REMEDIAL INVESTIGATION/FEASIBILITY STUDY WORK PLAN

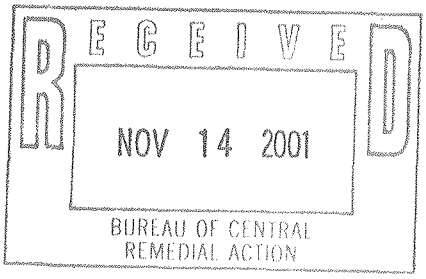
BOUCHARDS JUNKYARD
TOWN OF NEW LEBANON, COLUMBIA COUNTY, NEW YORK

(SITE REGISTRY NO. 4-11-014)

WORK ASSIGNMENT NO. D003600-28

PREPARED FOR

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION



BY

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SYRACUSE, NEW YORK

NOVEMBER 2001

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1.0 INTRODUCTION

As part of New York State's program to investigate and remediate hazardous waste sites, the New York State Department of Environmental Conservation (NYSDEC) has issued a Work Assignment to Dvirka and Bartilucci Consulting Engineers (D&B) of Woodbury, New York. The Work Assignment has been issued under the Superfund Standby Contract between D&B and NYSDEC, and involves conducting a remedial investigation and feasibility study (RI/FS) for the Bouchards Junkyard Site, Town of New Lebanon, Columbia County, New York. The registry number for this New York State Superfund Class 2 inactive hazardous waste site is 4-11-014. The RI/FS for this site is being performed with funds allocated under the New York State Superfund Program.

This RI/FS Work Plan has been prepared to perform the remedial investigation and prepare a feasibility study for the Bouchards Junkyard Site. Implementation of the Work Plan will define the nature, extent and source of contamination, identify the risks associated with the contamination, and develop and evaluate alternatives for remediation of the site. The scope of work will be sufficient for the NYSDEC to prepare a Proposed Remedial Action Plan and issue a Record of Decision.

The RI/FS Work Plan presents the components of the RI/FS and a description of the tasks to be performed. It also describes specific methods and procedures that will be used to conduct the field investigation. The Project Management Work Plan is a separate document that includes administrative details regarding project staffing, proposed subcontractors, schedule and budget.

2.0 SUMMARY OF EXISTING INFORMATION

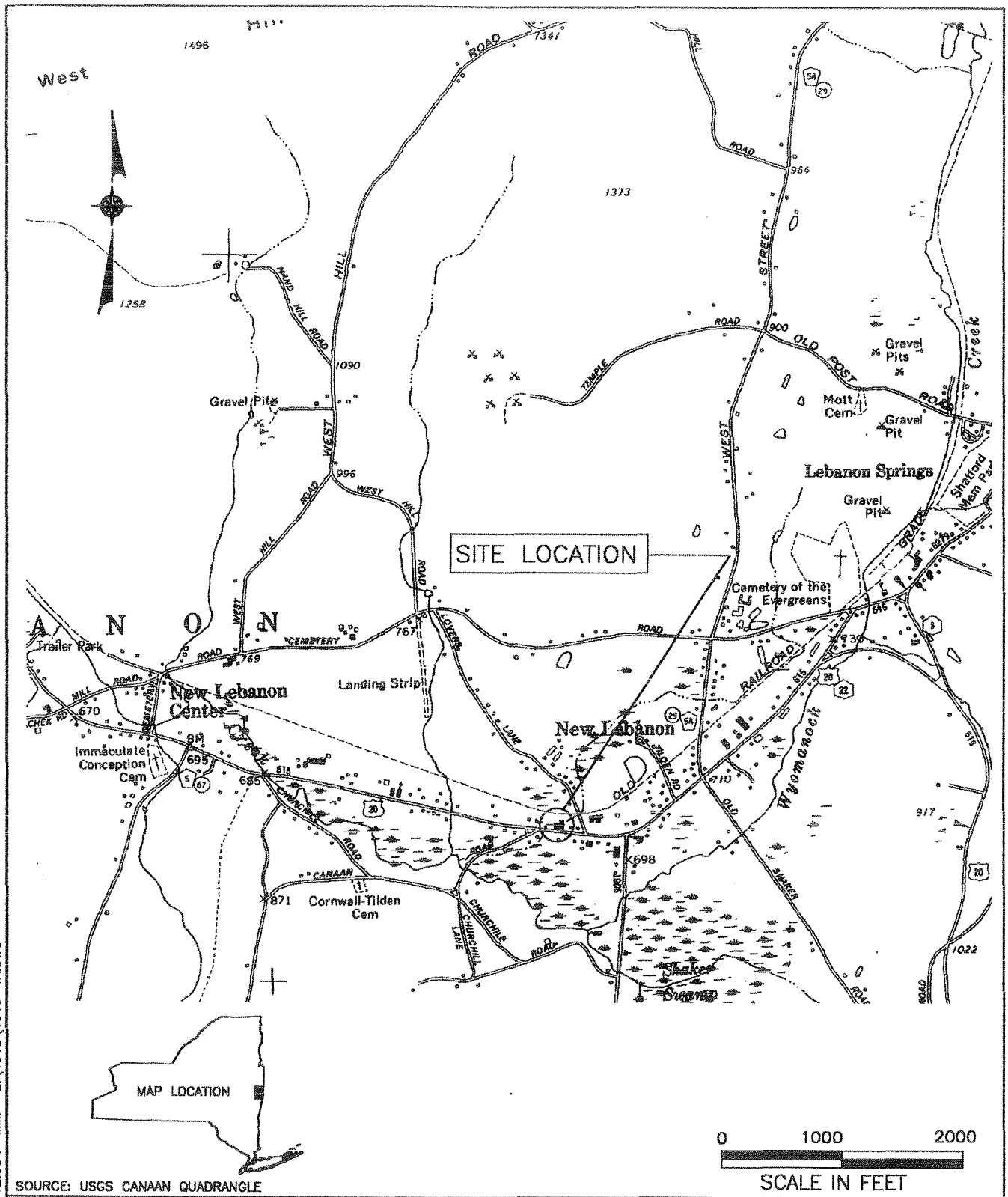
2.1 Site Location, Ownership and Access

The Bouchards Junkyard Site is located in a rural agricultural area on United States (US) Route 20 in the Town of New Lebanon, Columbia County, New York, approximately 0.25 miles west of New Lebanon and 25 miles southeast of the City of Albany (see Figure 2-1). The site is the location of a former automobile junkyard that closed in the early 1970's when the owner was discovered to be involved in stolen automobile parts distribution. The site is currently owned by Mr. Ralph Chittenden, who also owns adjacent property.

Access to the site is via a driveway along US Route 20 that leads to a gravel parking lot for three buildings at the site. Gravel drives traverse the site allowing access to other portions of the property. The site is not fenced.

2.2 Site Description

The approximately 17-acre property consists of an irregularly shaped parcel of land that is relatively flat with a gentle downward slope to the southeast. Topographic relief across the site is less than 30 feet. Three buildings are currently located at the site. The site is located in a rural community near the intersection of US Route 20 and New York State Route 22. The site is bounded on the north and east by Lovers Lane, on the south by US Route 20, and on the west by private property (see Figure 2-2). Wyamanock Creek, a New York State Class C (TS) stream, is located southwest of the site and flows from southeast to northwest. Tributaries flow from north to south along the eastern and western boundaries of the site.



BOUCHARDS JUNKYARD
NEW LEBANON, NEW YORK

SITE LOCATION

Dvirka and Bartilucci Consulting Engineers

FIGURE 2-1

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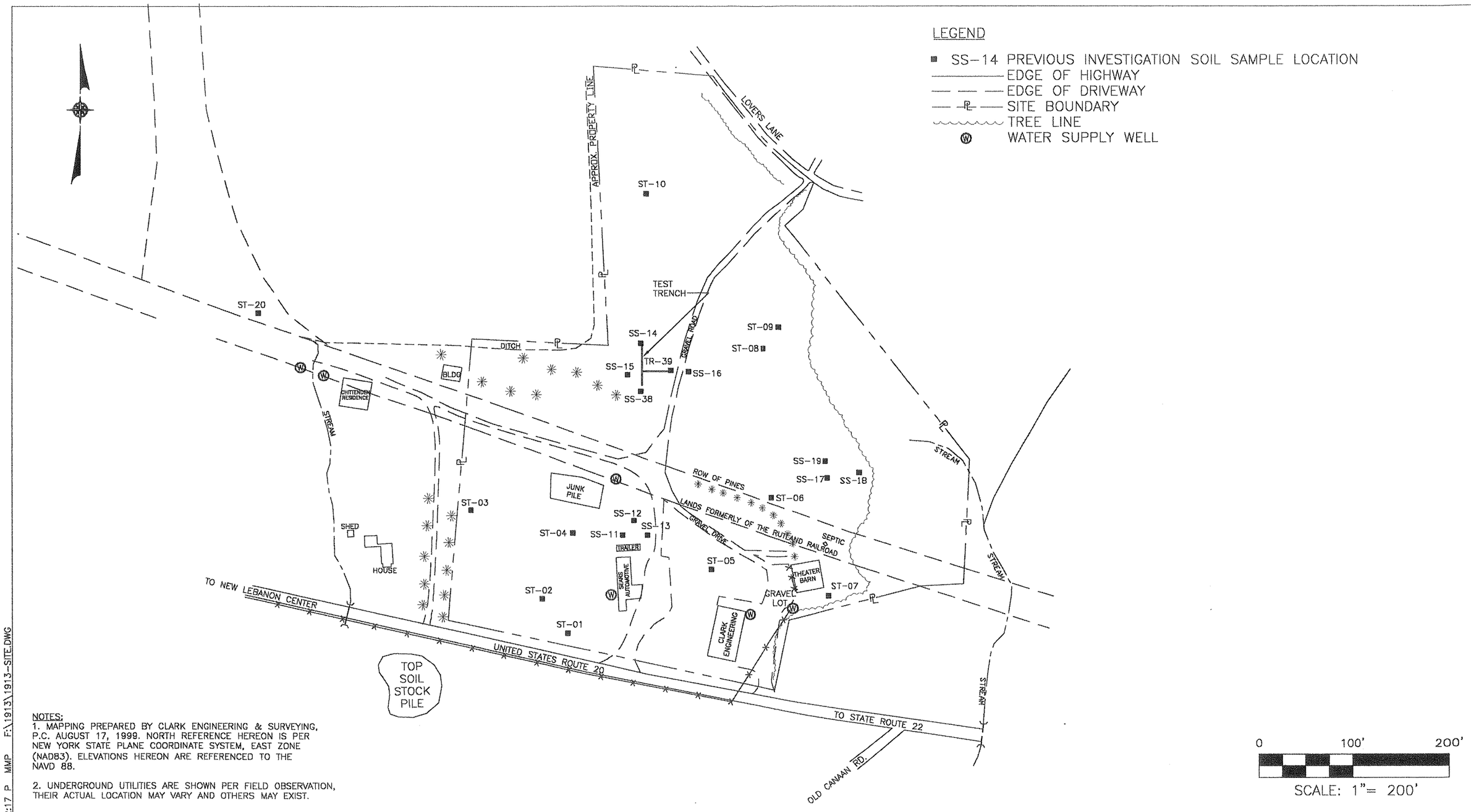

NOTES:
1. MAPPING PREPARED BY CLARK ENGINEERING & SURVEYING, P.C. AUGUST 17, 1999. NORTH REFERENCE HEREON IS PER NEW YORK STATE PLANE COORDINATE SYSTEM, EAST ZONE (NAD83). ELEVATIONS HEREON ARE REFERENCED TO THE NAVD 88.

2. UNDERGROUND UTILITIES ARE SHOWN PER FIELD OBSERVATION, THEIR ACTUAL LOCATION MAY VARY AND OTHERS MAY EXIST.

BOUCHARDS JUNKYARD SITE
NEW LEBANON, NEW YORK

SITE PLAN

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

FIGURE 2-2

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The buildings are rented by three businesses and are occupied by employees and customers during business hours. The businesses are a theater group, automobile repair shop and engineering company. The remainder of the property is utilized as farmland. South of the property, across US Route 20, are a construction company, apartment buildings and residential properties. Residential properties are located to the north, east and west of the site. Agricultural lands are situated to the northwest.

2.2.1 Geology

Unconsolidated deposits at the site have been mapped as outwash sands and gravels (Cadwell and Dineen, 1986). Outwash sands and gravels consist of coarse to fine gravels with sand. These deposits are associated with proglacial fluvial deposition and are generally well rounded and stratified. The texture of these units is generally finer away from the ice border and the thickness is variable (6 to 60 feet).

Little is known about the geology or hydrogeology of the bedrock at the site. Bedrock at the site is approximately 90 feet deep according to reports of a water supply well at the site. Bedrock geology in the vicinity of the site has been mapped as the Walloomsac formation of the Lorraine, Trenton and Black River Groups (Fisher, et. al., 1970). The Walloomsac formation is Middle Ordovician in age. This formation is composed of slate, phyllite, schist and metagraywacke.

2.2.2 Hydrogeology

Five potable water supply wells were observed on or near the site during a May 31, 2001 site visit. Four of the wells are reported to be shallow dug wells, however, details regarding the construction and use of these wells are unknown. The fifth well, utilized at the Clark Engineering and Surveying building, was installed by Mr. Chittenden in 1990. The well has a total depth of 102 feet with a casing depth of 91 feet. It is

reported that flow from the well is approximately 50 gallons per minute and the static water level is 4 feet. Residences and businesses in the vicinity of the site are suspected to have private water supply wells.

2.2.3 Surface Water Hydrology

Mean annual precipitation for Columbia County is 39.26 inches per year (Soil Survey Columbia County, New York, 1989). Wyomanock Creek is located to the south of the site across US Route 20 and flows from southeast to northwest in the vicinity of the site. Wyomanock Creek drains into Kinderhook Creek approximately 3.2 miles west of the site. Kinderhook Creek flows west into the Hudson River, which empties into the Atlantic Ocean. The channel of a small unnamed tributary to Wyomanock Creek is located along the eastern portion of the site.

A north-south oriented ditch collects run-off from the parking lot and buildings is also tributary to Wyomanock Creek and is located at the south central portion of the site. A second ditch forming the perimeter of a farm field originates adjacent to the northwest corner of the site and follows the western boundary of the property until it flows southward beneath US Route 20 and offsite. Shaker Swamp is located across US Route 20 to the south and southeast of the site. Shaker Swamp is a NYSDEC designated Class 1 (CA-4) wetland.

2.3 Site History

The Bouchards Junkyard Site is the location of a former automobile junkyard operated from at least 1959 through February 1969 by Mr. Henri Bouchard. Mr. Weisberg purchased the property from the widow of Mr. Bouchard in February 1969. New York State Police closed the automobile junkyard in the early 1970's when the owner at that time (Mr. Edward Weisberg) was discovered to be involved in stolen automobile parts distribution. In July 1998, General Electric (GE) provided NYSDEC with an internal memorandum dated October 10, 1980, indicating that drums of oil and Pyranol (polychlorinated biphenyls or PCBs) had either been disposed or burned at the site. All salvage was removed from the site in the late 1970's as the result of the business closure due to Mr. Weisberg's conviction. Since the removal of the junk cars a theater group, automobile repair shop and engineering company are tenants on the site, however, most of the property is utilized as agricultural farmland.

NYSDEC collected surface and subsurface soil samples and water samples from private water supply wells on or near the property on September 28, 1998. Following this sampling program, discussions ensued between NYSDEC and GE regarding continuing studies at the site. That effort (January 2000) resulted in a sampling plan for adjacent properties, but not the junkyard itself. GE did not conduct this work.

Based on the sampling data, site conditions and GE's non-cooperative position, NYSDEC listed the site as a Class 2 Inactive Hazardous Waste Site. The site was referred to the Division of Environmental Enforcement in an attempt to get GE to enter into an Order on Consent to conduct a RI/FS. This effort was unsuccessful and a referral to State Superfund action was provided on November 30, 2000.

2.4 Contamination Assessment

On September 28, 1998, NYSDEC collected 36 surface and subsurface soil samples and five water samples from private water supply wells on or near the property. These samples were collected to verify information provided by GE and to identify human health or environmental impacts. The sample locations are shown in Figure 2-2. Subsequent sampling at an adjacent daycare facility (reportedly no longer doing business at this location) was conducted by the New York State Department of Health in January 1999.

Results from the September 1998 sampling program conducted by NYSDEC indicated that PCBs were present in on-site soils ranging from 1 to 120 parts per million (ppm). Five soil samples had concentrations above 50 ppm, the hazardous waste level in New York State.

Five potable water supply wells were sampled for hazardous constituents by NYSDEC. Groundwater samples were collected from each of the five wells on September 28, 1998. The groundwater samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs) pesticides, PCBs and Target Analyte List (TAL) metals. There were no VOCs, pesticides or PCBs detected in these groundwater samples with the exception of the VOC trichloroethene, which was detected in the water sample collected from the Chittenden well at an estimated concentration of 2 micrograms per liter (µg/L). Several metals were detected in each of the water samples that were collected.

2.5 Potentially Responsible Parties

Potentially responsible parties (PRPs) include the former owners who operated the junkyard, transporters and the industries whose wastes were disposed at the junkyard,

as well as subsequent owners of the land. The owner operators were Mr. Henri Bouchard doing business as Bouchard's Auto Parts (from approximately 1959 to 1969) and Mr. Edward Weisberg, owner of Bouchard's Auto Parts (from 1969 to 1971). The subsequent property owner is Mr. Ralph Chittenden, who was not involved with junkyard operations at the site.

GE was identified by NYSDEC as a PRP as a result of an internal memorandum indicating that waste was disposed at the site. GE prepared a Sampling Work Plan that was not implemented.

3.0 SCOPE OF REMEDIAL INVESTIGATION/FEASIBILITY STUDY

3.1 Objectives and Approach

The purpose of the Bouchards Junkyard Site RI/FS is to determine the impacts from hazardous waste disposal, ascertain whether completed routes of exposure to site contaminants exist and to develop a remedial action that will be protective of human health and the environment. The scope of work will be sufficient for the NYSDEC to prepare a Proposed Remedial Action Plan and issue a Record of Decision.

The approach to the RI/FS for the Bouchards Junkyard Site is to review existing data, fill data gaps, and interpret the old and new data on a site-wide basis. Using this information, a qualitative human health exposure assessment and fish and wildlife analysis will be performed. Based on the findings of the remedial investigation and risk assessment, remedial measures will be developed and evaluated in a feasibility study and a remedy recommended.

3.2 Remedial Investigation

The remedial investigation will include a field investigation, quality assurance/quality control (QA/QC) program, health and safety program, evaluation of impact on human health and ecological resources, remedial investigation report, public meeting, a supplemental remedial investigation, if necessary, and development of interim remedial measures, also if necessary. These tasks are described below.

3.2.1 Health and Safety Plan

A site specific health and safety plan (HASP) is included in Section 7. The HASP provides guidance to maximize health and safety of on-site workers during various RI/FS

tasks, including sampling, drilling, test pit excavation, surveying and other related activities. This will set forth guidelines for health and safety supervision, air monitoring, medical monitoring, personal protective equipment, site controls, safe work practices, and decontamination.

In addition to worker monitoring described in the site specific HASP, community air monitoring will be conducted during site activities to minimize the potential exposure of off-site residences, businesses and individuals not associated with the project to potential airborne contaminant releases. In particular, volatile organic compounds (VOCs) and particulates (i.e. dust) will be monitored on the downwind perimeter of designated work areas during site activities using real-time measuring instruments. Community air monitoring will be performed in accordance with the New York State Department of Health Generic Community Air Monitoring Plan (CAMP). A table indicating action levels and required response actions, along with the generic CAMP are included in Appendix B.

3.2.2 Quality Assurance Project Plan

A Quality Assurance/Quality Control (QA/QC) Plan is included in Section 6. Deviations from protocols specified in the QA/QC Plan will be subject to NYSDEC approval.

All laboratory analytical work will be performed by a NYSDOH ELAP approved laboratory certified in all categories of Analytical Services Protocol (ASP), Contract Laboratory Protocol (CLP), and Solid and Hazardous Waste analytical testing. A Data Usability Summary Report (DUSR) will be included in the RI Report for each round of analytical work. Category B deliverables will be retained in the project files and available for full data validation by a qualified independent third party, if required.

3.2.3 Field Investigation

The field investigation will include several work elements and will be conducted over various areas on the site and some locations off-site. Permission to access the site has been obtained from the property owner by NYSDEC. Permission to access the adjacent off-site properties for the purpose of inspection, surveying, drilling, test pit excavation, sampling or other investigation related activities will be obtained by NYSDEC prior to the initiation of off-site activities. The properties and property owners will be identified and provided to NYSDEC prior to the field investigation.

The field investigation elements for the Bouchards Junkyard Site will include the following:

- Base Map Development
- Grid Network Survey
- Surface and Shallow Subsurface Soil Sampling
- Geophysical Survey
- Surface Water and Surface Water Sediment Sampling
- Test Pit Excavation
- Subsurface Soil Sampling
- Soil Borings and Monitoring Well Installation
- Hydraulic Conductivity Testing
- Water Level Monitoring
- Monitoring Well Development and Sampling
- Water Supply Sampling
- Surveying and Mapping

A summary of the field investigation program is provided in Table 3-1. A summary of the sampling program is provided in Table 3-2. Further description of investigation procedures and techniques are provided in Section 5.

Table 3-1
BOUCHARDS JUNKYARD
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
FIELD INVESTIGATION SUMMARY

Program Element	Description
1. Base Map Development	A base map for the site will be compiled from aerial photography and an on-site ground control survey. The map will include two-foot, survey-verified contours and have a scale of 1 inch equals 100 feet. The map will also include site features, such as existing structures, sampling locations, surface water bodies, topography and certified property boundaries.
2. Grid Network Survey	A grid with 50-foot node spacing will be established on site for use in locating geophysical lines, unbiased soil samples and other field investigation activities.
3. Surface and Shallow Subsurface Soil Sampling	247 surface soil samples and 234 shallow subsurface (approximately 2 feet below grade) will be collected and analyzed. 234 unbiased surface soil samples and 234 unbiased shallow subsurface soil samples will be collected from node points on the 50-foot grid network. The samples will be analyzed to characterize soil chemistry. All 468 samples (234 surface and 234 shallow subsurface) will be analyzed for PCBs in the field, using immunoassay testing, and 10% of these samples will be analyzed at a laboratory. 10 of the unbiased samples will be selected, based on visual screening, for VOC, SVOC, pesticide, TAL metals and cyanide analyses. 13 biased samples will be collected at locations exhibiting stained soil, stressed vegetation or identified through background research as potentially contaminated. The biased samples will include at least 1 off-site composite sample from the topsoil stockpile located south of Route 20, south of the site. 3 biased samples will be collected as background samples from off-site locations (1 sample collected from railroad bed). The 13 biased samples will be analyzed for TCL+30 organic compounds, TAL metals and cyanide.
4. Geophysical Survey	An electromagnetic geophysical survey will be conducted over the site using an EM-61 to locate possible buried drums, scrap metal or underground storage tanks (USTs). The geophysical survey will be conducted on traverses across the site at 5-foot intervals. EM-61 surveys can accurately delineate size and orientation of buried metal objects, and can discern between small metal debris, such as auto parts and larger objects, such as metal drums or USTs.
5. Surface Water and Surface Water Sediment	Two (2) rounds of 10 surface water samples will be collected. The rounds will occur during seasonally wet and dry conditions. 10 surface water sediment samples will also be collected at each of the surface water sample locations. Samples will be analyzed for TCL+30 organic compounds, TAL metals and cyanide. Surface water samples will also be analyzed for total hardness. Sediment samples will also be analyzed for total organic carbon (TOC).
6. Test Pit Excavation	30 test pits will be constructed to attempt to identify anomalous geophysical results, determine extent of disturbed soils, evaluate possible leaching of contaminants from the ground surface and locate possible burn pits or excavations. Test pit locations will be determined by the results of the geophysical survey, historical research, aerial photography, topography, site reconnaissance and surface soil sample results.

