C&S

Work Plan

for

Remedial Investigation/ Feasibility Study

Maestri II Site
(formerly known as Val's Dodge Site)
NYSDEC Site 734040
Town of Geddes, New York

June 1999

APPROVED
DOCUMENT
DATE _____

WORK PLAN

FOR

REMEDIAL INVESTIGATION/ FEASIBILITY STUDY

Maestri II Site

(formerly known as Val's Dodge Site)

NYSDEC Site 734040

Town of Geddes, New York

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June 1999

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SECTION 1: WORK PLAN INTRODUCTION

1.1 General

This work plan identifies the Remedial Investigation/Feasibility Study (RI/FS) activities and tasks to be conducted at the Maestri II Site (formerly known as the Val's Dodge Site; herein referred to as "the Site"), located within the vicinity of Val's Motors, a car dealership located on the north side of State Fair Boulevard, at 756 State Fair Boulevard in the Town of Geddes, Onondaga County, New York. The site encompasses a land parcel owned by John B. Maestri and may partially encompass a land parcel owned by Margaret Valerino.

A Phase II Investigation was completed by URS Consultants, Inc. in 1992, under contract with the New York State Department of Environmental Conservation (NYSDEC). The Site was reclassified by the NYSDEC in 1996 to a Class 2 Site (Site No. #734040) on the New York State Registry of Inactive Hazardous Waste Sites. In conjunction with the United States Environmental Protection Agency (USEPA), the Department notified Respondents on June 23, 1997 that they currently consider the site to be a "sub-site" of the Onondaga Lake National Priorities List Site. The Respondents specifically refute that there is regulatory authority for a "sub-site" status.

The following work plan sections address elements, as appropriate, of an RI/FS as set forth in the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, the National Oil and Hazardous Substances Contingency Plan (NCP), and the USEPA Guidance Document entitled *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA*, dated October 1988. This work plan has been developed based on a conceptual understanding of the Site considering the alleged sources of the constituents of concern, potential migration pathways, and potential receptors. The scope and detail of the site characterization studies and alternative development and analysis have been tailored to the Site areas of concern and reflect comments of the NYSDEC as part of a scoping session completed on November 7, 1997. The work plan was revised based on comments provided by the NYSDEC letter dated March 12, 1998, October 26, 1998, and December 30, 1998.

1.2 Work Plan Components

Specific tasks associated with conducting the RI/FS are discussed in Section 2 of this document. Section 3 includes the Sampling and Analysis Plan (SAP). The SAP focuses on the tasks, methodologies, and procedures necessary for the completion of sampling and analysis as part of the Remedial Investigation proposed for this Site. Analytical procedures in the SAP conform, as applicable, with the 1995 version of the NYSDEC Analytical Services Protocols (ASP).

The SAP consists of two primary sections: the Quality Assurance Project Plan (QAPP) and the Field Sampling Plan (FSP). The QAPP describes the policies, organization, objectives, functional activities, and specific Quality Assurance (QA)/Quality Control (QC) activities designed to achieve the data quality goals or objectives of the project. The FSP is consistent with *Field Methods Compendium*, OSWER-Directive 9285.2-11 (Draft June 1993). The FSP is developed so that sample collection activities are conducted in accordance with technically acceptable protocols and so that data collected in the field meets the established data quality objectives.

Section 4 provides the schedule for the completion of the project.

Appendix B provides a Health and Safety Plan (HSP) in accordance with 29 CFR Section 1910. This HSP has been developed to provide guidance on protecting personnel at, and in the vicinity of, the Site during the completion of Remedial Investigation tasks. The HSP will be reviewed and updated, as appropriate, when additional site data are received, on-site personnel change, or site operations differ from those covered by the existing plan.

SECTION 2: RI/FS WORK PLAN

2.1 Introduction

The Site is located in the vicinity of Val's Motors, an operating automotive dealership located on the north side of State Fair Boulevard at 756 State Fair Boulevard (see Figure 1). The Site encompasses a land parcel owned by John B. Maestri and may partially encompass a land parcel owned by Margaret Valerino. The Site borders a State-regulated wetland (designated in 1986 as SYW-10 by the Department on the official freshwater wetlands map) adjacent to Ninemile Creek and Onondaga Lake. Onondaga Lake is approximately 800 feet from the north-eastern edge of the Site.

According to the Phase II report's history of the area, the site is part of a parcel of land that was purchased by Giuseppe Valerino in 1914. A service garage and auto dealership were established on the western end of this parcel in 1927 and 1929 respectively. Portions of the original parcel were sold to John B. Maestri in 1961; this included a 1.5 acre parcel directly behind the car dealership and a 3.8 acre parcel due east, adjacent to the railroad tracks.

Between 1968 and 1973, it was reported that Crucible Specialty Metals, then of Colt Industries, Inc. (or its various subsidiaries), may have disposed of approximately 24 tons of caustic-coated mill scale at the Site. NYSDEC became aware of this potential disposal upon the filing of a Hazardous Waste Disposal Questionnaire with NYSDEC as part of the Community Right to Know Program. The Site was classified as a 2a Hazardous Waste site on the New York State Registry of Inactive Hazardous Waste Disposal Sites in November 1986. Subsequent to a Phase II Investigation conducted in 1992 site by a NYSDEC consultant, the site classification was changed to 2 in 1996.

In conjunction with the United States Environmental Protection Agency (USEPA), the Department notified Respondents on June 23, 1997 that they currently consider the site to be a "sub-site" of the Onondaga Lake National Priorities List Site. The Respondents specifically refute that there is regulatory authority for a "sub-site" status.

2.1A Pre-Remedial Investigation Ecological Risk Assessment

A combined ecologic risk assessment will be conducted at the site. This will be based on the NYSDEC's document titled *Generic Ecological Risk Assessment Guidance* (GERAG), which is included as Appendix D of this work plan. This document utilizes portions of the following two publications:

- FWIA - *Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites*, NYSDEC, October 1994
- ERAGS - *Ecological Risk Assessment Guidance for Superfund: Interim Final*, USEPA, EPA 540-R-97-006, June 1997

2.1A.1 Screening Assessment

The first phase will be to conduct a combination of Step I of the FWIA and Steps 1 and 2 of the ERAGS. Following completion of the screening assessment, a report will be submitted to the NYSDEC documenting the findings to date. Specific tasks for the screening assessment are described below.

FWIA Step I - A site description will be developed that will include :

- Site Maps
  1. *Topographic map* - within two miles of the site perimeter showing (scale of 1" = 2,000') location of site, location of fill, documented fish & wildlife resources (NYSDEC significant habitats; habitats of endangered, threatened, or rare species; regulated wetlands; wild, scenic, and recreational rivers; and streams & lakes).
  2. *Covertype map* - for the site and within ½ mile from the perimeter of the site (scale of 1" = 500') showing major vegetative communities and covertype identification supervised by a qualified biologist.
  3. *Drainage map* - showing surface flows after hydrological events.
- Description of fish & wildlife resources
  1. Fish & Wildlife resources and covertypes with identification of chemical and physical parameters of aquatic resources, identification and distribution of submergent aquatic

vegetation, and identification and distribution of vegetative species.

2. Fauna expected within each covertype & aquatic habitat
3. Observations of stress (e.g., signs of reduced vegetative growth, wildlife mortality, records of past fish & wildlife contamination or mortality).

- Description of fish & wildlife resource value including value of habitat to associated fauna

2.2.2.1 Preliminary Tasks

As part of preliminary site investigation efforts, we propose to complete a Site survey to establish scaled topographic site mapping on which to base future investigations and remedial efforts. The final site map will include property boundaries (lot/block limits) and owner information. The surveyed points will be tied into or otherwise designated using the State Plane coordinate system.

2.2.2.2 Horizontal Waste Limit Delineation

To identify the horizontal limits of waste deposition at the Site, a test trenching program will be completed proximate to the apparent existing limits of waste. As shown in Figure 2, a minimum of eight test trenches will be completed to identify the horizontal limits of fill at the Site. All trenches will, where feasible, be excavated deep enough to encounter native soils. (note: if it is not feasible to excavate to native materials, alternative methods for determining the extent and nature of the waste will be reviewed with the State). Test trenches will be completed by means of a rubber wheeled backhoe or excavator. During the completion of the test trench efforts, priority will be given to the visual identification of solid waste debris, examination of soils for discoloration, and the field screening of soils within each test trench for volatile organic vapors (via photoionization detector headspace analysis). Determination of the extent of fill will be made in the field between representatives of the NYSDEC and the Respondents. If necessary to adequately define the limits, additional test trenches may be excavated. In an effort to identify potential site-specific contaminants of concern within the waste material, a minimum of one sample of soil/waste will be collected from each trench during the test trenching effort for TCL analysis (plus hexavalent chromium) in accordance with NYSDEC ASP methodologies (see Table 1).

2.2.2.3 Preliminary Hydrologic/Hydrogeologic Assessment

A preliminary hydrologic/hydrogeologic assessment will be completed to confirm the appropriate location of surface water and groundwater sampling locations. As part of this task, reconnaissance efforts will be completed within the lowland areas north, east, and

south of the waste mass to confirm the primary flow direction of local drainage. Groundwater elevations will be measured within each of the existing Site groundwater monitoring wells in an effort to confirm local shallow groundwater flow directions. This data will then be supplemented by gauged surface water measurements from within the standing water of the swamp/wetland area; two staff gauges will be installed in the wetland areas, in close proximity to monitoring wells.

2.2.2.4 Hydrogeologic Investigations

Local Geology and Hydrogeology

The results of previous subsurface investigations completed at the Site reported that the fill portion of the Site is approximately 10 to 14 feet in thickness. Immediately below the fill, approximately 4 to 8 feet of peat and 4 to 8 feet of marl were identified. A silty clay-clayey silt layer, with thickness ranging from 5 to 20 feet in the east to west direction, respectively, was identified immediately below the thin layers of peat and marl. In the area of the fill material, a layer of clay was reported immediately below the silt-clay unit. The fill material is saturated at a depth of approximately five feet below the land surface. Based on data presented in the Phase II report, it appears that the surface water in the swamp/wetland adjacent to the fill is in direct hydrologic connection with the water in the fill.

This clay layer, which is approximately 20 feet thick below the fill area, appears to thin in a east to west direction and was not identified within the previously completed upgradient well boring GW-1. A fine to medium sand was identified as the lowermost unit at the Site, during the completion of borings GW-1 and GW-6. In general, the geology encountered during previous site investigations is consistent with the type of glaciofluvial deposits identified in the vicinity, including primarily fine-grained sediments which are typically described as impermeable or semi-impermeable.

General Hydrogeologic Investigation Scope

Six groundwater monitoring wells exist at the Site (see Figure 3), with four wells (GW-3, GW-4, GW-5, and GW-6) screened partially within the fill and two wells (GW-1 and GW-

2) located generally upgradient of the fill area. In accordance with a recent well inspection and previously identified groundwater flow direction (as indicated by water table data in the NYSDEC's Phase II report), well GW-1 was selected to serve as an upgradient shallow groundwater well. Although two of the existing monitoring wells (i.e., GW-1, GW-2) will be utilized to collect hydrologic data and to characterize groundwater flow direction, it is unlikely that the remaining existing wells will be able to provide unbiased groundwater quality data relating to the potential for contaminant migration within the local shallow groundwater (these wells are screened in the fill material). Therefore, monitoring wells GW-3, GW-4, GW-5, and GW-6 will be abandoned and replaced with new wells MW-9, MW-10, MW-11, MW-12S, and MW-12D. Well decommissioning will take place after the new wells are completed in accordance with the procedure in Appendix E of this work plan.

To provide more appropriate data (i.e., data from monitoring wells not screened in the fill materials) relating to the physical and chemical potential for contaminant migration within the local shallow groundwater, two additional shallow monitoring wells (MW-7 and MW-8) will be installed along the northern perimeter of the Site. Although intermittent areas of fill were identified within this area, in general it appears that historic waste placement in this area was limited. As such, it appears that one or both of these proposed monitoring wells could be installed in this general area at locations in where no obvious waste deposition occurred.

To characterize the potential for contaminant migration to local deep groundwater as well as the vertical gradient component of groundwater flow at the Site, a shallow/deep groundwater monitoring couplet will be installed at location MW-12S/D. For this monitoring couplet, the deep monitoring well (MW-12D) would be completed (cased) through the waste and screened within the underlying silty clay-clayey silt soils, while the shallow monitoring well (MW-12S) would be screened within the waste fill material.

For the two groundwater sampling events, samples will be collected from existing upgradient well GW-1, and all of the new wells.

Supplemental Borings and Groundwater Monitoring Well Installations

The exact location of the seven new groundwater monitoring wells, as shown in Figure 3, will be field determined upon completing the preliminary hydrologic/ hydrogeologic assessment.

Subsurface borings, to be completed for purposes of monitoring well installation at these locations, will entail the use of continuous split spoon sampling at each monitoring well location, in accordance with ASTM D-1586-84, or the most recent revision thereof. Borings will be advanced using a six-inch I.D. hollow-stem auger without the use of air or drilling fluids. The Modified Burmeister geologic logging method will be used for describing soil samples. Figure 4 includes a typical schematic of a shallow groundwater monitoring well.

One soil sample from each well screen interval will be analyzed for grain size using sieve and hydrometer testing in accordance with ASTM D-422. Split spoons and all downhole apparatus/tools will be decontaminated (steam cleaned) between samples. During the continuous sampling process, all soil samples will be field screened for the presence of volatile organic compounds using a Thermo-Environmental photoionization detector (PID). As agreed upon in the field by representatives of the NYSDEC and the Respondents, samples may be collected for TCL analysis (including hexavalent chromium).

When it is determined that a subsurface boring has attained an appropriate depth for well screening within the shallow aquifer, monitoring wells will be installed in each soil boring. During the completion of shallow borings and respective monitoring well installations, continuous sampling will be completed as a means to define the unconsolidated geology prior to boring advancement.

All well installations will be constructed of two-inch diameter PVC tri-lock jointed screen and riser, with locking caps. The supplemental shallow groundwater monitoring wells will incorporate a 5 or 10-foot screen section. The length of the screen will be determined in the field to include the top of the water table and to monitor the majority of the shallow zone. All screens, risers and fittings will be thoroughly steam cleaned prior to installation. Screen slot size will be 0.01 or 0.006 inches (ten or six slot) and will depend on the grain size of the sand pack material.

Sand incorporated within sand-pack shall consist of either "0" or "00" sizes, dependent upon the grade of material yielded from native soils surrounding the screened elevation. A bentonite seal, at least two feet in thickness, will be placed following the installation of the sand pack. The bentonite seal will serve to minimize the potential downward communication (or short-circuiting) of infiltrating surface waters/runoff or leachate to the local shallow groundwater regime. The balance of the hole will be backfilled with a cement/bentonite grout. The placement of annular material will be coordinated with the withdrawal of augers or casing to minimize caving around the well screen and riser pipe. Annular material will be placed with a tremie to avoid bridging between riser and bore hole. The sand-pack will extend a minimum of one foot below and two feet above the well screen. A vented six-foot, six-inch outside diameter, steel casing with a locking steel cap, marked with the well identification number, will be installed to surround each PVC well location to maintain well integrity. The monitoring wells will be finished by installing a concrete cap, sloped away from the respective well casing, to prevent water infiltration. The void between each steel casing and PVC riser will be filled with heavy grade sand to prevent invasion by rodents and insects. A weep hole will be drilled into each steel casing, just above the concrete cap. All monitoring wells will be surveyed to establish the horizontal location and elevation of the measuring point. All elevations will be referenced to the New York State Plane Coordinate System for horizontal control and NGVD for vertical control. The elevations of each measuring point will be determined and water levels measured upon completion of well development to identify local groundwater contours and flow directions. It should be noted that during the completion of subsurface drilling tasks, drill cuttings will be visually inspected and screened with a PID.

To minimize potential contamination of deep groundwater, drilling efforts for the deep well boring MW-12D will include casing, grouting, and telescoping tasks, as follows; 1) A borehole will be advanced through the unconsolidated deposits to the silt-clay layer utilizing 6¼-inch (ID) hollow-stem augers; 2) A 6-inch diameter black-iron pipe will be installed within the borehole and grouted into place utilizing a cement/bentonite slurry as the hollow-stem auger is withdrawn; 3) After allowing the cement/bentonite grout to solidify over a 24-48 hour period, the boring will be extended an additional 10 feet(+/-)

within the silt-clay layer using a 4-inch flush joint casing, accompanied by continuous sampling; 4) A 2-inch ID PVC deep groundwater monitoring well (comprised of 5 or 10-feet of PVC-wire wrapped screen and PVC riser pipe) will be installed within the borehole, as shown in Figure 5. The deep well will be finished in accordance with the well details previously described for shallow groundwater monitoring wells.

Well Development and Hydraulic Conductivity Testing

Subsequent to a 48 hour waiting period (or until water levels stabilize, whichever is later), monitoring wells will be developed utilizing overpumping or a combination of surge block and overpumping depending on the well depth and rate of recovery. These are widely used and accepted methods for well development. Where possible, development will continue until such time as the water withdrawn from the well has a turbidity of 50 nephelometric turbidity units (NTUs) or less over three successive measurements. Measurements will be made for each five gallons of water removed from the well. During the development process, pH, conductivity and temperature will also be measured and recorded. If the 50 NTU development criterion cannot be met, an attempt will be made to achieve stabilization of parameters such as pH or specific conductance. Otherwise the issue of using alternative development procedures will be discussed with the NYSDEC. Consistent with NYSDEC Policy, the development waters generated from the monitoring wells will be discharged in the vicinity of the well. Development water from wells at the perimeter of the landfill will be discharged within the boundary of the landfill. Hydraulic conductivity testing will be conducted in each monitoring well after it has been properly developed. A minimum of twenty-four hours or until stabilization of water levels will be allowed to elapse between the end of development and commencing conductivity testing. Hydraulic conductivity testing will be accomplished using either the falling or rising head method and the Hvorslev Method of data reduction.

Sampling and Analysis

Groundwater sampling and analysis will be conducted as shown in Table 1.

2.2.2.5 Wetland Investigations

As part of the field investigation effort, wetland surface water and sediment samples will be collected from wetland areas north and south of the fill area. To assess potential contaminant impacts adjacent to and remote to the fill area, samples will be collected at six locations as shown in Figure 3. Sediment samples will be collected will be collected from the first 0 to 6 inches of sediment. One water sample will be taken at each of the six sample locations. Wetland water samples will be collected using intermediate glass sampling containers, while it will likely be necessary to collect wetland sediment samples using auger/core devices.

Upon completion of the waste limit characterization and hydrogeologic investigations, site-specific parameters of concern (POCs) will be identified. POCs will be parameters detected above background levels in the waste/fill and groundwater samples. Also included will be any of the Constituents of Concern (COCs) identified as part of the risk assessment tasks. This list will be reviewed and approved by the NYSDEC.

Samples collected as part of the wetland investigation will then be analyzed only for the specific POCs identified above plus Total Organic Carbon. Analysis will be in accordance with NYSDEC ASP methodologies.

If the above wetland sampling data, combined with the results of the ecological risk assessment, indicate that additional data is needed, a second sampling event will be conducted subsequent to review by the State.

2.2.2.6 Site Drainage and Ninemile Creek Investigations

In order to characterize the potential for surface water/sediment impacts, a surface water and sediment sampling and analysis effort will be conducted in the drainage ditch northeast of the site and in Ninemile Creek. Surface water and sediment samples will be collected from the locations given below and shown in Figure 3. Sampling in Ninemile Creek will include samples collected upstream of the Site discharge to the Creek to evaluate the existing contaminant loading in the Creek from other locations (such as, Allied Waste Beds, Camillus Landfill, and other wastewater dischargers).

- SW/SED-1: drainage ditch upstream of the Site;

- SW/SED-2: drainage ditch immediately downgradient of the Site;
- SW/SED-3: drainage ditch immediately prior to confluence with southerly flowing surface water
- SW/SED-4: end of culvert prior to discharge to Ninemile Creek.
- SW/SED-5, SW/SED-6, SW/SED-7, SW/SED-8: Ninemile Creek upstream and downstream of the wetland discharges.
- SW/SED-9: background sample (from the ditch flowing under State Fair Boulevard and into the wetlands)

Sampling efforts will be completed during two separate events, under high (storm/runoff) flow conditions and low (dry) flow conditions in an effort to estimate the loading range of potential contaminants. Samples collected as part of the Site drainage and Ninemile Creek investigation will be analyzed only for the specific POCs identified above, and geochemical parameters (i.e., pH, DO, conductivity, hardness). Additionally, TOC will be included for sediment analysis. Analysis will be in accordance with NYSDEC ASP methodologies. Sediment criteria will be evaluated on a sample specific basis. Flow measurements will be made in both the on-site drainage ditches and Ninemile Creek using appropriate methods. For the drainage ditches, a weir will be installed where physically practical and measurements of flow will be made using standard measurements. Flow on Ninemile creek will be estimated from cross-sectional flow measurements at an accessible location.

2.2.2.7 Surface Soil Investigations

Eight surface soil samples will be collected from the fill area. Samples will be collected on an approximately 125 foot grid prior to any other site investigation sampling activity. Samples will be collected from the upper six inches of fill material. Analysis will be for the TCL list plus hexavalent chromium.

2.2.3 Data Validation

To provide adequate, compliant, and defensible data consistent with NYSDEC Guidance, the analytical data generated as part of the Remedial Investigations shall be validated by an

independent-third party data validator approved for such service in the State of New York. Data validation shall be completed on analytical data generated as part of the waste mass, surface water/sediment, hydrogeologic, and wetland investigations.

2.2.4 Ecological Risk Assessment

NOTE - This section will be submitted to the NYSDEC for review pending the outcome of the Pre-RI tasks described in section 2.1A of this work plan. The section will describe the tasks needed to complete the requirements of the NYSDEC's *Generic Ecological Risk Assessment Guidance*. The NYSDEC's guidance requires completion of steps 4 through 8 of the USEPA's *Ecological Risk Assessment Guidance for Superfund* (ERAGS), where applicable.

2.2.5 Human Health Risk Assessment

A letter report will be submitted to the NYSDEC that identifies the contaminants of concern, potential exposure pathways, exposure assumptions, and exposure point concentrations to be used in the baseline risk assessment. This risk assessment will be conducted in accordance with the applicable guidance documents, as shown in Appendix C. Potential risks/exposure routes existing within the perimeter of the waste mass will also need to be addressed. The report will be submitted as shown on the schedule in Section 5.

2.2.6 Interim RI Deliverables

- Analytical Summary Report - Within 90 days of the date of the receipt of all chemical data, an analytical summary report will be submitted to the State. The report will describe the scope of the sampling event and will include copies of relevant analytical data sheets. Validated data will also be presented in tabular format in spreadsheet files (both printed and electronic); two copies will be provided on 3½" diskettes.
- Risk Assessment reports - Ecological and human health risk assessment reports will be submitted as described in subsections 2.2.4 and 2.2.5 respectively.

2.2.7 RI Report and Meeting

Upon completion of the Remedial Investigation tasks, a Draft Remedial Investigation Report will

be prepared. The Draft RI Report will include, at a minimum, sections pertaining to the following; 1) Site history; 2) summary of RI tasks; 3) physical and chemical characteristics pertaining to hydrogeology and hydrology; 4) nature and extent of contaminants within and beyond the waste mass/fill material perimeter; 5) nature and extent of the limits of fill material and specific media contaminants; and 6) potential risks/exposure routes existing within and beyond the waste mass perimeter. The report format will follow that contained in the USEPA guidance document *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*. The report will contain tables that compare RI data to State and Federal water quality standards and guidance values, NYSDEC's Division of Environmental Remediation soil cleanup objectives (TAGM 4046), NYSDEC's Division of Fish and Wildlife's sediment criteria, and any background levels.

Copies of the draft report will be submitted as follows:

- Five copies (one unbound) to Susan Benjamin, NYSDEC DER. Also included will be a WordPerfect 6.1 (or compatible) version on 3½" diskette with accompanying figures in AutoCAD format.
- One copy to the Director, NYSDOH Bureau of Environmental Exposure Investigation, Troy
- One copy to Dan Geraghty, NYSDOH Bureau of Environmental Exposure Investigation, Troy
- One copy to NYSDEC Region 7 Director's Office, Syracuse
- One copy to Robert Nunes, USEPA Region II, New York City
- One copy to Gina Ferreira, USEPA Region II, New York City
- One copy (cover letter only) to Scott Crisafulli, Esq., NYSDEC DEE, Albany
- One copy (cover letter only) to George A. Shanahan, Esq., USEPA Region II, New York City

Subsequent to any changes to the RI report four additional copies of the revised draft RI report will be submitted to the Department.

If necessary, upon completion of the RI, a meeting between the PRPs and appropriate NYSDEC personnel will be held to discuss the cumulative results of the RI as well as to discuss pertinent remedial measures, if any.

2.3 Interim Remedial Measure

Based on the results of the RI, the PRPs may evaluate or propose an Interim Remedial Measure (IRM). This evaluation may focus on identifying an appropriate immediate remedial measure to abate, minimize, prevent, mitigate, or eliminate a threat.

2.4 Feasibility Study - Development and Screening of Alternatives

2.4.1 Remedial Action Objectives and General Response Actions

Remedial action objectives are a description of what the remedial action is intended to accomplish. Remedial action objectives are developed considering the existing data for the Site, the NCP, and the environmental standards, criteria, or guidelines (SCGs). As part of the initial stage of the Feasibility Study, a listing of all relevant Federal and State SCGs will be listed in an effort to develop applicable and appropriate remedial action objectives. The identification and listing of project specific SCGs will be compiled using the NYSDEC July 29, 1995 Memorandum titled, *Revised Index of New York State Standards, Criteria, and Guidance(SCGs)* and will include federal ARAR's as appropriate. These objectives specify remediation goals with respect to contaminants of concern, media of concern, and potential exposure pathways at the Site. The remediation goals are a subset of the remedial action objectives and consist of acceptable contaminant levels or a range of levels for each exposure route. Remedial action objectives are medium-specific and operable unit-specific goals for protecting human health and the environment.

The following preliminary remedial action objectives have been identified and will be expanded, refined, or revised, during the Remedial Investigation and included in the RI report. The intent of these actions is to effectively manage any potential risk identified during the remedial investigation.

- prevent direct contact with landfill contents
- minimize the generation of leachate
- minimize contaminant leaching to groundwater and surface water
- control surface water runoff and erosion
- removal of contaminants from the wetlands; restoration of the wetlands

After the remedial action objectives have been established, general response actions for each medium of interest will be developed. General response actions describe actions that may be utilized to attain the remedial action objectives for the Site and, to the extent practicable, describe areas of media to which the general response actions might be applied. These areas are identified considering acceptable exposure levels, potential exposure routes, the nature and extent of contamination, and other site conditions. The remedial action objectives and general response actions will be developed consistent with subsections 4.2.1 and 4.2.2 of the USEPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA*.

2.4.2 Remedial Action Alternative Development

The following feasibility study specific tasks will be completed in an effort to identify project-specific remedial action alternatives;

2.4.2.1 Identify Remedial Technologies

Potentially applicable remedial technology types and remedial technology process options will be identified under this task. The term technology type refers to general categories of technologies such as chemical treatment or capping. The term technology process option refers to specific processes within each technology type such as ion exchange chemical treatment or clay capping.

2.4.2.2 Evaluate Remedial Technologies

After identifying potential remedial technologies, each remedial technology will be evaluated and screened for suitability. The list of technologies and technology process options will be evaluated and screened based on their effectiveness and implementability. Existing information and other available data will be used in the screening process. The effectiveness evaluation will focus on the potential effectiveness of the technology in handling the estimated volumes or areas of contamination and meeting the remediation goals, the potential impact on human health, and the environment during the construction and implementation phase, and how proven or reliable the particular technology is. The implementability evaluation will consider both the technical and administrative feasibility of implementing the technology. After appropriate technologies and process options are selected, the technologies are assembled into remedial alternatives.

2.4.2.3 Assemble Suitable Technologies Into Alternative Remedial Actions

To assemble alternatives, general response actions and process options chosen for each technology type for each medium are combined to form alternatives to meet all the remedial response objectives for the Site as a whole. The alternative development process will focus only on the most viable options for site remediation. A description of each alternative will be given along with the rationale behind the assembly of the specific remedial action alternative.

2.4.3 ARAR Identification

Upon final assessment of the Remedial Investigation results, Federal and State standards, criteria, advisories, and guidance which are applicable to the hazardous substances at the Site will be identified, including those Applicable, or Relevant and Appropriate Requirements (ARARs) as these terms are used in CERCLA and defined in the NCP. Identification of these requirements early in the RI/FS process will assist in identifying remedial goals and remedial alternatives and allow for better planning of subsequent activities. ARAR identification will be based upon three categories; chemical specific, location specific, and action specific. As previously mentioned, ARAR identification will be initiated as soon as RI data becomes available, with subsequent requirement identifications and revisions completed throughout the final portions of the RI and initial stages of the FS. Chemical-specific ARARs are typically health or risk-based numerical values or methodologies used to determine acceptable levels of contaminants, such as a Maximum Contaminant Level (MCL) for acceptable levels in drinking water. Location-specific requirements typically restrict concentration of contaminants or the conduct of the actions based on the location of the Site with respect to environmentally sensitive areas, such as a wetland. Action-specific requirements are typically activity or technology-based requirements that control hazardous waste activities, with the requirements typically triggered by the particular remedial activity that is selected under the remedial actions. An example of an action-specific requirement is a cap construction requirement based on closure regulations.

2.4.4 Initial Screening of Alternatives

In the event that a large number of viable remedial alternatives are developed, they will be

screened to limit the number of alternatives that will be undergoing detailed analysis. During the screening process, each alternative, including a "no action" alternative, will be evaluated for its effectiveness (both long-term and short-term) and implementability.

Effectiveness - The effectiveness evaluation considers both the short term and long term effectiveness and the ability of the alternative to reduce the mobility, toxicity, or volume of contaminants. The short term evaluation considers the remedial construction and implementation period. The long term evaluation considers the period after the remedial action is completed and the remedial objectives have been met. Alternatives providing significantly less effectiveness than other more promising alternatives may be eliminated. Alternatives that do not provide adequate protection of human health and the environment will be eliminated.

Implementability - The implementability evaluation considers the technical and administrative feasibility of implementing the alternative. The implementation considerations of technical feasibility considers the ability to construct, operate, and meet remedial regulations. Additionally, it considers the ability to conduct operation and maintenance, replacement and monitoring requirements after the remedial action is complete. Considerations of administrative feasibility include the ability to obtain approvals from federal and state regulatory agencies, the availability of treatment, storage and disposal services, and the availability of equipment and technical expertise. Alternatives that are technically or administratively infeasible or that would require equipment, specialists, or facilities that are not available within a reasonable period will be eliminated.

2.4.5 Feasibility Study Screening Memorandum

Within 45 days of receipt of the Department's written approval of the last Risk assessment Report, an FS Screening Memorandum will be submitted. The Memorandum will describe the methods, rationale, and results of the initial screening of alternatives consistent with Section 4.5 of the USEPA Guidance Manual *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA*.

2.5 Feasibility Study - Detailed Analysis of Alternatives

2.5.1 General

After evaluation in the previously discussed screening stage has produced a limited number of viable alternatives, a detailed analysis on the alternatives will be conducted. This will include a narrative description of each alternative including: the technology components and process options; an estimation of the quantity of materials to be handled; implementation requirements including time to implement; major ARARs; and assumptions, uncertainties, and limitations. The detailed analysis of alternatives involves assessing each individual alternative against each of nine evaluation criteria and conducting a comparative analysis that focuses on the relative performance of each alternative against those criteria. The criteria are defined in the NCP and are expanded on in the RI/FS Guidance. They were developed to allow for an analysis with respect to statutory requirements and consideration of the NCP, CERCLA, and EPA policy considerations.

2.5.2 Detailed Analysis of Alternatives

A detailed analysis of alternatives will be conducted in accordance with the EPA RI/FS Guidance, NYSDEC TAGM 4030, consistent with the criteria defined in the NCP. The analysis will be conducted consistent with these documents with the approach described below. A detailed analysis in the format proposed below allows for a comprehensive analysis of each alternative and will allow for a efficient remedy selection process because these criteria are organized based on the function of the criteria in the remedy selection process. The NCP divides the nine evaluation criteria into three groups. The groups are threshold criteria, primary balancing criteria, and modifying criteria.

Threshold Criteria: Threshold criteria relate to CERCLA statutory requirements that each alternative must satisfy in order to be eligible for selection as the remedy. The threshold criteria are:

- *Overall Protection of Human Health and the Environment* - This criterion addresses the protection the alternative provides and draws on the assessment conducted under the other evaluation criteria especially attainment of ARARs, long-term effectiveness and permanence, and short-term effectiveness; and

- *Compliance with ARARs (unless a specific ARAR is waived)* - This criterion evaluates whether each alternative attains ARARs or provides ground for invoking a waiver.

Primary Balancing Criteria: Primary balancing criteria are used to identify major trade-offs between remedial alternatives. The five balancing criteria are:

- *Long Term Effectiveness and Permanence* - This criterion evaluates ability of the alternative to provide reliable protection at the conclusion of the remedial action. It focuses on the magnitude of residual risk remaining at the Site, and the adequacy and reliability of engineering or institutional controls necessary to manage treatment residuals or untreated waste;
- *Reduction of Mobility Toxicity, or Volume Through Treatment* - This criterion assesses the degree which the alternative meets the statutory preference to use recycling or treatment to reduce the mobility, toxicity, or volume of wastes that pose a principal threat. This criterion considers the amount of waste destroyed, treated, or recycled and the degree of expected reduction in toxicity, mobility, or volume using such actions. It also considers the type and quantity of residuals that remain following treatment;
- *Short Term Effectiveness* - This criterion assesses the short term impacts of the alternative considering potential impacts on the community, on-site workers, or the environment during construction and implementation of the alternative. Additionally, it considers the time until protection is achieved;
- *Implementability* - This criterion evaluates the ease or difficulty of implementing the alternative by considering the technical and administrative feasibility of implementation, and the availability of various services such as TSD facilities and the availability of materials. This criterion is of particular importance for evaluating remedial alternatives for landfill sites with large quantities of waste, or highly heterogeneous waste or media which make the implementability uncertain; and
- *Cost* - This criterion considers the capital cost including both direct and indirect costs, annual operating and maintenance (O&M) costs, and net present value of

both capital and O&M costs.

Modifying Criteria: Modifying criteria consist of the following:

- *Support Agency Acceptance* - This criterion assesses the State's position on the alternative and use of ARARs; and
- *Community Acceptance* - This criterion assesses which component of the alternatives interested persons in the community support, have reservations about or oppose.

2.5.3 Comparative Analysis of Alternatives

Once the alternatives have been evaluated with respect to the nine evaluation criteria, a comparative analysis will be conducted to assess the relative performance of each alternative with respect to other alternatives. The purpose of such an analysis is to identify the advantages and disadvantages or strength and weaknesses of each alternative relative to others so that trade offs may be considered and balanced. Particular attention will be given to a comparative analysis with respect to the relationship between protectiveness and costs of remedial alternatives which provide similar levels of protection.

2.5.4 Recommend Preferred Alternative

An alternative will be recommended that reflects the scope and purpose of the actions being undertaken and how the action relates to the long term comprehensive response at the Site. The nine point remedy selection criteria previously discussed will be used to propose a remedy that:

- Is protective of human health and the environment;
- To the maximum extent practicable attains Federal and State public health and environmental standards (attains ARARs);
- Is cost effective providing that it first satisfies the above two threshold criteria;
- Satisfies the preference for selecting a remedy that involves as a principal element treatment that significantly and permanently reduces the mobility, toxicity, or volume of hazardous substances at the Site requiring remediation.

The recommended remedy will ultimately attain the threshold criteria of protection of human health and the environment attaining ARARs. A determination will be made to identify the cost-

effectiveness of the remedy, provided that the remedy is protective and attains ARARs in addition to being an overall effective remedy. The overall effectiveness will be determined by evaluating the three primary balancing criteria: long term effectiveness and permanence; reduction of mobility, toxicity or volume through treatment; and short term effectiveness. The overall effectiveness is then compared to cost to determine if the remedy is cost effective. A remedy is cost effective if its costs are proportionate to its overall effectiveness. The preference for utilizing treatment as a principal element when proposing a remedy will also be considered. To the extent the information is available, State and Community acceptance will also be considered when proposing a remedy for selection.

