WORKPLAN
FOR THE
REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
OF THE
TNT -RED STAR EXPRESS SITE
97 INDUSTRIAL PARK DRIVE
KIRKWOOD, NEW YORK
NYSDEC SITE #704028

Prepared for

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1.0 INTRODUCTION

This Remedial Investigation/Feasibility Study ("RI/FS") Work Plan is submitted in partial fulfillment of the requirements stipulated in the April 30, 1998 Order-On-Consent (Index # B7-97-09) between USF-Red Star, Inc. ("USF-Red Star") and the New York State Department of Environmental Conservation ("NYSDEC"). This work Plan has been prepared for the TNT-Red Star Express Site, Site Code #704028, located in Kirkwood, Broome County, New York (hereafter referred to as "the Site"). The Work Plan was prepared by Leader Environmental, Inc. ("Leader") for USF-Red Star to provide a scope of work and procedures for conducting an RI/FS at the Site. Additionally, the Work Plan provides guidelines for evaluating the nature and extent of contamination and the collection of data to support the design and implementation of a remedial remedy.

1.1 Background

In 1991 the Site was used by USF-Red Star Express as a trucking terminal where goods were transferred between trucks for distribution. During the first week of January 1991 (the exact date is unknown), while loading drums into a trailer, a forklift punctured several drums containing perchloroethylene ("PCE") accidentally releasing approximately 100 gallons of PCE into the trailer and eventually on the asphalt pavement. On January 7, 1991, Allwash of Syracuse (now known as AAA Environmental, Inc. ["AAA"]) excavated asphalt and soil containing PCE as part of a spill response action completed under the direction of NYSDEC. AAA removed approximately 120 tons of contaminated soil during the spill response. Groundwater quality was also affected as a result of the spill and has been monitored since the release.

1.1.1 Site Location

The Site occupies approximately 5 acres and is used as a trucking terminal where materials are unloaded and loaded on to trailers for distribution. The Site is located at 97 Industrial Park Drive in the Town of Kirkwood within an active industrial park. A Site Location Plan is presented as Figure 1. The industrial park is located adjacent to and southwest of US Interstate Route 81, and northwest of Route 11. Within the industrial park, the Site is located adjacent to and south of the Hughes Flight Simulator facility and east the Universal Applied Conveyor Engineering Division facility. The nearest residential area to the Site is approximately 0.2-miles to the southeast.

1.1.2 Operational History

The USF-Red Star rents space on the property from C&D Terminal Leasing. USF-Red Star uses the space for the loading and unloading trucks. USF-Red Star also has access to the maintenance garage, on the Site, for minor truck repairs. C&D Terminal Leasing is responsible for the management and maintenance of the facility including the Site's underground storage tanks.

The USF-Red Star terminal is serviced by municipal sewer and water facilities. A storm water drainage system is also located on the property and is believed to enter a drainage ditch located along Industrial Park Drive. There is also a second smaller drainage ditch located on the south side of the Site separating the Site from the Universal Applied Conveyor Engineering Division facility. This small drainage ditch discharges to the ditch along Industrial Park Drive.

1.1.3 Regulatory Issues

The aforementioned PCE spill was confined to the trailer and a small area of the asphalt covered loading dock. In response to the spill, employees of the terminal poured absorbent on to the free liquid and notified USF-Red Star management. Subsequent to the spill, the following remedial actions and monitoring were conducted under the direction of NYSDEC Region 7 personnel:

- January 7, 1991 - Allwash of Syracuse, Inc. ("Allwash") drummed the spent absorbent and excavated approximately 120 tons of PCE contaminated soil.
- January 18, 1991 - Allwash installed a soil vapor extraction system and began the monthly collection and analysis of air samples.
- November 1991 - Allwash completed a soil gas survey of the spill area.
- April 1992 - Allwash completed a soil boring on-Site.

- November 1992- Allwash installed three monitoring wells and began quarterly sampling and analysis. Sample results were reported to NYSDEC. One monitoring well MW-3 was located near the spill area.

- December 1994 - NYSDEC requested that an additional downgradient monitoring well be installed, MW-4. USF-Red Star also requested that an upgradient piezometer be installed. NYSDEC confirmed the request in a letter dated December 27, 1994.

- January 1995 - Allwash installed the monitoring well and piezometer.

- February through October 1995 - Allwash continued quarterly monitoring of groundwater quality.

- November 1995 - USF-Red Star issued a stop work order to Allwash.

- December 18, 1996 - NYSDEC provided the Broome County Industrial Development Agency ("BCIDA"), as listed owner or ownership partner of the property, a letter notifying the BCIDA of the listing of the Site on the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites.

1.1.4 Previous Site Investigations and Description of Current Site Conditions

Following the cleanup of the PCE spill, Allwash was retained to install monitoring wells to assess the impact to groundwater. Investigative and remedial work and groundwater monitoring took place on the Site from January 18, 1991 to October 1995. In November 1997, AAA retained Leader to assist with the RI/FS for the Site. On November 11, 1997, Leader sampled the existing on-site monitoring wells.

Table 1 shows a summary of the past quarterly groundwater monitoring results and the groundwater monitoring results from the November 11, 1997 sampling event. The data show that the concentrations of PCE have generally decreased with time in monitoring wells MW-3 and MW-4. The data from MW-2 suggest that a steady-state condition may exist in the monitoring well at the down gradient edge of the plume.

The existing on-Site monitoring wells range in depth from 13 feet to 15 feet below ground surface and monitor groundwater quality in the uppermost water bearing zone. In general, the decrease in PCE concentrations in the monitoring wells could be the result of natural bio-attenuation, plume migration, and natural variation due to the rise and fall of the groundwater table. The data also reveal that the concentration of PCE in groundwater exceeds the NYSDEC's Class GA water quality standard of 5 micrograms per liter (mg/l).

1.1.5 Geology and Hydrogeology

The Town of Kirkwood area is located in the Appalachian Plateau physiographic province. The Appalachian Plateau is an area of Silurian and Devonian aged sedimentary rocks that are generally flat lying. The area appears to be mountainous, but the frequent and steep changes in ground surface elevation are reportedly the result of tectonic uplift and erosion. Tectonic movement, thermal cracking, and glacial unloading, has resulted in rock fractures. The most dominate fractures are oriented northwest to southeast.

The Susquehanna River and river valley are the dominant land features of the area. The Site is located on the north flank of the river valley, approximately 0.5-miles north of the Susquehanna River. There is also a small tributary to the Susquehanna River, named Park Creek, that is located approximately 500 feet east of the Site.

The Susquehanna River Valley was reportedly formed by a pre-glacial river which cut into the shale and sandstone of the Appalachian Plateau. The valley was widened and deepened through erosion. During the advance and retreat of the glaciers, a blanket of glacial till and stream and lake silt, sand and gravel sediments were deposited across the area. Till sediments tend to cover the hills and the edges of the river valley. Coarse sediments, sands and gravel, are typically found in the center of the river valley. An aquifer has formed in the shallow sand and gravel outwash deposits and today the aquifer is known as the Endicott-Johnson City Aquifer. The aquifer provides potable water for the towns and villages in the area.

According to the 1986 United States Geological Survey ("USGS") Open File Report 82-553 entitled "Atlas of Eleven Selected Aquifers in New York," and a 1986 study, entitled, "Simulation of Ground-Water Flow and Infiltration from the Susquehanna River to a Shallow Aquifer at Kirkwood and Conklin, New York," the Site is located on the edge of the aquifer. Beneath the Site the USGS has estimated there may be less than 10 feet of saturated aquifer thickness. According to the USGS regional groundwater data and the on-Site monitoring wells, the direction of groundwater flow beneath the Site is southwest toward the Susquehanna River. The USGS has shown by its studies that the Site is hydraulically upgradient from the Kirkwood wellfield; however, its position across the aquifer's hydraulic gradient makes it unlikely that the aquifer beneath the Site provides water to the wellfield (see Figure 2). A much larger concern to the wellfield water quality is the Gorick C&D Landfill Site, located northeast of and adjacent to the wellfield.

1.2 Objectives

It is USF-Red Star's intent to complete the RI/FS using a phased-approach to address the extent of contamination and to provide information and data for designing constructing, operating and monitoring an appropriate remedial response. The first phase of the RI will address the following issues:

- Assess the extent of contamination related to Site operations, including PCE and its degradation products, in the vicinity of the spill area;
- Evaluate on-Site contamination and compare the results to Technical and Administrative Document ("TAGM") *Determination of Soil Cleanup Objective and Goals - TAGM 4046, dated January 24, 1994,* or its latest revision; and
- Assess potential off-Site migration of contamination related to Site operations.

If it is appropriate and feasible, an Interim Remedial Measure ("IRM") will be designed and implemented based on the data collected during the Phase I RI, after obtaining approval from the NYSDEC. If a Phase II RI is needed, a scope of work will be prepared for NYSDEC review to address data gaps and delineation of the vertical and horizontal extent of contamination related to the site operations. To address the above issues, USF-Red Star proposes to complete the field activities discussed herein.

