ANSON ENVIRONMENTAL LTD.

33 Gerard Street • Suite 100
Huntington, New York 11743
516•351•3555
Fax 516•351•3615

FINAL

Nassau Uniform Services
525 Ray Street
Freeport, New York

Site #130063

Focused Remedial Investigation
Work Plan

March 25, 1997

Prepared by

Anson Environmental Ltd.
33 Gerard Street
Huntington, New York 11743

Volume 1 of 2

NASSAU UNIFORM SERVICES
525 RAY STREET
FREEPORT, NEW YORK
SITE # 130063

1.0 INTRODUCTION AND PURPOSE OF FOCUSED REMEDIAL INVESTIGATION

This Focused Remedial Investigation (FRI) for soil and groundwater sampling is being conducted by Nassau Uniform Services (Nassau Uniform) 525 Ray Street, Freeport, Town of Hempstead, Nassau County, New York, (SITE) with oversight by New York State Department of Environmental Conservation (NYSDEC). The preparation of this Work Plan is pursuant to an Order on Consent between Nassau Uniform and the NYSDEC.

This Work Plan is for an FRI for on SITE soil and groundwater sampling. If contamination extends off SITE, an expanded investigation may be required.

The objectives of this Work Plan are to determine the nature of volatile organic compound (VOC) contamination, if any, and its vertical and horizontal extent in the soils (vadose zone) on SITE. The soils investigation will be concentrated in the upper 2 to 4 feet below grade on the western portion of the SITE including, but not limited to, the vicinity of the former 2,000 gallon waste oil/tetrachloroethylene (PERC) tank.

Groundwater samples will be collected upgradient and down gradient of the SITE, to determine the quality of the groundwater beneath the SITE. These samples will be collected from one of the existing monitoring wells (MW1) on SITE, from a new well (MW3) to be installed, as well as, from three piezometers installed during this investigation. These piezometers will be screened at different depths and clustered at two locations (P3 at MW3 and P1 and P2 at the former waste PERC tank location).

Once the nature and extent of soil contamination and groundwater quality have been determined, remedial measures and their alternatives will be identified.

2.0 Summary of Existing and Background Information

2.1 Site Location, Ownership, and Access

The NYSDEC designated Inactive Hazardous Waste Disposal Site at Nassau Uniform Service, Inc. (Nassau Uniform) (SITE) is located at 525 Ray Street, Freeport, Nassau County, New York. The SITE is approximately three quarters of an acre in size (Figure 1). The designation on New York State Registry of Inactive Hazardous Waste Disposal Site listing is Site #130063.

The property is owned by Nassau Industrial Dry Cleaning.

2.2 SITE Description

The SITE includes one building occupied by Nassau Uniform which is in the business of selling, renting and cleaning industrial uniforms. The remainder of the SITE is paved with asphalt and used as a parking lot. The property is not fenced and primary access is from Ray Street.

According to Nassau County tax maps the SITE has the following designation: Section 54, Block 315 and Lots 98 through and including Lot 107 (Figure 2).

2.3 Background Information

2.3.1 Geology

The local SITE geology has been generally defined to a depth of 12 feet in the western portion of the SITE. These borings were installed by Groundwater Technologies Inc. (GTI) on September 23, 1994 (Appendix D).

The lithologic description indicates the following soil types are present at the SITE:

Feet Below Grade	Description of Soils
0-4	mostly brown fine sand, poorly sorted, some gravel, trace clay and fill material.
4-8	mostly black organic marsh deposits to

	approximately 7 feet, then changes to fine sands and clay material.
8-12	gray and brown fine sands to approximately 10 feet, then changing to orange sand.

In general, the area consists of marsh lands associated with Millburn Creek. These marsh lands have been developed by filling them with clean fill and are occupied by residential and commercial buildings.

Groundwater has been documented at approximately 7 feet below grade; however, the SITE is influenced by a tidal fluctuations that reportedly can range between 3 and 9 feet. It is unclear at which point during the tidal cycle the above noted depth to groundwater was recorded.

The drill logs for two Nassau County wells (N5906 and N2411) are included in Appendix G and indicate that gray clay was encountered at 38 to 52 feet below grade in N5906 and dark gray clay from 50-59+ feet in N2411.

Therefore, lithologic information will be gathered during the installation of a new monitoring well (MW3) on SITE.

2.3.2 Previous Investigations

The following is a brief chronological summary of events that have occurred on SITE.

1925 to 1962

Village of Freeport information indicate that the building was originally constructed in 1925. This information was obtained from a site diagram updated in 1965 (Appendix K).

No other information is available about the site between 1925 and 1962.

1962 to 1965

Historical aerial photographs taken in 1962 and 1965 illustrated that there was an addition built on the building between those years. This addition was placed on the western end of the building and extended from the edge of the existing building to the bulkhead.

1964

In December of 1964, Nassau Industrial Uniform Services, Inc. agrees to purchase from American Permac, Inc.:

-two 120 lb. SE Industrial dry cleaning machines
-one Titan 700 Industrial dry cleaning Machine
-one Model 200 Activated Carbon Recovery Unit

This equipment was delivered and installed in 1965.

See Appendix H for documentation of equipment purchases.

1965

Nassau Industrial Uniform Services agrees to purchase a Permac Industrial Cleaning Machine (330 SE) in August 1965.

See Appendix H for documentation of equipment purchases.

1975

A letter dated October 6, 1975 confirms Nassau Uniform Service's purchase of a Brill X-40 oil skimmer. This equipment was supplied by Western Environmental Engineering.

See Appendix H for documentation of equipment purchases.

1982

In May of 1982, there was a spill from the oil/water separator that separates the oil washed from uniforms from the wastewater discharged to the sewer. Oily waste was accidentally discharged to the soils on SITE and to Millburn Creek.

The oil contaminated soil was excavated by Nassau Uniform, drummed and disposed of properly off SITE.

1984

On July 5, 1984, a hydrostatic test was performed on a 2,000 gallon underground gasoline storage tank that was located on the eastern side of the building near the front door. The failure of the tank to pass this test was reported to the NYSDEC. Site remediation included the removal of the

tank and installation of three groundwater monitoring wells.

When the tank was removed from the ground, it was reported to have had several holes in it. The three wells were installed in the parking lot on the corner of Ray Street and West End Avenue. One well was installed in the center of the tank excavation and the other two to the northwest and southeast of the excavation. One of these wells could not be located during the recent site reconnaissance.

Spill #84-0959 was assigned to this event on the SITE.

This spill location was inspected by NCDH on October 20, 1984.

The spill remains open as of January 1997.

1988

On February 1, 1988, Nassau County Department of Health issued a permit to Nassau Uniform to maintain the following storage:

Tank/Storage Area Number	Tank Capacity in gallons	Type of Toxic or Hazardous Material Stored
0001	260	multiple chemicals stored
0002	2000	oil, fuel #2
0003	30	multiple chemicals stored
0004	2000	oil, fuel #2
0005	2000	tetrachloroethylene
0006	500	tetrachloroethylene

This permit expiration date was February 1, 1993.

1990

On April 27, 1990, a 2,000 gallon waste oil/PERC tank was removed, after being in place for approximately 12 years. The tank itself was reported to be leaking.

Laboratory analysis of soil samples collected from the tank excavation by NCDH identified 9,000,000 parts per billion (ppb) of tetrachloroethylene, 34,000 ppb of trichloroethene, 67,000 ppb of c-1,2-dichloroethylene and other volatile organic compounds in a soil sample collected under the tank.

A June 1, 1990 letter from NCDH instructed Nassau Uniform to perform site remediation, as soon as possible.

1991

Soil samples were collected by NCDH on December 17, 1991 from 14 feet beneath the ground surface in the former tank excavation location. Analysis reported contaminant concentrations as follows; PERC at 2,900,000 ppb, 1,1,2-trichloroethene at 130,000 ppb and 1,2-dichloroethylene at 38,000 ppb.

Groundwater samples that were taken on the same day, downgradient of the tank location, also reported contamination with PERC at 20,000 ppb, 1,2-dichloroethylene at 10,000 ppb, 1,1,2-Trichloroethene at 3,600 ppb and vinyl chloride at 1,200 ppb.

1994

On September 23, 1994, Groundwater Technology, Inc. (GTI) supervised the installation of six Geoprobe points (GP-1, GP-2, GP-3, GP-4, GP-5, and GP-6) for the collection of soil and groundwater samples. A SITE map illustrating the locations of the points is presented in Figure 3.

Soil analysis reported that samples collected from two Geoprobe locations at 2 to 4 feet below grade, GP-2 and GP-3, exceeded the NYSDEC Recommended Soil Clean-up Objectives for 1,2-dichloroethene, trichloroethene, PERC and for total volatile organic compounds. Laboratory analysis of soil samples collected from Geoprobe location GP-5 also indicated elevated levels of trichloroethene which exceeded the NYSDEC Recommended Soil Cleanup Objectives (Table 2 in Appendix D).

Groundwater samples (approximately seven feet below grade) collected on the same day showed concentrations above the Class GA standards for tetrachloroethene, vinyl chloride, 1,2-dichloroethene, chlorobenzene, 1,1-dichloroethene and 1,1,1-trichloroethane (Table 3 in Appendix D). Groundwater samples collected upgradient from the site showed no elevated levels of contamination. Given the levels of sodium and chloride, the underlying groundwater does not qualify as Class GA.

1996

On February 1, 1996, representatives of the NYSDEC and Anson

Environmental Ltd. (AEL) conducted a site reconnaissance. The purposes of which was to observe the operations on SITE, to determine constraints of the SITE and to better determine sampling locations.

Currently SITE operations include the washing and dry cleaning of uniforms and rags. The wastewater from the SITE flows through troughs in the floor, to an oil/water separator and then to the Nassau County sewer system. Dry cleaning is accomplished in two machines manufactured by Spencer (model GT 165) and Bowe, respectively. PERC contaminated waste (lint and sludge) is hauled from the SITE and disposed of properly by Safety Kleen. Safety Kleen also supplies raw materials (PERC) to Nassau Uniform.

The vast majority of the uniforms and rags cleaned on SITE are washed not dry cleaned.

1997

Freedom of Information requests were submitted to the Nassau County Department of Health on December 4, 1996. Access to these files was scheduled for January 22, 1997. The delay in gaining access to these records was caused by new file review policies recently instituted by the NCDH.

3.0 Scope of the Focused Remedial Investigation

3.1 Approach and Objectives

The objectives of the FRI are to determine the nature of VOC contamination, its vertical and horizontal extent in the soils (vadose zone) and the quality of the groundwater that exists beneath the SITE.

Particular attention will be paid to the soils in the vicinity of the former 2,000 gallon waste oil/tetrachloroethylene (PERC) tank and virgin PERC storage tank located in the northwest corner of the compressor room.

This investigation will be divided into two phases, One and Two. The purpose of this division is to allow for the scope of **Phase Two** to be adjusted based on the findings of **Phase One**.

Phase One will include soil gas sampling in the soil on the nodes of the grids (25 by 25 feet and 50 by 50 feet). Figure 4 illustrates the areas where the two grid types will be located. In addition to soil gas sampling, soil samples will also be collected at these nodes, the soil samples will be screened in the field and a limited number selected for laboratory analysis. The basis for selection for laboratory analysis will be headspace readings of 1.4 parts per million or higher. This sampling will be performed using a Geoprobe unit where ever possible. Inside the building where access is limited, Geoprobe rods will be driven by hand.

Phase One will also include the installation of a new monitoring well, MW3. During this installation, continuous split spoon samples will be collected to classify the soils on SITE and identify the location of layers of peat and significant amounts of clay under the SITE. This well (MW3) will be screened two feet above the first significant (greater than one foot thick) clay layer.

Groundwater samples will be collected from existing well MW1, the water supply well and from the new well, MW3. Because of the close proximity of MW2 to MW1 and the similarity of their construction (depth to bottom of MW1 is 15.00 feet below grade and MW2 bottom is 15.40 feet), only MW1 will be sampled during **Phase One.** However, both wells will be used to determine direction of shallow groundwater flow.

The **Phase One** soils investigation will be concentrated in the western portion (Figure 4) of the SITE including, but not limited to, the vicinity of the former 2,000 gallon waste oil/tetrachloroethylene (PERC) tank and the virgin PERC tank in northwestern corner of the compressor room.

Each floor drain in the vicinity of the dry cleaning machines will be dye tested to determine if it is connected to the trough in the floor and subsequently to the Nassau County sewer system. If the outfall for a floor drain cannot be identified, then the concrete floor will be broken up so the terminus of the pipe associated with the floor drain can be identified. If the floor drain and piping are not connected to the sewer, the soil surrounding the end of the pipe will be collected and submitted for laboratory analysis for VOCs.

Liquids from the trough in the floor will also be sampled to determine if VOCs are being discharged.

There is a hole in the floor in the compressor room. Sediment from this hole will be collected for laboratory analysis via EPA method 8240. At the time of sampling, the depth and diameter of this hole will be measured.

Three piezometers (P1, P2 and P3) will be installed during Phase One. One (P3) will be a shallow piezometer located in close proximity to MW3 and will be used to sample shallow groundwater. The second shallow piezometer (P1) will be installed in the vicinity of the former waste PERC tank location. This piezometer will be installed to a depth approximately equal to that of P3. The third piezometer (P2) will be installed adjacent to waste PERC tank and will be installed to a depth approximately equal to MW3. The two shallow piezometers (P1 and P3) and monitoring wells MW1 and MW2 will be used to determine the direction of shallow groundwater flow.

In **Phase One**, P2 and P3 will be installed such that five feet of screen will be above the water table and ten feet will be located in the water table. These piezometers will be installed using a Geoprobe and will be flush-mounted to the ground surface and will be inclosed in a curb box with a nine-inch diameter manhole.

The deep piezometer, P2, will be installed at the same depth as

monitoring well MW3 and will be screened at the same depth as that well. A Geoprobe will be used to install that piezometer.

Phase Two - Based on the lithologic information gathered during the installation of MW3, additional piezometers will be installed on site during **Phase Two**. Some of these piezometers will be installed in clusters and screened at different depths so that different portions of the water column can be sampled. Based on the findings of **Phase One**, an upgradient piezometer will be installed during **Phase Two**. This piezometer will be installed using a Geoprobe and will be flush-mounted to the ground surface and will be inclosed in a curb box with a nine-inch diameter manhole. The screen will be installed such that five feet will be above the water table and ten feet into it.

Once the nature and extent of soil contamination and groundwater quality have been determined under **Phases One and Two**, remedial measures and their alternatives will be identified.

3.2 Site Characterization

3.2.1 Field Investigations

The FRI field investigations during Phase One and Phase Two will include the following:

Phase One
- -Soil Sampling
  - soil gas sampling
  - head space sampling
  - discrete soil sample analysis by laboratory
- -Floor Drain Dye Testing
- -Drywell Sampling
- -Groundwater Sampling Using Monitoring Wells
- -Groundwater Sampling Using Piezometers at MW3 and Former Waste and Virgin PERC Tank Locations
- -Identification of Tidal Influences on Groundwater

Phase Two
- -Groundwater Sampling Using both Monitoring Wells and Piezometers

All field readings with the OVM 580B/PID will be performed when precipitation is not predicted.

PHASE ONE SAMPLING

3.2.2 Soil Sampling

Soil samples will be collected both inside and outside of the building. The interior samples in the room where the former waste PERC tank was located will be collected using a Geoprobe unit mounted on a van or golf cart. The interior samples collected in the compressor room, downgradient of the virgin PERC tank, as well as those locations near the dry cleaning machines and washing machines will be collected by hand -driving the Geoprobe rods. Exterior sampling locations will be sampled using the van-mounted Geoprobe.

3.2.2.1 Survey Grid Locations

Two grids will be placed on the SITE to identify the soil sampling locations (Figure 4). The grid on the east and north sides of the building will be 50 feet by 50 feet and will have sixteen nodes. The grid inside the building on the western side (in the vicinity of the dry cleaning machines, compressor room, former waste oil/PERC tank and virgin PERC tank) will be 25 feet by 25 feet and will have forty-two sampling locations. The grids will be marked on the ground surface and soil sampling will be performed at the nodes of the grid.

3.2.2.2 Soil Gas Sampling

At each soil sampling location, multiple samples will be collected which include: (1) soil gas samples collected one foot below grade using an OVM 580/PID; and (2) headspace analysis using an OVM 580/PID from a discrete soil sample collected from the 2 to 4 foot depth (or vadose zone, whichever is shallower). This discrete soil sample will be divided and part will be placed in glassware for laboratory analysis and the remainder will be placed in a ziplock plastic bag to be stored at room temperature for headspace analysis. The ziplock bag will be approximately half-filled with soil.

If elevated levels of VOCs (1.4 ppm or greater) are identified by headspace

analysis, then soil samples will be submitted for laboratory analysis via EPA method 8240. A maximum of fifteen soil samples will be submitted. Should more than fifteen samples have elevated levels, then the fifteen with the highest headspace readings will be submitted.

The soil gas, headspace and soil sampling will be performed by driving stainless steel Geoprobe rods with appropriate sampling devices into the ground. The sampling depth at each node for soil gas will be one foot below grade and the depth for soil sampling will be two to four feet below grade. At that depth the soil gas sample will be collected using a clean polyethylene tube which will be inserted into the borehole. Once the tube has been inserted, the area around the tube at the ground surface will be plugged using clean cotton to make sure that surface gases do not enter the borehole. The OVM 580/PID will be connected to the polyethylene tube and the highest reading recorded.