Table 3-1 (continued)
BOUCHARDS JUNKYARD
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
FIELD INVESTIGATION SUMMARY

Program Element	Description
7. Subsurface Soil Sampling	30 subsurface soil samples will be collected from the test pits. Subsurface soil samples will be collected to determine the depth of subsurface soil contamination and to identify sources of possible groundwater contaminants. Subsurface soil samples will be analyzed for TCL+30 organic compounds, TAL metals and cyanide.
8. Monitoring Well Installation	Six (6) soil borings will be installed to depths of approximately 30 feet to characterize subsurface soils. Continuous split spoon samples will be collected and screened with a PID. Six (6) water table monitoring wells will be installed in each soil boring. The wells will be constructed with 2-inch diameter PVC with 10-foot screens that straddle the water table.
9. Hydraulic Conductivity Testing	Hydraulic conductivity values will be determined for each of the six (6) wells by performing falling and rising head tests using the Bouwer and Rice method.
10. Water Level Monitoring	A rain gauge and temporary staff gauges will be installed in the two streams on either side of the site. Water levels at the monitoring wells and staff gauges will be measured and recorded on a periodic basis which, at a minimum, will coincide with groundwater and surface water sampling events.
11. Monitoring Well Sampling	Two (2) rounds of groundwater samples (11 per round) will be collected from each of the 6 monitoring wells. One round will correspond with low groundwater elevations (Fall of 2001) and the other round will be collected during high groundwater conditions (Spring of 2002). Each sample of the first round will be analyzed for TCL + 30 organic compounds, TAL metals (filtered and unfiltered) and cyanide. During the second round, analyses will be for TCL+10 VOCs and PCBs.
12. Water Supply Sampling	Two (2) rounds of water supply samples (5 per round) will be collected from 5 water supply wells. One round will correspond with low groundwater elevations (Fall of 2001) and the other round will be collected during high groundwater conditions (Spring of 2002). Each sample of the first round will be analyzed for TCL + 30 organic compounds, TAL metals (filtered and unfiltered) and cyanide. During the second round, analyses will be for TCL+10 VOCs and PCBs.
13. Surveying and Mapping	All new monitoring wells, selected sampling locations, test pits, staff gauges and other points of interest determined during the investigation will be surveyed for location and elevation by a New York State licensed surveyor and located on the base map.

Table 3-2
BOUCHARDS JUNKYARD SITE
REMEDIAL INVESTIGATIONSAMPLING MATRIX

Program Element	Environmental Media	Sample Type/Depth	Number of Samples	Equipment	Sample Analyses
Surface Soil Sampling	Surface Soil	Grab samples from surface soil (0 to 2 inches).	23	Disposable polyethylene or decontaminated stainless steel scoop.	TCL +30, TAL and CN.
Surface and Shallow Subsurface Soil Sampling	Surface Soil and Shallow Subsurface Soil	Grab samples from surface soil (0 to 2 inches) and from 2 feet below grade.	468 (46)	Disposable polyethylene or decontaminated stainless steel scoop and split spoon or dedicated direct push sampler.	PCBs by immunoassay (Laboratory confirmation by EPA Method 8082)
Subsurface Soil Sampling	Subsurface Soil	Grab samples from test pits; depths to be determined in field.	30	Disposable polyethylene or decontaminated stainless steel scoop.	TCL + 30, TAL and CN.
Surface Water Sampling (Round 1)	Water	Grab samples from below stream surface.	10	Sample container.	TCL +30, TAL, hardness and CN.
Surface Water Sediment Sampling	Sediment	Grab samples of stream sediment.	10	Disposable polyethylene or decontaminated stainless steel scoop.	TCL + 30, TAL, CN and TOC.
Surface Water Sampling (Round 2)	Water	Grab samples from below stream surface.	10	Sample container.	TCL +30, TAL, hardness and CN.
Well Sampling (Round 1)	Groundwater	At surface of water in well after purging well.	11	Disposable polyethylene bailer.	TCL + 30, TAL (total and dissolved) and CN.
Well Sampling (Round 2)	Groundwater	At surface of water in well after purging well.	11	Disposable polyethylene bailer.	TCL VOC + 10 and PCBs.
Trip Blanks	Aqueous	Laboratory provided distilled water.	4*	Sample supplied by laboratory.	TCL VOC + 10.
Matrix Spike/ Matrix Spike Duplicates	Aqueous	Surface water and groundwater (split of sample).	4**	Sample container or disposable polyethylene bailer.	TCL + 30, TAL and CN.
Matrix Spike/ Matrix Spike Duplicates	Soil/Sediment	Soil/sediment (split of sample).	5**	Disposable polyethylene scoop.	TCL + 30, TAL and CN.

*One trip blank will accompany each shipment of aqueous samples requiring volatile organic compound analysis.
**One MS/MSD for each media for every 20 samples collected or one every two weeks if fewer than 20 samples.
Note: No field blanks will be collected as per New York State Department of Environmental Conservation guidance.

3.2.4 Human Health Exposure Assessment

A human health exposure assessment will be conducted when the investigation data have been evaluated. The qualitative exposure assessment will address the potential exposure routes for identified contaminants and will identify potentially affected on-site and off-site receptors.

The goals of the exposure assessment are to:

- Provide qualitative analysis of human health risks under current site conditions, including identification of contaminant migration pathways and potential receptors.

- Provide a basis for determining contamination that can remain on-site while providing adequate protection of human health.

The approach to be used to perform the risk assessment for the Bouchards Junkyard Site will be to identify contaminants and media of concern at the site based on a comparison to standards, criteria and guidelines (SCGs) selected for the site. The routes of exposure to these contaminants and media will be defined, potential receptors identified and a determination will be made as to whether the pathways are complete or incomplete.

3.2.5 Fish and Wildlife Impact Analysis

A Fish and Wildlife Impact Analysis through Step II-B will be performed in accordance with the NYSDEC Division of Fish and Wildlife guidance memorandum entitled "Fish and Wildlife Impact Analysis", dated October 1994. Steps beyond IIB will be conducted as appropriate during the feasibility study based on the results of the remedial investigation.

3.2.6 Remedial Investigation Report

A remedial investigation report will be prepared following completion of the field investigation. The RI Report will provide a description of the field activities, present data collected during the field investigation along with the selection of SCGs, present a physical description of site including geology and hydrogeology, and provide an analysis and interpretation of the available data in the context of existing site conditions. The report will include tabulated laboratory analytical results, site maps and a discussion of contaminant concentrations compared to SCGs. The human health exposure and environmental assessments will be provided as sections of the RI Report.

3.2.7 Public Meeting

A public informational meeting may be scheduled by the NYSDEC to explain the findings of the RI to the public. Results of the RI will be presented and technical questions regarding the methodologies and findings answered. Visual aids will be provided and may include enlarged site maps on poster boards, data summary sheets, photographs and/or slides of site activities.

3.2.8 Supplemental Remedial Investigation/IRM

In the event that further site characterization is required, a Supplemental RI will be scoped and implemented. Scoping will be conducted concurrently with the start of the feasibility study and may include data gathering for preliminary design of remedial alternatives. If an Interim Remedial Measure (IRM) is required, the scoping and implementation of the IRM will also be undertaken concurrently with the start of the feasibility study. The initiation of a Supplemental RI or an IRM is subject to approval by NYSDEC.

3.3 Feasibility Study

The major objective of the feasibility study will be to support an informed decision regarding which remedy best meets the objectives of the evaluation criteria given in 6NYCRR 375-1.10. With limited options for remedial actions, the scope of the FS will be focused. The FS will be conducted in three phases as described below.

A focused FS will include identification and screening of remedial technologies, development and preliminary evaluation of potentially applicable remedial alternatives, and a detailed analysis of alternatives. The FS will be prepared in accordance with the following documents:

- Technical and Administrative Guidance Memorandum (TAGM) on Selection of Remedial Actions at Inactive Hazardous waste sites - Revised HWR-90-4030, New York State Department of Environmental Conservation, May 15, 1990. Scoring, if performed, will be conducted by NYSDEC.
- Guidance on Conducting Remedial Investigations and Feasibility Studies Under CERCLA Interim Final, EPA-540/E 89/004. OSWER Directive 9355.30-1, U.S. Environmental Protection Agency Office of Emergency and Remedial Response, October 1988.
- OSWER Presumptive Remedy Guidance

3.3.1 Identification and Screening of Technologies

The FS will initially identify remedial technologies that could be potentially applicable, taking into account site-specific considerations. As such, this phase includes the following steps:

- Identification and characterization of areas and media requiring remediation based on SCGs, results of the RI and risk assessment.

- Development of remedial action objectives (RAOs) specifying the contaminants and media of concern and exposure pathways. RAOs will be based upon review of the background analytical results, exposure assessment and applicable guidance, including, but not limited to NYSDEC TAGM # 4046 "Determination of Soil Cleanup Objectives and Cleanup Levels" (1/94), NYSDEC DFW guidance "Technical Guidance for Screening Contaminated Sediments" (1/99), and NYSDEC TOGS # 1.1.1 "Ambient Water Quality Standards and Guidance Values" (6/98).

- Development of general response actions for each exposure pathway.

- Identification of potentially applicable remedial action technologies, including a description of the technologies and discussion of applicability to the site. Technologies that are not viable and cannot be implemented will be eliminated from further consideration. Potential general response actions include no action, isolation, containment, treatment or removal.

3.3.2 Development and Screening of Remedial Alternatives

Remaining technologies will be carried forward to the development of remedial alternatives. Remedial alternatives will be evaluated on a preliminary basis for effectiveness, implementability and relative costs. Effectiveness evaluation will include consideration of the following:

1. Potential effectiveness of process options in handling the estimated areas of volumes of media and meeting the remediation goals identified by the remedial action objectives.

2. Potential impacts to human health and the environment during the construction and implementation phase; and

3. Proven operation and reliability of the process with respect to the contaminants and conditions at the site.

Implementability will include both the technical and administrative feasibility of accomplishing the alternative. Administrative feasibility will consider institutional factors, such as the ability to obtain necessary permits, the ability to comply with certain

institutional aspects of the SCGs, the commercial availability and capacity of treatment, storage and disposal services, and the availability of equipment and skilled labor to implement the technology.

Preliminary costs include both capital and long-term operation and maintenance.

A list of technically feasible potential remedial alternatives will be prepared for review. Development of the alternatives will be conducted in consultation with NYSDEC. A scoping meeting will be conducted with NYSDEC to further develop and screen the alternatives, if required. The results of the screening process will include a list of alternatives to be carried forward for detailed evaluation.

3.3.3 Detailed Analysis of Alternatives

The detailed analysis of alternatives will include further refinement and/or modification of alternatives, including evaluation of treatability studies, if performed, and involve evaluation of the following factors in accordance with NYSDEC guidance.

- Overall protection of human health and the environment;
- Compliance with SCGs;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility and volume;
- Short-term effectiveness;
- Implementability;
- Cost;
- Regulatory agency acceptance; and
- Community acceptance.

The FS Report will include discussions of each of these evaluation criteria for each of the alternatives being considered. The alternatives will be evaluated based on a comparative analysis of each of the criteria. A preferred remedy will be recommended that is protective of human health and the environment, complies to the maximum extent practicable with SCGs and cleanup objectives, reflects a preference for a permanent remedy and is cost effective. The report will include limited site background and site characterization discussions, since this information will be available in the RI report. The discussions will be limited to only the information necessary to justify the findings of the FS. The FS Report will be stamped by a professional engineer licensed to practice engineering in the State of New York.

3.4 Proposed Remedial Action Plan and Public Meeting

The NYSDEC will prepare a Proposed Remedial Action Plan (PRAP) which describes the preferred remedy. Tables and figures from RI/FS reports to support the PRAP document will be provided. A public meeting will be conducted to discuss the findings of the feasibility study. Results of the RI/FS will be presented and visual aids provided.

4.0 PROJECT MANAGEMENT

4.1 Project Schedule and Key Milestones/Reports

The RI/FS schedule for the Bouchards Junkyard Site is provided in Figure 4-1. Key milestones are identified to monitor work progress. The following is the list of milestones proposed for this project:

Milestone 1: Submittal of the Draft RI/FS Work Plan.
Milestone 2: Submittal of Final RI/FS Work Plan.
Milestone 3: Submittal of the Draft Remedial Investigation Report.
Milestone 4: Submittal of the Final Remedial Investigation Report.
Milestone 5: Submittal of the Draft Supplemental Investigation Report (if necessary).
Milestone 6: Submittal of the Final Supplemental Investigation Report (if necessary).
Milestone 7: Submittal of the IRM Work Plan (if necessary).
Milestone 8: Submittal of the Draft Feasibility Study Report.
Milestone 9: Submittal of Final Feasibility Study Report.
Milestone 10: NYSDEC issuance of the Record of Decision.

4.2 Project Management, Organization and Key Technical Personnel

Dvirka and Bartilucci Consulting Engineers will be the prime consultant responsible for performance of the remedial investigation/feasibility study. Subconsultants and subcontractors proposed for this project include:

- Emilcott Associates, Inc. (health and safety).
- YEC, Inc. (MBE, surveying).
- Hager-Richter Geoscience, Inc. (WBE, geophysical survey)
- Parratt-Wolff, Inc. (subsurface soil sampling, test pit excavation and monitoring well installation).
- MITKEM, Inc. (MBE, sample analysis).
- Ecologic, Inc. (WBE, fish/wildlife assessment)

The project organization for this RI/FS, illustrating both management and project responsibility functions for the project team and key personnel, is provided in Figure 4-2.

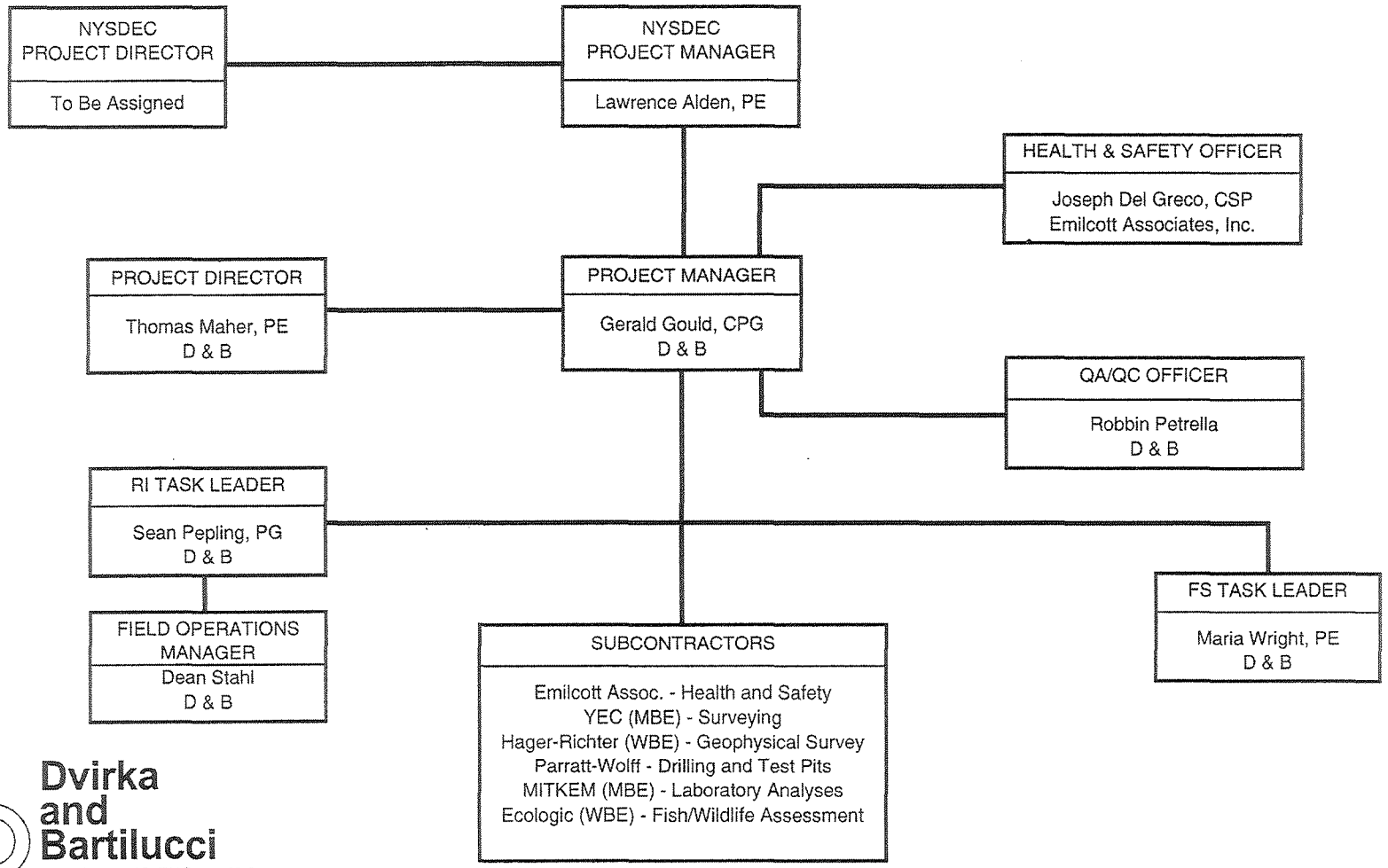
Figure 4-1
Project Schedule
Bouchards Junkyard Site RI/FS

Item	Action	Elapsed (days)	Duration (days)	Tentative Date
1.	Issue Work Assignment	(time zero)		4/23/01
2.	Work Assignment signed by Consultant	10	10	5/3/01
3.	Site Visit	20	10	5/13/01
4.	Submittal of M/WBE Utilization Plan	40	20	6/2/01
5.	Scoping Session	50	10	6/12/01
6a.	Submittal of Draft Project Management Work Plan	107	57	8/8/01
6b.	Submittal of Draft RI Work Plan, QAPP, HASP			
7.	DEC Review	121	14	8/22/01
8a.	Submittal of Final Project Management Work Plan and Budget	144	23	9/14/01
8b.	Submittal of Final RI Work Plan, QAPP, HASP			
9.	Notice to Proceed/Initiation of Field Activities	156	12	9/26/01
10.	Field Investigation Complete	218	62	11/27/01
11.	Submittal of Preliminary RI	278	60	1/26/02
12.	DEC Review	308	30	2/25/02
13.	Revisions of RI Report and WP Addendum	338	30	3/27/02
14.	DEC approval of second-phase work	368	30	4/26/02
15.	Conduct second round well samples and other second-phase RI work as necessary	388	20	5/16/02
16.	Submit Draft RI/FS and Detailed Analysis of Alternatives	428	40	6/25/02
17.	DEC Review	458	30	7/25/02
18.	Revise RI/FS Report	488	30	8/24/02
19.	DEC Approval of RI/FS Report	518	30	9/23/02
20.	Public Review and Remedy Selection	548	30	10/23/02

FIGURE 4-2

PROJECT TEAM ORGANIZATION CHART

BOUCHARDS JUNKYARD
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
TOWN OF NEW LEBANON, NEW YORK



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CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

5.0 FIELD OPERATION AND INVESTIGATION PLAN

5.1 Site Management Plan

5.1.1 Site Access and Security

The Bouchards Junkyard Site is located in the Town of New Lebanon in a rural area southeast of the City of Albany. The site is accessed via a driveway along US Route 20 that leads to a gravel parking lot for the three structures at the site (see Figure 2-2). Gravel drives traverse the site allowing access to other portions of the property. The site is not fenced.

The site is approximately 17 acres in size. The site is bounded on the north and east by Lovers Lane, on the south by US Route 20, and on the west by private property. Wyamanock Creek, a New York State Class C (TS) stream, is located southwest of the site and flows from southeast to northwest. Tributaries flow from north to south along the eastern and western boundaries of the site. Several ATV trails traverse the property.

Permission to access the site has been obtained from the property owner by NYSDEC. Permission to access the adjacent off-site properties, if required, for the purpose of inspection, surveying, drilling, test pit excavation, sampling or other investigation related activities, will be obtained by NYSDEC prior to the initiation of off-site activities. The properties and property owners will be identified and provided to NYSDEC prior to the field investigation.

Equipment, materials and supplies to be used in the field investigation will be removed each day or stored temporarily on site during the field investigation. Each night equipment left on site will be secured in or near support vehicles and excavations will be covered. If necessary, equipment and supplies will be removed from the site at night or on weekends.

A temporary decontamination pad will be installed on site at the beginning of the field investigation. The decontamination pad will consist of wood frame filled with crushed stone or

other suitable material that will prevent decontamination water from flowing out of the decontamination area, as well as prevent the accumulation of standing water. Wash water from steam cleaning will be allowed to drain into the site at designated areas on-site. These areas will be small pits that allow percolation of water while minimizing possible contact by workers, possible trespassers or wildlife. The pits will be covered with existing soil at the completion of site activities. At the completion of drilling and test pits, the decontamination pad will be dismantled and removed from the site.

5.1.2 Field Office

Due to the remote nature of the site and the onsite immunoassay field testing for PCBs (see Section 5.2.4), there will be a field office at the site. Project meetings will be held at the onsite field office when necessary. Deliveries will be made to the site, however, telephone and fax communications will occur through a local hotel or other means as may be necessary to maintain day to day project communications.

5.1.3 Organization and Responsibilities

D&B will have prime responsibility for managing the RI field program. Subcontractors to D&B that will be involved in the field investigation are identified in Section 4.2. Duties of the subcontractors are also identified in Section 4.2.

5.2 Field Activities Plan

The following is a description of the field activities to be conducted at the Bouchards Junkyard Site. These sections provide the scope of work to be performed under each task. Detailed procedures for sample collection, where applicable, are described in the QA/QC Plan in Section 6.0.

5.2.1 Base Map Development and Surveying

A base map for the site will be compiled from aerial photography and an on-site ground control survey. The map will include site features, such as roads, trails, existing water supply wells, surface water bodies and topography. The coordinate system for the map will be New York State Plane (NYSP). All relevant features of the site and adjacent areas will be plotted at a scale of 1 inch equals 100 feet. Topographic contours will be plotted at 2-foot intervals to an accuracy standard such that at least 90% of the features represented are plotted within +/- 1 foot. The vertical datum will be NAVD 88 or a datum relatable to NAVD 88. The map will be constructed using Autocad and topographic information will be presented in a separate layer.

Surveying for the base map and identification of investigation locations will be conducted in several phases. The first phase will involve the establishment of control points on the site. The control points will be used to locate a baseline for constructing the grid network (described below). A certified property boundary survey will also be conducted in order to prevent inadvertent trespassing onto neighboring properties. This property boundary survey will also be used for remedial design.

In late Fall, when the leaves have fallen off the trees, aerial photographs will be taken of the site. The aerial photographs will be used for preparation of the topographic map of the site described above. Further ground control may be surveyed at this time. If surveying is required at this time, previously established on-site benchmarks will be used for ground control.

Additional surveying will be conducted following the completion of the field work. During this phase of surveying, the locations and elevations of test pits, monitoring wells (including water level measurement reference points), surface water samples and other pertinent site features will be surveyed. These items will be plotted on the base map.

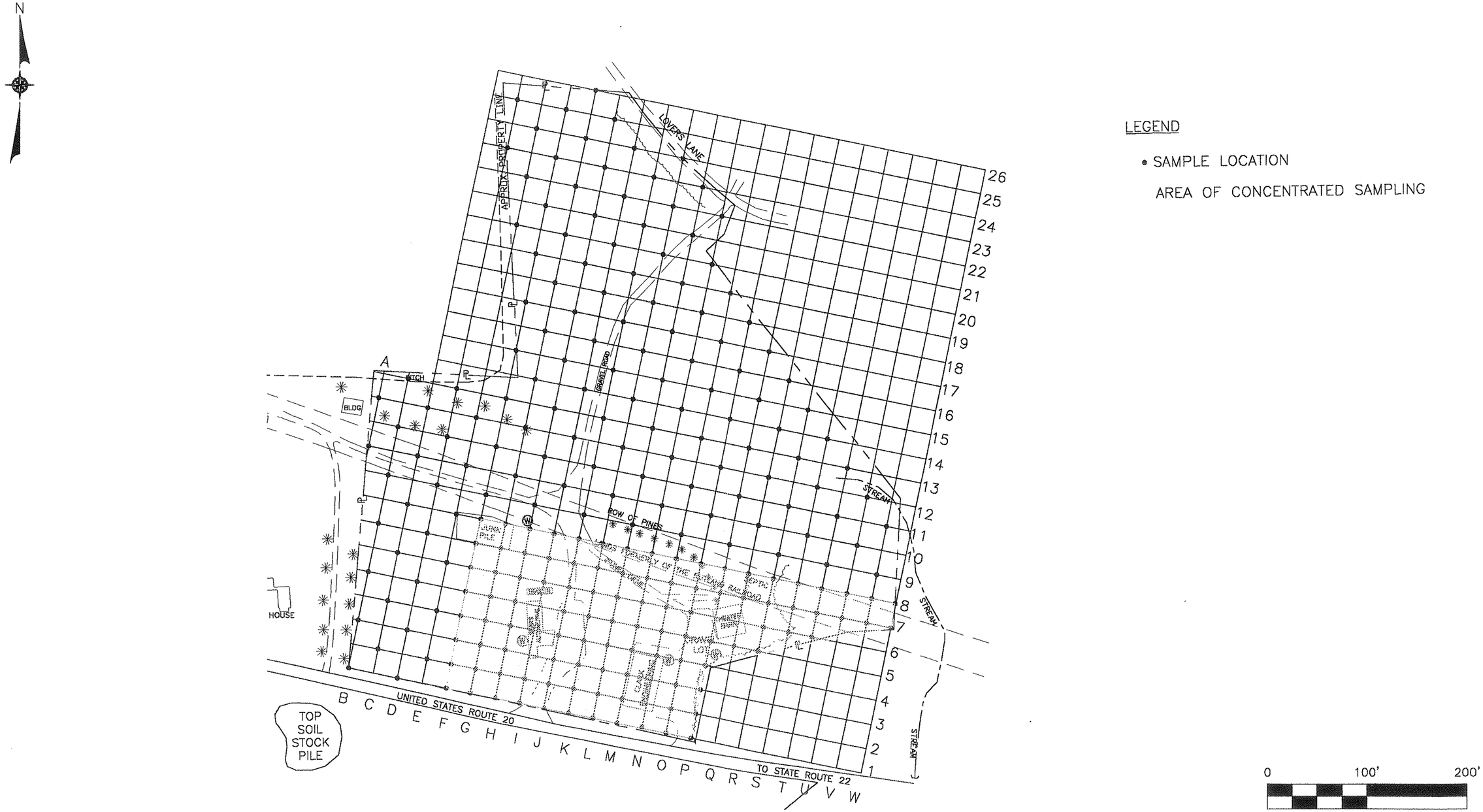
5.2.2. Site Clearing and Grid Network Survey

Site clearing, if necessary, will be performed to facilitate site access to conduct field activities. Additional site clearing, to the minimum extent possible, will be performed in order to facilitate the geophysical survey activities. Site clearing will occur concurrently with the grid network survey. Brush and tall grass will be cut or flattened to allow access to the grid lines and sample locations. Site clearing will be performed using a tractor-mounted brush hog or hand tools. Clearing will proceed in a manner that will minimize the generation of dust.