1.3 Work Plan Overview

The components of the Work Plan are presented below:

2.0	Remedial Investigation
3.0	Feasibility Study
4.0	Project Organization
5.0	Project Schedule

Appendix A	Quality Assurance Project Plan
Appendix B	Health and Safety Plan
Appendix C	Soil Sampling Protocol
Appendix D	Procedures for Water Level Monitoring
Appendix E	Procedures for Groundwater Quality Sampling
Appendix F	Permeability Testing Procedures

Overall, this Work Plan includes a description of the RI/FS scope of work, and those elements typically found in a Field Activities Plan and Site Sampling Plan. The RI/FS Quality Assurance/Quality Control (QA/QC) Plan is included in Appendix A, and the RI/FS Health and Safety Plan is included in Appendix B. The Work Plan addresses:

- Locations of soil samples;
- Locations of monitoring wells;
- Drilling and well construction techniques;
- Locations of sediment samples;
- Locations of insitu groundwater sampling locations;
- Sampling procedures and protocols;
- Laboratory analytical parameters; and
- FS evaluation procedures and criteria to be used in selecting a remedy.

This Work Plan outlines procedures that are in general accordance with the NYSDEC and USEPA requirements and protocols for performing an RI/FS; and is consistent with the NYS Environmental Conservation Law and CERCLA as amended by SARA.

The QA/QC plan outlines the measures necessary to ensure that accurate data are collected during the RI. The plan is tailored to meet the specific requirements for properly characterizing the Site and the needs of an environmental exposure assessment ("EEA") and FS. The QA/QC Plan conforms with the 1995 edition of the NYSDEC Analytical Services Protocols (ASP) and addresses the following elements:

- Field aspects of sampling and sample preparation;
- Equipment decontamination procedures;
- Calibration, preview time maintenance, and corrective maintenance;
- Mandatory clean-ups as a laboratory analytical procedure when matrix interference's are involved;
- Data reduction and interpretation procedures;
- Performance audits; and
- Documentation and document control for QA/QC.

The QA/QC plan outlines the procedures for closely monitoring the accuracy, precision and completeness of the field and laboratory data. For example, this monitoring will be accomplished by: 1) maintaining thorough documentation of decisions made during each phase of sampling; 2) thoroughly reviewing (validating) the analytical data; and 3) providing appropriate feedback as problems arise.

A Site-specific Health and Safety Plan ("HASP") outlines the procedures and exposure limits for field personnel. Specifically, the HASP presents personnel responsibilities, protection equipment, procedures and protocols, contingency plans, decontamination, training, and medical surveillance procedures as well as potential problems or hazards that may be encountered. The HASP conforms with applicable state and Federal worker safety regulations for hazardous waste sites, including the latest revision of the Occupational Safety and Health Guidance manual for Hazardous Waste Site activities.

2.0 REMEDIAL INVESTIGATION

2.1 Field Investigation

It is USF-Red Star's intent to complete the RI/FS using a phased-approach to address the extent of contamination, the potential exposure pathways to human health and the environment, and to provide data to support the design of an appropriate remedial response. The first phase of the RI will be to complete those field activities identified in the NYSDEC-approved scope of work dated April 27, 1998. Section 2.0 discusses the sample locations and sampling and analytical procedures to be completed during these field activities. Figure 3 includes the existing monitoring wells and the proposed RI sampling locations.

2.2 Site Infrastructure Assessment

The Site Infrastructure Assessment will include a property boundary survey, building and structure (i.e., utilities, catch basins, soil borings and monitoring wells) locations, sample locations, and a topographic survey of the Site. The topography of the Site will be plotted using a two foot contour interval. As needed, additional off-Site features will be included (e.g. abutting utility right-of-ways). The survey data and drawing(s) will be prepared and stamped by a New York State licensed land surveyor.

The approximate location and elevation of Site utilities, monitoring wells, sample locations, and other key surface features will be surveyed. These data will be plotted on the a topographic base map prepared for this RI/FS. The following guidelines will be used to establish the locations and elevations of each above mentioned item:

Vertical control - Elevations (0.01ft.) will be established for the ground surface spot locations (for the topographic map) and ground surface at the well, the top of the well's outer protective casing, and the top of the well's inner casing. The elevation of the adjacent drainage ditches and Park Creek will also be obtained. All elevations will be relative to a United States Geological Survey

("USGS") benchmark referenced to the National Geodetic Vertical Datum ("NGVD"). This procedure will allow comparisons of the ground water levels and subsurface geology to nearby topographic features (i.e., surface water bodies).

Horizontal Control - Utilities, monitoring wells, sample locations and key surface features will be located laterally by obtaining northings and eastings from a known location (i.e. bench mark). The horizontal accuracy of the survey will be to the nearest 0.1 of a foot.

Utilities will be located using four sources of information: 1) utilities found during field survey work; 2) utilities identified by an underground utilities locating service; 3) review of existing drawings available at the Town of Kirkwood's offices; and 4) drawings of the Site provided by the property owner, if available.

2.3 Horizontal and Vertical Extent of Contamination

To assess the extent of PCE contamination in the vicinity of the original spill and to evaluate the slope of the first impermeable layer below the uppermost groundwater zone, three test borings will be drilled and sampled, followed by installation of a single monitoring well (see Figure 3). The three soil borings will be located in a triangular configuration from which the slope of the first impermeable layer, or layer of lower hydraulic conductivity, can be evaluated. The first borehole is to be located within the spill area. The locations of the soil borings may be adjusted slightly as a result of potential conflicts with underground utilities. If contamination is found in the borehole B-1 (in the spill area) a fourth borehole may be drilled and sampled downgradient of the spill area to determine if contamination has migrated. Contamination in borehole B-1 will be defined by the presence of organic vapors a Photovac Micro TIP organic vapor analyzer ("OVA"). Samples containing OVA concentrations greater than 10 ppm and, or having soil stains will be considered contamination. The need for the additional borehole, the location of the fourth borehole, if needed, and all changes to sampling locations will be made only after conferring with the NYSDEC Project Manager.

Test borings will be sampled using a split-spoon sampler following the Standard Penetration Test Method (D-1587) through the uppermost groundwater zone and into the first impermeable layer. Borehole samples will be collected continuously with a split-spoon sampler ahead of the hollow stem augers using a truck-mounted drilling rig. Immediately after sample collection, the sample will be screened using an OVA and the measurements recorded. The sample will then be described by an experienced geologist using the Unified Soil Classification System. In addition to the data needed to describe the soil strata, the geologist will also note the amount of sample recovery, the presence of soil stains, and the relative moisture content. The geologist will then retain a portion of the sample in a clean sample jar with a teflon lid for headspace screening using the OVA. A spilt of the soil sample will be placed in a laboratory clean jar for potential chemical analysis and placed in a sample cooler at a temperature of approximately 4 degrees centigrade. Appendix C provides a procedure for collecting and analyzing the headspace sample. After the collection of a split-spoon sample the sampling tool will be decontaminated following procedures described in Appendix C.

At least one soil sample will be submitted for analysis for USEPA's Target Compound List ("TCL") Volatile Organic Compounds ("VOCs") in accordance with NYSDEC's Analytical Services Procedures ("ASP") 1995 edition. The sample(s) to be analyzed will be selected with concurrence of NYSDEC field representative. The selected laboratory will be a New York State Department of Health ELAP CLP certified laboratory. The sample or sample(s) to be submitted for analysis will be determined based on OVA readings greater than 10 ppm and/or the presence of stains. The soil sample will be placed in a clean glass sample jar with a teflon coated screw cap lid. The sample will be placed in the jar as soon as possible after collection and placed in a sample cooler with sufficient ice to keep the sample at approximately 4-degrees centigrade. Samples will be transported to the selected laboratory by courier.

After the completion of the borehole sampling activity, one soil boring will be extended into the lower groundwater zone and converted into a monitoring well. The location of the monitoring well will be selected based on the direction of the slope of the low permeability layer, with the preferred location being down gradient of the spill area or an area where there is a presence of high VOC concentrations in the soil above the lower groundwater zone. The process to determine the location of the monitoring well will follow the following sequence:

- Once a borehole is completed the hollow stem augers or a steel casing will be left in the ground until all three boreholes are completed.
- The elevation of the top of the confining layer will be determined from the topographic survey and soil sample descriptions. Using this data and soil OVA readings the slope and the downgradient direction of the confining layer will be determined.
- The location of the monitoring well will be determined after conferring with the NYSDEC Project Manager and NYSDEC's field representative.
- The drilling equipment will be remobilized to the selected borehole location and the borehole advanced and the monitoring well installed as discussed below.

The test boring/monitoring well will be advanced using the same sampling and drilling methods used to advance the soil borings. It is anticipated that the depth of the screened interval will be approximately 20 to 25 feet below ground surface. The actual screened interval will depend on the on-Site geologic evaluation of split-spoon samples, soil headspace sample results, and the ability of the interval to provide a groundwater sample. The screen location will be reviewed with the NYSDEC.

