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NYSDEC Environmental Restoration Program

Remedial Investigation/Interim Remedial Measures Work Plan

350-352 Liberty Street Site (ERP Site No. B00189)

350-352 Liberty Street City of Newburgh Orange County, New York

Prepared for:

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REMEDIAL INVESTIGATION/INTERIM REMEDIAL MEASURES WORK PLAN
350-352 LIBERTY STREET SITE
CITY OF NEWBURGH
ORANGE COUNTY, NEW YORK

TABLE OF CONTENTS

REMEDIAL INVESTIGATION/INTERIM REMEDIAL MEASURES WORK PLAN
350-352 LIBERTY STREET SITE
CITY OF NEWBURGH
ORANGE COUNTY, NEW YORK

TABLE OF CONTENTS

FIGURES

TABLES

REMEDIAL INVESTIGATION/INTERIM REMEDIAL MEASURES WORK PLAN
350-352 LIBERTY STREET SITE
CITY OF NEWBURGH
ORANGE COUNTY, NEW YORK

TABLE OF CONTENTS

1.0 INTRODUCTION & PURPOSE

1.1 Introduction

The City of Newburgh submitted an application to the New York State Department of Environmental Conservation (DEC) for participation in the NYS Environmental Restoration Program (ERP) in relationship to the property known as the 350-352 Liberty Street Site located in the City of Newburgh, Orange County, New York (herein "the Site"). A Site Location Map is presented as Figure 1. The DEC subsequently notified the City of Newburgh of its eligibility to participate in the ERP. The DEC and the City of Newburgh executed a State Assistance Contract (SAC) which requires amongst other things the submission, review, approval and implementation of investigative work plans.

In January 2010, the City of Newburgh retained C.T. Male Associates, P.C. (C.T. Male) as an environmental consultant for this project. To aid in the development of the proposed scope of work for the site, C.T. Male arranged for a project scoping meeting with DEC personnel in February 2010. The purpose of the meeting was to allow the involved agency personnel to gain a better understanding of the site layout and conditions, and to outline the proposed scope of work for implementing the Remedial Investigation (RI) and proposed Interim Remedial Measures (IRMs) for the site.

The RI/IRM work and reporting will be conducted in general accordance with the November 2009 (Public Release 11/4/09) NYSDEC Division of Environmental Remediation Draft DER-10 Technical Guidance for Site Investigation and Remediation.

To aid in the development of the RI/IRM work plan, a preliminary site characterization was conducted in February 2010. The site characterization included completion of a site boundary survey, pre-demolition asbestos containing materials (ACM) survey, and a building materials survey to evaluate and inventory drums, containers, underground and aboveground storage tanks, floor lifts, trenches and drains, etc. Data obtained from the site characterization is incorporated in this work plan.

The proposed RI/IRMs scope of work consists of both investigative and IRM work tasks. The investigative tasks will primarily be conducted in support of the proposed IRMs for the site. Investigative tasks include:

- Perform a Ground Penetrating Radar (GPR) survey to confirm the presence and orientation of known USTs and to determine the presence of subsurface anomalies which may be indicative of additional buried structures;

- The advancement of test pits across the site to confirm the location, size and orientation of the known USTs, further investigate anomalies detected during the GPR survey, confirm subsurface conditions and depth to groundwater, define the extent of on-site contamination to estimate soil removal limits and groundwater control and treatment during soil removal, and determine if off-site IRMs need to be considered;

- Collect and analyze select soil samples from the test pits to gain an understanding of the severity and extent of site contaminants and for waste disposal facility characterization;

- Installation of monitoring wells after completion of the IRMs to aid in the collection of groundwater samples to determine the extent and severity of groundwater impacts and to determine groundwater flow direction;

- Conduct a vapor intrusion evaluation upon completion of the IRMs to determine the potential for vapors associated with residual site contaminants to enter any future site buildings; and

- Collect surface soil samples from areas of the site not excavated during the IRMs.

The site characterization completed to date along with the proposed GPR survey, test pits and select soil sampling and analysis should provide sufficient information for preparation of the IRM scope, plans and specifications and bidding documents.

The proposed IRMs which will be conducted as part of the site RI include:

- Pre-demolition asbestos abatement and demolition of the site structure;

- Removal and off-site disposal of the USTs and their appurtenances;

- Dry well (if necessary), drainage structure (if necessary) and vehicle lift removals and off-site disposal;

- Excavation and off-site disposal of contaminated soils;
- Dewatering and treatment of groundwater encountered during excavation of contaminated soils;
- Consolidation and off-site disposal of aboveground tanks, drums, containers and other ancillary debris; and
- Other unforeseen environmental conditions which may be encountered during investigative and IRM work.

Because the site is covered with impervious surfaces (building, concrete and asphalt) and is located in a densely populated urban setting, a Fish and Wildlife Impact Analysis (FWIA) will not be conducted.

This RI/IRM Work Plan will become an exhibit to the State Assistance Contract (SAC). The work plan is a working document that may be modified by the City of Newburgh and DEC under the terms and conditions of the ERP.

1.2 Purpose

The purpose of the RI/IRM Work Plan is to describe the investigations and IRMs necessary to address known and assumed environmental conditions at the site. These include the existence of asbestos containing materials in the site building, the presence of several USTs, ASTs, drums, containers and hydraulic lifts, and the presumed presence of drainage structures, contaminated soils and groundwater. The results of the proposed investigations and IRMs will aid in the formulation of decisions regarding the need for additional remedial actions and the evaluation of remedial alternatives relative to the intended use of the Site.

The Work Plan outlines systematic investigations and IRMs specific to the Site characteristics considering the Site's history, geology, hydrogeology, known or suspected contaminants and contemplated future use. The target goals of this ERP work plan will be to conduct the necessary investigations in support of the planned IRMs and to address, if feasible, unforeseen environmental conditions as they arise during the course of the investigation and IRMs. The outcome of the investigations and IRMs will be utilized to support the development of potential remedial alternatives, as

necessary, which will allow the Department to prepare a Proposed Remedial Action Plan (PRAP) and Record of Decision (ROD) for the site.

It is our understanding that the City of Newburgh intends to use the site for Restricted Use, which may include residential or commercial development.

2.0 SITE DESCRIPTION & HISTORY

2.1 Site Description

The Site consists of a single parcel of land addressed as 350-352 Liberty Street in the City of Newburgh, Orange County, New York. The site is approximately 0.12 acres in size and is identified on the City of Newburgh tax map as being located in Section 12, Block 1, Lot 25. A Tax Map showing the site and its surrounding properties is included as Figure 2. The site is currently vacant, predominantly flat, and consists of a single-story structure on its eastern end and a combination of pavement and concrete at the ground surface on its western end. A narrow strip of vegetation is located between the site building and its eastern property boundary. The site has historically been utilized as a gasoline service station and repair shop. This usage began in the 1950's and ceased in the 1980's, when the City of Newburgh took possession of the site for delinquent tax payments. The site has remained idle ever since. An aerial photograph depicting site features from aerial photography taken in 2007 is included as Figure 3.

A boundary survey of the site was prepared by C.T. Male Associates, P.C. and is presented as Exhibit 1.

2.1.1 Surrounding Property Usage

Surrounding property usage is predominantly residential with interspersing of commercial development.

2.1.2 Site Utilities

Public water and sanitary sewer are reportedly available to the project site and are located along Liberty and Clinton Streets. Electricity and natural gas to the site is provided by Central Hudson Gas & Electric Corporation.

2.1.3 Site Drainage Features

The site is predominantly flat. Surface water caused during rain events will likely sheet flow across the site in a general westerly direction into storm water basins located on Liberty Street.

2.1.4 Topographic Description and Nearby Surface Water Bodies

According to the United States Geological Survey (USGS) Topographic Map (Figure 1), the subject site lies at approximately 165 feet above Mean Sea Level. Overall, the site area topography slopes gently to moderately from the west to the east. Based on the topographical relief depicted on the map and observed during the site visit, the inferred groundwater flow direction is to the east towards the Hudson River, which is located approximately 1,400 feet east of the site.

2.1.5 Site Geology

Soils are mapped by the Orange County Soil Survey as Mardin gravelly silt loam, 3 to 8 percent slopes.

Surficial geology is mapped as poorly sorted glacial till consisting of clay, silt-clay and boulder clay.

Bedrock geology is mapped as the Normanskill Formation consisting of shale, argillite and siltstone.

2.2 Environmental Site History and Site Characterization

2.2.1 Previous Property Use and Site History

According to information provided by the City of Newburgh, the known history of the site dates back to 1954 when a retail gasoline station received a permit for storage tanks by the City of Newburgh Fire Department, the permitting agency at that time. The business operated until the mid 1980's before being taken by the City of Newburgh for failure to pay taxes. The property has remained vacant since being acquired by the City due to the stigma attached to the property by the presence of the underground storage tanks. According to City Fire Department records, the permit for the site identified three 2,000-gallon gasoline, one 1,000-gallon gasoline and one 550-gallon waste oil underground storage tanks on the site. In addition to the underground tanks, the City permit identifies a 275-gallon aboveground storage tank reportedly used for kerosene storage and a 60-gallon aboveground storage tank whose use was not identified. There was no report of environmental issues on the subject property during its site operations. There is no record of previous environmental investigations of the site.

2.2.2 Historical Chemical Use

Petroleum fuels, waste oils and solvents were likely used in association with past gasoline sales and vehicle repair at the site.

2.2.3 Environmental Orders, Decrees and Violations Associated with the Site

The site was not identified in the NYSDEC Spills Incidents and Bulk Storage databases.

2.2.4 Site Boundary Survey

A site boundary survey was conducted by C.T. Male and is presented as Exhibit 1. The survey depicted the presence of four UST fill pipes on western portions of the site and a single UST fill pipe at the building's southwest corner.