The data gathered during the soil survey will be used as a screening method to determine (1) the extent of soil contamination on SITE and (2) the level of protection for the workers during the remaining investigation.

Stainless steel Geoprobe rods, with a clean drive point adapter and an expendable point, will be driven approximately 2 to 4 feet into the surface soils. At each boring point, the sampling rod will be positioned over the sampling location and a blind probe driven to a depth above the desired sampling depth in order to clear obstructions and/or debris. Subsequent to opening this probe hole a large bore (LB) sampler will be driven to the desired sampling depth. The LB sampler remains completely closed while it is being driven to depth and is opened by releasing a stop pin. Removal of the stop pin allows a piston to retract into the sample tube as it is displaced by the soil core. This device is then used to collect a soil core in a dedicated sterile acetate liner. The acetate liner assists in the removal of the soil sample from the tube and helps insure sample integrity.

All Geoprobe sampling tools will be decontaminated with an Alconox solution, double rinsed with tap water, and a final rinse with deionized water between sample collection. All acetate liners will be discarded after one use.

3.2.2.3 Soil Sampling

Forty-two soil samples will be collected by installing borings inside the building, in the vicinity of the dry cleaning machines, compressor room and former waste oil/PERC tank. Outside the building sixteen soil samples will be collected at the perimeter of the SITE and inside drywell(s) currently located on SITE (Figure 4). These fifty-eight soil samples will be collected at depths below grade of 2 to 4 feet.

Soil samples will be collected through the floor inside the building in the vicinity of the dry cleaning machines and other areas identified on Figure 4. Where use of the Geoprobe is not possible, these samples will be collected by hand-driving Geoprobe equipment. The sampling techniques and decontamination procedures for this equipment will be the same as was described above.

The soil will be classified at each sampling location so as to adequately describe the soils on SITE. This information will be used when developing a remedial method for the soil and groundwater on SITE, if necessary.

3.2.2.4 Headspace Analysis of Soil Samples

All soil samples collected will be screened in the field via headspace analysis using a OVM model 580 and/or PID. Samples with a headspace concentration of 1.4 parts per million (ppm) or greater will be submitted for laboratory analysis via EPA method 8240. The fifteen soil samples with the highest headspace readings will be submitted for laboratory analysis via EPA method 8240. The two samples with the highest headspace readings will be analyzed for the NYSDEC designated target compound list (TCL) following the ASP parameters (see Table 1).

If fifteen soil samples do not exceed the 1.4 ppm limit, then the five samples with the highest headspace readings will be submitted for laboratory analysis via EPA method 8240 and the one with the highest headspace reading will be selected for analysis for TCL via ASP.

During cold weather, the plastic bags with soil in them will be stored in a warm place for at least thirty minutes prior to performing headspace analysis.

Following the analysis via headspace, the plastic bags of soil will be

placed in a drum and stored on SITE until proper disposal can occur off SITE.

3.2.2.5 Drywell Sampling

Sediment will be collected from the drywell on the southeastern side of the building (in front of the building in the parking lot). This sample will be collected from the top one foot of sediment in the bottom of the structure and will be analyzed via EPA method 8240.

3.2.2.6 Sediment Sampling in Compressor Room

One soil sample will be collected from the hole in the compressor room floor and will be analyzed via EPA method 8240.

3.2.2.7 PERC Tank Locations

There are two locations where PERC was stored in tanks. The waste PERC tank has been removed, however, the virgin PERC storage tank was located in the compressor room.

The new monitoring well to be located at MW3 will be installed prior to the installation of the boring at the former waste PERC tank location. At this location, two piezometers (P1 and P2) will be installed.

Former Waste PERC Location - In the vicinity of the former waste PERC tank location, continuous soil samples will be collected in four foot long acetate liners from the floor surface to a depth equal to the depth of the soil sampling at MW3. Each soil sample will be divided and one part will be screened in the field using headspace analysis. The other portion will immediately be placed in laboratory glassware. Based on the data gathered during the installation of this soil boring, the following four samples will be submitted for laboratory analysis:

1. soil sample with the highest headspace reading
2. sample collected from the groundwater interface (approx.7 feet depth below grade)
3. sample immediately above the peat/marshy layer (approx. 2 to 4 feet depth below grade)
4. sample immediately above the clay layer

Samples 1 and 2 will be analyzed for the target compound list of chemical compounds (not including cyanide) and will be reported in CLP package format while, samples 3 and 4 will be analyzed for volatile organic compounds via EPA method 8240.

During the drilling of piezometer P2, the following information will be gathered.

classification of soil types (see attached Unified Soil Classification parameters)
location and thickness of the peat/marshy layer
location of the clay layer
location of the groundwater interface
headspace readings of the soil samples

At this location, continuous soil samples will be collected in acetate tubes from ground surface to a depth equal to the bottom of the boring at MW3.

The depth and thickness of the peat/marsh and clay layers will be determined and compared to those data for MW3.

The concentrations of volatile organic compounds in each four foot acetate liner will be determined using headspace analysis.

Following the soil sampling in this location, a piezometer will be installed where the soil boring was performed using a Geoprobe.

Virgin PERC Storage Tank - One soil sample will be collected at 2-4 feet depth below grade using a hand driven Geoprobe sampling device.

3.2.2.8 MW3 Soil Sampling

Once the split spoon sampling has been completed, the augers will be removed from the ground and the well redrilled in the same location as where the split spoon sample sampling was performed.

A permanent groundwater monitoring well, designated MW3, will be installed on SITE to determine the quality of the groundwater on the south side of the SITE (Figure 5). This well will be installed using hollow-stem

augers and two feet long by two inch diameter split spoon samplers. Continuous split spoon samples will be collected from the ground surface to the first significant clay layer (at least one foot thick).

During the drilling of MW3, the following information will be gathered:

classification of soil types (see attached Unified Soil Classification parameters)
location and thickness of the peat/marshy layer and
location of the groundwater interface

Soil samples will be collected from each split spoon, divided between laboratory glassware and ziplock plastic bags that will be screened using headspace analysis. The four soil samples will be collected during the installation of MW3 are:

1. soil sample with the highest headspace reading
2. sample collected from the groundwater interface
3. sample immediately above the peat layer
4. sample immediately above the clay layer

The concentrations of volatile organic compounds in each split spoon will be determined using an OVM model 580/PID. Although this field analysis does not identify specific volatile organic compounds present in the soil samples, the analysis does identify the total volatile organic compounds and is useful as a screening technique.

All four samples will be analyzed for volatile organic compounds via EPA method 8240.

3.2.2.9 Floor Drains and Trough

The floor drain identified in Figure 3, as well as, all other floor drains subsequently identified, will be dye tested to determine if the terminus of each drain is the Nassau County Sewer System.

If the terminus cannot be identified, the concrete floor will be saw cut and broken up so that the end of the piping can be identified.

Liquid will be collected from the trough in the floor that directs the

wastewater from the clothes washing machines to the Nassau County Sewer System. This sample will be submitted for laboratory analysis EPA method 8240.

3.2.2.10 Monitoring Well Installation

Five feet of screen will be installed with the bottom of the well screen located one foot or less above the clay layer. This well installation technique was chosen to detect free product on top of the clay layer.

Based on data obtained from other wells in the area, it is anticipated that this clay layer will be encountered at approximately 50 feet below grade. In the event that no significant clay layer is encountered, the screen interval will be decided in the field with input from the NYSDEC engineer overseeing the field work. The NYSDEC and AEL field personnel will use the boring log data to decide on the location of the well screen.

This well will be constructed per the NYSDEC protocol for groundwater monitoring wells described in the Appendix B. The depth of the well will depend upon the depth of the first significant clay layer.

The groundwater monitoring wells installed on site by AEL will be tested via a slug test to determine the hydraulic conductivity, transmissivity and other groundwater conditions necessary to remediate the contaminated groundwater, if present.

Prior to groundwater sampling, one of the existing on SITE monitoring wells (MW1) and the water supply well, as well as the new monitoring well (MW3), each well will be developed by pumping water from them for a minimum of thirty minutes. This pumping will be accomplished using a Grundfos centrifugal pump. This development water will be stored in drums until they are sampled for disposal purposes using RCRA characteristics. Then, this water will be properly disposed of off SITE. To document this disposal, waste manifests will be provided illustrating compliance with all ARARs.

Prior to sampling the monitoring wells, each will be purged of at least three well volumes. A Grundfos Redi-Flo2 pump or centrifugal pump (suction pump) with a flow rate of less than five gallons per minute, or approved substitute, will be used to purge the wells. Each well will be

purged until either the turbidity is reduced to 50 NTUs or thirty minutes of purging. Groundwater will be purged into a 55-gallon drums and contained on SITE until the proper disposal method is identified. Samples will be collected using a dedicated bailer.

The Grundfos centrifugal pump will be decontaminated following its use in each well. The development and purge waters for each well will be placed in labelled drums. Each well will have dedicated drums and development and purge waters will not be mixed from different wells.

The water supply well located inside the building near the compressor room will also be sampled. Since the condition of this well is unknown, an attempt will be made to collect a water sample following USEPA and NYSDEC sampling protocols. However, if the condition does not allow adherence to such protocols, a grab sample will be collected and analyzed via EPA method of 8240.

3.2.2.11 Groundwater Monitoring

There are two existing groundwater monitoring wells (MW1 and MW2) located on the eastern side of the building. These two wells were installed by others to address a underground gasoline spill from the storage tank (Spill #84-0959). These two wells will be used to the fullest extent possible during the FRI. To supplement the depth to water data gathered from these two monitoring wells, a shallow piezometer will be installed in the vicinity of MW3. This piezometer and two wells will be used to calculate the direction of groundwater flow.

To gather deeper groundwater data, a new monitoring well (MW3) will be installed along with one deep piezometer in the former PERC tank location.

Following the installation of piezometers P1 and P3, depth to water measurements will be collected from them as well as from MW1 and MW2 to determine the direction of shallow groundwater. Within a week of those depth to water measurements, one round of groundwater sampling will be performed during Phase One. This sampling will include MW1, MW3 and the three piezometers, P1, P2 and P3. Another round of depth to water measurements will be collected as part of the groundwater sampling for laboratory analysis.

Groundwater sample collected from the two monitoring wells will be performed per USEPA and NYSDEC sampling protocols. The turbidity of each sample will be equal to or less than 50 NTUs. The turbidity of the groundwater samples collected from the water supply well and piezometers will also be measured. If the turbidity cannot be reduced to less than 50 NTUs, the sample will be allowed to stand until the turbidity has been reduced, then the sample will be decanted and the turbidity re-measured. If the turbidity is less than 50 NTUs, then it will be submitted for laboratory analysis for metals. However, if the turbidity cannot be reduced to an acceptable level, it will be submitted with a request for the laboratory to filter the sample. In that case, another container of groundwater will be collected for analysis for metals and the laboratory will be requested not to filter that sample.

In order to reduce the turbidity of the groundwater samples collected from the piezometers, a peristaltic pump will be connected to polyethylene tubing that extends from the ground surface to two inches above the bottom of each piezometer and the water supply well. The groundwater will be pumped slowly in an attempt to have the natural sand pack form around the screen zone of the piezometer and thereby reduce the turbidity of the groundwater sample.

3.2.2.12 Tidal Influence on Groundwater

Since aquifers located next to tidal bodies such as Millburn Creek are subject to short-term fluctuations in the head due to tides, a water-level recorder will be installed in MW3. This recorder will indicate the fluctuations in hydraulic head that parallels changes in tides.

Tidal changes will be measured using a staff gauge that will be installed on the bulkhead abutting the SITE to the west.

Tidal changes will be compared to fluctuations in depth to groundwater measurements in MW3 identified by the water-level recorder.

3.3 Land Survey

The surface elevations of the monitoring wells (MW1, MW2 and MW3) and piezometers (P1, P2 and P3) will be determined by William Welsh a NYS licensed land surveyor and professional engineer. All elevations will be

measured within less than 0.01 feet.

During this survey, the building, property lines and other major land features will be surveyed indicating their location on the SITE. Following the completion of Phase One, soil sampling locations will be surveyed.

A drawing will be prepared using a scale of one inch equals ten feet.

PHASE TWO SAMPLING

Five to seven additional piezometers will be installed to determine the quality of the groundwater and confirm the direction of groundwater flow on the SITE. The location of these piezometers will be based on the groundwater flow direction calculated during Phase One. The surface elevations of the additional piezometers and monitoring wells will be determined by a NYS licensed land surveyor. All elevations will be measured to 0.01 of a foot.

Work performed during **Phase Two** will include the installation of additional piezometers. These piezometers, as well as, the monitoring wells and piezometers used during **Phase One** will be used to gather depth to water measurements to confirm the direction of groundwater flow.

Groundwater samples will be collected from both monitoring wells and piezometers. These samples will be submitted for laboratory analysis based on the findings of **Phase One**.

Tidal changes identified by the water-level recorder will be compared to fluctuations in depth to groundwater measurements in MW1 and MW2, as well as, piezometers P2 and P3 during **Phase Two**, also.

3.4 Laboratory Analysis

All soil and groundwater samples and quality control blanks collected will be kept in an ice-filled cooler and delivered to Accredited Laboratories, a New York State certified laboratory, for analysis for TCL.

Groundwater samples collected will be analyzed for the Target Compound List (TCL) including the following: semi-volatile organic compounds,

pesticides, PCBs, metals, as well as, VOCs. The two soil samples with the highest head space readings will be submitted for the target compound list of chemical compounds (not including cyanides) via the CLP package.

In addition to analysis for VOCs, all groundwater samples will also be tested to determine salinity. These data will be used to determine which ARARs apply to the SITE.

The information collected, using field screening and the laboratory analytical results, will be used to determine the extent of the soil contamination on the SITE and the groundwater quality at the SITE. Later, this information will be used as a baseline to monitor the remedial process at the SITE.

Laboratory analysis for VOCs only will be performed by Accredited Laboratories. Soil and groundwater samples will be analyzed for concentrations of VOCs using EPA Method 8240. Quality control blanks submitted with groundwater samples will be analyzed via EPA method 8240.

3.5 Deliverables

The following reports will be prepared using the data gathered during the above described soil gas, soil and groundwater sampling events.

3.5.1 SITE History Report

The historical uses of the SITE will be described identifying the building modifications and SITE changes. The operations of the dry cleaning machines will be described. Environmental investigations previously performed on SITE will be detailed.

This report will be submitted as part of the Phase One report.

3.5.2 Focused Remedial Investigation (FRI) Report

The findings of **Phase One** of the FRI will be submitted within 60 (sixty) days of receipt of all laboratory data.

This report will recommend the location for additional soil sampling, if

necessary, and piezometer and/or well installation. This work will be performed during **Phase Two** of the project. The report of findings of **Phase Two** will include an evaluation of the Interim Remedial Measures (IRM) that would be cost-effective to remediate the SITE, if appropriate.

It is understood that the NYSDEC will only comment on those portions of the report dealing with the proposed work under **Phase Two** as the laboratory data will not be validated under **Phase One**.

After **Phases One and Two** have been completed, a draft FRI Report will be presented including the results and conclusions of both Phases. This report will be revised following receipt of the NYSDEC's comments.

A copy of the final FRI Report will be sent to the repositories identified in the Citizens Participation Plan. The letter report of the findings of **Phase One** will not be submitted to the repository.

A public meeting will be scheduled following the completion of the FRI Report.

3.5.3 IRM Reports

The Consent Order for the FRI calls for a separate IRM Work Plan to be submitted for NYSDEC review. The recommended IRM will be discussed at the public meeting for the FRI.

3.6 Citizens Participation Program

Nassau Uniform Services, in coordination with AEL, will have the prime responsibility for preparation and implementation of a community relations program for the SITE. Information will be provided for the public that may include written documents, drawings, charts, slides, and/or transparencies. Presentation of this material will be made at public availability sessions/meetings to be held after the completion of the FRI. This program will be conducted in compliance with 6 NYCRR Part 375, 375-1.5 Public Participation.

A detailed Citizens Participation Program is included in this work plan. The mailing list is currently being developed and will not be finalized until the project gets closer to the time when materials need to be

mailed.

3.7 Quality Assurance/Quality Control Plan

The Quality Assurance/Quality Control Plan appears starting on page QA-1.

3.8 Health and Safety Plan

The SITE Health and Safety Plan begins on page HASP-1.

4.0 Project Management

4.1 Project Schedule and Key Milestones

Key milestones are identified in order to monitor work progress. Specific deadlines for completion of tasks and subtasks are established throughout the project schedule to insure timely completion of work. The following is the list of milestones proposed for this project.

Milestone 1 — Submittal of **Phase One** findings will include the interpretation of the results and recommendations for **Phase Two**. The NYSDEC will only comment on the recommendations for **Phase Two.**

Milestone 2 — Draft Focused Remedial Investigation Report will include the findings of both **Phases One and Two** and a schedule for Interim Remedial Measures. A copy of the final report will be submitted to the local document repository.

A task-by-task schedule for the investigative activities described in this work plan is illustrated in Figure 6.

4.2 Project Management, Organization and Key Technical Personnel

Anson Environmental Ltd will be the prime consultant responsible for the FRI and, if necessary, IRM. Subcontractors will provide assistance in performing the tasks identified in Section 5.1.2 below. The key AEL technical personnel will be:

Project Manager	Priscilla Mazzola Gros-Daillon
Field Project Manager	Jeff Bohlen
QA/QC Officer	Dean Anson
Professional Engineer	Steven Osmundsen, P.E.
Land Surveyor	William Welsh, P.E., L.S.