Once a suitable groundwater bearing zone is located, a 2-inch diameter PVC monitoring well will be constructed in the borehole, see Figure 5. The monitoring well will be placed at least 5-feet below the upper most groundwater zone and be screened in the lower groundwater zone. The construction procedures for the monitoring well include:

- PVC well materials will be pressure-washed using hot water and detergent;

- At the bottom of the borehole, a 6-inch layer of sand will be placed to cushion the well;

- The PVC well will be lowered through the hollow stem augers and centered;

- A sand filter pack will be slowly poured into the annulus of the borehole to a point where the sand is at least one foot above the well screen. The sand pack will be measured frequently during placement to ensure that the filter pack does not form a bridge or exceed the prescribed fill level. As sand is added to the annulus, the augers will be lifted in small increments to minimize the amount of native soil collapse into the borehole;

- If the well screen has filled with water, a bailer will be used to lower the water depth in the well to help develop the well screen and settle the filter pack sand. Following the bailing procedure, the level of the filter pack will be re-measured and additional sand added if needed.

- On the top of the filter pack, a minimum 2-foot thick layer of bentonite chips or pellets will be placed to form a well seal. The bentonite will be placed by slowly pouring the chips from the top of the augers. The top of the bentonite will be compacted using a tremie pipe, steel rod or weighted tape to ensure that some degree of compaction is achieved. If the contractor is having difficulty placing the bentonite, a tremie pipe will be used to place the chips. The bentonite will be given approximately one hour to hydrate. If the level of groundwater is below the sand pack, a hydrated bentonite mud will be mixed using manufacturer's mixing directions. The top of the well seal will be measured using a weighted tape after placement.

- At the top of the well seal, a 6-inch layer of sand will be placed to assist in limiting the penetration of the cement grout into the bentonite well seal. The level of the sand will be measured after placement using a weighted tape.

- A cement-bentonite grout will be mixed using 1 pound of bentonite per 94-pound sack of cement. The dry mixture will be hydrated using approximately 7.5-gallons of potable water. Once the mixture has been evenly mixed, it will be poured or tremie piped into the annulus. The annulus will be filled to a point where the level of the grout is approximately 1.5-feet below the ground surface.

- Once the grout has hardened, a flush-mounted roadbox will be fitted over the well casing. The interior of the roadbox will be filled with sand from a point approximately 1.5-feet below groundsurface to a point approximately 2-inches below the top of the monitoring well. The exterior of the roadbox will be sealed to the ground level using concrete.

- The monitoring will be fitted with a water-tight locking well cap.

- Following completion of the monitoring well and no less than 24-hours after grouting the monitoring well, the monitoring well will be developed using bailing, pumping and surging techniques to free the well screen of sediment and to enhance the communication between the screen and the groundwater zone.

- Development will continue until the purged groundwater has an Nephelometric Turbidity Unit (NTU) of less than 50, or a consistent pH, temperature, and conductivity reading for three well borehole volumes.

The vertical extent of contamination will be determined by the collection and analysis of soil samples and the collection and analysis of a groundwater sample. Soil and groundwater sampling will follow the procedures described in Appendices C and E.

Hydraulic characteristics of the lower groundwater zone will be determined using rising and/or falling head hydraulic conductivity tests following the methodology published by Bower (Ground Water, Vol. 27, No. 3, June, 1989, pp. 304-309). Procedures to complete the rising and falling head tests are described in the Appendices A and F. Each of the monitoring wells (including the existing monitoring wells) will be field tested, using the slug test method, to estimate the hydraulic conductivity of the aquifer material surrounding the well screen. Water level fluctuations within each well will be initiated by rapidly introducing a solid PVC slug into the water column and measuring the rate at which the displaced water falls and returns to equilibrium (falling head), and then removing the slug and measuring the rate at which the water level rises and returns to equilibrium (rising head).

The induced water level changes will be recorded by an electronic data logger in combination with a pressure transducer. During the slug tests, water level readings will be obtained every two-tenths of a second and downloaded into a laptop computer. Data from the slug tests in the shallow wells (monitoring wells MW-1 through MW-4) will be reduced by the methodology published by Bower (1989). In this method, calculations are performed on the basis of borehole diameter for unconfined aquifers that are partially penetrated by a monitoring well. Slug test data from the deeper aquifer (which may be confined) will be analyzed separately using methods described in Cooper, Bredehoeft, and Papadopulas, 1967.

Equipment to be used in the drilling and sampling of the soil and groundwater will be decontaminated using hot water from a pressure washer or detergent as described in Appendix A. Decontamination of the equipment will be completed before work begins and between samples.

Soil waste produced during the drilling and the collection of soil samples will be screened using an OVA. If soil staining or VOCs are present in the soil, the soil will be containerized for off-Site disposal in an appropriate disposal or treatment facility. Uncontaminated soil will be left on the Site in a location to be determined by USF-Red Star.

2.4 Well Assessment and Sampling

Approximately one week after installation of the new deep monitoring well, a groundwater sample will be collected from each on-Site monitoring well. Samples will be analyzed for TCL VOCs using ASP 95-1. The sample from monitoring well MW-4 will also be analyzed for TCL semi-volatile organic compounds using ASP 95-2, poly-chlorinated biphenyl's (PCB's) using USEPA Method 8080 with ASP Category B deliverables, and target analyte list ("TAL") metals using USEPA and ASTM methods on an unfiltered sample. The chemical and survey data will be used to evaluate contaminant concentrations in comparison to NYSDEC's Class GA groundwater quality criteria and to estimate the direction of groundwater flow and contaminant migration.

Sample analyses will be completed by a New York State Department of Health ELAP CLP-certified laboratory. Sample data will be presented in an analytical report which will be validated by a qualified third party following USEPA and NYSDEC guidelines.

As part of this task, we will also review the New York State and Broome County Department's of Health records for the location of potable drinking water wells in the Site area. Using the information obtained from this review, a drawing will be developed showing locations of the potable wells in the area, if any. The information will be used to complete the exposure assessment section of the final RI report.

Groundwater samples will be collected using the following procedure:

- The monitoring well will be opened and the headspace monitored using an OVA to evaluate the proper level of respiratory protection;

- The water level in the monitoring well will be measured using an electronic water level probe. The water level will be measured to the nearest 0.01 of a foot.

- The monitoring well will be checked to evaluate for the presence of light non-aqueous phase liquids ("LNAPL") and dense non-aqueous phase liquids ("DNAPL"). This evaluation will be done using a dedicated clear acrylic bailer suspended on a dedicated nylon cord. LNAPL will be checked by slowly lowering the bailer until it is completely submerged. The bailer will be lifted and visually checked to evaluate the potential presence of the LNAPL. If an LNAPL is present, a sample of the liquid will be collected for analysis.

- Evaluating the presence of DNAPL will require slowly dropping the bailer to the bottom of the monitoring well, allowing the liquid to enter, and then slowly lifting the bailer to the surface. The bailer will be visually checked to evaluate the presence of DNAPL. If DNAPL is present, a sample of the liquid will be collected for analysis.

- Using a dedicated bailer, the well will then be purged of a minimum of three well volumes and until three consecutive consistent pH, temperature, and conductivity readings are measured. If the monitoring well is completely evacuated, the well will be sampled immediately once there is a sufficient sample volume.

- The sample bottles will filled slowly to limit volatilization. The first bottle to be filled will be for VOC analysis, followed by semivolatile compounds ("SVOCs"), pesticides, PCBs and TAL metals.

At the completion of filling a sample vial or bottle, the sample will be given a unique sample number and placed in a sample cooler with sufficient ice to keep the samples at approximately 4-degrees centigrade. Samples will be transported to the selected analytical laboratory by courier for next day delivery. The required quality assurance and quality control samples to be collected are discussed in Appendix A.

2.5 Off-Site Migration of PCE

To assess whether contamination has migrated off of the Site, sediment sampling of the Site's storm sewer system and a geoprobe groundwater investigation of the hydraulically downgradient and adjacent Universal Applied Conveyor property will be completed.

2.5.1 Sediment Sampling

Sediment sampling will be conducted from one catchbasin on the north side of the Site where there is a potential for the PCE to have entered the system and from the ditch sediment at the discharge point of the storm sewer. It is assumed that the likely discharge points for the storm sewer are the drainage ditches on the south and west sides of the Site and the sanitary sewer located beneath Industrial Park Drive. During the field investigation, water will be introduced into the system and the likely discharge points monitored. If necessary, an inert dye will be introduced so that the water from the Site can be distinguished from other discharges.

Samples will be analyzed for TCL VOCs using ASP 95-1. Samples will be collected using a stainless steel scoop or trowel. The sample will be deposited in a clean sample jar suitable for holding a sample intended for VOC analyses. Immediately following sample collection, the sample will be given a unique sample number and placed in to a sample cooler with sufficient ice to keep the samples at approximately 4-degrees Centigrade. The samples will be delivered by courier to the selected laboratory for analysis.

Sample analyses will be completed by a New York State Department of Health ELAP CLP-certified laboratory. Sample data will be presented in an analytical report which will be validated by qualified a third party in general accordance with USEPA and NYSDEC guidelines. The validated results will be compared to TAGM 4046 cleanup criteria to assess whether the sewer pathway can be eliminated from a list of potential remediation areas.

2.5.2 Geoprobe Groundwater Sampling

To evaluate the extent of off-Site contaminant migration, a geoprobe (or similar type sampling tool) investigation is proposed. If an in-situ type sampling device is not appropriate because of subsurface conditions (i.e., the soil is too dense to advance the tool) temporary monitoring wells will be installed and sampled using dedicated bailers as discussed in Section 2.4.