A grid network with 50 foot node spacing will be established over the site. The precision of the survey will be adjusted to reflect the purpose(s) to be met; i.e., geophysical survey. The grid will consist of a series of parallel north-south trending staked lines and a series of east-west trending staked lines as illustrated in Figure 5-1. The points on the lines will be located by making measurements from the surveyed baseline. The grid will include the 17 acre site and extend approximately 1250 feet north of the southern property line and 1100 feet east of the western property line. If it is determined that geophysical lines will be necessary on ungridded areas near the site, these lines will be located by measuring from marked node points or by using global positioning system (GPS) equipment and differential antenna in order to minimize disturbances to adjacent properties.

5.2.3 Geophysical Survey

A time domain electromagnetic induction metal detector (EM61) survey will be conducted at the site. This method is effective at detecting buried metal such as drums and underground storage tanks. The EM61 data will be collected at approximately 8-inch intervals along lines spaced 5 feet apart across the accessible portions of the site. This grid spacing is optimal for identifying possible buried drums, but can resolve objects as small as 12-inches in diameter.



BOUCHARDS JUNKYARD SITE
NEW LEBANON, NEW YORK

GRID NETWORK

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

FIGURE 5-1

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The EM61 survey lines will be oriented along the grid network established for the site. The EM61 produces a pulsed primary magnetic field in the earth that induces eddy currents in the subsurface and in nearby metal objects. The receiver is timed to measure the secondary magnetic field produced by eddy currents after those in the ground have dissipated. Data is recorded on a digital data logger. This method is relatively unaffected by nearby cultural interferences such as buildings.

5.2.4 Surface and Shallow Subsurface Soil Sampling

Previous environmental investigation identified PCBs in surface and subsurface soils at concentrations ranging from 1 to 120 ppm at the site. Disposal practices used at the site are unknown and the PCBs appear to be distributed across the site. Agricultural use of the property may have resulted in the spreading of PCBs across the site through tilling of the land. Based on the limited knowledge of site practices and size of the site, a large number of soil samples will be required to adequately characterize the distribution of affected soil. In an attempt to provide sufficient data in a cost effective manner, soil samples will be analyzed on-site for PCBs using immunoassay methodology.

RaPID Assay® test kits will be used to perform rapid and reliable quantitative immunoassay testing of soil samples for PCBs. RaPID Assay® test kits have been validated as USEPA SW-846 4000 series analysis. RaPID Assay® utilizes magnetic particle technology to achieve the maximum analytical precision available in environmental immunoassays. Assay antibodies are bound to microscopic particles, optimizing reaction kinetics, assay sensitivity and analytical precision. Eight calibrators and one control sample are analyzed with each assay which may include up to 50 samples per run. Test results and data interpretation are conducted with a microprocessor controlled spectrophotometer, which performs several statistical assay QC checks and provides test results directly in sample concentrations. The detection limit achievable with this method is 0.5 ppm.

Unbiased surface and shallow subsurface soil samples will be collected from 234 locations at the site to attempt to delineate PCB affected soil. In addition, 13 biased surface soil samples will be collected. Surface and shallow subsurface soil sampling will be conducted subsequent to the establishment of the grid network (Section 5.2.2). Surface soil samples will be collected using a disposable polyethylene scoop or decontaminated stainless steel scoop. Shallow subsurface soil samples will be collected from a depth of approximately 2 feet below grade using decontaminated split spoons.

Unbiased surface and shallow subsurface soil samples will be collected from every other node point of the grid network on the site property with the exception of the developed portion of the property. Unbiased surface and shallow subsurface soil sampling at the developed portion of the property will be collected from every node point of the grid network. Soil samples will not be collected from beneath existing building structures. The 13 biased surface soil samples will be collected from field selected areas based on soil staining, stressed vegetation or identification through background research. The biased surface soil samples will include at least one off-site composite soil sample collected from the topsoil stockpile located south of US Route 20, south of the site. Three biased samples will be collected as background samples from off-site locations, including one (1) sample collected from the railroad bed.

Ten (10) unbiased surface soil samples and the 10 biased surface soil samples will be analyzed at the laboratory for Target Compound List (TCL) + 30 compounds, Target Analyte List (TAL) metals and cyanide. The 10 unbiased surface soil samples analyzed by the laboratory will be selected in the field based on visual screening. The remaining 458 unbiased surface and shallow subsurface soil samples will be analyzed in the field for PCBs using immunoassay methodology. Ten (10) percent (46 samples) of the unbiased soil samples analyzed in the field will also be submitted for laboratory analysis for PCBs as confirmation of field findings.

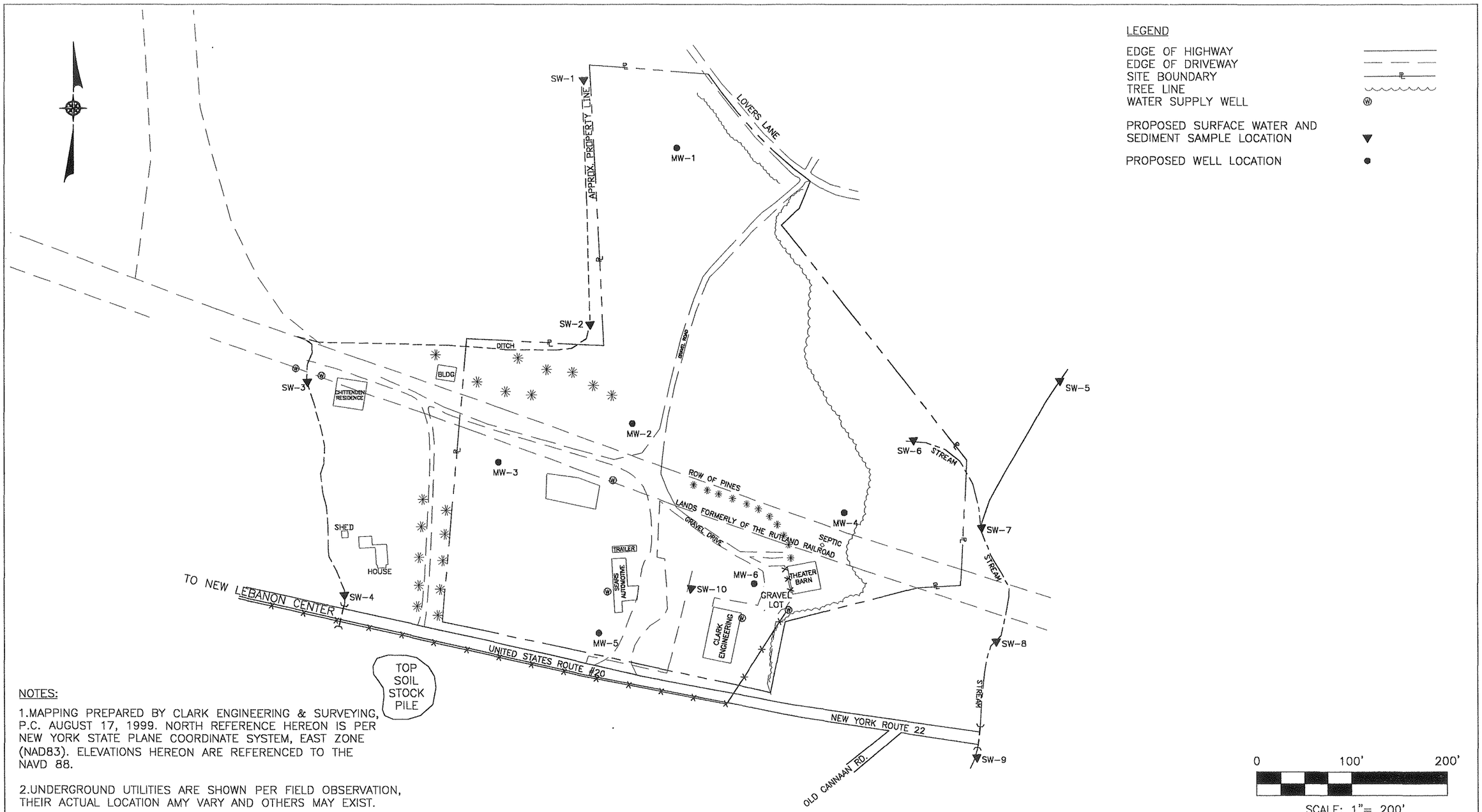
5.2.5 Surface Water and Surface Water Sediment Sampling

Two rounds of 10 surface water samples will be collected. The rounds will occur during seasonally wet and dry conditions. The first round of surface water sampling will be conducted in the Fall of 2001, during seasonally dry conditions. During the Fall sampling event, 10 surface water sediment samples will also be collected at the same locations as surface water samples. The second round of surface water samples will be collected in the Spring of 2002, during seasonally wet conditions. The Spring 2002 round of samples will be collected from the same locations as the Fall 2001 surface water samples. Surface water sediment samples will not be collected in the Spring due to the unlikely possibility of significant change in sediment chemistry.

Surface water and surface water sediment samples will be collected from intermittent streams flowing onto and away from the site and the perimeter ditch. Proposed sample locations are presented in Figure 5-2. Surface water samples will be collected from the base of the water column by submerging the sample container, opening it and lifting vertically to avoid mixing. If there is a surface sheen on the water, the sampling method will be altered to obtain as much of the sheen as possible. Sediment samples will be collected from the stream or ditch bed using a disposable polyethylene scoop or decontaminated long handled polyethylene scoop. Surface water and surface water sediment samples will be analyzed for TCL + 30 compounds, TAL metals and cyanide. The surface water samples will also be analyzed for total hardness. The surface water sediment samples will also be analyzed for total organic carbon (TOC).

5.2.6 Test Pit Excavation

Thirty (30) test pits will be excavated to a maximum depth of 10 feet below grade to attempt to identify the sources of anomalous geophysical survey results, determine or confirm extent of potential debris, and locate possible buried drums. Test pit locations will be



NOTES:

1. MAPPING PREPARED BY CLARK ENGINEERING & SURVEYING, P.C. AUGUST 17, 1999. NORTH REFERENCE HEREON IS PER NEW YORK STATE PLANE COORDINATE SYSTEM, EAST ZONE (NAD83). ELEVATIONS HEREON ARE REFERENCED TO THE NAVD 88.

2. UNDERGROUND UTILITIES ARE SHOWN PER FIELD OBSERVATION, THEIR ACTUAL LOCATION AMY VARY AND OTHERS MAY EXIST.

BOUCHARDS JUNKYARD
NEW LEBANON, NEW YORK

SAMPLING LOCATION MAP

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

FIGURE 5-2

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determined by the results of geophysical survey, historical research, aerial photography, topography and site reconnaissance.

The protocol for test pit excavation, sampling and backfill will be the following:

- Soil from the test pit will be removed and temporarily stored on one side of the test pit.
- Test Pit Logs indicating excavation contents, depth and sample collection will be maintained by a qualified geologist.
- The excavation will be filled in the reverse order of soil removal so as to maximize the preservation of the natural hydrogeologic properties of the subsurface materials.

In general, only the excavator bucket, which may come into contact with contaminated soil, will require decontamination. The sequence of test pits will be conducted so as to minimize the time required for decontamination. For example, test pits that are suspected to encounter affected soil will be excavated as a group and decontamination will not be performed between test pits unless gross contamination is observed or samples are required. Decontamination will be required before excavating test pits off-site (if any) or at suspected uncontaminated areas on-site. Off-site test pits will also be conducted as a group and decontamination will not be performed between test pits unless screening of subsurface material indicates the presence of possible contaminants. The excavator will be fully decontaminated at the completion of work, before leaving the site.

5.2.7. Subsurface Soil Sampling

Samples of soil may be obtained from test pits if unusual conditions such as discolored soil, sludge, elevated photoionization detector (PID) or flame ionization detector (FID) measurements, liquid waste or drums are encountered. A maximum of 30 such samples will be collected. If collected, samples will be obtained from the backhoe bucket immediately after retrieval from the test pit. Personnel will not enter the pit to collect samples. The samples will be analyzed to characterize soil chemistry and to assess possible environmental exposures

through human, plant or animal contact. Soil samples will be analyzed for TCL + 30 compounds, TAL metals, and cyanide.

5.2.8. Soil Boring and Monitoring Well Installation

Six (6) soil borings will be advanced to depths of approximately 30 feet to characterize subsurface soils and to investigate anomalous geophysical survey results. Monitoring wells will be installed in each of the borings advanced at the site to determine groundwater flow direction and water quality beneath the site. The locations of the borings and monitoring wells will be determined in the field and will be based on the results of site observations, test pits and geophysical survey.

All borehole construction and monitoring well installation will be logged and documented by a geologist. Notes will be kept in both bound field books and on Boring Logs and Monitoring Well Construction Logs (see Section 6.10). The Boring Logs will include the depths of stratigraphic changes, description of all samples, details of drilling techniques, listing of soil samples collected for laboratory analyses and measurements made with a PID or FID. Well construction details will be provided in the Monitoring Well Construction Logs. The Modified Burmeister Classification System will be used to describe soil samples recovered from the borings. A Daily Field Activity Report (see Section 6.10) will be completed whenever there are drilling activities (or any other subcontractor activities) undertaken as part of the investigation.

5.2.8.1 Monitoring Well Locations

Wells will be located on-site at upgradient, central and downgradient locations of the site. Figure 5-2 depicts the approximate locations of proposed monitoring wells at Bouchards Junkyard Site. The upgradient well will be located at the northern portion of the site. Three wells will be installed across the central portion of the site at the western, center and eastern

areas. Two downgradient wells will be installed towards the southern property boundary in the vicinity of existing water supply wells.

The final locations of monitoring wells will be determined in the field based on site observations, geophysical survey results and site conditions.

5.2.8.2 Monitoring Well Borings

Monitoring wells will be installed by advancing soil borings using 4.25 inch inside diameter hollow stem augers to groundwater. Groundwater is anticipated to be less than 25 feet below ground surface. During construction of each borehole, split spoon samples will be obtained continuously (2 foot intervals) beginning at the ground surface and ending at the bottom of the borehole to provide stratigraphic information on the site, as well as information on soil quality. Soil samples obtained from decontaminated split spoons will be observed and logged for geologic characteristics, odors and staining, and screened with a PID or FID. The data obtained from this screening will be used to characterize site stratigraphy.

Monitoring well depths are anticipated to be approximately 30 feet and will be determined by the observed occurrence of saturated conditions as noted in the examination of split spoon samples and drilling tools. The bottom of the well borings will be at least 5 feet below the depth of the water table.

Cuttings generated from the construction of the boreholes will be handled in accordance with NYSDEC TAGM No. 4032 "Disposal of Drill Cuttings", dated November 1989. In general, this TAGM allows for on-site disposal of cuttings as long as certain criteria as to location and cover of cuttings is met.

5.2.8.3 Monitoring Well Construction

Overburden monitoring wells will be constructed of decontaminated two inch inside diameter, Schedule 40, slotted PVC well screen and threaded, flush joint PVC casing. The overburden water table monitoring well screens will generally be 10 feet long. The screen will be installed with approximately 5 feet below the water table in order to maximize contact with the water table under varying seasonal groundwater elevations. Screen lengths will be determined in the field based upon depth of the water table and field evaluation of the soil samples for moisture content and mottling as indicators of the existing and seasonal high water table depth. Well screen slot sizes and sand pack particle size will be determined in the field. The sand pack and slot sizes will be related to the subsurface formation particle sizes observed in split spoon samples and drill cuttings in order to optimize groundwater flow into the well, while minimizing turbidity.

The overburden wells will be installed by first removing any standing water within the borehole. The evacuation of standing water will remove suspended fine-grained soil material that may later inhibit well development. The well screen and riser pipe will be lowered into the hollow stem auger and set at the desired depth. A sand pack will be placed into the annular space to a height of 2 feet above the top of the well screen. Upon completion of the placement of the sand pack, a 2-foot thick bentonite pellet or chip seal will be emplaced in the annular space, hydrated with potable water and allowed to swell for a minimum of 1/2 hour before introducing cement-bentonite grout in the remaining annular space. The cement-bentonite grout will be pressure pumped into the annular space by the tremie method.

Shallow monitoring wells will be completed with approximately 2-$^1/_2$ feet of 2-inch, inside diameter riser above ground surface and protective steel casing with minimum diameter of 4 inches. The protective casing will be at least 5 feet in length and secured into the borehole using sand or gravel concrete mix. The surface seal will be completed with a 24-inch diameter formed concrete pad and will be constructed to drain surface water away from the well. The protective casing will have a locking cap and be marked with the monitoring well identification.

5.2.8.4 Monitoring Well Development

All new monitoring wells will be developed by gently pumping and surging using bailers, 12 volt electric submersible pumps or similar techniques. Well development will continue until the turbidity of the groundwater achieves a turbidity of 50 nephelometric turbidity units (NTUs) or less, or until NYSDEC approves cessation of development. If 50 NTUs cannot be achieved, water removed during well development will be measured for field parameters, including temperature, pH and specific conductance. Development will continue until the field parameters stabilize for a minimum of three consecutive readings of 10 percent variability or less, or as approved by the NYSDEC. Well development water will be recharged at designated areas on-site. These areas will be small pits that allow percolation of water while minimizing possible contact by workers, possible trespassers or wildlife. The pits will be covered with existing soil at the completion of well development. All equipment used for the development of monitoring wells will be decontaminated prior to use and between wells or dedicated to individual wells.

5.2.9 Hydraulic Conductivity Testing

In-situ hydraulic conductivity values will be determined for each of the six (6) new wells by performing falling and rising head tests using the Bouwer and Rice method.

Water displacement will be achieved lowering a solid aluminum rod measuring 6 feet in length and 1-inch in diameter into the well. Changes in water level over time will be recorded using a pressure transducer and an electronic data logger. If the formation exhibits very slow recovery, the test may not be run until full recovery is achieved. Attempts will be made to allow the water to fall to at least two-thirds of the original level before stopping the test. All down hole equipment will be decontaminated between wells.

5.2.10 Water Level Monitoring

Water levels in monitoring wells, streams and ditches will be measured and recorded on a bi-monthly basis and whenever field personnel observe significant or unusual precipitation or surface water flow events. Groundwater level measurements will be obtained from the six (6) wells to be installed as part of the RI and from the five (5) existing water supply wells, if accessible. Groundwater level measurements of all wells will be made using an electronic water level indicator within an eight hour period of uniform weather conditions. All water level measurements will be made using a fixed reference point at each measurement location. Down hole instruments will be decontaminated between each measurement location (see Section 6.8). The static water level will be measured to the nearest 0.01 foot. Groundwater level data will be used to construct groundwater potentiometric surface maps and to determine local horizontal flow direction, as well as vertical gradients.

Surface water levels will be obtained from the ditches at the west and central portion of the site and from the stream at the eastern side of the site. Surface water levels will be obtained by installing a fixed measuring point such as a staff gauge or permanent mark, on a fixed surface and measuring the depth to the surface of the water body. The measuring points will be surveyed for location and elevation.

5.2.11 Groundwater Sampling

Two rounds of groundwater samples will be collected from each of the six (6) monitoring wells. One round will occur during anticipated low groundwater conditions (Fall of 2001) and the other round will be collected during anticipated high groundwater conditions (Spring of 2002). Each sample collected during the first round will be analyzed for TCL + 30, TAL metals (filtered and unfiltered) and cyanide. Every effort will be made to collect metals samples from water with turbidity less than 50 NTUs. If turbid water is present at the time VOCs and SVOCs are sampled, the well will be left undisturbed for several hours before the collection of the metals sample. If the turbidity is still greater than 50 NTUs, a filtered metals sample will be collected in

addition to the total metals sample. During the second round, groundwater analyses will be for TCL+10 and PCBs.

Disposable polyethylene bailers with disposable polypropylene rope will be used for purging and sampling of shallow wells. The wells will be purged until a minimum of three to five bore volumes have been removed or until the well is dry, whichever occurs first. The number of bore volumes purged will depend on stabilization of the pH, temperature and conductivity, and will continue until stabilization of these parameters is achieved. Purge water will be disposed in onsite pits as described in the discussion of monitoring well development in Section 5.2.8.4.

Once the well has been sufficiently purged, sampling will begin. If groundwater recovery is very slow, it may be necessary to wait several hours, or overnight, for sufficient volume to become available for the necessary sample analyses. Specific monitoring well sampling procedures are presented in Section 6.7.8.

5.2.12 Water Supply Sampling

Two rounds of groundwater samples will be collected from five (5) existing water supply wells. One round will occur during anticipated low groundwater conditions (Fall of 2001) and the other round will be collected during anticipated high groundwater conditions (Spring of 2002). Each sample collected during the first round will be analyzed for TCL + 30, TAL metals (filtered and unfiltered) and cyanide. Every effort will be made to collect metals samples from water with turbidity less than 50 NTUs. If turbid water is present at the time VOCs and SVOCs are sampled, the well will be left undisturbed for several hours before the collection of the metals sample. If the turbidity is still greater than 50 NTUs, a filtered metals sample will be collected in addition to the total metals sample. During the second round, groundwater analyses will be for TCL+10 and PCBs.

Existing water supply well pump and piping will be used for purging and sampling of shallow wells. The wells will be purged for a period of ten to fifteen minutes. The pH, temperature and conductivity will be measured at the start and end of purging. Purge water will be disposed directly to the ground.

Once the well has been sufficiently purged, sampling will begin. If groundwater recovery is very slow, it may be necessary to wait several hours, or overnight, for sufficient volume to become available for the necessary sample analyses.. Specific monitoring well sampling procedures are presented in Section 6.7.9.

5.2.13 Ambient Air Monitoring

Air monitoring for fugitive dusts and organic vapors will be conducted during all field activities. Fugitive dusts will be monitored using an MIE miniram portable dust indicator and organic vapors will be screened using a PID or FID.

6.0 QUALITY ASSURANCE/QUALITY CONTROL PLAN

6.1 Project Identification

Project Name:	Bouchards Junkyard Remedial Investigation and Feasibility Study
Project Requested By:	New York State Department of Environmental Conservation (NYSDEC)
Project Manager:	Lawrence Alden, PE (NYSDEC) Gerald Gould (D&B Consulting Engineers)
Quality Assurance Officer:	Robbin Petrella (D&B Consulting Engineers)
Field Operations Manager:	Sean Pepling (D&B Consulting Engineers)

6.2 Objective and Scope

The objective of the Bouchards Junkyard RI/FS is to determine the impacts from hazardous waste disposal, ascertain whether complete routes of exposure to site contaminants exist and develop a remedial action that will be protective of human health and the environment. The scope of work will be sufficient for the NYSDEC to prepare a PRAP and issue a Record of Decision for the site.

The purpose of this QA/QC Plan is to develop and describe the detailed sample collection and analytical procedures that will ensure high quality, valid data for use in the RI/FS.

6.3 Data Usage

The data generated from the field sampling program will be used to monitor for health and safety of workers at the site and the health and safety of persons off-site. As described above, it will also be utilized to evaluate on-site and off-site impacts due to soil, surface water, surface water sediment and, groundwater contamination, prepare a qualitative risk/exposure and environmental assessment and to select and prepare a remedial design for the site.