Dean Anson will act as the Quality Assurance Manager and will be responsible for making sure that the data collected are valid and collected in a precise and accurate manner. The QA Manager will conduct

unannounced field visits to observe data collection procedures.

The New York State licensed engineer for this project will be Steven Osmundsen, PE, who is the President of S.J. Osmundsen Engineering, a professional corporation. Mr. Osmundsen's New York State license number is 056136.

The resumes of the above key personnel are contained in Appendix E to this work plan along with the recent experience of AEL performing work at similar Inactive Hazardous Waste Disposal Sites on Long Island, New York (Appendix F).

5.0 Field Operations and Investigation Plan

5.1 Site Management Plan

5.1.1 Site Access and Security

Primary access to the property will be via Ray Street. Access authorization for AEL, its subcontractors, and the NYSDEC will be allowed following proper notification of Nassau Uniform.

5.1.2 Organization and Responsibilities

For the purpose of undertaking technical aspects of the Focused Remedial Investigation, the following firms will assist in undertaking the project. Prior to begin field work, the qualifications of these Subcontractors will be submitted for DEC review and approval. These include:

- Anson Environmental Ltd. - AEL will be the Environmental Consultants who have prime responsibility for completion of the focused remedial investigation, interim remedial measures and related reports.

- Analytical Laboratory - Accredited Laboratories, of Carteret, New Jersey, a New York State certified laboratory for CLP documents, as well as, for non-ASP laboratory analyses

- Geoprobing - Zebra Environmental Corp., Cedarhurst, NY.

- Well Installation - Miller Environmental Group, Calverton, NY.

- Data Validation - Environmental Standards Inc., Valley Forge, PA.

5.2 Field Activity Plan

The following is a description of the field activities to be conducted at the Nassau Uniform SITE. For a more detailed description of the sampling procedures, see Section 6.0, Quality Assurance/Quality Control Plan.

In addition to field activities, information about the operation of the dry cleaning machine are contained in Appendix A.

5.2.1 Soil Sampling

Soil sampling procedures are described above. During that sampling the following information and steps will be accomplished.

1. Sample location will be noted in the field log book and on the Location Sketch form.

2. Remove the field laboratory pre-cleaned sample bottle as provided by Accredited Laboratories. Using a standard ball-point pen, fill out a Sample Information Record on the label to be attached to the sample bag or bottle. Attach the label to the sample bottle.

3. Drive the probe with the dedicated sampling tube to the desired sampling depth.

4. Retrieve the soil probe, remove sampling tube and immediately after opening it obtain an organic vapor measurement with the OVM/PID. Record measurement in log book.

5. Remove the soil from the soil tube using the decontaminated scoop and/or tongue depressor, place the soil into the open sample bottle making certain that the bottle is tightly filled to the top. Tightly close the bottle with the bottle cover and fill out the sample label.

6. Return the sample bottle to the cooler.

7. If reusable, decontaminate the sampling equipment according to the procedures in Section 6.5.

8. All disposable personal protective equipment and disposal sampling equipment will be assumed to be non-hazardous and properly disposed of in normal garbage removed from the SITE.

5.2.2 Air Monitoring and Air Screening Survey

Ambient air monitoring will be conducted throughout the field investigation activities using a OVM/PID. The instrument will be used to assess current levels of personnel protective equipment, as well as, to

provide data on contaminant concentrations in the ambient air during investigative activities.

Ambient air monitoring will also be used to screen the property for any volatile organic compounds which may occur. This survey will occur throughout the field investigation.

5.2.3 Floor Drain and Trough Sampling

The floor drain located in the dry cleaning area of the facility is illustrated on Figure 3. This drain, as well as, all others identified during the field investigation will be dye tested to determine each drains terminus. Should that terminus be into the soils on SITE and not into the Nassau County Sewer System, a soil sample will be collected and submitted for laboratory analysis via EPA method 8240. These samples will be preserved on ice until analysis by the laboratory.

One liquid sample will be collected from the trough in the floor that directs the flow of the wastewater to the county sewer.

Following the collection of these samples, the drains will be dye tested to determine where they flow. The troughs in the floor that accept the wastewater from the clothes washing machines will be investigated to see if the introduced dye enters them. The sewer outflow(s) will then be investigated to see if that dye flows to them and subsequently off SITE.

Table 1
Summary of Sampling Techniques and Protocols for Phase One
Nassau Uniform Services (Page 1 of 5)

Sampling Location	Matrix	Sampling Technique	Analysis/ Method	Holding Time (VTSR)
58 nodes	soil gas	OVM/PID	OVM/PID	none
2-4 feet	soil	headspace	OVM/PID	none
2-4 feet (13)	soil	grab	EPA 8240	7 days
2-4 feet (2)	soil	grab	ASP**	see below
P2 (2)	soil	grab	ASP**	see below
P2 (2)	soil	grab	EPA 8240	7 days
MW-3	soil	split spoon	OVM/PID	none
	soil (4)	grab	EPA 8240	7 days
Drywell	soil	grab	EPA 8240	7 days
Floor Drain	dye test			
	sediment	grab	EPA 8240	7 days
Compressor Room				
Floor Hole	soil	grab	EPA 8240	7 days
Trough	liquid	grab	EPA 8240	7 days

Sampling Location	Matrix	Sampling Technique	Analysis/ Method	Holding Time (VTSR)
Water Supply Well	liquid	grab	EPA 8240	7 days
Monitoring Well (MW1)	liquid	grab	EPA 8240	7 days
Monitoring Well (MW3)	liquid	grab	ASP**	see below
1 matrix spike	liquid	grab	ASP**	see below
1 matrix spike duplicate	liquid	grab	ASP**	see below
Piezometers (P2)	liquid	grab	EPA 8240	7 days
Piezometers (P1 and P3)	liquid	grab	ASP**	see below

Summary of Sampling Techniques and Protocols for Phase Two

Piezometers	liquid	grab	EPA 8240*	7 days
Monitoring Wells (MW1 and MW3)	liquid	grab	EPA 8240*	7 days

NOTES:

All groundwater samples will be analyzed for salinity.

VTSR = verified time of sample receipt

* = Laboratory analysis for Phase Two will be based on the findings of Phase One.

ASP** = The following EPA methods will be used during the ASP analysis of soil and liquids:

Analyte	Analytical Method	Holding Time	Preservation
Volatile organic compounds	95-1	7 days	cool to 4 degrees C
Semi-volatile organic compounds	95-2	5 days to extraction 40 days to analysis	cool to 4 degrees C
Pesticides/PCBs	95-3	5 days to extraction 40 days to analysis	cool to 4 degrees C
TAL metals	Superfund CLP inorganics	180 days	low/med conc. HNO_3 to pH<2 then cool to 4 degrees C
Mercury	CLP inorganics	26 days	
1 Trip Blank/cooler for Groundwater Samples Only	95-1	7 days	cool to 4 degrees C
1 Field Blank	all parameters being tested in accompanying samples	as specified above based on analysis	

Glassware Requirements

Analyte	Analytical Method	Glassware Requirements
SOILS		
Volatile organic compounds	8240	60 ml glass
Volatile organic compounds	95-1	60 ml glass
Semi-volatile organic compounds	95-2	950 ml glass if combined if separate, 125 ml glass for each
Pesticides/PCBs	95-3	
TAL metals	Superfund CLP inorganics	
Mercury	CLP inorganics	
1 Trip Blank/cooler for Groundwater Samples Only	95-1	60 ml glass
1 Field Blank	all parameters being tested in accompanying samples	

Glassware Requirements

Analyte	Analytical Method	Glassware Requirements
LIQUIDS		
Volatile organic compounds	8240	2-40 ml glass
Volatile organic compounds	95-1	2-40 ml glass
Semi-volatile organic compounds	95-2	950 ml amber glass
Pesticides/PCBs	95-3	950 ml amber glass
TAL metals	Superfund CLP inorganics	950 ml glass + HNO_3
Mercury	CLP inorganics	950 ml plastic +HNO_3
1 Trip Blank/day for Groundwater Samples Only	95-1	60 ml glass
1 Field Blank	all parameters being tested in accompanying samples	

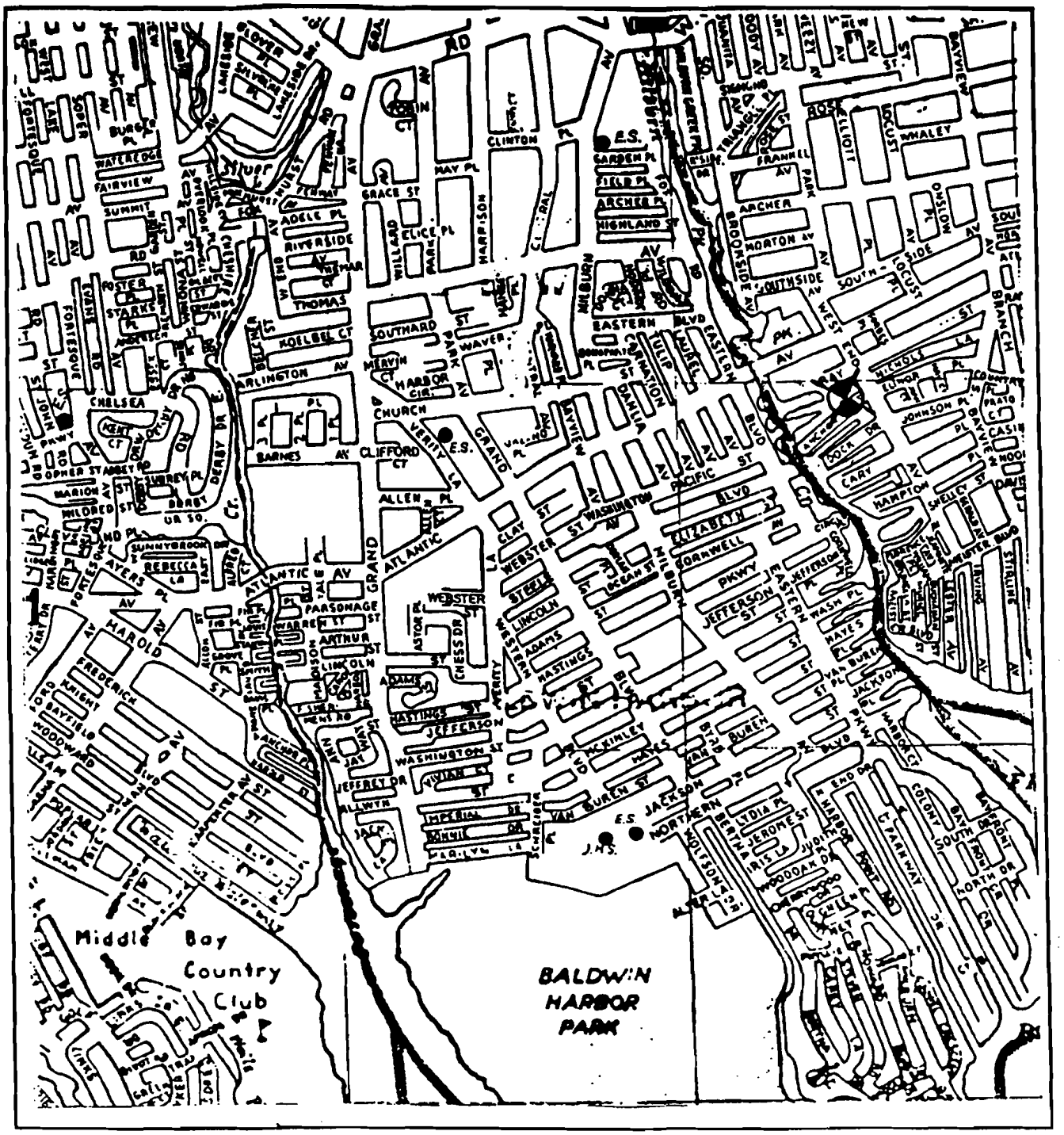


Figure 1 Site Location

Anson Environmental

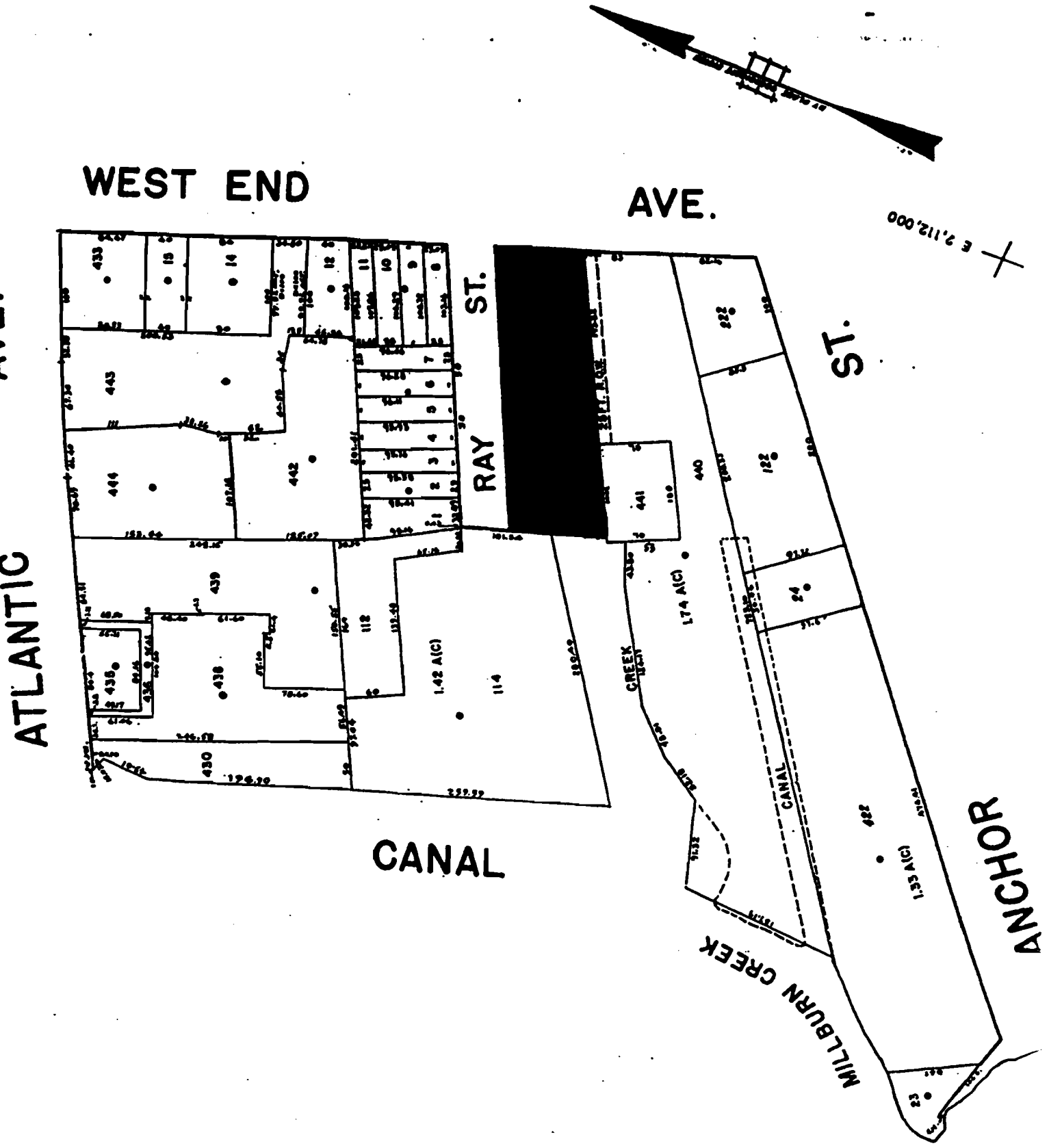
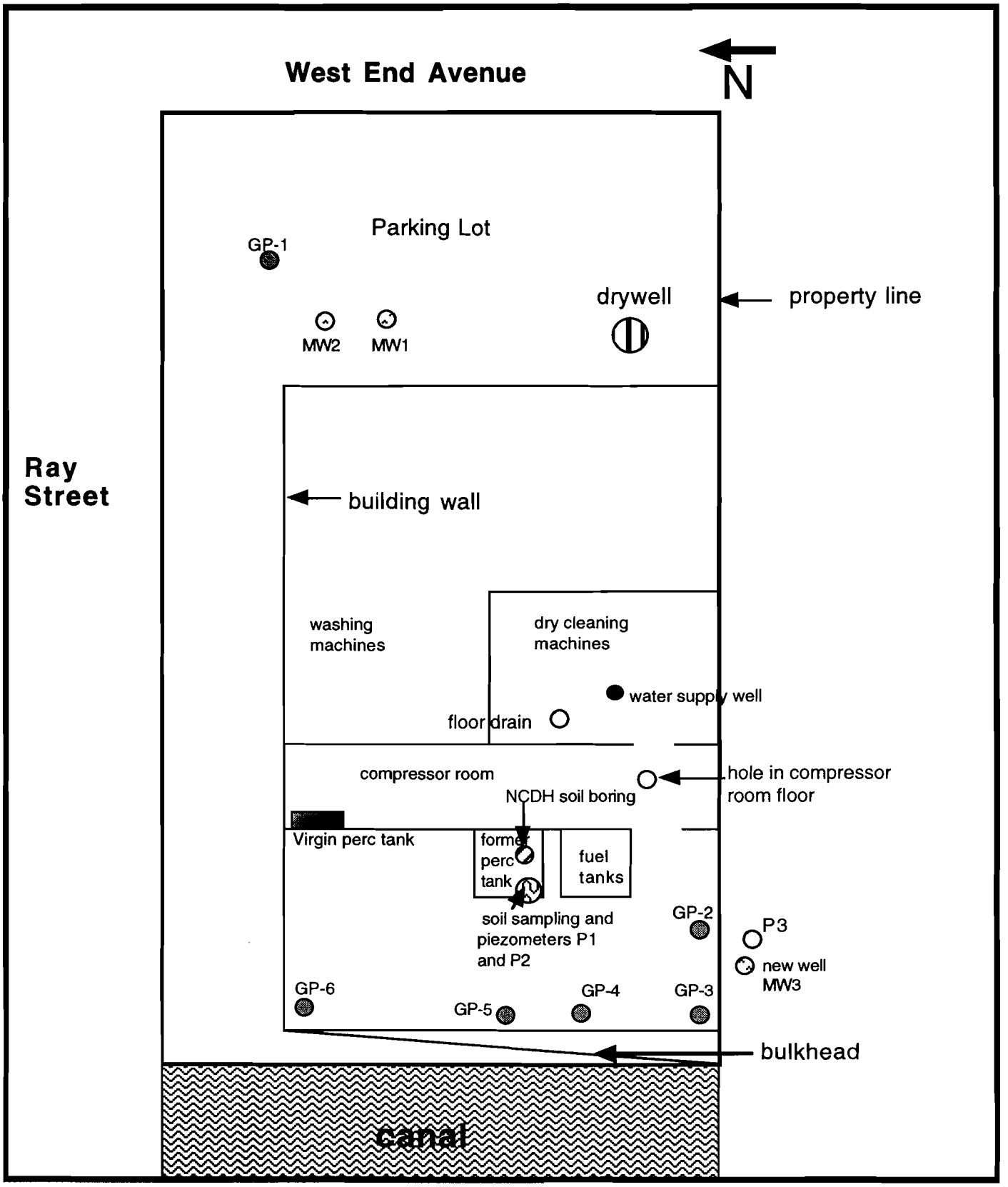