Groundwater samples will be collected from the uppermost groundwater zone using an insitu type sampler (e.g. Geoprobe). The type of sampling tool to be used will be determined at the time of sampling. To sample the groundwater, the sampling tool will be pushed to a depth of approximately 15 feet below groundsurface and the sampling tool exposed to the water bearing formation. The tool operator will evacuate the sample tool by drawing three or more volumes (i.e. sample collection tool volumes) through the sample collection system. The groundwater zone will then be allowed to recharge for approximately 15 minutes before a sample is collected. If a LNAPL or DNAPL is identified, a sample of the material will be collected and analyzed if possible. Once the sample is collected it will be given a unique sample identification number and placed into a sample cooler and kept at approximately 4-degrees Centigrade. The sample cooler will be delivered by courier to the selected ELAP CLP-certified laboratory for analysis. Analyses will be completed using USEPA Method 8260 for TCL VOCs.

Sampling will be done along the western property line beginning at two locations approximately 100 feet to the north and to the south of monitoring well MW-4. A sample from monitoring well MW-4 will also be collected at this time for comparison with the results of the geoprobe samples. The concentration of TCL VOCs in the samples will be used to assess the centerline and limits of the contaminant plume. If it appears that monitoring well MW-4 does not represent the approximate centerline of the plume, or that the limits of the plume are not defined, then an additional sample(s) will be collected along the property line. This new sample location will be located approximately 50 feet from the next nearest sampling location on the property line.

Following definition of the plume along the western property line, the off-Site extent of the plume will be evaluated. Sampling locations will be along a straight transect extending west from the approximate center of the plume. Sample locations will be placed at +/- 100-foot intervals from the property line and will continue to a point where the sample results show that Site-related contamination is no longer present. Once no Site-related contaminants are detected at levels above applicable State Criteria and Guidance values ("SCGs"), an additional sample will be collected at the mid-point between this sample collection point and the previous sample point.

Sample analyses will be completed using a New York State Department of Health ELAP CLP-certified laboratory using USEPA Method 8260 for analysis of TCL VOCs. Typical detection limits for Method 8260 are 2 parts per billion ("ppb") and 1.5 ppb for vinyl chloride, however these detection limits are dependent on the concentrations of the contaminants detected and the potential sample matrix interference. Samples will be analyzed with field blanks, method blanks, and matrix spike samples. The data will be reviewed to determine if cross-contamination or laboratory contamination is present. The data from the geoprobe sampling will not be used to produce a fully documented analytical data package for data validation. The data will be used to evaluate whether the plume is off-Site so that informed decisions concerning whether additional RI Phase II off-Site work, such as installing a permanent monitoring well, is necessary.

If temporary monitoring wells are used, they will be drilled into place using hollow stem augers or driven using the drilling rigs hydraulic system or a 300 pound sampling hammer. If augered into place, the monitoring well screen will be sand-packed and developed to remove sediment. Sampling will follow the procedures summarized in Section 2.4. Because the wells will be of small diameter and for temporary use, the groundwater will not be evaluated for DNAPL or LNAPL as identified in Section 2.4; however, if a DNAPL or LNAPL is identified, a sample of the material will be collected, if possible. Equipment will be decontaminated prior to use using hot water from a pressure washer unit.

2.6 *Field Equipment Cleaning and Material Disposal Procedures*

Precautions will be undertaken to limit the spread/release of subsurface materials that are removed during drilling and sampling. The excess soil generated during the installation of the deep monitoring well will be containerized in drums. Groundwater removed from the monitoring wells during well development/purging and spent steam-cleaning water will be containerized in separate 55-gallon drums for analysis.

Decontamination of drilling and geoprobe sampling equipment will take place in the field at a designated steam-cleaning area to be determined by USF's Terminal Manager. This area will serve as the Contaminant Reduction Zone and will be comprised of an equipment decontamination pad. The pad will be constructed by the drilling subcontractor to accommodate equipment, and will have a central sump (or equivalent system) that will collect the decontamination water. The wastewater will be containerized, analyzed, and disposed of properly. Drilling equipment will be steam-cleaned prior to setting-up for drilling. The geoprobe contractor will also decontaminate equipment prior to sampling, but will also decontaminate a sufficient amount of equipment to avoid decontamination between each sampling location.

Small field equipment (trowels) will be cleaned in general accordance with Appendix A and wrapped in aluminum foil until used. This cleaning procedure should be done prior to bringing the equipment on-Site. No cleaning solvents or acids should be brought on to the Site at any time, since these materials would: 1) increase the disposal costs of decontamination water; and 2) create the potential for artificially induced contamination.

2.7 *Laboratory Analytical Data Validation Procedures*

Laboratory analytical methods, results, and Quality Assurance/Quality Control ("QA/QC") data will be reviewed upon receipt by an experienced chemist to ensure that the data are accurate. This review will be done in general accordance with the Appendix A. A Quality Assurance Narrative will be prepared at the completion of the data validation summarizing the findings and qualifying the data usability. The narrative will discuss the analyses that were performed and the items evaluated during the data validation review. Issues identified during the review will be expressed in terms of the impact on the data usability. This narrative will address the significance of any detected errors upon the subsequent project work and decisions.

2.8 RI Reporting

Reporting for the RI/FS process will include the preparation of the following documents; RI Memo, draft RI Report and the final RI Report. At the completion of the RI investigation Phase I, the data will be assembled and an RI Data Memo will be prepared to provide a brief synopsis of the field sampling and the sample results. The memo will include a description of the samples collected and the variances in the sampling procedures, and presentation of the sample results in tabular form and on a figure of the Site. During the preparation of the memo, data gaps will be identified and the need for Phase II field activities reviewed. Based on a review of the RI Data Memo by NYSDEC, USF-Red Star and Leader an agreement will be made to continue with the preparation of the RI draft report or to define and execute a scope for a Phase II investigation. If a Phase II RI is required an additional RI Data Memo will be completed.

The draft RI report will be prepared after a thorough analysis of the investigation data. The RI Report will include the following sections:

1.0 Introduction

2.0 Remedial Investigation Program

3.0 Site Geology and Hydrology (Groundwater and Surface Water Hydrology, Aquifer Characteristics, and Hydraulic Testing)

4.0 Sample Results

4.1 Soil Sample Results

4.2 Groundwater Sample Results

4.3 Quality Assurance and Quality Control Results

5.0 Nature and Extent of Contamination

- 5.1 Extent of Contamination

5.2 Data Compared to NYSDEC Guidance for Cleanup Objectives and Goals

5.3 Exposure Assessment

6.0 Summary and Conclusions

7.0 List of References

Sample data will be provided in tabular form and on the Site Plan. A drawing of the Site, buildings and features, showing all sampling points will be provided on a "D" sized (24' x 36") sheet. A "C" size (11" x 17") drawing will also be provided showing groundwater elevation contours, the direction of groundwater flow, site drainages, and surface water bodies. A copy of original data sheets, calculations, and analytical data reports will be included as an appendix.

Once NYSDEC and NYSDOH has reviewed the draft RI Report, their comments will be assembled and reviewed. Changes to the RI Report will be made based on an acceptable response to the draft NYSDEC and NYSDOH comments by USF-Red Star and Leader.

3.0 FEASIBILITY STUDY

The Feasibility Study ("FS") portion of the RI/FS will be conducted in accordance with NYSDEC and USEPA guidance policies. At this time it is suspected that groundwater contamination will be the primary focus of the FS activities; however, the RI will determine if other issues exist which will be considered in preparation of the FS. Based on the probable scenario of chlorinated solvent contamination of the groundwater, the basis of the FS will be the "Presumptive Remedies: Site Characterization and Technology Selection for CERCLA Sites with Volatile Organic Compounds in Soils," Directive 9355.048FS, EPA 540-F-93-048, Office of Solid Waste and Emergency Response, September 1993.

3.1 Development of Alternatives

3.1.1 Overview

The objectives of the overall FS are to identify, develop, evaluate, and select a long-term, cost-effective, environmentally-sound and comprehensive remedial action for the Site. Although the exact focus of Development of Alternatives (the initial step of the FS) will be based on the results of the RI, additional testing may be required during the FS to evaluate the effectiveness of specific alternatives.

3.1.2 Identification of Potential Remedial Action Alternatives

A range of potential remedial technologies will be identified and evaluated based on the USEPA's Presumptive Remedy guidance document. At this time, the approach will focus on ground water treatment but, depending on the findings of the RI, other issues (i.e. soil treatment) may need to be addressed in the FS. A comprehensive listing of most, if not all, available remedial methods for uncontrolled hazardous substance releases are found in the NCP and USEPA guidance documents.

To develop alternatives two important activities take place: the volume or areas of environmental media are identified where contamination is present; the media to be treated are determined by information on the nature and extent of contamination; applicable or relevant and appropriate New

York State Standards, Criteria and Guidelines ("SCGs"); and cleanup criteria/standards. Second, the remedial action alternatives and associated technologies including alternative treatment technologies are screened to identify those that would be effective for the hazardous waste and media of interest. The information obtained from these activities is used in assembling technologies and the media to which they will be applied into alternative for the Site.