2.6 Feasibility Study - Report and Public Meeting

Upon completion of the feasibility study and within 45 days of receipt of the Department's written approval of the FS Screening Memorandum, a Feasibility Study Report detailing the results of the technology and alternative screening and development process will be prepared. The report will consist of an Executive Summary section which will describe the recommended alternative and will be followed by an Introduction section which will describe the purpose and organization of the report including background information from the RI Report. The report will include a section on identification and screening of technologies which will also describe the remedial action objectives and general response actions. This will be followed by a section on development and screening of alternatives. The report will conclude with a detailed analysis of alternatives which will include a narrative description of each alternative and comparative analysis of alternatives. The Respondents and/or their representatives will attend a public meeting to be held to discuss the technical aspects and results of the Remedial Investigation, the recommended alternatives for remediation, and other potential recommended remedies identified in the Proposed Remedial Action Plan (PRAP). Presentation material will be prepared, as required, for the meeting to discuss the finalized results and evaluations of the Remedial Investigation and Feasibility Study as well as the NYSDEC PRAP or Proposed Plan.

SECTION 3: SAMPLING AND ANALYSIS PLAN

3.1 Introduction

The Sampling and Analysis Plan includes identification of sampling locations and media, method of collection, handling, and preservation, and the protocol used for sample analysis. Environmental media to be sampled include groundwater, surface water, sediment, wetland waters and sediment, and waste/fill as shown in Table 1 of this RI/FS work plan. The data will be utilized to form conclusions as to the presence, transport, and fate of contaminants which may be originating from fill located at the site.

3.2 Quality Assurance Project Plan (QAPP)

3.2.1 Project Organization and Responsibilities

The sampling and analysis plan will utilize the following project organization and the associated responsibilities:

Project Administration	Robert M. Palladine, Jr., P.E.
Project Management	Thomas A. Barba
Project Hydrogeologist	John M. Kanoza
Quality Assurance/Quality Control	Christen M. Craig
Laboratory Coordinator	Christen M. Craig
Field Investigations	Bryan Bayer

3.2.2 Data Quality Objectives and Forms

Data Quality Objectives are statements which describe the desired quality of data necessary to meet the objectives of the sampling program. The DQOs for the site sampling program were formulated during the scoping effort and developed as part of this Sampling and Analysis Plan. Data Quality Objectives Forms have been completed for each type of sampling media and are located in Appendix A. The general steps followed in preparation of the DQOs were as follows:

- Identification of the media to be sampled;
- Identification of the data uses;
- Identification of the data types;
- Identification of the data quality needs;

- Identification of the data quantity needs;
- Identification the sampling and analysis procedure; and
- Review data for completeness.

The following subsections refer to specific portions of the DQO Forms.

3.2.2.1 Sampled Media

This section identifies the media being investigated with one form filled out for each of the media to be sampled.

3.2.2.2 Data Use

This section identifies the intended uses of the data according to the following:

- *Site Characterization* - Data are used to determine the composition, nature, and extent of contamination.
- *Risk Assessment* - Data are used to evaluate the actual or potential risks posed by contaminants determined to be present on-site. Particular attention is given to sampling at locations where human and ecological exposure is possible.
- *Health and Safety Plan (HSP)* - Data are used to establish the level of protection needed for on-site workers during site characterization activities.
- *Monitoring* - Data are used during the monitoring of the remedial action to access the effectiveness of such action.
- *PRP Enforcement* - Data are used to help establish potentially responsible parties (PRP's).
- *Evaluation of Alternatives* - Data are used to evaluate various proposed remedial technologies and assist in proper design of alternatives.

3.2.2.3 Data Types

This section identifies what type of analyses are to be performed. Testing of samples can include TCL parameters (volatiles, semivolatiles, PCB/pesticides, metals); field parameters (pH, specific conductance, turbidity, temperature, Eh); geochemical parameters (alkalinity, chloride, dissolved oxygen, ammonia, nitrate, total organic carbon, total dissolved solids, hardness, sulfates); and geotechnical parameters (grain size).

3.2.2.4 Sample Collected

This section describes the sample collected.

- *Environmental* - Refers to a specific media sampled such as water, soil, air, or

biological.

- *Source* - Refers to sampling an actual contamination source.
- *Grab* - Refers to a discrete sample representative of a specific location.
- *Composite* - Refers to a sample that represents a mixture of a number of grab samples that represents the average properties over the extent of areas sampled.
- *Biased* - Refers to sampling that focuses on a specific area of expected contamination or uncontaminated area (background).

3.2.2.5 Analytical Support Levels

This section identifies the analytical options available to support data collection activities and are identified as follows:

Level I: *Field Screening*. This level is characterized by the use of portable type instruments which provide real-time data. This section identifies the field monitoring equipment to be used and the manufacturers specified detection limits when available.

Level II: *Field Analysis*. This level is characterized by the use of portable analytical instruments in an on-site lab or transported to the site. This section identifies the field analysis to be used.

Level III: *NYSDEC ASP Protocols*. This method may use standard analytical protocols without the NYSDEC ASP (1995) deliverables/reportables documentation. This level is often used to support design requirements.

Level IV: *NYSDEC ASP Reportables/Deliverables*. This level is characterized by rigorous QA/QC protocols and reportables/deliverables documentation. This section will identify the NYSDEC ASP 1995 Category B methodology to be used.

Level V: *Non-Standard*. This level is characterized by methods which have been modified to meet specific site study needs or by use of some other specialized analytical methods that cannot be obtained through standard avenues of analytical support. The section will identify the special method use and reference the specific method procedures.

3.2.2.6 Sampling Procedures

This section references the section of the Field Sampling Plan that describes the sampling procedures. If appropriate, this section also describes crucial samples that must be collected in order for this sampling event to be successful.

3.2.2.7 Data Quality Factors

This section describes factors which influence the quality or quantity of data to be collected. Primary contaminants and associated levels of concern are identified concerning ARARs or potential risks. The required detection limit are also given or referenced.

3.2.2.8 QA/QC Samples

This section indicates additional samples to be collected to support Quality Assurance/ Quality Control (QA/QC) procedures. Additional samples to be collected include:

- *Duplicates* - Duplicate samples are collected in a way such that they are equally representative of the sampled material. Each portion is carried through the same steps in the analytical process.
- *Matrix Spike Duplicates* - Matrix spike duplicate samples are collected as a duplicate sample which the analytical laboratory will add known amounts of analyte. These QA/QC samples are intended to assess the extraction procedure used by the laboratory.
- *Field Blanks* - Field (equipment) blanks are samples which are obtained by running analyte-free water through the sample collection equipment in a way that is identical to the sample collection procedures. Field blanks will be used during QA/QC procedures to evaluate if sampling equipment has contributed contaminants to the samples.
- *Trip Blanks* - Trip blanks are samples which are prepared prior to the sampling event in the same type of sample container and are kept with the collected samples throughout the sampling event unit analysis. Trip blank vials are not opened in the field and are analyzed for volatile organics only.

3.2.3 Sampling Procedures

All sampling objectives, locations, and procedures have been included as the Field Sampling Plan and described in Section 3.3 of this Sampling and Analysis Plan. Items including Field Measurement Techniques, General Field Decontamination, and Sample Management have also been included within the Field Sampling Plan.

3.2.4 Laboratory Coordination

All chemical analyses for soils, waters, and associated site media will be completed by a laboratory capable of performing project specific analyses as indicated in this QA/QC plan and approved by the NYSDOH/NYSDEC as having the appropriate standard operating procedures, QA/QC programs, current resumes, and organizational structure to complete analytical work as specified in this work plan. The laboratory will be NYSDOH certified under the Environmental Laboratory Approval Program (ELAP) and will be required to remain certified as such throughout the project. The project specific Quality Assurance/Quality Control (QA/QC) Officer will also be responsible for all project related laboratory coordination.

3.2.5 Analytical Methodologies

Sampling and analysis will be conducted as shown in Table 1. All methods will be in accordance with the NYSDEC ASP, 1995 version. Analysis of groundwater and waste samples will be for the TCL parameters in accordance with the NYSDEC ASP 1995 Category B Reportables/Deliverables protocol. Target quantitation limits, where technically feasible, will be established to allow for comparison to media standards as determined by ARARs. Upon completion of the initial groundwater and waste investigation, a group of parameters of concern (POCs) will be identified as discussed in Section 2.2.2.5 of this work plan. Sampling will then be conducted within the adjacent surface waters and wetland area to identify potential impacts to local wetland surface waters and sediments. Stream and wetland samples will be analyzed for the POCs in accordance with the applicable NYSDEC ASP 1995 Category B protocols. The specific analyses for the metals, volatiles, and semivolatiles will be conducted according to the following NYSDEC ASP 1995 methodologies:

Parameter Group	Analysis Method
Volatiles	ASP 95-1
Semivolatiles	ASP 95-2
PCBs/Pesticides	ASP 95-3
Metals	CLP M-series 200.7 (ICP Methodology) or CLP M-series (202.1 - 289.2) (AA Methodology)
Mercury	CLP M-245.1
Cyanide	CLP M-335.2

3.2.5.1 Trip Blanks

Trip blanks will accompany each shipment of aqueous samples for VOC analysis. Trip blanks are not necessary for soil samples. If several samples are collected for VOC analysis on any one day, all VOC samples will be packed in the same cooler with the trip blank. All collected trip blanks will be analyzed according to NYSDEC ASP 1995.

3.2.5.2 Field Duplicates

Duplicate samples will be obtained from each aqueous matrix sampled. A general guideline of one sample in twenty for each matrix will receive a duplicate sample. A duplicate sample will not be taken from the waste/fill due to the inherent inhomogeneity of the sample matrix and expected low volume of retrievable sample.

3.2.6 Analytical Quality Control

Analytical quality control shall be in accordance with the methodology and quality assurance/ quality control requirements listed in NYSDEC ASP 1995. The following holding times calculated from the verified time of sample receipt (VTSR) will be required from the contracted analytical laboratory, regardless of sample matrix:

Parameter	Task	Holding Time
VOCs	Analysis	7 days from VTSR
Semi-VOCs	Extraction	5 days from VTSR
	Sample Clean-Up(s)*	5 days from VTSR
	Analysis	40 days from VTSR
Pesticides/PCBs	Extraction	5 days from VTSR
	Sample Clean-Up(s)*	5 days from VTSR
	Analysis	40 days from VTSR
Mercury	Analysis	26 days from VTSR
Cyanide	Analysis	12 days from VTSR
Metals	Analysis	180 days from VTSR

* If sample cleanup performed during the 5 day period does not provide acceptable samples, these holding times may be extended to accomplish additional clean-up(s). If sample clean-up is required because of sample matrix interferences, samples may be diluted by no more than a 1:5 dilution to bring the analyte(s) on scale.

3.2.7 Reportables and Deliverables Documentation

All analytical data which will be subjected to independent data validation (TCL parameters) will be presented in NYSDEC ASP 1995 Category B reportables/deliverables format.

3.2.8 Data Validation

Because the Remedial Investigation will produce data to be utilized for the Feasibility Study, Remedial Action Plan, and subsequent site related activity, it is important that an evaluation of the validity of the data generated be completed. The data validator will be required to meet the qualification criteria issued by the NYSDEC and be acceptable to the NYSDEC. Requirements stated in this QA/QC plan will ensure that sufficient information is available to assess data validity. This information includes, at a minimum, the following:

- Sampling data including date, matrix, sample type, location, and method of sample retrieval;
- Identification of sampling personnel;
- Field sample preparation;
- Laboratory sample preparation;
- Laboratory analytical methods;

- Laboratory detection limits;
- Laboratory analytical reports; and
- Laboratory QA/QC documentation.

The data validator will utilize the above information and review the laboratory analytical reports to certify conformance with approved analytical methodology, QA/QC documentation, and reporting requirements in accordance with the data validation guidance document issued by NYSDEC. In accordance with NYSDEC requirements, data validation will be performed by a consultant independent of the analytical laboratory. This consultant must meet the qualification criteria issued by NYSDEC which requires that all staff members involved in the validation process have a minimum of one year's experience in the implementation and application of the protocols used in generating the data which they are reviewing, and a minimum of one year's experience reviewing CLP data packages for contract and protocol compliance.

3.2.9 Data Usability and Acceptability

Upon receipt of completed and validated site data, it will be the responsibility of the project QA/QC officer to determine the data usability and acceptability. This determination will entail defining the number of samples of each matrix that are necessary and sufficient to satisfy the sampling objectives. Statistically, data sufficiency involves determining whether confidence levels for measured or predicted values are rigorous enough to satisfy regulatory and engineering criteria. Various statistical methods may be used to ensure that sampling data meet required SCGs/ARAR's standards (i.e., parameter detection limits meet groundwater quality standards).

3.3 Field Sampling Plan

3.3.1 Sampling Objectives

Field sampling at the site will be designed to obtain representative samples of environmental media in an effort to assess the impact that the site may have upon the environment or public. The field sampling plan will specifically address the water quality upgradient and downgradient from the site, waste/fill constituents, and impact of the site fill upon the surface waters, sediment, and wetland media adjacent to the site. The majority of media samples collected as part of the RI will be analyzed for Target Compound List (TCL) parameters and analyzed according to NYSDEC

ASP 1995 Category B protocols and the data presented in reportables/deliverables format.

3.3.2 Sampling Locations

3.3.2.1 Background Sampling

Samples of environmental media from areas not believed to have been affected by site fill may be obtained for comparison against analytical data from samples collected proximate to the site. The groundwater, surface water, and stream sediment background sampling points will be located upgradient/upstream of the other sampling points. Location of any background samples to be collected will be reviewed with the NYSDEC.

3.3.2.2 Groundwater Monitoring Well Locations

As part of field sampling efforts, a total of eight groundwater samples will be collected from either currently existing or newly installed groundwater monitoring wells as described in Section 2 of the work plan.

3.3.2.3 Site Drainage and Ninemile Creek Sampling Locations

Nine surface water and sediment samples will be collected as described Section 2.2.2 of this work plan. A background surface water and sediment sample will be collected from a location known to be upstream of the waste/fill area, and four surface water and sediment samples will be collected from locations within the primary drainage channel which flows to Ninemile Creek. Four locations in Ninemile Creek will also be sampled. The surface water and sediment samples will be obtained from the same point, with the water sample collected first. The downstream samples will be collected first in each stream. The upstream sediment and surface water samples will essentially represent background conditions. Analysis will be for a select group of parameters identified as the POCs.

3.3.2.4 Waste/Fill Investigations

In an effort to characterize potential site contaminants within the waste/fill, a test trench investigation, including eight excavations, will be conducted. During the completion of this investigation, a minimum of one soil/waste sample will be collected from each trench for TCL parameter analysis. The samples collected will be either grab samples collected at discrete locations within a specific test trench or composite samples collected within a

general area of a specific test trench. The final number and location of the test trench media samples will be determined in the field during the time of test trench completion.

3.3.2.5 Wetland Media Investigations

Sampling will be conducted within the wetland area to identify potential impacts to local wetland surface waters and sediments. Wetland surface water and sediment samples collected during this effort will be analyzed for the previously identified POCs. Four surface water samples will be collected from the wetland area located south of the fill area and two will be collected from the wetlands north of the fill area. Sediment samples will be taken at the same locations.

3.3.2.6 Surface Soil Investigations

Eight surface soil samples will be collected from the fill area. Samples will be collected on an approximately 125 foot grid prior to any other site investigation sampling activity. Samples will be collected from the upper six inches of fill material. Analysis will be for the TCL list plus hexavalent chromium.

3.3.3 Sampling Procedures

3.3.3.1 Preparation for Sampling

The sample collection technique is of prime importance to assure the integrity of the collected sample. The following techniques include provisions so that:

- A representative sample is obtained;
- Potential contamination of the sample is minimized;
- The sample is properly preserved; and
- An acceptable Chain-of-Custody record is maintained.

The QA/QC Sampling Component of the Plan includes:

- Incorporation of accepted sampling techniques referenced in the sampling plan;
- Procedures for documenting any field actions contrary to the QA/QC Plan;
- Documentation of all preliminary activities such as equipment check-out, calibrations, and container storage and preparation;
- Documentation of field measurement quality control data (quality control procedures for such measurements shall be equivalent to corresponding QC procedures);
- Documentation of field activities;
- Documentation of post-field activities including sample shipment and receipt, field team debriefing, and equipment check-in;
- Generation of quality control samples including duplicate samples, field blanks, equipment blanks, and trip blanks; and
- The use of these samples in the context of data evaluation with details of the methods

employed (including statistical methods) and of the criteria upon which the information generated will be judged.

The personnel responsible for sample collection will be familiar with standard sampling procedures and follow the appropriate protocol. Auditable files, including the appropriate data sheets, sampling schedules, and custody forms, for every sampling event at each location will be available upon completion for review. Field records will be maintained in bound notebooks with numbered pages to document daily instrument calibration, locations sampled, field observations, and weather conditions. Each page will be dated and signed by the sampler. Each notebook will be numbered and a log of notebooks will be maintained by the project manager. Prior to sampling, all equipment must be procured and accommodations for purge water storage, sample container delivery, and sample shipment must be made. The following is a list of general equipment that might be on hand for sampling events. Special equipment for each sampling event is presented in the section describing that specific sampling event.

General Field Sampling Equipment

- Field Data Sheets
- Chain-of-Custody forms
- Engineers tape and folding ruler with 0.01 foot intervals
- Field Record Sheets
- Latex gloves
- Face-safety shield
- Tyvek coveralls
- Respirators
- Photoionization detector
- Bio-degradable phosphate free detergent
- Coolers (with ice)
- 55 gallon drums
- Sample bottles
- Aluminum foil
- Duct and filament tape
- Tap water
- Distilled water
- Laboratory grade methanol and hexane
- 5 gallon wash buckets
- Decontamination cloths
- Large disposal containers
- Large plastic sheets

3.3.3.2 Groundwater Sample Collection

Groundwater samples will be collected using dedicated PVC bailers following evacuation of three bore hole volumes or complete purging of the well. All other related sampling equipment will be properly decontaminated in the field. The following equipment will be required for sampling of monitoring wells in addition to the general sampling equipment list:

- Well Data Sheets
- PVC dedicated bailers (existing wells)
- Dedicated, disposable HDPE bailers (new wells)
- Electronic water level indicator
- Conductivity meter with calibration standards
- pH meter (portable)
- Thermometer
- Sample preservatives
- Protective gloves
- pH paper
- Redox meter
- Dissolved oxygen meter

The following activities will be completed before going into the field before the start of sampling:

1. Fill out appropriate section on Well Data Sheet for the wells to be sampled;
2. Obtain the sampling schedule for each well to be sampled;
3. Calibrate the Photoionization Detector (PID) with the calibration gas;
4. Calibrate the conductivity meter prior to each day's sampling;
5. Calibrate the pH meter with standard buffer solutions of pH 4, 7, and 10. The meter is calibrated again at each well site using only the buffer solution of pH 7;
6. Determine the amount of sampling to be done for the day and prepare the necessary number of cooler(s);
7. Each well to be sampled will have designated cooler(s) containing the pre-labeled, certified clean, sample bottles. The groundwater samples will be placed in the cooler labeled for the well from which they were taken. The bottle shall be labeled with large distinguishable letters, so that the groundwater samples will be placed in the proper cooler; and
8. Select the appropriate sample bottles for the day's sampling. The bottles shall be pre-marked with a sample parameter and preservatives. Reusable glass bottles will have been cleaned and prepared at the laboratory. The bottles for the various parameters to be analyzed from each well location will then be placed in a cooler.

The following steps describe the sample collection of groundwater:

1. Unlock and remove the well cap;
2. Test the air at the wellhead with the calibrated PID. If the gases from the well have caused the local outside air to read organics greater than 5 ppm, stop work and refer to the Health and Safety Plan. Record the reading on the Well Data Sheet;
3. Calibrate the pH meter with standard buffer solution of pH 7. Rinse probes and

color, odor, sediment content of sample, etc.). Any situations at the site that have the potential to interfere with the analytical results should also be recorded here.

15. Lock well, inspect well site, and note any maintenance required.
16. Dispose of potentially contaminated materials in designated container for contaminated solids.

3.3.3.3 Surface Water and Sediment Sampling

Stream sediment samples will be collected directly, without the use of an intermediate sampler. After collection of each sediment sample into the dedicated, certified clean jar, the suspended sediment will be allowed to settle and any overlying water will be decanted from the sample collection jar. With the exception of VOCs, surface water samples will be acquired using dedicated, certified clean, disposable, glass-quart sampling containers for distribution to parameter specific containers. This approach will eliminate the need for collection of field (equipment) blanks. Each sample container will be appropriately labeled and transported to the contracted laboratory in appropriate coolers. The following equipment will be required for the sampling of stream water and sediment, in addition to the general sampling equipment list:

- Waders, life jacket, and safety line (if necessary);
- Wide-mouth intermediate, certified clean, disposable, glass jar to be used as an interim sampling container;
- Conductivity meter;
- Portable pH meter; and
- Dissolved oxygen meter.

The following activities will be completed prior to field sampling:

- Fill out appropriate section on Surface Water/Sediment Data Sheet for the sites to be sampled;
- Determine the amount of sampling to be done for the day and prepare the necessary number of coolers;
- Select the appropriate sample bottles for the day's sampling. The bottles will be pre-marked with a sample parameter and, if necessary, preservatives added prior to entering the field; and

Surface waters will be collected prior to sediment samples in a downstream to upstream sequence to minimize turbulence. The sampler will submerge the vials into the water at the midpoint, rinse, and evacuate the vials, and then fill the vials with the sample, with minimum turbulence. The sample vials will then be capped immediately after filling to prevent the loss of VOCs. Duplicate samples will include the field splitting of at least one

surface water sample during each sampling visit. This may require the collection of twice the amount of water needed for duplication purposes. The creation of duplicates and matrix spike duplicates shall be performed at least once with each field batch with a minimum of one for each twenty samples. Field measurements, such as pH, specific conductance, dissolved oxygen, and temperature will be performed at both upgradient and downgradient sampling locations.

Techniques and equipment for sediment sampling will vary depending on field conditions and the depth of sediment. When sampling shallow sediment (e.g., where sediment is underlain by rock or gravel), the sampler will submerge the sediment sampling container beneath the water and into the sediment and then fill the container with the uppermost sediment sample, with minimal turbulence. For deeper sediment, a clear tube will be manually advanced to remove a core-like sample of the sediment. The field technician will then place a subsample of the sediment into the appropriate analysis specific container for analysis. Samples will be collected from the first 0 to 6 inches of sediment.

3.3.3.4 Waste/fill Sample Collection

Waste/fill samples will be collected during completion of the fill limit investigation to identify potential contaminants existing within the fill area. Selection of samples will be based on visual examination and PID scanning for volatile organics. These samples will likely consist of solids and would include fill material or stained/discolored soil in the immediate vicinity of fill material where a test trench is completed. During the waste limit investigation, any areas of additional leachate staining will be noted and mapped in the RI report. The locations sampled will be clearly identified on relevant field maps and Chain-of-Custody documents upon properly labeling each sample and completion of record keeping documents.

Waste samples will be collected using stainless steel spoons or an intermediate, disposable, certified clean, glass-pint sampling container, depending upon the consistency of the media. Parameter specific sample containers will then be filled, capped with a minimum amount of head-space, and placed within specific sample coolers for delivery to the laboratory. Samples will be logged within the appropriate sampler's field book and chain-of-custody sheet. Prior to sampling, the following activities will be completed:

- Field identify and stake the tentative locations of planned test trench excavations;
- Calibrate Photoionization Detector (if used for screening); and
- Collect, label, and organize appropriate disposable trowels, spoons, and sample containers.

The following activities will be completed during the waste mass media sampling process:

- Collect appropriate waste mass media sample from field determined locations using pre-cleaned stainless steel spoons or disposable, certified clean, intermediate sampling container;
- Transfer each sample to the appropriately labeled container noting observed characteristics on field data sheet;
- Analyze a subsample of each sample for organic vapors using a PID;
- Cap container and complete proper chain-of-custody sheets and field data sheet; and
- Transport containers and chain-of-custody sheets to laboratory.

3.3.3.5 Wetland Water and Sediment Sampling

Wetland sediment samples will be collected directly, without the use of an intermediate sampler, where the depth to wetland sediment allows. In the event the wetland water depth exceeds 2 feet, a stainless steel hand auger device, with stainless steel/acetate sample collection sleeves, may be utilized to obtain the sediment samples.

After collection, or transfer of the sediment sample to the appropriate sample container, the suspended sediment will be allowed to settle and any overlying water will be decanted from the sample collection jar. With the exception of VOCs, wetland surface water samples will be acquired using dedicated, certified clean, disposable, glass-quart sampling containers for distribution to parameter specific containers. This approach will eliminate the need for collection of field (equipment) blanks. Each sample container will be appropriately labeled and transported to the contracted laboratory in appropriate coolers. The following equipment will be required for the sampling of stream water and sediment, in addition to the general sampling equipment list:

- Waders, life jacket, and safety line (if necessary);
- Wide-mouth intermediate, certified clean, disposable, glass jar to be used as an interim sampling container;
- Stainless steel hand auger and sampling sleeves;
- Alconox wash detergent; deionized water; wash/decon buckets for hand auger decontamination;
- Conductivity meter;
- Portable pH meter; and

- Dissolved oxygen meter.

The following activities will be completed prior to field sampling everyday:

- Fill out appropriate section on Surface Water/Sediment Data Sheet for the sites to be sampled;
- Determine the amount of sampling to be done for the day and prepare the necessary number of coolers;
- Select the appropriate sample bottles for the day's sampling. The bottles will be pre-marked with a sample parameter and, if necessary, preservatives added prior to entering the field; and

Wetland waters will be collected, prior to wetland sediment samples, in a downstream to upstream sequence (where applicable) to minimize turbulence. The sampler will submerge the vials into the water at the midpoint, rinse, and evacuate the vials, and then fill the vials with the sample, with minimum turbulence. The sample vials will then be capped immediately after filling to prevent the loss of VOCs. When sampling sediment, the sampler will submerge the sediment sampling container beneath the water and into the sediment and then fill the container with the upper-most sediment sample, with minimal turbulence. Sediment samples will be taken from the first 0 to 6 inches of sediment. The field technician will then place a subsample of the sediment into the appropriate analysis specific container for analysis. Duplicate samples will include the field splitting of at least one surface water sample and one sediment sample during each sampling visit. This may require the collection of twice the amount of water needed for duplication purposes. The creation of duplicates and matrix spike duplicates shall be performed at least once with each field batch with a minimum of one for each twenty samples. Field measurements, such as pH, specific conductance, dissolved oxygen, and temperature will be performed at both upgradient and downgradient sampling locations.

3.3.3.6 Surface Soil Samples

Surface soil samples will be collected prior to any other sample collection activities at the site. Sample locations will be staked on an approximately 125 foot grid and will be collected from the top six inches of soil at each location. Sample will be collected using stainless steel spoons and placed in certified clean glass sampling containers. Containers will be placed in coolers for transport to the laboratory. Samples will be logged within the appropriate sampler's field book and chain-of-custody sheet. Prior to sampling, the

following activities will be completed:

- Field identify and stake the tentative locations of planned surface soil location;
- Calibrate Photoionization Detector (if used for screening); and
- Collect, label, and organize appropriate disposable trowels, spoons, and sample containers.

The following activities will be completed during the waste mass media sampling process:

- Collect appropriate soil sample using pre-cleaned stainless steel spoons;
- Transfer each sample to the appropriately labeled container noting observed characteristics on field data sheet;
- Cap container and complete proper chain-of-custody sheets and field data sheet; and
- Transport containers and chain-of-custody sheets to laboratory.

3.3.3.7 Background Samples

Surface water, sediment, and groundwater background samples have been incorporated within the respective matrix sampling plan as upstream and upgradient samples.

3.3.3.8 QA/QC Samples

Field Duplicates

Duplicate samples will be obtained from each of the following environmental media sampling points to assess the replicatability of the sampling procedures:

Groundwater	(downgradient well)
Surface Water	(downstream - drainage ditch)
Wetland Surface Water	(adjacent to fill area; random)

Matrix Spike and Matrix Spike Duplicates

Additional samples from each of the following environmental sampling media will be collected as matrix spike and matrix spike duplicates:

Groundwater	(downgradient well)
Stream Sediment	(downstream - drainage ditch)
Wetland Surface Water	(adjacent to fill area; random)
Wetland Sediment	(adjacent to fill area; random)
Waste/fill - trench	(fill area; random)
Waste/fill - borings	(fill area; random)

Trip Blanks

Separate trip blanks will be carried into the field on each of the sampling days. The trip blank vials will be prepared by the contracted laboratory and handled in the field similar

daily, using a 1M KCl reference solution, to 1415 µmhos/cm at 25 degrees centigrade.

to the other sampling containers with the exception that the vials will not be opened.

Rinsate samples

In cases where sampling equipment is field cleaned, a rinsate sample will be collected for analysis.

3.3.4 Field Measurement Techniques

Water Level Measurement - Water elevations will be taken on all wells prior to purging and sampling. All measurements will be taken within a 24 hour period to obtain consistent elevations and recorded on well data sheets. The procedure for measuring water levels in the monitoring wells is:

- Unlock and remove well cap;
- Test the atmosphere of the well with the calibrated PID. If the gases from the well have caused the outside air to read organics greater than 5 ppm, work will be stopped and samplers will refer to the Health and Safety Plan.
- Measure water level to nearest 0.01 foot with a water level indicator (electronic).
- Water level indicators will be decontaminated before moving to next well. The tape and cable are decontaminated by washing in a bucket of distilled water - biodegradable phosphate free-detergent solution, followed by a rinse with distilled water.

pH Measurement - The pH will be determined using a portable pH meter, 100 ml disposable beakers, and pH calibration standards. The pH meter will be calibrated to within 0.05 pH units of the reference standard. Sample pH will be recorded to the nearest 0.05 pH units and readings will be repeated so that meter readings do not fluctuate more than 0.03 pH units. Upon completion of pH measurements the probe will be washed, rinsed, and re-calibrated.

Temperature Measurement - A field thermometer will be pre-calibrated.

Specific Conductance Measurement - A specific conductance meter will be field calibrated daily, using a 1M KCl reference solution, to 1413 μmhos/cm at 25 degrees centigrade. Sample aliquots for specific conductance and temperature will be obtained directly from the sampling point in 100 ml disposable beakers.

Combustible Gas Indicator (CGI), Photoionization Detector (PID) and Organic Vapor

Analyzer (OVA) - The CGI, PID, and OVA will be calibrated daily (and more often as required by the manufacturer's data) prior to use in the field, using calibration test gases.

3.3.5 General Decontamination

The following procedures will be performed for the decontamination of exploration equipment, sampling equipment, and personnel after each drilling/sampling event:

Drill rig and backhoe - The drill rig and backhoe will be steam cleaned prior to their entrance and exit of the site. Greases and oils will not be used on any down hole equipment during drilling or exploration activities.

Exploration equipment - To avoid cross contamination, use of a PID meter and cleaning between each sampling site will be employed on backhoe arms, buckets, hollow stem augers, casing drill rods, and appurtenant equipment.

Split spoon sampler - The split spoon sampler will be scrubbed, cleaned, and put through a series of rinses between each sampling event. A number of split spoon samplers will be used so that one can be utilized for sampling while the others are being cleaned.

Reusable equipment - The following steps will be employed to decontaminate reusable equipment:

- Rinse equipment of soil or foreign material with potable water;
- Immerse and scrub equipment with bio-degradable phosphate-free detergent and potable water;
- Immerse and scrub in a potable water rinse without detergent;
- Immerse and scrub in deionized/distilled water;
- Saturate by spraying or immersion in laboratory-grade hexane;
- Air dry and wrap cleaned equipment in foil to carry to next monitoring site to prevent contamination of equipment during transfer; and
- The decontamination wash and rinse water will not be considered hazardous unless visual inspection or monitoring by the PID and other equipment indicate that contaminants may be present. The rinse waters can be discharged on-site if they are not contaminated. If contaminants are expected to be present, the rinseate waters should be placed in 55 gallon drums and stored on-site.

Disposable equipment - The following steps will be employed to decontaminate disposable equipment:

- Rinse with potable water;
- Remove all standing liquid from the piece of equipment;
- Dispose of the equipment in a dedicated container for contaminated solids; and
- Dispose of rinse water in 55 gallon drums if contaminants are found to be present.

Sample containers - upon filling and capping sample bottles, the outside of the bottle will be wiped off with a clean paper towel. These towels will be disposed of in a dedicated container for contaminated solids.

Personnel decontamination - The following procedures will be used to decontaminate sampling personnel.

- After each sampling event plastic gloves will be disposed of in a dedicated container for contaminated solids;
- At the end of each sampling day, Tyvek coveralls will be disposed of in a dedicated container for contaminated solids;
- Boots will be rinsed off with water to remove mud, clay, or any other contaminants; and
- Personnel will be required to follow procedures outlined in the Health and Safety Plan.

3.3.6 Sample Management Plan

3.3.6.1 Sample Management

The Sample Management Plan provides procedures to document and track samples and results obtained during this work effort. A series of pre-printed forms with the appropriate information serves as a vehicle for documentation and tracking. In order to accomplish this task, the documentation materials will include sample labels, sample characterization and Chain-of-Custody sheets, daily field reports, and a sample log.

Sample Label - A sample label will be completed for each sample obtained and will be affixed to the sample container. The label is configured in a way to address various types of mediums. Information on the label includes, at a minimum, client name, location, sample description, sample number, date, time, grab sample, composite sample, notes, and sampler's name.

Sample Characterization & Chain-of-Custody Sheet - All pertinent field information will be entered onto the sample characterization and chain-of-custody sheets including client name, sample ID, sample description, location of sample, sampling method, number of containers, container type, analysis required, and preservation. The monitoring well form has space allotted for entering information regarding the well including depth to water, well volume, sample pH, temperature, color, etc. The Chain-of-Custody section of the form will document the sample's pathway of sample shipment which will include names

of persons delivering/receiving, dates, and times. The reverse side of this form will be used by the laboratory to document analysis performed on the sample. Copies of the completed forms will be retained by the Engineer and the analytical laboratory. The original sample characterization and Chain-of-Custody sheets will be submitted in the Remedial Investigation report along with the laboratory results.

Daily Field Reports - Daily activities will be recorded on the Inspection Report form. The purpose of this form will be to summarize the work performed on the site each day. The completed forms will be submitted to the Project Manager on a daily basis for short term site activity and on a weekly basis for site activities of a longer duration.

Sample Log - The sample log will be utilized to track each individual sample obtained at the site. The upper portion, "Field Identification" will be completed the day the sample is taken. The form will accompany the sample characterization and Chain-of-Custody form to the laboratory. Personnel at the laboratory will complete the middle section of this form and return it to the Engineer, who will use the document to track incoming results. The bottom of the sheet has space allocated to enter "Recommended Actions" based on laboratory results.

3.3.6.2 Sample Designation

Each sample will have an unique sample code that will indicate the sample media, the sample location, and the date of sample collection as indicated by the season (Sp, Su, F, W), and the year (91, 92, etc.). The following codes will be used in the sample designation:

Sample Media	Code	Sample Location	Code (example)
Groundwater	MW	Monitoring Well	1D, 2S, etc.
Surface Water	SW	Surface Water	1, 2, etc.
Stream Sediment	SED	Stream Sediment	S1, S2, D1, D2
Wetland Water	WW	Wetland Water	1, 2, etc.
Wetland Sediment	WS	Wetland Sediment	S1, S2, D1, D2
Waste Mass Media	FL	Test Trench	WM-2; TT-1
Background Samples	-	All	B1, B2, etc.

Field Blank	-	All	FB1, FB2, etc.
Field Duplicates	-	All	FD1, FD2, etc.
Matrix Spike Duplicate	-	All	MSD1, MSD2, etc.
Trip Blanks	-	-	TB1, TB2, etc.

As an example of a sample designation, sample ID# GW-MW3S-F-97 represents a groundwater sample obtained from monitoring well MW-3S during the Fall 1997 sampling round.