Figure 2
Nassau Uniform
525 Ray Street
Freeport, New York

Anson Environmental Ltd.
Not to Scale



Legend

- GP-1 = Groundwater Technology geoprobe sampling points
- GTI soil boring = Groundwater Technology soil sampling
- NCDH soil boring = Nassau County Department of Health sampling

P3 = piezometer 3

Figure 3 - Soil Sampling Plan

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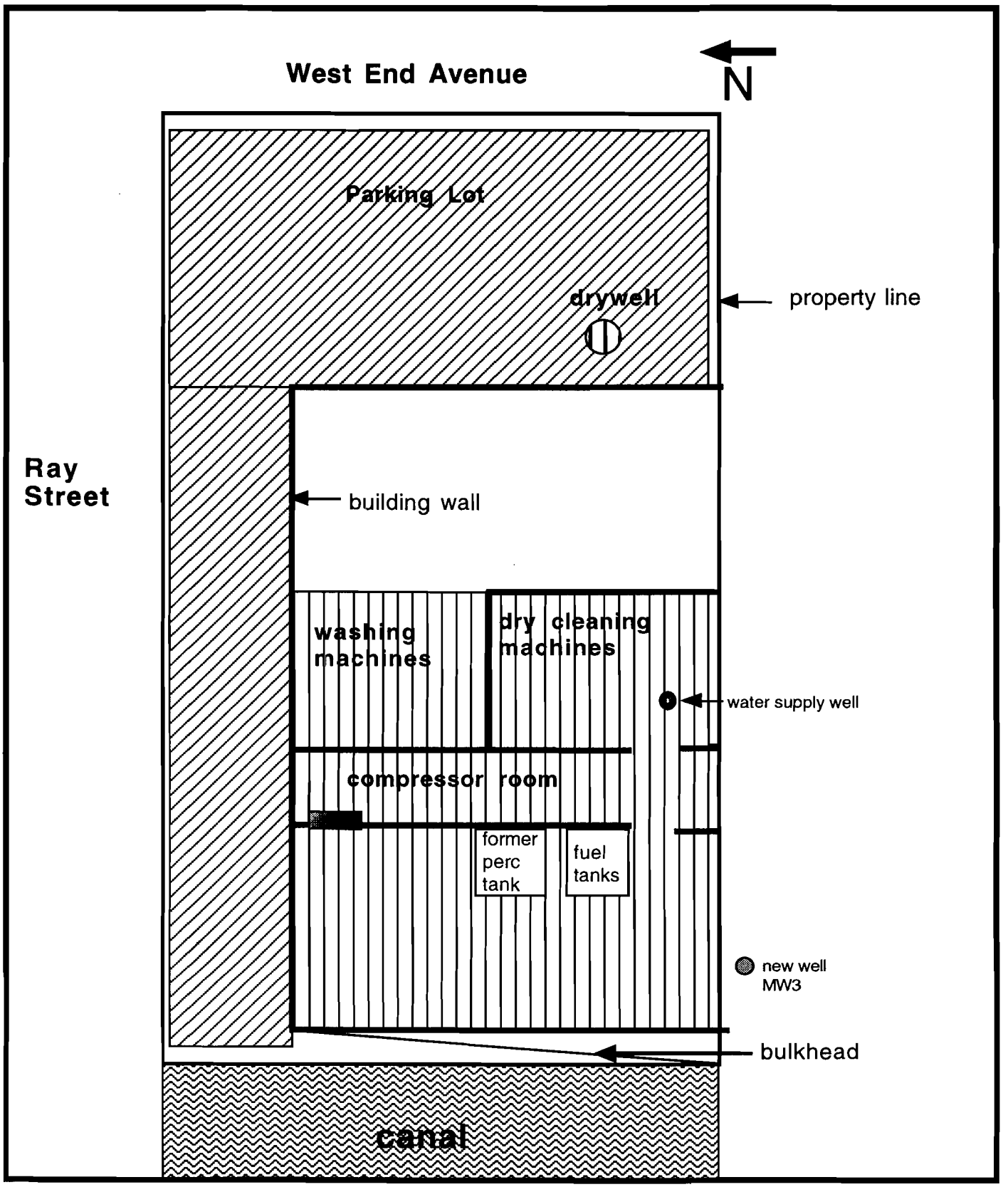
rev. 3/11/97
rev. 3/19/97

not to scale



Legend

50 ft by 50 ft grid

25 ft by 25 ft grid

Figure 4 - Soil Sampling Grids

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rev. 3/11/97 **not to scale**

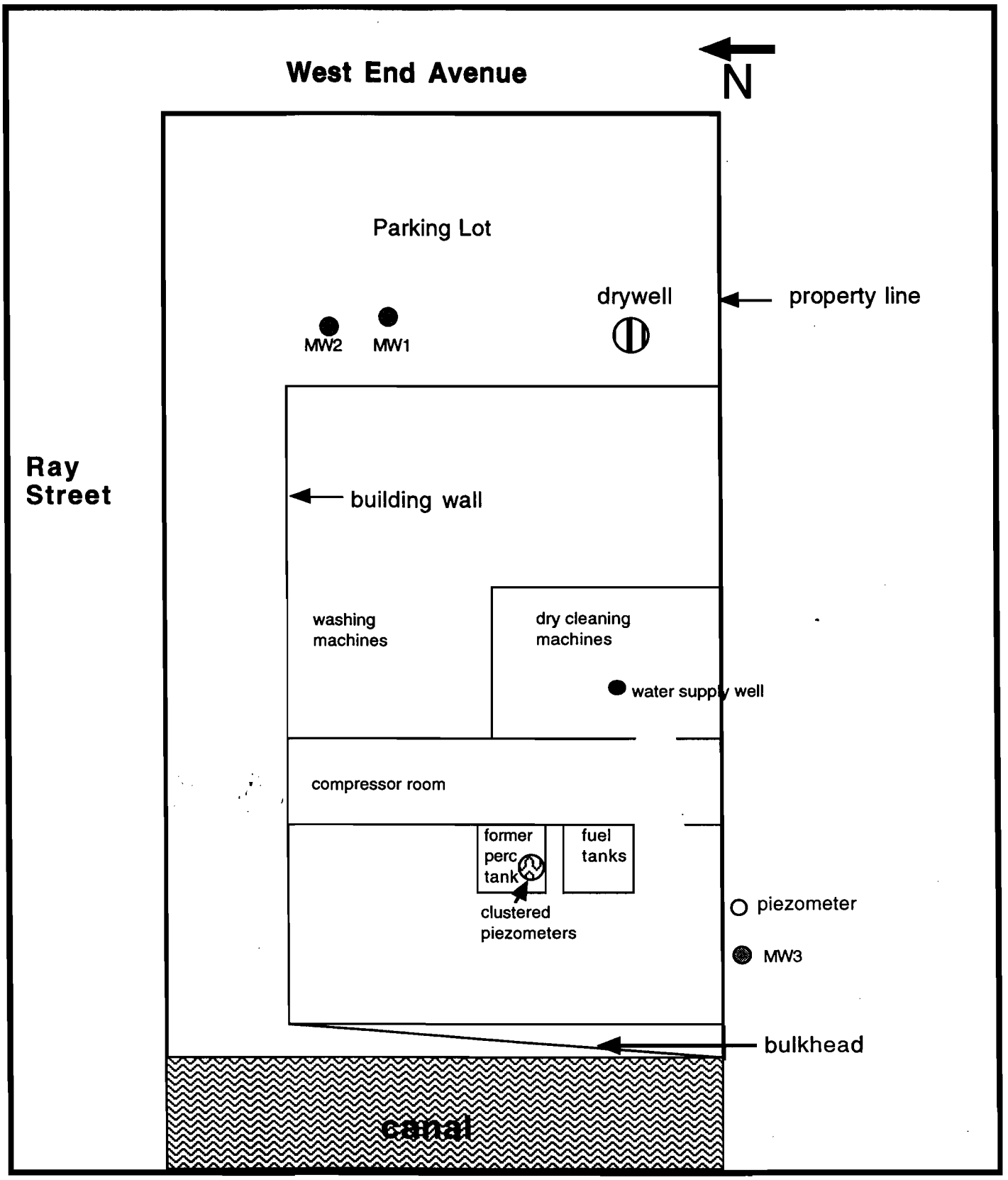

Figure 5 - Groundwater Sampling Plan

Anson Environmental Ltd

not to scale

	TIME (weeks)																
TASK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
NYSDEC Approval of Work Plan																	
Scheduling Field Work	x																
1. Monitoring Well Installation		x															
2. Soil Sampling		x	x														
3. Floor Drain/Trough Sampling		x															
Laboratory Analysis			x	x	x	x											
Data Validation (TCL/CLP)							x	x	x								
Report Preparation					x	x	x	x	x	x	x						
1. Site History Report												x					
2. FRI Report													x	x			
Client Review															x	x	
NYSDEC Submission																	x
Additional Investigation													to be determined				
or Remedial System Design													to be determined				

Figure 6 Project Schedule for Nassau Uniform

Anson Environmental Ltd.

ANSON ENVIRONMENTAL LTD.

33 Gerard Street • Suite 100
Huntington, New York 11743
516•351•3555
Fax 516•351•3615

Nassau Uniform Services
525 Ray Street
Freeport, New York

Site #130063

Quality Assurance/Quality Control Plan

March 25, 1997

Prepared by

Anson Environmental Ltd.
33 Gerard Street
Huntington, New York 11743

1.0 Introduction

This Quality Assurance Project Plan (QAPP) has been prepared in conjunction with and to accompany the Nassau Uniform Services (Nassau Uniform) Focused Remedial Investigation Work Plan for SITE# 130063. It specifies quality assurance/quality control (QA/QC) measures, functional activities, and policies that will be implemented in order to achieve the data quality objectives of this environmental investigation. This document was prepared to adhere to the U.S. Environmental Protection Agency's report entitled "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans" (EPA-600/4-83-004). A review of the New York State Department of Environmental Conservation (NYSDEC) memorandum "Guidance for Review of Work Plans and Quality Assurance Project Plans" was conducted to make sure that this Quality Assurance Project Plan (QAPP) includes and adequately addresses QA/QC issues so that QA approval will be received. Prior to deviations from the protocols set forth in this QAPP, the designated NYSDEC QA/QC officer will be notified.

2.0 Project Background and Description

2.1 Project Background

Nassau Uniform is located at 525 Ray Street, Freeport, New York, (SITE) on three-quarters of an acre of land. The SITE is covered by the building (originally constructed in approximately 1925) or the asphalt paved parking area. The facility has operated as a uniform sales, rental and cleaning facility for over 35 years. In May 1982, there was an accidental spill from the oil/water separator onto the soil and into Milburn Creek. The contaminated soil was excavated and removed from the SITE by Nassau Uniform. In 1984, an underground fuel oil storage tank was removed, determined to have leaked and monitoring wells were installed. In 1990, a partially buried underground waste oil/tetrachloroethylene (PERC) tank was excavated, determined to have leaked and the SITE investigation began. Several investigations identified soil and groundwater contamination onsite, although the extent has not been determined.

In February 1996, Anson Environmental Ltd. (AEL) and representatives from NYSDEC conducted a SITE reconnaissance to observe operations on SITE and determine sampling locations for the Focused Remedial Investigation (FRI).

2.2 Project Description

The objectives of this Work Plan are to determine the nature of VOC contamination, if any, its vertical and horizontal extent in the soils on SITE, and the quality of the groundwater that exists beneath the SITE. The soils investigation will be concentrated in the western portion of the SITE including, but not limited to, the vicinity of the former 2,000 gallon waste oil/tetrachloroethylene (PERC) tank, dry cleaning machines, laundry machines and compressor room. Once the nature and extent of soil and groundwater contamination on SITE have been determined, remedial measures will be identified.

In order to further define the extent of contamination and possible impacts to adjacent areas, the Work Plan consists of the following:

(1) One soil boring located (MW3) at the southwestern corner (Figure 4) of the property which will be drilled using hollow stem augers with continuous split-spoon sampling to the significant clay layer at approximately 40-50 feet below grade. Following the collection of these soil samples, a four inch diameter groundwater monitoring well will be

installed. The well will be screened such that the bottom of the five foot screen is one foot or less above the clay layer.

If no significant clay layer is encountered, the screen interval will be decided in the field with input from the NYSDEC engineer overseeing the field work.

The purpose of collecting split spoon samples is to lithologically classify the soils, note the location of the peat/marshy and clay layers under the site. During this drilling, the concentration of volatile organic compounds in the soil will be determined.

(2) Geoprobe borings, at the grid nodes identified on Figure 4, will be drilled to 2-4 feet below grade. Soil samples will be screened for headspace using an Organic Vapor Meter (OVM 580B). The proposed sampling locations are outlined in the Work Plan. The fifteen samples with the highest head space readings will be forwarded to the laboratory for analysis for the presence of volatile organic compounds via EPA Method 8240. The two highest will by analyzed for TCL, also.

(3) Groundwater samples will be collected from one existing monitoring well (MW1); the water supply well and the new monitoring MW3 (Figure 6). Two groundwater samples will be analyzed for the compounds identified on the Target Compound List.

(4) The floor drain will be dye-tested to confirm its discharge point. If the dye test does not confirm that the piping discharges into the county sewer, the piping will be traced and the concrete floor will be broken up and removed to determine its terminus. The washing machine discharge water is directed through the trough and into the Nassau County Sewer System. A sample of the material in the trough water will be collected and analyzed for the presence of volatile organic compounds. A sample of the sediment in the drywell will be collected with a hand auger for analysis for the presence of volatile organic compounds. A sample of the sediment will also be collected from the hole in the floor of the compressor room.

The information gathered while performing the scope of work briefly discussed above will be used to define the geological subsurface conditions. Data gathered in this phase along with data in a second phase will provide the information as to the extent on SITE contamination and to implement the IRM to mitigate future impacts from existing sources. A complete scope of work and overall objectives for this phase of the project are fully described in the accompanying Work Plan document.

The design of Phase Two of the site investigation will based on information from the sources gathered during Phase One and will be used to decide the nature of Phase Two including the following:

(1) The number and location of piezometers that will be installed during Phase Two. The depth and location of the piezometers and their screens.

(2) During Phase Two, another round of groundwater sampling will be performed including the measurement of depth to groundwater.

3.0 Project Organization and Responsibility

Figure 1 illustrates the organization of the project and reporting line of authority for the Nassau Uniform project.

Dean Anson of Anson Environmental Ltd. (AEL), will be responsible for ensuring the collection of valid data, in a precise and accurate manner, by personnel under his direction. The QA Official will be responsible for conducting unannounced field visits to observe data collection procedures and for periodic review of data generated. The QA official will also be responsible for review of project deliverables.

Priscilla Mazzola Gros-Daillon will be the Project Manager for the SITE. Jeff Bohlen will serve as Field Manager and will be responsible for coordination of field activities, technical supervision and execution of the field effort. Dean Anson will serve as the Health and Safety Officer. In this capacity his responsibilities will be to implement the requirements of the Health and Safety Plan and ensure that all team members meet the training requirements for the project.

Accredited Laboratories, Inc., Inc. of Carteret, New Jersey, a New York State certified laboratory, will be responsible for laboratory analysis of soil and liquid samples.

Zebra Environmental Corp. of Inwood, New York will be responsible for providing the Geoprobe services. Miller Environmental Group of Calverton, New York will be responsible for the drilling of the monitoring well and continuous split spoon sampling. The above sub-contractors will be directly responsible to AEL.

Environmental Standards, Inc. of Valley Forge, PA will provide independent data validation.

Reports and findings of the Nassau Uniform investigation will be forwarded to Nassau Uniform and the NYSDEC.