3.2 Screening of Alternatives

3.2.1 Initial Screening of Alternatives

The alternatives developed will be subjected to an initial screening to narrow the list of potential remedial alternatives for detailed analysis. The criteria to be used in this preliminary evaluation include; effectiveness and implementability. The effectiveness of each remedial alternative will, in part, be evaluated in terms of its potential to reduce risk to human health and the environment. The standards and criteria in TAGM 4046, dated January 24, 1994, and the Water Quality Regulations as defined in New York State Codes, Rule, and Regulations ("NYCRR"), Title 6, Chapter X, Parts 700 to 705 will be used as evaluation criteria. Implementability is the measure of the technical and administrative feasibility of constructing, operating and maintaining a remedial action alternative. The administrative feasibility of an alternative refers to compliance with applicable rules, regulations and statutes and the ability to obtain approvals from other offices and agencies, and the availability and capacity of treatment, storage, and disposal services. Each alternative will be evaluated in terms of its impleamentability.

3.2.1.1 Effectiveness Evaluation

A key aspect of the screening evaluation is the effectiveness of each alternative in protecting human health and the environment. Each alternative will be evaluated as to the extent to which it will eliminate significant threats to public health and the environment through reductions in toxicity, mobility and volume of the hazardous wastes at the site. Both short-term and long-term effectiveness will be evaluated; short-term referring to the construction and implementation period, and long-term referring to the period after the remedial action is in place and effective.

The expected lifetime or duration of effectiveness will be identified for each alternative. The control and isolation technologies may fail if any, of the following is expected to take place:

(i) significant loss of the surface cover such as clay cap with a potential for exposure of waste material underneath the cap;

(ii) contamination of the groundwater by the leachate from the waste material;

(iii) contamination of the adjoining surface water by the leachate from the waste material or by the contaminated groundwater;

(iv) structural failure of the control or isolation technology.

A table will be used in evaluating the effectiveness of each alternative in protecting human health and the environment. If an alternative is scored less than 10 out of a maximum score of 25, that remedial alternative may be removed from further consideration.

3.2.1.2 Implementability Evaluation

Implementability is a measure of both the technical and administrative feasibility of constructing, operating, and maintaining a remedial action alternative. Technical feasibility refers to the ability to construct, reliably operate and meet technical specifications or criteria, and the availability of specific equipment and technical specialist to operate necessary process units. It also includes operation, maintenance, replacement, and monitoring of technical components of an alternative if required, into the future after the remedial action is complete. Administrative feasibility refers to: compliance with applicable rules, regulations and statutes; the ability to obtain approvals from other offices and agencies; the availability of treatment, storage, and disposal services; and capacity.

Determinations of an alternative not being technically feasible and not being available for implementation will preclude it from further consideration unless steps can be taken to change the conditions responsible for the determination. Remedial alternatives which will be difficult to implement administratively given the Site conditions may be eliminated from further consideration for this reason alone.

The results of the implementability analysis of each remedial alternative will be shown in tabular form. If an alternative does not score a minimum rating of eight out of a possible maximum 15, then the alternative will be removed from further consideration.

3.2.2 Detailed Analysis of Alternatives

The purpose of the detailed analysis of alternatives is the analyses and presentation of the relevant information needed to select a Site remedy. The specific requirements that must be addressed in the FS report include:

- Be protective of human health and the environment;
- Attain New York State Standards, Criteria, and Guidelines ("SSGs");
- Satisfy the preference for treatment that significantly and permanently reduces toxicity, mobility, or volume of hazardous waste; and
- Be cost effective.

The remedial alternatives that are selected from the Initial Screening Analysis of Alternatives will be evaluated in detail against the following factors:

- Compliance with applicable SSGs;
- Protection of Human Health and the Environment;
- Short-term impacts and effectiveness;
- Long term effectiveness and permanence;
- Reduction of toxicity, mobility and volume;
- Implementability;

- Cost; and
- Community Acceptance.

The analysis of the remedial alternatives during the detailed analysis phase builds on the previous evaluations done during the screening analysis and the data generated during the RI and any treatibility studies completed to support the FS. The results of the detailed analysis serve to document the evaluations and provide a basis for selecting a remedy.

3.2.2.1 Compliance with Applicable New York State SSGs

This evaluation criterion is used to determine how each alternative complies with applicable or relevant and appropriate New York State SCGs. There are three general categories of SCGs: chemical, location, and action specific. The detailed analysis will summarize which requirements are applicable or relevant and appropriate to an alternative and describe how the alternative meets these requirements. When a SCG is not met, justification for use of one of the six waivers allowed under CERCLA and SARA will be discussed.

The following should be addressed for each alternative during the detailed analysis of SCGs:

1. Compliance with chemical-specific SCGs (e.g. groundwater standards). This factor addresses whether the SCGs will be met, and if not, the basis for a waiver.
2. Compliance with action-specific SCGs (e.g. RCRA minimum technology standards). It should be determined whether SCGs will be met and if not, the basis for a waiver.
3. Compliance with location-specific SCGs. As with other SCG - related factors, this involves a consideration of whether the SCGs will be met and if not, the basis for a waiver.

The actual determination of which requirements are applicable or relevant and appropriate is made by the NYSDEC in consultation with the DOH. A summary of these SCGs and whether they will be attained by a specific alternative will be presented in tabular format if appropriate.

If an alternative complies with all SCGs, it will be assigned a full rating score of 10. If an alternative complies with none of the above-mentioned four specific aspects of the SCGs, it will receive a rating score of 0. Each component of the four specific aspects of the SCGs will receive a maximum score of 2.5. If an alternative does not meet the SCGs and a waiver to the SCGs is not appropriate or justifiable it will no longer be considered. The evaluation of the remedial alternatives will be presented in tabular form.

3.2.2.2 Overall Protection of Human Health and the Environment

This evaluation criteria provides a final check to assess whether each alternative meets the requirement that it is protective of human health and the environment. The overall assessment of protection is based on a composite of factors assessed under other evaluation criteria, especially long-term effectiveness and performance, short-term effectiveness, and compliance with SCGs.

Evaluation of the overall protectiveness of an alternative during the RI/FS should focus on how a specific alternative achieves protection over time and how site risks are reduced. The analysis should indicate how each source of contamination is to be eliminated, reduced or controlled for each alternative.

Short-term Impacts and Effectiveness

This evaluation criterion assesses the effects of the alternatives during the construction and implementation phase until remedial response objectives are met. Under this criterion, alternatives will be evaluated with respect to their effects on human health and the environment during implementation of the remedial action. The following factors of this analysis will be addressed for each alternative:

(i) Protection of the community during remedial actions - This aspect of short-term effectiveness addresses any risk that results from implementation of the proposed remedial action, such as dust from excavation or air-quality impacts from the operation of an incinerator.

(ii) Environmental impacts - This factor addresses the potential adverse environmental impacts that may result from the implementation of an alternative and evaluates how effective available mitigation measures would be in preventing or reducing the impacts.

(iii) Time until remedial response objectives are achieved - This factor includes an estimate of the time required to achieve protection for either the entire site or individual elements associated with specific site areas or threats.

(iv) Protection of workers during remedial actions - This factor assesses threats that may be posed to workers and the effectiveness and reliability of protective measures that could be taken.

Scoring for this criteria should be assigned based on the analysis of factors (i), (ii), and (iii). Analysis of the factor "protection of workers during remedial actions", should be used to design appropriate safety measures for on-site workers.

Long-term Effectiveness and Permanence

This evaluation criteria addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual remaining at the site after response objectives have been met. The primary focus of this evaluation is the extent and effectiveness of the controls that may be required to manage the waste or residual remaining at the site and operating system necessary for the remedy to remain effective. The following components of the criterion will be addressed for each alternative:

- Permanence of the remedial alternative.

- Magnitude of remaining risk - The potential remaining risk may be expressed quantitatively such as by cancer risk levels, or margins of safety over NOELs for non-carcinogenic effects, or by the volume or concentration of contaminants in waste, media, or treatment residuals remaining at the site. The characteristics of the residuals that will be considered to the degree that they remain hazardous, taking into account their toxicity, mobility, and propensity to bio-accumulate.

- Adequacy of controls - This factor assess the adequacy and suitability of controls, if any, that are used to manage treatment residuals or untreated wastes that remain at the site. It may include an assessment of containment systems and institutional controls to determine if they are sufficient to ensure that any exposure to human and environmental receptors is within protective levels.

- Reliability of controls - This factor assesses the long-term reliability of management controls for providing continued protection from residuals. It includes the assessment of the potential need to replace components of the alternative, such as a cap, a slurry wall, or a treatment system; the potential exposure pathway; and the risks posed should the remedial action need replacement. This factor will include systems to warn the failure of remedial alternative, once in place.

Each criteria will be given a numerical rating to assist in the evaluation of the alternative and the results shown in tabular form.