6.4 Sampling Program Design and Rationale

The following presents a general discussion of the sampling to be conducted during the remedial investigation.

- Surface Water and Surface Water Sediment: Thirty (30) biased samples will be collected from perimeter drainage ditches and intermittent streams. The samples will be collected in two rounds of ten (10) surface water samples and one round of ten (10) sediment samples.

- Surface Soil and Shallow Subsurface Soil: Up to 481 surface soil and shallow subsurface soil samples will be collected. Unbiased surface soil and shallow subsurface soil samples will be collected from 234 grid node points (468 samples). Thirteen (13) surface soil samples will be collected from biased locations based on stained soil, stressed vegetation, or information obtained through background research. Biased samples will be collected at the discretion of the on-site geologist.

- Subsurface Soil: Up to thirty (30) subsurface soil samples will be collected from the test pits excavated on-site. Samples will be collected at the discretion of the on-site geologist.

- Groundwater: Two rounds of eleven (11) groundwater samples each round will be collected. Each round will consist of one sample from each of 6 newly installed wells and 5 existing water supply wells adjacent to and on the Bouchards Junkyard Site.

For a detailed discussion of the sampling program, and selection of sample matrices and locations, see the Field Operation and Investigation Plan (Section 5.0).

6.5 Analytical Parameters

Sample analysis for the subsurface soil, surface water, sediment, and groundwater samples collected will consist of all or part of the TCL+30 substances and TAL parameters and cyanide identified in the 6/00 NYSDEC ASP. Selected soil samples will be analyzed for PCBs in the field and laboratory as identified in SW-846. If turbidity of the groundwater samples is greater than 50 NTUs, the sample will be filtered for dissolved metals analyses. In such instances both filtered and unfiltered samples will be analyzed for dissolved and total metals, respectively.

Table 6-1 presents a summary of the parameters/sample fractions to be analyzed together with the sample location, type of sample, sample matrix, number of samples, frequency of sample collection, type of sample container, method of sample preservation, holding time and analytical method.

6.6 Data Quality Requirements and Assessment

Data quality requirements and assessments are provided in the 6/00 NYSDEC ASP, which includes the detection limit for each parameter and sample matrix. Note that quantification limits, estimated accuracy, accuracy protocol, estimate precision and precision protocol are determined by the laboratory and will be in conformance with the requirements of the 6/00 NYSDEC ASP, where applicable. Table 6-2 presents a summary of the data quality requirements.

In addition to meeting the requirements provided in the 6/00 NYSDEC ASP, the data must also be useful in evaluating the nature and extent of contamination. Data obtained during the RI will be compared to specific SCGs. The SCGs to be utilized include:

Matrix	SCG
Surface and Subsurface Soil	NYSDEC Technical and Administrative Guideline Memorandum (TAGM) HWR-94-4046 for the Determination of Soil Cleanup Objectives and Cleanup Levels, dated January 1994.
Sediment	NYSDEC Division of Fish and Wildlife Technical Guidance for Screening Contaminated Sediment dated January 1999.
Groundwater and Surface Water	Division of Water Technical and Operational Guidance Series (TOGs) (1.1.1) - Ambient Water Quality Standards and Guidance Values, dated June 1998.

Table 6-1

BOUCHARDS JUNKYARD REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
SUMMARY OF MONITORING PARAMETERS

Sample Location	Sample Type	Sample matrix	Sample Fraction	Number of Samples*	Frequency*	Container Type/Size/No.	Sample Preservation	Maximum Holding Time**	Analytical Method
Surface Water (Drainage ditch and stream)	Grab	Surface Water	Volatile Organics	10	2	Glass, clear/ 40 mL/2 ICHEM 300 series or equivalent	Cool to 4°C	7 days for analysis	6/00 NYSDEC ASP Method EPA S0W OLMO4.2
	Grab	Surface Water	Base Neutral and Acid Extractable Organics	10	2	Glass, amber/ 1 Liter/2 ICHEM 300 series or equivalent	Cool to 4°C	5 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP Method EPA S0W OLMO4.2
	Grab	Surface Water	Pesticides/PCBs	10	2	Glass, amber/ 1 Liter/2 ICHEM 300 series or equivalent	Cool to 4°C	5 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP Method EPA S0W OLMO4.2
	Grab	Surface Water	Metals	10	2	Plastic/ 1 Liter/1 ICHEM 300 series or equivalent	HNO_3 to pH <2 Cool to 4°C	26 days for Hg analysis, 6 months for analysis of others	6/00 NYSDEC ASP Method EPA S0W ILMO4.0
	Grab	Surface Water	Cyanide	10	2	Plastic, clear/ 250 mL/1 ICHEM 300 series or equivalent	NaOH to pH >12 Cool to 4°C	12 days for analysis	6/00 NYSDEC ASP Method 335.2
	Grab	Surface Water	Total Hardness	10	2	Plastic, clear/ 250 mL/1 ICHEM 300 series or equivalent	Cool to 4°C	12 days for analysis	6/00 NYSDEC ASP Method 130.2

* Two rounds of sampling with ten samples per round being collected.
** Holding times as listed for each method in Exhibit D of the 6/00 NYSDEC ASP and based upon VTSR (Verified Time of Sample Receipt).

Table 6-1 (continued)

BOUCHARDS JUNKYARD REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
SUMMARY OF MONITORING PARAMETERS

Sample Location	Sample Type	Sample matrix	Sample Fraction	Number of Samples	Frequency	Container Type/Size/No.	Sample Preservation	Maximum Holding Time*	Analytical Method
Surface Water Sediment (Drainage ditch and stream)	Grab	Sediment	Volatile Organics	10	1	Glass, clear/ 4 oz/2 ICHEM 200 series or equivalent	Cool to 4°C	10 days for analysis	6/00 NYSDEC ASP Method EPA S0W OLMO4.2
	Grab	Sediment	Base Neutral and Acid Extractable Organics	10	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	10 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP Method EPA S0W OLMO4.2
	Grab	Sediment	Pesticides/PCBs	10	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	10 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP Method EPA S0W OLMO4.2
	Grab	Sediment	Metals	10	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	26 days for Hg analysis, 6 months for analysis of others	6/00 NYSDEC ASP Method EPA S0W ILMO4.0
	Grab	Sediment	Cyanide	10	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	12 days for analysis	6/00 NYSDEC ASP Method 335.2
	Grab	Sediment	Total Organic Carbon	10	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	26 days for analysis	6/00 NYSDEC ASP Method 415.1

* Holding times as listed for each method in Exhibit D of the 6/00 NYSDEC ASP and based upon VTSR (Verified Time of Sample Receipt).

Table 6-1 (continued)

BOUCHARDS JUNKYARD REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
SUMMARY OF MONITORING PARAMETERS

Sample Location	Sample Type	Sample matrix	Sample Fraction	Number of Samples	Frequency	Container Type/Size/No.	Sample Preservation	Maximum Holding Time*	Analytical Method
Test Pits (On-site)	Grab	Soil	Volatile Organics	30	1	Glass, clear/ 4 oz/2 ICHEM 200 series or equivalent	Cool to 4°C	10 days for analysis	6/00 NYSDEC ASP Method EPA S0W OLMO4.2
	Grab	Soil	Base Neutral and Acid Extractable Organics	30	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	10 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP Method EPA S0W OLMO4.2
	Grab	Soil	Pesticides/PCBs	30	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	10 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP Method EPA S0W OLMO4.2
	Grab	Soil	Metals	30	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	26 days for Hg analysis, 6 months for analysis of others	6/00 NYSDEC ASP Method EPA S0W ILMO4.0
	Grab	Soil	Cyanide	30	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	12 days for analysis	6/00 NYSDEC ASP Method 335.2

* Holding times as listed for each method in Exhibit D of the 6/00 NYSDEC ASP and based upon VTSR (Verified Time of Sample Receipt).

Table 6-1 (continued)

BOUCHARDS JUNKYARD REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
SUMMARY OF MONITORING PARAMETERS

Sample Location	Sample Type	Sample matrix	Sample Fraction	Number of Samples	Frequency	Container Type/Size/No.	Sample Preservation	Maximum Holding Time*	Analytical Method
Surface and Shallow Subsurface Soil	Grab	Soil	Volatile Organics	23	1	Glass, clear/ 4 oz/2 ICHEM 200 series or equivalent	Cool to 4°C	10 days for analysis	6/00 NYSDEC ASP Method EPA S0W OLMO4.2
	Grab	Soil	Base Neutral and Acid Extractable Organics	23	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	10 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP Method EPA S0W OLMO4.2
	Grab	Soil	Pesticides/PCBs	23	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	10 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP Method EPA S0W OLMO4.2
	Grab	Soil	PCBs	468	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	Analyze immediately	RaPID Assay Field analysis
	Grab	Soil	PCBs	46	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	10 days for extraction, 40 days after extraction for analysis	USEPA Method 8082
	Grab	Soil	Metals	23	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	26 days for Hg analysis, 6 months for analysis of others	6/00 NYSDEC ASP Method USEPA SOW ILMO4.0
	Grab	Soil	Cyanide	23	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	12 days for analysis	6/00 NYSDEC ASP Method 335.2

* Holding times as listed for each method in Exhibit D of the 6/00 NYSDEC ASP and based upon VTSR (Verified Time of Sample Receipt).

Table 6-1 (continued)

BOUCHARDS JUNKYARD REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
SUMMARY OF MONITORING PARAMETERS

Sample Location	Sample Type	Sample matrix	Sample Fraction	Number of Samples*	Frequency*	Container Type/Size/No.	Sample Preservation	Maximum Holding Time**	Analytical Method
Monitoring Wells (Six new wells, five existing wells)	Grab	Groundwater	Volatile Organics	11	2 ***	Glass, clear/ 40 mL/3 ICHEM 300 series or equivalent	Cool to 4°C	7 days for analysis	6/00 NYSDEC ASP Method USEPA SOW OLMO4.2
	Grab	Groundwater	Base Neutral and Acid Extractable Organics	11	1	Glass, amber/ 1L/2 ICHEM 300 series or equivalent	Cool to 4°C	5 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP Method USEPA SOW OLMO4.2
	Grab	Groundwater	Pesticides/PCBs	11	2 ***	Glass, amber/ 1L/2 ICHEM 300 series or equivalent	Cool to 4°C	5 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP Method USEPA SOW OLMO4.2
	Grab	Groundwater	Total and Dissolved Metals****	11	1	Plastic/1L/1 ICHEM 300 series or equivalent	HNO_3 to pH <2 Cool to 4°C	26 days for Hg analysis, 6 months for analysis of others	6/00 NYSDEC ASP Method USEPA SOW ILMO4.0
	Grab	Groundwater	Cyanide	11	1	Plastic/250 mL/1 ICHEM 300 series or equivalent	NaOH to pH >12 Cool to 4°C	12 days for analysis	10/95 NYSDEC ASP Method 335.2

* Two rounds of sampling with eleven (11) samples being collected each round. During the second round samples will only be analyzed for TCL volatiles and PCBs.
** Holding times as listed for each method in Exhibit D of the 6/00 NYSDEC ASP and based upon VTSR (Verified Time of Sample Receipt).
*** Second round will be analyzed for VOCs and PCBs only.
**** Samples will be analyzed for dissolved metals in addition to total metals only if the turbidity is >50 NTUs.

Table 6-1 (continued)

BOUCHARDS JUNKYARD REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
SUMMARY OF MONITORING PARAMETERS

Sample Location	Sample Type	Sample matrix	Sample Fraction	Number of Samples	Frequency	Container Type/Size/No.	Sample Preservation	Maximum Holding Time*	Analytical Method
Site/Study Area	Trip Blank	Water	Volatile Organics	4**	2	Glass, clear/ 40 mL/2 ICHEM 300 series or equivalent	Cool to 4°C***	7 days for analysis	6/00 NYSDEC ASP Method USEPA SOW OLMO4.2

* Holding times as listed for each method in Exhibit D of the 6/00 NYSDEC ASP and based upon VTSR (Verified Time of Sample Receipt).
** One trip blank will accompany each shipment of aqueous samples requiring volatile organic analysis.
*** Samples are not to be preserved to pH <2.

Table 6-1 (continued)

BOUCHARDS JUNKYARD REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
SUMMARY OF MONITORING PARAMETERS

Sample Location	Sample Type	Sample matrix	Sample Fraction	Number of Samples	Frequency	Container Type/Size/No.	Sample Preservation	Maximum Holding Time*	Analytical Method
Site/Study Area	Matrix Spike and Matrix Spike Duplicate	Groundwater	Volatile Organics	1**	2	Glass, clear/ 40 mL/3 ICHEM 300 series or equivalent	Cool to 4°C***	7 days for analysis	6/00 NYSDEC ASP Method USEPA SOW OLMO4.2
	Matrix Spike and Matrix Spike Duplicate	Groundwater	Base Neutral and Acid Extractable Organics	1**	1	Glass, amber/ 1L/2 ICHEM 300 series or equivalent	Cool to 4°C	5 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP Method USEPA SOW OLMO4.2
	Matrix Spike and Matrix Spike Duplicate	Groundwater	Pesticides/PCBs	1**	2	Glass, amber/ 1L/2 ICHEM 300 series or equivalent	Cool 4°C	5 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP Method USEPA SOW OLMO4.2
	Matrix Spike and Matrix Spike Duplicate	Groundwater	Metals	1**	1	Plastic/1L/1 ICHEM 300 series or equivalent	HNO_3 to pH <2 Cool to 4°C	26 days for Hg analysis, 6 months for analysis of others	6/00 NYSDEC ASP Method USEPA SOW ILMO4.0
	Matrix Spike and Matrix Spike Duplicate	Groundwater	Cyanide	1**	1	Plastic/1L/1 ICHEM 300 series or equivalent	NaOH to pH >12 Cool to 4°C	12 days for analysis	6/00 NYSDEC ASP Method 335.2

* Holding times as listed for each method in Exhibit D of the 6/00 NYSDEC ASP and based upon VTSR (Verified Time of Sample Receipt).
** One set of MS/MSD for each round of sampling based upon 11 groundwater samples collected per round. The first round will consist of all parameters with the second round only analyzed for VOCs and PCBs.
*** Samples are not to be preserved to pH <2.

Table 6-1 (continued)

BOUCHARDS JUNKYARD REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
SUMMARY OF MONITORING PARAMETERS

Sample Location	Sample Type	Sample matrix	Sample Fraction	Number of Samples	Frequency	Container Type/Size/No.	Sample Preservation	Maximum Holding Time*	Analytical Method
Site/Study Area	Matrix Spike and Matrix Spike Duplicate	Surface Water	Volatile Organics	1**	2	Glass, clear/ 40 mL/3 ICHEM 300 series or equivalent	Cool to 4°C***	7 days for analysis	6/00 NYSDEC ASP Method USEPA SOW OLMO4.2
	Matrix Spike and Matrix Spike Duplicate	Surface Water	Base Neutral and Acid Extractable Organics	1**	2	Glass, amber/ 1L/2 ICHEM 300 series or equivalent	Cool to 4°C	5 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP Method USEPA SOW OLMO4.2
	Matrix Spike and Matrix Spike Duplicate	Surface Water	Pesticides/PCBs	1**	2	Glass, amber/ 1L/2 ICHEM 300 series or equivalent	Cool 4°C	5 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP Method USEPA SOW OLMO4.2
	Matrix Spike and Matrix Spike Duplicate	Surface Water	Metals	1**	2	Plastic/1L/1 ICHEM 300 series or equivalent	HNO_3 to pH <2 Cool to 4°C	26 days for Hg analysis, 6 months for analysis of others	6/00 NYSDEC ASP Method USEPA SOW ILMO4.0
	Matrix Spike and Matrix Spike Duplicate	Surface Water	Cyanide	1**	2	Plastic/1L/1 ICHEM 300 series or equivalent	NaOH to pH >12 Cool to 4°C	12 days for analysis	6/00 NYSDEC ASP Method 335.2

* Holding times as listed for each method in Exhibit D of the 6/00 NYSDEC ASP and based upon VTSR (Verified Time of Sample Receipt).
** One set of MS/MSD for each round of sampling based upon 10 surface water collected per round.
*** Samples are not to be preserved to pH <2.

Table 6-1 (continued)

BOUCHARDS JUNKYARD REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
SUMMARY OF MONITORING PARAMETERS

Sample Location	Sample Type	Sample matrix	Sample Fraction	Number of Samples	Frequency	Container Type/Size/No.	Sample Preservation	Maximum Holding Time*	Analytical Method
Site/Study Area	Matrix Spike and Matrix Spike Duplicate	Soil	Volatile Organics	5**	1	Glass, clear/ 4 oz./2 ICHEM 200 series or equivalent	Cool to 4°C	10 days for analysis	6/00 NYSDEC ASP Method USEPA SOW OLMO4.2
	Matrix Spike and Matrix Spike Duplicate	Soil	Base Neutral and Acid Extractable Organics	5**	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	10 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP Method USEPA SOW OLMO4.2
	Matrix Spike and Matrix Spike Duplicate	Soil	Pesticides/PCBs	5**	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool 4°C	10 days for extraction, 40 days after extraction for analysis	6/00 NYSDEC ASP Method USEPA SOW OLMO4.2
	Matrix Spike and Matrix Spike Duplicate	Soil	PCBs	3***	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool 4°C	10 days for extraction, 40 days after extraction for analysis	USEPA Method 8082
	Matrix Spike and Matrix Spike Duplicate	Soil	Metals	5**	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	26 days for Hg analysis, 6 months for analysis of others	6/00 NYSDEC ASP Method USEPA SOW ILMO4.0
	Matrix Spike and Matrix Spike Duplicate	Soil	Cyanide	5**	1	Glass, clear/ 150 mL/1 ICHEM 200 series or equivalent	Cool to 4°C	12 days for analysis	6/00 NYSDEC ASP Method 335.2

* Holding times as listed for each method in Exhibit D of the 6/00 NYSDEC ASP and based upon VTSR (Verified Time of Sample Receipt).
** Sets of MS/MSD based on 30 test pit soil samples, 10 biased surface soil samples, 13 unbiased surface soil samples, and 10 sediment samples.
*** Based on 46 samples for PCB laboratory analysis for confirmation of field testing.

Table 6-2

BOUCHARDS JUNKYARD REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
DATA QUALITY REQUIREMENTS

Parameter	Sample Matrix	CRDL* (ug/l)	Estimated Accuracy	Accuracy Protocol	Estimated Precision	Precision Protocol
Volatile Organics	Liquid Solid	5-10 5-10	0.87 - 2.48 ug/l	Vol. IB, Chapter 4, Method 8240, Table 7	0.11 - 4.00 ug/l	Vol. IB, Chapter 4, Method 8240, Table 7
Base Neutrals	Liquid Solid	10-50 330-1600	0.29 - 1.23 ug/l	Vol. IB, Chapter 4, Method 8270, Table 7	0.13 - 1.05 ug/l	Vol. IB, Chapter 4, Method 8270, Table 7
Acid Extractables	Liquid Solid	10-50 330-1600	0.29 - 1.23 ug/l	Vol. IB, Chapter 4, Method 8270, Table 7	0.13 - 1.055 ug/l	Vol. IB, Chapter 4, Method 8270, Table 7
Pesticides/PCBs	Liquid Solid	0.5-1.0 8.0-160	0.69 - 10.79 ug/l	Vol. IB, Chapter 4, Method 8080, Table 4	1.16 - 3.50 ug/l	Vol. IB, Chapter 4, Method 8080, Table 4
Metals (except cyanide)	Liquid Solid	0.2-5000 0.2-5000	--	Vol. IA, Chapter 3, Method 6010**, Table 4	--	Vol. IA, Chapter 3, Method 6010**, Table 4
Cyanide	Liquid Solid	10 10	85% - 102% of recovery	Vol. IC, Chapter 5, Method 9010	±0.02 mg/l	Vol. IC, Chapter 5, Method 9010
Total Organic Carbon	Solid	1 mg/kg	0.75	Vol. VI, Part XXIV Method 415.1, Subpart 9	3.93 – 8.32 mg/kg	Vol. VI, Part XXIV Method 415.1, Subpart 9

* Contract Required Detection Limits

** and SW-846 Methods for:

	Method
Mercury	7470

Table 6-2 (continued)

BOUCHARDS JUNKYARD REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
DATA QUALITY REQUIREMENTS
OBJECTIVES FOR PRECISION, ACCURACY, AND COMPLETENESS

Matrix/Parameter	Precision (%)	Accuracy (%)
Soils		
VOCs[(a)]	See Table 6-2a	See Table 6-2a
Extractables[(a)]	See Table 6-2b	See Table 6-2b
Pesticides/PCBs	See Table 6-2c	See Table 6-2c
Metals[(b)]	± 25	75-125
Groundwater		
VOCs(a)	See Table 6-2a	See Table 6-2a
Extractables(a)	See Table 6-2b	See Table 6-2b
Pesticides/PCBs	See Table 6-2c	See Table 6-2c
Metals(b)	± 25%	75-125

NOTES:

(a) Accuracy will be determined as percent recovery of surrogate spike compounds and matrix spike compounds. Surrogate and matrix spike compounds for VOCs, extractables, and pesticides/PCBs are listed in Tables 6-2a, 6-2b and 6-2c, respectively. Precision will be estimated as the relative standard deviation of the percent recoveries per matrix.

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

(c) Precision will be determined as the average percent difference for replicate samples. Accuracy will be determined as the percent recovery of matrix spike samples or laboratory control samples, as appropriate.

Source: NYSDEC ASP

Table 6-2a

BOUCHARDS JUNKYARD REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
DATA QUALITY REQUIREMENTS
ACCURACY REQUIREMENTS FOR VOC

	Spike Recovery Limits (%)	
	Water	Low/Medium Soil
Surrogate Compound		
Toluene-d8	88-110	84-138
4-Bromofluorobenzene	86-115	59-113
1,2,Dichlorethane-d4	76-114	70-121
Matrix Spike Compound		
1,1-Dichloroethene	61-145	59-172
Trichloroethane	71-120	62-137
Chlorobenzene	75-130	60-133
Toluene	76-125	59-139
Benzene	76-127	66-142

Source: NYSDEC ASP

Table 6-2b

BOUCHARDS JUNKYARD REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
DATA QUALITY REQUIREMENTS
OBJECTIVES FOR PRECISION AND ACCURACY
OF EXTRACTABLE COMPOUNDS
BASED UPON RECOVERY OF SURROGATE AND
MATRIX SPIKE COMPOUNDS*

Surrogate Compounds	Matrix	Precision	Accuracy %
d5-Nitrobenzene	Water	≤ 20	35-114
	Solid	≤ 25	23-120
2-Fluorobiphenyl	Water	≤ 20	43-116
	Solid	≤ 25	30-115
d14-Terphenyl	Water	≤ 20	33-141
	Solid	≤ 25	18-137
d5-Phenol	Water	≤ 20	10-110
	Solid	≤ 25	24-113
2-Fluorophenol	Water	≤ 20	21-110
	Solid	≤ 25	25-121
2,4,6-Tribromophenol	Water	≤ 20	10-123
	Solid	≤ 25	19-122
2-Chlorophenol-d4 (Advisory)	Water	≤ 20	33-110
	Solid	≤ 25	20-130
1,2-Dichlorobenzene-d4 (Advisory)	Water	≤ 20	16-110
	Solid	≤ 25	20-130

Table 6-2b (continued)

BOUCHARDS JUNKYARD REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
DATA QUALITY REQUIREMENTS
OBJECTIVES FOR PRECISION AND ACCURACY
OF EXTRACTABLE COMPOUNDS
BASED UPON RECOVERY OF SURROGATE AND
MATRIX SPIKE COMPOUNDS*

	Matrix	Precision	Accuracy %
Matrix Spike Compounds			
1,2,4-Trichlorobenzene	Water	≤ 20	39-98
	Solid	≤ 25	38-107
Acenaphthene	Water	≤ 20	46-118
	Solid	≤ 25	31-137
2,4-Dinitrotoluene	Water	≤ 20	24-96
	Solid	≤ 25	28-89
Pyrene	Water	≤ 20	26-127
	Solid	≤ 25	35-142
N-Nitroso-Di-n-Propylamine	Water	≤ 20	41-116
	Solid	≤ 25	41-126
1,4-Dichlorobenzene	Water	≤ 20	36-97
	Solid	≤ 25	28-104
Pentachlorophenol	Water	≤ 20	9-103
	Solid	≤ 25	17-109
Phenol	Water	≤ 20	12-110
	Solid	≤ 25	26-90
2-Chlorophenol	Water	≤ 20	27-123
	Solid	≤ 25	25-102

Table 6-2b (continued)

BOUCHARDS JUNKYARD REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
DATA QUALITY REQUIREMENTS
OBJECTIVES FOR PRECISION AND ACCURACY
OF EXTRACTABLE COMPOUNDS
BASED UPON RECOVERY OF SURROGATE AND
MATRIX SPIKE COMPOUNDS*

	Matrix	Precision	Accuracy %
Matrix Spike Compounds (continued)			
4-Chloro-3-methylphenol	Water	≤ 20	23-97
	Solid	≤ 25	26-103
4-Nitrophenol	Water	≤ 20	10-80
	Solid	≤ 25	11-114

* Accuracy will be determined as percent recovery of these compounds. Precision will be estimated as the relative standard deviation of the percent recoveries per matrix.