The information gathered from the work briefly described above will be used to define the extent of contamination on SITE and identify remedial measures. Figure 2 identifies the schedule of dates for starting and completing the project.

4.0 Data Usage and Data Quality Objectives

4.1 Data Usage

Data collected for this project will be used to further define the on-SITE contamination and implement the IRM designed for this SITE. The IRM will concentrate on eliminating the sources (s) of contamination that exist on SITE.

4.2 Data Quality Objectives

It is the objective of this project to ensure that all measurements be made so that the results are representative, precise, accurate, complete and comparable. Procedures to meet this objective in the field are included in Section 5 of this report. Within this section, sampling, decontamination, and field measurement procedures are described which will ensure QA/QC of all data collected.

The above objectives apply to laboratory sample analysis as well. To meet these objectives, standard methods will be applied. Analytical procedures outlining the QA objectives for laboratory methods to be used are included in Appendix B.

5.0 Sampling and Analytical Procedures and Protocol

This phase of the project, as fully described in the Work Plan, entails the collection of soil, groundwater and indoor air samples. Soil samples will be procured using a split spoon sampler and/or acetate liners with Geoprobe rods. Groundwater samples will be collected using dedicated polyethylene bailers and indoor air samples will be collected with appropriate sorbent tubes. A description of each sampling method to be used for the collection of samples is addressed in the following sections.

All samples will be transported to the laboratory such that they are received by the laboratory within 48 hours of samples collection.

5.1 Soil Sampling/Split Spoon

Split spoon samples are used to obtain representative soil samples for geologic classification purposes, analytical laboratory testing and to obtain a measure of the resistance of the soil to the penetration of the sampler. The ASTM procedure D1586-67 will be used for the collection of split spoon samples obtained during drilling operations.

Procedures

A summary of the ASTM D1586-67 procedure is listed below:

(1) Clear out hole to sampling elevation using equipment the ensure that the material is not disturbed by the operation.

(2) With the sampler resting on the bottom, drive the sampler with blows from a hammer falling 30-inches until either 18-inches has been penetrated or 100 blows have been applied. A 140-pound hammer will be used.

(3) This operation will be repeated at intervals specified in the work plan for well installation and soil borings.

(4) Record the number of blows required to effect each 6-inch interval of penetration or fraction thereof.

(5) Bring the sampler to the surface and open. Immediately fill appropriate sample jars with representative material, seal to prevent evaporation of soil moisture and store on ice in a cooler. Scan remaining soil, if any, in the split spoon with an OVM and record the OVM reading, composition, structure, consistency, color and soil condition. Affix labels to the sample jars bearing job number, date, time, initials of sampler, boring number, sample number, depth of penetration and length of recovery.

(6) All samples collected will be retained and preserved for future analysis (if necessary).

Soil samples obtained from this boring will be selected for analysis based upon elevated OVM reading relevant to background levels. If no split spoon samples exhibit elevated readings, samples will be retained at hydrogeologist's discretion. Factors such as depth, proximity to water table, soil characteristics, and location will be considered in the determination of which samples to retain.

After each sample bottle is filled, it will be appropriately labeled and put in an ice-filled cooler for delivery to the laboratory for analysis. Completed chain-of-custody forms will accompany all samples. The sample information will be recorded in the hydrogeologist's 's field book. The quality assurance of field sampling and sample custody are included in Sections 5.7 and 6.0 respectively.

The soil samples will be analyzed by EPA Method 8240 or for the Target Compound List. Analytical procedures, calibration of equipment, calibration frequency and matrix specification detection limits corresponding to this method are included in the appendix. The purpose of this analysis is to determine if there are measurable quantities of those organic compounds in the soil which have been known to have been used on SITE. These compounds are manmade and would not be expected to occur naturally in the soil.

Soil screening for this project will be performed with an OVM calibrated to provide direct readings in the field. Calibration procedures from the instrument's instruction manual are included in the appendix. Frequency of calibration is based upon manufacturer's recommendations.

5.2 Soil Sampling/Manual Collection

Soil samples will be collected within the interior of the building at perimeter locations using hand-driven Geoprobe-style sampling rods. The sampling will be conducted as follows:

(1) The concrete floor will be cored using a hand-held drill with a core sampler bit. Once the floor has been penetrated, a Geoprobe sampling rod will be attached.

(2) A dedicated clear acetate liner will be inserted into the large bore sampler and will be driven into the soil to a depth of 2 to 4 feet using a slide hammer.

(3) The sampling rod will be removed from the boring and the sample will be removed intact within the acetate liner.

(4) Slice open the acetate liner and scan soil, if any, in the acetate liner with an OVM and record the OVM reading, composition, structure, consistency, color and soil condition. Immediately fill appropriate sample jars with representative material, seal to prevent evaporation of soil moisture and store on ice in a cooler. Affix labels to the sample jars bearing job number, date, time, initials of sampler, boring number, sample number, depth of penetration and length of recovery.
(5) All samples collected will be retained and preserved for future analysis (if necessary).

Soil samples obtained from each boring will be selected for analysis. The sediment sample from the drywell will be collected with a stainless steel hand auger, decontaminated between sampling events and handled in the same technique as outlined above.

After each sample bottle is filled, it will be appropriately labeled and put in an ice-filled cooler for delivery to the laboratory for analysis. Completed chain-of-custody forms will accompany all samples. The sample information will be recorded in the hydrogeologist's 's field book. The quality assurance of field sampling and sample custody are included in Sections 5.7 and 6.0 respectively.

The soil samples will be analyzed by EPA Method 8240. Analytical procedures, calibration of equipment, calibration frequency and matrix specification detection limits corresponding to this method are included in the appendix. The purpose of this analysis is to determine if there are measurable quantities of those organic compounds in the soil which have been known to have been used on SITE. These compounds are manmade and would not be expected to occur naturally in the soil.

Soil screening for this project will be performed with an OVM calibrated to provide direct readings in the field. Calibration procedures from the instrument's instruction manual are included in the appendix. Frequency of calibration is based upon manufacturer's recommendations.

5.3 Groundwater Samples

A round of groundwater samples will be collected from MW1, an existing monitoring well, the water supply well, MW3, the new groundwater monitoring well and the three piezometers, P1, P2, and P3. The initial groundwater sampling will be performed approximately one week following well development and piezometer installation.

All groundwater sampling will follow strict USEPA and NYSDEC QA/QC protocols. Prior to sampling the wells, a 4 foot by 4 foot plastic sheet will be placed at the foot of each well. This will be the designated work zone for the sampling event. Sampling equipment will be placed on the sheet to minimize the possibility of contaminating sampling equipment from the surrounding surfaces. Upon opening the monitoring well, the OVM/PID will be used to screen for total volatile organic contaminants in the ambient atmosphere and in the headspace of the well. Readings will be recorded and compared to ambient background readings. Ambient air sampling for this project will be performed with an OVM/PID, calibrated to manufacturer's instructions.

The following procedure will be followed for groundwater sampling:
(1) Prior to the purging of the wells for sample collection, a synoptic static water level measured to the nearest 0.01 foot in each monitoring well will be taken.
(2) To ensure a representative sample from the monitoring well, purging of the wells is required. The standing water will be purged from the top of the water column. In general, the groundwater standing in the well casing prior to sample collection will be similar in quality to that in the surrounding aquifer or local groundwater, but it may not be representative.
(3) A volume of water equal to three to five times the volume of standing water in the well will be purged from the well before taking the sample. If the monitoring well has a low yield, standing water will be evacuated until the well is dry and a sample will be collected upon recovery. Wells with high yield can be sampled immediately after evacuation. A dedicated polyethylene bailer will be used to collect the groundwater sample. Prior to the sampling event, sampling equipment will be decontaminated as outlined in Section 5.8.2. All water removed during the evacuation process will be placed in clearly labeled 55-gallon drums and stored on-SITE pending analysis.
(4) Dedicated, laboratory-cleaned, polyethylene disposable bailers will be attached to dedicated polypropylene rope or nylon line. The sample will be collected from the screen zone. The first bailer volume will be placed in a pre-cleaned glass jar and used to conduct analytical field tests such as temperature, pH and specific conductivity. The measurements will be recorded in the field book. All field instruments will be calibrated daily prior to the sampling events, and cleaned between each sampling point.

The groundwater samples will be collected in laboratory cleaned containers on the second bail. The first round groundwater samples will be analyzed according to Table 1 paraments, following appropriate laboratory protocols for that method. The purpose of this analysis is to determine if there are measurable quantities of volatile organic compounds which have been known to have used on the SITE in the groundwater.

One (1) trip blank per cooler and one (1) field blank QA/QC sample will accompany the groundwater sampling per sample day. A trip blank is used in order to determine if outside contamination has been introduced in the course of the transportation of the sample. The trip blank vials are filled in the laboratory using analyte free distilled/deionized water and will accompany the glassware from the laboratory to the field and back to the laboratory. The field blank vial will be filled during the sampling by adding distilled/deionized water to one of the bailers and then filling the empty field blank vials from the bailer. The blank samples will be analyzed for the same parameters as the groundwater samples. Given the limited number of groundwater samples to be collected in this phase of the investigation, duplicate samples will not be collected.

Field tests will include temperature, pH and specific conductivity and will be taken immediately upon collection. The pH probe will be field calibrated with a No. 7 buffer solution. The specific conductivity probe will be calibrated in air to zero. Complete calibration procedures are included in the copies of the instrument instruction manuals in the Appendix. A mercury thermometer will be used to measure temperature and will be visibly inspected. The above calibration procedures will be performed each day of groundwater sampling.

The well cap will be secured and the above process repeated at each groundwater sampling location.

5.4 Floor Drain Dye Test/Interior Sampling

The floor drain will be dye tested using distilled water and industrial red dye tablets (Formultabs, Lot 3386). The water will be put into the floor drain and the trough will be observed to determine if the dye is visible entering the trough. The exit point of the trough into the Nassau County sewer system will also be observed to determine if the connection is continuous.

The material in the trough, the hole in the compressor room floor and drywell sediment will be collected for analysis for the presence of volatile organic compounds.

5.5 Preparation and Preservation of Sample Containers

Both soil and groundwater samples to be analyzed via Method 8240 and will be placed in a cooler provided with ice packs as soon as they are collected. All samples will be placed in a cooler provided with ice packs and either shipped for overnight delivery or picked up at the site to Accredited Laboratories. All samples will be delivered to the laboratory within 48 hours of collection.

The scope of this project necessitates that 40 milliliter vial and 4 ounce sampling containers be used. Sample containers will be provided by Accredited Laboratories. Each sample container will be provided with a label for sample identification purposes. The amount of information will include identification number, time, date and initials of sample collector. All sample containers will be accompanied by a full chain-of-custody as outlined by the USEPA.

All sample containers will be thoroughly cleaned by the laboratory prior to sampling. The type of sampling jars and preservatives are identified in Table 1.

5.6 Groundwater Level Monitoring

Groundwater levels will be obtained from the two existing monitoring wells and the newly-installed monitoring well. Water levels will be taken using an electronic water level indicator. The depth to water will be measured to the nearest 0.01 foot and referenced to the top of the well casing. After use in each monitoring well, the measuring device will be cleaned to prevent cross contamination between wells using decontamination procedures addressed in Section 5.9. The well casings will be surveyed by a licensed land surveyor in order to determine the direction of groundwater flow.

5.7 Field Sampling Quality Assurance

5.7.1 Field QA/QC

Blanks will be used to verify the quality of the field sampling results. A field blank will be used to determine the effectiveness of the decontamination of the sampling devices (i.e. bailers and split spoon samplers). Analyte free water will be poured into the device and then transferred to sample containers before use in sampling. Dedicated disposable polyethylene bailers will be used, however, these equipment blanks will be used to ensure that contamination is not introduced by the manufacturer.

5.7.2 Field Records

All information pertinent to any field activities will be recorded in bound, waterproof field books. Duplicates of all notes will be prepared and kept in a ringed binder. The binder will be stored in a secure place in the office of AEL. Proper documentation will consist of field personnel maintaining records of work accomplished including the items listed below:
-date and time of work events
-weather
-purpose of work
-description of methods
-description of samples
-number and size of samples
-description of sampling
-date and time of collection of sample
-sample collector's name
-field observations
-any field measurements with portable instruments

Each sample collected in the field will be labeled using waterproof ink. Each bottle will be labeled with a number or location, parameter to be analyzed, sampling time and date.

Data obtained from borings will be recorded in the field notebook and will include the following:
-name, location and job number
-date of boring
-boring number
-surface elevation (if available)
-sample number and depth
-method of advancing sampler, penetration and recovery lengths
-type and size of sampler
-OVM reading during field screening
-description of soil

-thickness of layer
-depth to water
-type of equipment used
-size of casing, depth of well
-blow counts

5.8 Decontamination of Field Equipment

Proper decontamination protocols will be followed during field activities in order to minimize the possibility of introducing contaminants into non-contaminated areas of the SITE and to ensure that samples and data collected are representative of the actual conditions.

5.8.1 Equipment Requiring Decontamination

The field equipment and sampling devices that require decontamination include:

1. Drilling Equipment-paying particular attention to down-hole tools, back of the drilling rig and drilling rod racks.

2. Sampling Equipment-split spoons, trowels, pumps and hoses, stainless steel bailers, temporary well screen and casing, water level measuring device, etc.

3. Personnel Protective Equipment-respiratory protection and protective clothing.

5.8.2 Decontamination Procedures

The water level meter, sampling rods and miscellaneous tools will be decontaminated according to the following procedure:
-non-phosphate detergent and tap water wash
-tap water rinse
-distilled/deionized water rinse
-total air dry

Field decontamination for drilling equipment, split spoons, temporary well screen and casing, and other sampling equipment will consist of steam cleaning and/or manual scrubbing to remove foreign material and steam cleaning inside and out. These items will then be stored in such a manner as to preserve their clean condition.

Field decontamination for pumps and hoses will consist of manual scrubbing to remove foreign materials followed by a non-phosphate detergent scrub and flushing with tap water.

Field personnel protective equipment decontamination procedures will consist of the minimum decontamination stations outlined in the Health and Safety Plan prepared for this project.

The contractor will prepare a decontamination station whose perimeter is diked to prevent ground contamination from wash waters running out of the area. All drilling equipment will be decontaminated in this zone. Wash waters from equipment requiring decontamination will be contained and stored in 55-gallon drums pending laboratory analyses.

6.0 Sample Custody

The purpose of sample custody procedures is to document the history of sample containers and samples from the time of preparation of sample containers through sample collection and analysis. To maintain and document sample possession, chain of custody procedures will be followed. A chain-of-custody form contains the signatures of individuals who have possession of the samples after collection and identification in the field.

A sample is in custody if:
1. it is in your actual possession; or
2. it is in your view, after being in your physical possession; or
3. it is in your physical possession and then you locked it up or sealed it to prevent tampering; or
4. it is in a designated secure place restricted to authorized personnel.

Each person involved with the samples will know chain-of-custody procedures. A discussion of the various stages of sample custody, transfer of custody and laboratory custody is presented below.

6.1 Environmental Sample Chain-of-Custody

The field sampler initiates the chain-of-custody procedure in the field and is the first to sign the form upon collection of samples.

The field sampler is personally responsible for the care and custody of the samples until they are transferred and properly dispatched. Sample labels will be completed for each sample using waterproof ink and packaged to preclude breakage during shipment. Every sample will be assigned an unique identification number that is entered on the chain-of-custody form. Samples can be grouped for shipment using a single form.

The record will be completed in the field so as to indicate: project number, unique sample number, sample location, sampling date and time, person obtaining the sample, and method of sample preservation. The paperwork will be done and checked at an on-site location.

A sample chain-of-custody form is attached.

6.2 Transfer of Custody

All samples will be accompanied by a chain-of-custody record. When transferring possession of samples, the individuals relinquishing and receiving will sign, date, and note the time of the transfer. This record documents transfer of custody of samples either from the sampler to another person or a mobile laboratory or to a permanent laboratory.

Whenever samples are split with a facility or government agency, a separate chain-of-custody record will be prepared for those samples and marked to indicate with whom the samples were split.

6.3 Laboratory Custody Procedures

The laboratory utilized will follow a minimum standard operating procedure for documenting: receipt, tracking and sample preparation. A full explanation of laboratory procedures is included in the Accredited Laboratories documentation in the Appendix. Sample custody is described briefly below:

6.3.1 Sample Custody

1. Shipping or Pickup of Cooler by Client
    A. Cooler packed at lab after contact with client.
    B. Cooler wrapped with evidence tape.
    C. Chain-of-custody form filled out by lab personnel.
    D. Client supplied with evidence tape to seal cooler prior to shipment back to laboratory.

2. Delivery of Cooler to Lab
    A. Samplers check for external damage (such as leaking).
    B. Lab signs for cooler from shipper.

3. Cooler Delivery to Sample Custodian
    A. Samplers place cooler in air-lock to special process lab.
    B. Sample custodian or assistant removes cooler.

4. Opening of Cooler
    A. Check condition of external seal.
    B .Open cooler.
    C. Remove chain-of-custody forms, fill out and sign.
    D. To see if any samples are broken or damaged.
    E. If samples are broken, note manner of disposal and

contact client immediately.

5. Report Sent to Client to include:
   A. Traveler's Way Bill.
   B. Final Report.
   C. Log-out Sheet.

6. Final Steps
   A. Raw data stored on file.

6.3.2 Sample Storage

Samples will be maintained in storage in the GC/MS laboratory in a locked refrigerator prior to sample preparation and analysis. The storage refrigerators will be maintained at 4 degrees C. The samples will be stored no longer than the required holding time identified in Table 1 before analysis. It is the responsibility of the laboratory to properly dispose of samples beyond the holding period.