3.3.6.3 Sample Handling

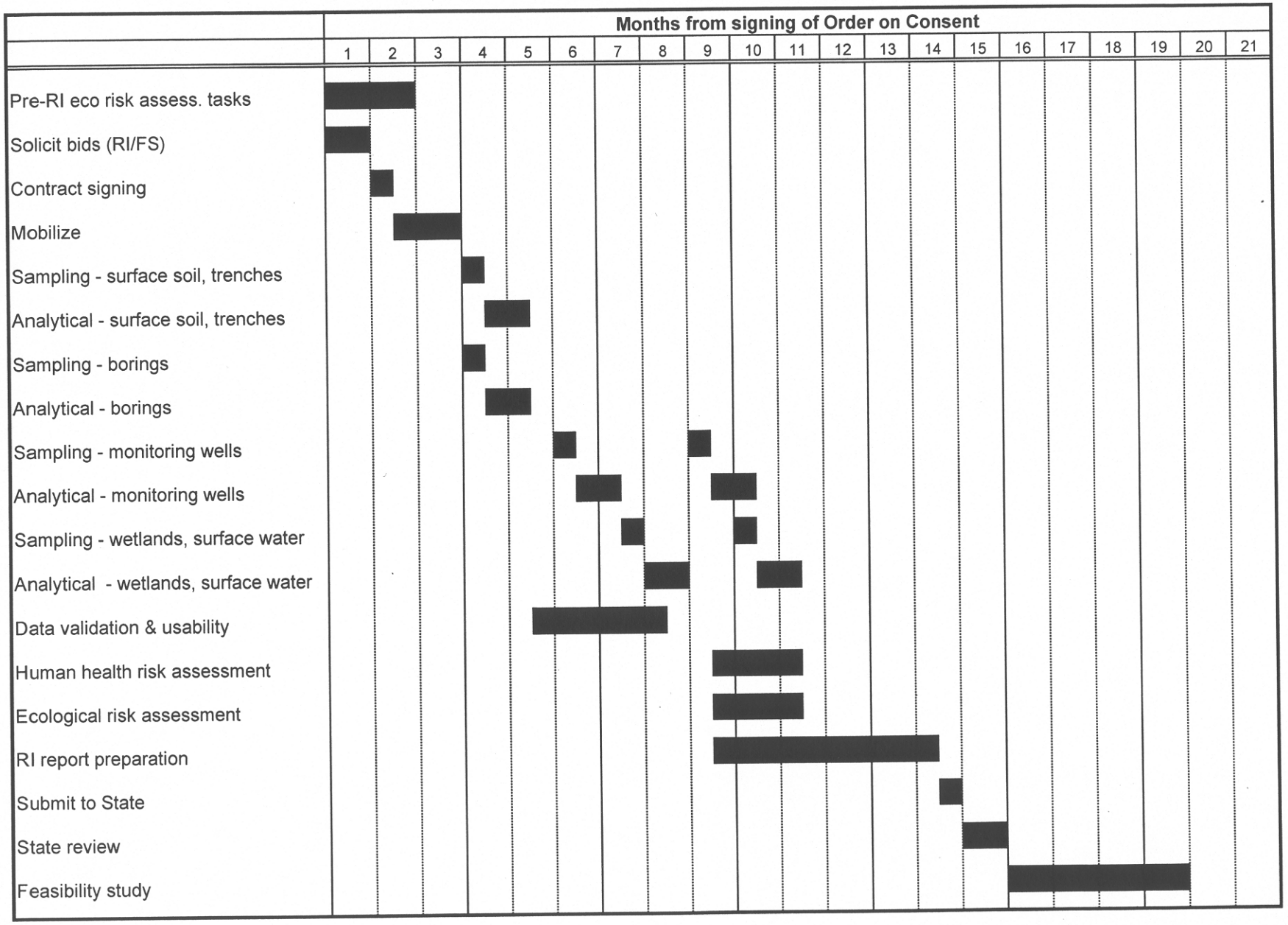
Each collected sample will be dispensed into the appropriate sample containers for the type of analysis to be performed. Appropriate sample preservatives will be added to the sample containers by the contracted analytical laboratory prior to the delivery into the field, except in cases where the sample preservative must be added after sample collection. All samples that require cool storage will be immediately placed in coolers with appropriate packaging materials so as to protect the breakage of sample containers during shipment. The sample coolers will be filled with cubed ice (no "Blue Ice") prior to leaving the sample collection location. In the instance that a local analytical laboratory is contracted, the samples will be hand delivered to the laboratory each sampling day. The chain-of-custody forms will be signed by the laboratory personnel picking up the samples and placed within the coolers. In the instance that an analytical laboratory is contracted which is not based locally and a common carrier is used for sample shipment, the chain-of-custody forms will be signed by the sampler and the carrier personnel and placed inside of the coolers. Careful packaging techniques will be used to prevent sample containers from breakage during shipment. Materials such as cardboard, foam wrap, or styrofoam may be used as packaging materials. All samples will be delivered to the contracted analytical laboratory on the day they were collected and will be received by the laboratory within 24 hours of sample collection. The samples will be collected with sufficient time allowed at the end of the day for the analytical laboratory to properly process the sample chain-of-custody forms.

SECTION 4: PROJECT SCHEDULE

4.1 Tentative Project Schedule

The schedule on the following page identifies key tasks within the RI/FS project for the Maestri II Site. If circumstances arise which warrant a change in the schedule, the Department will be contacted to discuss a change in the schedule.

Project Schedule - Maestri II Site



SCHED1.xls

Updated: 06/21/99

Tables

Table 1

Sampling and Analysis Matrix

Table 1 - Sampling and Analysis Matrix

Matrix	Sampling Event	No. of Samples	Locations	QA/QC samples [2]	Parameters [1]
Groundwater	1	8	GW-1, MW-7, 8, 9, 10, 11, 12S, 12D	1 DUP, 1 MS, 1 MSD, 1 TB	VOA, SVOA, PA, IN, MIS, Cr6
	2	8	GW-1, MW-7, 8, 9, 10, 11, 12S, 12D	1 DUP, 1 MS, 1 MSD, 1 TB	POC, MIS
Surface water	1	9	SW-1, 2, 3, 4, 5, 6, 7, 8, 9	1 DUP	POC, MIS
	2	9	SW-1, 2, 3, 4, 5, 6, 7, 8, 9	1 DUP	POC, MIS
Sediment	1	9	SED - 1, 2, 3, 4, 5, 6, 7, 8, 9	1 MS, 1 MSD	POC, TOC
Wetland Water	1	6	WW - 1, 2, 3, 4, 5, 6	1 DUP, 1 MS, 1 MSD, 1 TB	POC, MIS
Wetland Sediment	1	6	WS - 1, 2, 3, 4, 5, 6	1 MS, 1 MSD	POC, TOC
Waste/Fill surface	1	8	SS - 1, 2, 3, 4, 5, 6, 7, 7	included with trenches	VOA, SVOA, PA, IN, Cr6
Waste/Fill trenches	1	8	FL - 1, 2, 3, 4, 5, 6, 7, 8	1 MS, 1 MSD	VOA, SVOA, PA, IN. Cr6
Waste/Fill borings	1	7	BR-7, 8, 9, 10, 11, 12S, 12D	1 MS, 1 MSD	VOA, SVOA, PA, IN, Cr6, grain size

Notes: 1. VOA = TCL volatiles, SVOA =TCL semivolatiles, PA = pesticides/Aroclors, IN = TCL inorganics, POC = parameters of concern, Cr6 = hexavalent chromium, TOC = total organic carbon MIS = Misc. parameters (e.g., pH, DO, conductivity, hardness).

2. DUP = duplicate sample, MS = matrix spike, MSD = matrix spike duplicate, TB = trip blank (for VOA only)

Table 2

Target Compound List Parameters and Contract Required Quantitation Limits

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

Volatiles	CAS Number	Quantitation Limits* Water µg/L	Low Soil µg/Kg	Med Soil µg/Kg	On Column (ng)
1. Chloromethane	74-87-3	10	10	1200	(50)
2. Bromomethane	74-83-9	10	10	1200	(50)
3. Vinyl chloride	75-01-4	10	10	1200	(50)
4. Chloroethane	75-00-3	10	10	1200	(50)
5. Methylene chloride	75-09-2	10	10	1200	(50)
6. Acetone	67-64-1	10	10	1200	(50)
7. Carbon Disulfide	75-15-0	10	10	1200	(50)
8. 1,1-Dichloroethylene	75-35-4	10	10	1200	(50)
9. 1,1-Dichloroethane	75-35-3	10	10	1200	(50)
10. 1,2-Dichloroethylene(total)	540-59-0	10	10	1200	(50)
11. Chloroform	67-66-3	10	10	1200	(50)
12. 1,2-Dichloroethane	107-06-2	10	10	1200	(50)
13. 2-Butanone	78-93-3	10	10	1200	(50)
14. 1,1,1-Trichloroethane	71-55-6	10	10	1200	(50)
15. Carbon tetrachloride	56-23-5	10	10	1200	(50)
16. Bromodichloromethane	75-27-4	10	10	1200	(50)
17. 1,2-Dichloropropane	78-87-5	10	10	1200	(50)
18. cis-1,3-Dichloropropene	10061-01-5	10	10	1200	(50)
19. Trichloroethene	79-01-6	10	10	1200	(50)
20. Dibromochloromethane	124-48-1	10	10	1200	(50)
21. 1,1,2-Trichloroethane	79-00-5	10	10	1200	(50)
22. Benzene	71-43-2	10	10	1200	(50)
23. trans-1,3-Dichl[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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

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

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

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

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

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

Water Samples

A 1 L volume of water is extracted in a continuous liquid-liquid extractor with methylene chloride at a pH of approximately 2. This extract is reduced in volume to 1.0 mL, and a 2 µL volume is injected onto the GC/MS for analysis. For a sample with compound X at the CRQL of 10 µg/L:

(10 µg/L) (1 L) = 10 µg in the original extract

When the extract is concentrated, this .material is contained in the 1 mL concentrated extract, of which 2 µL are injected into the instrument:

(10 µg/mL) (2 µL) (10^{-3} mL/µL) = 20 x 10^{-3} µg = 20 ng on the GC column

Low Soil Samples

A 30 g soil sample is extracted three times with methylene chloride/acetone at ambient pH, by sonication or Soxhlet. The extract is reduced in volume to 1.0 mL, and a 2 µL volume is injected onto the GC/MS for analysis. For a sample with compound X at the CRQL of 330 µg/Kg:

(330 µg/Kg) (30 g) (10^{-3} Kg/g) = 9900 x 10^{-3} µg = 9.9 µg

When the sample extract is to be subjected to Gel Permeation Chromatography (required) to remove high molecular weight interferences, the volume of the extract is initially reduced to 10 mL. This 10 mL is put through the GPC column, and only 5 mL are collected off the GPC. That 5 mL volume is reduced to 0.5 mL prior to analysis. Therefore:

(9.9 µg/10 mL) (5 mL) = 4.95 µg

This material is contained in the 0.5 mL extract, of which 2 µL are injected Into the instrument:

(4.95 µg/0.5 mL) (2 µL) (10^{-3} mL/µL) = (1.98 x 10^{-2} µg) 20 ng on the GC column

Medium Soil Samples

A 1 g soil sample is extracted once with 10 mL of methylene chloride/acetone, which is filtered through glass wool to remove particles of soil. The filtered extract is then subjected to GPC clean up, and only 5 mL of extract are collected after GPC. This extract is reduced in volume to 0.5 mL, of which 2 µL are injected onto the GC/MS. For a sample with compound X at the CRQL of 10,000 µg/Kg:

(10,000 µg/Kg) (1 g) (10^{-3} Kg/g) = 10 µg

(continued)

Semivolatiles, Medium Soil, continued -

This material is contained in the 10 mL extract, of which only 5 mL are collected after GPC:

(10 µg) (5 mL/10 mL) = 5 ug

The volume of this extract is reduced to 0.5 mL, of which 2 µL are injected into the instrument:

(5 µg/0.5 mL) (2 µL) (10^{-3} mL/µL) = 20 x 10^{-3} ug = 20 ng on the GC column

Eight semivolatile compounds are calibrated using only a four point initial calibration, with the lowest standard at 50 ng. Therefore, the CRQL values for these eight compounds are 2.5 times higher for all matrices and levels.

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

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

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

Water Samples

A 1 L volume of water is extracted three times with methylene chloride or by a continuous liquid-liquid extractor. This extract is reduced in volume to approximately 3 - 5 mL, and diluted up to 10.0 mL with clean solvent. When Gel Permeation Chromatography is performed, only 5 of the 10 mL of extract are collected after GPC.

Regardless of whether GPC is performed, either 1.0 or 2.0 mL of the 10.0 mL of the original extracts are taken through the remaining clean up steps (Florisil and sulfur removal). The volume taken through Florisil cleanup and the final volume of the extract after the clean up steps depends on the requirements of the autosampler. If the autosampler can handle 1.0 mL final extract volumes, this is the volume taken through Florisil and the final volume. If the autosampler cannot reliably handle 1.0 mL volumes, the volume is 2.0 mL. When using an autosampler, the injection volume may be 1.0 or 2.0 µL. Manual injections must use a 2.0 µL injection volume.

For a sample with compound X at the CRQL of 0.05 µg/L and an autosampler requiring a 1.0 mL volume:

(0.05 µg/L) (1 L) = 0.05 µg in the original extract

This material is contained in the 10.0 mL of extract:

(0.05 µg)/ (10.0 mL) = 0.005 µg/mL

Of which, only 1.0 mL is carried through the remaining clean up steps. For a final extract volume of 1.0 mL and a 1 µL injection volume:

(0.005 µg/L) (1 µL) (10^{-3} mL/µL) = 5 x 10^{-6} µg = 5 pg on the GC column

Soil Samples

There is no differentiation between the preparation of low and medium soil samples in this method for the analysis of pesticides/Aroclors. A 30 g soil sample is extracted three times with methylene chloride/acetone by sonication or Soxhlet extraction. The extract is reduced in volume to 10.0 mL and subjected to Gel Permeation Chromatography. After GPC, only 5.0 mL of extract are collected. However, as with the water sample described above, either 1.0 or 2.0 mL of that extract are subjected to the other clean up steps, so no loss of sensitivity results from the use of GPC. From this point on, the soil sample extract is handled in the same fashion as the extract of a water sample. For a sample with compound X at the CRQL of 1.7 µg/Kg:

(1.7 µg/Kg) (30 g) (10^{-3} Kg/g) = 51 x 10^{-3} µg = 51 ng in the original extract

This material is contained in the 10.0 mL of extract:

(51 ng)/10 mL = 5.1 ng/mL

(continued)

Pesticides/Aroclors, continued

of which, only 1.0 or 2.0 mL are carried through the remaining cleanup steps For a final extract volume of 1.0 mL and a 1 µL injection volume:

$(5.1\ ng/mL)(1\ \mu L)(10^{-3}\ mL/\mu L) = 5.1 \times 10^{-3}\ ng = 5\ pg$ on the GC column.

For either water or soil samples, if the autosampler used requires a 2.0 mL final volume, the concentration in the 10.0 mL of extract above remains the same.

Using a 2 µL injection volume, twice the total number of picograms are injected onto the GC column. However, because the injection volume must be the same for samples and standards, twice as much material is injected onto the column during calibration, and thus the amount of compound X injected from the sample extract is equivalent to the amount of compound X injected from the calibration standard, regardless of injection volume.

If a single injection is used for two GC columns attached to a single injection part, it may be necessary to use an injection volume greater than 2 µL.

SECTION II

SUPERFUND-CLP INORGANICS

Superfund Target Compound List (TCL) and Contract Required Quantitation Limit

Parameter	Contract Required Quantitation Level (µg/L)
1. Aluminum	200
2. Antimony	60
3. Arsenic	10
4. Barium	200
5. Beryllium	5
6. Cadmium	5
7. Calcium	5000
8. Chromium	10
9. Cobalt	50
10. Copper	25
11. Iron	100
12. Lead	3
13. Magnesium	5000
14. Manganese	15
15. Mercury	0.2
16. Nickel	40
17. Potassium	5000
18. Selenium	5
19. Silver	10
20. Sodium	5000
21. Thallium	10
22. Vanadium	50
23. Zinc	20
24. Cyanide	10

1: Any analytical method specified in Exhibit D, CLP-Inorganics may be utilized as long as the documented instrument or method detection limits meet the Contract Required Quantitation Level (CRQL) requirements. Higher quantitation levels may only be used in the following circumstance:

If the sample concentration exceeds five times the quantitation limit of the instrument or method in use, the value may be reported even though the instrument or method detection limit may not equal the Contract Required Quantitation Limit. This is illustrated in the example below:

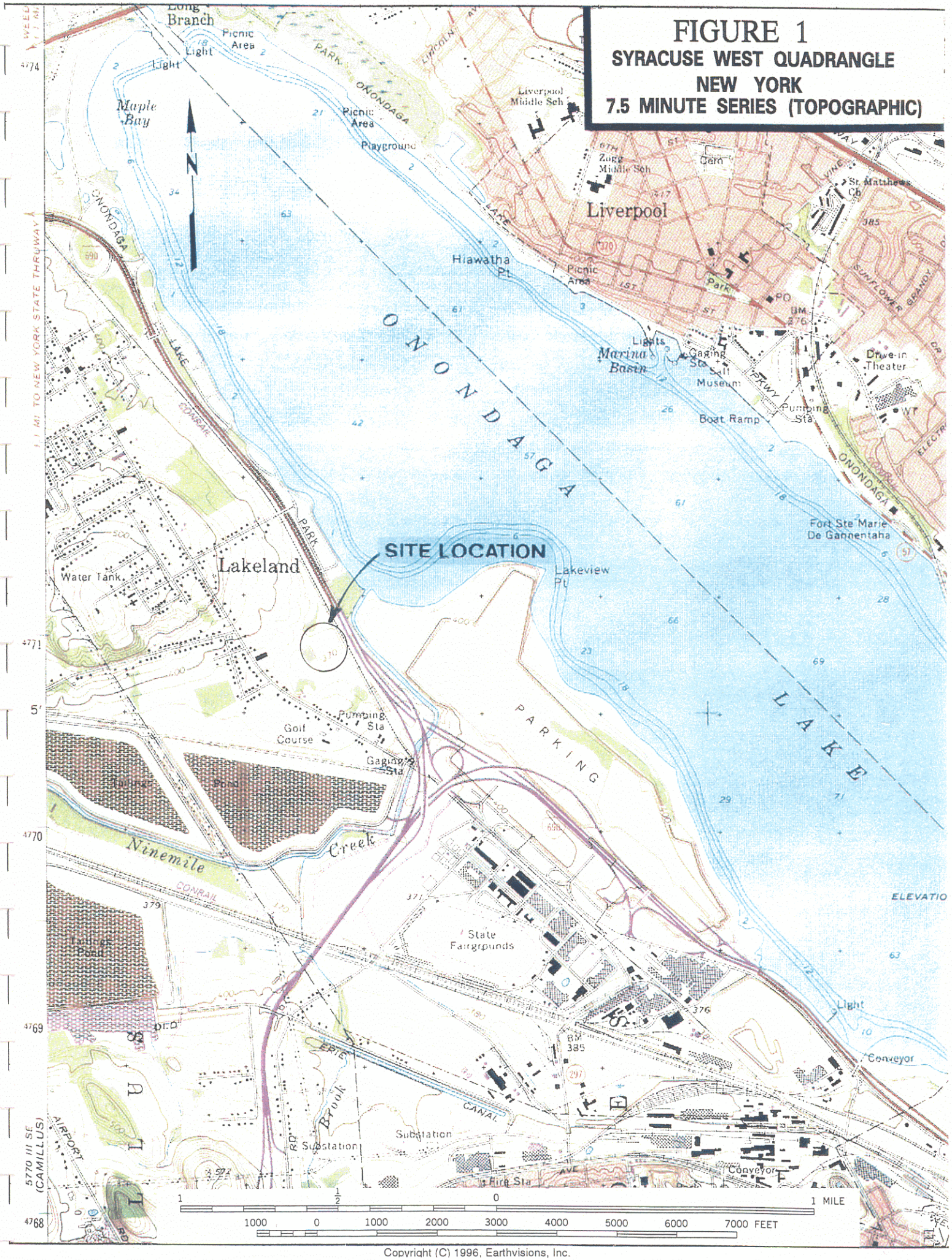
For lead:
Method in use = ICP
Instrument Detection Limit (IDL) = 40
Sample concentration = 220
Contract Required Quantitation Level (CRQL) = 3

The value of 220 may be reported even though instrument detection limit is greater than Contract Required Quantitation Limit. The instrument or method detection limit must be documented as described in Exhibit E.

2: These CRQLs are the instrument detection limits obtained in pure water that must be met using the procedure in Exhibit E. The quantitation limits for samples may be considerably higher depending on the sample matrix.

Figures

FIGURE 1
SYRACUSE WEST QUADRANGLE
NEW YORK
7.5 MINUTE SERIES (TOPOGRAPHIC)



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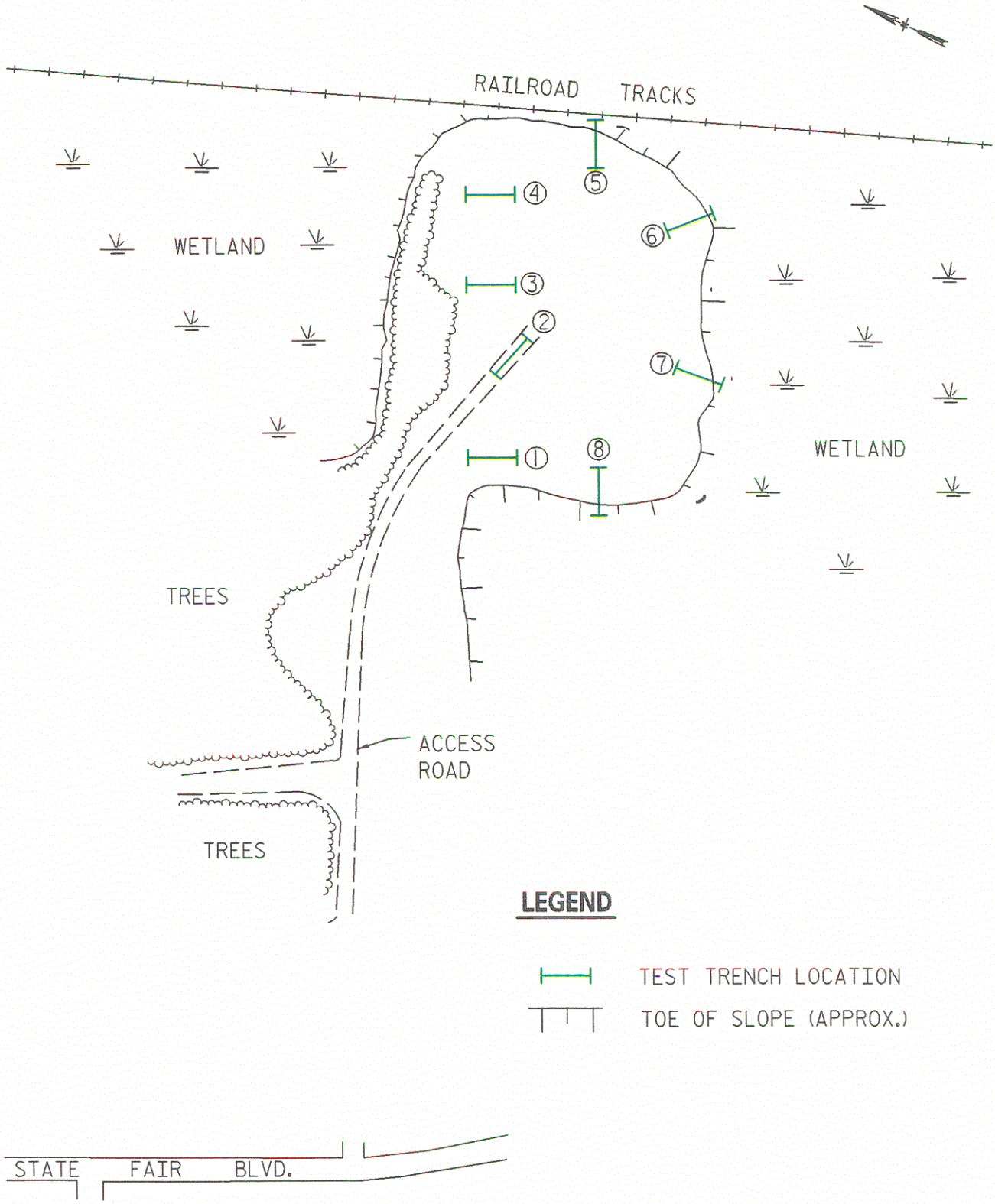


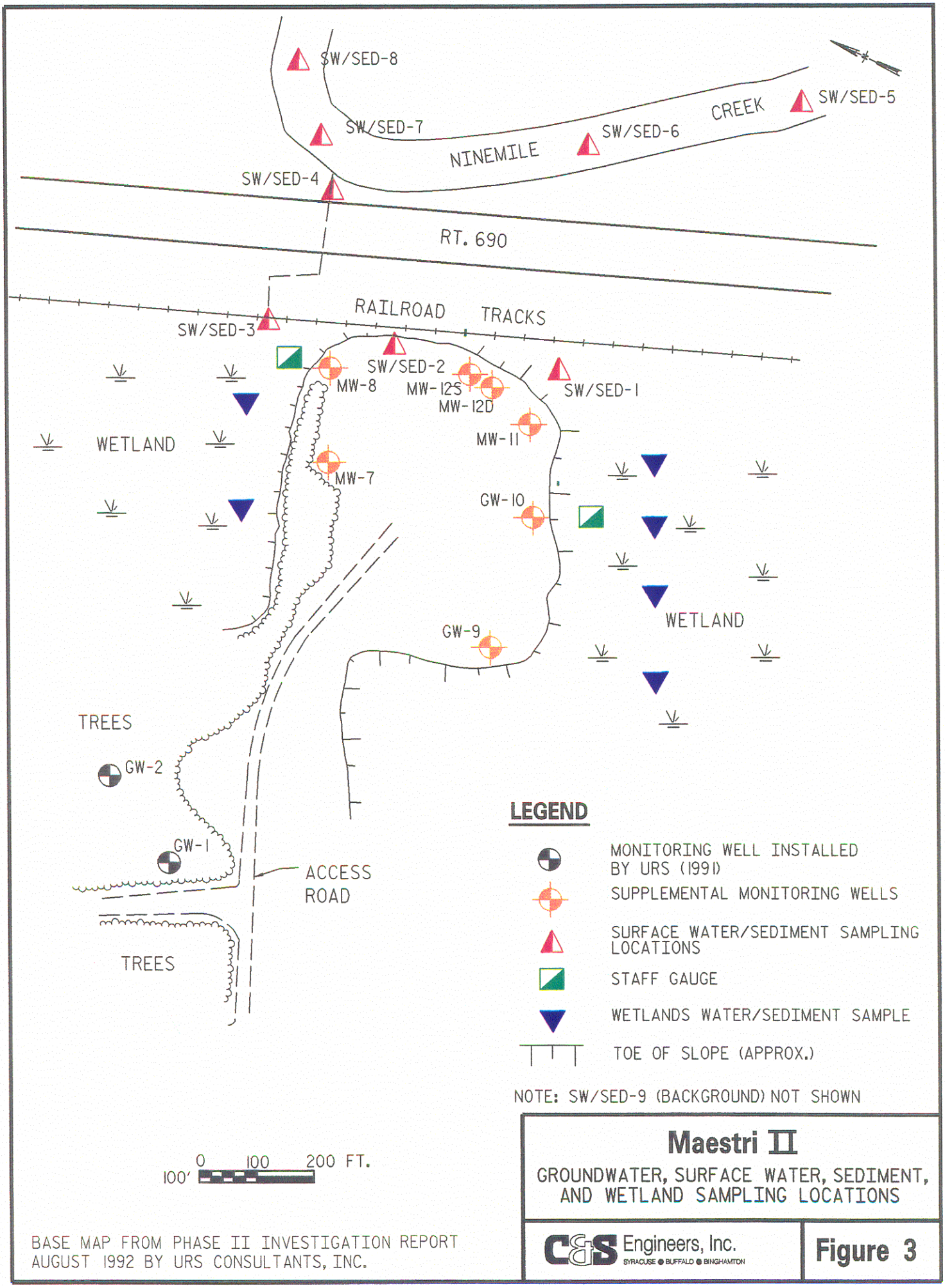
Maestri II

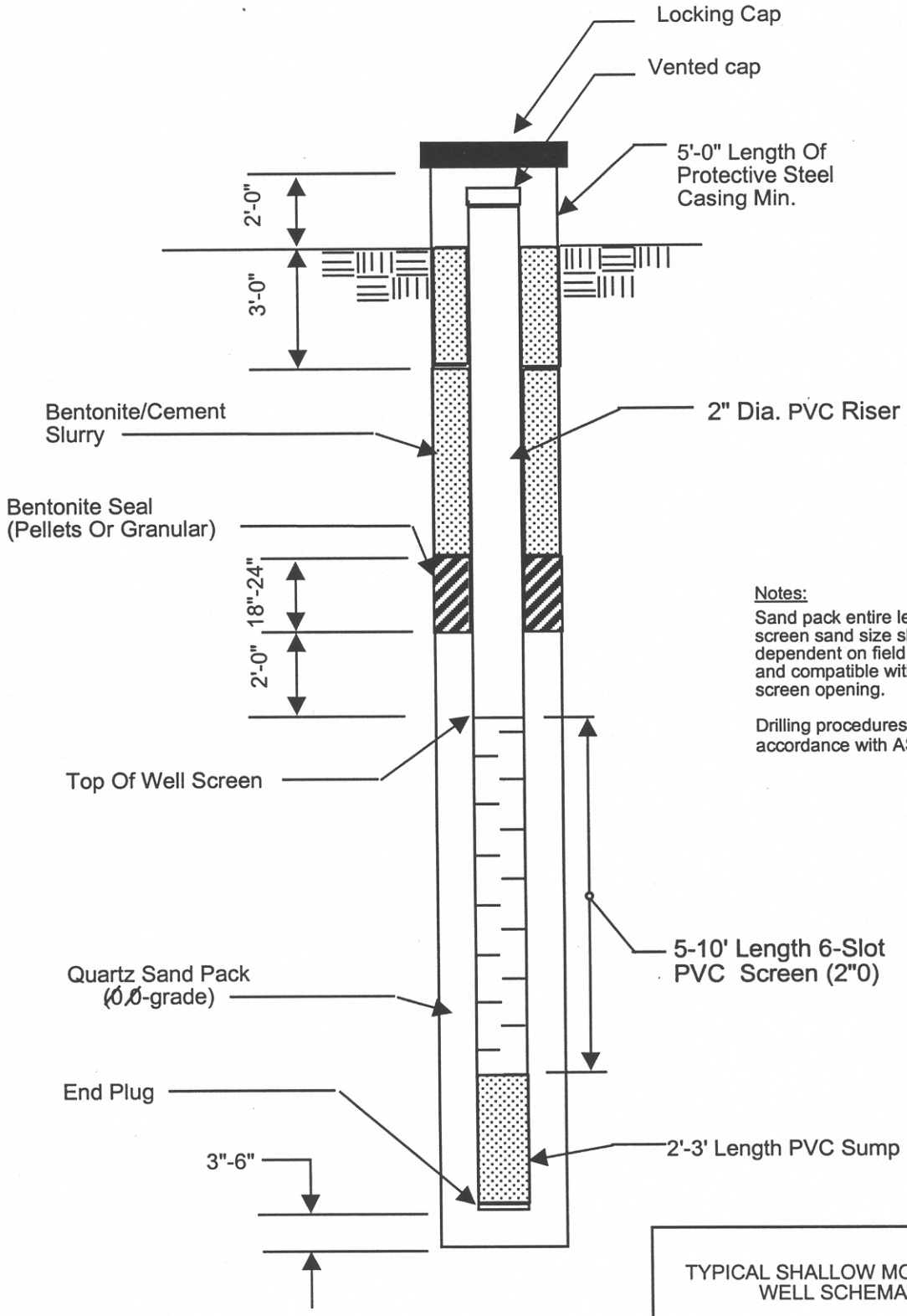
WASTE LIMIT INVESTIGATION TEST TRENCH LOCATIONS

C&S Engineers, Inc.
SYRACUSE • BUFFALO • BINGHAMTON

Figure 2

BASE MAP FROM PHASE II INVESTIGATION REPORT AUGUST 1992 BY URS CONSULTANTS, INC.


SW/SED-8
SW/SED-7
SW/SED-6
SW/SED-5
SW/SED-4
SW/SED-3
SW/SED-2
SW/SED-1
NINEMILE
CREEK
RT. 690
RAILROAD
TRACKS
MW-8
MW-12S
MW-12D
MW-11
MW-7
GW-10
GW-9
WETLAND
WETLAND
TREES
TREES
GW-2
GW-1
ACCESS
ROAD
LEGEND
MONITORING WELL INSTALLED BY URS (1991)
SUPPLEMENTAL MONITORING WELLS
SURFACE WATER/SEDIMENT SAMPLING LOCATIONS
STAFF GAUGE
WETLANDS WATER/SEDIMENT SAMPLE
TOE OF SLOPE (APPROX.)
NOTE: SW/SED-9 (BACKGROUND) NOT SHOWN
0 100 200 FT.
100'
BASE MAP FROM PHASE II INVESTIGATION REPORT
AUGUST 1992 BY URS CONSULTANTS, INC.
Maestri II
GROUNDWATER, SURFACE WATER, SEDIMENT, AND WETLAND SAMPLING LOCATIONS
C&S Engineers, Inc.
SYRACUSE • BUFFALO • BINGHAMTON
Figure 3



Notes:

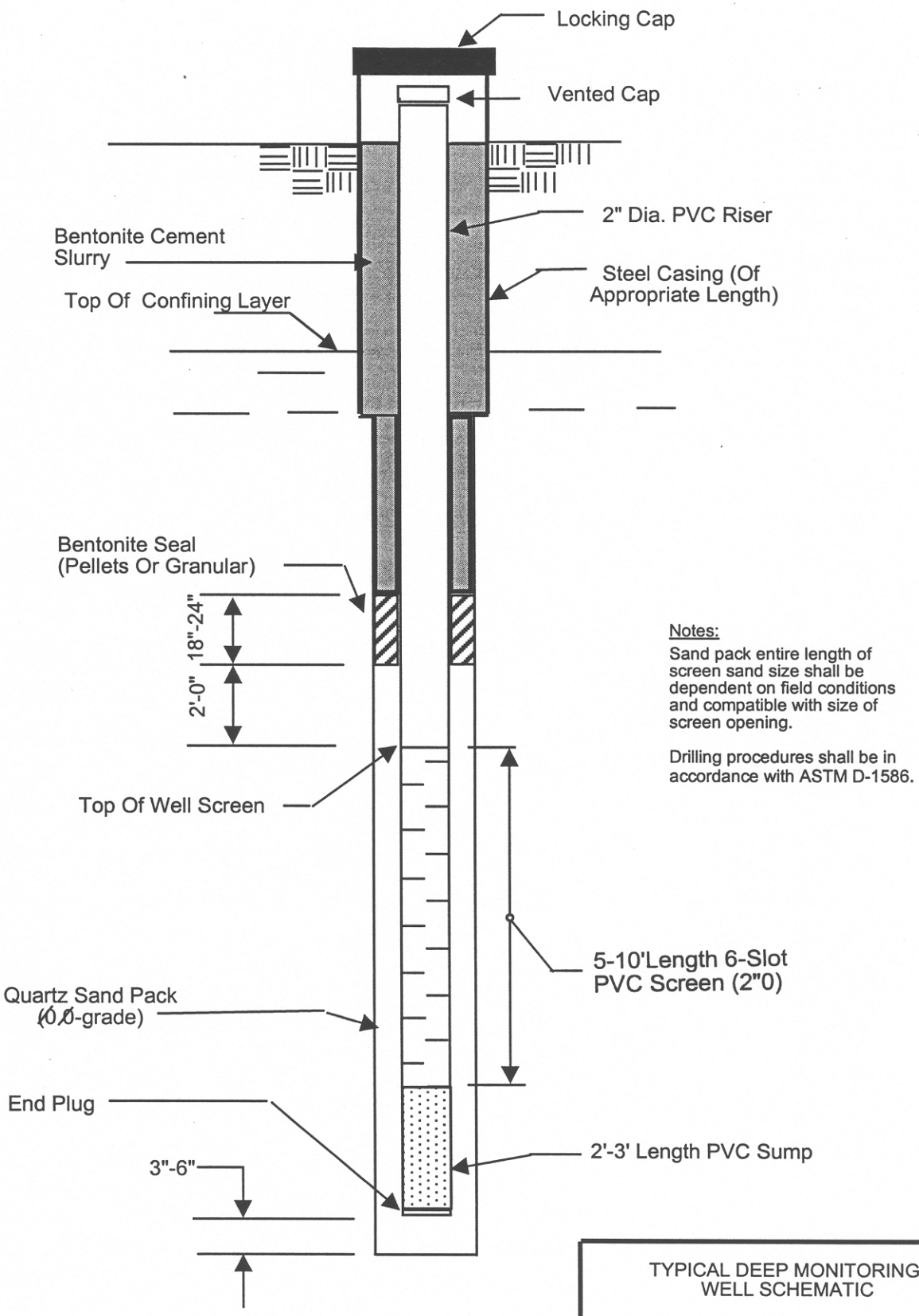
Sand pack entire length of screen sand size shall be dependent on field conditions and compatible with size of screen opening.

Drilling procedures shall be in accordance with ASTM D-1586.

TYPICAL SHALLOW MONITORING WELL SCHEMATIC

C&S Engineers, Inc.

FIGURE 4



Notes:

Sand pack entire length of screen sand size shall be dependent on field conditions and compatible with size of screen opening.