Source: NYSDEC ASP

Table 6-2c

BOUCHARDS JUNKYARD REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
ADVISORY RECOVERY LIMITS
SURROGATE AND MATRIX SPIKE COMPOUNDS
FOR PESTICIDES/PCBs*

	Advisory Recovery Limits (%)	
	Water	Soil/Sediment
Surrogate Compound		
Decachlorobiphenyl	60-150	60-150
Tetrachloro-m-xylene	60-150	60-150
Matrix Spike Compound		
Lindane	56-123	46-127
Heptachlor	40-131	35-130
Aldrin	40-120	34-132
Dieldrin	52-126	31-134
Endrin	56-121	42-139
4,4'-DDT	38-127	23-134

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

Source: NYSDEC ASP

The methods of analysis will be in accordance with the 6/00 NYSDEC ASP. Specific analytical procedures and laboratory QA/QC descriptions are not included in this QA/QC plan, but will be available upon request from the laboratory selected to perform the analyses. The laboratory will be New York State Department of Health (NYSDOH) Environmental Laboratory Approved Program (ELAP) certified for organic and inorganic analyses, and also USEPA CLP certified.

6.6.1 Data Representativeness

Representative samples will be collected as follows:

- Surface Water - Samples will be collected from drainage ditches and intermittent streams using sample bottles supplied by the laboratory and will be collected from as close to the bottom of the water column as practicable unless there is a surface sheen, in which case as much of the sheen as possible will be collected.

- Sediment - Samples will be collected from the drainage ditches and intermittent streams using a disposable polyethylene scoop.

- Surface Soil and Shallow Subsurface Soil – Surface soil samples will be collected using a sterile polystyrene scoop and/or wooden tongue depressor. Shallow subsurface soil samples will be obtained using a decontaminated split spoon sampler during soil borings and transferred into the container with a sterile polystyrene scoop and/or wooden tongue depressor.

- Subsurface Soil - Samples will be collected from test pits (backhoe bucket) using a sterile polystyrene scoop and/or wooden tongue depressor.

- Groundwater (Monitoring Well) - Samples will be obtained after the monitoring well has been purged of three to five well casing volumes and field measurements (pH, conductivity, temperature and turbidity) have stabilized, or until the well is purged dry (whichever occurs first) and allowed to recharge. Samples will be collected with a dedicated polyethylene bailer.

- Groundwater (Water Supply Wells) - Samples will be obtained after the water supply well has been purged for a period of fifteen minutes. Samples will be collected directly from point-of-use taps.

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

- Equipment Decontamination - Non-sterile sampling equipment will be decontaminated prior to use at each location according to the NYSDEC approved procedures described on Section 6.8 of this QA/QC Plan.

6.6.2 Data Comparability

All data will be presented in the units designated by the methods specified by a NYSDOH ELAP and CLP certified laboratory, and the 6/00 NYSDEC ASP. In addition, sample locations, collection procedures, and analytical methods from earlier studies will be evaluated for comparability with current procedures/methods.

6.6.3 Data Completeness

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

6.7 Detailed Sampling Procedures

Four types of environmental samples will be collected from different locations as part of the RI for the Bouchards Junkyard Site. These include soil, sediment, surface water and groundwater. Sample locations will consist of surface soils, soil borings, test pits, surface water, stream sediments, and monitoring/water supply wells. Actual locations are described in Section 5.0. Sampling procedures and equipment are described in this section. A summary of the sampling program, including sample media, locations, depths, equipment, rationale and analytical parameters is provided in Table 6-3. Sample collection will be performed in conformance with D&B's Quality Assurance Procedures and Field Investigations Manual for Hazardous Waste Sites, which has been prepared in accordance with USEPA and NYSDEC requirements and guidelines.

When collecting soil samples, an attempt will be made to maintain sample integrity by preserving its physical form and chemical composition to as great an extent as possible. First, the

Table 6-3
BOUCHARDS JUNKYARD SITE
REMEDIAL INVESTIGATIONSAMPLING MATRIX

Program Element	Environmental Media	Sample Type/Depth	Number of Samples	Equipment	Sample Analyses
Surface Soil Sampling	Surface Soil	Grab samples from surface soil (0 to 2 inches).	23	Disposable polyethylene or decontaminated stainless steel scoop.	TCL +30, TAL and CN.
Surface and Shallow Subsurface Soil Sampling	Surface Soil and Shallow Subsurface Soil	Grab samples from surface soil (0 to 2 inches) and from 2 feet below grade.	468 (46)	Disposable polyethylene or decontaminated stainless steel scoop and split spoon or dedicated direct push sampler.	PCBs by immunoassay (Laboratory confirmation by EPA Method 8082)
Subsurface Soil Sampling	Subsurface Soil	Grab samples from test pits; depths to be determined in field.	30	Disposable polyethylene or decontaminated stainless steel scoop.	TCL + 30, TAL and CN.
Surface Water Sampling (Round 1)	Water	Grab samples from below stream surface.	10	Sample container.	TCL +30, TAL, hardness and CN.
Surface Water Sediment Sampling	Sediment	Grab samples of stream sediment.	10	Disposable polyethylene or decontaminated stainless steel scoop.	TCL + 30, TAL, CN and TOC.
Surface Water Sampling (Round 2)	Water	Grab samples from below stream surface.	10	Sample container.	TCL +30, TAL, hardness and CN.
Well Sampling (Round 1)	Groundwater	At surface of water in well after purging well.	11	Disposable polyethylene bailer.	TCL + 30, TAL (total and dissolved) and CN.
Well Sampling (Round 2)	Groundwater	At surface of water in well after purging well.	11	Disposable polyethylene bailer.	TCL VOC + 10 and PCBs.
Trip Blanks	Aqueous	Laboratory provided distilled water.	4*	Sample supplied by laboratory.	TCL VOC + 10.
Matrix Spike/ Matrix Spike Duplicates	Aqueous	Surface water and groundwater (split of sample).	4**	Sample container or disposable polyethylene bailer.	TCL + 30, TAL and CN.
Matrix Spike/ Matrix Spike Duplicates	Soil/Sediment	Soil/sediment (split of sample).	5**	Disposable polyethylene scoop.	TCL + 30, TAL and CN.

*One trip blank will accompany each shipment of aqueous samples requiring volatile organic compound analysis.
**One MS/MSD for each media for every 20 samples collected or one every two weeks if fewer than 20 samples.
Note: No field blanks will be collected as per New York State Department of Environmental Conservation guidance.

mechanism used to collect the soil must be properly decontaminated. An appropriate sampling device (i.e., decontaminated scoop or sterile wooden tongue depressor) will be utilized to transfer the sample into the sample container. The sample should reflect and contain a good representation of the matrix it was taken from.

The sample will be transferred into the sample container as quickly as possible, with no mixing, to ensure that the volatile fraction is not lost.

The materials involved in groundwater sampling are critical to the collection of high quality monitoring information, particularly where the analyses of volatile, pH sensitive or reduced chemical constituents are of interest. Sterile disposable polyethylene bailers will be utilized for this project.

There will be several steps taken after the transfer of the soil or water sample into the sample container that are necessary to properly complete collection activities. Once the sample is transferred into the appropriate container, the container will be capped and, if necessary, the outside of the container will be wiped with a clean paper towel to remove excess sampling material. The container will not be submerged in water in an effort to clean it. Rather, if necessary, a clean paper towel moistened with distilled/deionized water will be used.

The sample container will then be properly labeled. Information such as sample number, location, collection time and sample description will be recorded in the field log book. Associated forms (e.g., Chain of Custody forms) will then be completed and will stay with the sample. The samples will be packaged in a manner that will allow the appropriate storage temperature (4°C) to be maintained during shipment to the laboratory. Samples will be delivered to the laboratory within 48 hours of collection.

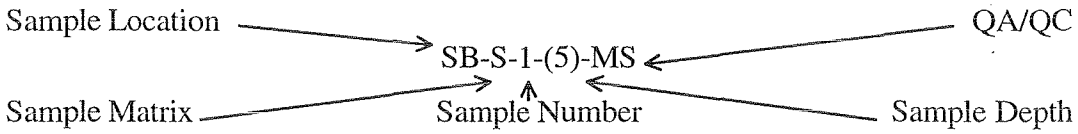
6.7.1 Sample Identification

All samples collected during the field investigation at the Bouchard Junkyard Site will be labeled with a sample identification code. The code will identify the sample location, sample matrix

and series numbers for sample locations with more than one sample. Samples will be labeled according to the following system:

- Sample Location:
  - Test Pit "TP"
  - Surface Soil "SS"
  - Soil Boring "SB"
  - Sediment "SD"
  - Surface Water "SW"
  - Monitoring Well "MW"
  - Water Supply Well "WS"
- Sample Matrix:
  - Soil "S"
  - Water "W"
- Sample Number:
  - For circumstances where more than one sample of the same type and/or from the same location will be collected, a consecutive sample number will be assigned.
- Quality Assurance/ Quality Control (QA/QC):
  - Trip Blank "TB"
  - Matrix Spike "MS"
  - Matrix spike duplicate "MSD"

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



6.7.2 Sample Handling, Packaging and Shipping

All analytical samples will be placed in the appropriate sample containers as specified in the 6/00 NYSDEC ASP. The holding time criteria identified in Volume I for the individual methods of the ASP will be followed, as specified in Table 6-1.

Prior to packaging any samples for shipment, the sample containers will be checked for proper identification and compared to the field log book for accuracy. The samples will then be

wrapped with a cushioning material and placed in a cooler (or laboratory shuttle) with a sufficient amount of bagged ice or "blue ice" packs in order to keep the samples at 4°C until arrival at the laboratory.

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

All samples will be shipped to ensure laboratory receipt within 48 hours of sample collection in accordance with NYSDEC requirements. The laboratory will be notified prior to the shipment of the samples.

6.7.3 Soil (Surface)

For all surface soil samples, soil will be collected from the upper 2-inches of the ground surface using disposable or decontaminated sampling equipment. Samples will be logged and then immediately transferred into a sample container.

1. Be certain that the sample location is noted on Location Sketch (see Section 6.10).
2. Be certain that non-disposable sampling equipment (scoop) has been decontaminated utilizing the procedures outlined in Section 6.8.
3. Remove laboratory precleaned sample containers from sample cooler, label bottle with an indelible marker, fill out Sample Information Record and Chain of Custody Form (see Section 6.10).
4. Remove vegetation from the ground surface at the sampling location.
5. Retrieve the sample with either a disposable polyethylene scoop or decontaminated stainless steel scoop and immediately obtain an organic vapor measurement and fill out Sample Information Record (see Section 6.22).
6. Place the sample into the open sample container and replace the container cover.
7. Return the sample container to the cooler.

8. If reusable, decontaminate the sampling equipment according to the procedures described in Section 6.8.

6.7.4 Soil (Test Pit)

Test pit excavation will be conducted using a backhoe or excavator.

1. Be certain that the sample location is noted on Location Sketch (see Section 6.10.1).

2. Be certain that the sampling equipment is decontaminated utilizing the procedures outlined in Section 6.8.

3. Remove laboratory precleaned sample containers from sample cooler, label bottle with an indelible marker, fill out Sample Information Record and Chain of Custody Form (see Section 6.10.2 and 6.10.3).

4. Lower the bucket into the test pit and remove soil material.

5. Immediately upon retrieval of the soil, obtain an organic vapor measurement.

6. Depending upon the organic vapor and visual characteristics, obtain a soil sample from the backhoe bucket with a scoop and/or wooden tongue depressor, place into the open sample containers and replace the container cover.

7. Fill out Test Pit Log Form (see Section 6.22), including a description of soil with location and depth and material sampled.

8. Return the sample container to the cooler.

9. Backfill test pit.

10. If reusable, decontaminate the sampling equipment according to the procedures described in Section 6.8.

11. Place disposable personal protective equipment and disposable sampling equipment into 55-gallon drum in the designated secure area.

6.7.5 Soil (Borehole)

For all borehole soil samples, a drill rig will be employed to advance a borehole to the desired depth. All downhole devices will be thoroughly decontaminated. Once the desired depth is reached, a decontaminated sampling device (e.g., split spoon) will be advanced by the drill rig. Upon retrieval, the split spoon will be opened, its contents logged, and then immediately transferred into a sample container using a decontaminated spoon or sterile wooden tongue depressor.

1. Be certain that the sample location is noted on Location Sketch (see Section 6.10).
2. Be certain that the sampling equipment (split spoon) has been decontaminated utilizing the procedures outlined in Section 6.8.
3. Remove laboratory precleaned sample containers from sample cooler, label bottle with an indelible marker, fill out Sample Information Record and Chain of Custody Form (see Section 6.10).
4. Auger into the soil to the desired depth and drive the split spoon sampler.
5. Retrieve the split spoon and immediately after opening the split spoon, obtain an organic vapor measurement and fill out Boring Log Form (see Section 6.22).
6. Remove a sample aliquot from the split spoon using the sterile scoop and/or tongue depressor, place into the open sample container and replace the container cover.
7. Return the sample container to the cooler.
8. If reusable, decontaminate the sampling equipment according to the procedures described in Section 6.8.

6.7.6 Surface Water

1. Make sure sample location is noted on Location Sketch (see Section 6.10.1).
2. Make sure that the sample equipment (polyethylene or stainless steel scoop) has been decontaminated utilizing the procedures outlined in Section 6.8.
3. Remove laboratory precleaned sample containers from sample cooler, label bottle with an indelible marker, fill out Sample Information Record and Chain of Custody Form (see Section 6.10.2 and 6.10.3).

4. Lower the sample container slowly into the water making sure that the sample is taken just above the base of the water column (or at the water/air interface if there is a sheen present) and raise the sample out of the water. (Sample water before sediment to avoid introduction of sediment into the water column).

5. Take field measurements (pH, conductivity, temperature and turbidity) and record in log book.

6. Gently pour the sample into the sample container, if not sampled directly, taking care not to spill the sample on outside of container or overfill container, and replace cover on the sample container. For volatile organic samples, make sure that there are no air bubbles in the sample vial after it has been capped. This is done by filling the vial such that there is a positive meniscus on top. Carefully slide the septum, Teflon side down, onto the top of the vial and cap the vial. Check for bubbles by turning the vial upside down and tapping it lightly. if the bubbles appear, reopen the vial, remove septum and add more sample (or resample). Replace septum, recap and check for bubbles. Continue until vial is bubble-free.

7. Return the sample container to the sample cooler. If sample is obtained directly with a sample bottle, dry the exterior of the container before placing into cooler.

8. Decontaminate the sampling equipment according to the procedures described in Section 6.8.

6.7.7 Surface Water Sediment

1. Be certain that the sample location is noted on Location Sketch (see Section 6.10) and obtain a photograph of the location.

2. Unless using disposable equipment, be certain that the sampling equipment (polyethylene scoop) has been decontaminated utilizing the procedures outlined in Section 6.8.

3. Remove laboratory precleaned sample containers from sample cooler, label container with an indelible marker, fill out Sample Information Record and Chain of Custody Form (see Section 6.10).

4. Wear disposable gloves and boots if it is necessary to enter the water.

5. Enter the water downstream of the sample location with minimum disturbance of the sediment. Sample sediment at the most downstream location and move sequentially upstream.

6. Insert scoop slowly 0-6 inches into the sediment and remove sample.

7. With a sterile polyethylene scoop or tongue depressor, if necessary, transfer the sample into the open sample container taking care not to spill sample on the outside of the container or overfill container and replace cover on the sample container.

8. Return sample container to cooler.

9. If necessary, decontaminate the sampling equipment according to the procedures outlined in Section 6.8.

10. All disposable personal protective equipment and disposable sampling equipment will be assumed to be nonhazardous and disposed of off-site.

6.7.8 Groundwater (Monitoring Well)

1. Be certain that the sample location is noted on Location Sketch (see Section 6.10).

2. Measure the depth of water using a decontaminated water level indicator and compute the volume of standing water in the well.

3. Remove three to five times the volume of standing water from the well until field measurements (pH, conductivity, temperature, and turbidity) stabilize, or until the well is dry, whichever occurs first, with a submersible pump. (Turbidity must be less than 50 NTUs prior to collection of a sample for metals analysis. Greater than 50 NTUs may require filtering of the sample or waiting a maximum of 24 hours for the turbidity to decrease.)

4. Remove the laboratory precleaned sample containers from sample cooler, label container with an indelible marker, fill out Sample Information Record and Chain of Custody Form (see Section 6.10).

5. Obtain a sample by using the disposable polyethylene bailer. The order to which the samples are collected is: VOA, SVOC, Pesticide/PCB, metals, and cyanide.

6. If the turbidity exceeds 50 NTUs, then the well should be sampled for all constituents except metals. The well can rest for a maximum of 24 hours until a turbidity reading is less than 50 NTUs, once less than 50 NTUs, the metals sample can be collected.

7. If it is determined in consultation with the NYSDEC that filtering of the sample is necessary (i.e. through direction from NYSDEC or after waiting a maximum of 24 hours), first collect an unfiltered sample in a sample container, replace the cover on the sample container and label the sample. Next, pour an appropriate amount of the remaining sample from the bailer into a second sample container through a filter medium (0.45 microns) to remove particulates from suspension. Replace the cover on the sample container and label the sample. The turbidity of both the filtered and unfiltered sample will be recorded at the time of collection.

8. Gently pour the sample into the sample container taking care not to spill on outside of bottle or overfill container and replace cover on the sample container. Samples for volatile organic analyses, will have no air space in the sample vial prior to sealing. This is done by filling the vial such that there is a meniscus on top. Carefully, slide the septum, Teflon side down, onto the top of the vial and cap the vial. Check for bubbles by turning the vial upside down and tapping it lightly. If bubbles appear, reopen the vial, remove the septum and add more sample (or resample). Replace the septum, recap and check for bubbles. Continue until vial is bubble-free.

9. Return sample container to sample cooler.

10. Dispose of bailer.

11. Place disposable personal protective equipment into a 55-gallon drum.

6.7.9 Groundwater (Water Supply Well)

1. Be certain that the sample location is noted on Location Sketch (see Section 6.10).

2. Measure the depth of water using a decontaminated water level indicator.

3. Purge the well for a period of ten to fifteen minutes using existing water supply well pump and piping. Collect field measurements (pH, conductivity, temperature, and turbidity) at the start of pumping and immediately prior to cessation of purging. (Turbidity must be less than 50 NTUs prior to collection of a sample for metals analysis. Greater than 50 NTUs may require filtering of the sample or waiting a maximum of 24 hours for the turbidity to decrease.)

4. Remove the laboratory precleaned sample containers from sample cooler, label container with an indelible marker, fill out Sample Information Record and Chain of Custody Form (see Section 6.10).

5. Obtain a sample by collecting the sample directly from a point of use tap. The order to which the samples are collected is: VOA, SVOC, Pesticide/PCB, metals, and cyanide.

6. If the turbidity exceeds 50 NTUs, then the well should be sampled for all constituents except metals. The well can rest for a maximum of 24 hours until a turbidity reading is less than 50 NTUs, once less than 50 NTUs, the metals sample can be collected.

7. If it is determined in consultation with the NYSDEC that filtering of the sample is necessary (i.e. through direction from NYSDEC or after waiting a maximum of 24 hours), first collect an unfiltered sample in a sample container, replace the cover on the sample container and label the sample. Next, pour an appropriate amount of the remaining sample from the bailer into a second sample container through a filter medium (0.45 microns) to remove particulates from suspension. Replace the cover on the sample container and label the sample. The turbidity of both the filtered and unfiltered sample will be recorded at the time of collection.

8. Gently collect the sample into the sample container taking care not to spill on outside of bottle or overfill container and replace cover on the sample container. Samples for volatile organic analyses, will have no air space in the sample vial prior to sealing. This is done by filling the vial such that there is a meniscus on top. Carefully, slide the septum, Teflon side down, onto the top of the vial and cap the vial. Check for bubbles by turning the vial upside down and tapping it lightly. If bubbles appear, reopen the vial, remove the septum and add more sample (or resample). Replace the septum, recap and check for bubbles. Continue until vial is bubble-free.

9. Return sample container to sample cooler.

10. Place disposable personal protective equipment into a 55-gallon drum.

6.8 Decontamination Procedures

All field sampling equipment should be sterile and dedicated to a particular sampling point. In instances where this is not possible, a field cleaning (decontamination) procedure will be used in order to reduce the chances of cross-contamination between sample locations. A decontamination station will be established for all field activities. This will be an area located away from the source of contamination so as not to adversely impact the decontamination procedure, but close enough to the sampling area to keep equipment handling to a minimum.

6.8.1 Field Decontamination Procedures

All nondisposable equipment will be decontaminated at appropriate intervals (e.g., prior to initial use, prior to moving to a new sampling location and prior to leaving the site). Different decontamination procedures are used for various types of equipment that perform the field activities as discussed below. When using field decontamination, it is advisable to start sampling in the area

of the site with the lowest contaminant probability and proceed through to the areas of highest suspected contamination.

6.8.2 Decontamination Procedure for Drilling/Test Trench/Pit Equipment

All equipment such as drill rigs, backhoes and other mobile equipment should receive an initial cleaning prior to use at the site. The equipment will then be decontaminated prior to leaving the site and each time it returns on-site. Unless otherwise specified and approved, all wash/rinse solutions should be collected and contained on-site. The actual fate of this material will be determined after review of analytical data generated from samples and on-site discharge impacts have been evaluated.

After the initial washing, cleaning may be reduced to those areas that are in close proximity to materials being sampled. Drill rig items such as auger flights, drill rods, and drill bits are to be cleaned in between sample locations.

All decontamination generated wastes will be contained in 55-gallon drums and stored in the designated area.

Drilling equipment will be decontaminated in the following manner:

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

6.8.3 Decontamination Procedure for Sampling Equipment

Teflon, PVC, polyethylene, polystyrene and stainless steel sampling equipment decontamination procedures will be the following:

- Wash thoroughly with nonresidual nonionic anionic detergent (such as alconox) and clean potable tap water using a brush to remove particulate matter or surface film.
- Rinse thoroughly with tap water.
- Rinse thoroughly with distilled water.
- Rinse in a well ventilated area with methanol (pesticide grade) and air dry.
- Rinse thoroughly with distilled water and air dry.
- Wrap completely in clean aluminum foil with dull side against the equipment. For small sampling items, such as scoops, decontamination will take place over a drum specifically used for this purpose.

The first step, a soap and water wash, is to remove all visible particulate matter and residual oils and grease. This is followed by a tap water rinse and a distilled/deionized water rinse to remove the detergent. Next, a high purity solvent rinse is designated for trace organics removal. Methanol has been chosen because it is not an analyte of concern in the TCL. The solvent must be allowed to evaporate and then a final distilled/deionized water rinse is performed. This rinse removes any residual traces of the solvent. The aluminum wrap protects the equipment and keeps it clean until it is used at another sampling location.

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

Field cleaning of well casing and screen should consist of a manual scrubbing to remove foreign material and steam cleaning, inside and out, until all traces of oil and grease are removed. If precleaned certified well casing and screen can be obtained from the manufacturer this would also be acceptable. This material should then be stored in such a manner so as to preserve it in this

condition. Special attention to threaded joints may be necessary to remove cutting oil or weld burn residues.

Materials and equipment that will be used within the monitoring well casing for the purposes of well development and purging shall also be decontaminated.

The submersible pump will be decontaminated by the following procedures:

1. Place pump in a water solution of an nonionic anionic surfactant solution (such as unscented Tide or Alconox) solution and wash the outside of the pump with a scrub brush.
2. Pump approximately five gallons of the wash solution through the pump.
3. Place pump in bucket of clean water and pump out five gallons of water.
4. Wipe down the cable with deionized water and a paper towel.
5. Decontamination water will be disposed of on-site.

6.9 Laboratory Sample Custody Procedures

A NYSDOH ELAP and CLP certified laboratory meeting the requirements for sample custody procedures, including cleaning and handling sample containers and analytical equipment will be used. The laboratory's Standard Operating Procedures (SOPs) will be available upon request.