6.4 Field Notebook Chain-of-Custody

Dedicated field notebooks will be used for the duration of the project. These will be numbered and assigned to field personnel. A log of the notebook number, the personnel assigned to the notebooks and the date and time signed out and signed in will be kept as a responsibility of the field hydrogeologist. Sufficient number of notebooks will be provided.

Field notes during drilling data will be copied and stored in a ringed binder. Sample chain-of-custody forms will also be retained in the binder.

7.0 Calibration Procedures and Frequency

The in-field analytical instruments to be used in the site investigation include:
Environmental Instruments Organic Vapor Meter: OVM Model 580B
PID
pH meter
specific conductivity meter
water table indicator
therometer

The calibration procedures for each of these instruments is included in the Appendix I.

8.0 Documentation, Data Reduction, Validation and Reporting

8.1 Field and Technical Data Documentation

All information pertinent to any field activities will be recorded in bound, field books. Duplicates of all notes will be prepared each night and kept in a ringed binder, with the office of AEL. Proper documentation will consist of all field personnel maintaining detailed records of all work accomplished including:

1. date and time of work events
2. purpose of work
3. names and addresses of people relevant to the project
4. description of all methods
5. description of all samples
6. number and size of samples
7. description of sampling point
8. date and time of collection of sample
9. sample collector's name
10. reference to site map and/or photographs
11. field observations
12. any field measurements with portable instruments.

8.1.1 Field and Technical Data Reporting

During the performance of the project, field and technical data will be assembled and will be made available to those individuals who need the data. Data reporting will be as follows:

1. data collected by the field manager
2. data will be reduced by the field manager
3. data will then be reviewed by the project manager
4. data will be validated by the data validator, Environmental Standards, Inc.

After the data in the field books are checked, the data will be reduced to tabular form and where appropriate, entered into the data files. Objective data, e.g. water level measurements, will be compiled on a spread sheet. Subjective data, e.g. soil boring logs, will be included as hard copies and incorporated in technical reports. A sample boring log appears at the end of the QA/QC plan.

8.1.2 Field and Technical Data Validation

The two levels upon which the field and technical data will be validated will be:

validated at the time of collection
after data reduction into tables and charts

Inconsistencies will be resolved by reviewing the original data or by discussing the inconsistencies with the field personnel or laboratory performing the analysis.

Where possible, peer review will be used to maximize consistency among field personnel.

8.2 Laboratory Data

8.2.1 Laboratory Data Documentation

A complete description of Accredited Laboratories standard operating procedures is presented in Appendix J.

8.2.2 Laboratory Data Reporting

Applicable data presentation and all laboratory reports will conform to full NYSDEC Category B level deliverables package including:

1. laboratory data will be reviewed and approved by the laboratory QA manager
2. data presentation will include:
   - sample ID# used by the laboratory
   - chemical parameters analyzed, reported values and units of measurements
   - detection limits
   - data for chemical parameters
   - results of QA sample analysis
   - footnotes if required

8.2.3 Laboratory Data Reduction

Laboratory data reduction and analysis for organic analyses involves relating a "peak area" to the mass of a constituent. This is accomplished with digital computers. The computer software and hardware is designed to allow the analysts to create libraries or files of calibration standards, and then compare raw data against these libraries to produce a report which

contains identification and qualification of constituents present in the sample. The computer-reduced data are manually checked by the analysts. The organic analyses are typed as reports listing the date the sample was received, date collected and date reported.

8.2.4 Laboratory Data Validation

Data validation procedures performed internally by Accredited Laboratories are based on the following document as reference:

Technical Directive Document No. HQ-8410-01
"Functional Guidelines for Evaluation of Organic Analysis"

External data validation for this project will be performed by Environmental Standards Inc. of Valley Forge, Pa. in conformance with NYSDEC ASP and the USEPA Region II Functional Guidelines.

9.0 Internal Quality Control Checks

9.1 Internal Quality Control Checks-Field

The quality assurance effort for a field investigation program is developed to ensure and validate that the inconsistencies in protocols themselves do not introduce error into the date collection process. The procedures as outlined in other sections of this report include but are not limited to the carrying and collection of trip blanks, field blank, MS/MSD samples and field checks. All technical field personnel will be required to have read the Work Plan, HASP and QA/QC plan prior to beginning field work.

9.2 Internal Quality Control Checks-Laboratory

The quality of the analytical data is controlled by the requirements of the appropriate ASP methods. Internal laboratory checks include method blanks, method blank spikes and laboratory duplication samples.

10.0 Performance and System Audits

10.1 Field Performance Audits

Periodic in-field audits will be conducted by the QA Official. The purpose of the field audits will be to ensure that the methods and protocols detailed in this QA/QC plan are being consistently adhered to in the field. Items to be examined may include, the implementation of approved work procedures, calibration and operation of equipment, and documentation procedures. In addition the calibration records of field equipment, daily field activity logs, chain-of-custody documentation will be reviewed. Audits of field activities will take place at least one during the field work.

During an audit and upon its completion, the auditor will discuss the findings with the individuals audited and cite and corrective actions to be initiated. Minor administration findings that can be corrected to the satisfaction of the auditor will not be cited as items requiring corrective action.

10.2 Laboratory System Audits

ASP-B laboratories participate in several external system audits sponsored by the USEPA. These audits involve on-site evaluation of Accredited Laboratories. The type of audit, auditing agency and frequency of audit for the CLP laboratories is included in the laboratory system manual.

10.3 Laboratory Performance Audits

Each CLP laboratory participates in several external performance audits sponsored by numerous agencies. Accredited Laboratories is subject to performance audit by the Environmental Laboratory Approval Program (ELAP).

11.0 Preventive Maintenance

11.1 Field Equipment

Field equipment will be properly calibrated, charged and in good working condition prior to the beginning of each field day. In addition, the equipment will be properly protected against inclement weather conditions during the field investigation. At the end of each working day, all field equipment will be taken out of the filed and placed in a cool dry room for safe storage.

All subcontractor equipment will arrive at the site each day in proper working condition. All lubrication, hydraulic and motor oils will be checked each day to ensure there are no leaks. Prior to the start of the work day, a representative from AEL will check with the subcontractor.

11.2 Laboratory Equipment

Proper routine maintenance of laboratory equipment is instrumental to the generation of valid data. The ASP-B requirements include routine maintenance of laboratory instruments which typically includes documentation in logbooks. Preventative maintenance of laboratory equipment is performed by the manufacturer of the equipment. On the other hand, the laboratory should keep spare parts in-house to reduce the amount of time that equipment is out of service.

12.0 Specific Routine Procedures Used to Assess Data Precision, Accuracy, Comparability, Representativeness and Completeness

The purpose of the quality assurance project plan is to make sure that the laboratory data quality are such that they can be replicated and comparable. To determine if the data are of such quality, matrix spike and matrix spike duplicates are collected during the field investigation. Ten percent of all samples collected are analyzed in duplicate. The laboratory analysis of the duplicate samples are then compared and the differences between the values are calculated using the following equation:

$$\%D = \frac{V2 - V1}{\frac{V1 + V2}{2}} \times 100$$

The accuracy of the analysis by the laboratory is assess by comparing the determined data to known values of quality control samples (standards). These standards are processed in the laboratory on a regular basis, usually monthly, and equipment is calibrated using these standards.

The formula that is used to evaluate the accuracy of the equipment is:

$$\%\ \text{error} = \frac{\text{observed - known}}{\text{known}} \times 100$$

The usage of standard methodology by the laboratory will assure data comparability. Data representativeness is assured through the proper collection of field samples by using established protocols.

Project objectives have been established and will be compared to the output of the field sampling program and laboratory analysis to determine if the laboratory data are complete enough to accomplish these objectives. This completeness will be assess by the quality assurance officer.

If the data quality are not adequate to meet the objectives, the QA official will re-evaluate the laboratory's performance and identify corrective actions that should be taken.

13.0 Corrective Action

The field personnel are responsible for the accuracy of the field measurements. The quality of the field work will be monitored by collecting duplicate readings, where possible, i.e., depth to water measurements. Field personnel are responsible for accurate observation and recording of the installation of wells, soil borings and other field activities. These personnel are also responsible for employing proper sampling procedures and adhering to field protocols.

The project manager will be responsible for regularly assessing the correctness of the field methods so that the field work meets the project quality assurance objectives. Problems either observed or brought to the project manager's attention will be reviewed with the quality assurance official. An assessment will then be made of the potential impact of this problem on the quality assurance objectives for the project. The quality assurance official will determine if corrective actions are required to address this field data problem.

The quality assurance official will also review the field notebooks on a daily basis and will make unannounced routine site visits to make sure that the quality of data collection is acceptable. Based on this review and these visits, corrective actions may be required including: instrument maintenance or re-calibration, re-sampling or additional sampling and possibly more frequent site visits. Should corrective actions be required, the project manager will document that these actions have been implemented and determine the results of such action. The project manager's documentation of corrective action implementation will be supplied to the quality assurance official.

13.2 Laboratory Corrective Action

Each laboratory will be responsible for identifying the corrective action and determination of the quality control limit procedures including: instrument maintenance, solution checking, re-calculation, re-analysis, re-extraction and other laboratory procedures. Each laboratory will monitor their own performance on a daily basis so that, quality control problems can be identified as early as possible. The internal checks will include to audit procedures, non-conformance summary reports, laboratory information management systems worksheets, and internal audit of chain-of-custody checks. The laboratory analyst will be responsible for identifying and implementing corrective actions. Each analyst's supervisor has checks in place to meet their quality control plans and procedures. A

more complete corrective action plan and procedures for Accredited Laboratories is included in the Appendix and is on file at Anson Environmental Ltd.

14.0 Quality Assurance/Data Usability Reports to Management

The Nassau Uniform Services project will be performed in phases. Quality Assurance reports will be submitted to Anson Environmental Ltd. management and the NYSDEC project manager at the completion of each phase of the project. The Quality Assurance/Data Usability Report will be prepared by the project manager and the initial report will assess compliance with field protocols, review comments assembled by the independent data validator to evaluate the performance of the laboratory(ies). Significant quality assurance problems will be identified along with solutions to address each problem.

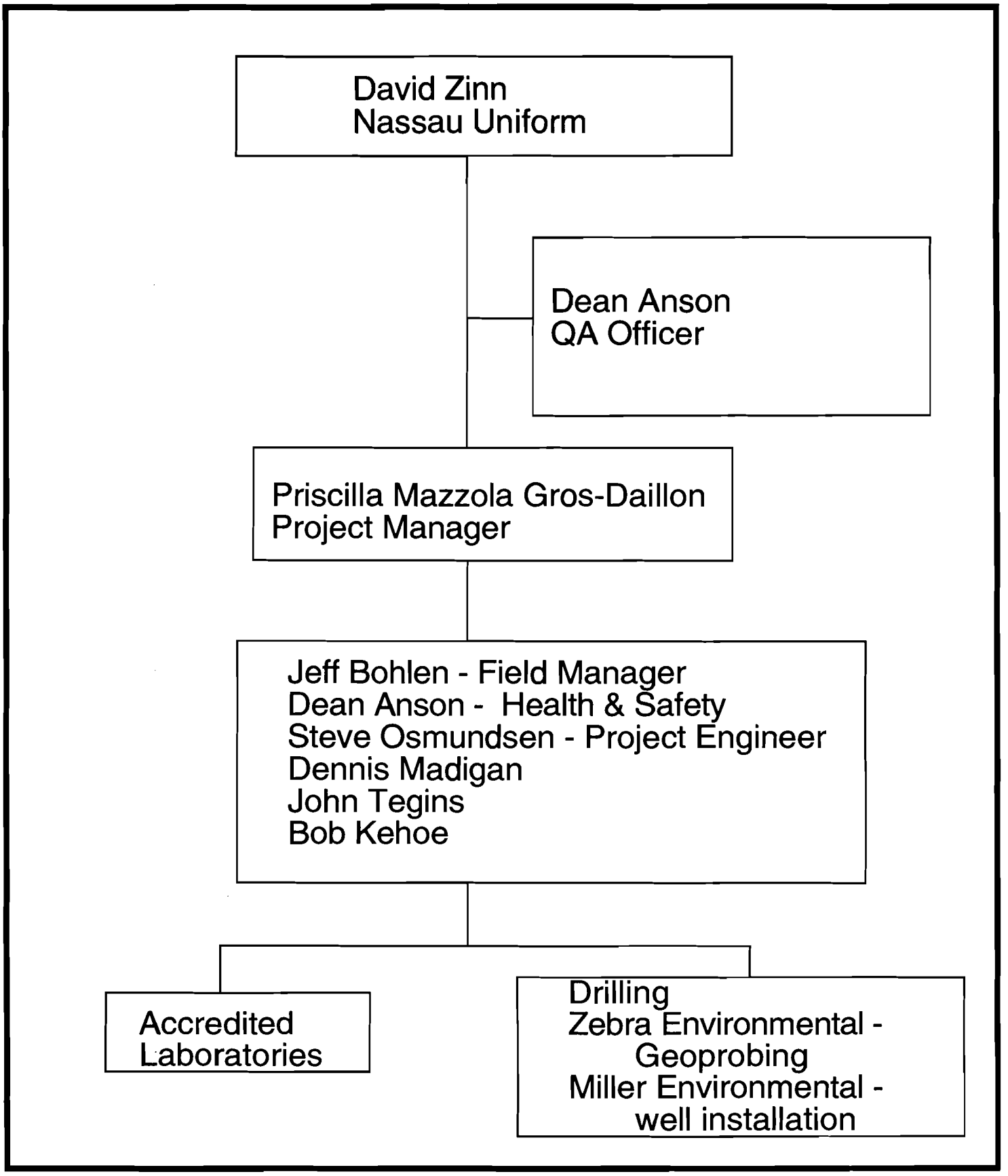

Figure 1 Nassau Uniform Project Organization rev. 3/18/97

Dean Anson II
Quality Assurance/Quality Control Officer

Experience Summary:
Dean Anson has over 25 years of experience performing environmental assignments throughout the United States. He has directed and participated in RI/FS investigations, site remediation projects, groundwater assessments, and environmental impact assessments. He has served as an expert witness on Federal Superfund investigations and site remediation projects.

Education:
B.A. Zoology, Ohio Wesleyan University, 1969
M.S. Biology, New York University, 1976
M.B.A. Marketing and Finance, New York University, 1981

Chemistry Courses:
General Chemistry
Inorganic Chemistry
Organic Chemistry
Carbohydrate Chemistry

Current Projects in Quality Assurance/Quality Control Role:

Anchor Chemical Superfund Site, Hicksville, NY - Dean Anson served as the Facility Coordinator and Health and Safety Officer on this RI/FS investigation. In this role, he was responsible for the review of CLP submittals, as well as, the data validator's comments to ensure compliance with USEPA and NYSDEC quality assurance/quality control procedures.

QA/QC compliance was also assured by frequent site visits during the performance of field data collection.

He developed the site-specific health and safety plan for the Anchor Chemical Superfund site.

Site Remediation at Barclays Bank Oil Spill Site, Lake Success, NY - Dean reviewed the installation of the bioremediation and soil vapor extraction systems, monthly operation, data collection procedures and data evaluation to ensure compliance with NYSDEC Spill Group requirements.

He served as the QA/QC officer for the periodic progress reports submitted to the NYSDEC documenting the remediation of the fuel oil spill.

Arkwin Industries Incorporated Inactive Hazardous Waste Disposal Site, Westbury, NY - During the investigative phase of the focused remedial investigative phase at the Arkwin site, Dean observed field sampling activities for compliance with the NYSDEC approved work plan. Data evaluation identified the vertical and horizontal extent of contamination. Dean is participating in the evaluation process for site remediation and is considering health and safety issues, costs and building structural concerns.

	TIME (weeks)																
TASK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
NYSDEC Approval of Work Plan																	
Scheduling Field Work	x																
1. Monitoring Well Installation		x															
2. Soil Sampling		x	x														
3. Floor Drain/Trough Sampling		x															
Laboratory Analysis			x	x	x	x											
Data Validation (TCL/CLP)							x	x	x								
Report Preparation					x	x	x	x	x	x	x						
1. Site History Report												x					
2. FRI Report													x	x			
Client Review															x	x	
NYSDEC Submission																	x
Additional Investigation													to be determined				
or Remedial System Design													to be determined				

Figure 2 Project Schedule for Nassau Uniform

Anson Environmental Ltd.

Anson Environmental Ltd.
33 Gerard Street
Huntington, NY 11743

DRILLING LOG

CLIENT ______________________ PROJECT ____________ BORING ______________

LOCATION ____ DATE ______________

DRILLER ____

SAMPLER ________________ LENGTH OF BORING ____________ GROUND SURFACE ELEV. _____

WATER LEVEL AFTER ____ HRS. WITH ____ FT. OF CASING WAS ____ FT. BELOW GROUND SURFACE ____

[page___of___]

DEPTH BELOW GND. SURF.	SAMPLE NO.	BLOWS ON SAMPLER				SAMPLE INTERVALS		RECOVERY IN INCHES	U.S.C.S.	COLOR	CASING	IDENTIFICATION OF SOIL AND REMARKS
		0 6	6 12	12 18	18 24	FROM	TO					

ANSON ENVIRONMENTAL LTD.
33 GERARD ST., HUNTINGTON, N.Y. 1743

CHAIN OF CUSTODY REPORT

CLIENT:
ADDRESS:
PHONE:
PROJECT:
PROJ. MGR.:

BILL TO:
SEND REPORT TO:
IN CASE OF QUESTIONS UPON SAMPLE RECEIPT CALL:
PHONE:

ANSON ENVIRONMENTAL LTD.