Drilling procedures shall be in accordance with ASTM D-1586.

TYPICAL DEEP MONITORING WELL SCHEMATIC

C&S Engineers, Inc.

FIGURE 5

Appendix A

Data Quality Objectives Forms

DATA QUALITY OBJECTIVES FORM

Site Name/Location:

Val's Dodge/Maestri No. 2 Site; NYSDEC Site #734040
State Fair Boulevard, Town of Geddes, New York

Sampling Objectives:

Characterize groundwater quality proximate to the site. Determine the presence and potential extent of groundwater contamination.

Sampled Media

✓ groundwater ___ surface water ___ sediment ___ wetland water
___ wetland sediment ___ waste material

Date Use

✓ site characterization ✓ risk assessment ___ health and safety ✓ monitoring
✓ evaluate remediation alternatives

Data Types	**Parameters**
✓ TCL or Modified TCL	✓ PCB/Pest ✓ VOCs ✓ Semi-VOCs ✓ Metals ✓ Mercury ✓ Cyanide
✓ Field Parameters	✓ pH ✓ Sp.Cond. ✓ Turb ✓ Temp. ✓ Eh
✓ Geochemical Parameters	✓ Alk ✓ Cl- ✓ DO ✓ NH4- ✓ NO3- ✓ TOC ✓ TDS ✓ Hardness ✓ SO4

Level of Analysis

Level I: Field Screening

Level II: Field Analysis

Level III: ASP Analytical Methods

Samples will be analyzed in accordance with NYSDEC-ASP 1995 Category B.

Level IV: ASP Reportables/Deliverables

NYSDEC-ASP 1995 Category B Reportables/Deliverables documentation to be provided.

Sampling Procedures

Sampling Procedures are described within the Sampling and Analysis Plan (SAP).

Data Quality Factors

Analytical Detection Limits will be consistent with ASP-Contract required Quantitation Limits (CRQLs).

QA/QC Samples

✓ Duplicate ✓ Matrix Spike ✓ Matrix Spike Duplicate
✓ Field Blank ✓ Trip Blank

DATA QUALITY OBJECTIVES FORM

Site Name/Location:

Val's Dodge/Maestri No. 2 Site; NYSDEC Site #734040
State Fair Boulevard, Town of Geddes, New York

Sampling Objectives:

Characterize surface water quality proximate to the site. Determine the presence and potential extent of surface water contamination.

Sampled Media

___ groundwater ✓ _surface water ___ sediment ___ wetland water
___ wetland sediment ___ waste material

Date Use

✓ site characterization ✓ risk assessment ___ health and safety ✓ monitoring
✓ evaluate remediation alternatives

Data Types

✓ TCL or Modified TCL
✓ Field Parameters
✓ Geochemical Parameters

Parameters (to be determined)

___ PCB/Pest ___ VOCs ___ Semi-VOCs ___ Metals
___ Mercury ___ Cyanide
✓ pH ✓ Sp.Cond. ✓ Turb ✓ Temp. ___ Eh
✓ Alk ✓ Cl- ✓ DO ✓ NH4- ___ NO3- ✓ TOC
✓ TDS ✓ Hardness ✓ SO4

Level of Analysis

Level I: Field Screening

Level II: Field Analysis

Level III: ASP Analytical Methods

Samples will be analyzed in accordance with NYSDEC-ASP 1995 Category B.

Level IV: ASP Reportables/Deliverables

NYSDEC-ASP 1995 Category B Reportables/Deliverables documentation to be provided.

Sampling Procedures

Sampling Procedures are described within the Sampling and Analysis Plan (SAP).

Data Quality Factors

Analytical Detection Limits will be consistent with ASP-Contract required Quantitation Limits (CRQLs).

QA/QC Samples

✓ _Duplicate ✓ _Matrix Spike ✓ _Matrix Spike Duplicate
___ Field Blank ✓ _Trip Blank

DATA QUALITY OBJECTIVES FORM

Site Name/Location:

Val's Dodge/Maestri No. 2 Site; NYSDEC Site #734040
State Fair Boulevard, Town of Geddes, New York

Sampling Objectives:

Characterize the presence and extent of sediment contamination proximate to the site.

Sampled Media

___ groundwater ___ surface water ✓ sediment ___ wetland water
___ wetland sediment ___ waste material

Date Use

✓ site characterization ✓ risk assessment ___ health and safety ✓ monitoring
✓ evaluate remediation alternatives

Data Types

✓ TCL or Modified TCL
___ Field Parameters
✓ Geochemical Parameters

Parameters

✓ PCB/Pest ✓ VOCs ✓ Semi-VOCs ✓ Metals
✓ Mercury ✓ Cyanide
___ pH ___ Sp.Cond. ___ Turb ___ Temp. ___ Eh
___ Alk ___ Cl- ___ DO ___ NH4- ___ NO3- ✓ TOC
___ TDS ___ Hardness ___ SO4

Level of Analysis

Level I: Field Screening

Level II: Field Analysis

Level III: ASP Analytical Methods

Samples will be analyzed in accordance with NYSDEC-ASP 1995 Category B.

Level IV: ASP Reportables/Deliverables

NYSDEC-ASP 1995 Category B Reportables/Deliverables documentation to be provided.

Sampling Procedures

Sampling Procedures are described within the Sampling and Analysis Plan (SAP).

Data Quality Factors

Analytical Detection Limits will be consistent with ASP-Contract required Quantitation

Limits (CRQLs).

QA/QC Samples

✓ _Duplicate ✓ Matrix Spike ✓ Matrix Spike Duplicate
___ Field Blank ___ Trip Blank

DATA QUALITY OBJECTIVES FORM

Site Name/Location:

Val's Dodge/Maestri No. 2 Site; NYSDEC Site #734040
State Fair Boulevard, Town of Geddes, New York

Sampling Objectives:

Characterize the quality of wetland waters proximate to the site. Determine the presence and potential extent of wetland water contamination.

Sampled Media

___ groundwater ___ surface water ___ sediment ✓ wetland water
___ wetland sediment ___ waste material

Date Use

✓ site characterization ✓ risk assessment ___ health and safety ✓ monitoring
✓ evaluate remediation alternatives

Data Types **Parameters: (to be determined)**

✓ TCL or Modified TCL ___ PCB/Pest ___ VOCs ___ Semi-VOCs ___ Metals
___ Mercury ___ Cyanide
✓ Field Parameters ✓ pH ✓ Sp.Cond. ✓ Turb ✓ Temp. ✓ Eh
✓ Geochemical Parameters ✓ Alk ✓ Cl- ✓ DO ✓ NH4- ✓ NO3- ✓ TOC
✓ TDS ✓ Hardness ✓ SO4

Level of Analysis

Level I: Field Screening

Level II: Field Analysis

Level III: ASP Analytical Methods
Samples will be analyzed in accordance with NYSDEC-ASP 1995 Category B.

Level IV: ASP Reportables/Deliverables
NYSDEC-ASP 1995 Category B Reportables/Deliverables documentation to be provided.

Sampling Procedures

Sampling Procedures are described within the Sampling and Analysis Plan (SAP).

Data Quality Factors

Analytical Detection Limits will be consistent with ASP-Contract required Quantitation Limits (CRQLs).

QA/QC Samples

✓ Duplicate ✓ Matrix Spike ✓ Matrix Spike Duplicate
___ Field Blank ✓ Trip Blank

DATA QUALITY OBJECTIVES FORM

Site Name/Location:

Val's Dodge/Maestri No. 2 Site; NYSDEC Site #734040
State Fair Boulevard, Town of Geddes, New York

Sampling Objectives:

Characterize the presence and extent of wetland sediment contamination proximate to the site.

Sampled Media

___ groundwater ___ surface water ___ sediment ___ wetland water
✓ wetland sediment ___ waste material

Date Use

✓ site characterization ✓ risk assessment ___ health and safety ✓ monitoring
✓ evaluate remediation alternatives

Data Types

✓ TCL or Modified TCL
___ Field Parameters
✓ Geochemical Parameters

Parameters: (TCL to be determined)

___ PCB/Pest ___ VOCs ___ Semi-VOCs ___ Metals
___ Mercury ___ Cyanide
___ pH ___ Sp.Cond. ___ Turb ___ Temp. ___ Eh
___ Alk ___ Cl- ___ DO ___ NH4- ___ NO3- ✓ TOC
___ TDS ___ Hardness ___ SO4

Level of Analysis

Level I: Field Screening

Level II: Field Analysis

Level III: ASP Analytical Methods

Samples will be analyzed in accordance with NYSDEC-ASP 1995 Category B.

Level IV: ASP Reportables/Deliverables

NYSDEC-ASP 1995 Category B Reportables/Deliverables documentation to be provided.

Sampling Procedures

Sampling Procedures are described within the Sampling and Analysis Plan (SAP).

Data Quality Factors

Analytical Detection Limits will be consistent with ASP-Contract required Quantitation Limits (CRQLs).

QA/QC Samples

✓ Duplicate ✓ Matrix Spike ✓ Matrix Spike Duplicate
___ Field Blank ___ Trip Blank

DATA QUALITY OBJECTIVES FORM

Site Name/Location:

Val's Dodge/Maestri No. 2 Site; NYSDEC Site #734040
State Fair Boulevard, Town of Geddes, New York

Sampling Objectives:

Characterize the type and degree of contamination within the waste mass material.

Sampled Media

___ groundwater ___ surface water ___ sediment ___ wetland water
___ wetland sediment ✓ waste material

Date Use

✓ site characterization ✓ risk assessment ✓ health and safety ___ monitoring
✓ evaluate remediation alternatives

Data Types	**Parameters**
✓ TCL or Modified TCL	✓ PCB/Pest ✓ VOCs ✓ Semi-VOCs ✓ Metals ✓ Mercury ✓ Cyanide ✓ Cr^{6+}
___ Field Parameters	✓ pH ___ Sp.Cond. ___ Turb ___ Temp. ___ Eh
___ Geochemical Parameters	___ Alk ___ Cl- ___ DO ___ NH4- ___ NO3- ___ TOC ___ TDS ___ Hardness ___ SO4
___ Geotechnical Parameters	___ Grain size

Level of Analysis

Level I: Field Screening

Level II: Field Analysis

Level III: ASP Analytical Methods

Samples will be analyzed in accordance with NYSDEC-ASP 1995 Category B.

Level IV: ASP Reportables/Deliverables

Appendix B

Health and Safety Plan

MAESTRI II SITE
(FORMERLY KNOWN AS VAL'S DODGE SITE)
ONONDAGA COUNTY, NEW YORK

Health and Safety Plan for Remedial Investigation

May 1999

C&S ENGINEERS, INC.
1099 AIRPORT BOULEVARD
NORTH SYRACUSE, NY 13212
(315) 455-2000

Approved:

_____

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APPENDIX C – GUIDANCE ON HEAT STRESS CONTROL
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APPENDIX E – GUIDANCE ON EXCAVATION/TRENCHING OPERATIONS
APPENDIX F – GUIDANCE ON INCIDENT INVESTIGATION AND REPORTING

SECTION I GENERAL INFORMATION

1.0 General Information

The Health and Safety Plan (HASP) described in this document will address health and safety considerations for all those activities that personnel employed by C&S Engineers, Inc., may be engaged in during the Remedial Investigation at the Maestri II Site in Onondaga County, New York, and will be implemented by the Health and Safety Officer (HSO) during site work.

Compliance with this HASP is required of all C&S personnel who enter this site. The content of a HASP may change or undergo revision based upon additional information made available to health, safety, and training (H&S) committee, monitoring results or changes in the technical scope of work. Any changes proposed must be reviewed by the H&S committee. This HASP was written specifically for those employees of C&S Engineers, Inc., and is not intended for use by others.

Responsibilities

Project Manager:	Thomas A. Barba (C&S)	Work Phone:(315) 455-2000
Site Health and Safety Officer:	John Kanoza (C&S)	Work Phone:(315) 455-2000
Emergency Coordinator:	John Kanoza (C&S)	Work Phone:(315) 455-2000

Emergency Phone Numbers

Fire Department:	Lakeside Fire Department	911
Ambulance:	Rural Metro	911
Police:	Town of Geddes/Onondaga County Sheriff	911
Hospital:	University Hospital (Emergency Dept.)	464-5611
Poison Control Center:		476-4766
Oil Spills and Hazardous Material Spills:		800-457-7362

1.1 Route to the Hospital

Route To The Hospital

University Hospital - 750 East Adams Street, Syracuse, NY
Emergency Room Telephone Number: 464-5611

Exit the Site and turn left on to State Fair Boulevard. Go approximately 1½ miles and turn left onto Route 690 East. Take 690 East into the City of Syracuse and follow the signs for Route 81 South. Take the Exit for Adams and Harrisons Streets. Turn left onto Adams Street. University Hospital is on the right. Look for signs for the Emergency Room.

SECTION II — HEALTH AND SAFETY PERSONNEL

2.0 Health and Safety Personnel Designations

The following information briefly describes the health and safety designations and general responsibilities which may be employed for the Remedial Investigation Project.

2.1 Project Manager (PM)

The PM is responsible for the overall project including the implementation of the HASP. Specifically, this includes allocating adequate manpower, equipment, and time resources to conduct site activities safely.

2.2 Health and Safety Officer (HSO)

The HSO is the person on-site responsible for assuring that personnel under direction comply with the requirements of the HASP and that personnel protective equipment needed for site work is available.

2.3 Emergency Coordinator

The Emergency Coordinator is responsible for implementation of the Emergency Plan as presented in Section XIII of this HASP, establishment and supervision of the emergency response team, and conducting training programs for personnel assigned duties on the emergency response team.

SECTION III — PERTINENT SITE INFORMATION

The Site is located behind and east of Val's Motors, an automotive dealership located on the north side of State Fair Boulevard at 756 State Fair Boulevard (see Figure 1). The site includes parcels of property believed to be owned by Margaret Valerino and John B. Maestri. The Site borders a wetland (designated in 1986 as SYW-10 by the Department on the freshwater wetlands map) adjacent to Ninemile Creek and Onondaga Lake. Onondaga Lake is approximately 800 feet from the north-eastern edge of the Site.

The site is part of a parcel of land that was purchased by Giuseppe Valerino in 1914. A service garage and auto dealership were established on the western end of this parcel in 1927 and 1929 respectively. Portions of the original parcel were sold to John B. Maestri in 1961; this included a 1.5 acre parcel directly behind the car dealership and a 3.8 acre parcel due east, adjacent to the railroad tracks.

Between 1968 and 1973, it was reported that Crucible Specialty Metals, then of Colt Industries, Inc. (or its various subsidiaries), may have disposed of approximately 24 tons of caustic-coated mill scale at the Site. NYSDEC became aware of this potential disposal upon the filing of a Hazardous Waste Disposal Questionnaire with NYSDEC as part of the Community Right to Know Program. In 1986, NYSDEC personnel visited the Site. The Site was classified as a 2a Hazardous Waste site on the New York State Registry of Inactive Hazardous Waste Disposal Sites in November 1986. Subsequent to a Phase II Investigation conducted in 1992 site by a NYSDEC consultant, the site classification was changed to 2.

SECTION IV — HAZARD ASSESSMENT AND HAZARD COMMUNICATION

The most likely routes of exposure during Remedial Investigation activities include skin adsorption and inhalation due to exposure to wastes, leachate, and gases emanating from the leachate collection system vents and the landfill mound. The chemical hazards which may be associated with site activities were determined through examination of historical analytical data from groundwater, surface water, sediments,

leachate, and air emission samples. A copy of the analytical data is presented in Appendix A and available Material Safety Data Sheets (MSDS) for these parameters are provided in Appendix B. Mechanical hazards associated with heavy equipment must be recognized at the site. Additionally, physical hazards must be recognized. The ground surface may be littered with sharp objects such as scrap metal and glass, and the possibility of tripping or falling exists in most areas. During warm weather, contacts with vectors such as bees or wasps is also a concern. It is assumed that site workers have the potential to be exposed to concentrations of hazardous substances. Relatively low concentrations of several hazardous substances have been identified in various media samples obtained from the site, including leachate, sediments, groundwater, surface water, and air. It is difficult to draw a correlation between the concentrations of contaminants found in one media and the potential for exposure to these contaminants to site workers. However, their presence may indicate that some potential for exposure to these compounds exist, and the requirements for protective measures and monitoring of exposure is based on this potential. Pertinent information regarding various hazardous substances identified is discussed below.

Benzene, CAS number 71-43-2—Benzene in its pure form is a colorless liquid with an aromatic odor. It is flammable and highly toxic. It is not expected that benzene will be present in a pure form but rather in low concentrations in the parts per billion range in the landfill. Benzene is classified as a potential human carcinogen be the American Conference of Governmental Hygienists (ACGIH). Exposure occurs primarily by inhalation and by skin absorption to a lesser degree. The federal Occupational Safety and Health Administration (OSHA) regulates worker exposure to benzene. Employers must assure that no employee is exposed to an airborne concentration of benzene in excess of one part of benzene per million parts of air (1 ppm) as an 8-hour time weighted average (TWA). In addition, no employee shall be exposed to an airborne concentration of benzene in excess of five (5) ppm as averaged over any 15 minute period. This limit is referred to as the Short-term Exposure Limit (STEL).

Toluene, CAS number 108-88-3—Toluene is a colorless liquid with an odor similar to benzene. It is flammable with explosive limits in air of 1.27 - 7%. It is toxic by inhalation, ingestion and skin absorption. Exposure to high concentrations in air cause central nervous system depression. It is expected that if toluene is present, it will be in low concentrations in the parts per billion range in the landfill. OSHA limits airborne exposure to 100 ppm as an eight hour TWA and to 150 ppm as a STEL. The ACGIH recommends that exposure be limited to 50 ppm as an eight-hour TWA.

Methylene Chloride, CAS number 75-09-2—(synonym: dichloromethane) Methylene Chloride is a colorless, volatile liquid with a penetrating ether-like odor. It is an eye, skin, and respiratory tract irritant. It is also a mild central nervous system depressant with exposure generally occurring through inhalation. Methylene chloride is a suspected human carcinogen. OSHA has proposed to limit exposure to 25 ppm as an eight-hour TWA, and to 125 ppm as a STEL. If methylene chloride is present at the landfill, the airborne concentrations are expected to be very low or not detectable.

Trichloroethene, CAS number 79-01-6—(synonym: Trichloroethylene) Trichloroethene is a nonflammable mobile gas with a characteristic odor resembling that of chloroform. Moderate exposure can cause symptoms similar to alcohol inebriation. High concentrations of Trichloroethene can cause a narcotic effect. Trichloroethane has been found to induce hepocellular carcinomas. Heavy exposure has also been found to cause death by ventricular fibrillation.

1,2-Dichloroethane, CAS number 107-06-2—(synonym: Ethylene Dichloride) 1,2-Dichloroethane has a characteristic pleasant odor and a sweet taste. Vapors of 1,2-Dichloroethane have been found to be irritating to the lungs and eyes and may disturb balance cause abdominal cramping. This substance has been listed as a carcinogen by the USEPA.

Acetone, CAS number 67-64-1 (synonym - dimethylketone; 2-propanone). Acetone is a colorless volatile liquid with a pungent odor and sweetish taste. Acetone is extremely flammable and is considered a fire risk and is generally characterized by low to moderate toxicity by ingestion and inhalation. Prolonged or repeated topical use may cause dryness. Inhalation may produce headache, fatigue, excitement, bronchial irritation, and in large amounts narcosis.

2-Butanone, CAS number 78-93-1 (synonym - methyl ethyl ketone). 2-Butanone is a colorless liquid with an acetone-like odor and is a narcotic by inhalation. 2-Butanone should be considered a fire risk.

Tetrachloroethene, CAS 127-18-4—(synonym: Tetrachloroethylene) Tetrachlorethane is a colorless nonflammable liquid with a an ethereal odor. In high concentrations tetrachlorethane can have a narcotic effect and can cause a defatting effect on the skin leading to dermatitis.

PCB (Aroclor), PCBs are highly toxic colorless liquids. PCBs induce toxic effects in humans including chloracne, pigmentation of skin and nails, excessive eye discharge, swelling of eyelids, distinctive hair follicles, and gastrointestinal disturbances. PCB's have been listed as carcinogens by the USEPA and may also cause liver damage.

SECTION V — TRAINING

5.1 Basic Training Required

Completion of the 40-hour Health and Safety Training for Hazardous Waste Operations and three days on the job training under the supervision of a qualified person is required for all employees who will perform work in areas where the potential for a toxic exposure exists.

5.2 Advanced Training

Advanced training, as necessary, will be provided to any personnel who will be expected to perform site work utilizing Level A protection or other specialized operation to be undertaken at the site.

5.3 Site-Specific Training

Training will be provided that specifically addresses the activities, procedures, monitoring, and equipment for the site operations prior to going on site. Training will include familiarization with site and facility layout, known and potential hazards, and emergency services at the site, and details all provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity.

5.4 Safety Briefings

C&S project personnel will be given briefings by the HSO on a daily or as needed basis to further assist site personnel in conducting their activities safely. Pertinent information will be provided when new operations are to be conducted. Changes in work practices must be implemented due to new information made available, or if site or environmental conditions change. Briefings will also be given to facilitate conformance with prescribed safety practices. When conformance with these practices is not being followed, or if deficiencies are identified during safety audits the project manager will be notified.

5.5 First Aid and CPR

The HSO will identify those individuals requiring this training in order to oversee emergency treatment if so required during field activities. It is expected that a selected number of field workers will have First

Aid training and some members of the field team will have CPR training These courses will be consistent with the requirements of the American Red Cross Association.

SECTION VI — ZONES

6.1 Site Zones

Three types of site activity zones are identified for the Remedial Investigation activities, including the Work Zone, Contamination Reduction Zone, and the Support Zone.

6.1.1 Work Zone (Exclusion Zone)

The Work Zone is (are) the area(s) where contamination is known to be or likely to be present or area(s) where activity is being conducted which has the potential to cause harm. The Work Zone will be any area in the general vicinity of active site work or intrusive activities. It is anticipated that the location of the Work Zone will change as various investigating activities change. No one may enter the Work Zone without the necessary protective equipment and without permission from the HSO.

6.1.2 Contamination Reduction Zone

The Contamination Reduction Zone is defined as the landfill mound but excluding areas on the landfill mound where intrusive activities are being conducted. In this area, personal and equipment decontamination will be conducted.

6.1.3 Support Zone

The support area is considered the uncontaminated area. This area may include the C&S trailer command post or pre-work area which will provide for communications and emergency response Appropriate safety and support equipment also will be located in this zone.

SECTION VII — PERSONAL PROTECTIVE EQUIPMENT

7.1 General

The level of protection to be worn by field personnel will be defined and controlled by the HSO. Depending upon the type and levels of waste material present at the site, varying degrees of protective equipment will be needed. If the possible hazards are unknown, a reasonable level of protection will be taken until sampling and monitoring results can ascertain potential risks. The levels of protection listed below are based on USEPA Guidelines. A list of the appropriate clothing for each level is also provided

Level A protection must be worn when a reasonable determination has been made that the highest available level of respiratory, skin, eye, and mucous membrane protection is needed. It should be noted that while Level A provides maximum available protection, it does not protect against all possible hazards. Consideration of the heat stressthat can arise from wearing Level A protection should also enter into the decision making process.

Level A protection includes

Open Circuit, pressure-demand SCBA
Totally encapsulated chemical resistant suit
Gloves, inner (surgical type)
Gloves, outer, chemical protective
Boots, chemical protective

Level B protection must be used when the highest level of respiratory protection is needed, but hazardous material exposure to the few unprotected areas of the body (i.e., the back of the neck) is unlikely.

Level B protection includes

Open circuit, pressure-demand SCBA or pressure airline with escape air bottle
Chemical protective clothing:
Overalls and long sleeved jacket; disposal chemical resistant coveralls; coveralls; one or two piece chemical splash suit with hood
Gloves, inner (surgical type)
Gloves, outer, chemical protective
Boots, chemical protective

Level C: must be used when the required level of respiratory protection is known, or reasonably assumed to be, not greater than the level of protection afforded by air purifying respirators; and hazardous materials exposure to the few unprotected areas of the body (i.e., the back of the neck) is unlikely.

Level C protection includes:

Full or half face air-purifying respirator
Chemical protective clothing:
Overalls and long-sleeve jacket; disposable chemical resistant coveralls; coveralls; one or two piece chemical splash suit
Gloves, inner (surgical type)
Gloves, outer, chemical protective
Boots, chemical protective

Level D is the basic work uniform. It cannot be worn on any site where respiratory or skin hazards exist.

Level D protection includes:

Safety boots/shoes
Safety glasses
Hard Hat with optional face shield

Note that the use of SCBA and airline equipment is contingent upon the user receiving special training in the proper use and maintenance of such equipment.

7.2 Personal Protective Equipment - Specific

Level D with some modification will be required when working in the work zone on this site. In addition to the basic work uniform specified by Level D protection, chemical protective gloves with a surgical type inner liner will be required when contact with soil, leachate or landfill material is likely. An upgrade to a higher level (Level C) of protection may occur if determined necessary by the HSO.

SECTION VIII MONITORING PROCEDURES

8.1 Monitoring During Site Operations

All site environmental monitoring should be accompanied by meteorological monitoring of appropriate climatic conditions.

8.1.1 Drilling Operations (Monitoring Well Installation and Subsurface Borings)

Monitoring will be performed by the HSO or drilling observer during the conduct of work. A photoionization detector (PID) will be utilized to monitor the breathing zone, the borehole, and geological samples upon their retrieval. Drill cuttings will also be monitored. A combustible gas indicator (CGI) with oxygen alarm will be used to monitor the borehole for the presence of combustible gases. Similar monitoring of fluids produced during well development will also be conducted.

8.1.2 Test Pit Excavations/Test Trenches

Monitoring will be performed during excavation and sampling operations when C&S personnel are within the work zone. A PID will be utilized to monitor the breathing zone, the excavated area, and material taken from the excavation. Monitoring of the breathing zone with a CGI and oxygen meter will be conducted.

8.1.3 Waste Mass Investigation

Monitoring will be performed during sampling operations when C&S personnel are within the work zone. A PID will be utilized to monitor the breathing zone and the material taken from the excavation. Monitoring of the breathing zone with a CGI and oxygen meter will be conducted.

8.1.4 Other Media Sampling

Monitoring will be performed during sampling operations when C&S personnel are within the work zone. A PID will be utilized to monitor the breathing zone, the sampling area, and material taken from the sample location. Monitoring of the breathing zone with a CGI and oxygen meter will be conducted.

8.2 Action Levels

In the event total organic vapor levels exceed 10 ppm above background at the point of intrusion, field activities will be ceased until such time as the respective conditions (monitored after work cessation) decrease. Similarly, in the event %LEL levels exceed 25% LEL at the point of intrusion, field activities will be ceased until such time as the respective conditions (monitored after work cessation) decrease. Upon ceasing work, the work area will be evacuated and readings will be taken at the adjacent downwind property line by the HSO. If the organic vapor level at the work site decreases below 10 ppm above background within 30-minutes of work cessation, work activities can resume, however more frequent successive recordings of the air quality conditions at the intrusion location will be completed. In this

manner, the potential for air quality impacts to the local community will be identified, at relatively low-levels, within the immediate vicinity of the location of intrusion. If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 10 ppm above background for a period of 30-minutes or longer, and contingency efforts such as abandoning or closing the intrusion location do not abate the emission source, a major vapor emission response plan shall be immediately placed into effect. The major vapor emission response plan is described in subsection 14.2.3 of this HASP.

8.3 Personnel Monitoring Procedures

Personal monitoring shall be performed as a contingency measure in the event that VOC concentrations are consistently above the 1.0 ppm action level as detected by the CGI and/or PID. If the concentration of VOCs is above this action level, then amendments to the HASP must be made before work can continue at the site.

8.4 Medical Surveillance Procedures for Evidence of Personal Exposure

All C&S Engineers Inc. personnel who will be performing field work at the Site must be medically qualified. Additional medical testing may be required by the HSO in consultation with the company physician if an overt exposure or accident occurs, or if other site conditions warrant further medical surveillance.

8.5 Heat Stress Monitoring

It is anticipated that heat stress may be a concern. Guidance relating to heat stress control is presented in Appendix C of this HASP.

SECTION IX COMMUNICATIONS

A cellular telephone will be available for communication with emergency support services/ facilities Guidance relating to site communications which may be implemented depending on conditions and circumstances is presented in Appendix D of this HASP.

SECTION X — SAFETY CONSIDERATIONS FOR SITE OPERATIONS

10.1 General

Standard safe work practices that will be followed include:

- Do not climb over/under drums, or other obstacles.
- Do not enter the work zone alone.
- Practice contamination avoidance, on and off-site.
- Plan activities ahead of time, use caution when conducting concurrently running activities.
- No eating, drinking, chewing or smoking is permitted in work zones.
- Due to the unknown nature of waste placement at the site, extreme caution should be practiced during excavation activities.
- Apply immediate first aid to any and all cuts, scratches, abrasions, etc.
- Be alert to your own physical condition. Watch your buddy for signs of fatigue, exposure, etc.

A work/rest regimen will be initiated when ambient temperatures and protective clothing create a potential heat stress situation.
No work will be conducted without adequate natural light or without appropriate supervision.
Task safety briefings will be held prior to onset of task work.
Ignition of flammable liquids within or through improvised heating devices (barrels, etc.) or space heaters is forbidden.
Entry into areas of spaces where toxic or explosive concentrations of gases or dust may exist without proper equipment is prohibited.
Any injury or unusual health effect must be reported to the site health and safety officer.
Prevent splashing or spilling of potentially contaminated materials.
Use of contact lenses is prohibited while on site.
Beards and other facial hair that would impair the effectiveness of respiratory protection are prohibited.
Field crew members should be familiar with the physical characteristics of investigations, including:
- Wind direction in relation to potential sources
- Accessibility to co-workers, equipment, and vehicles
- Communication
- Hot Zones (areas of known or suspected contamination)
- Site Access
- Nearest water sources

The number of personnel and equipment in potentially contaminated areas should be minimized consistent with site operations.

10.2 Field Operations

10.2.1 Intrusive Operations

An HSO or designee will be present on-site during all intrusive work, e.g., drilling operations, excavations, trenching, and will provide monitoring to oversee that appropriate levels of protection and safety procedures are utilized by C&S Engineers, Inc., personnel.
The use of salamanders or other equipment with an open flame is prohibited and the use of protective clothing especially hard hats and boots, will be required during drilling or other heavy equipment operations. All contaminated equipment, e.g., augers, split spoons, drill pipe, backhoe, bucket, etc., will be placed on liner material when not in use, or when awaiting and during steam cleaning. Communications will be maintained at all times.

10.2.2 Excavation Trenching

Guidance relating to safe work practices for C&S Engineers, Inc., employees regarding excavating/trenching operation is presented in Appendix E of this HASP.

SECTION XI — DECONTAMINATION PROCEDURES

Decontamination involves physically removing contaminants and/or converting them chemically into innocuous substances. Only general guidance can be given on methods and techniques for decontamination.

Decontamination procedures are designed to:

- Remove contaminant(s).
- Avoid spreading the contamination from the work zone.
- Avoid exposing unprotected personnel outside of the work zone to contaminants.

Contamination avoidance is the first and best method for preventing spread of contamination from a hazardous site. Each person involved in site operations must practice the basic methods of contamination avoidance listed below. Additional precautions may be required in the HASP.

- Know the limitations of all protective equipment being used.
- Do not enter a contaminated area unless it is necessary to carry out a specific objective.
- When in a contaminated area, avoid touching anything unnecessarily.
- Walk around pools of liquids, discolored areas, or any area that shows evidence of possible contamination.
- Walk upwind of contamination, if possible.
- Do not sit or lean against anything in a contaminated area. If you must kneel (e.g., to take samples), use a plastic ground sheet.
- If at all possible, do not set sampling equipment directly on contaminated areas. Place equipment on a protective cover such as a ground cloth.
- Use the proper tools necessary to safely conduct the work.

Specific methods that may reduce the chance of contamination are:

- Use of remote sampling techniques.
- Opening containers by non-manual means.
- Bagging monitoring instruments.
- Use of drum grapplers.
- Watering down dusty areas.

Equipment which will need to be decontaminated includes tools, monitoring equipment, and personal protective equipment. Items to be decontaminated will be brushed off, rinsed, and dropped into a plastic container supplied for that purpose. They will then be washed with a detergent solution and rinsed with clean water. Monitoring instruments will be wrapped in plastic bags prior to entering the field in order to reduce the potential for contamination. Instrumentation that is contaminated during field operations will be carefully wiped down.

Heavy equipment, if utilized for operations where it may be contaminated, will have prescribed decontamination procedures to prevent hazardous materials from potentially leaving the site. The on-site contractor will be responsible for decontaminating all construction equipment prior to demobilization.

SECTION XII DISPOSAL PROCEDURES

All discarded materials, waste materials, or other objects shall be handled in such a way as to reduce or eliminate the potential for spreading contamination, creating a sanitary hazard, or causing litter to be left on-site. All potentially contaminated materials, e.g., clothing, gloves, etc., will be bagged or drummed as necessary and segregated for proper disposal. All contaminated waste materials shall be disposed of as required by the provisions included in the contract and consistent with regulatory provisions.

All non-contaminated materials shall be collected and bagged for appropriate disposal

SECTION XIII EMERGENCY PLAN

As a result of the hazards at the site, and the conditions under which operations are conducted, there is the possibility of emergency situations. This section has established procedures for the implementation of an emergency plan.

13.1 Emergency Coordinator

	Name	Telephone No.
The Site Emergency Coordinator	John Kanoza	(315)-455-2000

The Site Emergency Coordinator shall implement the emergency plan whenever conditions at the site warrant such action. The Site Emergency Coordinator will be responsible for assuring the evacuation, emergency treatment, emergency transport of site personnel as necessary, and notification of emergency response units (refer to phone listing in the beginning of this HASP) and the appropriate management staff.

13.2 Evacuation

In the event of an emergency situation, such as fire, explosion, significant release of toxic gases, etc., all personnel will evacuate and assemble in a designated assembly area (most likely the project trailer). The Emergency Coordinator will have authority to contact outside services as required. Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given. The Emergency Coordinator must see that access for emergency equipment is provided and that all ignition sources have been shut down once the alarm has been sounded. Once the safety of all personnel is established, the Fire Department and other emergency response groups will be notified by telephone of the emergency.

13.3 Potential or Actual Fire or Explosion

Immediately evacuate the site and notify local fire and police departments, and other appropriate emergency response groups, if LEL values are above 25% in the work zone or if an actual fire or explosion has taken place.

13.4 Environmental Incident (spread or release of contamination)

Control or stop the spread of contamination if possible. Notify the Emergency Coordinator and the Project Manager. Other appropriate response groups will be notified as appropriate.

13.5 Personnel Injury

Emergency first aid shall be applied on-site as necessary. Then, decontaminate (en route if necessary) and transport the individual to nearest medical facility if needed. The ambulance/rescue squad shall be contacted for transport as necessary in an emergency. The directions to the hospital and a map are found in Figure 1.

13.6 Personnel Exposure

Skin Contact:	Use copious amounts of soap and water. Wash/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/or, if necessary, decontaminate and transport to emergency medial facility.
Ingestion	Decontaminate and transport to emergency medical facility
Puncture Wound/ Laceration:	Decontaminate, if possible, and transport to emergency medical facility. HSC will provide medical data sheets to medical personnel as requested.

13.7 Adverse Weather Conditions

In the event of adverse weather conditions, the HSO will determine if work can continue without sacrificing the health and safety of C&S field workers.

Incident Investigation and Reporting

In the event of an incident, procedures discussed in the C&S incident investigation and reporting policy, which is presented in Appendix F of this HASP, shall be followed.

SECTION XIV COMMUNITY RELATIONS AND HEALTH & SAFETY PLAN

14.1 Community Relations

Community relations may be a sensitive matter. All C&S employees should be aware of issues associated with this specific site. Conversations with community members not involved in activities at the site should be limited. Conversations between site workers off the site, in restaurants, etc., should not include discussions of the potential hazards on the site nor should negative statements be made regarding the site.

Community Health and Safety Plan

14.2.1 Site Access

In general, the majority of active and/or intrusive efforts to be completed as part of the Remedial Investigation will occur within the general perimeter of the site or within areas immediately adjacent to the site perimeter. Community residences are located relatively remote from the site. During completion of the Remedial Investigation efforts, site access will be limited only to those personnel (field sampling technicians, geologists, engineers, and subcontractors) who are scheduled to be involved with site specific investigation. Site access restrictions will be primarily achieved by means of the existing site fence and gate network proximate to State Fair Boulevard.