2.2.5 Pre-Demolition Asbestos Containing Materials (ACMs) Survey

A pre-demolition ACM survey was conducted on the site building by C.T. Male Associates, P.C. on February 9, 2010 as part of the site characterization. The survey

report is presented as Exhibit 2. The survey identified several building materials as asbestos-containing. These include:

- Floor tile (not mastic);
- Plaster walls and ceilings; and
- Built-up roofing.

The survey report indicated that "due to the condition of the building, it is improbable that the asbestos containing material can be abated prior to building demolition. Therefore, the abatement will be performed under the NYSDOL ICR-56 Section 11.5 "Controlled Demolition with Asbestos in Place."

2.2.6 Building Material Inventory

A building material inventory was conducted by C.T. Male Associates, P.C. on February 9, 2010 as part of the site characterization. The inventory identified the following items.

Building Item	Description
275-gallon aboveground storage tank	Located along the east exterior wall of the building. Approximately one-inch of liquid emitting a petroleum type odor was identified in the tank.
Two underground hydraulic lifts	One lift located in the southern bay of the building's interior. One lift located outside in the vicinity of the building's southwest exterior wall.
Concrete base for a former pump island	Located on the western portion of the site adjacent to Liberty Street.
Five UST fill ports.	Four fill ports located in pavement on western portions of the site and are sequenced from east to west. One fill port located in the vicinity of the building's southwest exterior wall.

Building Item	Description
Five USTs.	USTs associated with the UST fill ports enumerated above. The four USTs located on western portions of the site are each approximately six feet in diameter. One of the USTs appears to be dry and the remaining three USTs each contain from two to six inches of liquid emanating a petroleum-type odor. The top of the UST along the building's southwest exterior is located about six inches below the ground surface and was observed to contain snow and debris.
Four vent pipes	Located along northern portions of the building's west exterior wall. The vent pipes are assumed to be affiliated with the four USTs located beneath western portions of the site.
55-gallon drum	Located in the building interior. Approximately one-third full of dry debris
Roofing shingles	Located on northeast portions of the site.
C&D debris	Located on northern and eastern portions of the site.
± 20 used tires.	Located in the building interior.
Miscellaneous oil cans and containers	Located both in the building interior and outside, most of which appeared to be empty.

3.0 OBJECTIVES, SCOPE & RATIONALE

3.1 Objectives

The objective of the RI/IRM Work Plan is to provide a description of, and the rationale for, the investigations and IRMs contemplated for the site. To accomplish the overall project objective, a RI/IRM Work Plan is developed, reviewed and approved prior to the initiation of the field work. The overall project objective is to complete appropriate site investigations and IRMs in support of the preparation of a comprehensive RI with IRM Summary Report. Remedial actions based upon the investigation and IRMs will be developed and presented in the Alternatives Analysis Report. The investigative and IRM work outlined herein is based on the contemplated future use of the Site which will consist of possible restricted residential or commercial use consistent with surrounding land usage. The type and analysis for all samples to be collected for laboratory analysis during the RI and IRM work are summarized in Table 1: Analytical Sampling Program. Table 1 is appended in the Tables section of this Work Plan.

3.2 Investigative Scope and Rationale

The scope and rationale of the investigation work is intended to supplement the existing preliminary site characterization data with additional physical and chemical data to support the IRMs for the site. The following discusses the scope and rationale for the proposed investigative tasks.

3.2.1 Ground Penetrating Radar Survey

A Ground Penetrating Radar (GPR) survey will be conducted to confirm the existence and orientation of known USTs and to locate subsurface anomalies which may be indicative of buried structures. The GPR survey will be conducted over all accessible portions of the site including the building interior to the extent the wastes within the building can be moved around. Detected anomalies will be further investigated through the advancement of test pits (section 3.2.2). The type and specifications of the GPR unit that is planned to be used at the site as well as the type of GPR output is presented as Exhibit 3.

3.2.2 Test Pits

Approximately 18 test pits will be advanced across the site to further investigate anomalies located during the GPR survey, confirm the location, size and orientation of the USTs, confirm subsurface conditions and depth to groundwater, define the extent of on-site contamination to estimate soil removal limits and groundwater control and treatment during soil removal, and determine if off-site IRMs need to be considered. Two days should be sufficient to complete the test pits.

At a minimum, the test pits will be advanced at the property boundaries, along the building exterior (where feasible), and beneath asphalt pavement on western portions of the site where the USTs are located. The test pits will also be advanced in areas of suspected anomalies. The proposed test pit locations are depicted in Figure 4-Proposed Investigations Locations Map. The number and locations of the test pits are based on average test pit dimensions of 4 feet wide by 8 feet long. Additional test pits and reorientation of the proposed test pits may be required upon review of the GPR survey results and other site limitations.

The test pits will be advanced with an excavator to either the depth attainable by the excavator arm reach (10-15 feet), to the depth of groundwater, or to the top of bedrock, whichever is encountered first with the exception of test pitting conducted for the investigation/confirmation of underground tanks and anomalies. The excavated soils will be subjectively assessed employing PID headspace analysis and organoleptic perception.

During advancement of each test pit, subjectively assessed clean and grossly contaminated (if encountered) soil will each be temporarily staged atop designated 6-mil poly at the ground surface. In the event grossly contaminated soils are encountered in the test pit, the bottom and sidewalls of the excavation will be lined with 6-mil poly and the grossly contaminated soils returned to the excavation. The top of the contaminated soils will then be covered with poly and the remainder of the excavation backfilled with excavated clean soils. In the event that all soils in the test pit are subjectively assessed as contaminated, then the contaminated soils returned to the excavation will be tampered down utilizing the excavator bucket to approximately six inches below existing grades, the soils covered with poly, and the remainder of the

excavation backfilled with either excess clean soil derived from other test pits or imported general fill.

Care will be taken not to rupture the existing underground storage tanks during test pitting. The GPR survey technician will approximate the limits and orientation of the underground tanks by spray-marking the site's surface. The test pits will be advanced at the vertical end-points of the tanks and the soils overlying and in the vicinity of the tanks will be excavated in maximum one foot lifts. The purpose of test pitting around the tanks is to gain a better understanding of the tank sizes and the presence of any subjectively assessed grossly contaminated soils. This information will be used in the preparation of the bidding specifications, plans and bidding documents.

The decontamination procedure to be employed on the excavator bucket should grossly contaminated soils be encountered will consist of removing gross soil debris from the excavator bucket and incorporating the removed soils with the excavated contaminated soils. The excavator bucket will then be manually cleaned of soil residues employing a brush and tap water with non-phosphate (Alconox) detergent. The excavator bucket will be placed over a 55-gallon drum during cleaning and the wash water will be captured and stored in the 55-gallon drum(s). The 55-gallon drum(s) will be staged on the site and will be characterized and disposed of by the remediation contractor during the RI and IRM work.

3.2.3 Test Pit Soil Sampling

Soil samples will be collected from select test pits (see Table 1 appended in the Tables section of this report) to gain an understanding of the severity and extent of site contaminants, and for waste disposal facility characterization for soils that are anticipated to be excavated during the IRM.

One soil sample each will be collected of soils exhibiting evidence of highest impacts employing subjective methods from test pits advanced along each of the site's property boundaries (six samples total). Analysis of these samples will aid in determining the potential for impacts onto off-site properties and will aid in determining the need and feasibility for off-site IRMs. Additional confirmatory end-point samples will be collected after completion of the UST removals and soil excavation IRMs. The soil samples will be analyzed for the full TCL/TAL groups of compounds and analytes

(except TCL Pesticides) with requisite QA/QC samples consisting of a duplicate, equipment blank, matrix spike and matrix spike duplicate. The QA/QC samples will be for the development of laboratory generated ASP Category B Data Deliverable Packages that will undergo independent data validation for development of a Data Usability Summary Report (DUSR).

A representative soil sample will be collected from an interior site location for waste characterization for the disposal facility. The soil sample will be analyzed for the full Toxicity Characteristic Leaching Procedure (TCLP), Total Petroleum Hydrocarbons (TPH), Diesel Range Organics (DRO), Gasoline Range Organics (GRO), full TCL/TAL, and ignitability, flash point and corrosivity. Because the soil samples will be collected for waste characterization purposes only, QA/QC samples will not be required.

3.2.4 Monitoring Wells

Monitoring wells will be installed after completion of the IRMs to aid in the collection of groundwater samples (Table 1) to determine the extent and severity of groundwater impacts, to determine groundwater flow direction and to determine the probability and feasibility of off-site IRMs. The proposed monitoring well locations are depicted in Figure 4. As shown, one monitoring well each will be installed at each of the property boundaries and the approximate center of the site. The monitoring wells will serve to determine if potentially impacted groundwater originating from the site is migrating off-site and/or if the site's groundwater is being impacted from off-site sources. It is anticipated that the monitoring wells will be completed utilizing conventional auger drilling techniques.

Groundwater samples will be collected employing low flow groundwater sampling techniques (i.e. peristaltic pump with dedicated Tygon and polyethylene tubing) from each of the monitoring wells for laboratory analysis. The groundwater samples will be analyzed for the TCL/TAL groups of compounds and analytes (except TCL Pesticides) with requisite QA/QC samples consisting of a duplicate, equipment blank, matrix spike and matrix spike duplicate. The QA/QC samples will be for the development of laboratory generated ASP Category B Deliverable Packages that will undergo independent data validation for development of a Data Usability Summary Report (DUSR).

3.2.5 Vapor Intrusion Evaluation

A vapor intrusion evaluation (soil gas survey) will be conducted upon completion of the IRMs and backfilling of soil excavations, and laboratory analysis of groundwater samples collected from the monitoring wells (section 3.2.4). The frequency and analytical parameters of the vapor intrusion evaluation will be predicated on both the analytical results of the groundwater sampling and consultation with the NYSDEC and NYSDOH project managers.