TURNAROUND TIME
FAX (PRELIMINARIES) (If required)
HARDCOPY
COOLER TEMP

LABORATORY ID CODE	SAMPLE IDENTIFICATION	SAMPLE DATE	SAMPLE TIME	COMPOSITE	SAMPLE MATRIX: GRAB	SOIL	LIQUID	SLUDGE	OTHER	# OF BOTTLES	ANALYSIS	PRESERVATIVES: H_2SO_4	HNO_3	HCL	NAOH	OTHER

SAMPLED BY:
RELINQUISHED BY:
RECEIVED BY:
RELINQUISHED BY:
RECEIVED BY:
RELINQUISHED BY:
RECEIVED BY:

DATE: TIME:
DATE: TIME:
DATE: TIME:
DATE: TIME:
DATE: TIME:
DATE: TIME:
DATE: TIME:

COMMENTS:

COMPOUND LIST
- ☐ PRIORITY POLLUTANT
- ☐ TARGET COMPOUND LIST
- ☐ NJAC 7:14A APP B
- ☐ OTHER

CONCENTRATIONS EXPECTED
- ☐ HIGH
- ☐ MEDIUM
- ☐ LOW

IS SAMPLE CHLORINATED?
☐ YES ☐ NO

KNOWN HAZARD

Table 1
Summary of Sampling Techniques and Protocols for Phase One
Nassau Uniform Services (Page 1 of 5)

Sampling Location	Matrix	Sampling Technique	Analysis/ Method	Holding Time (VTSR)
58 nodes	soil gas	OVM/PID	OVM/PID	none
2-4 feet	soil	headspace	OVM/PID	none
2-4 feet (13)	soil	grab	EPA 8240	7 days
2-4 feet (2)	soil	grab	ASP**	see below
P2 (2)	soil	grab	ASP**	see below
P2 (2)	soil	grab	EPA 8240	7 days
MW-3	soil	split spoon	OVM/PID	none
	soil (4)	grab	EPA 8240	7 days
Drywell	soil	grab	EPA 8240	7 days
Floor Drain	dye test			
	sediment	grab	EPA 8240	7 days
Compressor Room				
Floor Hole	soil	grab	EPA 8240	7 days
Trough	liquid	grab	EPA 8240	7 days

Sampling Location	Matrix	Sampling Technique	Analysis/ Method	Holding Time (VTSR)
Water Supply Well	liquid	grab	EPA 8240	7 days
Monitoring Well (MW1)	liquid	grab	EPA 8240	7 days
Monitoring Well (MW3)	liquid	grab	ASP**	see below
1 matrix spike	liquid	grab	ASP**	see below
1 matrix spike duplicate	liquid	grab	ASP**	see below
Piezometers (P2)	liquid	grab	EPA 8240	7 days
Piezometers (P1 and P3)	liquid	grab	ASP**	see below

Summary of Sampling Techniques and Protocols for Phase Two

Piezometers	liquid	grab	EPA 8240*	7 days
Monitoring Wells (MW1 and MW3)	liquid	grab	EPA 8240*	7 days

NOTES:

All groundwater samples will be analyzed for salinity.

VTSR = verified time of sample receipt

* = Laboratory analysis for Phase Two will be based on the findings of Phase One.

ASP** = The following EPA methods will be used during the ASP analysis of soil and liquids:

Analyte	Analytical Method	Holding Time	Preservation
Volatile organic compounds	95-1	7 days	cool to 4 degrees C
Semi-volatile organic compounds	95-2	5 days to extraction 40 days to analysis	cool to 4 degrees C
Pesticides/PCBs	95-3	5 days to extraction 40 days to analysis	cool to 4 degrees C
TAL metals	Superfund CLP inorganics	180 days	low/med conc. HNO_3 to pH<2 then cool to 4 degrees C
Mercury	CLP inorganics	26 days	
1 Trip Blank/cooler for Groundwater Samples Only	95-1	7 days	cool to 4 degrees C
1 Field Blank	all parameters being tested in accompanying samples	as specified above based on analysis	

Glassware Requirements

Analyte	Analytical Method	Glassware Requirements
SOILS		
Volatile organic compounds	8240	60 ml glass
Volatile organic compounds	95-1	60 ml glass
Semi-volatile organic compounds	95-2	950 ml glass if combined if separate, 125 ml glass for each
Pesticides/PCBs	95-3	
TAL metals	Superfund CLP inorganics	
Mercury	CLP inorganics	
1 Trip Blank/cooler for Groundwater Samples Only	95-1	60 ml glass
1 Field Blank	all parameters being tested in accompanying samples	

Glassware Requirements

Analyte	Analytical Method	Glassware Requirements
LIQUIDS		
Volatile organic compounds	8240	2-40 ml glass
Volatile organic compounds	95-1	2-40 ml glass
Semi-volatile organic compounds	95-2	950 ml amber glass
Pesticides/PCBs	95-3	950 ml amber glass
TAL metals	Superfund CLP inorganics	950 ml glass + HNO_3
Mercury	CLP inorganics	950 ml plastic +HNO_3
1 Trip Blank/day for Groundwater Samples Only	95-1	60 ml glass
1 Field Blank	all parameters being tested in accompanying samples	

ANSON ENVIRONMENTAL LTD.

33 Gerard Street • Suite 100
Huntington, New York 11743
516•351•3555
Fax 516•351•3615

Nassau Uniform Services
525 Ray Street
Freeport, New York

Site #130063

Citizen Participation Plan

March 25, 1997

Prepared by

Anson Environmental Ltd.
33 Gerard Street
Huntington, New York 11743

Nassau Uniform Services

Citizen Participation Plan
(3/24/97)

Table of Contents

Section 8.0 Glossary of Key Terms and Major Program Elements

8.1 Definitions of Significant Elements and Terms of the Remedial Program

8.2 Definitions of Commonly Used Citizen Participation Terms

Section 1.0 Introduction to the Plan

The New York State Department of Environmental Conservation is committed to a citizen participation program as a part of its responsibilities for the inactive hazardous waste site remedial program. Citizen participation promotes public understanding of the Department's responsibilities, planning activities, and remedial activities at inactive hazardous waste disposal sites. It provides an opportunity for the Department to learn from the public information that will enable the Department to develop a comprehensive remedial program which is protective of both public health and the environment.

Section 2.0 Basic Site Information

Nassau Uniform Services Inc. (Nassau Uniform) has been classified as a Class 2 Inactive Hazardous Waste Disposal Site by the New York Department of Environmental Conservation with a Site Identification # 13 -0063.

2.1 Site Setting

The Nassau Uniform site is located at 525 Ray Street, Freeport, Nassau County, New York in a commercial/residential district. The site is approximately three quarters of an acre in size with one building located on the property. The balance of the property not covered by the footprint of the building is paved. The extreme southern boundary of the property is a bulkhead on Millburn Creek. The property is not fenced and primary access is via Ray Street.

2.2 Site History

Nassau Uniform Services operates a uniform laundering service at this location during which uniforms and rags are either washed or drycleaned. They have operated at the site since the early 1960s.

In May 1982, a spill from the oil/water separator occurred in which oily waste from the uniforms was accidentally discharged onto the surface soils at the site and into Millburn Creek. The oil-contaminated soil was excavated, drummed and disposed of at a permitted facility off-site.

In July 1984, there was a reported tank test failure on the 2000 gallon underground gasoline storage tank. Site remediation with NYSDEC oversight included removal of the tank and installation of three groundwater monitoring wells. This incident was assigned Spill #84-0959 which remains open.

In April 1990, a 2000 gallon waste oil/tetrachloroethylene (PERC) tank was removed. Although the tank did not appear to be perforated, excess waste liquids appeared to have run down the sides of the tank and out through return pipe connections. With the oversight of NCDH, the tank was removed and subsequent soil sampling determined the presence of PERC and breakdown products. Soil and groundwater sampling conducted in

1991 further confirmed contamination.

In September 1994, soil and groundwater samples were collected via Geoprobe at several locations on site and contamination was confirmed. Currently, there is a Focused Remedial Investigation work plan which is being implemented with NYSDEC oversight.

2.3 Problems Identified at Site

Soil and groundwater contamination by PERC and its breakdown products has been confirmed by several different sampling organizations at different times.

2.4 Map of Site

A map of the site is included in the appendix of the citizen participation plan.

Section 3.0 Project Description

3.1 Overall Objectives of the Remedial Program

The objectives of the remedial program is described in the work plan associated with this document are as follows

(a) identification of sources of contamination
(b) identification of appropriate remedial techniques
(c) implementation of said techniques

Section 4.0 Identification of Affected and/or Interested Public Contact List

This section of the citizen participation plan will include names, addresses and/or telephone numbers of individuals and organizations. This contact list is used by the Department to inform and involve the interested/affected public. Interest in the site, stage of remediation and other factors guide how comprehensive the list becomes. It should be noted that as the investigation/remediation moves ahead, the interested/affected public is likely to change. The contact list and the citizen participation strategy must be evaluated as the remedial program progresses through various stages. The Department will maintain the confidentiality of names and addresses where requested and appropriate.

4.1 Contact List

The following is the list of major categories of interested/affected public which will become the Department contact list:

4.1.1 Residents

The following are streets surrounding 525 Ray Street.

West End Avenue, Anchor Street, Nichols Lane, Atlantic Avenue, South Side Avenue, Locust Place, Forbes Place, Ellinor Place, Dock Drive, Cary Place, Hampton Place, Shelley Street, Bayview Avenue,

4.1.2 Local Officials, Committees and Boards

a).	Mayor/supervisor:	Richard Whistler, Mayor Village Hall, 46 N. Ocean Ave Freeport, NY 11520 377-2252 Gary Peterson, Supervisor Town of Hempstead 1 Washington Street Hempstead, NY 11550 489-5000
b).	town board members:	Ralph Smith, Dep. Mayor Eugene Turner, Trustee Ernest D'Angelo, Trustee Roland Savage, Trustee
c).	planning board:	Robert Francis, Commissioner

Planning and Economic Development
Town of Hempstead
200 Franklin Avenue
Hempstead, NY 11550 538-7100

d). water district: John Bryck, Superintendent
Freeport Water District
46 N. Ocean Avenue
Freeport, NY 11520

e). town engineer/public works official:
Louis DeGrazia
46 N. Ocean Ave.
Freeport, NY 11520 377-2375

f). town clerk: Anna Knoeller
46 N. Ocean Ave.
Freeport, NY 11520 377-2205

g). town attorney: Michael Solomon, Esq.
46 N. Ocean Ave.
Freeport, NY 11520 377-2249

h). police/fire officials
Police Chief: Chief Edward Locke
Fire Chief: Chief Broen
40 N. Ocean Avenue
Freeport, NY 11520 378-0700
378-0400

4.1.3 Regional/County Officials, Boards and Organizations

a). Chairperson of Board of Supervisors
Thomas Gullotta
1 West Street
Mineola, NY 11501 571-3131

b). environmental management council:
R. Nicollello - Chair
240 Old Country Road
Mineola, NY 11501

c). health department: Kathleen Gaffney, M.D.
240 Old Country Road
Mineola, NY 11501571-2260

d). public works: John M. Waltz, Commissioner

240 Old Country Road
Mineola, NY 11501 571-4292

4.1.4 Economic Interests

a). potentially responsible parties (none identified at this time)

b). Financial Institutions/Lenders

Chase Bank
160 S. Main Street
Freeport, NY 11520 326-9140
Fleet Bank
189 W. Merrick Road
Freeport, NY 11520 378-2800

c). real estate agencies:

Dorfman Development
410 Atlantic Avenue
Freeport, NY 11520 223-9000
Jerry Leonard Associates
75 W. Sunrise Highway
Freeport, NY 11520 378-5800

d). chamber of commerce

Raymond MaGuire, President
Freeport Chamber ofComm.
429 Atlantic Avenue
Freeport, NY 11520

4.1.5 Civic/Environmental Organizations

a). local/regional citizens groups:

Jeff Fulner, Co-Chair
Long Island Citizens Campaign
on Hazardous Waste
550 Smithtown Bypass #205
Hauppauge, NY 11788
Rosemary Konatich, Co-Chair
NY State Legislative
Committee on LI Water Needs
11 Middle Neck Road #200
Great Neck, NY 11021

Long Island Citizens Campaign
518 Broadway
Massapequa, NY 11758
798-6556

b). rotary/VFW/American Legion

American Legion Post #342
49 W. Sunrise Highway
Freeport, NY 11520 378-9360

c). environmental and recreational groups:

Operation SPLASH for
a cleaner environment
Ft. S Grove
Freeport, NY 11520
516-378-4770

d). League of Women Voters:

League of Women Voters
1 Jericho Plaza
Jericho, NY 11753

4.1.6 Academic

a). University and college groups:

Nassau Community College
Stewart Avenue
Garden City, NY 516-222-7345
Five Towns College
2165 Seaford Avenue
Seaford, NY 516-783-8800

b). School Boards and Officials

Albert Renken, President of
Board of Education,
Freeport School Dist.
Dante Grover, VP
235 N. Ocean Avenue
Freeport, NY 11520 867-5200

c). PTA's

Joyce Lorraine Lisi, President
of Freeport PTA Council
235 N. Ocean Avenue
Freeport, NY 11520 867-5200

4.1.7 Local/Regional Media

a). Newspapers

Newsday Inc.
235 Pinelawn Road
Melville, NY 11747 454-3000

c). pennysaver — The Freeport Leader
18 E. Sunrise Highway
Freeport, NY 11520 378-3133

d). radio stations — WGBB Broadcasting Station
117 W. Sunrise Highway
Freeport, NY 11520 623-1240

e). television stations — V-44 TV
260 E. 2nd
Mineola, NY 11501
WLIW, TV 21
1425 Old Country Road
Plainview, NY 11803454-8866

4.1.8 State Officials and Organizations

a). state senators and members of the assembly:

state senator:
Norman J. Levy, District 8SD
30 S. Ocean Avenue
Freeport, NY 11520 546-4100

state assemb.
Earlene Hill, District 18AD
80 N. Franklin Street
Hempstead, NY 11550
489-6610

b). department of health: BarbaraDeBuono,Commissioner
Corning Tower Building Room 1408
Empire State Plaza
Albany, NY 12237 518-474-2011

c). department of law: Dennis Vacco, Attorney General
State Capitol
Albany, NY 12224 518-474-7330

d). department of state: Alexander Treadwell, Sec. of State
Department of State
162 Washington Avenue
Albany, NY 12231 518-474-4750

e). department of transportation
John Daly, Commissioner

Department of Transportation
State Office Building Campus 5
1220 Washington Avenue
Albany, NY 12232 518-457-4422

f). governor's office — George Pataki, Governor
Executive Chamber
State Capitol
Albany, NY 12224 518-474-7516

g). DEC staff — John Cahill, Acting Director
50 Wolf Road
Albany, NY 12233 518-457-3446

4.1.9 Federal Officials and Organizations

a). members of US Senate and House of Representatives:

US Senators:
Alfonse D'Amato
7 Penn Plaza #600
New York, NY 10001
212-947-7390

Daniel Moynihan
405 Lexington Ave #4101
New York, NY 10174
212-661-5150

US Representatives:
Peter T. King
1003 Park Blvd.
Massapequa, NY 11758
516-541-4225

Carolyn McCarthy
1 Fulton Avenue
Hempstead, NY 11550
516-489-7066

b). US Environmental Protection Agency:
Carol Browner, Administrator

202-260-7751

c). Occupational Health and Safety Administration:

d). National Institute of Occupational Safety and Health:

Stuart Weisberg, Chair
1120 20th Street, Room 421
NW Washington DC 20036
202-606-5374

Section 5.0 Identification of Department Contacts

This section identifies names, addresses and/or telephone numbers of the contacts within the NYSDEC.

DEC Project Manager
Robert Stewart, Environmental Engineer I
NYSDEC, Region 1
Building 40, SUNY
Stony Brook, NY 11790
(516) 444-0244

DEC Division of Environmental Enforcement
John Byrne, Esq.
DEC Division of Environmental Enforcement
200 White Plains Road, 5th floor
Tarrytown, NY 10591-5805

DEC Citizen Participation Specialist
Joshua Epstein, Ph.D.
NYSDEC, Region 1
Building 40, SUNY
Stony Brook, NY 11790
(516) 444-0249

DEC's toll-free number
1-800-342-9296

DOH Health Liaison Program
Nina Knapp
1-800-458-1158 ext. 402

DOH Contact
John Olm
New York State Department of Health
Bureau of Environmental Exposure Investigation
2 University Place
Albany, NY 12203-3399
(518) 458-6305

Section 6.0 Identification of Document Repository

This section indicates where documents related to remedial activities at the Nassau Uniform site will be available for public review.

6.1 Location of Document Repository

For the first phase of the remedial investigation, the repository will be located at the DEC Regional office in Building 40 at SUNY, Stony Brook. The documents will also be available at the Freeport Memorial Library, 144 West Merrick Road, Freeport, NY. The library is open during regular business hours and on weekends.