14.2.2 Community Health and Safety Monitoring

As part of the Remedial Investigation, three general types of efforts are scheduled, including, non-intrusive reconnaissance tasks, sampling or monitoring tasks (monitoring point or stream sampling), and intrusive tasks (test trenching, subsurface borings, monitoring point/well installation). As part of the monitoring tasks to be completed, a limited number of residential well water locations will also be included for sampling purposes only. During completion of general reconnaissance and sampling or monitoring tasks, potential for health and safety risks to off-site landowners or the local community are not anticipated. During completion of intrusive efforts at or adjacent to the site, health and safety monitoring efforts will be concentrated immediately adjacent to the area or areas in which intrusive efforts are being completed. Since the air pathway is the most available and likely avenue for the release of potential contaminants to the atmosphere at or near the site, in addition to limiting public or community access to the areas in which intrusive efforts are completed, health and safety measures will primarily consist of monitoring the air pathway for worker exposure.

14.2.3 Community Air Monitoring Plan

Since the field activities (test trenches and groundwater monitoring wells) to be completed during the Remedial Investigation include a limited degree or area of intrusion, air monitoring for protection of the local community will be focused at the area of intrusion. During completion of intrusive investigation tasks, efforts will be initiated to complete field work at a pace which will minimize the creation of airborne dust or particulates. During periods of extreme wind or rain, intrusive field work will be halted until such time as the potential for creating airborne dust or particulate matter is limited. Since volatile organic parameters (as well as explosive gases) exist as the more likely contaminants which could be released via the air pathway during the completion of intrusive activities, air monitoring for total VOCs and explosive will be completed at each intrusion location and during each phase of intrusive work, for purposes of providing adequate health and safety monitoring to the local community. Air monitoring will be completed at each point of intrusion utilizing a Thermo-Environmental photoionization detector (PID) equipped with a 10.0 eV lamp. The PID is capable of detecting the presence of a wide variety of specific VOCs which are measured as total VOCs. Similarly, in an effort to monitor for the presence of explosive or combustible gases, a Bacharach-multi gas meter will be utilized to identify the percent lower explosive limit (%LEL), carbon monoxide concentration, and hydrogen sulfide concentration. Point of intrusion monitoring for VOCs and explosive gases will be completed continuously, with an alarm set according to background conditions and with measured readings documented every 30 - 60 minutes.

In the event total organic vapor levels exceed 10 ppm above background at the point of intrusion, field activities will be ceased until such time as the respective conditions (monitored after work cessation) decrease. Similarly, in the event %LEL levels exceed 25% LEL at the point of intrusion, field activities will be ceased until such time as the respective conditions (monitored after work cessation) decrease. Upon ceasing work, the work area will be evacuated and readings will be taken at the adjacent downwind property line by the HSO. If the organic vapor level at the work site decreases below 10 ppm above background within 30-minutes of work cessation, work activities can resume, however more frequent successive recordings of the air quality conditions at the intrusion location will be completed. In this manner, the potential for air quality impacts to the local community will be identified, at relatively low-levels, within the immediate vicinity of the location of intrusion. If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 10 ppm above background for a period of 30-minutes or longer, and contingency efforts such as abandoning or closing the intrusion location do not abate the emission source, a major vapor emission

response plan shall be immediately placed into effect. For purposes of this project, the major vapor emission response plan shall include the following activities;

Emergency response contacts as listed in this Health and Safety Plan will go into effect;
The local police authorities will be contacted by the Health and Safety Officer (HSO);
Appropriate community officials and County personnel will be contacted by the Health and Safety Officer (HSO);
Air monitoring shall be continued at a perimeter location deemed appropriate by the Health and Safety Officer (HSO).

SECTION XV — AUTHORIZATIONS

C&S personnel authorized to enter the Site while operations are being conducted must be approved by the HSO. Authorization will involve completion of appropriate training courses, medical examination requirements, and review and sign-off of this HASP. No C&S personnel should enter the work zone alone. Each C&S employee should check in with the HSO or Project Manager prior to entering the work zones.

HASP Appendix A

Analytical Data

pb; heptachl 0.53 ppb; coba

/90s—9d

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION

Original—SHSC
Copy—REGION
Copy—DEE
Copy—COM
Copy—PREPARER

ADDITIONS/CHANGES TO REGISTRY OF INACTIVE HAZARDOUS WASTE DISPOSAL SITES

1. SITE NAME	2. SITE NO.	3. TOWN	4. COUNTY
Val's Dodge	134040	Geddes	Onondaga

5. REGION: 7

6. CLASSIFICATION: Current 2a / Proposed 2

7. ACTIVITY: ☐ Add ☒ Reclassify ☐ Delist ☐ Modify

8a. DESCRIBE LOCATION OF SITE (Attach U.S.G.S. Topographic Map showing site location)

Exit I-690 at the State Fair exit. Travel west along State Fair Blvd. under NYS State Rte. 695. Continue on State Fair Blvd. to Val's Motors (on right). Site is located behind the auto dealership.

b. Quadrangle Syracuse West c. Site Latitude 43°5'9.9" Longitude 76°13'58.5" d. Tax Map Number

9a. BRIEFLY DESCRIBE THE SITE (Attach site plan showing disposal/sampling locations)

The site, located adjacent to a wetland, is the location of a dump used by Crucible Steel of Syracuse to dispose of caustic mill scale. Recent unauthorized dumping of automobile dealership wastes is ongoing.

b. Area 16.5 c. c. EPA ID Number NYD980530075 d. PA/SI ☐ Yes ☐ No

e. Completed ☒ Phase I ☒ Phase II ☐ PSA ☒ Sampling

10. BRIEFLY LIST THE TYPE AND QUANTITY OF THE HAZARDOUS WASTE AND THE DATES THAT IT WAS DISPOSED OF AT THIS SITE

23.75 tons of caustic mill scale between 1968 and 1973.

11a. SUMMARIZED SAMPLING DATA ATTACHED

☐ Air ☒ Groundwater ☒ Surface Water ☒ Soil ☒ Waste ☒ EP Tox ☐ TCLP.

b. List contravened parameters and values

Groundwater: benzene 1 ppb; phenol 43 ppb, 4-methylphenol 4 ppb; 2,4-dimethylphenol 5 ppb; 2,4,6-trichlorophenol 2 ppb; 2,4,5-trichlorophenol 3 ppb; Iron 30,000 ppb; sodium 82,500 ppb; antimony 49.1 ppb; magnesium 65,600 ppb; chromium 1510 ppb; lead 25.1 ppb.
Surface Water: 2-methylphenol 29 ppb; 4-methylphenol 14 ppb; phenol 1 ppb; benzo(a) pyrene 2 ppb; heptachlor 0.53 ppb; cobalt 136 ppb; copper 169 ppb; Iron 136,000 ppb;(ove

12. SITE IMPACT DATA

a. Nearest surface water Distance adjacent ft. Direction ____ Classification Wetland

b. Nearest groundwater. Depth ____ ft. Flow Direction East ☐ Sole Source ☐ Primary ☐ Principal

c. Nearest water supply: Distance ____ ft. Direction ____ Active ☐ Yes ☐ No

d. Nearest building: Distance onsite ft. Direction West edge Use auto dealership

e. Crops or livestock on site? ☐ Yes ☒ No

f. Exposed hazardous waste? ☒ Yes ☐ No

g. Controlled site access? ☐ Yes ☒ No

h. Documented fish or wildlife mortality? ☐ Yes ☒ No

i. Impact on special status fish or wildlife resource? ☐ Yes ☒ No

j. Within a State Economic Development Zone? ☐ Yes ☒ No

k. For Class 2a: Code ____ Health Model Score ____

l. For Class 2: Priority Category ____

m. ~~HRS Score~~ PA Score SM = 50

n. Significant Threat ☐ Yes ☐ No ☐ Unknown

13. SITE OWNER'S NAME: Multiple Owners

14. ADDRESS

PREPARER

Scott Kreuzer — Geologist — URS Consultants, Inc
Name, Title and Organization

5/1/92

Signature

APPROVED

Name

Signature

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION

Original—BHSC
Copy—REGION
Copy—OEE
Copy—DOH
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ADDITIONS/CHANGES TO REGISTRY OF INACTIVE HAZARDOUS WASTE DISPOSAL SITES

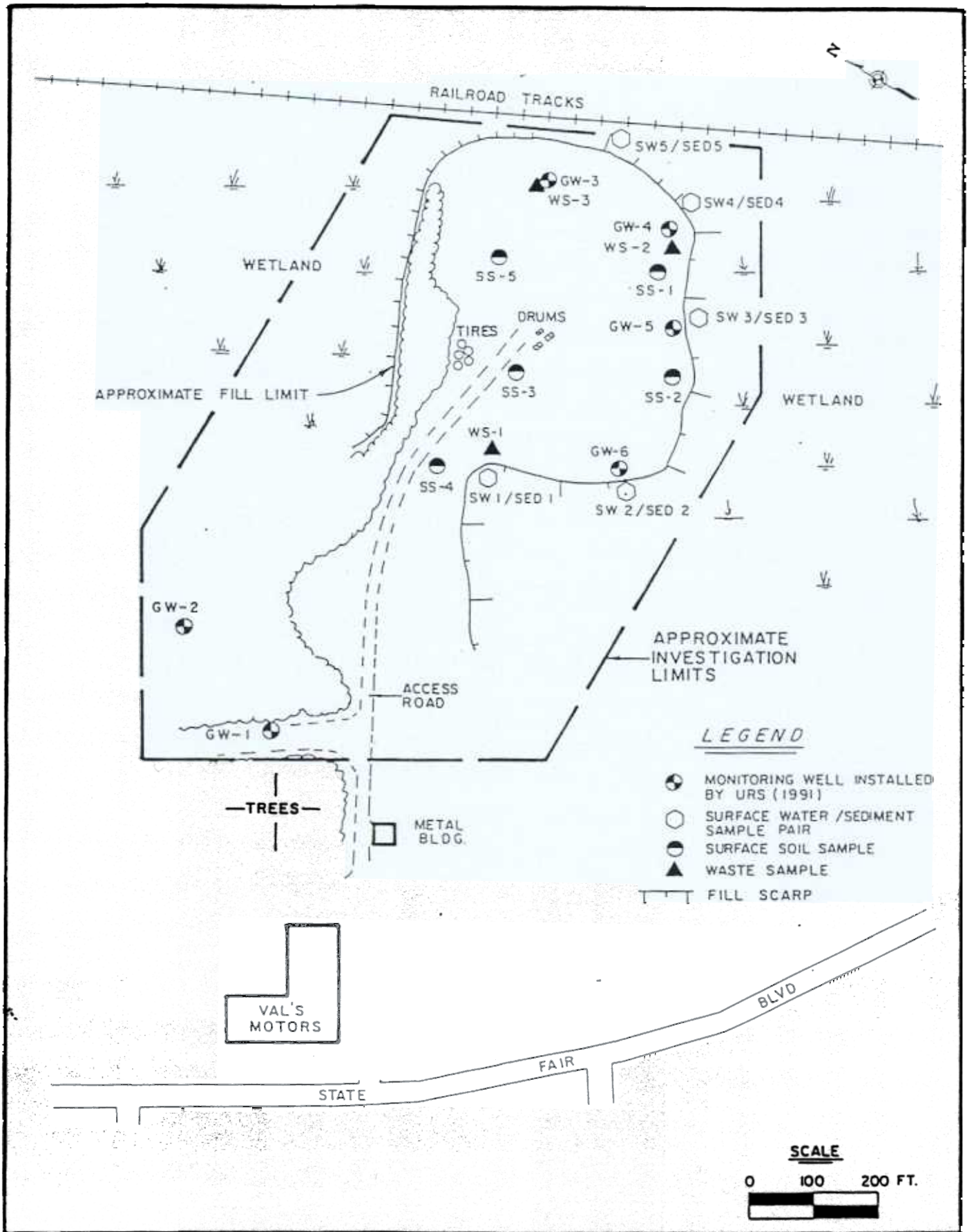
1. SITE NAME	2. SITE NO.	3. TOWN	4. COUNTY
Val's Dodge	134040	Geddes	Onondaga

11b. List contravened parameters and values (Continued)

Surface Water: mercury 0.38 ppb; thallium 37 ppb

Waste: ignitable; EP Toxicity barium 120,000 ppb

Exceeded NYSDEC Water Quality and Guidance Values, T.O.G.S. 1.1.1, revised 9/1/.91 or 6 NYCRR part 371 criteria.



URS CONSULTANTS, INC.

VAL'S DODGE
SAMPLE LOCATION MAP

FIGURE 3-1

A-4065 A

to compile and review site-specific information, develop a site history, and assess waste characteristics at the site. The preliminary Hazardous Ranking System (HRS) scores developed during the Phase I for the Val's Dodge site were:

S_M = 11.61 (S_{GW} = 15.51, S_{SW} = 12.76, S_A = 0.00)
S_{FE} = 0.00
S_{DC} = 37.50

The rationale used in the calculation of these HRS scores was that the site did have PCB contamination, but that PCBs were not mobile in groundwater. Moreover, no groundwater was used for drinking purposes within a 4-mile radius of the site. Direct contact with PCB-contaminated wastes was a possibility.

The data collected during the Phase I Investigation was considered inadequate to properly reclassify the site and therefore NYSDEC authorized a Phase II Investigation.

4.5.2 Phase II Waste Contamination Assessment

Three waste samples were collected as a part of the Phase II Investigation. Sample collection was based on visual or instrument indications of contamination. Sample locations are presented on Figure 3-1. Results of the laboratory analyses are presented in Table 4-2.

Volatiles - Volatile organic compounds (VOCs) were detected in all three waste samples. Sample WS-2 was found to contain six compounds including: 270 ppb 2-butanone, 420 ppb 2-hexanone, 330 ppb toluene, 72 ppb chlorobenzene and 100 ppb total xylenes. Xylenes and 2-butanone were detected in sample WS-3 at 4 and 7 ppb respectively. Sample WS-1 contained 4 ppb methylene chloride and 3 ppb toluene. Acetone was

TABLE 4-2
VAL'S DODGE
ANALYTICAL RESULTS - WASTE SAMPLES

SAMPLE-ID		WS-1	WS-2	WS-3
SAMPLE TYPE		WASTE	WASTE	WASTE
COLLECTION DATE		8/22/91	8/22/91	8/22/91
PARAMETER	TYPE			
CHLOROMETHANE	VOC			
BROMOMETHANE	VOC			
VINYL CHLORIDE	VOC			
CHLOROETHANE	VOC			
METHYLENE CHLORIDE	VOC	4 J		
ACETONE	VOC	R	480 B D E	R
CARBON DISULFIDE	VOC			
1,1-DICHLOROETHENE	VOC			
1,1-DICHLOROETHANE	VOC			
1,2-DICHLOROETHENE (TOTAL)	VOC			
CHLOROFORM	VOC			
1,2-DICHLOROETHANE	VOC			
2-BUTANONE	VOC		270 D	7 J
1,1,1-TRICHLOROETHANE	VOC			
CARBON TETRACHLORIDE	VOC			
VINYL ACETATE	VOC			
BROMODICHLOROMETHANE	VOC			
1,2-DICHLOROPROPANE	VOC			
CIS-1,3-DICHLOROPROPENE	VOC			
TRICHLOROETHENE	VOC			
DIBROMOCHLOROMETHANE	VOC			
1,1,2-TRICHLOROETHANE	VOC			
BENZENE	VOC			
TRANS-1,3-DICHLOROPROPENE	VOC			
BROMOFORM	VOC			
4-METHYL-2-PENTANONE	VOC			
2-HEXANONE	VOC		420 D E	
TETRACHLOROETHENE	VOC			
1,1,2,2-TETRACHLOROETHANE	VOC			
TOLUENE	VOC	3 J	330 D	
CHLOROBENZENE	VOC		72 D	
ETHYLBENZENE	VOC			
STYRENE	VOC			
TOTAL XYLENES	VOC		100 D	4 J

All results reported in µg/kg (ppb).
Only detected results are reported.
VOC - Volatile Organic Compounds.

J-Indicates the value is less than the sample quantitation limit but greater than zero.
B-Compound detected in associated method blank.
D-Indicates the compound required a dilution.
E-Indicates the compound concentration exceeded the linear range of calibration.
R-Compound rejected due to contamination in the associated blank.

TABLE 4-2
VAL'S DODGE
ANALYTICAL RESULTS - WASTE SAMPLES

SAMPLE-ID		WS-1	WS-2	WS-3
SAMPLE TYPE		WASTE	WASTE	WASTE
COLLECTION DATE		8/22/91	8/22/91	8/22/91
PARAMETER	TYPE			
PHENOL	SEMI			260 J X
BIS(2-CHLOROETHYL) ETHER	SEMI			
2-CHLOROPHENOL	SEMI			
1,3-DICHLOROBENZENE	SEMI			
1,4-DICHLOROBENZENE	SEMI			
BENZYL ALCOHOL	SEMI			
1,2-DICHLOROBENZENE	SEMI			
2-METHYLPHENOL	SEMI			
BIS(2-CHLOROISOPROPYL) ETHER	SEMI			
4-METHYLPHENOL	SEMI			
N-NITROSO-DI-N-PROPYLAMINE	SEMI			
HEXACHLOROETHANE	SEMI			
NITROBENZENE	SEMI			
ISOPHORONE	SEMI			
2-NITROPHENOL	SEMI			
2,4-DIMETHYLPHENOL	SEMI			
BENZOIC ACID	SEMI	450 J X		130 J X
BIS(2-CHLOROETHOXY)METHANE	SEMI			
2,4-DICHLOROPHENOL	SEMI			
1,2,4-TRICHLOROBENZENE	SEMI			
NAPHTHALENE	SEMI	720 J X		1300
4-CHLOROANILINE	SEMI			
HEXACHLOROBUTADIENE	SEMI			
4-CHLORO-3-METHYLPHENOL	SEMI			
2-METHYLNAPHTHALENE	SEMI	2000		650 X
HEXACHLOROCYCLOPENTADIENE	SEMI			
2,4,6-TRICHLOROPHENOL	SEMI			
2,4,5-TRICHLOROPHENOL	SEMI			
2-CHLORONAPHTHALENE	SEMI			
2-NITROANILINE	SEMI			
DIMETHYLPHTHALATE	SEMI			
ACENAPHTHYLENE	SEMI	140 J X		
2,6-DINITROTOLUENE	SEMI			
3-NITROANILINE	SEMI			

All results reported in µg/kg (ppb).
Only detected results are reported.
SEMI - Semivolatile Organic Compounds.

J - Indicates the value is less than the sample quantitation limit but greater than zero.
X-The sample was reanalyzed. The greater of two values reported.

TABLE 4-2
VAL'S DODGE
ANALYTICAL RESULTS - WASTE SAMPLES

SAMPLE-ID		WS-1	WS-2	WS-3
SAMPLE TYPE		WASTE		
COLLECTION DATE		—	8/22/91	8/22/91
PARAMETER	TYPE			
ACENAPHTHENE	SEMI			1000 X
2,4-DINITROPHENOL	SEMI			
4-NITROPHENOL	SEMI	610 J X		
DIBENZOFURAN	SEMI			730 X
2,4-DINITROTOLUENE	SEMI			
DIETHYLPHTHALATE	SEMI			400 J X
4-CHLOROPHENYL-PHENYL ETHER	SEMI			
FLUORENE	SEMI	110 J X		690 X
4-NITROANILINE	SEMI			
4,6-DINITRO-2-METHYLPHENOL	SEMI			
N-NITROSODIPHENYLAMINE	SEMI			
4-BROMOPHENYL-PHENYL ETHER	SEMI			
HEXACHLOROBENZENE	SEMI			
PENTACHLOROPHENOL	SEMI			
PHENANTHRENE	SEMI	310 J X		2000
ANTHRACENE	SEMI	110 J X		97 J X
DI-N-BUTYLPHTHALATE	SEMI	870 J B X		R
FLUORANTHENE	SEMI	650 J X		740 X
PYRENE	SEMI	5500		840 X
BUTYLBENZYLPHTHALATE	SEMI	1400 J X	3700 J X	
3,3'-DICHLOROBENZIDINE	SEMI			
BENZO(A)ANTHRACENE	SEMI	1700 J X		160 J X
CHRYSENE	SEMI	770 J X	4300 J X	170 J
BIS(2-ETHYLHEXYL)PHTHALATE	SEMI	8200 J X	R	R
DI-N-OCTYL PHTHALATE	SEMI	1800 J X		97 J X
BENZO(B)FLUORANTHENE	SEMI	1200 J X	530 J X	110 J X
BENZO(K)FLUORANTHENE	SEMI	550 J X	670 J X	39 J X
BENZO(A)PYRENE	SEMI	1100 J X	680 J X	92 J X
INDENO(1,2,3-CD)PYRENE	SEMI	740 J X	620 J X	51 J X
DIBENZ(A,H)ANTHRACENE	SEMI			
BENZO(G,H,I)PERYLENE	SEMI	2400 X		62 J X

All results reported in µg/kg (ppb).
Only detected results are reported.
SEMI - Semivolatile Organic Compounds.

J - Indicates the value is less than the sample quantitation limit but greater than zero.
B - Compound detected in associated method blank.
X-The sample was reanalyzed. The greater of two values reported.
R-Compound rejected due to contamination in associated method blank.

TABLE 4-2
VAL'S DODGE
ANALYTICAL RESULTS - WASTE SAMPLES

SAMPLE-ID		WS-1	WS-2	WS-3
SAMPLE TYPE		WASTE	WASTE	WASTE
COLLECTION DATE		8/22/91	8/22/91	8/22/91
PARAMETER	TYPE			
ALPHA-BHC	PST			
BETA-BHC	PST			
DELTA-BHC	PST			
GAMMA-BHC (LINDANE)	PST			
HEPTACHLOR	PST			
ALDRIN	PST			
HEPTACHLOR EPOXIDE	PST			
ENDOSULFAN I	PST		310	
DIELDRIN	PST		150	
4,4'-DDE	PST			
ENDRIN	PST		230	
ENDOSULFAN II	PST			
4,4'-DDD	PST			
ENDOSULFAN SULFATE	PST			
4,4'-DDT	PST			
METHOXYCHLOR	PST			
ENDRIN KETONE	PST			
ALPHA-CHLORDANE	PST			
GAMMA-CHLORDANE	PST			
TOXAPHENE	PST			
AROCLOR-1016	PCB			
AROCLOR-1221	PCB			
AROCLOR-1232	PCB			
AROCLOR-1242	PCB			
AROCLOR-1248	PCB			
AROCLOR-1254	PCB	14000 C		
AROCLOR-1260	PCB			

All results reported in µg/kg (ppb).
Only detected results are reported.
PST - Pesticides.
PCB - Polychlorinated Biphenyls.
C-Indicates the value has been confirmed by GC/MS.

TABLE 4-2
VAL'S DODGE
ANALYTICAL RESULTS - WASTE SAMPLES

SAMPLE-ID		Observed	WS-1	WS-2	WS-3
SAMPLE TYPE		Range In	WASTE	WASTE	WASTE
COLLECTION DATE		Eastern U.S.	8/22/91	8/22/91	8/22/91
PARAMETER	TYPE	(ppm)#			
ALUMINUM	MET	7000-100000	5180 *	118 *	10400 *
ANTIMONY	MET	<1-8.8			
ARSENIC	MET	<0.1-73	16.4 S	0.66 B	11.7 S
BARIUM	MET	10-1500	79.3	98300	162
BERYLLIUM	MET	<1-7	0.41 B	0.63 B	0.70 B
CADMIUM	MET		3.1	0.19 B	1.7
CALCIUM	MET	100-280000	28500 *	1730 *	61300 *
CHROMIUM	MET	1-1000	3210 *	95.9 *	4170 *
COBALT	MET	<0.3-70	320	3.6 B	330
COPPER	MET	<1-700	337	18.2	247
IRON	MET	100->100000	88800 *	3760 *	61500 *
LEAD	MET	10-300	161 *	8.7 *	215 *
MAGNESIUM	MET	50-50000	6330 *	184 B *	34100 *
MANGANESE	MET	<2-7000	6500 *	163 *	8490 *
MERCURY	MET	0.01-3.4	0.11		
NICKEL	MET	<5-700	7880 N *	207 N *	1330 N *
POTASSIUM	MET	50-37000	320 B	119 B	1380
SELENIUM	MET	<0.1-3.9	7.5 S		3.8 B
SILVER	MET		0.62 B		0.98 B
SODIUM	MET	<500-50000	107 B	23.6 B	668 B
THALLIUM	MET	2.2-23			
VANADIUM	MET	<7-300	532	11.8	581
ZINC	MET	<5-2900	201	9.2	61.1
CYANIDE	CN				

All results reported in mg/kg (ppm).
Only detected results are reported.
MET - Metals.
CN - Cyanide.
- Observed range in Eastern U.S. obtained from Shacklette and Boerngen, 1984.

B - Value is less than quantitation limit but greater than or equal to instrument detection limit.
N-Spiked sample not with in control limits.
*-Duplicate analysis not with in control limits.
S-The reported value was determined by Method of Standard Additions (MSA).

TABLE 4-2
VAL'S DODGE
ANALYTICAL RESULTS - WASTE SAMPLES

SAMPLE ID		Maximum Concentration Level (ppb)#	WS-1	WS-2	WS-3
SAMPLE TYPE			WASTE	WASTE	WASTE
COLLECTION DATE			8/22/91	8/22/91	8/22/91
PARAMETER	TYPE				
EPTOX GAMMA-BHC (LINDANE)	PST	400			
EPTOX ENDRIN	PST	20			
EPTOX METHOXYCHLOR	PST	10000			
EPTOX TOXAPHENE	PST	500			
EPTOX 2,4-D	HERB	10000			
EPTOX 2,4,5-TP (SILVEX)	HERB	1000			
EPTOX ARSENIC	MET	5000			
EPTOX BARIUM	MET	100000	222	120000	69.4 B
EPTOX CADMIUM	MET	1000		1.2 B	
EPTOX CHROMIUM	MET	5000	26.6		36.2
EPTOX LEAD	MET	5000			
EPTOX MERCURY	MET	200			
EPTOX SELENIUM	MET	1000			
EPTOX SILVER	MET	5000			
CORROSIVITY (as pH)	HWC	>2 AND <12	N	N	N
IGNITABILITY (°F)	HWC	<140°F	Y	Y	N
REACTIVE CYANIDE (mg/kg)	HWC	500##			
REACTIVE SULFIDE (mg/kg)	HWC	250##		40.8	20.0

All results reported in µg/L (ppb)

Only detected results are reported.

PST-Pesticide.

HERB- Herbicide.

HWC-Hazardous waste characteristic.

#-Source: 40 CFR 261, September 25, 1990.

##-NYSDEC guideline values.

B-Value is less than the quantitation limit but greater than or equal to the instrument detection limit.

detected in sample WS-2, however, the laboratory quality control method blank indicated possible laboratory contamination.

Semivolatiles - Semivolatile organic compounds (SVOCs) detected in the waste samples were primarily polynuclear aromatic hydrocarbon (PAH) and phthalate compounds. Total PAH concentrations ranged from 6,800 ppb at location WS-2 to 18,000 ppb at WS-1. Benzoic acid was found at locations WS-1 and WS-3 at 450 and 130 ppb respectively. Sample WS-1 contained four phthalate compounds including: 870 ppb di-n-butylphthalate, 1,400 ppb butylbenzylphthalate, 8,200 ppb bis(2-ethylhexyl)phthalate and 1,800 ppb di-n-octylphthalate. Butylbenzylphthalate was also detected in sample WS-2 at 3,700 ppb. Sample WS-3 contained only diethylphthalate and di-n-octylphthalate at 400 and 97 ppb respectively. Additional SVOCs detected included 610 ppb 4-nitrophenol at WS-1 and 730 ppb dibenzofuran at WS-3.

Pesticides/PCBs - The only pesticides detected were in sample WS-2 which contained 310 ppb endosulfan, 150 ppb dieldrin, and 230 ppb endrin. PCBs were only detected in sample WS-1 which contained 14,000 ppb of Aroclor-1254.

Metals - Chromium, cobalt, nickel, and vanadium in samples WS-1 and WS-3 were found in excess of observed natural ranges within soils in the Eastern United States. Sample WS-2 had a barium concentration of 98,300 ppb.

Extraction Procedure (EP) Toxicity - Waste sample WS-2 was classifiable as a hazardous waste based on the result for leachable barium at a concentration of 120,000 ppb. This concentration for this parameter exceeds the EP Toxicity criteria as per 6 NYCRR Part 371(e)(1).

Hazardous Waste Characteristics - Waste samples WS-1 and WS-2 were classifiable as hazardous waste based on the ignitability criteria as per 6 NYCRR Part 371(b)(1)(i).

4.5.3 Phase II Soil Contamination Assessment

Five surface soil and five subsurface soil samples were collected as part of the Phase II Investigation. Each sample was analyzed for TCL parameters. Surface soil samples were also analyzed for hazardous waste characteristics. Sampling locations are shown on Figure 3-1.

Subsurface Soils

Subsurface soil samples were recovered from the monitoring well borings and were selected, where possible, based on visual signs of contamination or on elevated PID readings. The sample from boring GW-3 was analyzed as waste sample WS-3 based on indications of the presence of waste. Results of the sample analyses are presented in Table 4-3.

Volatiles - VOCs were only detected in downgradient soil samples from GW-5 and GW-6. Concentrations of toluene and chlorobenzene were found to be 4 ppb and 2 ppb respectively within both samples. Methylene chloride was only found in sample GW-5 at 5 ppb.

Semivolatiles - Similar to the waste samples analyzed, most SVOCs detected within subsurface soils were PAH compounds. PAH compounds were found at highest concentrations in downgradient samples from GW-4 and GW-6 with total PAH concentrations of 1,751 ppb and 4,520 ppb respectively. Additional SVOCs were found in sample GW-6 and included: 16 ppb phenol, 29 ppb 1,4-dichlorobenzene, 21 ppb acenaphthylene, 59 ppb dibenzofuran, and 90 ppb hexachlorobenzene. The samples from GW-4 and GW-6 were found to contain 1,2,4-trichlorobenzene at 470 and 12 ppb respectively. Samples GW-5 and GW-6 each contained 20 ppb and 18 ppb diethylphthalate and 8 ppb and 110 ppb butylbenzylphthalate respectively. Di-n-butylphthalate was detected in upgradient samples GW-1 and GW-2 at 31 and 30 ppb respectively. It was the only SVOC detected at these locations.

TABLE 4-3
VAL'S DODGE
ANALYTICAL RESULTS - SUBSURFACE SOIL SAMPLES

SAMPLE-ID		GW-1	GW-2	GW-4	GW-5	GW-6
SAMPLE TYPE		SOIL	SOIL	SOIL	SOIL	SOIL
COLLECTION DATE		8/19/91	8/19/91	8/20/91	8/21/91	8/21/91
PARAMETER	TYPE					
CHLOROMETHANE	VOC					
BROMOMETHANE	VOC					
VINYL CHLORIDE	VOC					
CHLOROETHANE	VOC					
METHYLENE CHLORIDE	VOC			R	5 J	
ACETONE	VOC	R	R	R	R	R
CARBON DISULFIDE	VOC					
1,1-DICHLOROETHENE	VOC					
1,1-DICHLOROETHANE	VOC					
1,2-DICHLOROETHENE (TOTAL)	VOC					
CHLOROFORM	VOC					
1,2-DICHLOROETHANE	VOC					
	VOC					
	VOC					
	VOC					
	VOC					
	VOC					
	VOC					
	VOC					
	VOC					
	VOC					
	VOC					
BENZENE	VOC					
TRANS-1,3-DICHLOROPROPENE	VOC					
BROMOFORM	VOC					
4-METHYL-2-PENTANONE	VOC					
2-HEXANONE	VOC					
TETRACHLOROETHENE	VOC					
1,1,2,2-TETRACHLOROETHANE	VOC					
					4 J	4 J
CHLOROBENZENE					2 J	2 J
ETHYLBENZENE	VOC					
	VOC					
	VOC					

J - Indicates the value is less than the quantitation limit but greater than zero.

R - Compound rejected due to contamination in the associated blank.

TABLE 4-3
VAL'S DODGE
ANALYTICAL RESULTS - SUBSURFACE SOIL SAMPLES

SAMPLE-ID		GW-1	GW-2	GW-4	GW-5	GW-6
SAMPLE TYPE		SOIL	SOIL	SOIL	SOIL	SOIL
COLLECTION DATE		8/19/91	8/19/91	8/20/91	8/21/91	8/21/91
PARAMETER	TYPE					
PHENOL	SEMI					16 J
BIS(2-CHLOROETHYL) ETHER	SEMI					
2-CHLOROPHENOL	SEMI					
1,3-DICHLOROBENZENE	SEMI					
1,4-DICHLOROBENZENE	SEMI					29 J
BENZYL ALCOHOL	SEMI					
1,2-DICHLOROBENZENE	SEMI					
2-METHYLPHENOL	SEMI					
BIS(2-CHLOROISOPROPYL) ETHER	SEMI					
4-METHYLPHENOL	SEMI					
N-NITROSO-DI-N-PROPYLAMINE	SEMI					
HEXACHLOROETHANE	SEMI					
NITROBENZENE	SEMI					
ISOPHORONE	SEMI					
2-NITROPHENOL	SEMI					
2,4-DIMETHYLPHENOL	SEMI					
BENZOIC ACID	SEMI					
BIS(2-CHLOROETHOXY)METHANE	SEMI					
2,4-DICHLOROPHENOL	SEMI					
1,2,4-TRICHLOROBENZENE	SEMI			470		12 J
NAPHTHALENE	SEMI			130 J		52 J
4-CHLOROANILINE	SEMI					
HEXACHLOROBUTADIENE	SEMI					
4-CHLORO-3-METHYLPHENOL	SEMI					
2-METHYLNAPHTHALENE	SEMI			79 J		73 J
HEXACHLOROCYCLOPENTADIENE	SEMI					
2,4,6-TRICHLOROPHENOL	SEMI					
2,4,5-TRICHLOROPHENOL	SEMI					
2-CHLORONAPHTHALENE	SEMI					
2-NITROANILINE	SEMI					
DIMETHYLPHTHALATE	SEMI					
ACENAPHTHYLENE	SEMI					21 J
2,6-DINITROTOLUENE	SEMI					
3-NITROANILINE	SEMI					

All results reported in µg/kg (ppb).

Only detected results are reported.

SEMI - Semivolatile Organic Compounds.

J - Indicates the value is less than the quantitation limit but greater than zero.

TABLE 4-3
VAL'S DODGE
ANALYTICAL RESULTS - SUBSURFACE SOIL SAMPLES

SAMPLE-ID		GW-1	GW-2	GW-4	GW-5	GW-6
SAMPLE TYPE		SOIL	SOIL	SOIL	SOIL	SOIL
COLLECTION DATE		8/19/91	8/19/91	8/20/91	8/21/91	8/21/91
PARAMETER	TYPE					
ACENAPHTHENE	SEMI			66 J		50 J
2,4-DINITROPHENOL	SEMI					
4-NITROPHENOL	SEMI					
DIBENZOFURAN	SEMI					59 J
2,4-DINITROTOLUENE	SEMI					
DIETHYLPHTHALATE	SEMI				20 J	18 J
4-CHLOROPHENYL-PHENYL ETHER	SEMI					
FLUORENE	SEMI					68 J
4-NITROANILINE	SEMI					
4,6-DINITRO-2-METHYLPHENOL	SEMI					
N-NITROSODIPHENYLAMINE	SEMI					
4-BROMOPHENYL-PHENYL ETHER	SEMI					
HEXACHLOROBENZENE	SEMI					90 J
PENTACHLOROPHENOL	SEMI					
PHENANTHRENE	SEMI			360 J		790
ANTHRACENE	SEMI			62 J		110 J
DI-N-BUTYLPHTHALATE	SEMI	31 J	30 J		R	R
FLUORANTHENE	SEMI			290 J		1000
PYRENE	SEMI			170 J		820
BUTYLBENZYLPHTHALATE	SEMI				8 J	110 J
3,3'-DICHLOROBENZIDINE	SEMI					
BENZO(A)ANTHRACENE	SEMI			150 J		350 J
CHRYSENE	SEMI			140 J		360 J
BIS(2-ETHYLHEXYL)PHTHALATE	SEMI			R	R	R
DI-N-OCTYL PHTHALATE	SEMI					
BENZO(B)FLUORANTHENE	SEMI			130 J		240 J
BENZO(K)FLUORANTHENE	SEMI			75 J		140 J
BENZO(A)PYRENE	SEMI			99 J		310 J
INDENO(1,2,3-CD)PYRENE	SEMI					69 J
DIBENZ(A,H)ANTHRACENE	SEMI					12 J
BENZO(G,H,I)PERYLENE	SEMI					55 J

All results reported in µg/kg (ppb).
Only detected results are reported.
SEMI - Semivolatile Organic Compounds.