Reduction of Toxicity, Mobility and Volume

This evaluation criterion assesses the remedial alternative's use for treatment technologies that permanently and significantly reduce toxicity, mobility, or volume of the hazardous wastes as their principal element. As a matter of the NYSDEC policy, it is preferred to use treatment to eliminate any significant threats at a site through destruction of toxic contaminants, reduction of the total mass of toxic contaminants, irreversible reduction in contaminants mobility, or reduction of total volume of contaminated media.

This evaluation will focus on the following specific factors for a particular remedial alternative:

- The amount of hazardous materials that will be destroyed or treated, including how the principal threat(s) will be addressed;
- The degree of expected reduction in toxicity, mobility, or volume measured as a percentage of reduction (or order of magnitude);
- The degree to which the treatment will be irreversible; and
- The type and quantity of treatment residuals that will remain following treatment.

Each criteria will be given a numerical rating to assist in the evaluation of the alternative and the results shown in tabular form.

Implementability

If the total weight of 15, the technical feasibility shall receive a maximum rating score of 10 while administrative feasibility and availability of services and materials will be assigned a combined maximum rating score of 5.

The implementability criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation. This criterion involves analysis of the following factors:

- Technical feasibility

  Construction and operation - This relates to the technical difficulties and unknowns associated with a technology. This was initially identified for specific technologies during the development and preliminary screening of alternatives and is addressed again in the detailed analysis for the alternative as a whole.

  Reliability of technology - This focuses on the ability of a technology to meet specified process efficiencies or performance goals. The likelihood that technical problems will lead to schedule delays will be considered as well.

  Ease of undertaking additional remedial action - This includes a discussion of what, if any, future remedial actions may need to be undertaken and how difficult it would be to implement such additional actions. This may be addressed if an IRM appears to be appropriate for the Site.

  Monitoring considerations - This addresses the ability to monitor the effectiveness of the remedy and includes an evaluation of the risks of exposure should monitoring be insufficient to detect a system failure.

  The maximum rating score for the technical feasibility is 10. The results of the scoring analysis will be presented in tabular format.

- Administrative feasibility

  Activities needed to coordinate with other offices and agencies.

  Availability of adequate off-site treatment, storage capacity, and disposal services.

Availability of necessary equipment, specialists and skilled operators and provisions to ensure any necessary additional resources.

Availability of services and materials, plus the potential for obtaining competitive bids, which may be particularly important for alternative remedial technologies.

A combined scoring not to exceed five should be assigned to administrative feasibility and availability of services and materials.

3.2.2.3 Cost

Cost for each remedial alternative will be estimated to cover the following three areas:

1. Capital costs to construct the selected remedy.
2. Annual operation & maintenance costs for the life of the remedial system (or 30 years).
3. Cost of future land use (the cost to remove the remediation system, or redevelop the land after remediation is complete)

3.2.2.4 Community Acceptance

Community acceptance of an alternative will be evaluated based on comments from the community after the community has had an opportunity to reviewed the draft RI/FS. The comments will be assembled and evaluated. Where appropriate the comments will also be used to revise the most favored alternative(s). After the revision, if needed, the alternatives will be re-evaluated to determine if a more accepted alternative should be considered as a remedy.

3.3 FS Report

At the completion of the detailed analysis of remedial alternatives, Leader will prepare a draft FS for review by NYSDEC. The draft FS will include the following major sections:

- Overview of Site Conditions
- Development of Alternatives

- Screening of Alternatives
- Initial Screening of Alternatives
- Detailed Screening of Alternatives
- Recommended Remedy

Incorporated into the text will be tables presenting the analysis of the different remedial alternatives. After the draft FS is reviewed it is anticipated that the RI report and the FS will be presented to the public for comment. After the public review period, Leader will incorporate the public's comments and revised the FS as needed, including the FS section involving Community Acceptance. Based on the public response, Leader may be required to address certain sections of the FS and reconsider several alternatives. After this re-evaluation based on Community Acceptance, Leader will submit the final FS.

3.4 Selection of Remedy

The FS will culminate with a recommended alternative based on the findings of the RI, and the FS' detailed analysis of remedial alternatives -- including the no action alternative. The NYSDEC will prepare a Proposed Remedial Action Plan ("PRAP") of the select a remedy(s) for the Site, obtain public input, and issue a Record of Decision ("ROD") document.

3.5 Interim Remedial Measure

After completion of the RI Phase I or Phase II, if it is appropriate and feasible, an Interim Remedial Measure ("IRM") will be designed and proposed to the NYSDEC for implementation at the Site. The proposal will be in the format of an IRM Work Plan. If agreed to by NYSDEC, the implementation of the IRM may temporarily supersede the completion of the FS, but the FS will be completed by a mutually agreed upon date. If appropriate IRM may be selected as the remedy for the Site.

4.0 PROJECT ORGANIZATION

4.1 Project Management Structure

The individuals and their responsibilities on the project are presented below.

The Project Manager is Jeffrey Wittlinger, P.E. Mr. Wittlinger responsible for quality control, client and NYSDEC communications, contract administration, scheduling, staffing and budget control.

The Remedial Investigation Manager is Peter von Schondorf, P.G. Mr. von Schondorf is responsible for the field investigation program, which includes subcontractor supervision,

The Health and Safety Officer is Mary-Ellen Holvey. Ms. Holvey is responsible for the preparation of the Health and Safety Plan and supervisor of the Site Health and Safety Officer when she is not on the Site.

The QA/QC Officer is Michael Rumrill. Mr. Rumrill is responsible for the ensuring the project is completed in accordance with this Work Plan and the QAPP.

The Data Valdidtor is Ms. Judy Harry of Data Validation Services. Ms. Harry is responsible for reviewing ASP laboratory results and preparation of a narrative describing suitability of the analytical data and its conformance with the QAPP. Ms. Harry is independent of Columbia Analytical Services.

4.2 Project Reporting

During field activities, a monthly Project Manager's Report will be submitted to NYSDEC. This report will summarize the activities of the month, as well as any major communications or events that occurred.