6.2 Documents to be placed in Repository

The documents which should be placed in the repository as they become available should include, but not be limited to the following:

(a) Final draft work plans for the focused remedial investigation
(b) Final FRI report after the completion of Phase I and Phase II
(c) Final draft IRM work plan
(d) Final IRM report
(e) Final construction-related work plan

Section 7.0 Description of Citizen Participation Activities for each Major Element of the Remedial Program

This section describes the major elements of the remedial program and the citizen participation activities which are associated with each element. The DEC requires certain activities and provides guidance for additional optional activities in its Citizens Participation Plan Guidance Document. In conducting its citizens participation program at each site, the DEC affirms the value and importance of : ensuring that project documents are readily available for public review; providing sufficient notice to the public to review the documents and prepare for the meetings; and making sure that the information be available in its complete technical form with easily understandable summaries.

7.1 During the Development of the Scope of Work for FRI

-Place a minimum of one copy of the final draft work plan for the FRI in the project's information repositories.

7.1.1 Disseminate fact sheet describing FRI work plan to repositories and public contact list.

7.2 Draft Final FRI Report is Publicly Available

-Place a minimum of one copy of the final draft FRI report in the project's information repositories.

-NYSDEC press notice to Newsday's "government watch" and the local weeklies to help notify the public of a meeting (see below).

-Mail invitation/fact sheet to public contact list.

-Hold public meeting.

7.3 Draft Final IRM

-Place draft final IRM work plan in local repositories.

-Disseminate fact sheet on IRM work plan to local repositories and contact list.

-IRM report and/or construction document placed into local repositories.

-After completion of construction and system is operational, prepare a fact sheet to describe the IRM system and future plans.

-Place IRM plans into local repositories.

Section 8.0 Glossary of Key Terms and Major Program Elements

This section will define, in easy to understand terms, the major elements of the site's remedial program, technical terms and citizens participation terms.

8.1 Definitions of Significant Elements and Terms of the Remedial Program

The first eight definitions represent major elements of the remedial process. They are presented in the order in which they occur, rather than in alphabetical order, to provide a context to aid in their definition.

Site Placed on Registry of Inactive Hazardous Waste Sites- Each inactive site known or suspected of containing hazardous waste must be included in the Registry. Therefore, all sites which state or country environmental or public health agencies identify as known or suspected to have received hazardous waste should be listed in the Registry as they are identified. Whenever possible, the Department carries out an initial evaluation at the site before listing.

Phase One Site Investigation - Preliminary characterizations of hazardous substances present at a site; estimates pathways by which pollutants might be migrating away from the original site of disposal; identifies population or resources which might be affected by pollutants from a site; observes how the disposal area was used or operated; and gathers information regarding who might be responsible for wastes at a site. Involves a search of records from all agencies known to be involved with a site, interviews with site owners, employees and local residents to gather pertinent information about a site. Information gathered is summarized in a Phase One report.

After a Phase One investigation, DEC may choose to initiate and emergency response; to nominate the site for the National Priorities List, or, where additional information is need to determine site significance, to conduct further (Phase Two) investigation.

Phase Two Site Investigation - Ordered by DEC when additional information is still needed after completion of Phase One to properly classify the site. A Phase Two investigation is not sufficiently detailed to determine the full extent of the contamination, to evaluate remedial

alternatives, or to prepare a conceptual design for construction. Information gathered is summarized in a Phase Two report and is used to arrive at a final hazard ranking score and to classify the site.

Remedial Investigation (RI) - A process to determine the nature and extent of contamination by collecting data and analyzing the site. It includes sampling and monitoring, as necessary, and includes the gathering of sufficient information to determine the necessity for, and proposed extent of, a remedial program for the site.

Feasibility Study (FS) - A process for developing, evaluating, and selecting remedial actions, using data gathered during the remedial investigation to: define the objectives of the remedial program for the site and broadly develop remedial action alternatives; and perform a detailed analysis of a limited number of alternatives which remain after the initial screening stage.

Remedial Design - Once a remedial actions has been selected, technical drawings and specifications for remedial construction at a site were developed, as specified in the final FRI report. Design documents are used to bid and construct the chosen remedial actions. Remedial design is prepared by consulting engineers with experience in inactive waste disposal site remedial actions.

Construction - DEC selects contractors and supervises construction work to carry out the designed remedial alternative. Construction may be as straightforward as excavation of contaminated soil with disposal at a permitted hazardous waste facility. On the other hand, it may involve drum sampling and identification, complete encapsulation, leachate collection, storage and treatment, groundwater management, or other technologies. Construction costs may vary from several thousand dollars to many millions of dollars, depending on the size of the site, the soil, groundwater and other conditions, and the nature of the wastes.

Monitoring/Maintenance - Denotes post-closure activities to insure continued effectiveness of the remedial actions. Typical monitoring/maintenance activities include quarterly inspection by an engineering technician; measurement of level of water in monitoring wells; or collection of groundwater and surface water samples and analysis for factors showing the condition of water, presence of toxic substances, or other indicators of possible pollution from the site. Monitoring/maintenance

may be required indefinitely at many sites.

Consent Order - A legal and enforceable negotiated agreement between the Department and responsible parties where responsible parties agree to undertake investigation and cleanup or pay for the costs of investigation and cleanup work at the site. The order includes a description of the remedial actions to be undertaken at the site and a schedule for implementation.

Contract - A legal document signed by a contractor and the Department to carry out specific site remediation activities.

Contractor - A person or firm hired to furnish materials or perform services, especially in construction projects.

Delisting - Removal of a site from the state Registry based on study which shows the site does not contain hazardous wastes.

Potentially Responsible Party Lead Site - An Inactive Hazardous Waste Disposal Site at which those legally liable for the site have accepted responsibility for investigating problems at the site, and for developing and implementing the site's remedial program. PRP's include: those who owned the site during the time wastes were placed, current owners, past and present operators of the site, and those who generated the wastes placed at the site. Remedial programs developed and implemented by PRP's generally result from an enforcement action taken by the State and the costs of the remedial program are generally borne by the PRP.

8.2 Definitions of Commonly Used Citizen Participation Terms

This terms are written in easy to understand definitions in alphabetical order.

Availability Session - Scheduled gathering of the Department staff and public in a setting less formal than a public meeting. Encourages "one-to -one" discussions in which the public meets with Department staff on an individual or small group basis to discuss particular questions or concerns.

Citizen Participation - A process to inform and involve the interested/affected public in the decision-making process during identification, assessment and remediation of inactive hazardous waste sites.

This process helps to assure that the best decisions are made from environmental, human health, economic, social and political perspectives.

Citizen Participation Plan - A document that describes the site-specific citizen participation activities that will take place to complement the "technical" (remedial) activities. It also provides site background and rationale for the selected citizen participation program for the site. A plan may be updated or altered as public interest or the technical aspects of the program change.

Citizen Participation Specialist - A Department staff member who provides guidance, evaluation and assistance to help the Project Manager carry out his/her site-specific Citizen Participation program.

Contact List - Names, addresses, and/or telephone numbers of individuals, groups, organizations and media interested and/or affected by a particular hazardous waste site. Compiled and updated by the Department. Interest in the site, stage of remediation and other factors guide how comprehensive the list becomes. Used to assist the Department to inform and involve the interested/affected public.

Document Repository - Typically a regional DEC office and/or public building, such as a library, near a particular site, at which documents related to remedial and citizen participation activities at the site are available for public review. Provides access to documents at times and a location convenient to the public. Environmental Management Councils (EMCs), Conservation Advisory Committees (CACs) as well as active local groups often can serve a supplemental document repositories.

Information Sheet - A written discussion of a site's remedial process, or some part of it, prepared by the Department for the public in easily understandable language. May be prepared for the "general" public or a particular segment. Uses may include, for example: discussion of an element of the remedial program, opportunities for public involvement, availability of a report or other information, or announcement of a public meeting. May be mailed to all or part of the interested public, distributed at meetings and availability sessions or sent on an "as requested" basis.

Project Manager - A Department staff member within the Division of Hazardous Waste Remediation (usually an engineer, geologist or

hydrogeologist) responsible for the day-to-day administration of activities, and ultimate disposition of, one or more hazardous waste sites. The Project Manager with the Office of Public Affairs as well as fiscal and legal staff to accomplish site-related goals and objectives.

Public - The universe of individuals, groups and organizations: a) affected (or potentially affected) by an inactive hazardous waste site and/or its remedial program; b) interested in the site and/or its remediation, c) having information about the site and its history.

Public Meeting - A scheduled gathering of the Department staff and the public to give and receive information, ask questions and discuss concerns. May take one of the following forms: large-group meeting called by the Department; participation by the Department at a meeting sponsored by another organization such as a town board or Department of Health; working group or workshop; tour of the hazardous waste site.

Public Notice - A written or verbal informational technique for telling people about an important part of a site remedial program coming up soon (examples: announcement that the report for the FRI is publicly available; a public meeting has been scheduled.)

The public notice may be formal and meet legal requirements (for example: what it must say, such as announcing beginning of a public comment period; where, when and how it is published).

ANSON ENVIRONMENTAL LTD.

33 Gerard Street • Suite 100
Huntington, New York 11743
516•351•3555
Fax 516•351•3615

Nassau Uniform Services
525 Ray Street
Freeport, New York

Site #130063

Health and Safety Plan

March 25, 1997

Prepared by

Anson Environmental Ltd.
33 Gerard Street
Huntington, New York 11743

1.0 HEALTH AND SAFETY PLAN

1.1 General Information

1.1.1 Introduction and Objectives

Described below are AEL's project health and safety requirements, responsibilities and procedures to protect workers during the FRI for the Nassau Uniform SITE located in the Village of Freeport, Nassau County, New York.

The purpose of this portion of the FRI is to determine the areas of concern. This Health and Safety Plan is designed to protect on-site workers and to mitigate the potential of off site releases. As part of this plan, access to the areas of concern, and ambient air monitoring will be performed at the location of soil disturbance, downwind, and at the site perimeter to minimize the potential for possible on-site and off site exposure.

1.1.2 Requirements

The requirements for worker health and safety are based on the following:

-The Standard Operating Safety, U.S Environmental Protection Agency (EPA), Office of Emergency, and Remedial Response.

-The Occupational Safety and Health Administration (OSHA) Regulations, 29 CFR Parts 1910.120 and 1992.

-Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, NIOSH, OSHA, USCG, and EPA.

-Superfund Amendments Reauthorization Act (SARA), Title I, Section 126.

1.1.3 Applicability

The protection of AEL's workers' and subcontractors' health and safety and the environment are major concerns during the FRI at the Nassau Uniform property. Personnel must be protected from the risk of incurring illness or injury during the field investigation at the site. Since each and every safety hazard associated with the site cannot be anticipated, precautions will be taken to prevent illness or injury to workers during the project. Based on these considerations, this health and safety plan will be applicable for each phase of the FRI at this site as described in this work plan. The implementation of this plan will be based on the

judgement of the Project Manager's described in this work plan.

1.2 Site Specific Information

The Nassau Uniform site is an industrial plant facility located in the Village of Freeport, New York. The principal areas of concern is the area around the former waste oil/PERC tank.

1.2.1 Hazard Characterization/Identification

The primary concern at the site is to protect the workers from contaminated surface and subsurface soils and groundwater on and off the site. During this portion of the investigation, exposure to a potential source of contamination is limited. Ambient air monitoring will be performed during any soil disturbance procedures (soil gas survey) and any field operations that warrant it. The chemical exposure concerns for the site will be discussed by the field project manager with all field personnel at the beginning of each work day.

1.2.2 Potential Exposures

Potential exposure during the FRI will be considered on a daily basis during the performance of the investigation. Therefore, disposable gloves will be worn during any contact with soil on the property.

1.2.3 Level of Protection

Level of protection during the field investigations will be Level D and will be upgraded, if conditions require.

1.3 Site Personnel

The project will require the interaction of government agencies (NYSDEC), contractors, site facility operators, and technical specialists. The project team will be composed of Anson Environmental Ltd. and various subcontractors. The Health and Safety Plan will be implemented during all field operations performed on the property. The Field Operations Manager will be responsible for implementing safety precautions and procedures during all field activities/sampling phases.

1.3.1 General Work Practices

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

1.All personnel working on the investigation team shall read the Health and Safety Plan (a copy of the Acknowledgement Form is provided at the last page of this work plan).

2. No employee will be allowed in active investigation areas without the prior knowledge of the field operations manager.

3.All personnel involved in the investigation at the site will notify the field operations manager of any unsafe conditions or activities.

4.Standard hygiene practices will be implemented such as no smoking, eating, or drinking during SITE investigative work activities, and require a thorough washing of hands and face prior to smoking, eating, or drinking. At all times, personnel should perform investigative activities from upwind directions.

5. Workers will avoid unnecessary contamination such as walking through, sitting on, leaning on, or kneeling in areas that are known or suspected to be hazardous.

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

1.3.2 Orientation and Training

Each member of the field investigation team has completed the 40-hour training course required by the Occupational Safety and Health Administration for personnel working at hazardous waste sites. Each field team member is trained and experienced in the standard field sampling techniques and procedures to be utilized in this project.

Each person who may be required to use respirator protection has been medically approved, trained, and fit tested with a NIOSH approved respirator appropriate for the conditions likely to be encountered. In addition, each field team member participates in an orientation session prior to commencing of work at the site. The orientation will include the following:

- Project goals and objectives.
- Overview of the Health and Safety Plan.
- Health and safety requirements and procedures.

- Chemicals contaminating the site and their properties.
- Potential health and safety hazards.
- Safe sampling procedures.
- First aid and emergency procedures.
- Use of respiratory protection and respirator fit testing.
- Use of protective clothing.
- Decontamination procedures.
- Waste disposal procedures.

1.3.3 Monitoring Equipment

The principal forms of chemical contamination at the site are believed to be known and are of generally low hazard levels if appropriate precautionary measures are used. However, routine monitoring for health and safety purposes will be performed during all site activities.

Monitoring equipment will be operated, maintained, and calibrated each working day in accordance with the manufacturer's instructions and AEL's quality assurance procedures. Organic vapor monitoring will be conducted during field activities. Should contaminant levels indicate high hazard potential, operations will be discontinued until situation is evaluated.

1.3.4 Injuries and Emergencies

Injured or over-exposed person will be removed from the area immediately. Where applicable, first aid will be used and/or an emergency rescue team called. Depending on the nature of the injury/emergency, appropriate notifications will be made.

1.4 Levels of Personnel Protection

Four protection levels (A, B, C and D) will be used as bench marks for selection of personal protection equipment.

Level A requires the highest degree of protection including a fully encapsulating, chemical resistant suit with full facepiece, SCBA or supplied air respirator. No situations are anticipated in this investigation that would require this level of protection.

Level B protection requires full chemical resistant clothing with a full facepiece SCBA or supplied air respirator. No levels of VOCs or toxic chemicals are expected at this SITE that would require this level of protection. However, provisions will be made to have this equipment available should its use be

determined to be required. Investigative activities which may result in this level of protection being required, will not be implemented until the equipment has been transported to the SITE. Implementation of level B protection shall only be performed when sufficient trained personnel (minimum of two) are available.

Level C protection requires a full facepiece, air purifying cartridge-equipped respirator (or a half facepiece, air purifying cartridge-equipped respirator if specifically approved), and protective coveralls (Tyvek or full chemical resistant clothing or other protective clothing if specifically approved). Level of contaminants in the study area are not expected to require this level of protection. Activities which significantly disturb the soil or generate dust will be closely monitored to determine if the upgrading to this level of protection is appropriate. Sampling and handling of highly contaminated waste or soils on-site could result in potential exposures where this level of protection is warranted. The decision to require this level of protection will be made on a case-by-case basis. Unknown hazardous conditions suspected of containing risks which have not been identified as part of this plan shall be investigated with Level C protection.

Level D protection requires standard work clothes such as protective coveralls, work boots, safety glasses/goggles, and hard hat. This protection level applies to situations in which there is minimal risk of dust generation with subsequent inhalation and dermal risk to hazardous chemicals. It is currently anticipated that this level of protection will be applicable to all investigative activities both on and off-SITE.

Should ambient air monitoring during the study indicate a need for higher protection levels than those currently in use, immediate implementation of the appropriate level or cessation of all activities, which are generating the excessive level shall be performed.

In addition, protection and first aid will be provided for common health hazards associated with outdoor work such as poison ivy, insect bites and stings, and ticks. Since ticks are a known disease vector, affected persons are instructed to report tick bites to a physician. Poison ivy contact should be treated immediately. A medical kit for first aid will be available in the field. Any signs of rashes, inflammation, irritation, or burning sensation will be reported immediately.

1.5 Personal Protective Equipment

All employees at the SITE will be required to use appropriate protective equipment for protection against potential hazards at the site.
Since Level D is anticipated for the field investigation equipment listed under Level D in Section 5.4. If conditions occur which require Level C or greater,

conditions will be evaluated.

1.6 Emergency Information

1.6.1 Emergency Services and Notification

The emergency procedures will include notifying emergency and other affected personnel, and keeping their locations and emergency telephone numbers in a convenient and readily accessible area at the project site. A map showing the route from the project SITE to the nearest emergency medical facility will be provided at the project area.

Emergency services for the Nassau Uniform SITE include:

- **Nearest Emergency Medical Facility**
  Freeport Hospital
  267 South Ocean Avenue
  Freeport, NY 11520

  516-378-0800

- **Fire Department and Rescue Service**
  Merrick Fire Department
  Merrick Avenue
  Merrick, NY

  fire calls: 516-221-7044
  non-emergency number: 516-221-7055

- **Police Department**
  Nassau County Police Department
  Seventh Precinct
  3636 Merrick Road
  Seaford, NY

  emergency calls: 911
  non-emergency calls: 516-573-6700

- **Poison Control Center**
  General Area Number:
  (516) 542 - 2323