J - Indicates the value is less than the quantitation limit but greater than zero.
R - Compound rejected due to contamination in the associated blank.

TABLE 4-3
VAL'S DODGE
ANALYTICAL RESULTS - SUBSURFACE SOIL SAMPLES

SAMPLE-ID		GW-1	GW-2	GW-4	GW-5	GW-6
SAMPLE TYPE		SOIL	SOIL	SOIL	SOIL	SOIL
COLLECTION DATE		8/19/91	8/19/91	8/20/91	8/21/91	8/21/91
PARAMETER	TYPE					
ALPHA-BHC	PST					
BETA-BHC	PST					
DELTA-BHC	PST					
GAMMA-BHC (LINDANE)	PST					
HEPTACHLOR	PST					
ALDRIN	PST					
HEPTACHLOR EPOXIDE	PST					
ENDOSULFAN I	PST					
DIELDRIN	PST					
4,4'-DDE	PST					
ENDRIN	PST					
ENDOSULFAN II	PST					
4,4'-DDD	PST					
ENDOSULFAN SULFATE	PST					
4,4'-DDT	PST					
METHOXYCHLOR	PST					
ENDRIN KETONE	PST					
ALPHA-CHLORDANE	PST					
GAMMA-CHLORDANE	PST					
TOXAPHENE	PST					
AROCLOR-1016	PCB					
AROCLOR-1221	PCB					
AROCLOR-1232	PCB					
AROCLOR-1242	PCB					
AROCLOR-1248	PCB			1700		
AROCLOR-1254	PCB			990		2100
AROCLOR-1260	PCB					

All results reported in µg/kg (ppb).
Only detected results are reported.
PST - Pesticides.
PCB - Polychlorinated Biphenyls.

TABLE 4-3
VAL'S DODGE
ANALYTICAL RESULTS - SUBSURFACE SOIL SAMPLES

SAMPLE-ID		Observed	GW-1	GW-2	GW-4	GW-5	GW-6
SAMPLE TYPE		Range In	SOIL	SOIL	SOIL	SOIL	SOIL
COLLECTION DATE		Eastern U.S.	8/19/91	8/19/91	8/20/91	8/21/91	8/21/91
PARAMETER	TYPE	(ppm)#					
ALUMINUM	MET	7000-100000	7830 *	15600 *	7930 *	2080 *	5250 *
ANTIMONY	MET	<1-8.8	5.5 B	6.1 B			
ARSENIC	MET	<0.1-73	1.8 B	2 B	12.7 S		19.1 S
BARIUM	MET	10-1500	63.5	186	809	87.4	1810
BERYLLIUM	MET	<1-7	0.51 B	0.91 B	0.22 B		0.76 B
	MET			0.45 B	4		3.5
CALCIUM	MET	100-280000	63900 *	73900 *	74400 *	330000 *	32200 *
CHROMIUM	MET	1-1000	10.5 *	20.8 *	7950 *	8.5 *	6420 *
COBALT	MET	<0.3-70	5.6 B	9.7 B	463	1.5 B	1070
COPPER	MET	<1-700	13.3	19.2	310	5.5 B	355
IRON	MET	100->100000	13800 *	22300 *	115000 *	3570 *	119000 *
LEAD	MET	10-300	7 S*	7.4 *	93.6 *	2.1 BW*	251 *
MAGNESIUM	MET	50-50000	25000 *	21200 *	18000 *	4310 *	5450 *
MANGANESE	MET	<2-7000	427 *	562 *	7610 *	118 *	6550 *
MERCURY	MET	0.01-3.4					0.08
	MET	<5-700	14.3 N*	24.1 N*	3540 N*	8.6 B N*	5380 N*
	MET	50-37000	1850	3870	1040	607 B	470 B
	MET	<0.1-3.9			5.3 S		1.5 BS
SILVER	MET				1 B		1.6 B
SODIUM	MET	<500-50000	162 B	250 B	461 B	406 B	231 B
THALLIUM	MET	2.2-23					
VANADIUM	MET	<7-300	17.2	30.4	758	5.1 B	597
ZINC	MET	<5-2900	33.9	54.3	75	11.3	89.9
CYANIDE	CN						

All results reported in mg/kg (ppm).

Only detected results are reported.

MET - Metals.

CN - Cyanide.

- Observed range in Eastern U.S. from Shacklette and Boerngen, 1984.

B - The value is less than the quantitation limit but greater than or equal to the instrument detection li

* - Duplicate analysis not within control limits.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%) while sample absorbance is less than 50% of spike absorbance.

Pesticides/PCBs - No pesticides were detected in the subsurface soil samples. PCBs detected include 1,700 ppb Aroclor-1248 and 990 ppb Aroclor-1254 at location GW-4, and 2,100 ppb Aroclor-1254 at GW-6.

Metals - Based on comparisons with observed ranges of metals in natural soils in the Eastern United States, elevated levels of several metals were found in the subsurface soil samples. Relatively high levels of chromium, cobalt, iron and nickel were found at locations GW-4 and GW-6. Location GW-6 also had relatively high levels of barium and vanadium. Calcium was the only metal detected at elevated levels at location GW-5. All metals were found within normally observed ranges at upgradient locations GW-1 and GW-2.

With the exception of di-n-butylphthalate, all elevated concentrations of organics and metals were detected at downgradient sampling locations within the fill.

Surface Soils

Surface soil samples were collected at five locations on the surface of the fill area where indications of contamination were evident. Sampling locations are presented on Figure 3-1. Results of the chemical analyses are presented in Table 4-4.

Volatiles - VOCs were found in all surface soil samples. Toluene was detected in all surface soil samples at concentrations ranging from 2 ppb in SS-3 to 10 ppb in SS-1. Methylene chloride was detected in samples SS-3, SS-4, and SS-5 at concentrations ranging from 4 to 5 ppb. Carbon tetrachloride was detected in SS-1 at 3 ppb and in SS-3 at 2 ppb. Chlorobenzene and total xylenes were detected in SS-1 and SS-2 at a maximum of 11 ppb.

TABLE 4-4
VAL'S DODGE
ANALYTICAL RESULTS - SURFACE SOIL SAMPLES

SAMPLE-ID		SS-1	SS-2	SS-3		SS-5
SAMPLE TYPE		SOIL	SOIL	SOIL		SOIL
		8/20/91	8/21/91	8/22/91	8/22/91	8/22/91
CHLOROMETHANE	VOC					
BROMOMETHANE	VOC					
[redacted]						
[redacted]						
[redacted]						
1,1,2,2-TETRACHLOROETHANE	VOC					
TOLUENE	VOC					

TABLE 4-4
VAL'S DODGE
ANALYTICAL RESULTS - SURFACE SOIL SAMPLES

SAMPLE-ID		SS-1	SS-2	SS-3	SS-4	SS-5
SAMPLE TYPE		SOIL	SOIL	SOIL	SOIL	SOIL
COLLECTION DATE		8/20/91	8/21/91	8/22/91	8/22/91	8/22/91
PARAMETER	TYPE					
PHENOL	SEMI	110 J X			34 J	
BIS(2-CHLOROETHYL) ETHER	SEMI					
2-CHLOROPHENOL	SEMI					
1,3-DICHLOROBENZENE	SEMI					
1,4-DICHLOROBENZENE	SEMI					
BENZYL ALCOHOL	SEMI					
1,2-DICHLOROBENZENE	SEMI					
2-METHYLPHENOL	SEMI					
BIS(2-CHLOROISOPROPYL) ETHER	SEMI					
4-METHYLPHENOL	SEMI		22 J			
N-NITROSO-DI-N-PROPYLAMINE	SEMI					
HEXACHLOROETHANE	SEMI					
NITROBENZENE	SEMI					
ISOPHORONE	SEMI					
2-NITROPHENOL	SEMI					
2,4-DIMETHYLPHENOL	SEMI					
BENZOIC ACID	SEMI		46 J X	39 J		200 J X
BIS(2-CHLOROETHOXY)METHANE	SEMI					
2,4-DICHLOROPHENOL	SEMI					
1,2,4-TRICHLOROBENZENE	SEMI	67 J X	47 J X	190 J	120 J	
NAPHTHALENE	SEMI	58 J X	67 J X	65 J	140 J	53 J X
4-CHLOROANILINE	SEMI				96 J	
HEXACHLOROBUTADIENE	SEMI					
4-CHLORO-3-METHYLPHENOL	SEMI					37 J X
2-METHYLNAPHTHALENE	SEMI	200 J X	82 J X	84 J	250 J	62 J X
HEXACHLOROCYCLOPENTADIENE	SEMI					
2,4,6-TRICHLOROPHENOL	SEMI					
2,4,5-TRICHLOROPHENOL	SEMI					34 J X
2-CHLORONAPHTHALENE	SEMI					
2-NITROANILINE	SEMI					
DIMETHYLPHTHALATE	SEMI					
ACENAPHTHYLENE	SEMI		40 J X	170 J	68 J	560 J X
2,6-DINITROTOLUENE	SEMI					
3-NITROANILINE						

All results reported in µg/kg (ppb).
Only detected results are reported.
SEMI - Semivolatile Organic Compounds.

J - Indicates the value is less than the sample quantitation limit but greater than zero.
X - The sample was reanalyzed. The greater of the two values is reported.

TABLE 4-4
VAL'S DODGE
ANALYTICAL RESULTS - SURFACE SOIL SAMPLES

SAMPLE-ID		SS-1	SS-2	SS-3	SS-4	SS-5
SAMPLE TYPE		SOIL	SOIL	SOIL	SOIL	
COLLECTION DATE		8/20/91	8/21/91	8/22/91	8/22/91	8/22/91
PARAMETER	TYPE					
ACENAPHTHENE	SEMI		16 J X	42 J	46 J	150 J X
2,4-DINITROPHENOL	SEMI					
4-NITROPHENOL	SEMI					440 J X
DIBENZOFURAN	SEMI		46 J X	53 J	220 J	84 J X
2,4-DINITROTOLUENE	SEMI					
DIETHYLPHTHALATE	SEMI		28 J X	14 J	12 J	55 J X
4-CHLOROPHENYL-PHENYL ETHER	SEMI					
FLUORENE	SEMI		25 J X	70 J	60 J	240 J X
4-NITROANILINE	SEMI					
4,6-DINITRO-2-METHYLPHENOL	SEMI					
N-NITROSODIPHENYLAMINE	SEMI					60 J X
4-BROMOPHENYL-PHENYL ETHER	SEMI					
HEXACHLOROBENZENE	SEMI					
PENTACHLOROPHENOL	SEMI					190 J X
PHENANTHRENE	SEMI		260 J X	540	860	1600 X
ANTHRACENE	SEMI		12 J X	140 J	49 J	660 X
DI-N-BUTYLPHTHALATE	SEMI		R	470 B	R	400 B X
FLUORANTHENE	SEMI		170 J X	880	530	3400 X
PYRENE	SEMI		290 J X	970	390	3900 X
BUTYLBENZYLPHTHALATE	SEMI	1500 J X		2500	27 J	730 X
3,3'-DICHLOROBENZIDINE	SEMI					
BENZO(A)ANTHRACENE	SEMI		110 J X	400	110 J	2800 X
CHRYSENE	SEMI			530	140 J	2800 X
BIS(2-ETHYLHEXYL)PHTHALATE	SEMI	3500 J X	3000 B X	R	R	2300 B X
DI-N-OCTYL PHTHALATE	SEMI			22 J		660 X
BENZO(B)FLUORANTHENE	SEMI		160 J X	330 J	99 J	2000 X
BENZO(K)FLUORANTHENE	SEMI		97 J X	190 J	38 J	1900 X
BENZO(A)PYRENE	SEMI		200 J X	490	120 J	3000 X
INDENO(1,2,3-CD)PYRENE	SEMI		89 J X	140 J	68 J	1100 X
DIBENZ(A,H)ANTHRACENE	SEMI			43 J	14 J	130 J X
BENZO(G,H,I)PERYLENE	SEMI			98 J	54 J	480 X

All results reported in µg/kg (ppb).

Only detected results are reported.

SEMI - Semivolatile Organic Compounds.

J - Indicates the value is less than the sample quantitation limit but greater than zero.

B - Compound detected in associated method blank.

R-Compound rejected due to contamination in the associated blank.

X-The sample was reanalyzed. The greater of two values is reported.

TABLE 4-4
VAL'S DODGE
ANALYTICAL RESULTS - SURFACE SOIL SAMPLES

SAMPLE-ID		SS-1	SS-2	SS-3	SS-4	SS-5
SAMPLE TYPE		SOIL	SOIL	SOIL	SOIL	SOIL
COLLECTION DATE		8/20/91	8/21/91	8/22/91	8/22/91	
PARAMETER	TYPE					
ALPHA-BHC	PST					14
BETA-BHC	PST	56				
DELTA-BHC						
GAMMA-BHC (LINDANE)	PST					
HEPTACHLOR					2.7 J	
	PST					
	PST					
	PST	75				
	PST					
	PST					
	PST					
4,4'-DDD	PST					
ENDOSULFAN SULFATE	PST					
4,4'-DDT						
METHOXYCHLOR	PST					
ENDRIN KETONE	PST					
ALPHA-CHLORDANE	PST					
GAMMA-CHLORDANE						
TOXAPHENE	PST					
AROCLOR-1016	PCB					
AROCLOR-1221	PCB					
	PCB					
AROCLOR-1242	PCB					
AROCLOR-1248	PCB					
AROCLOR-1254	PCB			700	270	1100
AROCLOR-1260	PCB					

All results reported in µg/kg (ppb).
Only detected results are reported.
PST - Pesticides.
PCB - Polychlorinated Biphenyls.

J - Indicates the value is less than the sample quantitation limit but greater than zero.

TABLE 4-4
VAL'S DODGE
ANALYTICAL RESULTS - SURFACE SOIL SAMPLES

SAMPLE-ID		Observed	SS-1	SS-2	SS-3	SS-4	SS-5
SAMPLE TYPE		Range In		SOIL			
COLLECTION DATE		Eastern U.S.		8/21/91	8/22/91	8/22/91	8/22/91
PARAMETER	TYPE	(ppm)#					
ALUMINUM	MET	7000-100000	11700 *	7370 *	5540 *	4250 *	6390 *
ANTIMONY	MET	<1-8.8					
ARSENIC	MET	<0.1-73	11.9	13.4	16.3	15.2 S	10.4 S
	MET	10-1500	232	188	271	340	
BERYLLIUM	MET	<1-7	0.44 B	0.76 B	1.1	0.62 B	
CADMIUM	MET		4.5	4.9	5.5	5.6	
CALCIUM	MET	100-280000	82900	40800	41600*	24000 *	55900 *
CHROMIUM	MET	1-1000	5780	7650	5040 *	10600 *	1280 *
COBALT	MET	<0.3-70	401	1490	610	1230	223
COPPER	MET	<1-700	2040	290	267	279	155
IRON	MET	100->100000	89400	163000	126000 *	204000 *	46500 *
LEAD	MET	10-300	92.9	84	139 *	46.6 *	112 *
MAGNESIUM	MET	50-50000	24800	9370	9200 *	6950 *	14800
MANGANESE	MET	<2-7000	16900	4740	3870 *	3070 *	1870
MERCURY	MET	0.01-3.4	0.09	0.15	0.2	0.13	0.13
NICKEL		<5-700	2830	2520	3030 N *	3670 N*	2160 N *
POTASSIUM	MET	50-37000	910 B	746 B	652 B	239 B	
SELENIUM	MET	<0.1-3.9	7.1	2.3	1.7 B	3.7	2.4 S
SILVER	MET		1.4 B	1.3 B	0.95 B	1.2 B	
SODIUM	MET	<500-50000	624 B	277 B	200 B	176 B	203 B
THALLIUM	MET	2.2-23					
VANADIUM	MET	<7-300	573	2130	825	1490	235
ZINC	MET	<5-2900	117	50.1	144	64.4	67.6
CYANIDE	CN						

All results reported in mg/kg (ppm).
Only detected results are reported.
MET - Metals.
CN - Cyanide.
- Observed range in Eastern U.S. obtained from Shacklette and Boerngen, 1984.

B - Value is less than quantitation limit but greater than or equal to instrument detection limit.
S-The reported value was determined by the Method of Standard Additions (MSA).
N-Spiked sample recovery not within control limits.
*-Duplicate analysis not within control limits.

TABLE 4-4
VAL'S DODGE
ANALYTICAL RESULTS - SURFACE SOIL SAMPLES

SAMPLE ID		Maximum	SS-1	SS-2	SS-3	SS-4	SS-5
SAMPLE TYPE		Concentration	SOIL	SOIL	SOIL	SOIL	SOIL
COLLECTION DATE		Level	8/20/91	8/21/91	8/22/91	8/22/91	8/22/91
PARAMETER	TYPE	(ppb)#					
EPTOX GAMMA-BHC (LINDANE)	PST	400					
EPTOX ENDRIN	PST	20					
EPTOX METHOXYCHLOR	PST	10000					
EPTOX TOXAPHENE	PST	500					
EPTOX 2,4-D	HERB	10000					
EPTOX 2,4,5-TP (SILVEX)	HERB	1000					
EPTOX ARSENIC	MET	5000					
EPTOX BARIUM	MET	100000	85 .6	423	139 B	300	196 B
EPTOX CADMIUM	MET	1000					
EPTOX CHROMIUM	MET	5000	10.4		4.7 B	21.8	6.6 B
EPTOX LEAD	MET	5000					
EPTOX MERCURY	MET	200					
EPTOX SELENIUM	MET	1000					
EPTOX SILVER	MET	5000					
CORROSIVITY (as pH)	HWC	>2 AND <12			N	N	N
IGNITABILITY (F)	HWC	<140 F			N	N	N
REACTIVE CYANIDE (mg/kg)	HWC	500##					
REACTIVE SULFIDE (mg/kg)	HWC	250##					

All results reported in µg/L (ppb)

Only detected results are reported.

PST-Pesticide.

HERB- Herbicide.

HWC-Hazardous waste characteristic.

#-Source: 40 CFR 261, September 25, 1990.

##-NYSDEC guideline values.

B-Value is less than quantitation limit but greater than or equal to the instrument detection limit.

Semivolatiles - The principal SVOCs detected in all surface soil samples were PAH compounds except for SS-1 where phthalates were predominantly detected. Total PAH concentrations were found to range from 258 ppb in SS-1 to 24,835 ppb in SS-5. Dibenzofuran and diethylphthalate were detected in all samples except SS-1. Dibenzofuran concentrations ranged from 46 ppb in SS-2 to 220 ppb in SS-4. Diethylphthalate concentrations ranged from 12 ppb in SS-4 to 55 ppb in SS-5. 1,2,4-trichlorobenzene was detected in samples SS-1, SS-2, SS-3, and SS-4 at concentrations ranging from 47 to 190 ppb. Additional SVOCs were found at location SS-5 and included: 4-chloro-3-methylphenol (37 ppb), 2,4,5-trichlorophenol (34 ppb), 4-nitrophenol (440 ppb), n-nitrosodiphenylamine (60 ppb), and pentachlorophenol (190 ppb). 4-chloroaniline was only found in sample SS-4 at 96 ppb. Phenol was found in samples SS-1 and SS-4 at 100 ppb and 34 ppb respectively. 4-methylphenol was only found in SS-2 at 22 ppb. Benzoic acid was found in samples SS-2, SS-1, SS-3, and SS-5 at concentrations ranging from 39 to 200 ppb. Butylbenzylphthalate was found in SS-1, SS-3, SS-4, and SS-5 at concentrations ranging from 27 to 2,500 ppb. Bis(2-ethylhexyl)phthalate was detected in SS-5 at 2,300 ppb, in SS-2 at 3,000 ppb, and in SS-1 at 3,500 ppb. Di-n-octylphthalate was detected in SS-3 at 22 ppb and in SS-5 at 660 ppb.

Pesticides/PCBs - Four pesticides were detected in the surface soils. Sample SS-1 contained 56 ppb beta-BHC and 75 ppb dieldrin; sample SS-4 contained 2.7 ppb heptachlor; and sample SS-5 contained 14 ppb alpha-BHC. Aroclor-1254 was detected in samples SS-3, SS-4, and SS-5 at concentrations ranging from 270 to 1,100 ppb. No pesticides or PCBs were detected in sample SS-2.

Metals - Several metals were detected in all surface soil samples at concentrations that are relatively high in comparison to observed ranges in Eastern U.S. soils. Elevated concentrations of chromium, cobalt, and nickel were found in all surface soil samples reflecting the results from subsurface soil samples from GW-4 and GW-6. Concentrations of vanadium

were found to be high at all locations except SS-5. Iron concentrations were elevated at SS-2, SS-3, and SS-4. Sample SS-1 was also found to have higher than expected concentrations of copper and selenium.

Hazardous Waste Characteristics - None of the surface soil samples analyzed exhibited characteristics of hazardous waste as per 6 NYCRR Part 371.

4.5.4 Phase II Surface Water/Sediment Contamination Assessment

Five surface water and companion sediment samples were collected from the NYSDEC freshwater wetland SYW-10 around the base of the fill area. Sampling locations were selected to compliment the series of monitoring wells installed along the edge of the fill lobe (GW-3 through GW-6). All sampling points are illustrated on Figure 3-1. Results of the sample analyses are presented in Table 4-5, 4-6, and 4-7.

Surface Water

Volatiles - VOCs were only found in surface water samples SW-4 and SW-5. Toluene and xylenes were detected in both samples, however, Standards, Criteria, and Guidance (SCG) values have not yet been established by the NYSDEC for these compounds in Class D surface water. Toluene concentrations were 2 ppb at SW-4 and 6 ppb at SW-5. Total xylenes concentrations were 110 ppb at SW-4 and 1 ppb at SW-5. Trichloroethene was found in sample SW-4 at 0.9 ppb, below the 11 ppb SCG value. Toluene and xylenes were also found within the waste and surface soil samples collected from the site.

Semivolatiles - Several SVOCs were detected in all of the surface water samples. Analytes detected were primarily phenols, phthalates, and PAH compounds. Phenolic compounds that exceeded surface water SCG values included 2-methylphenol at 29 ppb in sample SW-4 and 4-methylphenol at 10

TABLE 4-5
VAL'S DODGE
ANALYTICAL RESULTS - SURFACE WATER SAMPLES

SAMPLE TYPE			SW-1	SW-2	SW-3	SW-4	SW-5
			SURFACE WATER	SURFACE WATER	SURFACE WATER	SURFACE WATER	SURFACE WATER
			8/21/91	8/21/91	8/21/91	8/21/91	8/21/91
	VOC						
	VOC						
	VOC						
METHYLENE CHLORIDE	**VOC**						
ACETONE	VOC		R		**R**	**R**	
CARBON DISULFIDE	VOC						
1,1-DICHLOROETHENE	VOC						
1,1-DICHLOROETHANE	VOC						
1,2-DICHLOROETHENE (TOTAL)	VOC						
CHLOROFORM	VOC						
1,2-DICHLOROETHANE	VOC						
2-BUTANONE	VOC						
1,1,1-TRICHLOROETHANE	VOC						
CARBON TETRACHLORIDE	VOC						
VINYL ACETATE	VOC						
BROMODICHLOROMETHANE	VOC						
1,2-DICHLOROPROPANE	VOC						
CIS-1,3-DICHLOROPROPENE	VOC						
TRICHLOROETHENE	VOC	11 G				0.9 J	
DIBROMOCHLOROMETHANE	VOC						
1,1,2-TRICHLOROETHANE	VOC						
BENZENE	VOC	6 G					
TRANS-1,3-DICHLOROPROPENE	VOC						
BROMOFORM	VOC						
4-METHYL-2-PENTANONE	VOC						
2-HEXANONE	VOC						
TETRACHLOROETHENE	VOC	1 G					
1,1,2,2-TETRACHLOROETHANE	VOC						
TOLUENE	VOC					2 J	**6**
CHLOROBENZENE	VOC						
ETHYLBENZENE	VOC	50					
STYRENE	VOC						
TOTAL XYLENES	VOC					110	1 J

TABLE 4-5
VAL'S DODGE
ANALYTICAL RESULTS - SURFACE WATER SAMPLES

SAMPLE-ID		CLASS D	SW-1	SW-2	SW-3	SW-4	SW-5
SAMPLE TYPE		STREAM	SURFACE WATER	SURFACE WATER	SURFACE WATER	SURFACE WATER	SURFACE WATER
COLLECTION DATE		SCGs	8/21/91	8/21/91	8/21/91	8/21/91	8/21/91
PARAMETER	TYPE	(ppb)#					
PHENOL	SEMI	5 (UP)					
		1 (CP)					0.5 J
1,3-DICHLOROBENZENE	SEMI	50 (1)					
1,4-DICHLOROBENZENE	SEMI	50 (1)					
BENZYL ALCOHOL	SEMI		2 J	3 J			
1,2-DICHLOROBENZENE	SEMI	50 (1)					
2-METHYLPHENOL	SEMI	5 (UP)				29	
BIS(2-CHLOROISOPROPYL) ETHER	SEMI						
4-METHYLPHENOL	SEMI	5 (UP)		3 J	1 J	10	14
N-NITROSO-DI-N-PROPYLAMINE	SEMI						
HEXACHLOROETHANE	SEMI						
NITROBENZENE	SEMI						
ISOPHORONE	SEMI		0.5 J	2 J	0.7 J	1 J	0.5 J
2-NITROPHENOL	SEMI	5 (UP)					
2,4-DIMETHYLPHENOL	SEMI	5 (UP)					1 J
BENZOIC ACID	SEMI		5 J	23 J	10 J	37 J	18 J
BIS(2-CHLOROETHOXY)METHANE	SEMI						
2,4-DICHLOROPHENOL	SEMI	1 (CP)					
1,2,4-TRICHLOROBENZENE	SEMI	50					
NAPHTHALENE	SEMI						
4-CHLOROANILINE	SEMI						
HEXACHLOROBUTADIENE	SEMI	10					
4-CHLORO-3-METHYLPHENOL	SEMI	1 (CP)	0.9 J		0.6 J		
2-METHYLNAPHTHALENE	SEMI						
HEXACHLOROCYCLOPENTADIENE	SEMI	4.5					
2,4,6-TRICHLOROPHENOL	SEMI	1 (CP)					
2,4,5-TRICHLOROPHENOL	SEMI	1 (CP)					
2-CHLORONAPHTHALENE	SEMI						
2-NITROANILINE	SEMI						
DIMETHYLPHTHALATE	SEMI						
ACENAPHTHYLENE	SEMI						
2,6-DINITROTOLUENE	SEMI						
	SEMI						

All results reported in µg/L (ppb).
Only detected results are reported.
SEMI - Semivolatile Organic Compounds.

J - Indicates the value is less than the sample quantitation limit but greater than zero.
(UP) - Standard applies to the sum of total unchlorinated phenols.
(CP) - Standard applies to the sum of total chlorinated phenols.
(1) - Applies to the sum of all isomers.

- SCG (Standards, Criteria, and Guidance) Values: NYSDEC Water Quality Standards and Guidance Values, TOGS 1.1.1, 9/25/90 and 6NYCRR 700-705, effective 9/1/91.

TABLE 4-5
VAL'S DODGE
ANALYTICAL RESULTS – SURFACE WATER SAMPLES

SAMPLE-ID		CLASS D	SW-1	SW-2	SW-3	SW-4	SW-5
SAMPLE TYPE		STREAM	SURFACE WATER	SURFACE WATER	SURFACE WATER	SURFACE WATER	SURFACE WATER
COLLECTION DATE		SCGs	8/21/91	8/21/91	8/21/91	8/21/91	8/21/91
PARAMETER	TYPE	(ppb)#					
ACENAPHTHENE	SEMI						
2,4-DINITROPHENOL	SEMI	5 (UP)					
4-NITROPHENOL	SEMI	5 (UP)	4 J				
DIBENZOFURAN	SEMI						
2,4-DINITROTOLUENE	SEMI						
DIETHYLPHTHALATE	SEMI		R	R	R	R	R
4-CHLOROPHENYL-PHENYL ETHER	SEMI						
FLUORENE	SEMI					0.9 J	
4-NITROANILINE	SEMI						
4,6-DINITRO-2-METHYLPHENOL	SEMI	5 (UP)					
N-NITROSODIPHENYLAMINE	SEMI		1 J				1 J
4-BROMOPHENYL-PHENYL ETHER	SEMI						
HEXACHLOROBENZENE	SEMI						
PENTACHLOROPHENOL	SEMI	1 (CP)					
PHENANTHRENE	SEMI		1 J	0.6 J			
ANTHRACENE	SEMI		1 J				
DI-N-BUTYLPHTHALATE	SEMI		R	R	R		R
FLUORANTHENE	SEMI		3 J	1 J	0.3 J		
PYRENE	SEMI		2 J	1 J	0.3 J		
BUTYLBENZYLPHTHALATE	SEMI		7 J	2 J	0.5 J	19	0.3 J
3,3'-DICHLOROBENZIDINE	SEMI						
BENZO(A)ANTHRACENE	SEMI		3 J	1 J			
CHRYSENE	SEMI		0.6 J	0.4 J			
BIS(2-ETHYLHEXYL)PHTHALATE	SEMI		8 JB	R	R	11 B	R
DI-N-OCTYL PHTHALATE	SEMI		6 J	1 J	0.2 J		
BENZO(B)FLUORANTHENE	SEMI		3 J	1 J	0.3 J		
BENZO(K)FLUORANTHENE	SEMI		1 J				
BENZO(A)PYRENE	SEMI	0.0012 G	2 J		0.2 J		
INDENO(1,2,3-CD)PYRENE	SEMI		2 J	0.5 J			
DIBENZ(A,H)ANTHRACENE	SEMI						
BENZO(G,H,I)PERYLENE	SEMI		1 J				

All results reported in µg/L (ppb).
Only detected results are reported.
SEMI - Semivolatile Organic Compounds.

J - Indicates the value is less than the sample quantitation limit but greater than zero.
B - Compound detected in associated method blank.
(UP) - Standard applies to the sum of total unchlorinated phenols.
(CP) - Standard applies to the sum of total chlorinated phenols.
R-Compound rejected due to contamination in the associated blank.

- SCG (Standards, Criteria, and Guidance) Values: NYSDEC Water Quality Standards and Guidance Values, TOGS 1.1.1, 9/25/90 and 6NYCRR 700-705, effective 9/1/91.

TABLE 4-5
VAL'S DODGE
ANALYTICAL RESULTS - SURFACE WATER SAMPLES

SAMPLE-ID		CLASS D STREAM SCGs (ppb)#	SW-1	SW-2	SW-3	SW-4	SW-5
SAMPLE TYPE			SURFACE WATER	SURFACE WATER	SURFACE WATER	SURFACE WATER	SURFACE WATER
COLLECTION DATE			8/21/91	8/21/91	8/21/91	8/21/91	8/21/91
PARAMETER	TYPE						
ALPHA-BHC	PST	2 (2)					
BETA-BHC	PST	2 (2)					
DELTA-BHC	PST	2 (2)					
GAMMA-BHC (LINDANE)	PST	2 (2)					
HEPTACHLOR	PST	0.001 (3)				0.53	
ALDRIN	PST	0.001 (4)					
HEPTACHLOR EPOXIDE	PST	0.001 (3)					
ENDOSULFAN I	PST	0.22 (5)					
DIELDRIN	PST	0.001 (4)					
4,4'-DDE	PST	0.001 (6)					
ENDRIN	PST	0.001					
ENDOSULFAN II	PST	0.22 (5)					
4,4'-DDD	PST	0.001 (6)					
ENDOSULFAN SULFATE	PST	0.22 (5)					
4,4'-DDT	PST	0.001 (6)					
METHOXYCHLOR	PST					8.9	
ENDRIN KETONE	PST						
ALPHA-CHLORDANE	PST	0.002 (7)O					
GAMMA-CHLORDANE	PST	0.002 (7)O					
TOXAPHENE	PST	1.6					
AROCLOR-1016	PCB	0.001 (8)					
AROCLOR-1221	PCB	0.001 (8)					
AROCLOR-1232	PCB	0.001 (8)					
AROCLOR-1242	PCB	0.001 (8)					
AROCLOR-1248	PCB	0.001 (8)					
AROCLOR-1254	PCB	0.001 (8)					
AROCLOR-1260	PCB	0.001 (8)					

All results reported in µg/L (ppb).
Only detected results are reported.
PST - Pesticides.
PCB - Polychlorinated Biphenyls.
O - Guidance value.

(2) - Standard applies to total hexachlorocyclohexanes.
(3) - Standard applies to the sum of Heptachlor and Heptachlor epoxide.
(4) - Standard applies to the sum of Aldrin and Dieldrin.
(5) - Applies to Endosulfan.
(6) - Standard applies to the sum of DDE, DDD, and DDT.
(7) - Applies to chlordane.
(8) - Applies to total PCBs.

- SCG (Standards, Criteria, and Guidance) Values: NYSDEC Water Quality Standards and Guidance Values, TOGS 1.1.1, 9/25/90 and 6NYCRR 700-705, effective 9/1/91.

TABLE 4-5
VAL'S DODGE
ANALYTICAL RESULTS - SURFACE WATER SAMPLES

SAMPLE-ID		CLASS D	SW-1	SW-2	SW-3	SW-4	SW-5
SAMPLE TYPE		STREAM	SURFACE WATER	SURFACE WATER	SURFACE WATER	SURFACE WATER	SURFACE WATER
COLLECTION DATE		SCGs	8/21/91	8/21/91	8/21/91	8/21/91	8/21/91
PARAMETER	TYPE	(ppb)#					
ALUMINUM	MET		1610	8800	1460	3920	484
ANTIMONY	MET						
ARSENIC	MET	360	8.1 B N	9.2 B N W		20.1	
BARIUM	MET		452	445	134 B	221	134 B
BERYLLIUM	MET		1.1 B	1.3 B			
CADMIUM	MET	CALC	4.6 B	4.6 B	1.5 B	11.9	1.4 B
CALCIUM	MET		159000	227000	116000	162000	124000
CHROMIUM	MET	CALC	230	662	70.8	640	44.5
COBALT	MET	110 G	36.9 B	33.3 B	6.5 B	136	7.1 B
COPPER	MET	CALC	75.8	110	31.5	169	20.6 B
IRON	MET	300	31500 N	35300 N	3640 N	136000 N	3900
LEAD	MET	CALC	105 N	117 N	32.7 N S	505	8.3 B N S
MAGNESIUM	MET		75000	61000	26600	30800	31100
MANGANESE	MET		962	1840	591	1550	1230
MERCURY	MET	0.2 G	0.24	0.33	0.20	0.38	
NICKEL	MET	CALC	151	249	47.7	295	48.1
POTASSIUM	MET		15000	6820	6850	9110	15200
SELENIUM	MET		31.6	28.5		33	
SILVER	MET	CALC				5.3 B	
SODIUM	MET		43400	45700	49800	71200	95700
THALLIUM	MET	20				37 B	
VANADIUM	MET	190	157	108	6.2 B	152	7.4 B
ZINC	MET	CALC	777	470	85.6	1120	114
CYANIDE	CN	5.2					

All results reported in µg/L (ppb).
Only detected results are reported.
MET - Metals.
CN - Cyanide.
G - Guidance value.
B - Value is less than the quantitation limit but greater than the instrument detection limit.
CALC - Calculated, sample-specific SCG as a function of hardness.
N - Spiked sample recovery not within control limits.
S - The reported value was determined by the Method of Standard Additions (MSA).
W - Post-digestion spike for Furnace AA analysis is out of control limits.
- SCG (Standards, Criteria, and Guidance) Values: NYSDEC Water Quality Standards and Guidance Values, TOGS 1.1.1, 9/25/90 and 6NYCRR 700-705, effective 9/1/91.

TABLE 4-6
VAL'S DODGE
SCG EXCEEDANCES – SURFACE WATER SAMPLES

SAMPLE-ID		CLASS D	SW-1	SW-2	SW-3	SW-4	SW-5
SAMPLE TYPE		STREAM	SURFACE WATER	SURFACE WATER	SURFACE WATER	SURFACE WATER	SURFACE WATER
COLLECTION DATE		SCGs	8/21/91	8/21/91	8/21/91	8/21/91	8/21/91
PARAMETER	TYPE	(ppb)#					
2-METHYLPHENOL	SEMI	5 (UP)				29	
4-METHYLPHENOL	SEMI	5 (UP)				10	14
2,4-DIMETHYLPHENOL	SEMI	5 (UP)					1 J
BENZO(A)PYRENE	SEMI	0.0012 G	2 J		0.2 J		
HEPTACHLOR	PST	0.001 (3)				0.53	
COBALT	MET	110 G				136	
COPPER	MET	CALC (85)				169	
IRON	MET	300	31500 N	35300 N	3640 N	136000 N	3900
MERCURY	MET	0.2 G	0.24	0.33	0.20	0.38	
THALLIUM	MET	20				37 B	

All results reported in µg/L (ppb).
Only detected results are reported.
G – Guidance value.
SEMI – Semivolatile Organic Compounds.
PST – Pesticides.
MET – Metals.