TABLE 1

SUMMARY OF PCE CONCENTRATIONS IN GROUNDWATER

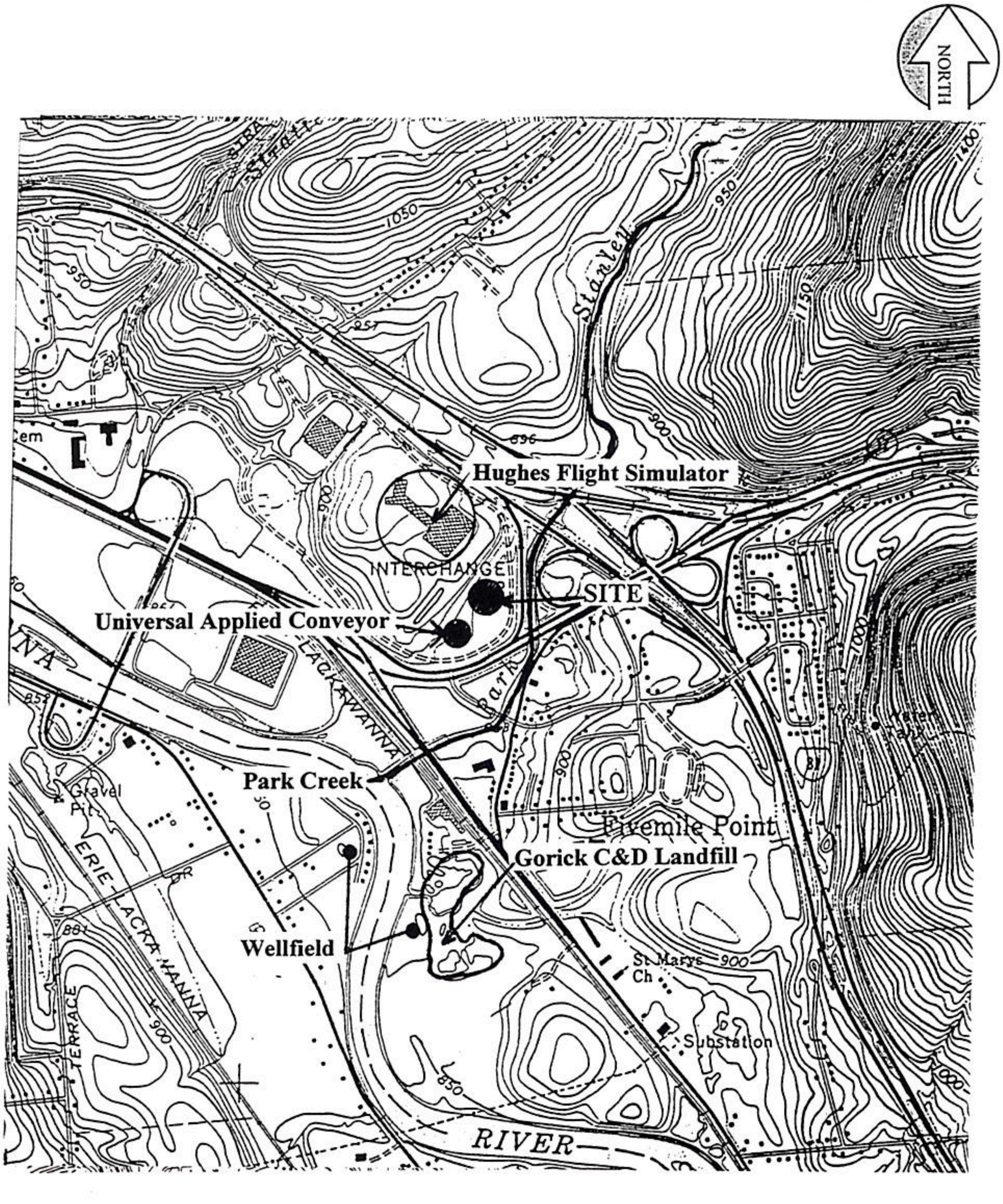
TNT-REDSTAR SITE

KIRKWOOD, NEW YORK

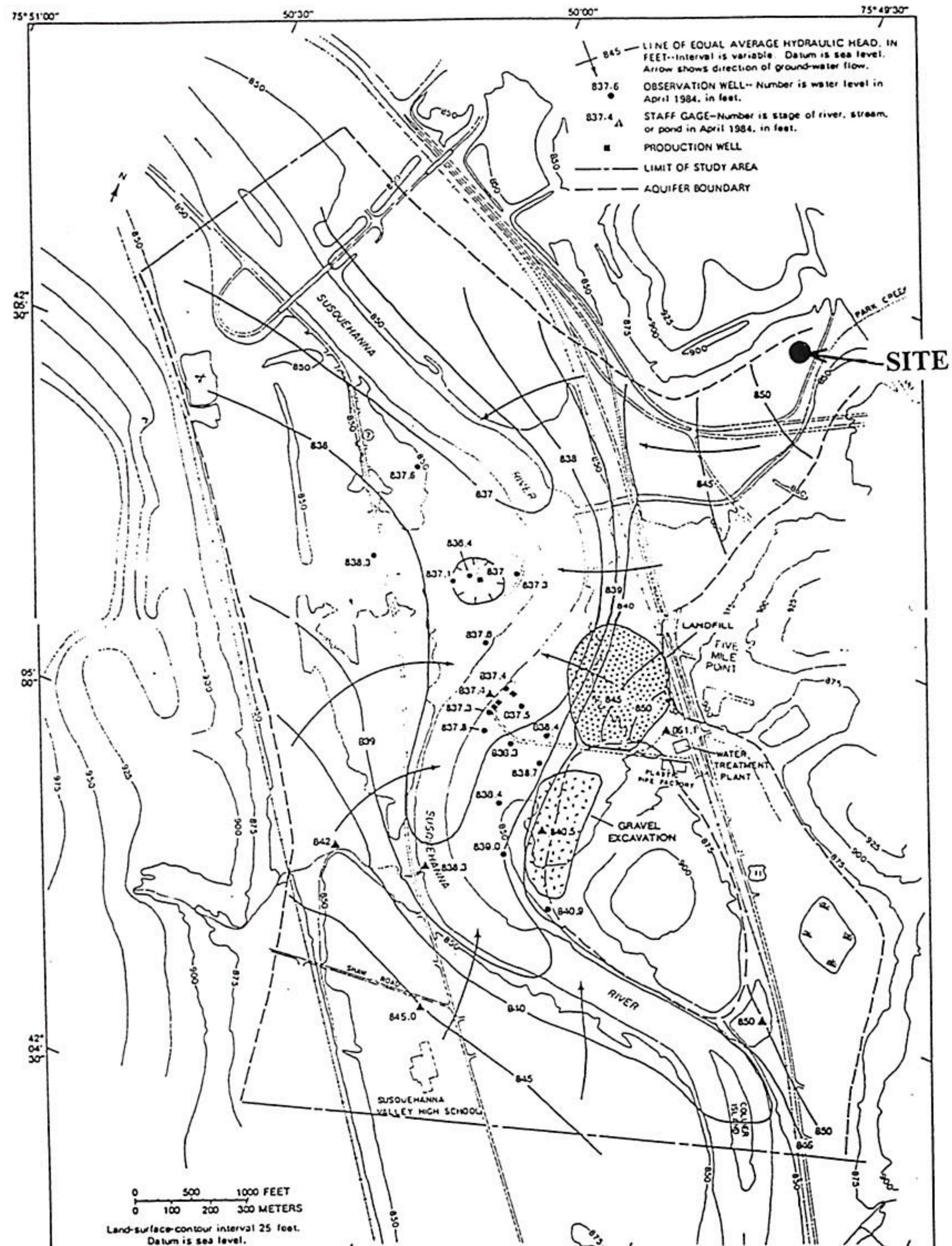
Sampling Date	MW-1	MW-2	MW-3	MW-4
December 1992	N/A	21	1200	N/A
May 1993	N/A	12	152	N/A
August 1993	N/A	23	304	N/A
November 1993	N/A	28	343	N/A
July 1994	N/A	14	907	N/A
January 1995	N/A	19	780	N/A
March 1995	N/A	23	760	250
June 1995	N/A	18	77.5	NS
July 1995	N/A	NS	NS	148.3
September 1995	N/A	33	460	130.0
November 1997	ND	23.2	207.9	113.7

Notes:

N/A = Not Analyzed
NS = Not Sampled
ND = Not Detected
All concentrations shown in units of micrograms per liter (parts per billion)

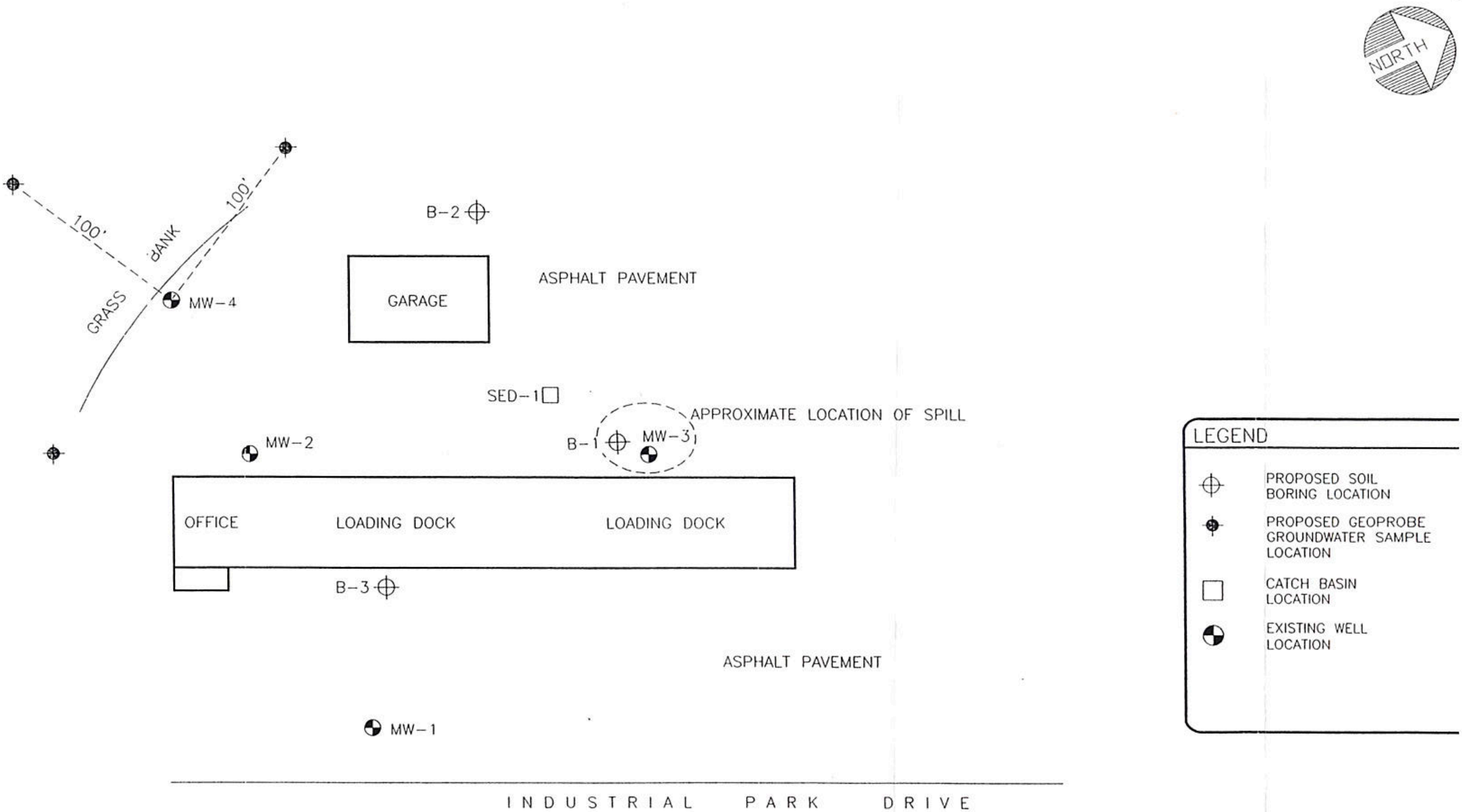


Title: Site Location Map TNT-Red Star Site Kirkwood, New York	LEADER	Project: 161.002	Drawn: MJW	Figure
Prepared For: USF-Red Star, Inc. 400 Delancy Street Newark, New Jersey	Leader Environmental, Inc 640 Kreag Road-Suite 300 Pittsford, New York 14534 (716) 248-2413 FAX (716) 248-2834	Date: 2/6/98 Scale: 1" = 2,000 ft.	Checked: PvS File Name: Site Map	1