The vapor intrusion evaluation (if required) will be conducted in accordance with the NYS Department of Health Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006. Because vapor intrusion sampling locations (if required) are currently unknown, they are not depicted on Figure 4.

3.2.6 Surface Soil Sampling

Surface soil samples (Table 1) will be collected from areas of the site not excavated during completion of the IRMs. Surface soil sampling is a requirement of the NYSDOH to determine the quality of surface soils at the site. Because the extent of site excavation is currently unknown, surface soil sampling locations cannot be determined at this time. The NYSDEC and NYSDOH project managers will be consulted upon completion of the IRMs to determine the frequency (if needed) of surface soil sampling.

If surface soil sampling is required, the soil samples will be analyzed for the TCL/TAL groups of compounds and analytes with requisite QA/QC samples consisting of a duplicate, equipment blank, matrix spike and matrix spike duplicate. The QA/QC samples will be for the development of laboratory generated ASP Category B Deliverable Packages that will undergo independent data validation for development of a Data Usability Summary Report (DUSR).

3.3 Interim Remedial Measures Scope and Rationale

This IRM scope and rationale is intended to summarize the non-emergency IRMs proposed for the site. More detail in regards to the requirements and logistics for the IRM work will be provided in the IRM Scope, Plans, Specifications and Bidding Documents. The purpose of the IRMs is to address known sources (i.e., USTs) having

the potential to impact the subject site and to address any contamination encountered during the site investigation.

All of the IRM work, inclusive of the building demolition, and also select investigative tasks including installation of monitoring wells and vapor points (if necessary), will be included in one set of plans, specifications and bidding documents.

3.3.1 Asbestos Abatement and Building Demolition

Demolition of the building is necessary to allow access to underlying potentially impacted soils and/or groundwater and for access to any underlying drainage structures (i.e., floor drains, dry wells). Demolition of the building will also aid in the collection of surface soil and soil gas samples, if required.

Based on the Pre-Demolition Asbestos Containing Material Survey (see Section 2.2.5 and Exhibit 2), the building in its entirety will need to be demolished as asbestos debris. As such, the demolition will be performed by a contractor licensed by the NYS Department of Labor (DOL) to conduct asbestos abatement in New York State. The building demolition will involve the demolition as asbestos containing materials of the entire building system inclusive of slabs and footers and will also include the removal of all used tires and C&D debris scattered throughout the building and the site's exterior. Any containers containing products used in affiliation with past site activities will be segregated, profiled and disposed of off-site.

More detail regarding the work practices for demolition of the building as asbestos debris will be provided in the project scope, plans, specifications and bidding documents.

3.3.2 Underground Storage Tank Closures

All underground storage tanks and their appurtenances will be closed by removal and disposed of off-site. All liquids within the tanks will be evacuated and disposed of off-site and the tanks cleaned and recycled off-site. Subjectively impacted soils encountered during the tank removals will be excavated and disposed of off-site (see section 3.3.5).

A NYSDEC Petroleum Bulk Storage (PBS) Application will be completed listing all underground tanks, their capacity and former contents, and closure status. The completed PBS Application will be forwarded to the City of Newburgh and NYSDEC for their record keeping.

3.3.3 Closure of Vehicle Lifts, Dry Wells and Drainage Structures

Hydraulic lifts and their appurtenances and liquid contents will be profiled, removed and properly disposed of off-site. Any dry wells or other drainage structures uncovered during the site investigation will be properly profiled and removed from the site for off-site disposal.

3.3.4 Aboveground Tanks, Drums and Containers

All aboveground tanks, drums and containers identified during the site characterization or which may be discovered during further site investigation and IRMs will be assessed and properly disposed of off-site.

3.3.5 Soil Excavation and Groundwater Dewatering

Soils exhibiting evidence of impacts employing subjective methods of PID headspace analysis and organoleptic perception will be excavated and disposed of off-site. Upon completion of excavation, the requisite number of confirmatory excavation end-point samples will be collected in accordance Section 5.5 of DER-10. The soil samples will be analyzed for the TCL/TAL groups of compounds and analytes (except TCL Pesticides) with requisite QA/QC samples consisting of a duplicate, equipment blank, matrix spike and matrix spike duplicate. The QA/QC samples will be for the development of laboratory generated ASP Category B Deliverable Packages that will undergo independent data validation for development of a Data Usability Summary Report (DUSR). Any groundwater entering the excavation(s) will be evacuated and temporarily stored in holding tanks for sampling, treatment and/or disposal.

3.4 Other RI/IRM Tasks

3.4.1 Exposure Assessment

A qualitative human health exposure assessment of the Site will be completed in general accordance with NYSDOH guidance. The assessment will consist of characterizing the exposure setting (including the physical environment and potentially exposed human populations), identifying exposure pathways, and evaluating contaminant fate and transport.

3.4.2 Post Site Survey

A survey of all the exploratory locations (i.e. surface samples, vapor intrusion samples, monitoring wells, excavation limits, etc.) and other pertinent surface features will be completed. The locations and features will be amended to the original site survey presented as Exhibit 1.

3.5 Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) will be followed for the project in general accordance with the New York State Department of Health Generic CAMP dated June 2000, which is appended to the Site Specific Health and Safety Plan in Appendix C of this Work Plan.

Monitoring for volatile organic compounds (VOCs) and particulate dust will be conducted during all ground intrusive activities and demolition performed during the RI and IRMs. These activities include test pitting, advancement of test borings, installation of monitoring wells and vapor points (if necessary), building demolition, underground tank closures, closure of drainage structures, soil excavation, loading of soils into transport vehicles, and excavation dewatering (if necessary). Due to the small size of the site (0.12 acre), one dedicated dust monitor will be located in an upwind position and one dedicated dust monitor will be located in a downwind position during site activities. The location of the dust monitors will be adjusted in the field according to the prevailing wind conditions. VOC monitoring will consist of a dedicated photo-ionization detector (PID) located at a downwind position during the above mentioned work. Upwind ambient VOC concentrations will be recorded at least twice daily and when needed.

VOC monitoring with a PID will be conducted during monitoring well development and sampling events not being conducted in tandem with ground intrusive activities. Sampling events include groundwater sampling, soil gas sampling (if necessary), and surface soil sampling (if necessary). PID readings will be obtained from upwind and downwind locations of the work area prior to sampling, during sampling, and at the completion of sampling. Results of the VOC monitoring will be recorded in the field technician's daily field log.

4.0 SUPPLEMENTAL PLANS

4.1 Field Sampling Plan

The field activities for this project will include collection and laboratory analysis of surface soil (if required) and subsurface soil samples, soil gas samples (if required) , and collection and laboratory analysis of groundwater samples from monitoring wells. The procedures relative to implementation of these field activities are presented in the Field Sampling Plan (FSP) in Appendix A, which also conforms to the Quality Assurance/Quality Control Plan. The FSP describes in detail the various methods and techniques to be followed during the completion of the soil, soil gas and groundwater sampling activities, instrument operation and calibration, and chain of custody procedures.

4.2 Quality Assurance/ Quality Control Plan

The Quality Assurance Project Plan (QAPP) describes the quality assurance and quality control procedures to be followed at the time media samples are collected to the time they are analyzed by the environmental analytical laboratory and evaluated by a third party according to the NYSDEC DUSR guidelines. The QAPP is presented in Appendix B of this RI/IRM Work Plan.

The QAPP will be utilized and followed by field personnel during the Site investigation and IRM activities and media sampling events. It will also be used by the project management team and Quality Assurance Officer to assure the data collected and generated is representative and accurate. The laboratory results will be reported with NYSDEC ASP Category B deliverables, which will be subjected to NYSDEC's Data Usability Summary Report guidelines to determine if the data is valid and usable.

4.3 Health and Safety Plan

A Site specific Health and Safety Plan (HASP) has been prepared for this project to address Site worker health and safety issues. The HASP is presented in Appendix C of this RI/IRM Work Plan. Although the plan addresses all of the Site activities to be

performed, the subcontractors to be utilized will be required to develop their own HASP relative to work they will be performing.

4.4 Citizen Participation (CP) Plan

A project specific Citizen Participation Plan (CP Plan) has been developed for this project in general accordance with Draft DER 10. The objective of the plan is to disseminate information to the public regarding the RI/IRM and to involve the public in the decision making process. This is accomplished by keeping the public informed of the investigations and IRMs through direct mailing, periodic community meetings, pubic notice in local newspapers and other publications, and by having project documents available for review at public accessible repository locations. The CP Plan should be considered an integral part of the Work Plan.

5.0 REPORTING AND SCHEDULE

5.1 Reporting

Upon completion of all of the field activities and receipt of the analytical laboratory data, a RI with IRM Summary Report will be prepared and submitted to NYSDEC in a timely manner. The draft report will be prepared in general conformance with the executed ERP. The primary objective of the RI with IRM Summary Report is to summarize and discuss the investigation and IRM activities completed and any non-conformance to the approved work plan. The report will present the investigation and IRM measures employed at the Site, analytical results of samples collected and analyzed, interpretations of the data, overall conclusions regarding the effectiveness of the IRMs and any residual site contaminants, and recommendations for further investigative work and/or additional IRMs, if any. Upon review and acceptance by the Department, the final approved RI with IRM Summary Report will be submitted in both hard copy and electronic format acceptable to the Department.

5.2 Schedule

A tabular schedule outlining specific dates and deliverables for the work associated with the RI and IRMs is presented as Exhibit 4. It is anticipated that the NYSDEC ROD will be issued in March 2011.

5.3 Development and Analysis of Remedial Alternatives

The development and analysis of remedial alternatives, if necessary, will be dependent upon the success of the IRMs and will be prepared following receipt of the investigative and IRM analytical data.