J – Indicates the value is less than the sample quantitation limit but greater than zero.
(UP) – Standard applies to the sum of total unchlorinated phenols.
(3) – Standard applies to the sum of Heptachlor and Heptachlor epoxide.
B – Value is less than the quantitation limit but greater than the instrument detection limit.
CALC – Calculated, sample-specific SCG as a function of hardness.
Value in parentheses is for SW-4 only.
N – Spiked sample recovery not within control limits.

– SCG (Standards, Criteria, and Guidance) Values: NYSDEC Water Quality Standards and Guidance Values, TOGS 1.1.1, 9/25/90 and 6NYCRR 700-705, effective 9/1/91.

TABLE 4-7
VAL'S DODGE
ANALYTICAL RESULTS - SEDIMENT SAMPLES

SAMPLE-ID		SED-1	SED-2	SED-3	SED-4	SED-5
SAMPLE TYPE		SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
COLLECTION DATE		8/21/91	8/21/91	8/21/91	8/21/91	8/21/91
PARAMETER	TYPE					
CHLOROMETHANE	VOC				DR	
BROMOMETHANE	VOC				DR	
VINYL CHLORIDE	VOC				DR	
CHLOROETHANE	VOC				DR	
METHYLENE CHLORIDE	VOC				DR	
ACETONE	VOC	R	R	R	DR	R
CARBON DISULFIDE	VOC				DR	5 J
1,1-DICHLOROETHENE	VOC				DR	
1,1-DICHLOROETHANE	VOC				DR	
1,2-DICHLOROETHENE (TOTAL)	VOC				DR	
CHLOROFORM	VOC				DR	
1,2-DICHLOROETHANE	VOC				DR	
2-BUTANONE	VOC	15 J	46 J		DR	21 J
1,1,1-TRICHLOROETHANE	VOC				DR	
CARBON TETRACHLORIDE	VOC				DR	
VINYL ACETATE	VOC				DR	
BROMODICHLOROMETHANE	VOC				DR	
1,2-DICHLOROPROPANE	VOC				DR	
CIS-1,3-DICHLOROPROPENE	VOC				DR	
TRICHLOROETHENE	VOC				DR	
DIBROMOCHLOROMETHANE	VOC				DR	
1,1,2-TRICHLOROETHANE	VOC				DR	
BENZENE	VOC				DR	
TRANS-1,3-DICHLOROPROPENE	VOC				DR	
BROMOFORM	VOC				DR	
4-METHYL-2-PENTANONE	VOC				DR	
2-HEXANONE	VOC				DR	
TETRACHLOROETHENE	VOC				DR	
1,1,2,2-TETRACHLOROETHANE	VOC				DR	
TOLUENE	VOC				DR	
CHLOROBENZENE	VOC				DR	
ETHYLBENZENE	VOC				DR	
STYRENE	VOC				DR	
TOTAL XYLENES	VOC			29 J	DR	

All results reported in µg/kg (ppb).
Only detected results are reported.
VOC - Volatile Organic Compounds.

J - Indicates the value is less than the sample quantitation limit but greater than zero.
R-Compound rejected due to contamination in the associated blank.
DR-Data rejected due to method deviation.

TABLE 4-7
VAL'S DODGE
ANALYTICAL RESULTS - SEDIMENT SAMPLES

SAMPLE-ID		SED-1	SED-2	SED-3	SED-4	SED-5
SAMPLE TYPE		SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
COLLECTION DATE		8/21/91	8/21/91	8/21/91	8/21/91	8/21/91
PARAMETER	TYPE					
PHENOL	SEMI					
BIS(2-CHLOROETHYL) ETHER	SEMI					
2-CHLOROPHENOL	SEMI					77 J
1,3-DICHLOROBENZENE	SEMI					
1,4-DICHLOROBENZENE	SEMI					
BENZYL ALCOHOL	SEMI	98 J				100 J
1,2-DICHLOROBENZENE	SEMI					
2-METHYLPHENOL	SEMI					
BIS(2-CHLOROISOPROPYL) ETHER	SEMI					
4-METHYLPHENOL	SEMI		210 J			140 J
N-NITROSO-DI-N-PROPYLAMINE	SEMI					
HEXACHLOROETHANE	SEMI					
NITROBENZENE	SEMI					
ISOPHORONE	SEMI					
2-NITROPHENOL	SEMI					
2,4-DIMETHYLPHENOL	SEMI					
BENZOIC ACID	SEMI	260 J	340 J	930 J	1800 J	1700 J
BIS(2-CHLOROETHOXY)METHANE	SEMI					
2,4-DICHLOROPHENOL	SEMI					
1,2,4-TRICHLOROBENZENE	SEMI					76 J
NAPHTHALENE	SEMI	150 J				86 J
4-CHLOROANILINE	SEMI					
HEXACHLOROBUTADIENE	SEMI					
4-CHLORO-3-METHYLPHENOL	SEMI					
2-METHYLNAPHTHALENE	SEMI	190 J				130 J
HEXACHLOROCYCLOPENTADIENE	SEMI					
2,4,6-TRICHLOROPHENOL	SEMI					
2,4,5-TRICHLOROPHENOL	SEMI					
2-CHLORONAPHTHALENE	SEMI					
2-NITROANILINE	SEMI					
DIMETHYLPHTHALATE	SEMI					
ACENAPHTHYLENE	SEMI	630 J				
2,6-DINITROTOLUENE	SEMI					
3-NITROANILINE	SEMI					

All results reported in µg/kg (ppb).

Only detected results are reported.

SEMI = Semivolatile Organic Compounds.

J = Indicates the value is less than the sample quantitation limit but greater than zero.

TABLE 4-7
VAL'S DODGE
ANALYTICAL RESULTS - SEDIMENT SAMPLES

SAMPLE-ID		SED-1	SED-2	SED-3	SED-4	SED-5
SAMPLE TYPE		SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
COLLECTION DATE		8/21/91	8/21/91	8/21/91	8/21/91	8/21/91
PARAMETER	TYPE					
ACENAPHTHENE	SEMI	150 J				87 J
2,4-DINITROPHENOL	SEMI					
4-NITROPHENOL	SEMI					
DIBENZOFURAN	SEMI	130 J				78 J
2,4-DINITROTOLUENE	SEMI					
DIETHYLPHTHALATE	SEMI	46 J	150 J		170 J	190 J
4-CHLOROPHENYL-PHENYL ETHER	SEMI					
FLUORENE	SEMI	310 J				94 J
4-NITROANILINE	SEMI					
4,6-DINITRO-2-METHYLPHENOL	SEMI					
N-NITROSODIPHENYLAMINE	SEMI	49 J				240 J
4-BROMOPHENYL-PHENYL ETHER	SEMI					
HEXACHLOROBENZENE	SEMI					
PENTACHLOROPHENOL	SEMI					
PHENANTHRENE	SEMI	2000	230 J	250 J		1100 J
ANTHRACENE	SEMI	720 J		150 J		180 J
DI-N-BUTYLPHTHALATE	SEMI	130 JB	320 JB	410 JB		980 JB
FLUORANTHENE	SEMI	2900	720 J	790 J		1600 J
PYRENE	SEMI	3400	530 J	690 J		1100 J
BUTYLBENZYLPHTHALATE	SEMI	2000	210 J		3100	20000
3,3'-DICHLOROBENZIDINE	SEMI					
BENZO(A)ANTHRACENE	SEMI	1500	210 J		110 J	340 J
CHRYSENE	SEMI	1900	290 J	360 J		480 J
BIS(2-ETHYLHEXYL)PHTHALATE	SEMI	1100 B	270 JB	1200 JB	6400 B	2100 JB
DI-N-OCTYL PHTHALATE	SEMI	270 J	55 J		710 J	120 J
BENZO(B)FLUORANTHENE	SEMI	1500	280 J	350 J		400 J
BENZO(K)FLUORANTHENE	SEMI	850	130 J	110 J		220 J
BENZO(A)PYRENE	SEMI	1800	320 J	400 J		380 J
INDENO(1,2,3-CD)PYRENE	SEMI	560 J	150 J	160 J		170 J
DIBENZ(A,H)ANTHRACENE	SEMI	140 J				
BENZO(G,H,I)PERYLENE	SEMI	610 J	96 J			

All results reported in ug/kg (ppb).
Only detected results are reported.
SEMI - Semivolatile Organic Compounds.
J - Indicates the value is less than the sample quantitation limit but greater than zero.
B - Compound detected in associated method blank.

TABLE 4-7
VAL'S DODGE
ANALYTICAL RESULTS - SEDIMENT SAMPLES

SAMPLE-ID		SED-1	SED-2	SED-3	SED-4	SED-5
			SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
COLLECTION DATE		8/21/91	8/21/91	8/21/91	8/21/91	8/21/91
PARAMETER	TYPE					
ALPHA-BHC	PST					
BETA-BHC	PST					
DELTA-BHC	PST					
GAMMA-BHC (LINDANE)	PST					
	PST					
ALDRIN	PST					
HEPTACHLOR EPOXIDE	PST					
ENDOSULFAN I	PST					
DIELDRIN	PST	8.6 J				
4,4'-DDE	PST					
ENDRIN						
ENDOSULFAN II	PST					
	PST					
	PST					
	PST					
	PST					
	PST					44 J
	PST					
	PST					
AROCLOR-1016	PCB					
AROCLOR-1221	PCB					
AROCLOR-1232	PCB					
AROCLOR-1242	PCB					
	PCB					
AROCLOR-1254	PCB					
AROCLOR-1260	PCB					

All results reported in µg/kg (ppb).
Only detected results are reported.
PST - Pesticides.
PCB - Polychlorinated Biphenyls.

J - Indicates the value is less than the sample quantitation limit but greater than zero.

TABLE 4-7
VAL'S DODGE
ANALYTICAL RESULTS - SEDIMENT SAMPLES

SAMPLE-ID		SED-1	SED-2	SED-3	SED-4	SED-5
SAMPLE TYPE		SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
COLLECTION DATE		8/21/91	8/21/91	8/21/91	8/21/91	8/21/91
PARAMETER	TYPE					
ALUMINUM	MET	6800 *	3720 *	7730 *	9940 *	1400 *
ANTIMONY	MET					
ARSENIC	MET	8.9 S	4.6 B	6.6 B	8.5 B	8.9 B
BARIUM	MET	266	80.2 B	87.9 B	114 B	191 B
BERYLLIUM	MET	1 B				
CADMIUM	MET	10.8			11.1	
CALCIUM	MET	55700 *	21800 *	20300 *	20800	12900 *
CHROMIUM	MET	527 *	471 *	270 *	2470	2380 *
COBALT	MET		25.1 B	63 B	345	150
COPPER	MET	141	62.1	100	317	127
IRON	MET	37800 *	13700 *	14700 *	64500 *	47000 *
	MET	275 *	72 *	109 *	289 *	384 *
	MET	17800 *	4440 B *	5240 B *	3600 B *	18500 *
	MET	1490 *	242 *	301 *	4450 *	7910 *
MERCURY	MET	0.79				
NICKEL	MET	303 N *	167 N *	282	794 N *	1360 N *
POTASSIUM	MET	3190	2140 B	3070 B	2100 B	2220 B
SELENIUM	MET	2.3	23.8	5.5 B	35.2	
SILVER	MET	6.1			18.4	
SODIUM	MET	267 B	1040 B	1430 B	1010 B	1910 B
	MET					
VANADIUM	MET	90.2	63 B	59.4 B	229	237
ZINC	MET	313	224	159	1200	542
CYANIDE	CN					

All results reported in mg/kg (ppm).
Only detected results are reported.
MET - Metals.
CN - Cyanide.

B - Value is less than the quantitation limit but greater than or equal to instrument detection limit.
*-Duplicate analysis no within control limits.

and 14 ppb in samples SW-4 and SW-5 respectively. Other phenolic compounds detected below the SCG values included 2-chlorophenol, 2,4-dimethylphenol, 4-chloro-3-methylphenol, and 4-nitrophenol. Total PAH concentrations ranged from zero at SW-5 to 19.6 ppb at SW-1. Benzo(a)-pyrene was found in excess of the SCG value within samples SW-1 and SW-3 at 2.0 and 0.2 ppb respectively. The surface water samples were slightly turbid and the PAHs detected in these samples can probably be attributed to the organic matter present in each sample. SVOCs found in all of the samples included: isophorone, ranging from 0.5 to 2 ppb; benzoic acid, ranging from 5.0 to 37 ppb; and butylbenzylphthalate, ranging from 0.5 to 19 ppb. Additional SVOCs detected in the surface water samples include benzyl alcohol, n-nitrosodiphenylamine, and bis(2-ethylhexyl)phthalate.

Pesticides/PCBs - Pesticides were only detected in sample SW-4 which contained 0.53 ppb heptachlor and 8.9 ppb methoxychlor. Heptachlor exceeded the 0.001 ppb SCG value. PCBs were not detected in any surface water sample.

Metals - Iron concentrations were found in excess of the 300 ppb SCG value in all samples (3,900 ppb to 136,000 ppb). Mercury exceeded the 0.2 ppb SCG value in SW-1 through SW-4 (0.38 ppb maximum). Cobalt exceeded the 100 ppb SCG value only in sample SW-4 at 136 ppb. Copper, at 169 ppb, exceeded the calculated surface water SCG value of 85 ppb for SW-4. The thallium concentration in SW-4, at 37 ppb, exceeded the 20 ppb SCG value.

Sediment

Volatiles - VOCs detected in the wetland sediments were limited to carbon disulfide, 2-butanone, and xylene. Carbon disulfide was only found in sample SED-5 at 5 ppb. 2-butanone was found in samples SED-1, SED-2, and SED-5 at 15, 46, and 21 ppb respectively. Xylenes were only detected in SED-3 at a total concentration of 29 ppb. VOC results for sample SED-4 were rejected due to laboratory analytical methods deviations.

Semivolatiles - PAH compounds were found in all five sediment samples. Total PAH concentrations ranged from 110 ppb in SED-4 to 18,510 ppb in SED-1. Benzoic acid was detected in all samples ranging from 260 ppb in SED-1 to 1,800 ppb in SED-4. Bis(2-ethylhexyl)phthalate was also detected in each sample ranging from 270 ppb in SED-2 to 6,400 ppb in SED-4. Diethylphthalate and di-n-octylphthalate were found in all sediment samples, except SED-3, at concentrations ranging from 46 to 190 ppb and 55 to 710 ppb respectively. Additional compounds detected in the wetland sediments include 2-chlorophenol, benzyl alcohol, 4-methylphenol, 1,2,4-trichlorobenzene, dibenzofuran and N-nitrosodiphenylamine.

Pesticides/PCBs - Pesticides detected in the sediments were limited to 8.6 ppb dieldrin in SED-1 and 44 ppb alpha chlordane in SED-5. PCBs were not detected.

Metals - Metals concentrations were found to vary widely among the sediment samples. Concentration ranges were: 1,400 to 9,940 ppb aluminum, 12,900 to 55,700 ppb calcium, 270 to 2,380 ppb chromium, 13,700 to 64,500 ppb iron, 3,600 to 18,500 ppb magnesium, 242 to 7,910 ppb manganese, 167 to 1,360 ppb nickel, 267 to 1,910 ppm sodium, and 159 to 1,200 ppb zinc. The highest metals concentrations were observed in samples SED-1 and SED-4.

4.5.5 Phase II Groundwater Contamination Assessment

Groundwater samples were collected from the six monitoring wells installed for the Phase II Investigation. Monitoring well locations are presented on Figure 3-1. Results of the chemical analyses are presented in Table 4-8 and 4-9.

Volatiles - Benzene was detected in contravention of the 0.7 ppb groundwater SCG value in sample GW-3 (1 ppb). Total xylenes in sample GW-4 were measured at 0.9 ppb.

TABLE 4-8
VAL'S DODGE
ANALYTICAL RESULTS - GROUNDWATER SAMPLES

SAMPLE ID		CLASS GA SCGs (ppb)#	GW-1	GW-2	GW-3	GW-4	GW-5	GW-6	DRILL WATER
SAMPLE TYPE			GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	DRILL WATER
COLLECTION DATE			1/8/92	1/8/92	1/8/92	1/8/92	1/8/92	1/8/92	8/21/91
PARAMETER	TYPE								
CHLOROMETHANE	VOC	5							
BROMOMETHANE	VOC	5							
VINYL CHLORIDE	VOC	2							
CHLOROETHANE	VOC	5							
METHYLENE CHLORIDE	VOC	5							
ACETONE	VOC	50 G	R	R	R	R	R	R	R
CARBON DISULFIDE	VOC	50 G							
1,1-DICHLOROETHENE	VOC	5							
1,1-DICHLOROETHANE	VOC	5							
1,2-DICHLOROETHENE (TOTAL)	VOC	5							
CHLOROFORM	VOC	7							
1,2-DICHLOROETHANE	VOC	5							
2-BUTANONE	VOC	50 G							
1,1,1-TRICHLOROETHANE	VOC	5							
CARBON TETRACHLORIDE	VOC	5							
VINYL ACETATE	VOC	50 G							
BROMODICHLOROMETHANE	VOC	50 G							
1,2-DICHLOROPROPANE	VOC	5							
CIS-1,3-DICHLOROPROPENE	VOC	5							
TRICHLOROETHENE	VOC	5							
DIBROMOCHLOROMETHANE	VOC	50 G							
1,1,2-TRICHLOROETHANE	VOC	5							
BENZENE	VOC	0.7			1 J				
TRANS-1,3-DICHLOROPROPENE	VOC	5							
BROMOFORM	VOC	50 G							
4-METHYL-2-PENTANONE	VOC	50 G							
2-HEXANONE	VOC	50 G							
TETRACHLOROETHENE	VOC	5							
1,1,2,2-TETRACHLOROETHANE	VOC	5							
TOLUENE	VOC	5							
CHLOROBENZENE	VOC	5							
ETHYLBENZENE	VOC	5							
STYRENE	VOC	5							
TOTAL XYLENES	VOC	5@				0.9 J			

All results reported in µg/L (ppb).
Only detected results are reported.
G-Guidance Value.
VOC-Volatile Organic Compound.
#-SCG(Standards, Criteria, and Guidance) Values:NYSDEC Water Quality Standards and Guidance Values, TOGS 1.1.1, 9/25/90 and 6NYCRR 700-705, effective 9/1/91.

@-Applies to each isomer[(1,2-), (1,3-) and (1,4-)] individually.
R-Compound rejected due to associated blank contamination.
B-Compound detected in associated method blank.
J-Indicates the value is less than the quantition limit but greater than zero.

TABLE 4-8
VAL'S DODGE
ANALYTICAL RESULTS - GROUNDWATER SAMPLES

SAMPLE ID		CLASS GA SCGs (ppb)#	GW-1	GW-2	GW-3	GW-4	GW-5	GW-6	DRILL WATER
SAMPLE TYPE			GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	DRILL WATER
COLLECTION DATE			1/8/92	1/8/92	1/8/92	1/8/92	1/8/92	1/8/92	8/21/91
PARAMETER	TYPE								
PHENOL	SEMI	1(p)			43				
BIS(2-CHLOROETHYL) ETHER	SEMI	1							
2-CHLOROPHENOL	SEMI	1(p)							
1,3-DICHLOROBENZENE	SEMI	5							
1,4-DICHLOROBENZENE	SEMI	4.7 @							
BENZYL ALCOHOL	SEMI	50 O							
1,2-DICHLOROBENZENE	SEMI	4.7 @							
2-METHYLPHENOL	SEMI	1(p)							
BIS(2-CHLOROISOPROPYL) ETHER	SEMI	5							
4-METHYLPHENOL	SEMI	1(p)			4 J				
N-NITROSO-DI-N-PROPYLAMINE	SEMI	50 O							
HEXACHLOROETHANE	SEMI	5							
NITROBENZENE	SEMI	5							
ISOPHORONE	SEMI	50 O							
2-NITROPHENOL	SEMI	1(p)							
2,4-DIMETHYLPHENOL	SEMI	1(p)			5 J				
BENZOIC ACID	SEMI	50 O			6 J				
BIS(2-CHLOROETHOXY)METHANE	SEMI	5							
2,4-DICHLOROPHENOL	SEMI	1(p)							
1,2,4-TRICHLOROBENZENE	SEMI	5							
NAPHTHALENE	SEMI	10 O			3 J				
4-CHLOROANILINE	SEMI	5							
HEXACHLOROBUTADIENE	SEMI	5							
4-CHLORO-3-METHYLPHENOL	SEMI	1(p)							
2-METHYLNAPHTHALENE	SEMI	5							
HEXACHLOROCYCLOPENTADIENE	SEMI	5							
2,4,6-TRICHLOROPHENOL	SEMI	1(p)			2 J				
2,4,5-TRICHLOROPHENOL	SEMI	1(p)			3 J				
2-CHLORONAPHTHALENE	SEMI	5							
2-NITROANILINE	SEMI	5							
DIMETHYLPHTHALATE	SEMI	50 O							
ACENAPHTHYLENE	SEMI	50 O							
2,6-DINITROTOLUENE	SEMI	5							
3-NITROANILINE	SEMI	5							

All results reported in µg/L (ppb).
Only detected results are reported.
O- Guidance Value.
SEMI-Semivolatile Organic Compound.
#-SCG(Standards, Criteria, and Guidance) Values:NYSDEC Water Quality Standards and Guidance Values, TOGS 1.1.1, 9/25/90 and 6NYCRR 700-705, effective 9/1/91.

(p)-Phenolic compound standard for total phenols.
@-Applies to the sum of [(1,2-), and (1,4-)] dichlorobenzene.
J-Indicates the value is less then the sample quantitation limit but greater than zero.

TABLE 4-8
VAL'S DODGE
ANALYTICAL RESULTS - GROUNDWATER SAMPLES

SAMPLE ID		CLASS GA SCGs (ppb)#	GW-1	GW-2	GW-3	GW-4	GW-5	GW-6	DRILL WATER
SAMPLE TYPE			GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	DRILL WATER
COLLECTION DATE			1/8/92	1/8/92	1/8/92	1/8/92	1/8/92	1/8/92	8/21/91
PARAMETER	TYPE								
ACENAPHTHENE	SEMI	20 G							
2,4-DINITROPHENOL	SEMI	1(p)							
4-NITROPHENOL	SEMI	1(p)							
DIBENZOFURAN	SEMI	50 G							
2,4-DINITROTOLUENE	SEMI	5							
DIETHYLPHTHALATE	SEMI	50 G							
4-CHLOROPHENYL-PHENYL ETHER	SEMI	5							
FLUORENE	SEMI	50 G							
4-NITROANILINE	SEMI	5							
4,6-DINITRO-2-METHYLPHENOL	SEMI	1(p)							
N-NITROSODIPHENYLAMINE	SEMI	50 G							
4-BROMOPHENYL-PHENYL ETHER	SEMI	5							
HEXACHLOROBENZENE	SEMI	0.35							
PENTACHLOROPHENOL	SEMI	1(p)							
PHENANTHRENE	SEMI	50 G							
ANTHRACENE	SEMI	50 G							
DI-N-BUTYLPHTHALATE	SEMI	50			0.5 J				
FLUORANTHENE	SEMI	50 G							
PYRENE	SEMI	50 G							
BUTYLBENZYLPHTHALATE	SEMI	50 G							
3,3'-DICHLOROBENZIDINE	SEMI	5							
BENZO(A)ANTHRACENE	SEMI	0.002 G							
CHRYSENE	SEMI	0.002 G							
BIS(2-ETHYLHEXYL)PHTHALATE	SEMI	50	R	R	R	R	R	R	R
DI-N-OCTYL PHTHALATE	SEMI	50 G							
BENZO(B)FLUORANTHENE	SEMI	0.002 G							
BENZO(K)FLUORANTHENE	SEMI	0.002 G							
BENZO(A)PYRENE	SEMI								
INDENO(1,2,3-CD)PYRENE	SEMI	0.002 G							
DIBENZ(A,H)ANTHRACENE	SEMI	50							
BENZO(G,H,I)PERYLENE	SEMI	50							

All results reported in µg/L (ppb).
Only detected results are reported.
G- Guidance Value.
SEMI-Semivolatile Organic Compound.
(p)-Phenolic compound standard for total phenols.
R-Compound rejected due to contamination in the associated blank.
J- Indicates the value is less than the sample quantition but greater than zero.

#-SCG(Standards, Criteria, and Guidance) Values:NYSDEC Water Quality Standards and Guidance Values, TOGS 1.1.1, 9/25/90 and 6NYCRR 700-705, effective 9/1/91.

TABLE 4-8
VAL'S DODGE
ANALYTICAL RESULTS - GROUNDWATER SAMPLES

SAMPLE ID		CLASS GA SCGs (ppb)#	GW-1	GW-2	GW-3	GW-4	GW-5	GW-6	DRILL WATER
SAMPLE TYPE			GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	DRILL WATER
COLLECTION DATE			1/8/92	1/8/92	1/8/92	1/8/92	1/8/92	1/8/92	8/21/91
PARAMETER	TYPE								
ALPHA-BHC	PST								
BETA-BHC	PST								
DELTA-BHC	PST								
GAMMA-BHC (LINDANE)	PST								
HEPTACHLOR	PST								
ALDRIN	PST								
HEPTACHLOR EPOXIDE	PST								
ENDOSULFAN I	PST	5							
DIELDRIN	PST								
4,4'-DDE	PST								
ENDRIN	PST								
ENDOSULFAN II	PST	5							
4,4'-DDD	PST								
ENDOSULFAN SULFATE	PST	5							
4,4'-DDT	PST								
METHOXYCHLOR	PST	35							
ENDRIN KETONE	PST	5							
ALPHA-CHLORDANE	PST	0.1(+)							
GAMMA-CHLORDANE	PST	0.1(+)							
TOXAPHENE	PST								
AROCLOR-1016	PCB	0.1(x)							
AROCLOR-1221	PCB	0.1(x)							
AROCLOR-1232	PCB	0.1(x)							
AROCLOR-1242	PCB	0.1(x)							
AROCLOR-1248	PCB	0.1(x)							
AROCLOR-1254	PCB	0.1(x)							
AROCLOR-1260	PCB	0.1(x)							

All results reported in µg/L (ppb).
Only detected results are reported.
PST-Pesticide.
PCB-Polychlorinated Biphenyl.
#-SCG(Standards, Criteria, and Guidance) Values:NYSDEC Water Quality Standards and Guidance Values, TOGS 1.1.1, 9/25/90 and 6NYCRR 700-705, effective 9/1/91.

(x)-Applies to total PCB. Standard applies to total of PCBs.
(+)-Applies to chlordane. Standard applies to chlordane.

TABLE 4-8
VAL'S DODGE
ANALYTICAL RESULTS - GROUNDWATER SAMPLES

SAMPLE ID		CLASS GA SCGs (ppb)#	GW-1	GW-2	GW-3	GW-4	GW-5	GW-6	DRILL WATER
SAMPLE TYPE			GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	DRILL WATER
COLLECTION DATE			1/8/92	1/8/92	1/8/92	1/8/92	1/8/92	1/8/92	8/21/91
PARAMETER	TYPE								
ALUMINUM	MET		85 B	36.6 B	554	882	2070		236
ANTIMONY	MET	3 G					32.5 B	49.1 B	
ARSENIC	MET	25		1.3 B	3.8 B	2.4 B	3.8 B	1.5 B	11.5 N
BARIUM	MET	1000	67.2 B	38.2 B	37.3 B	117 B	82.3 B	59.2 B	222
BERYLLIUM	MET	3 G							
CADMIUM	MET	10							
CALCIUM	MET		122000	109000	46000	48400	190000	137000	38300
CHROMIUM	MET	50			46.2	8.5 B	1510	3.7 B	
COBALT	MET				6.2 B	2.1 B	180	2.3 B	
COPPER	MET	200							9.9 B
IRON	MET	300(x)	138	103	1030 S	1740	30000	1380	1050 N
LEAD	MET	25			6.7 B	1.2 B	25.1		1.4 B N W
MAGNESIUM	MET	35000 G	31400	24100	4870 B	26200	64100	65600	9820
MANGANESE	MET	300(x)	12.5 B	18.5	62	279	2240	1350	188
MERCURY	MET	2							
NICKEL	MET				14.8 B	8 B	502	38.6 B	
POTASSIUM	MET			14500	33400	9400	10600	11000	2240 B
SELENIUM	MET	10							
SILVER	MET	50							
SODIUM	MET	20000	10300	26200	77500	82500	62100	46500	10500
THALLIUM	MET	4 G							
VANADIUM	MET						132		
ZINC	MET	300							33.1
CYANIDE	CN	100							

All results reported in µg/L (ppb).
Only detected results are reported.
G- Guidance Value.
MET - Metal.
CN - Cyanide.

B - Value is less than quantitation limit but greater than or equal to instrument detection limit.
E - The reported value is estimated because of the presence of interference.
N - Spiked sample recovery not within control limits.
S - The reported value was determined by the Method of Standard Additions (MSA).
W - Post-digestion spike for Furnace AA analysis out of control limits.
(x)-Standard for sum of iron and manganese is 500ppb.

#-SCG(Standards, Criteria, and Guidance) Values:NYSDEC Water Quality Standards and Guidance Values,
TOGS 1.1.1, 9/25/90 and 6NYCRR 700-705, effective 9/1/91.

TABLE 4-9
VAL'S DODGE
SCG EXCEEDANCES - GROUNDWATER SAMPLES

SAMPLE ID		CLASS GA SCGs (ppb)#	GW-1	GW-2	GW-3	GW-4	GW-5	GW-6	DRILL WATER
SAMPLE TYPE			GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	DRILL WATER
COLLECTION DATE			1/8/92	1/8/92	1/8/92	1/8/92	1/8/92	1/8/92	8/21/91
PARAMETER	TYPE								
BENZENE	VOC	0.7			1 J				
PHENOL	SEMI	1(p)			43				
4-METHYLPHENOL	SEMI	1(p)			4 J				
2,4-DIMETHYLPHENOL	SEMI	1(p)			5 J				
2,4,6-TRICHLOROPHENOL	SEMI	1(p)			2 J				
2,4,5-TRICHLOROPHENOL	SEMI	1(p)			3 J				
ANTIMONY	MET	3 G					32.5 B	49.1 B	
CHROMIUM	MET	50					1510		
IRON	MET	300(x)			1030 S	1740	30000	1380	1050 N
LEAD	MET	25					25.1		
MAGNESIUM	MET	35000 G					64100	65600	
MANGANESE	MET	300(x)			62	279	2240	1350	188
SODIUM	MET	20000		26200	77500	82500	62100	46500	

All results reported in µg/L (ppb).
Only detected results are reported.
G-Guidance Value.
VOC-Volatile Organic Compound.
SEMI-Semivolatile Organic Compound.
MET - Metal.
#-SCG(Standards, Criteria, and Guidance) Values:NYSDEC Water Quality Standards and Guidance Values, TOGS 1.1.1, 9/25/90 and 6NYCRR 700-705, effective 9/1/91.

J-Indicates the value is less than the quantition limit but greater than zero.
(p)-Phenolic compound standard for total phenols.
B - Value is less than quantitation limit but greater than or equal to instrument detection limit.
N - Spiked sample recovery not within control limits.
S - The reported value was determined by the Method of Standard Additions (MSA).
(x)-Standard for sum of iron and manganese is 500ppb.

Semivolatiles - SVOCs were only detected in monitoring well GW-3. Compounds detected in excess of the groundwater SCG values were phenolics including: 43 ppb phenol, 4 ppb 4-methylphenol, 5 ppb 2,4-dimethylphenol, 2 ppb 2,4,6-trichlorophenol, and 3 ppb 2,4,5-trichlorophenol. Additional SVOCs detected in GW-3 include: 6 ppb benzoic acid and 0.5 ppb di-n-butylphthalate. The only PAH compound detected was naphthalene at 3 ppb. Recall that GW-3 was installed within the fill materials.

Pesticides/PCBs - Neither pesticides nor PCBS were detected in the groundwater around the site.

Metals - Metals concentrations were found in excess of groundwater SCG values at all sampling locations except GW-1. Sodium was found to exceed the 20,000 ppb SCG values in all samples except GW-1 with concentrations ranging from 26,200 ppb in GW-2 to 82,500 ppb in GW-4. Iron was found to exceed the 300 ppb SCG value in all downgradient well samples. Iron concentrations from the wells installed within the fill materials ranged from 1,030 ppb in GW-3 to 30,000 ppb in GW-5. Additional metals concentrations exceeding the SCG values included antimony at 32.5 and 49.1 ppb and magnesium at 64,100 and 65,600 ppb in GW-5 and GW-6 respectively. Chromium and lead also exceeded the SCG values at GW-5.

4.5.6 Air Quality Assessment

HNu readings in the breathing zone did not exceed background levels of 0 to 1 ppm during the Phase II drilling or sampling programs.

HASP Appendix B

Material Safety Data Sheets

APPENDIX C

GUIDANCE ON HEAT STRESS CONTROL

C&S ENGINEERS
HEALTH & SAFETY GUIDELINE #15
HEAT STRESS CONTROL

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PURPOSE

To establish procedures for the implementation and operation of a heat stress prevention, evaluation, and response program.

SCOPE

Applies to all activity where personnel may be exposed to environments exceeding 70 degrees Fahrenheit performing Levels C and B work, and environments exceeding 80 degrees Fahrenheit for Level D work.

DEFINITIONS

Acclimatization - Acclimatization is the process of the body becoming accustomed to extremes in temperature.

ACGIH TLV 1991/92 - Heat Stress Threshold Limit Values (TLVs) are intended to protect workers from the severest effects of heat stress and heat injury and to describe exposures to hot working conditions under which it is believed that nearly all workers can be repeatedly exposed without adverse health effects. The TLV objective is to prevent the deep body core temperature from exceeding 38°C (100.4°F).
Wet-Bulb Globe Temperature (WBGT) - This is the simplest and most suitable technique to measure the environmental factors associated with heat stress. The value is calculated by using equations shown in Appendix A.

Work-Rest Regimen - This is a ratio of time spent working versus time spent resting. The ratio applies to one hour periods. For example, a work-rest regiment of 75% work, 25% rest corresponds to 45 minutes work, 15 minutes rest each hour.

RESPONSIBILITIES

Employees - All employees must be alert to signs of development of symptoms of heat stress in themselves and in those working with them. Personnel must also be aware of emergency corrective action.

Health and Safety Coordinator (HSC) - The HSC is responsible for establishing and enforcing the work-rest regimen to control heat stress.

5.0 GUIDELINES

Acclimatization to heat involves a series of physiological and psychological adjustments that occur in an individual during his first week of exposure to hot environmental conditions. The work - rest regimen in this procedure is valid for acclimated workers who are physically fit.

5.1 Effects of Heat Stress

Hot weather can cause physical discomfort, loss of efficiency, and personal injury. Wearing personal protective equipment puts a worker at considerable risk of developing heat stress since protective clothing decreases natural body ventilation.

Heat stress is probably one of the most common (and potentially serious) illnesses at hazardous waste sites. Regular monitoring and preventive measures are essential to the health and safety of personnel conducting field work.

Early symptoms of heat stress may include fatigue, irritability, anxiety, and decreased concentration, dexterity, or movement. If not recognized or treated, heat stress may be serious; even fatal.

Heat-related problems include:

1 Heat Rash caused by continuous exposure to hot and humid air and aggravation of the skin by chafing clothes. This decreases the ability to tolerate heat as well as being a nuisance.

2. Heat Cramps caused by profuse perspiration with inadequate fluid intake and chemical replacement (especially salts). Signs: muscle spasm and pain in the extremities and abdomen.

3 Heat Exhaustion caused by increased stress on various organs to meet increased demands for body cooling. Signs: shallow breathing; pale, cool, moist skin; profuse sweating; dizziness; or fatigue.

4 Heat Stroke, the most severe form of heat stress. Heat stroke is considered an Immediately Dangerous to Life or Health (IDLH) condition and as such must be treated as an emergency. Any person suffering from heat stroke must be cooled down immediately and brought to a hospital. Decontamination procedures should not be implemented. Signs and symptoms are: red, hot, dry skin; no perspiration; nausea; dizziness and confusion; strong, rapid pulse; or coma.

It is important to note that individuals vary in their susceptibility and their reactions to heat related conditions. Factors that may predispose someone to a heat condition include:

- Lack of physical fitness
- Lack of acclimatization
- Age
- Dehydration
- Obesity

- Alcohol and Drug Use
- Infection
- Sunburn
- Diarrhea
- Chronic Disease

5.2 First Aid/Medical Treatment

The following first aid and medical treatments are recommended. First aid training is recommended.