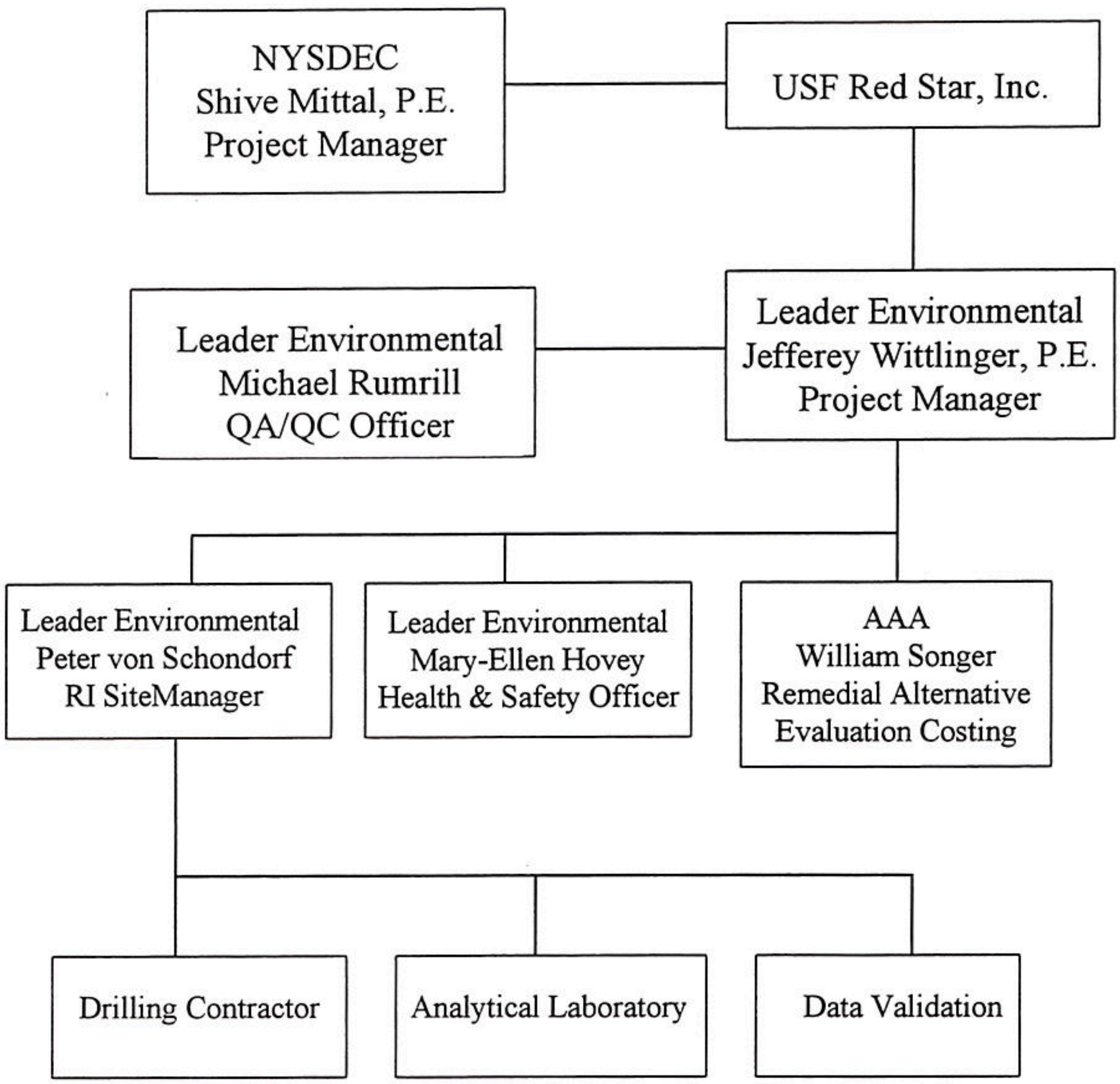


Base from Susquehanna River Basin Commission, 1974 1:2400

Title: Potentiometric Surface Map TNT-Red Star Site Kirkwood, New York	LEADER Leader Environmental, Inc 640 Kreag Road-Suite 300 Pittsford, New York 14534 (716) 248-2413 FAX (716) 248-2834	Project: 161.002	Drawn: MJW	Figure
Prepared For: USF-Red Star, Inc. 400 Delancy Street Newark, New Jersey		Date: 5/6/98	Checked: PvS	2
		Scale: 1" = 1,600 ft.	File Name: RI/FS	



l Notes . PLAN ADAPTED FROI IRE PROVIDED BY AA IONMENTAL, INC. ATIONS OF SITE FEATURES APPROXIMATE.	Title: PROPOSED SAMPLING LOCATION PLAN Prepared For: USF RED STAR EXPRESS, INC.	Project: PHASE I REMEDIAL INVESTIGATION Location: KIRKLAND, NEW YORK	Project: 161.002 Date: 4/98 Scale: NO SCALE	Drawn: WSW Checked: PVS File Name: SITEPLAN	Figure: 3



Title: Project Management Organization
TNT-Red Star Site
Kirkwood, New York

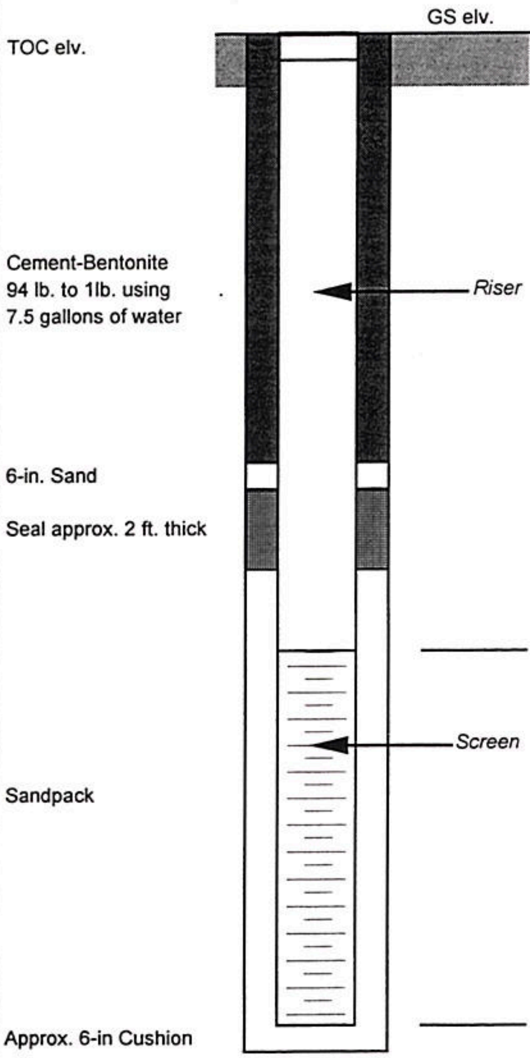
Prepared For: USF-Red Star, Inc.
400 Delancy Street
Newark, New York

LEADER
Leader Environmental, Inc
640 Kreag Road-Suite 300
Pittsford, New York 14534
(716) 248-2413
FAX (716) 248-2834

Project: 161.002	Drawn: MJW	Figure	4
Date: 6/20/98	Checked: PvS		
Scale: NS	File Name: QAPP		

WELL CONSTRUCTION DIAGRAM

Project: TNT Red Star Express   Location: Kirkwood, N.Y.   Well No.: ______
Permit No.: ______



DRILLING SUMMARY

Drilling Company: ______   Drillers: ______
Drill Rig/Model: ______
Borehole Diameters: Approx. 6.5-in.   Drilling Fluid: Water
Bits/Depths: ______
Total Depth: ______   Depth To Water: ______
Supervisor Geologist: ______

WELL DESIGN

Casing Material:	PVC	Diameter:	2-in.
Screen Size:	To be determined	Diameter:	2-in.
Slot Size:	To be determined	Setting:	
Filter Material:	Sand	Setting:	
Seals Material:	Bentonite	Setting:	
Grout:	Cement-Bentonite	Setting:	
Surface Casing Material:	Flush Mounted Steel	Setting:	

TIME LOG

	Started	Completed
Drilling:		
Installation:		
Development:		

WELL DEVELOPMENT

Method: ______
Static Depth to Water: ______
Pumping Depth To Water: ______
Pumping Rate: ______   Spec. Capacity: ______
Volume Pumped: ______

Title: Monitoring Well Design TNT-Red Star Site Kirkwood, New York	LEADER	Project: 161.002	Drawn: MJW	Figure: 5
Prepared For: USF-Red Star, Inc. 400 Delancy Street Newark, New Jersey	Leader Environmental, Inc 640 Kreag Road-Suite 300 Pittsford, New York 14534 (716) 248-2413 FAX (716) 248-2834	Date: 2/6/98	Checked: PvS	
		Scale: NTS	File Name:	