6.10 Field Management Documentation

Proper management and documentation of field activities is essential to ensure that all necessary work is conducted in accordance with the sampling plan and QA/QC Plan in an efficient and high quality manner. Field management procedures include following proper chain of custody procedures to track a sample from collection through analysis, noting when and how samples are to be composited (if required), preparing a Location Sketch, completing Sample Information Record Forms, Chain of Custody Forms and Boring, Well and Test Pit Construction Logs, maintaining a

daily Field Log Book, preparing Daily Field Activity Reports, completing Field Change Forms and filling out a Daily Air Monitoring Form. Copies of each of these forms are provided in Section 6.22. Proper completion of these forms and the field log book are necessary to support the consequent actions that may result from the sample analysis. This documentation will support that the evidence was gathered and handled properly.

6.10.1 Location Sketch

Each sampling point shall have its own location sketch (found in Section 6.22) with permanent references, to the maximum extent practicable.

6.10.2 Sample Information Record

At each sampling location, the Sample Information Record Form is filled out and maintained including, but not limited to, the following information:

- Site name
- Sample crew
- Sample location
- Field sample identification number
- Date
- Time of sample collection
- Weather conditions
- Temperature
- Sample matrix
- Method of sample collection and any factor that may affect its quality adversely
- Well information (groundwater only)

- Field test results
- Constituents sampled
- Remarks (Sample Compositing Information)

6.10.3 Chain of Custody

The Chain of Custody (COC) is initiated at the laboratory with bottle preparation and shipment to the site. The COC remains with the sample at all times and bears the name of the person assuming responsibility for the samples. This person is tasked with ensuring secure and appropriate handling of the bottles and samples. When the form is complete, it should indicate that there was no lapses in sample accountability.

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

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

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

- Project name and address
- Project number
- Sample identification number
- Date
- Time

- Sample location
- Sample type
- Analysis requested
- Number of containers and volume taken
- Remarks
- Type of waste
- Sampler(s) name(s) and signature(s)
- Spaces for relinquished by/received by signature and date/time.

For this particular study, forms provided by the laboratory will be utilized. A copy of this form is contained in Section 6.22.

The COC Form is filled out and signed by the person performing the sampling. The original of the form travels with the sample and is signed and dated each time the sample is relinquished to another party, until it reaches the laboratory or analysis is completed. The field sampler keeps one copy and a copy is retained for the project file. The sample container must also be labeled with an indelible marker with a minimum of the following information:

- Sample number
- Analysis to be performed
- Date of collection
- Compositing information

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

6.10.4 Split Samples

Whenever samples are being split with another party, a Receipt for Samples Form must be completed and signed. A copy of this form can be found in Section 6.22. A copy of the COC Form will accompany this form. The present work plan does not provide for split samples.

6.10.5 Field Log Book

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

The first page of the log contains the following information:

- Project name and address
- Name, address and phone number of field contact
- Waste generator and address, if different from above
- Type of process (if known), generating waste
- Type of waste
- Suspected waste composition, including concentrations

Daily entries are made for the following information:

- Purpose of sampling
- Location of sampling point
- Number(s) and volume(s) of sample(s) taken
- Description of sampling point and sampling methodology

- Date and time of collection, arrival and departure
- Collector's sample identification number(s)
- Sample distribution and method of storage and transportation
- References, such as sketches of the sampling site or photographs of sample collection
- Field observations, including results of field analyses (e.g., pH, temperature, specific conductance), water levels, drilling logs, and organic vapor and dust readings
- Signature of personnel responsible for completing log entries.

6.10.6 Daily Field Activity Report

At the end of each day of field work, the Field Operations Manager, or designee, completes this form noting personnel on-site and summarizing the work performed that day, equipment, materials and supplies used, results of field analyses, problems and resolutions. This form is then signed and is subject to review. A copy of the Daily Field Activity Report form is contained in Section 6.22.

6.10.7 Field Changes and Corrective Actions

Whenever there is a required or recommended investigation/sampling change or correction, a Field Change Form must be completed by the Field Operations Manager and NYSDEC on-site supervisor, and approved by the D&B and NYSDEC Project Managers.

6.11 Calibration Procedures and Preventive Maintenance

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

1. Equipment calibration and operating procedures which will include provisions for documentation of frequency, conditions, standards and records reflecting the calibration procedures, methods of usage and repair history of the measurement system. Calibration of field equipment will be done daily at the sampling site so that any

background contamination can be taken into consideration and the instrument calibrated accordingly.

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

Calibration procedures and preventive maintenance, in accordance with the NYSDEC 6/00 ASP, for laboratory equipment is contained in the laboratory's SOPs and is available upon request.

6.12 Performance of Field Audits

During field activities, the QA/QC officer will accompany sampling personnel into the field to verify that the site sampling program is being properly implemented and to detect and define problems so that corrective action can be taken. All findings will be documented and provided to the Field Operations Manager. A copy of D&B Field Audit form is in Section 6.24.

6.13 Control and Disposal of Contaminated Material

During construction and sampling of the monitoring wells and borings installed during the remedial investigation, possibly contaminated soil and water may be generated from drill cuttings, drilling fluids, decontamination water, development water and purge water. Drill cuttings will be handled in accordance with the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) - No. 4032 - Disposal of Drill Cuttings. Specifically, all soil and water associated with the wells or borings will be disposed of on-site. Decontamination water will also be disposed of on-site.

In general, soiled personal protective equipment (PPE) and disposable sampling equipment (i.e., bailers, tongue depressors, scoops) will be considered solid waste and contained and disposed off-site. If hazardous waste contamination of PPE or disposable equipment is suspected, due to elevated measurements of screening instruments, visual observations, odors or other means, PPE and equipment will be drummed and secured on-site until a hazardous waste determination can be made. Once a determination has been made, an approved disposal method will be employed.

6.14 Documentation, Data Reduction and Reporting

A NYSDOH ELAP and CLP certified laboratory meeting requirements for documentation, data reduction, and reporting will be used. All data will be cataloged according to sampling locations and sample identification nomenclature which is described in Section 6.7.1 of the QA/QC plan.

NYSDEC "Sample Identification and Analytical Requirement Summary" and "Sample Preparation and Analysis Summary" forms (for VOA Analysis, B/N-A Analysis, Pesticides/PCB Analysis and Inorganic Analysis) will be completed and included with each data package. These forms are contained in Section 6.23. The sample tracking forms are required and supplied by the 6/00 NYSDEC ASP.

6.15 Data Validation

As described in Section 6.14 above, summary documentation regarding data validation will be completed by the laboratory using NYSDEC forms contained in Section 6.23, and submitted with the data package.

A Data Usability Summary Report (DUSR) will be prepared instead of full data validation. The DUSR is prepared by reviewing and evaluating the analytical data. The parameters to be evaluated in reference to compliance with analytical method protocols include all chain-of-custody forms, holding times, raw data (instrument print out data and chromatograms), calibrations, blanks, spikes, controls, surrogate recoveries, duplicates and sample data. If available, field sampling notes should also be reviewed and any quality control problems should be evaluated as to their effect on the usability of the sample.data.

The DUSR shall describe the samples and analysis parameters reviewed. Data deficiencies, analytical protocol deviations and quailty control problems shall be described and their effect on the data discussed.

Re-sampling and re-analysis recommendations will be made, if necessary. Data qualifications are documented for each sample analyte following the NYSDEC Analytical Services Protocol 6/00 Rev. guidelines.

6.16 Performance and System Audits

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

6.17 Corrective Action

A NYSDOH ELAP and CLP certified laboratory shall meet the requirements for corrective action protocols, including sample "clean up" to attempt to eliminate/mitigate "matrix interference."

The 6/00 NYSDEC ASP protocols include both mandatory and optional sample cleanup and extraction methods. GPC cleanup is required for soil samples by the 6/00 NYSDEC ASP for semivolatile and pesticide/PCB analyses in order to meet contract required detection limits. Florisil column cleanup is required for the pesticide/PCB fraction of both soil and water samples. There are several optional cleanup and extraction methods noted in the 6/00 NYSDEC ASP protocol. These include: Silica gel column cleanup, acid-base partition, steam distillation and sulfuric acid cleanup for PCB analysis.

It should be noted, that if these optional cleanup and extraction methods are requested by NYSDEC, holding time requirements should not be exceeded due to negligence of the laboratory. However, subsequent to selection of the analytical laboratory for this project, a meeting will be scheduled among representatives of the NYSDEC, D&B and the laboratory to discuss these issues and establish procedures to ensure good and timely communications among all parties.

6.18 Trip Blanks (Travel Blanks)

The primary purpose of this type of blank is to detect additional sources of contamination that might potentially influence contaminant values reported in actual samples both quantitatively and qualitatively. The following have been identified as potential sources of contamination:

- Laboratory reagent water
- Sample containers
- Cross contamination in shipment
- Ambient air or contact with analytical instrumentation during preparation and analysis at the laboratory
- Laboratory reagents used in analytical procedures

A trip blank consists of a set of 40 ml sample vials filled at the laboratory with laboratory demonstrated analyte free water. Trip blanks should be handled, transported and analyzed in the same manner as the samples acquired that day, except that the sample containers themselves are not opened in the field. Rather, they just travel with the sample cooler. Trip blanks must accompany samples at a rate of one per shipment. The temperature of the trip blanks must be maintained at 4°C while on-site and during shipment. Trip blanks must return to the laboratory with the same set of bottles they accompanied in the field.

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

6.19 Field Blank (Field Rinsate Blank)/Equipment Blank

Based upon discussion with the NYSDEC, field blanks are not required for this project, since disposable bailers and sterile scoops are being utilized for sample collection.

6.20 Matrix Spikes/Matrix Spike Duplicates and Spiked Blanks

Matrix spike (MS), matrix spike duplicates (MSD), and matrix spike blanks (MSB) samples are quality control procedures, consistent with 6/00 NYSDEC ASP specifications, used by the laboratory as part of its internal QA/QC program. The MS and MSD are aliquots of a designated sample (water or soil) which are spiked with known quantities of specified compounds. They are used to evaluate the matrix effect of the sample upon the analytical methodology as well as to determine the precision of the analytical method used. A MSB is an aliquot of analyte-free water, prepared in the laboratory, and spiked with the same solution used to spike the MS and MSD. The MSB is subjected to the same analytical procedure as the MS/MSD and used to indicate the appropriateness of the spiking solution by calculating the spike compound recoveries. The procedure and frequency regarding the MS, MSD and MSB are defined in the 6/00 NYSDEC ASP. Site specific MS and MSDs should be collected at a frequency of one per 20 samples or every 7 days (one for each sample delivery group), for each sample matrix collected (i.e., water, soil, etc.). The laboratory is required to analyze an MSB at the same frequency as the MS/MSD.

6.21 Method Blanks

A method blank is an aliquot of laboratory water or soil which is spiked with the same internal and surrogate compounds as the samples. Its purpose is to define and determine the level of laboratory background contamination. Frequency, procedure and maximum laboratory containment concentration limits are specified in the 6/00 NYSDEC ASP as follows:

The laboratory shall prepare and analyze one laboratory reagent blank (method blank) for each group of samples of a similar matrix (for water or soil samples), extracted by a similar method

(separatory funnel, continuous liquid extraction or sonication) and a similar concentration level (for volatile and semivolatile soil samples only) for the following, whichever is most frequent:

- Each case of field samples received, or
- Each 20 samples in a case, including matrix spikes and reanalyses, or
- Each 7 calendar day period during which field samples in a case were received (said period beginning with the receipt of the first sample in that sample delivery group) or
- Whenever samples are extracted.

Volatile analysis requires one method blank for each 12-hour time period when volatile target compounds are analyzed.

Semivolatile and pesticide method blanks shall be carried through the entire analytical process from extraction to final GC/MS or GC/EC analysis, including all protocol performance/ delivery requirements.

6.22 Field Management Forms

Dvirka and Bartilucci Test Pit Log

Contractor: _____
Operator: _____
Inspector: _____
Equip Type: _____

Project Name: _____
Project #: _____

Pit No. TP-_____
Sheet 1 of _____
Pit Location:

Groundwater Observations		
Water level		
Time		
Date		
Depth of pit		

Start: _____
Finish: _____
Weather: _____

Plot Plan

(see location map)

USCS Classification	Sample No.	Depth	Description	Comments
		1		
		2		
		3		
		4		
		5		
		6		
		7		
		8		
		9		
		10		
		11		
		12		
		13		
		14		
		15		
		16		
		17		
		18		
		19		
		20		

Stratigraphic Summary: _____

Driller:_____	**Dvirka and Bartilucci Boring Log**	**Boring ID :** ____
Inspector:_____	Project Name: _____	**Sheet** _____ **of** _____
Rig Type:_____	Project #:_____	**Location:**_____
Drilling Method: _____	Boring Depth: _____	_____

	Groundwater Observations				
Date				Start (Date & Time):_____	**Location Sketch:**
Time				Finish (Date & Time):_____	
DTW				Weather: _____	
Casing/Total Depth				Elevation of Ground Surface: _____	

Sample Interval	Sample No.	Blows		Field Description	Well Schematic	Comments

Soil Stratigraphy Summary _____

Dvirka and Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

Well Construction Log

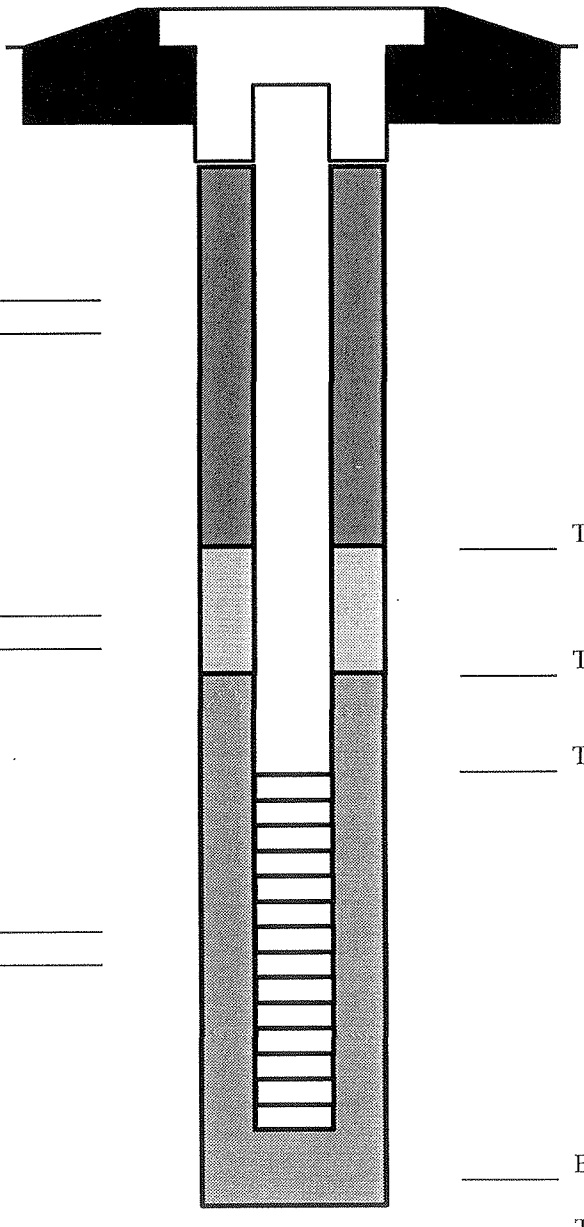
Site _____ Job No. _____ Well No. _____

Total Depth _____ Surface Elevation _____ Top Riser Elevation _____

Water Levels (Depth, Date, Time) _____ Date Installed _____

Riser Dia. _____ Material _____ Length _____
Screen Dia. _____ Material _____ Length _____ Slot Size _____

SCHEMATIC



Surface Seal Type _____

Ground Surface
_____ Riser Elevation
_____ Bottom Surface Seal

Grout Type _____

_____ Top Seal

Seal Type _____

_____ Top Sand Pack

_____ Top Screen

Sand Pack Type _____
Size _____

_____ Bottom Screen

_____ Total Depth of Boring

Dvirka and Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

Well Construction Log

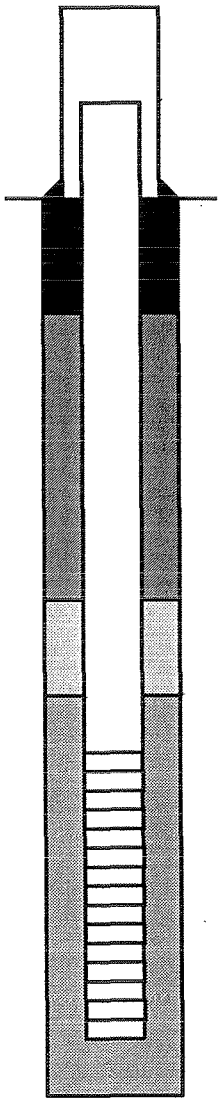
Site _____ Job No. _____ Well No. _____

Total Depth _____ Surface Elevation _____ Top Riser Elevation _____

Water Levels (Depth, Date, Time) _____ Date Installed _____

Riser	Dia. _____	Material _____	Length _____			
Screen	Dia. _____	Material _____	Length _____	Slot Size _____		
Protective Casing	Dia. _____	Material _____	Length _____			

SCHEMATIC



_____ Protective Casing Stickup

_____ Riser Stickup

Ground Surface

Surface Seal Type _____

_____ Bottom Surface Seal

Grout Type _____

_____ Top Seal

Seal Type _____

_____ Top Sand Pack

_____ Top Screen

Sand Pack Type _____

Size _____

_____ Bottom Screen

_____ Total Depth of Boring

Dvirka and Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

Date: _____

LOCATION SKETCH

Project _____ Sample Crew _____

Sample(s) Locations(s) _____

Sample(s) and/or Well Number(s) _____

Location of sample points, wells, borings, etc., with reference to three permanent reference points. Measure all distances, clearly label roads, wells and permanent features.

N

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Date: _____

SAMPLE INFORMATION RECORD

Site: _____ **Sample Crew:** _____

Sample Location/Well No. _____

Field Sample I.D. Number _____ **Time** _____

Weather _____ **Temperature** _____

Sample Type:

Groundwater _____ **Sediment** _____

Surface Water/Stream _____ **Air** _____

Soil _____ **Other (describe, i.e. water, septage, etc.)** _____

Well Information (fill out for groundwater samples)

Depth to Water _____ **Measurement Method** _____

Depth of Well _____ **Measurement Method** _____

Volume Removed _____ **Removal Method** _____

Field Test Results

pH _____ Spec Cond (mS/cm) _____ Turbidity (NTUs) _____

Diss. Oxygen (mg/l) _____ Temperature °C _____ Salinity (%) _____

PID (ppm) _____ Color _____ Odor _____

Other: _____

Laboratory Analyses Requested

_____ _____ _____ _____

_____ _____ _____ _____

Remarks:

_____

_____

_____

Well Casing Volumes

GAL/FT	1¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1½ =0.10	2½ " = 0.24	3½ = 0.50	6" = 1.46

MITKEM CORPORATION
175 Metro Center Boulevard
Warwick, Rhode Island 02886-1755
(401) 732-3400 • Fax (401) 732-3499
email: mitkem@mitkem.com

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

REPORT TO		INVOICE TO		
COMPANY	PHONE	COMPANY	PHONE	LAB PROJECT #:
NAME	FAX	NAME	FAX	
ADDRESS		ADDRESS		TURNAROUND TIME:
CITY/ST/ZIP		CITY/ST/ZIP		

CLIENT PROJECT NAME:	CLIENT PROJECT #:	CLIENT P.O.#:

REQUESTED ANALYSES

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	COMMENTS
	/								
	/								
	/								
	/								
	/								
	/								
	/								
	/								
	/								
	/								
	/								
	/								

TSF#	RELINQUISHED BY	DATE/TIME	ACCEPTED BY	DATE/TIME
1		/		/
2		/		/
3		/		/

ADDITIONAL REMARKS:

COOLER TEMP:

WHITE: LABORATORY COPY YELLOW: REPORT COPY PINK: CLIENT'S COPY

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Date: _____

DAILY FIELD ACTIVITY REPORT

Report Number: _____ Project Number: _____

Field Log Book Page Number: _____

Project: _____

Address: _____

Weather: (AM) _____ Rainfall: (AM) _____ Inches
(PM) _____ (PM) _____ Inches

Temperature: (AM) _____ °F Wind Speed: (AM) _____ MPH Wind Direction: (AM) _____
(PM) _____ °F (PM) _____ MPH (PM) _____

Site Condition: _____

Personnel On Site: Name	Affiliation	Arrival Time	Departure Time

Subcontractor Work Commencement: (AM) _____ (PM) _____

Subcontractor Work Completion: (AM) _____ (PM) _____

Dvirka and Bartilucci
CONSULTING ENGINEERS
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Date: _____

DAILY FIELD ACTIVITY REPORT

Work Performed by subcontractor(s) (includes equipment and labor breakdown):

Dvirka and Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

Date: _____

DAILY FIELD ACTIVITY REPORT

General work performed today by D&B Engineers:

List specific inspection(s) performed and results (include problems and corrective actions):

List type and location of tests performed and results (include equipment used and monitoring results):

Verbal comments received from subcontractor (include construction and testing problems, and recommendations/resulting actions):

Prepared by: _____ Reviewed by: _____

Dvirka and Bartilucci
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A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

FIELD CHANGE FORM

Project Name: _____

Project Number: _____ Field Change Number: _____

Location: _____ Date: _____

Field Activity Description: _____

_____

_____

_____

Reason for Change: _____

_____

_____

_____

Recommended Disposition: _____

_____

_____

_____

_____ _____

Field Operations Officer (D&B Consulting Engineers) (Signature) Date

Disposition: _____

_____

_____

_____

_____ _____

On-site Supervisor (NYSDEC) (Signature) Date

Distribution: Project Manager (D&B)
Project Manager (NYSDEC)
Field Operations Officer
On-site Supervisor (NYSDEC)

Others as Required: _____
_____
_____
_____

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Date: _____

DAILY EQUIPMENT CALIBRATION LOG

Project Name: _____

Project Number: _____ Calibrated by: _____

Instrument Name and Model Number	Calibration Method	Time	Readings and Observations

Dvirka and Bartilucci
CONSULTING ENGINEERS

AIR MONITORING FORM

PROJECT NAME: _____ DATE: _____

PROJECT NUMBER _____ INSTRUMENT: _____

RECORDED BY: _____ CALIBRATION DATE: _____

WEATHER CONDITIONS: _____

TIME	LOCATION	WIND SPEED AND DIRECTION	READING	OBSERVATIONS

RECORDING PROCEDURES/REMARKS: _____

6.23 NYSDEC Sample Identification, Preparation and Analysis Summary Forms

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL REQUIREMENT SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements					
		*VOA GC/MS Method #	*BNA GC/MS Method #	*VOA GC Method #	*Pest PCBs Method #	*Metals	*Other

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
SEMIVOLATILE (BNA)
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOLATILE (VOA)
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PESTICIDE/PCB
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
SEMIVOLATILE (BNA)
ANALYSES

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxiliary Cleanup	Dil/Conc Factor

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSES

Laboratory Sample ID	Matrix	Metals Requested	Date Rec'd at Lab	Date Analyzed

6.24 Field Audit Form

FIELD AUDIT FORM
(continued)

8. Are there adequate sample containers, including deionized water for QA/QC:

Field Blanks	YES	NO
Trip Blanks	YES	NO

Comments: _____

_____

_____

9. Is the equipment decontaminated in accordance with project requirements:

Sampling equipment	YES	NO
Construction equipment	YES	NO

Comments: _____

_____

_____

10. Is field measurement equipment calibrated:

Daily	YES	NO
Properly	YES	NO

Comments: _____

_____

_____

11. Are samples collected and labeled properly: YES NO

Comments: _____

_____

_____

FIELD AUDIT FORM
(continued)

12. Are samples stored at 4°C: YES NO

Comments: _____

_____

_____

13. Are coolers properly sealed and packed for shipment including Chain of Custody taped to underside of lid: YES NO

Comments: _____

_____

_____

14. Is a copy of the Field Investigation Work Plan available on-site: YES NO

Comments: _____

_____

_____

15. Is a copy of each equipment manual on-site: YES NO

Comments: _____

_____

_____

16. Is a copy of the QA/QC Plan available on-site: YES NO

Comments: _____

_____

_____

FIELD AUDIT FORM
(continued)

17. Are investigation personnel familiar with the Work Plan and QA/QC Plan: YES NO

Comments: _____

_____

_____

18. Are quality control samples taken:

Trip Blanks	YES	NO
Field Blanks	YES	NO

19. Are samples shipped in a timely and appropriate manner: YES NO

Comments: _____

_____

_____

20. Has the laboratory been contacted regarding planned shipment of samples: YES NO

Comments: _____

_____

_____

21. Certification - Based upon my audit at the above project, I hereby certify/do not certify compliance with QA/QC requirements for the project:

_____ _____

Dated Signed

FIELD AUDIT FORM
(continued)

General Comments: _____

_____

_____

_____

7.0 HEALTH AND SAFETY PLAN

7.1 General

7.1.1 Introduction

This Site-Specific HASP was developed for the Bouchards Junkyard Site Project located in New Lebanon, New York. This plan must be re-evaluated should the project conditions change from those that are discussed below.