At a minimum, the Alternatives Analysis Report (AAR) will evaluate no action relative to the documented conditions disclosed through the investigation and IRMs, and an action that would reduce/remove all documented media impacts below applicable standards, criteria and guidance (SCG's) values.

Once developed, a detailed evaluation will be conducted on the alternatives pursuant to factors identified in 6NYCRR375-1.10(c). These criterions include:

1. Overall protection of public health and the environmental;
2. Compliance with Standards, Criteria, and Guidance (SCGs);
3. Short-term effectiveness;
4. Long-term effectiveness;
5. Reduction of toxicity, mobility, and volume;
6. Implementability;
7. Cost; and
8. Community acceptance.

The first seven (7) of the preceding eight (8) criteria form the basic components of the detailed analysis of each alternative whereby each criteria is compared to the others to determine the most cost effective, protective remedy. The Department will use criteria #8 in their evaluation once the 45-day public comment period has ended.

Prior to the finalization of the AAR, the NYSDEC, NYSDOH and the City of Newburgh and/or C.T. Male will schedule a meeting to review validated analytical data of sampled media collected during the investigation and IRMs. Review of this data will generate discussion and consensus amongst the involved parties as to the preferred remedy(ies) for the site. The finalized Alternatives Analysis Report will be prepared by a currently registered New York State Licensed Professional Engineer.

From the AAR and the RI and IRM Summary Report, the Department will prepare a Proposed Remedial Action Plan (PRAP) to be submitted to the public with the RI and IRM Summary Report, and the AAR. The Department will address issues raised by the public in a Responsiveness Summary. The final remedy for the site will be documented in the Record of Decision (ROD) prepared by NYSDEC after a 45 day public comment period.

6.0 SUBMITTALS

Written communications required by this agreement will be transmitted by United States Postal Service, private courier, or hand delivered to the following individuals. Final documents, as they become available, will also be submitted to the following individuals:

- William Bennett, Env. Engineer I(two copies)
  Remedial Bureau C
  Division of Environmental Remediation
  New York State Department of Environmental Conservation
  625 Broadway
  Albany, New York 12233-7014

- Kristin Kulow (two copies)
  New York State Department of Health
  Oneonta District Office
  28 Hill Street, Suite 201
  Oneonta, New York 13820

- Mr. Ian Macdougall (one copy)
  City of Newburgh
  83 Broadway
  Newburgh, New York 12550

The Department shall review each of the submittals (i.e., RI/IRM work plan, remediation plan and final engineering report) required by the ERP agreement to determine whether it was prepared in accordance with the ERP agreement and generally accepted technical and scientific principles. The Department shall notify the Applicant (City of Newburgh) in writing (with copies to C.T. Male) of its approval or disapproval of any submittal.

FIGURES

FIGURE 1

SITE LOCATION MAP

MAP REFERENCE
United State Geological Survey
7.5 Minute Series Topographic Map
Quadrangle: Newburgh, NY
Date: 1957

ENGINEERING
ENVIRONMENTAL SERVICES
SURVEYING
PHONE (518)786-7400
FAX (518) 786-7299

C.T.MALE ASSOCIATES, P.C.
50 CENTURY HILL DRIVE, PO BOX 727, LATHAM, NY 12110

FIGURE 1 - SITE LOCATION MAP

350-352 Liberty Street Site

CITY OF NEWBURGH	ORANGE COUNTY, NY
SCALE: 1"=2,000'	
DRAFTER: SHB	
PROJECT No. 10.1045	

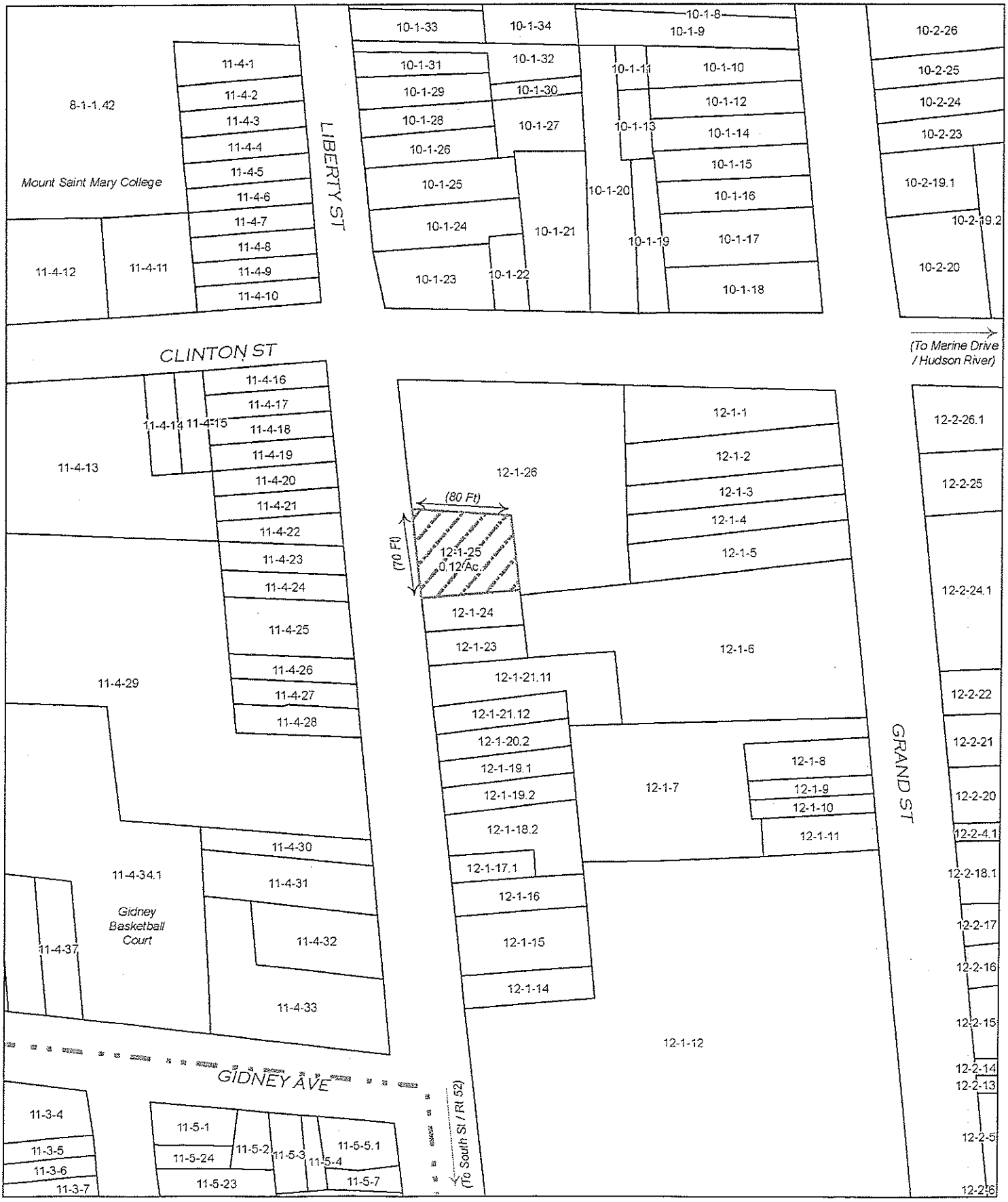
FIGURE 2

SITE TAX MAP

MAP I. 350-352 Liberty Street

City of Newburgh, Orange County, New York

(1" = 100 Feet)



06240974

FIGURE 3

2007 AERIAL PHOTOGRAPH

Map Note: Aerial Photography (Half Foot Resolution) was Flown in Spring of 2007.

Project Number: xx.xxxx
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (feet)

Location: 350-352 Liberty Street

City of Newburgh — Orange County, New York

C.T. MALE ASSOCIATES, P.C.
50 CENTURY HILL DRIVE, LATHAM, NEW YORK 12110
(518) 786-7400 * FAX (518) 786-7299 * WWW.CTMALE.COM
Architecture * Building Systems Engineering * Civil Engineering * Environmental Services * Geographic Information Services (GIS) * Land Development * Land Surveying
FOUNDED IN 1910