1 Heat Rash - Apply mild drying lotions and utilize cool, dry sleeping quarters to allow skin to dry between heat exposures.

2 Heat Cramps - Administer commercially-available electrolyte-balanced liquids. Seek medical attention if serious.

3. Heat Exhaustion - Remove to cooler environment, rest in reclining position. Drink plenty of fluids.

4. Heat Stroke - Immediate and rapid cooling by immersion in chilled water with massage, or wrapping in wet sheet and fanning. These steps are to be taken while waiting for emergency response to arrive, or while transporting the victim to an emergency medical facility. This is a life-threatening situation.

5.3 Heat Stress Prevention

One or more of the following will help prevent or reduce heat stress:

Drinking water shall be available to the workers to encourage frequent small drinks, i.e., one cup every 15-20 minutes (about 150 ml or 1/4 pint). The water shall be kept reasonably cool (55-60°F) and shall be placed outside the contaminated areas.

The workers shall be encouraged to salt their foods and maintain well balanced diets. If workers are unacclimatized, a commercially available product such as Gatorade or Exceed may be used for electrolyte replacement.

2 Cooling devices may be used to aid natural body ventilation. These devices, however, add weight, and their use should be balanced against worker efficiency.

3 Long cotton underwear should be worn. It acts as a wick to help absorb moisture and protect the skin from direct contact with heat-absorbing protective clothing.

4. Provide air conditioned shelter or shaded areas to protect personnel during rest periods.

5. Install mobile showers and/or hose-down facilities to reduce body temperature and cool protective clothing.

6. Conduct operations in the early morning or evening.

7. Rotate shifts of workers.

8 Add additional personnel to work teams

9. Mandate work slowdowns

10 Good hygienic standards must be maintained by frequent change of clothing and daily showering. Clothing should be permitted to dry during rest periods.

11. The workers shall be instructed in hot weather procedures. The training program shall include as a minimum, instruction in:

    a. Proper cooling procedures and appropriate first aid treatment

    b. Proper clothing practices.

    c. Proper eating and drinking habits.

    d. Recognition of impending heat exhaustion

    e. Recognition of signs and symptoms of impending heat stroke.

    f. Safe work practices.

5.5 Heat Stress Monitoring

Specific procedures will be established by the HSC and/or in the site specific Health and Safety Plan. Appendix A and B discuss the use of WBGT values.

5.6 Work-Rest Regimen

A work-rest regimen will be established for field work where personnel may be exposed to environments exceeding 80 degrees Fahrenheit for Level D work and environments exceeding 70 degrees Fahrenheit performing Levels C and B work. The American Conference of Governmental Industrial Hygienists' TLV Heat Stress Threshold Limit Values will be used as a guideline.

If any heat stress symptoms are identified by the employee or buddy, the HSC should be notified immediately and all work activity should cease until the situation is corrected.

5.7 Biological Monitoring

One of the following procedures shall be followed in order to make sure a work-rest regimen is providing proper personal protection and to document exposure.

Heart rate (HR) should be measured by the pulse for 30 seconds at the beginning of the resting period. The HR should not exceed 110 beats/ min. If the HR is higher, the next work period should be shortened by 33 percent, while the length of rest period stays the same. If the pulse rate is still greater than 110 beats/min. at the beginning of the next rest period, the following work cycle should again be shortened by 33 percent. The length of the initial work period will be determined by the HSC. If WBGT monitoring is conducted, Table 1 will identify the initial work period.

2. Body temperature shall be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature (OT) at the beginning of the rest period should not exceed 99.6°F. If it does, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the OT still exceeds 99.6°F at the beginning of the next rest period, the following work cycle should be further shortened by 33 percent. OT should be measured at the end of the rest period to make sure that it has dropped below 99°F. At no time shall work begin in impermeable or semipermeable garments when OT is above 100.6°F.

REFERENCES

ACGIH TLV Booklet, 1991-1992

ATTACHMENTS

TABLE 1 - Permissible Heat Exposure Threshold Limit Values

APPENDIX A - Wet-Bulb Globe Temperature Index

APPENDIX B - Manual Measurement of WBGT Factors

TABLE 1
Permissible Heat Exposure Threshold Limit Values
(values are given in °F WBGT)

	WORK LOAD		
Work-Rest Regimen	Light	Moderate	Heavy
Continuous Work	86	80	77
75% Work - 25% Rest, Each Hour	87	82	78
50% Work - 50% Rest, Each Hour	89	85	82
25% Work - 75% Rest,Each Hour	90	88	86

APPENDIX A

Wet-Bulb Globe Temperature Index

A baseline work-rest regimen is selected using the WBGT procedure. The period of work will be adjusted based on the biological monitoring outlined in Subsection 5.7 of this procedure.

The WBGT in conjunction with the work load required to perform each task is used to determine work-rest regimen. Light work examples include such tasks as sitting or standing to control machines or performing light hand or arm work. **Moderate** work includes walking about in coated coveralls and respirators doing moderate lifting and pushing. Heavy work corresponds to pick and shovel-type work or the use of full body protective clothing. *It must be assumed that any activity involving this type of clothing will be considered heavy work.*

In order to determine the WBGT the following equations are used:

- Outdoors with solar load:
  WBGT = 0.7 WB + 0.2 GT + 0.1 DB

- Indoors or outdoors with no solar load:
  WBGT = 0.7 WB + 0.3 GT

  WB = Natural Wet-Bulb Temperature
  DB = Dry-Bulb Temperature
  GT = Globe Thermometer Temperature

The factors involved in the above equations can be measured using a direct reading instrument or manually measuring each factor.

- An example of a direct-reading heat stress monitor is the Reuter-Stokes Widget No. RSS-214 heat stress monitor.

- Requirement of the individual factors requires the following equipment:

  - Dry-bulb thermometer
  - Natural wet-bulb thermometer
  - Globe thermometer
  - Stand

APPENDIX B

Manual Measurement of WBGT Factors

The range of the dry and the natural wet-bulb thermometers shall be -5°C to 50°C with an accuracy of 0.5° C. The dry-bulb thermometer must be shielded from the sun and the other radiant surfaces of the environment without restricting the airflow around the bulb. The wick of the natural wet-bulb thermometer shall be kept wet with distilled water for at least 1/2 hour before the temperature reading is made. It is not enough to immerse the other end of the wick into a reservoir of distilled water and wait until the whole wick becomes wet by capillary action. The wick shall be wetted by direct application of water from a syringe 1/2 hour before each reading. The wick shall extend over the bulb of the thermometer, covering the stem about one additional bulb length. The wick should always be clean and new wicks shall be washed before using.

A globe thermometer, consisting of a 15 cm (6-inch) diameter hollow copper sphere painted on the outside with a matted black finish or equivalent, shall be used. The bulb or sensor of a thermometer (range -5°C to 100 C with an accuracy of 0.5°C) must be fixed in the center of the sphere. The globe thermometer shall be exposed at least 25 minutes before it is read.

A stand shall be used to suspend the three thermometers so that they do not restrict free airflow around the bulbs.

It is permissible to use any other type of temperature sensor that gives identical reading as that of a mercury thermometer under the same conditions.

The thermometers must be so placed that the readings are representative of the condition where the men work or rest, respectively. All readings shall be recorded on the site log.

In many cases WBGT is the simplest and most suitable technique to measure heat. However, this system is only valid for light summer clothing. When special personal protective clothing is required for performing a particular job the worker's heat tolerance is reduced and the permissible heat exposure limits are not applicable since this clothing is heavier, impedes sweat evaporation and/or has higher insulation value.

APPENDIX D

GUIDANCE ON SITE COMMUNICATIONS

C&S ENGINEERS, INC.
HEALTH & SAFETY GUIDELINE #13
SITE COMMUNICATIONS

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HEALTH & SAFETY GUIDELINE #13
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1.0 PURPOSE

This guideline contains information and requirements necessary to make sure field activities are conducted with adequate provision for communications among field personnel and to emergency agencies.

SCOPE

The guideline applies to all field activities conducted by C & S Engineers. Additional provisions for communications will be addressed in each Site-Specific Health and Safety Plan (HASP), as needed. Field communications must be provided not only to make sure field personnel can communicate with one another; but, also to contact off-site technical and emergency assistance.

DEFINITIONS

RESPONSIBILITIES

Employees - All employees are responsible for knowing and using the specified communications to make sure field work is safely completed and/or to respond to emergencies.

Health and Safety Coordinator (HSC) - The HSC is responsible for determining the proper methods of communication required at a particular site, for training site personnel in the use of these communications, and for providing and maintaining the communications as specified.

5.0 GUIDELINES

5.1 On-Site Communications

Each person shall be able to communicate with other personnel at all times. This communication may be via sound (air horn), electronic (two way radio, bullhorn, etc.), or visual means.

A set of hand signals shall be designated and agreed upon by all personnel at each site activity, for use if electronic communications fail. The site-specific training shall include explanation of the following standard hand signals:

Signal	Meaning
Hand gripping throat:	Out of air, can't breath
Grip partner's wrist or place both hands around waist	Leave area immediately, now

Hands on top of head:	Need assistance.
Thumbs up:	OK, I'm all right, I understand.
Thumbs down:	No, negative.

Whichever communication system is selected as a primary system, a backup system must be provided. For, example hand signals may be used as a backup if radio communications fail. All internal systems should be:

- Clearly understood by all personnel.
- Checked and practiced daily.
- Intrinsically safe (spark-free).

A special set of emergency signals should be set up. These should be:

- Different from ordinary signals.
- Brief and exact.
- Limited in number so that they are easily remembered.

When designing and practicing communication systems, remember that:

- Background noise on site will interfere with talking and listening.
- Wearing personal protective equipment will impede hearing and limit vision (e.g., the ability to recognize hand and body signals).
- Inexperienced radio users may need practice in speaking clearly.

5.2 Off-Site Communications

Every field task shall provide for off-site communications to be able to contact local emergency agencies. Acceptable methods include mobile telephone, radio (CB, other) on a frequency monitored by emergency agencies, on-site telephone (portable or land-line), or a phone (booth or private home) within one-mile of the site. Where a private home phone is to be used, personnel shall make sure access to the home is guaranteed by the owner. Explicit directions and a map shall be prominently displayed. Adequate change shall be conveniently provided where a phone booth is specified for off-site communications.

6.0 REFERENCES

None.

ATTACHMENTS

None.

APPENDIX E

GUIDANCE ON EXCAVATION/TRENCHING OPERATIONS

C&S ENGINEERS
HEALTH & SAFETY GUIDELINE #14
EXCAVATION/TRENCHING OPERATIONS

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PURPOSE

To establish safe operating procedures for excavation/trenching operations at C&S Engineers work sites.

SCOPE

Applies to all C&S Engineers activity where excavation or trenching operations take place.

DEFINITIONS

Excavation - Any manmade cavity or depression in the earth's surface, including its sides, walls, or faces, formed by earth removal and producing unsupported earth conditions by reasons of the excavation.

Trench - A narrow excavation made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench is not greater than 15 feet.

RESPONSIBILITIES

Employees - All employees must understand and follow the procedures outlined in this guideline during all excavation and trenching operations.

Health and Safety Coordinator (HSC) - The HSC is responsible for ensuring these procedures are implemented at each work site.

GUIDELINES

5.1 Hazards Associated With Excavation/Trenching

The principle hazards associated with excavation/trenching are:

- Suffocation, crushing or other injury from falling material.
- Damage/failure of installed underground services and consequent hazards.
- Tripping, slipping or falling.
- Possibility of explosive, flammable, toxic or oxygen-deficient atmosphere in excavation.

5.2 Procedures Prior to Excavation

1. Underground utilities

- Determine the presence and location of any underground chemical or utility pipes, electrical, telephone or instrument wire or cables.

- Identify the location of underground services by stakes or markers.

- De-energize or isolate underground services during excavation. If not possible, or location is not definite, method of excavation shall be established to minimize hazards by such means as:

  1) Use of hand tools in area of underground services.

  2) Insulating personnel and equipment from possible electrical contact.

  3) Use tools or equipment that will reduce possibility of damage to underground services and hazard to worker.

2. Identify Excavation Area

   - Areas to be excavated shall be identified and segregated by means of barricades, ropes and/or signs to prevent access of unauthorized personnel and equipment. Suitable means shall be provided to make barriers visible at all times.

3. Surface Water

   - Provide means of diverting surface water from excavation.

4. Shoring/ Bracing

   - Shoring or bracing that may be required for installed equipment adjacent to the excavation shall be designed by a competent person.

5. Structural Ramps

   - Structural ramps that are used solely by employees as a means of access or egress from the excavation shall be designed by a competent person.

5.3 Procedures For Doing The Excavation

1. Determine the need for shoring/ sloping - The type of soil will establish the need for shoring, slope of the excavation, support systems, and equipment to be used. The soil condition may change as the excavation proceeds. Appendices A, B, C, D, E, and F of the OSHA Excavation Regulation, 29 CFR 1926 Subpart P (Attachment 1) are to be used in defining shoring and sloping requirements.

2. Mobile equipments - For safe use of mobile industrial equipment in or near the excavation, the load carrying capacity of soil shall be established and suitable protection against collapse of soil provided by the use of mats, barricades, restricting the location of equipment, or shoring.

3. Excavated material (spoil) shall be stored at least 2 feet from the edge of the excavation.

4. All trench (vertical sides) excavations greater than 5 feet in depth shall be shored.

5. Ladders or other means of access/egress to excavations shall be provided at a

   1) maximum spacing of 100 feet on the perimeter of open excavations and

   2) 25 feet for trench excavations greater than 4 feet in depth.

6. The excavation shall be inspected daily for changes in conditions. Look for the presence of ground water, change in soil condition, or effects of weather such as rain or freeze. A safe means of continuing the work shall be established based on changes in condition.

7. Appropriate monitoring for gas, toxic, or flammable materials will be conducted to establish the need for respiratory equipment, ventilation or other measures required to continue the excavation safely.

8. Adequate means of dewatering the excavation shall be provided as required

9. A signal person shall be provided to direct powered equipment if working in the excavation with other personnel.

10. A signal person shall be provided when back filling excavations to direct powered equipment working in the excavation with other personnel.

11. Warning vests will be worn when employees are exposed to public vehicular traffic.

12. Employees shall stand away from vehicles being loaded or unloaded, and shall not be permitted underneath loads handled by lifting or dragging equipment.

13. Emergency rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, shall be readily available if hazardous atmospheric conditions exist or may be expected to develop. The specifics will be determined by the HSC/HSM.

14. Walkways or bridges with standard guardrail shall be provided where employees or equipment are required or permitted to cross over excavations.

5.4 Entering the Excavation

No C&S Engineers employee shall enter an excavation which fails to meet the requirements of Section 5.3 of this guideline.

6.0 REFERENCES

OSHA Regulations 29 CFR 1926 Subpart P - Excavations
29 CFR 1926 Subpart P, Appendices A, B, C, D, E, and F

7.0 ATTACHMENTS

None

APPENDIX F

GUIDANCE ON INCIDENT INVESTIGATION AND REPORTING

C&S ENGINEERS
HEALTH & SAFETY GUIDELINE #2
INCIDENT INVESTIGATION AND REPORTING

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PURPOSE

To prevent the occurrence or reoccurrence of accidents on C&S Engineers work sites and to establish a procedure for investigation and reporting of incidents occurring in, or related to C&S Engineers's work activities.

SCOPE

Applies to all incidents related to C&S Engineers's work activities.

DEFINITIONS

Accident - An undesired event resulting in personal injury and/or property damage, and/or equipment failure.

Fatality - An injury resulting in death of the individual.

Incident - Any occurrence which results in, or could potentially result in, the need for medical care or property damage. Such incidents shall include lost time accidents or illness, medical treatment cases, unplanned exposure to toxic materials or any other significant occurrence resulting in property damage or in "near misses."

Incidence Rate - the number of injuries, illnesses, or lost workdays related to a common exposure base of 100 full-time workers. The rate is calculated as:

$$N/EH \times 200{,}000$$

N = number of injuries and illnesses or lost workday cases; EH = total hours worked by all associates during calendar year. 200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year).

Injury - An injury such as a cut, fracture, sprain, amputation, etc. which results from a work accident or from a single instantaneous event in the work environment.

Lost Workday Case - A lost workday case occurs when an injured or ill employee experiences days away from work beginning with the next scheduled work day. Lost workday cases do not occur unless the employee is effected beyond the day of injury or onset of illness.

Recordable Illness - An illness that results from the course of employment and must be entered on the OSHA 200 Log and Summary of Occupational Injuries and Illnesses. These illnesses require medical treatment and evaluation of work related injury. For example, dermatitis, bronchitis, irritation of eyes, nose, and throat can result from work and non-work related incidents.

Recordable Injury - An injury that results from the course of employment and must be entered on the OSHA 200 Log and Summary of Occupational Injuries and Illnesses. These injuries require medical treatment; may involve loss of consciousness; may result in restriction of work or motion or transfer to another job; or result in a fatality.

Near Miss - An incident which, if occurring at a different time or in a different personnel or equipment configuration, would have resulted in an incident.

4.0 RESPONSIBILITIES

Employees - It shall be the responsibility of all C&S Engineers employees to report all incidents as soon as possible to the HSC, regardless of the severity.

Human Resources - has overall responsibility for maintaining accident/ incident reporting and investigations according to current regulations and recording injuries/ illness on the OSHA 200 log, and posting the OSHA 200 log.

Health and Safety Coordinator (HSC) - It is the responsibility of the HSC to investigate and prepare an appropriate report of all accidents, illnesses, and incidents occurring on or related to C&S Engineers work. The HSC shall complete Attachment A within 24 hours of the incident occurrence.

Health and Safety Manager (HSM) - It is the responsibility of the HSM to investigate and prepare an appropriate report of all lost time injuries and illnesses and significant incidents occurring on or related to C&S Engineers. The HSM shall maintain the OSHA 200 form.

Project Managers (PM) - It shall be the PM's responsibility to promptly correct any deficiencies in personnel, training, actions, or any site or equipment deficiencies that were determined to cause or contribute to the incident investigated.

5.0 GUIDELINES

5. Incident Investigation

The HSC will immediately investigate the circumstances surrounding the incident and will make recommendations to prevent recurrence. The HSM shall be immediately notified by telephone if a serious accident/ incident occurs. The incident shall be evaluated to determine whether it is OSHA recordable. If the incident is determined to be OSHA 200 recordable, it shall be entered on the OSHA 200 form.

The following minimum information should be gathered in an accident investigation.

- Where and when the accident occurred
- Who and what were involved, operating personnel and witnesses

- How the accident or illness exposure occurred
- List of objects or substances involved
- The nature of the injury or illness and the part(s) of the body affected
- Discussion of the causes, and recommendations for prevention of recurrence.

Incident Report

The completed accident report must be completed by the HSC within 24 hours of the incident and distributed to the PM, HSM, and Human Resources. This form shall be maintained by Human Resources for at least five years for all OSHA recordable cases. This form serves as an equivalent to the OSHA 101 form.

Incident Follow-up Report

The Incident Follow-Up Report (Attachment B) shall be distributed with the Incident Report within one week of the incident. Delay in filing this report shall be explained in a brief memorandum.

Reporting of Fatalities or Multiple Hospitalization Accidents

Fatalities or accidents resulting in the hospitalization of five or more employees must be reported to OSHA verbally or in writing within 48 hours. The report must contain 1) circumstances surrounding the accident(s), 2) the number of fatalities, and 3) the extent of any injuries.

5.5 OSHA 200 Summary Form

Recordable cases must be entered on the log within six workdays of receipt of the information that a recordable case has occurred. The OSHA log must be kept updated to within 45 calendar days.

OSHA 200 forms must be updated during the 5 year retention period, if there is a change in the extent or outcome of an injury or illness which affects an entry on a log. If a change is necessary, the original entry should be lined out and a corrected entry made on that log. New entries should be made for previously unrecorded cases that are discovered or for cases that initially weren't recorded but were found to be recordable after the end of the year. Log totals should also be modified to reflect these changes.

5.5. Posting

The log must be summarized at the end of the calendar year and the summary must be posted from February 1 through March 1.

5.6 OSHA 200S

Facilities selected by the Bureau of Labor Statistics (BLS) to participate in surveys of occupational injuries and illnesses will receive the OSHA 200S. The data from the annual summary on the OSHA 200 log should be transferred to the OSHA 200S, other requested information provided and the form returned as instructed by the BLS.

5.7 Access to OSHA Records

All OSHA records (accident reporting forms and OSHA 200 logs) should be available for inspection and copying by authorized Federal and State government officials.

Employees, former employees, and their representatives must be given access for inspection and copying to only the log, OSHA No. 200, for the establishment in which the employee currently works or formerly worked.

REFERENCES

29 CFR Part 1904

ATTACHMENTS

Attachment A - Incident Investigation Form

Attachment B - Incident Follow-Up Report

Attachment C - Establishing Recordability

ATTACHMENT A

Incident Investigation Form

Accident investigation should include:

- Location
- Time of Day
- Accident Type
- Victim
- Nature of Injury
- Released Injury
- Hazardous Material
- Unsafe Acts
- Unsafe Conditions
- Policies, Decisions
- Personal Factors
- Environmental Factors

ATTACHMENT B

Date _____

Incident Follow-Up Report

Date of Incident _____

Site: _____

Brief description of incident: _____

_____

_____

Outcome of incident: _____

_____

_____

_____

_____

_____

Physician's recommendations: _____

_____

_____

_____

Date the injured returned to work: _____

ATTACH ANY ADDITIONAL INFORMATION TO THIS FORM

ATTACHMENT C

Establishing Recordability

Deciding whether to record a case and how to classify the case.

Determine whether a fatality, injury or illness is recordable.

A fatality is recordable if:
- results from employment

An injury is recordable if:
- results from employment and
- it requires medical treatment beyond first aid or
- results in restricted work activity or
- results in lost work day

An illness is recordable if
- it results from employment

2. Definition of "Resulting from Employment"

Resulting from employment is when the injury or illness results from an event or exposure in the work environment. The work environment is primarily composed of: 1) The employer's premises, and 2) other locations where associates are engaged in work-related activities or are present as a condition of their employment.

The employer's premises include company rest rooms, hallways, and cafeterias. Injuries occurring in these places are generally considered work related.

The employer's premises EXCLUDES employer controlled ball fields, tennis courts, golf courses, parks, swimming pools, gyms, and other similar recreational facilities, used by associates on a voluntary basis for their own benefit, primarily during off work hours.

Company parking facilities are generally not considered part of the employer's premises for OSHA recordkeeping purposes. Therefore, injuries to associates on these parking lots are not presumed to be work related, and are not recordable unless the associate was engaged in some work related activity.

Associates who travel on company business are considered to be engaged in work related activities all the time they spend in the interest of the company. This includes travel to and from customer contacts, and entertaining or being entertained for purpose of promoting or discussing business. Incidents occurring during normal living activities (eating, sleeping, recreation) or if the associate deviates from a reasonably direct route of travel are not considered OSHA recordable.

3. Distinction between Medical Treatment and First Aid.

First aid is defined as any one-time treatment, and any follow up visit for the purpose of observation, of minor scratches, cuts, burns, splinters, etc., which do not ordinarily require medical care. Such one time treatment, and follow up visit for the purpose of observation, is considered first aid even though provided by a physician or registered professional personnel.

Injuries are not minor if

a) They must be treated only by a physician or licensed medical personnel;

b) They impair bodily function (i.e. normal use of senses, limbs, etc.)

c) They result in damage to physical structure of a non superficial nature (fractures)

d) They involve complications requiring follow up medical treatment.

Appendix C

NYSDEC Risk Assessment Guidance List

Attachment 1

Some Suggested References

USEPA ECOLOGICAL RISK ASSESSMENT (ERA) DOCUMENTS (not the definitive list)

1 USEPA, 1989. Risk Assessment Guidance for Superfund (RAGS) Volume II Environmental Evaluation Manual.

2. USEPA, 1989. Ecological Assessments of Hazardous Waste Sites: A Field and Laboratory Reference Document. ORD. EPA/600/3-89/013.

3. USEPA, 1990. Guidance for Data Useability in Risk Assessment. EPA/540/G-90-008, October 1990; p. 90.

4. ECO Updates. Volume I. Nos. 1 through 5, Volume 2 Nos. 1 through 4, and Volume 3 No. 1.

5. USEPA, 1991. "Supplemental Guidance on Performing Risk Assessments in Remedial Investigation/Feasibility Studies (RI/FSs) Conducted by Potentially Responsible Parties (PRPs)." OSWER Directive No. 9835.15a.

6. USEPA, 1992. Framework for Ecological Risk Assessment. EPA/630/R-92/001.

7. USEPA, 1993. Terrestrial Ecological Risk Assessment Methods Handbook.

8. USEPA, 1993. Wildlife Exposure Factors Handbook. Volumes I and II.

9. USEPA, 1994. Considering Wetlands at CERCLA sites. OSWER. EPA/540/R-94/019.

10. USEPA, 1997. Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments. EPA/540-R-97-006.

OTHER RECOMMENDED REFERENCES

11. McGovern, E.C. 1987-1988. Background Concentrations of 20 Elements in Soils with Special Regard for New York State. NYSDEC.

12. NYSDEC, 1991. Ambient Water Quality Standards and Guidance Values (AWQS).

13. USEPA, 1992. Ambient Water Quality Criteria (AWQC), Federal Register Vol. 57, No. 246/Tuesday, Dec. 22, 1992/Rules and Regulations, p. 60911; and as revised for specific metals by Federal Register/Vol. 60, No. 86/Thursday, May 4, 1995/Rules and Regulations, p. 22228.

14. Persaud, D. et al. 1993. "Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario." Ontario Ministry of Environment and Energy.

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17. NewYork State Department of Environmental Conservation (NYSDEC), 1994. Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites (FWIA).

18. Eisler, R. Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review. USFWS.

19. Biological Reports, USFWS.

20. Contaminant Hazard Reviews, USFWS.

HUMAN HEALTH RISK ASSESSMENT GUIDANCE DOCUMENTS

(not the definitive list)

Superfund Risk Assessment Guidance

1. USEPA, 1989, Risk Assessment Guidance for Superfund (RAGS); Volume I Human Health Evaluation Manual Part A. OERR. EPA/540/1-89/002. December.

2 U.S. EPA, 1990, Risk Assessment Guidance for Superfund (RAGS) Volume I, Human Health Evaluation Manual, (Part B, Development of Risk-Based Preliminary Remediation Goals) OERR, EPA/540/R-92/003.

3. USEPA, 1991. Risk Assessment Guidance for Superfund (RAGS) Volume I, Human Health Evaluation Manual (Part C, Risk Evaluation of Remedial Alternatives), OSWER Directive 9285.7-01C, December 1991.

4. USEPA, 1998. Risk Assessment Guidance for Superfund (RAGS); Volume I, Human Health Evaluation Manual, Part D., OERR, Interim Publication No. 9285.7-01D http://www.epa.gov/superfund/oerr/techres/ragsd/ragsd.html

Exposure Factors

5. USEPA, 1992. Supplemental Guidance to RAGS: Calculating the Concentration Term. OSWER 9285.7-081. May 1992.

6 USEPA, 1991, RAGS Volume I: Human Health Evaluation Manual Supplemental Guidance. Standard Default Exposure Factors OSWER Directive 9285.6-03. March 25, 1991.

USEPA, 1997. Exposure Factors Handbook - Final, Office of Health and Environmental Assessment, Washington, D.C.

Dermal Exposure

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23. USEPA, 1997. Policy for Use of Probabilistic Analysis in Risk Assessment. USEPA, Office of Research and Development, EPA/630/R-97/001.

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24 USEPA, 1992. Final Guidance on Data Useability in Risk Assessment (Part A), OSWER Directive 9285.7-09A., June 1992.

USEPA, 1992. Guidance for Data Useability in Risk Assessment (Part B), OSWER Directive 9285.7-09B, August 1992.

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USEPA, 1989. Air/Superfund national Technical Guidance Study Services, Volumes I-IV, EPA 450/1-89/001, 002, 003, 004, July 1989.

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28. USEPA, 1993. Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. OSWER Directive #9355.4-12.

29. USEPA, 1995. Soil Screening Guidance: Technical Background Document EPA 540/R-95/126.

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Appendix D

NYSDEC Generic Ecological Risk Assessment Guidance

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION GENERIC ECOLOGICAL RISK ASSESSMENT GUIDANCE FOR ONONDAGA LAKE SITES

Revised April 7, 1998

It is recommended that the overall assessment outline be a combination of the New York State Department of Environmental Conservation's *Fish and Wildlife Impact Analysis, October 1994* guidance (FWIA) and the U.S. Environmental Protection Agency's (EPA's) 1997 document *Ecological Risk Assessment Guidance for Superfund, EPA/540-R-97-006* (ERAGS). This combination (referred to as the "Integrated ERA") covers both risk assessment and risk management aspects of the project, is acceptable to both agencies and provides the most focused approach. Potentially Responsible Parties (PRPs) should commit to following this guidance. Other helpful documents are listed in Attachment 1.

Scientific Management Decision Points (SMDPs) occur when agreement between PRPs and NYSDEC as lead agency (with input from USEPA) is required; needed to be effective; or termination of the assessment process may take place.

In order to most efficiently meet both NYSDEC and USEPA requirements, expedite review, and increase likelihood of document approval, it is recommended that the PRP do the following:

PRE-RI WORKPLAN

Step 1 of the FWIA, and Steps 1- 3 of ERAGS are required to be completed before the draft RI Workplan is submitted. NYSDEC concurrence is necessary at SMDPs after Step 2 and after Step 3.

Screening Assessment - First, do a combination of FWIA Step 1 and ERAGS Steps 1 and 2. There are helpful checklists in FWIA App. D, and EPA App. A of App.B, p. 30 to help ensure applicable concerns are covered. There is a decision point (SMDP) after this combination, which may end the process by determining there are enough data to determine no, or negligible risk at the site. If so, document and submit basis for decision. If potential risk exists, or if there are insufficient data to determine it, then submit basis for decision and continue.

Problem Formulation - Do Step 3. Submit documentation associated with assumptions for the baseline risk assessment (see EPA OSWER Directive No. 9835.15a) such as conceptual model, COC list, toxicity evaluation, potential exposure scenarios, assessment endpoints, and conceptual questions/hypotheses. Then confer and agree in writing (SMDP) with NYSDEC on the information submitted.

FOR THE RI WORKPLAN

Study Design and DQO Process - Do Step 4 and submit assoociated information in the draft RI Workplan. Then confer and agree in writing (SMDP), as part of the formal workplan review process, with NYSDEC on selection of measurement endpoints, site investigation methods, study design, and data reduction and interpretation techniques. The Ecological risk section of the workplan should be a stand-alone section within the workplan and contain the following information at a minimum: a detailed discussion and supporting information associated with ERAGS Steps 4 and 5; a summary of FWIA Step 1 and ERAGS Steps 1-3; and documentation of the various SMDPs.

Verification of Field Sampling Design - Do Step 5, prior to finalization of the RI Workplan. Any changes to the investigation proposed in Step 4 must be discussed with, and receive agreement in writing from the NYSDEC.

FOR THE RI REPORT

Do ERAGS Steps 6, ***Site Investigation and Analysis of Exposure and Effects***; 7, ***Risk Characterization*** (Baseline Risk Assessment); and 8, ***Risk Management*** of ERAGS. Submit in the stand-alone section of, or separate document accompanying, the RI Report.

FOR THE FS REPORT

Do FWIA Step 3, ***Evaluation of Alternatives***.

FOR DESIGN

Do FWIA Step 4, ***Design and Construction***.

FOR OPERATION, MAINTENANCE AND MONITORING

Do FWIA Step 5, ***Monitoring Program***.

NOTE: Any decision to permit dropping of subsequent steps requires submission of thorough documentation and rationale, and written agreement with the NYSDEC.

Attachment 1

Some Suggested References

USEPA ECOLOGICAL RISK ASSESSMENT (ERA) DOCUMENTS (not the definitive list)

1. USEPA, 1989. Risk Assessment Guidance for Superfund (RAGS) Volume II Environmental Evaluation Manual.

2. USEPA, 1989. Ecological Assessments of Hazardous Waste Sites: A Field and Laboratory Reference Document. ORD. EPA/600/3-89/013.

3. USEPA, 1990. Guidance for Data Useability in Risk Assessment. EPA/540/G-90-008, October 1990; p. 90.

4. ECO Updates. Volume I. Nos. 1 through 5, Volume 2 Nos. 1 through 4, and Volume 3 No. 1.

5. USEPA, 1991. "Supplemental Guidance on Performing Risk Assessments in Remedial Investigation/Feasibility Studies (RI/FSs) Conducted by Potentially Responsible Parties (PRPs)." OSWER Directive No. 9835.15a.

6. USEPA, 1992. Framework for Ecological Risk Assessment. EPA/630/R-92/001

7. USEPA, 1993. Terrestrial Ecological Risk Assessment Methods Handbook

8. USEPA, 1993. Wildlife Exposure Factors Handbook. Volumes I and II.

9. USEPA, 1994. Considering Wetlands at CERCLA sites. OSWER. EPA/540/R-94/019.

10. USEPA, 1997. Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments. EPA/540-R-97-006.

OTHER RECOMMENDED REFERENCES

11. McGovern, E.C. 1987-1988. Background Concentrations of 20 Elements in Soils with Special Regard for New York State. NYSDEC.

12. NYSDEC, 1991. Ambient Water Quality Standards and Guidance Values (AWQS)

13. USEPA, 1992. Ambient Water Quality Criteria (AWQC), Federal Register/Vol. 57, No. 246/Tuesday, Dec. 22, 1992/Rules and Regulations, p. 60911; and as revised for specific metals by Federal Register/Vol. 60, No. 86/Thursday, May 4, 1995/Rules and Regulations, p. 22228.

14. Persaud, D. et al. 1993. "Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario." Ontario Ministry of Environment and Energy.

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17. NewYork State Department of Environmental Conservation (NYSDEC), 1994. Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites (FWIA).

18. Eisler, R. Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review. USFWS.

19. Biological Reports, USFWS

20. --- Contaminant Hazard Reviews, USFWS.

Appendix E

Groundwater Monitoring Well Decommissioning Procedures

MONITORING WELL ABANDONMENT METHODOLOGY

Two methods of monitoring well abandonment are used: 1) pulling of shallow monitoring well PVC casings followed by tremie grouting of the respective borehole; and 2) overdrilling of intermediate and deep monitoring wells followed by tremie grouting of the overdrilled borehole. The following text summarizes these two methods.

Pulling of PVC casings involves the removal of the PVC casing (riser and screen) by lifting the monitoring wells from the boring. During the removal of the PVC casing, cement-bentonite grout is pumped into the well in order to seal the void left by the extracted PVC well materials. This procedure minimizes the downward migration and potential contamination of the subsurface by surface water contaminants. The procedure for pulling of casings consists of the following steps:

1. Puncture the bottom of the well screen or casing so that water or sediment in the well bottom can freely escape.
2. Fill the well riser with cement bentonite grout tremied from the bottom of the well.
3. Remove protective casing at concrete pad.
4. Remove well riser by lifting the casing out using a drill rig and whatever other suitable equipment may be necessary (i.e., jacks).
5. Continue to add grout as the casing is withdrawn.
6. In the event the casing or well screen is broken during pulling, continue the operation by overdrilling
7. Seal the remaining borehole with cement bentonite grout to five feet below the ground surface using a tremie pipe.
8. Fill the remaining five feet of the borehole to ground surface with native materials and compact to prevent settling.
9. Restore well site to proper condition.
10. Dispose of well materials properly.
11. Inspect well site periodically for settlement and fill with native materials, as needed.

The second method of well abandonment, utilized for intermediate and deep monitoring wells, includes overdrilling of the PVC well materials, as well as the original borehole annulus which was

constructed to include a well screen sandpack, bentonite seal, and cement grout along the PVC riser section. Overdrilling is utilized when pulling the well casing is not feasible or practical or when the pulling results in the breakage of the well installation below grade.

Upon reaching the bottom depth of the monitoring well with the overdrilling downhole tools, a cement-bentonite grout is then pressurized within the lowermost portion of the borehole, via tremie tube, to prevent the downward migration of water. The specific procedures utilized for overdrilling well abandonment are as follows:

Remove protective casing and concrete pad

2. Overbore the well using an over-reaming tool with a pilot bit nearly the same size as the inside diameter of the casing, and a reaming bit slightly larger than the original borehole diameter.
3. Overdrilling should proceed to the bottom of the well screen.
4. After overdrilling has been completed, the borehole is grouted using a cement-bentonite grout and tremie method.
5. Seal the borehole with cement-bentonite grout to five feet below ground surface.
6. Fill the remaining five feet of the borehole to ground surface with native materials and compact to prevent settling.
7. Restore the well site to a proper condition.
8. Dispose of well materials properly.
9. Inspect well site periodically for settlement and fill with native materials, as needed.