The procedures and protocols presented in this plan have been established to ensure that a mechanism is in place to assist project personnel in the event that hazards from site contamination are encountered. This plan addresses typical on-site activities such as surveying, drilling, excavation and construction activities that will be completed by D&B and its subcontractors. Existing construction-related health and safety procedures are currently in place and will be referenced where appropriate. This HASP is not designed to replace existing procedures or to address each and every health and safety scenario that could be encountered during the implementation of a typical project. This HASP addresses the special and/or unique health and safety situations resulting from actual or potential contact with contaminated materials, consistent with the requirements pursuant to OSHA 1910 General Industry Standards, OSHA 1926 Construction Standards, and specifically, the OSHA Standard for Hazardous Waste Operations and Emergency Response (29 CFR 1910.120), where applicable.

Compliance with this HASP is required from all authorized D&B project personnel, project support personnel and visitors who enter the work areas of this project. Under no circumstances will any person enter an established restricted area or exclusion zone without first complying with the requirements of this HASP.

The contents of this HASP may change or undergo revision based upon field monitoring results, modifications to the technical scope of work or additional information made available to health and safety personnel. Any proposed changes must also be reviewed and approved by designated D&B personnel.

7.1.2 Project Location

SITE NAME: *Bouchards Junkyard Site*

SITE LOCATION *New Lebanon, New York*

7.1.3 Project Personnel

This section specifically refers to D&B operations personnel, project management personnel, and project support personnel. Project Personnel are divided into three categories including Contact Project Personnel, Non -Contact Project Personnel and Project Support Personnel.

Contact Project Personnel - Refers to project personnel who have a reasonable potential to come into contact with contaminated soil, groundwater or soil gas and vapors. The specific job tasks will be evaluated to determine personnel classifications. The Health & Safety Coordinator (HSC) or his/her designee [i.e. Health and Safety Representative (HSR), Field Operations Manager (FOM)] will assist with this determination.

Non-Contact Project Personnel - Refers to Project Personnel who are not reasonably expected to come into contact with contaminated soil, groundwater or soil gas and vapors. The specific job tasks will be evaluated to determine personnel classifications. The HSC or his/her designee (i.e. HSR, FOM) will assist with this determination.

Project Support Personnel - refers to all other persons who may enter the project work zone such as truck drivers, utility workers, and emergency crews (police, fire, ambulance) as well as any other personnel designated as a project visitor by D&B.

Project Personnel Assignments

Dvirka and Bartilucci Consulting Engineers

Title	Name	Phone number
Project Director	Thomas Maher	516-364-9890
Project Manager	Gerald Gould	315-437-1142
Field Operations Manager	Sean Pepling	315-437-1142
QA/QC Control Officer	Robbin Petrella	516-364-9890
Geologist	Dean Stahl	315-437-1142
Feasibility Study Engineer	Maria Wright	516-364-9890
Corporate Health and Safety Coordinator/ On-site Health and Safety Representative	Sean Pepling	315-437-1142

Other Project Support Organizations

NYSDEC Project Contact	Lawrence Alden, PE	518-402-9774
Health & Safety Consultant Emilcott Associates	Bruce Groves, President	973-765-0991
Surveying YEC, Inc.	Ed Chen	845-268-3203
Geophysical Services Hager-Richter Geoscience, Inc.	Jeff Reid	603-893-9944
Fish and Wildlife Services Ecologic, LLC	Elizabeth Moran	315-687-6397
Drilling and Test Pit Excavation Parratt-Wolff, Inc.	Bill Morrow	315-437-1429
Laboratory Services Mitkem Corporation	Paul Seneca	401-732-3400
Designated Physician Industrial Medical Associates		315-478-1977

7.1.4 Emergency Phone Numbers

Detailed emergency information is found in Section 7.12. Written hospital directions and an accompanying map can be found in Section 7.12 and Appendix A.

Fire Department: New Lebanon Fire Dept.	**911 or 518-794-9331**
Police Department: NY State Police	**911 or 518-794-8445**
Ambulance: Lebanon Valley Rescue	**911 or 518-794-9331**
Hospital: Berkshire Medical Center	**413-447-2000**
Poison Control Center	**800-252-5655**
Region 2 EPA Hotline	**800-424-8802**
National Response Center (NRC) for Oil/Chemical Spills	**800-424-8802**
NY Dig Safe:	**800-962-7962**

7.2 Health And Safety Personnel

The following briefly describes the health and safety designations and general responsibilities for this project.

7.2.1 Project Director (PD) - D&B

The Project Director (PD) has overall executive responsibility for all activities and personnel on the site during all project activities described in this HASP.

7.2.2 Project Manager (PM) – D&B

The Project Manager assures that all elements of the Corporate Health and Safety Program are addressed in the Site-Specific HASP.

7.2.3 Corporate Health and Safety Coordinator (HSC) - D&B

The HSC or designee (e.g. the FOM) has overall responsibility for the development, implementation and enforcement of this HASP. He/she will also approve any changes to this plan due to modification of procedures or newly proposed site activities.

The HSC or designee is responsible for the development of safety protocols and procedures, consistent with the hazardous waste aspects of this project, and will also be responsible for the resolution of any outstanding health and safety issues that arise during the conduct of site work. Health and safety-related duties and responsibilities will be assigned only to qualified individuals by the HSC.

The HSC or designee will provide technical assistance for high hazard or other project tasks as required. He/she may periodically conduct audits of the health and safety procedures implemented on site. Before personnel may work in designated exclusion zones, status of medical clearance and applicable health and safety training must be presented to the HSC or his/her designee, pursuant to those requirements specified in OSHA 29 CFR 1910.120.

7.2.4 On-Site Health and Safety Representative (HSR)

The HSR or designee will be on-site for all site activities that have the reasonable potential for bringing workers into contact with contaminated materials. The HSR will obtain and review applicable health and safety training and medical surveillance documents for personnel who may work in designated exclusion zones. The HSR has "stop-work authorization", which he/she will execute upon determination of an imminent safety hazard, emergency situation, or other potentially dangerous situation, such as extreme weather conditions. Authorization to proceed with work will be issued by the HSR after such action. The HSR or his/her designee will initiate and execute all contact with support facilities, such as hospitals, NYSDEC representatives and emergency response organization, when this action is appropriate.

7.2.5 Health and Safety Consultants

A health and safety consultant (Emilcott Associates) is available to provide health and safety consulting services on an as needed basis for this project. The designated Health and Safety Consultant will review the HASP prior to implementation.

7.3 Hazard Assessment

7.3.1 Introduction

At this project location there may be areas where contaminated or hazardous soil or water are encountered. The probability of worker exposure to a chemical hazard varies with the job task. The job tasks that involve contact with potentially contaminated soil are expected to have a greater potential for exposure than job tasks that do not involve contact with soil. Site workers may be exposed to chemicals by inhalation, ingestion, and/or dermal contact. To protect potentially exposed personnel, the site may be divided into zones by a degree of contamination; dust control measures may be implemented; respirators and personal protective equipment may be worn; personal and area air monitoring may be conducted and proper decontamination procedures will be followed.

The following is a general discussion of the hazards that may be encountered on site.

7.3.2 Task Specific Hazard Assessment

At this site, potential exposure to contamination is dependent principally on the type of activity being undertaken. Those work tasks that involve significant disturbance and contact with subsurface soil and water (e.g. drilling or excavation) have the highest project personnel exposure potential. As such, this plan has established two categories of work tasks based on worker exposure to potential site contaminants:

Non-Contact –Work activities that have little or no reasonable potential for contact or exposure to hazardous site contaminants.

Contact –Work activities that have some reasonable potential for contact or exposure to hazardous site contaminants.

7.3.2.1 – Non-Contact Personnel

It is anticipated that the following activities involve minimal soil and water contact, and should not result in contact with potentially contaminated soil, water or soil gas and vapors. These activities should not require additional H&S considerations beyond those H&S practices already in place for this type of project. These tasks will include:

- *site preparation*
- *above ground installation activities*
- *surface restoration*
- *air monitoring activities*
- *project administration*

Exposure to contaminated soil or water is not anticipated however, the operations will be evaluated and monitored as necessary. In the event that contaminated materials are encountered, all project personnel involved in such areas will stop work until further instructions from the HSR.

Initially, exclusion zones will not be established for such activities. However, exclusion zones will be established if visual evidence of contamination is observed, and/or instrument readings exceed the action levels detailed in Section 7.

7.3.2.2 - Contact Personnel

It is anticipated that personnel performing the following tasks have some reasonable potential to come into contact with contaminated soil, groundwater, soil gas and vapors and sediments: These activities include:

- *drilling*
- *well installation*
- *handling of drill cuttings and fluids*

- *equipment and personnel decontamination*
- *liquid transfer activities*
- *material handling*

These activities will be evaluated and monitored by the HSR or his/her designee. Construction of exclusion zones will be established as required.

A hazard analysis was developed for the work activities that involved potential exposure to contamination at the site (contact work). The analysis was based on the potential for the hazard regardless of the contaminant concentrations. For example, the potential for an individual to come in contact with liquids or sediments during equipment decontamination is moderate to high. However, the actual hazard may be low if the liquids or sediments are not contaminated. Table 7-1 outlines the hazard analysis for the Contact Work Activities.

Table 7-1. Hazard Analysis

Potential Hazard	Soil Boring Drilling	Well Installation	Sample Collection	Waste Handling (drill cuttings, groundwater)	Equipment Decontamination
Inhalation of volatiles	low to moderate	low to moderate	low to moderate	low to moderate	low
Skin & eye contact	moderate	moderate	moderate to high	moderate to high	moderate to high
Ingestion	low	low	low	low	low to moderate
Inhalation of dust	low	low	low	low	low to moderate
Heat stress	depends on temperature	depends on temperature	depends on temperature	depends on temperature	depends on temperature
Cold stress	depends on temperature	depends on temperature	depends on temperature	depends on temperature	depends on temperature
Confined Space	not expected	not expected	not expected	not expected	not expected
Heavy equipment	moderate to high	moderate to high	low	low	low to moderate
Noise	moderate	moderate	low	low	moderate
Tripping	low	low	low	low	low
PPE	low	low	low	low	low to moderate
Utilities	moderate	moderate	low	low	low
Other Physical hazards	moderate	moderate	moderate	moderate	moderate
Biological hazards	low	low	low	low	low
Flammable hazards	low	low	low	low	low

The following is a general discussion of the hazards that may be encountered on site. Additional information on any contaminants encountered during this project may be found in standard health and safety references, such as the NIOSH "Pocket Guide to Chemical Hazards."

7.3.3 Chemical Hazards

Activities associated with drilling, soil and water handling for sampling or disposal present a potential for personnel chemical exposure. In addition, when conducting operations close to the roadways, the nearby passing traffic may also cause an increase in airborne contaminants. Precautions should be taken to continuously assess the workplace environment by observation and use of real-time-direct reading instruments during site operations where there exists a potential for contact with contaminants. Measures must be taken to prevent an uncontrolled release or exposure to vapor, liquid or solid contaminants by workers and/or the general public. Assessment and prevention strategies are discussed in other sections of this HASP and must be practiced on a continual basis by all on-site personnel throughout this project. Permissible exposure limits and health hazards of contaminants of concern are presented in Table 7-2.

The potential pathways of exposure and exposure control methods is presented below.

Inhalation - An inhalation exposure to volatile organic compounds and other gases and vapors would typically occur from gases/vapors present in the interstitial soil via the installation of vents or boreholes. Monitoring of these activities would assist in deciding whether engineering control and/or the respiratory protection would be appropriate.

Contact with Skin and Eyes - Contaminated groundwater, soil and sediments may come into contact with skin and eyes during work activities. Coveralls, work gloves, and eye protection will be used, as necessary, to minimize and/or prevent skin and eye exposures.

Ingestion - Ingestion of contaminated materials may occur as a result of a hand-to-mouth contact (eating, drinking, and smoking) in contaminated areas or prior to appropriate personal decontamination. Frequent and thorough washing of hands and face, restriction of food items and smoking in the work area, proper use of work clothing and personal decontamination will control the potential for ingestion of contaminated soils.

Table 7-2. Permissible Exposure Limits and Health Hazards of Contaminants of Concern

Chemical	OSHA Permissible Exposure Limit/IDLH	Primary Health Hazard (Target Organs)
Polychlorinated Biphenyl (PCB)	0.5 mg/m^3, IDLH 5 mg/m^3	Eyes, skin, liver, reproductive system,
Trichloroethylene (Trichloroethene)	100 ppm, IDLH 1000 ppm	Eyes, skin, respiratory system (RS), heart, liver, central nervous system (CNS)
METALS (elemental form)		
Aluminum	15 mg/m^3 (IDLH not determined)	Eyes, skin, RS
Arsenic	0.01 mg/m^3, IDLH 5 mg/m^3	Liver, kidneys, skin, lungs, lymphatic system
Barium	NR	------
Beryllium	0.002 mg/m^3, IDLH 4 mg/m^3	Eyes, skin, RS
Cadmium	0.005 mg/m^3, IDLH 9 mg/m^3	RS, kidneys, prostate, blood
Calcium *	NR	------
Chromium	1 mg/m^3, IDLH 250 mg/m^3	Eyes, skin, RS
Copper (dusts and mists)	1 mg/m^3, IDLH 100 mg/m^3	Eyes, skin, RS, liver, kidneys
Iron *	NR	-------
Magnesium*	NR	------
Manganese	5 mg/m^3, (IDLH 500 mg/m^3	Skin, RS, CNS, kidneys
Nickel	1mg/m^3, IDLH 10 mg/m^3	Nasal cavities, lungs, skin
Potassium*	NR	------
Silver	0.01mg/m^3, IDLH 10 mg/m^3	Nasal septum, skin, eyes
Sodium *	NR	------
Thallium (soluble compounds)	NR	------
Zinc	NR	------

*These metals are not likely to remain in elemental form in an aqueous environment
NR – Not regulated in elemental form
IDLH - Immediately Dangerous to Life and Health from NIOSH Pocket Guide to Chemical Hazards

This HASP assumes that buried drums, underground storage tanks or radiological waste will not be encountered during the work activities at this site. If such situations and associated waste are uncovered or suspected, project personnel will cease work activities and contact the HSR.

Note: Due to the reported low concentrations of the potentially hazardous materials found in the soil and groundwater, the need for Level C or B personal protection equipment (PPE) is not anticipated. If PID/FID readings are consistently 5 ppm or more above background colorimetric tubes will be used to assess the presence of specific volatile organic compounds (Trichloroethene, e.g.). Colorimetric tubes will be used at the discretion of the monitor, bearing in mind the potential for false positive indications, due to possible interferences from other compounds.

7.3.4 Biological hazards

The location of the Bouchards Junkyard Site is such that a limited number of biological hazards may exist. These hazards may include, but are not limited to: ticks; microbiological agents (molds and fungi); improperly disposed medical waste, such as syringes, sharps or materials contaminated with human blood or bodily fluid; improperly disposed household waste; plants such as poison ivy, oak and sumac; and animals and rodents that may inhabit the site.

7.3.5 Physical Hazard Analysis

Potential hazards that are most likely to be encountered at the Bouchards Junkyard Site during field operations include, but are not limited to:

- Weather conditions (lightning, rain, excessive heat, excessive cold, and high winds, etc.)
- Slips, trips, falls on uneven/overgrown surfaces
- Heavy equipment traffic
- Striking and struck-by (heavy equipment)
- Moving or rotating machinery
- Flying debris from drilling
- Electrocution from overhead power lines and damage to underground utilities (water, gas, sewer and process systems) and related equipment.
- Active vehicular traffic

Below is a summary of guidelines that may be used to eliminate/reduce the potential risk of physical hazards. A copy of the appropriate SOP is referenced where necessary.

7.3.5.1 - Weather

If severe weather occurs that may affect the safety of site workers, the D&B Project Manager or his/her designee shall stop affected field operations. The Project Manager or his/her designee will resume operations when weather conditions improve.

7.3.5.2 - Heat and Cold Stress

Depending on the time of year and weather conditions, cold or heat stress may present a potential problem. The HSR will ensure that the heat and cold stress programs are implemented and that adequate rest breaks and liquid consumption is maintained.

Proposed work/rest schedules will be dependent upon the weather conditions encountered and the level of personal protective equipment being utilized by on-site personnel. The HSR will use his judgment to establish and adjust work/rest schedules.

7.3.5.3 - Noise

Excessive noise can be a problem during certain activities on site, such as well drilling or the use of machinery. If necessary, as designated by the HSR when sustained noise levels exceed 85dbA, ear plugs or other hearing protection equipment with a NRR of 25 or greater will be made available for personnel use.

7.3.5.4 - Illumination

If work activities occur before sunrise and/or after sunset, lighting will be provided at each work area to meet the requirements of 29 CFR 1910.120(m). The Standard states that while any work is in progress, the general site areas shall be lighted to not less than 5 foot-candles [one foot-candle equals 10.764 lux ($E=I/D^2$)]. In addition, any areas of excavation, waste management areas, access ways, active storage areas, loading platforms, and field maintenance areas shall be lighted to not less than 3 foot-candles. The first aid stations should be lighted to not less than 30 foot-candle.

7.3.5.5 - Slip, Trip and Fall Hazards

As in any work area, it is expected that the ground may be uneven, the surface may be unreliable due to settling, surface debris may be present, and wet or muddy areas may exist. Therefore, the potential for slipping, tripping, and falling is present, especially considering that

respirators may be used which can impede vision. Severe trip hazards, such as a sinkhole, will be identified in site meetings and demarcated by flags or caution tape.

Reference D&B SOP # C0014 for more detailed requirements and procedures regarding slip, trip, and fall hazards/fall protection.

7.3.5.6 - Confined Space Entry

Confined space entry is not anticipated during this project.

7.3.5.7 - Electrical Hazards

To control the potential for electrical hazards, operating heavy equipment will not be allowed within 15 feet of any live overhead electrical wires or equipment. Ground fault circuit interrupters shall be used on portable hand tools. The FOM will be responsible for ensuring that all construction activities meet the appropriate electrical requirements outlined in the OSHA construction standards (29 CFR 1926 Subpart K). The HSR or designee will review available site drawings and other information regarding utilities, and call for underground utility mark out before allowing subsurface drilling, sampling or excavation to begin. Hand-dig in sensitive locations.

7.3.5.8 - Lockout/Tagout

A Lockout/Tagout Program has been established to protect employees from injuries that could result from the unexpected or unplanned start-up or movement of machinery or equipment during maintenance, installation, adjustment, or servicing operations. This policy sets forth procedures, which will be used to ensure that employees are provided with the information and equipment they need to perform these tasks safely.

Reference D&B SOP #C0018 for more detailed requirements and procedures regarding lockout/tagout.

7.3.5.9 - Dust Control

During all activities, control measures should be implemented if dust is observed at the perimeters of the construction exclusion zones. Dust control measures may include wetting the soil and/or covering stockpiled soils.

7.3.5.10 - Traffic/Highway Safety

Project personnel may be required to wear safety vests when working on or adjacent to roadways and must comply with all applicable rules and regulations for traffic safety.

7.3.5.11 - Excavation/Trenching, Heavy Equipment Operation, Drum/Container Handling

D&B has established safe operating procedures for employees working in or adjacent to excavation or trenching operations.

Reference D&B SOP # C0016 for more detailed requirements and procedures regarding excavation and trenching.

Maintain safe clearances for personnel/equipment not directly involved with the heavy equipment operation. Use proper guarding where feasible, prohibit loose clothing, long hair and jewelry in the vicinity of operating equipment. On unstable or inclined surface, use outrigger pads and do not exceed maximum safe inclines. Use diligent housekeeping and other techniques to minimize tripping hazards.

Use proper container handling equipment and proper lifting techniques.

7.4 Site Control

A Site Control plan has been established to restrict access to work areas where potential contamination may be present, to select appropriate PPE for personnel working in each control zone and to prevent the accidental spread of contaminated material. As part of this plan, a number of separate zones may be used at this site. These zones are identified as (1) the

Construction Work Zone (CWZ) (2) the Construction Exclusion Zone (CEZ), (3) the Contamination Reduction Zone (CRZ) and (4) the Construction Support Zone (CSZ). Zone classifications may change as circumstances may warrant. The CWZ is the project work area. The CEZ will be established within the CWZ if the air monitoring action levels will exceed the levels established for this project or if the constituents of the soil present a significant exposure hazards, in the opinion of the HSR (refer to section 7.6). The CRZ zone will be established within the CWZ between the CEZ and the CSZ as determined by the HSR.

For more detailed procedures on work zones and site control refer to SOP #HW002.

7.4.1 Construction Work Zone (CWZ)

The CWZ is the project work area or immediate construction area. All physical project work activities will be conducted within the CWZ. This zone is restricted to project (contact and non-contact) personnel and project support personnel and visitors as defined in this document. Access to the site will be controlled by fencing or caution tape and/or safety cones around the equipment and work area. In addition, equipment will be secured at the end of each shift and covers will be placed over any open borings, trenches or pits. Only authorized personnel will be permitted to enter this zone.

All personnel including project personnel, project support personnel and visitors entering the construction work zone will be briefed by the HSR prior to their initial entry. All Contact Project Personnel entering the CWZ must meet the training and medical requirements as outlined in Section 7.7 and 7.8. The protective work clothing and equipment to be worn is defined in Section 7.5 or as required by the HSR. All Contact Project Personnel and equipment exiting the construction work zone must be adequately cleaned before leaving the site as described in Section 7.10 or as required by the HSR or his/her designee. The HSR will monitor non-contact activities performed within the construction work zone

7.4.2 Construction Exclusion Zone (CEZ)

A Construction Exclusion Zone (CEZ) will be established at active work sites where contamination is anticipated, observed or measured leading to potential hazardous exposure to workers. The HSR will make the determination to establish a CEZ based upon work activities,

work conditions, visual evidence of contamination, air monitoring or sample results and/or other knowledge of the site that indicates an increase in the probability of worker exposure.

Typically, the CEZ will consist of an area with a 15-20 foot buffer area around the excavation or activity area. However, the HSR will determine the extent of the CEZ, depending on the potential hazards and site activities. The area will be marked using a physical barrier (i.e. flagging tape) or other means to readily identify the boundary of the zone.

Access to a CEZ will be limited to Contact Project Personnel that meet the training and medical requirements as outlined in Section 7.7 and 7.8. All contact project personnel entering the construction exclusion zones will be briefed by the HSR prior to initial entry.

The protective work clothing and equipment to be worn is defined in Section 7.5 or as required by the HSR. All personnel and equipment exiting the CEZ will be decontaminated (see Section 7.10) in the CRZ or as the HSR determines is necessary.

Once the operations have been completed, the CEZ will be removed by the HSR.

7.4.3 Contamination Reduction Zone (CRZ)

The CRZ is the area just outside of the construction exclusion zone where Contact Project Personnel undergo decontamination. This zone will be contiguous with the construction exclusion zone. The area will be marked using flagging tape or other means to readily identify the boundary of the zone. Access to this zone will be limited to Contact Project Personnel exiting the CEZ and personnel assisting with decontamination. A separate equipment decontamination area will be established as determined by the HSR or a designee.

7.4.4 Construction Support Zone (CSZ)

The CSZ is the location in which administrative and other support functions essential to site operations are conducted. Any function that need not or cannot be performed in a hazardous or potentially hazardous area is performed here. Personnel may wear normal work clothes

within this zone. Potentially contaminated clothing, equipment, and samples must remain in the CRZ until decontaminated.

7.5 Work Clothing And Levels Of Personnel Protection

7.5.1 Work Clothing

The HSR will recommend appropriate levels of protective clothing to be worn in the event that hazardous materials are encountered. The levels of protection planned for this project are identified in Table 7-3. In general, typical construction work clothing will be worn on this project.

7.5.2 Levels of Protection

The level of protection to be worn by field personnel will be defined and controlled by the HSR (in consultation with the firm's Corporate Health and Safety Consultant). Shown below is a list of tasks and the respective levels of protection when working inside a project exclusion zone.

Table 7-3. Personal Protection Levels

TASK	LEVEL OF PROTECTION			
Construction Activities	Respirators		PPE	
	Initial	Contingent	Initial	Contingent
Drilling and Well Installation	D	C	D/Mod D	C
Sample Collection	D	C	D/ Mod D	C
Waste Handling	D	C	D/Mod D	C
Decontamination	D	C	D/C	C

Definition of Levels of Protection:

Respirators:

Level D: A respirator is not required.