Legend

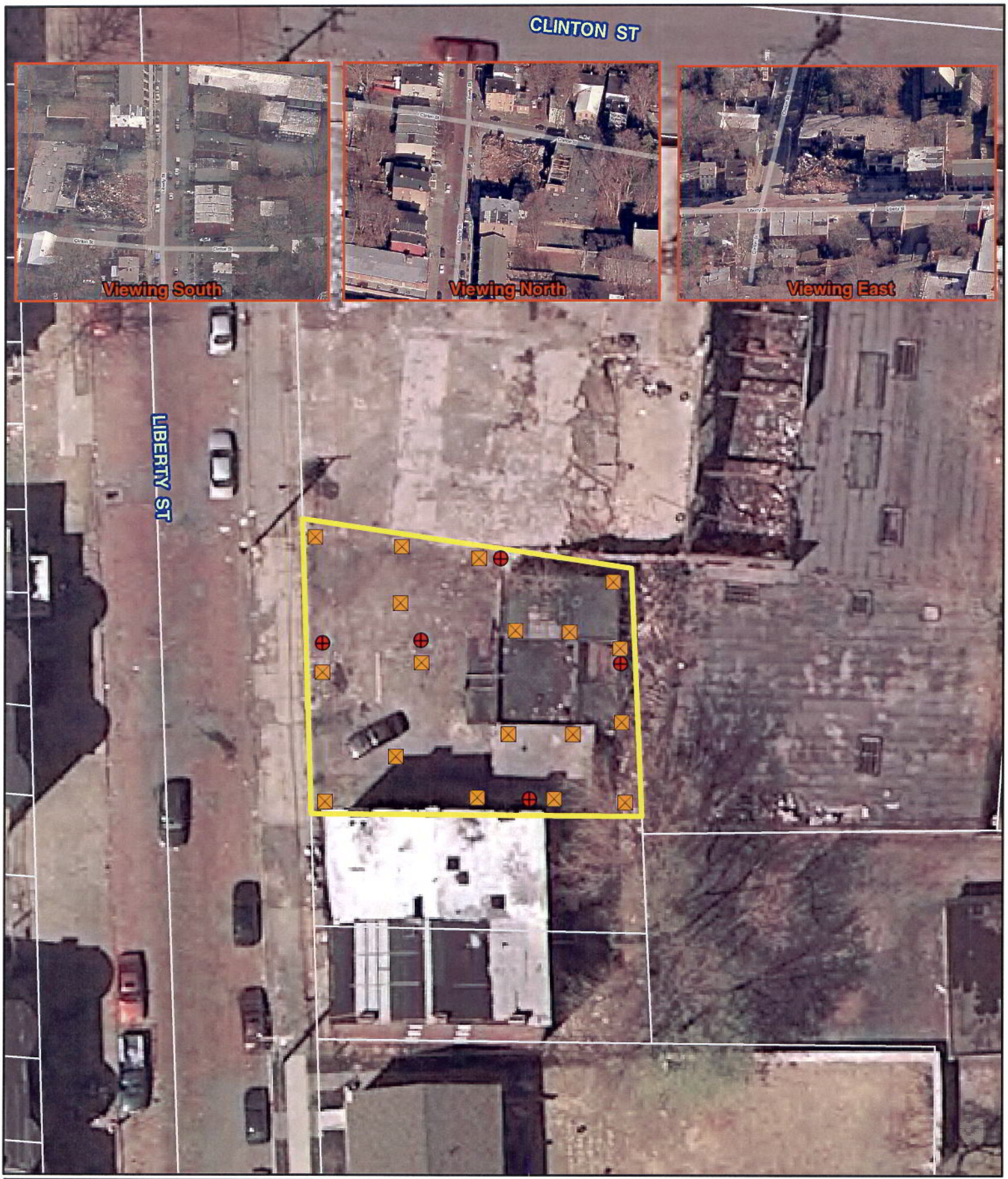
- ERP Site Location (Approximate)
- Tax Parcels (Approximate)

0 15 30 60 FT

Date: January 19, 2010
File: 350LibertySt11x17.mxd
GIS: C Secor

FIGURE 4

PROPOSED INVESTIGATIONS LOCATIONS MAP



Map Note: Aerial Photography (Half Foot Resolution) was Flown in Spring of 2007.

Project Number: xx.xxxx
Data Source: NYSGIS Clearinghouse
Projection: State Plane NAD83 NYE (feet)

Figure 4: Proposed Investigations Location Map

Location: 350-352 Liberty Street

City of Newburgh — Orange County, New York

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Architecture * Building Systems Engineering * Civil Engineering *
Environmental Services * Geographic Information Services (GIS) *
Land Development * Land Surveying
FOUNDED IN 1910

- Proposed Monitoring Well Locaiton
- Proposed Test Pit Location
- ERP Site Location (Approximate)

0 15 30 60 FT

Date: April 08, 2010
File: 350LibertySt11x17.mxd
GIS: C Secor

TABLES

TABLE 1

ANALYTICAL SAMPLING PROGRAM

TABLE 1: ANALYTICAL SAMPLING PROGRAM
Remedial Investigation/Interim Remedial Measures Work Plan
350-352 Liberty Street ERP Site
City of Newburgh, Orange County
ERP Site No. B00189

Media Sampled	Phase of RI/IRM	Number of Samples	Grab or Composite	TCL VOCs	TCL SVOCs	TCL PCBs	TCL Pesticides	TAL Metals	TO-15	Full TCLP	TPH	DRO	GRO	Ignitability	Flash Point	Corrosivity	Quality Assurance/Quality Control Samples*					
																	Duplicate	Equipment Blank	Trip Blank	Matrix Spike	Matrix Spike Duplicate	Ambient
Subsurface Soil	Site Investigation	6	Grab	X	X	X		X									X	X	X	X	X	
Subsurface Soil	Site Investigation Waste Characterization	1	Composite	X	X	X	X	X		X	X	X	X	X	X	X						
Subsurface Soil	IRM Post Excavation Confirmation Samples*	To be determined (Assume 10)	Grab	X	X	X		X									X	X	X	X	X	
Groundwater	Site Investigation Monitoring Wells	5	Grab	X	X	X		X									X	X	X	X	X	
Soil Gas	Site Investigation Vapor Intrusion	To be Determined (Assume 5)	Grab						X								X			X	X	X
Surface Soil	Site Investigation Surface Soil Sampling	To be Determined (Assume 5)	Grab	X	X	X	X	X									X	X	X	X	X	
Decon Water	Investigation/IRM Derived Waste	To be determined	Grab or Composite	Remediation Contractor will coordinate required analytical with the disposal facility Analytical results for investigative soil and groundwater sampling will be made available to the Contractor																		
Poly/PPE	Investigation/IRM Derived Waste	To be determined	Grab or Composite	Remediation Contractor will coordinate required analytical with the disposal facility, if any Analytical results for investigative soil and groundwater sampling will be made available to the Contractor. Poly/PPE typically defined as solid waste																		

Notes:
TCLP denotes Toxicity Characteristic Leaching Process
TPH denotes Total Petroleum Hydrocarbons
DRO denotes Diesel Range Organics
GRO denotes Gasoline Range Organics
Disposal of investigative and IRM derived wastes will be the responsibility of the Remediation Contractor.
* One set of Quality Assurance/Quality Control Samples will be collected per 20 media-type samples. For example, one set of QA/QC samples will be collected with the six subsurface soil samples anticipated to be collected during the Site Investigation.
** The analytical requirements for the IRM Post Excavation Confirmation Samples may be modified on the basis of the Remedial Investigation analytical results, following consultation and agreement with the DEC Project Manager.

APPENDIX A

FIELD SAMPLING PLAN

FIELD SAMPLING PLAN
350-352 LIBERTY STREET SITE
CITY OF NEWBURHG
ORANGE COUNTY, NEW YORK

TABLE OF CONTENTS

1.0 INTRODUCTION

This document is the Field Sampling Plan (FSP) for the remedial investigation (RI) and Interim Remedial Measures (IRMs) to be conducted at the 350-352 Liberty Street site ("the site") located in the City of Newburgh, Orange County, New York. It has been developed in accordance with the RI/IRM Work Plan dated February 2010 as prepared by C.T. Male Associates, P.C. A description of the property, available background information, objectives, and the proposed scope of work, are presented in the referenced RI/IRM Work Plan.

This FSP is a supplement to the RI/IRM Work Plan in that it presents the standard field sampling and data gathering procedures to be followed during implementation of the field activity portion of the scope of work. This plan addresses sampling locations and frequencies, ground penetrating radar (GPR) survey methodologies, drilling methods and installation of monitoring wells, exploratory test pits, vapor intrusion methodologies, decontamination procedures, sampling procedures, field screening and testing procedures, field instrumentation operating procedures, field measurements, sample handling and chain of custody procedures, and water level measurement procedures. The applicable portions of the RI/IRM Work Plan that coincide with the FSP will be provided to, and followed by, the field team. This FSP is intended to be applicable to field sampling activities conducted by C.T. Male and its subcontractors.

The FSP forms an integral part of the Quality Assurance Project Plan (QAPP). The field sampling and data gathering procedures presented in the FSP are incorporated into the QAPP by reference. The FSP and the QAPP document the laboratory quality assurance/quality control procedures to be followed during analysis of samples collected in the field so that valid data of a known quality is generated.

The FSP has been prepared, in part, in general accordance with the following USEPA and NYSDEC guidance documents:

- Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, EPA/540/G-89/004, USEPA, October 1988.
- A Compendium of Superfund Field Operations Methods, EPA/540/P-87/001, USEPA, December 1987.

- Draft DER-10, Technical Guidance for Site Investigation and Remediation, NYSDEC, December 2002.
- 6 NYCRR Part 375 Environmental Remediation Programs Subparts 375-1 to 375-4 & 375-6, Effective December 14, 2006.

2.0 SAMPLING LOCATIONS AND FREQUENCY

Sampling will be performed for volatile organic vapor screening, subjective media assessment, laboratory analyses, and for geologic and hydrogeologic characterization of the project site. The environmental media to be sampled includes:

- Surface Soil,
- Subsurface Soil,
- Groundwater, and
- Soil Gas

Soil and groundwater sampling will be performed as part of the surface soil, exploratory test pit subsurface investigation and monitoring well sampling. Soil gas sampling will be conducted as part of a vapor intrusion survey for the site. The sampling locations and proposed frequencies are discussed in the appropriate work task section of the RI/IRM Work Plan.

3.0 TEST PITING, SOIL EXCAVATIONS & MONITORING WELL INSTALLATIONS

3.1 Summary of Site Investigative and IRM Work

3.1.1 Geophysical Survey

A ground penetrating radar (GPR) survey will be conducted on the site to confirm the existence and orientation of known underground storage tanks (USTs) and for the presence (if any) of anomalies that may represent buried structures at the site. Anomalous subsurface features identified during the GPR survey will be further investigated through the advancement of exploratory test pits.

3.1.2 Test Pits

Test pits will be advanced across the site to further investigate anomalies located during the GPR survey, confirm the location, size and orientation of the USTs, confirm subsurface conditions and depth to groundwater, define the extent of on-site contamination to estimate soil removal limits and groundwater control and treatment during soil removal, and determine if off-site IRMs need to be considered.