Level C: Full or Half face, Air Purifying Respirator (APR) with combination HEPA - P,R,N 100 series (dusts, fumes, aerosols) and organic vapor cartridges. (Yellow)

***PPE*:**

Level D:
- Work coveralls or Tyvek
- Gloves
- Appropriate work boots
- Hardhat
- Safety glasses with side shields as needed

Level C:
- Polycoated Tyvek disposable coveralls or equal substitute
- Vinyl, neoprene, nitrile rubber or butyl rubber outer gloves
- Surgical inner gloves
- Appropriate leather work boots with chemically resistant outer boots or chemically resistant rubber boots
- Hardhat
- Safety glasses with side shields as needed

Note: Modified Level D (Mod D), if used, refers to Level C PPE with no respirator.

7.5.3 Donning and Doffing

Manufacturers recommended procedures for donning and removing PPE ensembles will be followed in order to prevent damage to PPE, reduce and eliminate migration from the work area and a transfer of contaminants to the wearer or others.

7.5.4 Storage and Inspection

Since storage facilities will not be readily available, only minimal quantities of protective equipment will be maintained on site. Items such as gloves, protective suits, and hearing protection will be kept within a suitable storage area. Respirators will be stored in plastic bags when not in use.

Employees are responsible for inspecting personal protective equipment prior to donning, during use and at the end of the shift. Defective equipment shall be removed from service and reported to the HSR. All reusable equipment will be maintained in a sanitary condition, in accordance with the manufacturer's recommendations.

7.6 Monitoring Procedures

7.6.1 Monitoring During Site Operations

Atmospheric air monitoring results are used by the HSR to provide data in determining when Site zones are needed to be established and when certain levels of personal protective equipment are required. For each instrument there are site-specific action level criteria that are used by the HSR as guidelines in making field health and safety determinations. Other data, such as the visible presence of contamination and/or the steady state nature of air contaminant concentration, is also used by the HSR in making field health and safety decisions. Therefore it is possible that the HSR may establish Exclusion Zones and/or require a person to wear a respirator even though atmospheric air contaminant concentrations are below established action levels.

The HSR or designee will perform monitoring. Air monitoring instrumentation will be utilized in all site work areas to monitor the worker-breathing zone. Personal air sampling for specific airborne contaminants may be performed at the direction of and under the supervision of the HSR. The types of instruments that may used and the contaminants they can detect are illustrated in Table 7-4.

Table 7-4. Air Monitoring Instrumentation

Air Monitoring Instrumentation	Acronym	Contaminant(s) Monitored
Combustible Gas Indicator	CGI	Combustible Gas, Oxygen, Hydrogen Sulfide (LEL, O_2, H_2S)
Photoionization Detector	PID	Organic Vapors (non-specific)
Handheld Aerosol Monitor	HAM	Dust, Particulate Material (non-specific)
Flame Ionization Detector	FID	Organic Vapors (non-specific)
Colorometric Detector Tube	---	Specific Organic Vapors
4-Gas Meter	---	Methane, Carbon Monoxide, Hydrogen Sulfide, Oxygen

Exclusion Zone Monitoring

The frequency of real-time monitoring in Exclusion Zone work areas will be determined by the HSR and/or according to the task being conducted and whether potentially hazardous soil or contaminated groundwater will be contacted/disturbed. Real-time monitoring in the Exclusion Zone work areas will be conducted daily and minimally under the following conditions: during an activity which would have the highest probability of worker exposure as determined by the HSR; visible presence of contamination; or at the discretion of the HSR. Engineering controls as discussed in Table 7-5 may be implemented to reduce worker exposure potential in the Exclusion Zones.

Construction Work Zone (Restricted Area)

The frequency of real-time monitoring in restricted zone work areas will be determined by the HSR. Real-time monitoring in restricted work zone areas will be conducted under the following conditions: prior to the beginning of any new job task; prior to the beginning of a job task in any new area; periodically for a long-term job task; during an activity which would have the highest probability of worker exposure as determined by the HSR; visible presence of contamination; or at the discretion of the HSR.

Background Monitoring

Real-time monitoring will occur at locations such as in the main staging area as part of determining atmospheric background levels. Background levels will be established before conducting real-time monitoring in any restricted or Exclusion Zone work area.

Instrument Calibration and Maintenance

All monitoring equipment will be calibrated at least once per day before each day's use. The calibration results will be recorded. Monitoring equipment will be maintained on a schedule corresponding to the manufacturer's suggested maintenance schedule.

7.6.2 Air Monitoring Locations and Action Level Criteria

The primary areas to be monitored during the project are the site perimeter and the work area. A summary of the action levels to be used in association with these air monitoring activities, as well as types of instrumentation which may be utilized at the discretion of the HSR, are presented in Tables 7-4 through 7-6.

It is important to ensure that the location and maintenance of the CEZ boundaries are adequate to protect non-Exclusion Zone personnel. Volatile organic hydrocarbon and dust levels at the perimeter of the work and construction exclusion zones will be maintained below the established action levels. To help manage this task, air monitoring will be performed in the following manner:

- Before any field activities commence, the general background levels of total volatiles and total dust concentrations (when needed) will be measured upwind and in the work area
- During the field activities, the perimeter of the exclusion zone, the work area and the site perimeter (as determined by HSR) monitoring will be conducted.

7.6.2.1 - Perimeter Monitoring

The real time monitoring for the total volatile organic contaminants and dust will be conducted using a PID or FID, as determined by HSR, and Aerosol/Dust monitor. Table 7-5 shows the action levels and action required.

Table 7-5 Perimeter Action Levels

INSTRUMENT	ACTION LEVEL*	ACTION REQUIRED
Aerosol Monitor	>2.5 mg/m^3 TWA or visible dust	Implement dust control measures. If control measures do not reduce concentrations below this action level, expand exclusion zone boundaries.
PID/FID	>5 ppm above Background	Expand exclusion zone boundaries.

7.6.2.2. - Work Area Monitoring

The action levels specified in Table 7-6 are guidelines used by the HSR in making health and safety decisions in the field. Such decisions include use of respiratory protection, placement of zone boundaries, stopping and resuming work.

Table 7-6 Work Area Action Levels

INSTRUMENT	ACTION LEVEL**	LEVEL OF PROTECTION OR ACTION REQUIRED
PID/FID	≤ 5 ppm above Background	No Respirator (Level D/modified D)
PID/FID	> 5 ppm above Background & ≤ 50 ppm above Background	Respirator (Level C). Contact HSR or his/her designee.
PID/FID	> 50 ppm above Background	If levels above 50 ppm persist for 15 minutes, vent area or discontinue work.
CGI –in work area*	≥ 10% LEL	Shut down machinery, remove personnel from work area and ventilate
Oxygen	≤ 19.5%	Cease work/ventilate.
Hydrogen Sulfide	>10 ppm	Notify HSR/leave Area.
Aerosol Monitor	>2.5 mg/m^3	If levels above 2.5 mg/m^3 persist for 15 minutes, implement dust control measures or use Level C protection.

*Note: If any reading is observed on the CGI, investigate potential health hazard

**Note: All concentrations refer to sustained measurements and do not include momentary "spikes" that quickly subside

7.6.3 Monitoring of Personnel

Personal or area monitoring for time weighted average (TWA) measurements may be performed during some operations and activities to qualitatively detect the presence of select

volatile or semi-volatile organic compounds. Personal monitoring will be performed as directed by the HSR. Sampling collection and analysis will be conducted according to the procedures set forth in either the NIOSH Manual of Analytical Methods or the OSHA Analytical Methods Manual. An American Industrial Hygiene Association (AIHA) accredited laboratory will be used for sample analysis.

7.7 Training

7.7.1 Hazard Communication

The HSR is responsible for site specific training, maintaining and updating the site chemical inventory list, assuring adequate labeling, obtaining and maintaining MSDS and notifying employees and contractors of the hazards associated with non-routine tasks. The HSR shall inform D&B personnel of the potential hazards that may be encountered in the area where he/she will be working, should the HSR have such knowledge of these hazards.

Reference D&B SOP # C002 for more detailed requirements and procedures regarding hazard communication.

7.7.2 Initial Site Training

The initial site briefing will be provided on-site by the HSR or designee for all Project Personnel (Contact and Non-Contact) and Project Support Personnel prior to initial entry onto the Construction Work Zone of the site. Site training will also be provided on an as needed basis to specifically address the activities, procedures, monitoring, and equipment for the site operations. Such training will include site and facility layout, hazards, and emergency services at the site, and will detail all provisions contained within this HASP. This training will be documented.

7.7.3 Contact Project Personnel Training

All Contact Project Personnel designated to work in the Construction Exclusion Zone, as outlined in Section 5.0, are required to have successfully met the initial and refresher training

requirements pursuant to OSHA 29 CFR 1910.120(e). A listing of company employees who currently meet the OSHA 1910.120(e) training requirements, along with copies of training certificates and a matrix of training requirements by job classification is maintained at D&B's corporate office.

7.7.4 Supervisor Training

All supervisory personnel designated to work in any designated Construction Exclusion Zone, as outlined in Section 7.4, will be required to have successfully met the supervisory training requirement pursuant to OSHA 29 CFR 1910.120(e).

7.8 Medical Surveillance

All Contact Project Personnel engaged in on-site activities associated with this project must have baseline physical examinations and participate in their employer's medical surveillance program. This program must meet the requirements of 29 CFR 1910.120(f). Medical procedures beyond baseline physical and routine medical surveillance are not planned for this project. Medical records for employees are maintained at D&B's corporate office and by the company's medical group. Medical records are maintained in accordance with the record keeping requirements of 29 CFR 1910.120. In addition, any employee required to wear a respirator for Level C PPE will be approved by a licensed health care provider for respirator use as defined in the OSHA Respiratory Standard 29 CFR 1910.134.

In the unlikely event of an exposure, the affected employee will be sent for any evaluation and treatment that may be needed to either the Designated Physician, or to the designated hospital. See Appendix A for a route map and written directions to the nearest hospital.

7.9 Communications

7.9.1 General Communication

A means of communication will be provided at each project site. This may include two-way radios, portable telephones, or existing nearby telephones. Project personnel will be informed of the communication procedures during site briefings.

7.10 Decontamination Procedures

7.10.1 General

All personnel and equipment that have been within established exclusion zones shall be decontaminated. All decontamination facilities will be under the control of the HSR or designee. Clean-up activities may also occur for operations outside of the established exclusion zones. Such clean-up is part of typical monitoring and sampling, construction, and other support operations.

7.10.2 Personnel Decontamination

Personnel field decontamination equipment, supplies and/or facilities will exist at the exits to all established Exclusion Zones in the CRZs. If possible, these field decontamination facilities should be located upwind of the Exclusion Zone. The field decontamination facilities will be under the control of the HSR. Based on the extent of personnel contamination, the HSR will establish site-specific decontamination procedures.

Full field decontamination procedures (generally Level C) will require all personnel exiting Exclusion Zones to undergo a wash and a rinse process and remove their PPE. This will consist minimally of two or three tubs on the ground, one wash tub and one or two rinse tubs on a plastic surface. Personnel exiting the Exclusion Zone(s) will be required to wash their outer boots, outer gloves and protective clothing. This will be accomplished with a soapy water solution and scrub brushes. Personnel will then proceed to the next two stations, each consisting of a rinse tub containing clean water and a water sprayer. Personnel will stand in the tub and

spray off their gloves, boots, and protective clothing with clean water from the sprayer. After the double rinse, personnel will then remove their outer boots, outer gloves, protective clothing and respiratory protection, if worn.

Once removed, disposable PPE will be collected at the field decontamination site in a drum or large plastic bag. The drum or plastic bag will be secured in order to prevent the accidental spread of contamination. Disposable PPE that has been worn in an Exclusion Zone must be removed and placed in the disposal container before leaving the CRZ. Disposable PPE may not be re-used.

Contaminated wash water will be collected in drums at the field decontamination area or it will be disposed onsite as appropriate (i.e.; placed in vehicle decontamination pads or other approved methods).

Cold weather field decontamination procedures, if applicable, will require the prevention of decontamination liquids (e.g. soap and water) from freezing. This may be accomplished by adding salt or other equivalent substance to the soap solution. The plastic decontamination pad may be covered with gravel or salt or other equivalent material to prevent slips, trips or falls during freezing temperatures.

7.10.3 Wash-up Facility

Portable wash-up materials, apparatus and/or facility will exist in the main support area of the CWZ. The facility will be under the control of the HSR.

After exiting a field decontamination facility, personnel may now use the "wash-up" setup. All personnel working at the site must wash their hands and faces prior to eating, drinking or smoking and practice good personal hygiene. Potable water will be available at the site.

7.10.4 Instrument Decontamination

Instruments will be decontaminated whenever they have come into contact with soil or dust. Instrument decontamination will occur in the same area for personnel decontamination and will consist of the removal of any dust or soil from the surface of the instruments.

7.10.5 Equipment Decontamination

Possible on-site equipment for this project:

- *Flatbed trucks and trailers*
- *Pumps*
- *Drill rigs*
- *Rigging hoists and slings*
- *Liquid and solid soil sampling equipment*

Equipment decontamination will take place at Bouchards Junkyard Site as needed. Water generated as part of decontamination may be allowed to drain back onto the site soil. All field equipment that has been contaminated will be decontaminated before leaving the project site. The HSR or designee will be responsible for ensuring that equipment is decontaminated as needed.

Refer to SOP #HW005 for more detailed containment and disposal procedures.

7.11 Disposal Procedures

It is possible that solid and liquid waste from excavation and drilling activities may be generated. Any waste material containerized during the course of the project shall be appropriately marked pending sampling results and ultimate disposal. All disposable personal protective equipment will be bagged or drummed, classified and segregated for temporary storage on site for ultimate disposal.

Refer to SOP #HW005 for more detailed disposal procedures.

7.12 Emergency Plan

Emergency situations can be characterized as a fire or explosion, an environmental release, business interruption, or accident or injury to the field personnel. For incidents other than minor injuries to on site personnel, evacuation of the area will be conducted. The PD, PM and HSR will be notified immediately in the event of an evacuation.

Emergency phone numbers are listed in Section 7.1 of this HASP. In case of an emergency, it is important that the following Incident Reporting Procedure be observed:

It is important to assure the rapid and accurate transfer of information to appropriate personnel in the event of an emergency situation. To simplify the procedure, emergency situations can be reported by dialing **911**. This includes incidents requiring police assistance, fire department, or medical emergencies.

Be sure to provide the following information to the dispatcher:

1. Caller full name
2. The nature of the incident (i.e. "Fire")
3. The location of the incident (i.e. "Street location and nearest intersection") The more specific the better.
4. What you need (i.e. "Fire Department and First Aid")
5. If you are able, where you will meet emergency responders (i.e. at end of West Street, near train tracks)
6. If applicable, a call back number or your pager number (e.g. "I'll be at the scene; my pager number is 123-4567").
7. Status of the situation. (e.g., is the situation stabilized or "I have the fire under control")
8. If anyone is injured or in need of emergency assistance (e.g. "A mechanic working on a pump was burned.")

7.12.1 Site Emergency Coordinator

Site Emergency Coordinator: *Sean Pepling*

7.12.2 Evacuation

In the event of an emergency situation, all personnel will evacuate and assemble at a designated meeting area. For efficient and safe area evacuation and assessment of the emergency situation, the HSC, HSR or FOM will have the authority to initiate proper action if outside services are required. The access to emergency equipment will be provided and all combustion apparatus (e.g. operating machinery) will be shut down once an emergency situation has been identified.

7.12.3 Personnel Injury

In the event of an emergency situation, the local emergency response group will be called. In case of a life-threatening situation, emergency first aid may be applied on-site as deemed necessary. If possible, the individual should be cleaned up and/or decontaminated and then transported to the nearest medical facility if needed.

The local rescue squad shall be contacted for transport as necessary in an emergency. Since some situations may require transport of an injured party by other means, transportation by automobile may be required.

7.12.4 Personnel Exposure Treatment

SKIN CONTACT:	Use copious amounts of soap and water. Wash and/or rinse affected area thoroughly, then provide appropriate medical attention. Eyes should be thoroughly rinsed with water for at least 15 minutes.
INHALATION:	Move to fresh air and, if necessary, decontaminate/transport to hospital.
INGESTION:	Decontaminate and transport to emergency medical facility.
PUNCTURE WOUND OR LACERATION:	Decontaminate, if possible, and transport to emergency medical facility.

7.12.5 Hospital Route

Turn left from the site exit, proceed east along US-20 for approximately 9.5 miles to US-7. Turn left (north) onto US-7, proceed approximately 1.6 miles to the hospital. Total travel distance is approximately 11.1 miles, time approximately 26 minutes.

A map depicting the route to the hospital is provided in Appendix A.

7.12.6 Safety Equipment

Basic emergency and first aid equipment will be made available at the Project Work Zone and/or the CRZ, as appropriate. This shall include a first aid kit and other safety-related equipment.

7.13 Recordkeeping

The HSR or designee will maintain health and safety information records for the site. The following information will be recorded as needed:

- Weather conditions (temperature, wind speed and direction)
- Air monitoring equipment calibration records
- Air monitoring results (date, time, location, data, instrument, person conducting sampling)
- Training Records
- Medical Surveillance Records
- Health and Safety Audit records
- Description of operation(s)
- Description of accident(s), if any
- Non-compliance with the HASP, if any.

7.14 Authorizations

The HSR or designee must approve all personnel authorized to enter the project work zones and exclusion zones at the site. Authorization will involve completion of appropriate training courses and medical examination requirements as outlined by this HASP, as well as the signature of the individual on the Field Sign Off Form recognizing a complete understanding of

this HASP (see Figure 7-1). Approval of this HASP by D&B's PD, PM, and FOM is indicated in Figure 7-2.

Figure 7-1. Field Sign Off Form

Each field team member shall sign this section after the site-specific training has been completed and before being permitted to work on site.

I have read and understand this Site-Specific Health and Safety Plan. I will comply with all of its provisions.

Project: Bouchards Junkyard Site

Name (Print)	Signature	Date

Figure 7-2. Approvals

The undersigned certify that this Site Health & Safety Plan (HASP) is approved and will be utilized by the Dvirka and Bartilucci Consulting Engineers, for the Bouchards Junkyard Site Project located in New Lebanon, New York.

For Dvirka and Bartilucci Consulting Engineers:

Title	Name	Signature	Date
Project Director	Thomas Maher	_____	_____
Field Operations Manager/ Corporate Health & Safety Officer	Sean Pepling	_____	_____
Project Manager	Gerald Gould	_____	_____
Other:			
_____	_____	_____	_____
_____	_____	_____	_____

APPENDIX A

EMERGENCY INFORMATION

HOSPITAL: Berkshire Medical Center
725 North Street
Pittsfield, MA
(413) 447-2000

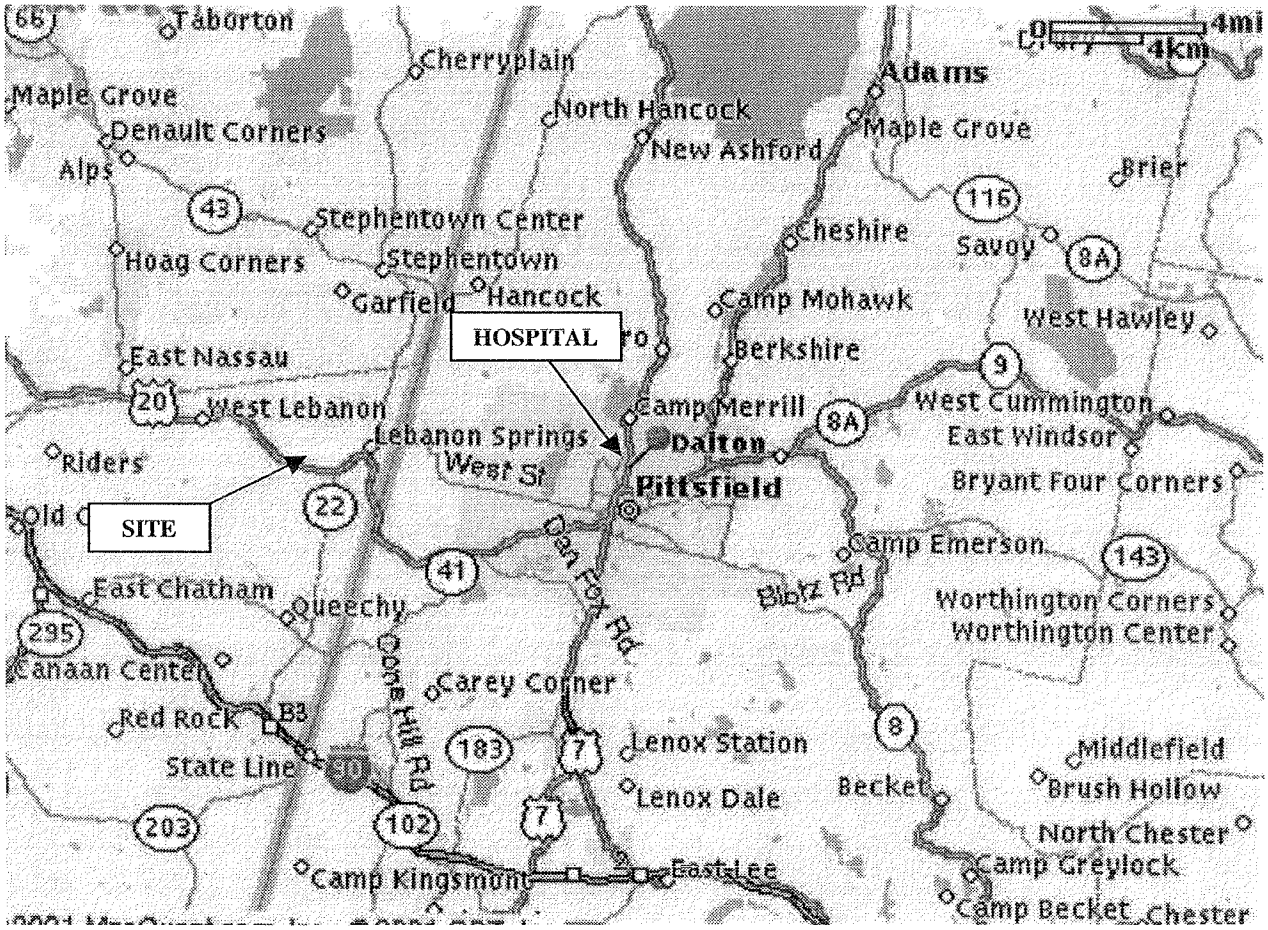
EMERGENCY TELEPHONE NUMBERS

Ambulance: Lebanon Valley Rescue	(518) 794-9331	911
Police: New York State Police	(518) 794-8445	911
Fire: New Lebanon Fire Dept.	(518) 794-9331	911
Hospital: Berkshire Medical Center 725 North Street Pittsfield, MA	(413) 447-2000	
D&B (E. Syracuse) Office	(315)-437-1142	
D&B Designated Physician Industrial Medical Assoc., Syracuse, N.Y.	(315)-478-1977	
Emilcott Associates	(973)-765-0991	
NYSDEC Project Contact (Lawrence Alden, PE))	(518)-402-9774	
Call Before You Dig (UFPO)	1-800-962-7962	

APPENDIX A (continued)

Figure 1. Map to the Hospital

Berkshire Medical Center
725 North Street
Pittsfield, MA
(413) 447-2000



Driving Directions:

1. Turn LEFT onto US-20. (9.5 miles)
2. Turn LEFT onto US-7. (1.6 miles)

Total distance: 11.1 miles.
Estimated travel time: 26 minutes

Table B-1.
Community Air Monitoring Plan
Perimeter Action Levels
Particulates

INSTRUMENT	ACTION LEVEL	ACTION REQUIRED
Aerosol Monitor (Capable of measuring less than 10 micrometer size particles)	>100 mcg/m^3 above background level for 15 minute average.	Implement dust control measures.
Aerosol Monitor (Capable of measuring less than 10 micrometer size particles)	>150 mcg/m^3 above background level for 15 minute average, after dust control measures implemented	Stop work. Re-evaluate dust control measures. Resume work when dust controls are successful in reducing particulate concentration to >150 mcg/m^3 above background level.

Community Air Monitoring Plan
Perimeter Action Levels
Volatile Organic Compounds

PID/FID	>5 ppm above background for 15 minute average	Temporarily halt site activities, continue monitoring. If levels rapidly decrease below 5 ppm, resume work.
PID/FID	> 5 ppm and < 25 ppm above background for 15 minute average	Halt work activities, identify VOC source, abate emissions and continue work. Initiate air monitoring 200 feet downwind – work may continue if VOC levels are > 5 ppm above background.
PID/FID	> 25 ppm	Halt work. Shut down work area. Contact NYSDEC.

New York State Department of Health
Generic Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical-specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a **continuous** basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored **continuously** at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

June 20, 2000

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