3.1.3 Subsurface Soil Sampling

Subsurface soil samples will be collected from select test pits and test borings during installation of the monitoring wells to gain an understanding of the severity and extent of site contaminants and for characterization. Confirmatory excavation end-point soil samples will also be collected from the IRM soil excavations.

3.1.4 Monitoring Well Installations

Monitoring wells will be installed to aid in the collection of groundwater samples to determine the extent and severity of groundwater impacts, to determine groundwater flow direction and to determine the probability and feasibility of off-site IRMs.

3.1.5 Vapor Intrusion Evaluation

A vapor intrusion evaluation (soil gas survey) will be conducted upon completion of the IRMs and backfilling of soil excavations, and laboratory analysis of groundwater

samples collected from the monitoring wells. The frequency and analytical parameters of the vapor intrusion evaluation will be predicated on both the analytical results of the groundwater sampling and consultation with the NYSDEC and NYSDOH project managers. The vapor intrusion evaluation (if required) will be conducted in accordance with the NYS Department of Health Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006.

3.1.6 Surface Soil Sampling

Surface soil samples will be collected from areas of the site not excavated during completion of the IRMs. Because the extent of site excavation is currently unknown, the NYSDEC and NYSDOH project managers will be consulted upon completion of the IRMs to determine the frequency of surface soil sampling.

3.1.7 Pre-Demolition Asbestos Abatement and Building Demolition

Asbestos containing materials (ACMs) will be abated from the site building and the building demolished. The building demolition will involve the demolition of the entire building system inclusive of slabs and footers and will also include the removal of all used tires and C&D debris scattered throughout the building and the site's exterior.

3.1.8 Underground Storage Tank Closures

All underground storage tanks and their appurtenances will be closed by removal and disposed of off-site. All liquids within the tanks will be evacuated and disposed of off-site and the tanks cleaned and recycled off-site.

3.1.9 Closure of Vehicle Lifts, Dry Wells and Drainage Structures

Hydraulic lifts and their appurtenances and liquid contents will be profiled, removed and properly disposed of off-site. Any dry wells or other drainage structures uncovered during the GPR survey and test pitting activities will be properly profiled and removed from the site for off-site disposal.

3.1.10 Aboveground Tanks, Drums and Containers

All aboveground tanks, drums and containers will be assessed and properly disposed of off-site.

3.1.11 Soil Excavation and Groundwater Dewatering

Impacted soils will be excavated and disposed of off-site. Any groundwater entering the excavation(s) will be evacuated and temporarily stored in holding tanks for sampling, treatment and/or disposal.

3.2 Observation of Test Pitting, Drilling Operations, Monitoring Well Installations, and Surface Soil and Vapor Intrusion Sampling Locations

All drilling, test pitting and other associated field work involved in the RI and IRMs to be performed by C.T. Male subcontractors will be observed by a full-time, on-site, C.T. Male Associates, P.C. representative. This representative will be responsible for the collection of soil samples, field screening of soil samples, recording of drilling and test pit sampling data, recording of groundwater data, deciding on the final drilling and test pitting depths and screened intervals (with input from the project manager, hydrogeologist or engineer), recording the monitoring well construction procedures, and monitoring the decontamination procedures.

Field system audits will be conducted and field reports will be prepared that document the daily activities and their conformance to the work plan (described further in Sections 10.1 and 13.0 of the QAPP). A copy of the forms to be utilized by the applicable field team personnel as part of the field quality assurance/quality control (QA/QC) procedures are presented in Appendix A of this FSP.

The project manager will be kept informed of the progress of work and any problems encountered during the RI and IRMs so that the appropriate corrective action can be implemented and the City of Newburgh and NYSDEC can be notified.

3.3 Sampling of Test Pits and Soil Excavations

A track mounted excavator will be utilized to complete the test pits and soil excavations. Excavated soils will be visually classified and screened via organoleptic perception (sight and smell), and with a photo ionization detector (PID). Select soil samples collected from test pits exhibiting evidence of contamination employing the above methods will be subjected to laboratory analyses for the full TCL/TAL groups of compounds and analytes. Confirmatory excavation end-point soil samples collected of

the IRM impacted soil excavations will be subjected to laboratory analyses for the full TCL/TAL groups of compounds and analytes.

Soils from the test pits will be visually classified in the field in general accordance with the Unified Soil Classification System and ASTM D 2488, Standard Practice for Description and Identification of Soils. The soil descriptions may include matrix and clast descriptions, moisture content, color, appearance, odor, behavior of the material and other pertinent observations. This information will be recorded on a test pit log form along with the test pit identification, date started and completed, sampling intervals, and depth of first groundwater encountered, if present. A blank copy of a Test Pit Log Form is enclosed in Appendix A.

Confirmatory excavation end-point sampling locations will be identified on the site's boundary survey.

3.4 Drilling and Sampling of Overburden for Installation of Monitoring Wells

The test boreholes will be advanced through the overburden using hollow-stem augers having a minimum 4.25 inch inside diameter (ID) for installation of the monitoring wells. Continuous (every two feet) soil samples will be collected in general accordance with the procedures of ASTM D-1586, Standard Method for Penetration Test and Split Barrel Sampling of Soils. A standard split barrel sampler, which is 24-inches long and 2-inches in diameter, will be used for sampling.

All soils will be visually classified in the field using the Unified Soil Classification System in general accordance with ASTM D-2488, Standard Practice for Description and Identification of Soils. The soil description may include matrix and clast descriptions, moisture content, color, appearance, odor, behavior of the material and any other pertinent observations. This information will be recorded on a test boring log form along with the boring identification and elevation, date started and completed, sampling intervals, standard penetration values, length of recovered sample and depth of first groundwater encountered. During the drilling a photoionization detector (PID) meter will be used to monitor the volatile organic vapors exiting the borehole and soil cuttings and of all recovered subsurface samples. All of these visual observations and field measurements will be recorded on the Test Boring Log. A blank copy of a Test Boring Log form is enclosed in Appendix A.

In the event a borehole is not converted into a monitoring well, it will be abandoned by filling it with the cuttings from that borehole and the balance needed to fill the borehole will be filled with a cement/bentonite grout mixture (approximately 20 to 1 ratio). Additional soil cuttings from borings converted to monitoring wells will remain on-site, unless directed otherwise.

3.5 Soil Sampling and Soil Field Screening Procedures

The specific soil sampling procedures that will be followed for test pits, soil excavations and surface soil samples include the following:

1. A cleaned (per Section 3.8) stainless steel or disposable trowel will be used by the onsite sampling personnel. Clean disposable gloves will be worn when handling the trowel.

2. A discrete soil sample will be collected by advancing the bucket of the excavator or hand trowel to a pre-determined depth, based on conditions found at each location. The onsite sampling personnel will collect the test pit/soil excavation soil sample from the bucket or the surface soil sample with the cleaned stainless steel or disposable trowel or a new pair of disposable gloves.

3. For samples to be collected for laboratory analysis, the sample container label will be completed with the sample location (test pit/excavation nomenclature), sample interval, sampler's initials, date, and time. The client, project name, site location, matrix, sample type (grab/composite) and laboratory analyses to be performed will also be recorded on the sample label.

4. Immediately upon collecting the soil sample, the sample will be put directly into pre-cleaned glass jars using a clean (per Section 3.8) stainless steel trowel, and the jars will be sealed. Sampling personnel will wear a new pair of disposable gloves for each sample interval retrieved. A portion of the remaining soil will be placed in a new plastic zip lock bag, not more than one-half full, and sealed. This bag sample will be for head space analysis screening in the field for volatile organic compounds (VOCs) using a PID meter.

5. The soil sample will be classified and the test pit log completed as described in Section 3.3.

6. The sampling equipment will be decontaminated per Section 3.8.

The specific soil sampling procedures that will be followed for the test borings to be converted to monitoring wells include the following:

1. A cleaned (per Section 3.8) split-spoon sampler will be given to the driller or driller's assistant who will attach it to the sampling rod. Clean disposable gloves will be worn when handling the split-spoon or macro-core sampler.

2. A soil sample will be collected by advancing the sampler with a 140 pound drive hammer pushing the split-spoon sampler the desired two (2) foot sampling interval per procedure ASTM D-1586.

3. For samples to be collected for laboratory analysis, the sample container label will be completed with the sample location (boring nomenclature), sample interval, sampler's initials, date, and time. The client, project name, site location, matrix, sample type (grab/composite) and laboratory analyses to be performed will also be recorded on the sample label.

4. The recovered split-spoon sampler will be placed on clean polyethylene sheeting. The end cap will be unscrewed and the sampling spoon opened to expose the sample.

5. Immediately upon opening the sampling spoon, a portion of the soil sample will be retrieved and put directly into pre-cleaned glass jars using a clean (per Section 3.8) stainless steel trowel, scapula, or a new pair of disposable gloves, and the jars will be sealed. Sampling personnel will wear a new pair of disposable gloves for each sample interval retrieved from the sampling spoon. A portion of the remaining soil will be placed in a new plastic zip lock bag, not more than one-half full, and sealed. This sample will be for head space analysis screening in the field for volatile organic compounds (VOCs) using a PID meter.

6. The soil samples will be classified and the test boring log completed as described in Sections 3.3 and 3.4.

7. The sampling equipment will be decontaminated per Section 3.8.

All of the split-spoon soil samples, where sufficient sample is recovered to generate a headspace sample, will be screened in the field with a PID meter on a daily basis. The sample will be allowed to equilibrate to ambient temperature; the plastic bag will be shaken for 30 seconds and allowed to equilibrate for 1 minute; the bag will be pierced with the tip of the PID meter; and the reading taken. The readings will be recorded on a C.T. Male Associates, P.C. Organic Vapor Headspace Analysis Log form. A blank copy is enclosed in Appendix A. The PID meter calibration procedures are discussed in Section 8.0.

At completion of the field screening of soil samples and soil classification, the recovered soil samples will be retained for no more than 90 days.

3.6 Monitoring Well Installation

Overburden monitoring wells will be installed within the hollow-stem augers. Once the hollow-stem augers are advanced to the desired depth, 2-inch diameter monitoring wells with slotted screens will be installed in accordance with standard practices. Typical overburden well construction details are shown in Figure 1. All wells will be constructed of flush-threaded joint, Schedule 40 PVC riser pipe, machine slotted screen, bottom plug, and cap. The screens will be 0.010-inch slotted and generally ten feet in length.

Each well will be assembled as it is lowered into the borehole. The annulus around the well screen will be packed with clean silica sand to a maximum of two feet above the screen. Additionally, a one-half foot choke of fine-grained sand will be placed on top of the sand pack to preclude the migration of the seal material into the sand pack. A minimum one-foot bentonite seal will be installed in the annulus. The seal will consist of bentonite pellets/chips or slurry. The remainder of the annulus will be filled with cement/bentonite grout (ratio of 20 to 1). A steel monitoring well guard pipe or curb box will be set over each well head and cemented in place. A positive grade will be constructed of cement around the well to divert surface water away from the well. A permanent mark will be made at the top of the PVC riser to serve as a datum for all subsequent static water level measurements. Upon completion, a locking gripper well cap will be installed and locked. Monitoring well depths, and screen lengths and depths will be calculated by the environmental scientist/geologist by maintaining accurate measurements of screen and casing placed in the borehole. A Monitoring Well

Construction Log form (Figure 1) will be completed that documents the well materials and depths.

3.7 Monitoring Well Development

Well development of the monitoring wells will be necessary to remove sediments (silt, clay, and fine sand) from the well screen, well bottom, sand pack, and formation. This will increase the hydraulic conductivity immediately around the well, thus increasing the well yield for sampling. No well will be developed sooner than 24 hours after installation. This will assure that the grout or bentonite seal will be set before increasing the flow to the well. The wells will be developed by surging, bailing, and pumping. Reasonable means will be taken to develop the wells to a turbidity of 50 NTU's or less, however, if the site soils are composed of a high percentage of silt and/or clay, a turbidity value of 50 NTU or less will not likely be achieved.

The monitoring wells will be developed utilizing surge and purge methods. The back and forth flow created within the screened interval dislodges fine sediments in the formation, sand pack, and screen, suspending fines so they can be removed.

The wells will be surged a minimum of 5 well volumes using a dedicated 3-foot long, 1.5-inch diameter polyethylene bailer attached to a 1/8-inch, dedicated, nylon or polypropylene rope. The surging will be accomplished by rapidly raising and lowering the bailer within the screened interval. The bailer will then be used to obtain a water sample to check the color, turbidity, odor, and sand and silt content of the well water during and after the development efforts.

The bailing rope and polyethylene bailer will be dedicated to each well to prevent cross-contamination during development. The dedicated bailer can be utilized in the future when the wells are purged for groundwater sampling.

All of the development water from the monitoring wells will be stored in 55-gallon drums pending analytical results for groundwater sampling.

3.8 Decontamination of Drilling and Sampling Equipment

Drilling equipment including augers, rods, samplers, tools, drill unit and any piece of equipment that can come in contact with the formation will be cleaned with a high

temperature/high pressure steam cleaner prior to the start of work and between each boring to prevent cross-contamination between borings. The equipment will also be cleaned using the same procedure at completion of the work (before leaving the site) to prevent any contamination from leaving the site.

The sampling equipment including split-spoon samplers and stainless steel trowels, etc., will be cleaned prior to use, in between each boring and at completion of the work by similar process described above. Between each sample interval at the same boring location the sampling equipment will be cleaned using the following procedure:

1. Remove any excess soil remaining on the split-spoon sampler.

2. Prepare a solution of tap water and non-phosphate detergent in a wash bucket, and scrub the equipment with a brush to remove any adhering particles.

3. Rinse the equipment with copious amounts of tap water.

4. Place clean equipment on clean polyethylene sheeting.

5. Reassemble the clean split-spoon sampler.

6. New disposable gloves will be worn when cleaning and handling the equipment to avoid contamination.

7. The water in the wash and rinse buckets will be changed frequently to avoid cross contamination.

The decontamination rinse water will be collected and placed in 55-gallon drums and stored at the project site until laboratory analyses results of the soil and groundwater samples indicates the proper method of treatment or disposal. Disposable protective clothing such as tyvek suits, gloves, etc. will be placed in a garbage bag and disposed of as a solid waste. The personnel decontamination procedures are detailed in Section 10.0 of the Site Specific Health and Safety Plan.

3.9 Decontamination of Excavating Equipment

The excavating equipment (bucket only) for advancement of the exploratory test pits and/or excavation of contaminated soils will be cleaned with a high temperature/high

pressure steam cleaner prior to the start of work and between each test pit location to prevent cross-contamination between test pits. The equipment will also be cleaned using the same procedure at completion of the work (before leaving the site) to prevent any contamination from leaving the site. The equipment will be washed over a temporary decontamination pad which will collect the wash and rinse water. A pumping device may be used to transfer the liquids into 55-gallon drums.

4.0 GROUNDWATER SAMPLING PROCEDURES

4.1 General

During groundwater sampling, it is important to follow strict acceptable protocol during the collection and transportation of groundwater samples. This minimizes the potential for sample variation from well to well due to sampling and transportation techniques. Quality control measures will be instituted as discussed in Section 7.0 of this document and the QAPP as a check on the procedures being utilized so that the quality of the data can be assessed. The groundwater samples will be analyzed in the laboratory for Target Compound List (TCL) volatile and semi-volatile organic compounds, PCBs and Pesticides and the Target Analyte List (TAL) metals (unfiltered) by standard methods following the QA/QC procedures outlined in the QAPP.

Prior to sampling, the water level in the well will be measured, and the well will be purged and allowed to recover to near static conditions. Groundwater samples will be taken employing low flow sampling techniques for field and laboratory analyses. The field parameters to be determined are pH, temperature, turbidity and specific conductance. All pertinent groundwater sampling information will be recorded on a C.T. Male Groundwater Services Field Log. A separate log will be completed for each monitoring well sampled. Logs will be dated and signed by the person making the entries and will be submitted to the project manager for inclusion in the project files. The following information will be included on the log forms:

1. Project name and location.
2. Date and times.
3. Monitoring well identification number.
4. Bailer type and identification number, if any.
5. Well development data.
6. Physical characteristics of samples.
7. Field analyses results.
8. Name of sampler(s).
9. Recovery times of wells.

10. Any additional observations/information.

An Environmental Services Field Log will also be completed for the groundwater sampling event. A blank copy of the referenced forms are enclosed in Appendix A.

4.2 Preparation for Sampling

Prior to groundwater sampling, the equipment and containers needed for sampling will be collected and prepared. If non-dedicated stainless steel sampling equipment is used it will be cleaned, as described below prior to use, in between each use, and at completion of use:

- Scrub with tap water and non-phosphate detergent,
- rinse with tap water,
- rinse with 10% HNO_3, ultrapure, if metal analyses are to be performed,
- rinse with tap water,
- rinse with methanol,
- rinse with deionized water,
- air dry, and
- wrap in aluminum foil.

In lieu of stainless steel sampling equipment, new disposable polyethylene bailers or peristaltic pump with new disposable Tygon and polyethylene tubing will be utilized to facilitate the groundwater sampling. New disposable gloves will be worn during equipment cleaning and decontamination, and handling of the media being sampled. Only new pre-cleaned laboratory provided sample containers and caps will be used for sample collection/analyses. All sample containers required to be fixed with a preservative, will be prepared by the laboratory before each sampling event. The container type, cap type and preservative requirements for the analytical parameters (water) to be analyzed are summarized in Table 1 on the following page.

TABLE 1
Analytical Requirements for Containers and Preservatives for Water Sampling

PARAMETER	CONTAINER	TOP	PRESERVATION	COMMENTS
VOCs per EPA 8260 (Water)	3-40 ml vials (preserved)	Septum	HCl to pH<2 Cool, 4°C	NA
Semi-VOCs, PCBs and Pesticides (Water)	3-1L amber Glass	Teflon	0.008% $Na_2S_2O_3$ Cool, 4°C	Store in dark.
Metals per EPA 6010/7000 (Water)	500 ml Plastic	Poly	HNO_3 to pH <2 Cool, 2°C- 4°C	NA

Sample labels will be prepared prior to sampling and affixed to the sample containers. The client, project name, site location, matrix, sample type (grab/composite), preservative and laboratory analyses to be performed will be recorded on the sample labels by the laboratory. The sample location (i.e., monitoring well ID), date, sampler's initials and time will be filled out on the sample label at the time of sampling.

Upon arrival at the sampling location, the well will be observed for any damage, the cover of the guard pipe or curb box will be cleared of any debris and unlocked or unbolted. Clean polyethylene sheeting will be placed adjacent to the well to protect purging and sampling equipment from contamination. The cap and top of the well casing will be wiped with a clean cloth and then the cap removed. A PID reading will be collected when the well cap is removed. The water level in the well will then be measured.

4.3 Measuring the Water Level

Prior to sampling and purging, static water heights will be measured using a water level indicator to determine the standing water column height. A full set of water levels will be collected from all wells prior to initiating the water sampling. The water column height and depth of the well are used to calculate the well water volume. Non-vented well caps will be removed for a period of ten minutes to allow the water column to

reach static conditions prior to taking the water level measurements. Refer to Section 10 for a detailed description of water level measurement procedures.

4.4 Well Development Procedures

Prior to sampling of the groundwater, it is necessary to purge the wells. Purging of the wells allows for a representative sample to be taken from the screened interval of the well by removing stagnant water from the well.

Three to five well volumes of the standing water will be removed from the well. The volume of standing water in the well is calculated by subtracting the water level height from the well depth measurement, and multiplying this value by a conversion factor. The conversion factor is based on the well casing diameter and converts linear feet of water into gallons. In cases where the water recharges at a slow rate, the well will be purged dry when possible.

New dedicated polyethylene bailers, pre-cleaned bottom filling stainless steel bailers with Teflon™ ball check valve or low flow peristaltic pump with dedicated Tygon and polyethylene tubing will be used to purge the wells. Bailers and tubing will be dedicated to an individual well during sampling events. If an alternative purging method is used it will be documented on the Groundwater Services Field Log form. A clean, new piece of polypropylene rope will be used at each individual well and will be properly discarded after each sampling event. Physical observations of the purge water will be noted and recorded in the groundwater sampling log. The actual quantity of purge water removed from the well will be measured by using a bucket graduated in gallons, and the volume will be recorded. Once purging is complete, the bailer, tubing or alternate purging device will be removed from the well and placed on the clean polyethylene sheeting or on the aluminum foil it was wrapped in, adjacent to the well, until completion of the groundwater sampling.

All of the purge water from the monitoring wells will be discharged to the ground around the well unless the water exhibits an unusual odor, or sheens or films are noted during development. If deemed necessary, the development water will be collected and placed in 55-gallon drums and stored at the project site until laboratory analyses results of the soil and groundwater samples indicates the proper method of treatment or disposal.

4.5 Sample Collection

Prior to sample collection, the wells will be allowed to recover to at least 80% of their initial static water level. Slow recharging wells will be allowed to recover for a period of four hours before sampling. Recovery times and water depths will be recorded on the Groundwater Services Field Log form.

The sample will be collected using a new disposable bailer, a pre-cleaned stainless steel bailer or peristaltic pump with new tubing that was dedicated to the well for the sampling event. In the event it becomes necessary to use a bailer at more than one location, the bailer will be field cleaned according to the decontamination protocol presented in Section 4.2, and the field decontamination techniques will be verified through the use of equipment/field blanks. An equipment/field blank will be taken from a distilled water rinse from the decontaminated sampling device prior to sampling.

A new pair of disposable surgical gloves will be used to handle the sampling equipment and containers at each sampling location. Only non-powdered sampling gloves will be used during sampling for metal analytes.

The stainless steel bailer, disposable bailer or disposable tubing will be lowered slowly into the well to minimize the aeration of the samples. Volatile samples will be collected first, followed by field parameters and then in decreasing order of the volatility of the parameters being analyzed for.

In order to insure the integrity of samples, sample containers must be filled properly. The following sections contain general procedures for sampling and specific procedures for sampling volatile organic compounds. Care shall be taken in sampling to assure that analytical results represent the actual sample composition.

A. General Sampling

1. Don't remove caps until the actual sampling time and only long enough to fill the container.
2. Identify every container by filling out the label with all the required data.
3. Fill all containers completely.

4. Some bottles may contain a fixative which should not be rinsed out of the bottle. Read the sample label treatment and fixative section to determine if a preservative/fixative has been added. Be careful not to contact fixatives with skin or clothing. If this should occur, rinse liberally with water.

5. After the sample is taken, wipe the container with a paper towel and place the container in a cooler with ice packs, to maintain the cooler at 4°C.

6. Complete the Groundwater Services Field Log and Chain of Custody Record forms.

7. Deliver or ship samples to the laboratory within 48 hours.

B. Sampling for Volatile Organic Compounds

1. Samples are to be collected in glass containers having a total volume in excess of 40 ml with open-top screw caps with Teflon-faced silicone septa. Sample containers will have hydrochloric acid (HCL) added to them as a preservative. This preservative must not be rinsed out.

2. A transport blank should be prepared from organic-free water and carried through the sampling and handling procedure. It will serve as a check for transport and container contamination.

3. Fill sample container slowly to minimize aeration of the sample, until a curved meniscus is observed over the bottle rim.

4. Float the septa, Teflon™ side down on the liquid meniscus. The Teflon™ side is the thin layer observed when viewing the septum from the side horizontally.

5. Carefully set on septum, expelling excess sample and being careful to exclude air. Then screw open-top cap down.

6. Check for a good seal by inverting bottle and tapping and checking for visible air bubbles.

7. If air bubbles are visible or there is a bad seal, remove cap and add additional sample and repeat steps 4 to 6.

8. Groundwater samples for volatile analysis will be taken in triplicate.

At completion of the sampling the well cap will be replaced; and the cover to the protective guard pipe or curb box will be bolted in place. The rope, gloves, and sheeting will be properly disposed of, and the stainless steel sampling equipment, if used, decontaminated and placed in a clean plastic bag. The polyethylene bailer or peristaltic pump tubing will be hung in the well using either a simple polyethylene string or stainless steel wire harness.

4.6 Field Analyses

The field analyses of groundwater include pH, temperature, specific conductivity and turbidity. The field analyses will be measured in the field since these constituents change during storage. A minimum 40 ml sample will be collected and placed in clean unpreserved polyethylene or glass containers for analysis. The containers will be covered if the measurements are not recorded immediately.

The pH, temperature and conductivity of a sample are measured with a portable unit capable of measuring all three parameters concurrently. The portable unit automatically adjusts to compensate for the temperature of the sample. The turbidity of a sample is measured with a separate portable unit. The pH, temperature, conductivity and turbidity will be recorded on the Groundwater Services Field Log. These units will be calibrated to known standards prior to the start of field activities. Measurement and operating procedures for these field analyses are presented in Section 8.0 of this FSP.

5.0 SOIL SAMPLING PROCEDURES

5.1 Headspace Analysis

The soil samples collected from the test boring investigation and soil excavations will be screened for the presence of petroleum/chemical related hydrocarbons by headspace analysis utilizing a photoionization detector (PID), to subjectively assess the recovered soil samples for evidence of petroleum/chemical contamination. The sample is transferred from the excavation or split-spoon sampler into a zip lock bag, sealed, shaken and then allowed to sit for several minutes. Once the sample has had a chance to sit or "volatilize," the vapor space inside the bag will be analyzed by inserting the tip of the PID through the bag, as described in Section 3.5.

5.2 Analytical Soil Sampling

Select recovered soil samples will be subjected to laboratory analysis to assist in defining the horizontal and vertical extent of the contamination at the project site. The soil samples will be analyzed for the Target Compound List (TCL) of volatile and semi-volatile organic compounds, PCBs and Pesticides, and the Target Analyte List (TAL) metals by standard methods. The soil samples will be extracted from the sampling equipment in a timely fashion such that the soil sample has limited exposure to the outside air reducing the chance for volatilization. The interval chosen to be analyzed for soils from the test borings and excavations will be based, in part, on headspace analysis results and visual observations for staining and odor. Only new pre-cleaned laboratory provided sample containers and caps will be used for sample collection/analyses. All sample containers required to be fixed with a preservative, will be prepared by the laboratory before each sampling event. The container type, cap type and preservative requirements for the analytical parameters (soil) to be analyzed are summarized in Table 2.

TABLE 2
Analytical Requirements for Containers and Preservatives for Soil Sampling

PARAMETER	CONTAINER	TOP	PRESERVATION	COMMENTS
VOCs (Soil)	4 oz Glass	Teflon	Cool	NA
TCL Semi-VOCs, PCBs and Pesticides (Soil)	8 oz Glass	Teflon	Cool	NA
Metals per EPA 6010/7000 (Soil)	8 oz Glass	Poly	Cool, 2°C- 4°C	NA

6.0 SOIL GAS SURVEY

A soil gas survey, whose sampling locations will be dependent on the results of the site investigation and IRMs, will be conducted within open areas of the site.

Samples collected from open areas of the site will be collected at a minimum depth of five feet below the ground surface. Should groundwater be encountered at a depth of less than five feet below the ground surface, then the samples will be collected at a depth that is approximately one foot above the water table. All attempts will be made to collect the samples concurrently. Where asphalt, concrete or other impervious surface materials exist, the use of mechanical methods (i.e. saw, drill etc.) may be used to penetrate the surface material for soil gas sampling operations.

6.1 Sample Point Installation

Once the surface materials have been penetrated as necessary, connect the polyethylene or polypropylene tubing to the expendable drive point. The expendable drive point is threaded such that the tubing should be screwed into place. Insert the tubing through the steel drive monitoring rod so that the tube rests on the lip of the expendable drive point. Advance the soil gas monitoring rod, tubing and expendable drive point assembly to an approximate depth (dependent on depth to groundwater) of five feet bgs at the sample collected from an open area to minimize the infiltration of ambient air. The probes will be advanced with available means (i.e., slide hammer, sledge hammer, hand or mechanical auger, geoprobe unit etc.). The soil vapor sampling zone will be approximately 1 to 2 feet in length and will be sealed above the sampling zone for a minimum of 3 feet. However, the length of the seal may be adjusted dependent on the depth to groundwater.

Note: If sample point refusal is encountered at a depth less than five feet bgs, the point will be removed and another attempt will be made within five feet of the original location. Record the distance and direction from the original location in daily field notes. If four unsuccessful attempts are made, the location where the deepest depth was achieved will be utilized for soil gas sampling.

Note: No soil gas sample will be collected from below grade locations where groundwater is present and saturated soil conditions prevail at the depth of the

screen point. Adjustments should be made in the target depth below grade to assure that the sample depth is one foot above the saturated soil condition or surface of the groundwater table. Water level gauging of nearby wells may assist in the determination of the local groundwater depths.

Once the sampling point intake has been set to the desired depth, withdraw the rod about two to three inches to expose the screened portion of the expendable drive point and purge one to three "probe volumes" from the probe and tubing. Connect the tubing directly to the 6-Liter vacuum canisters to create a sealed connection between the canister and the tubing within the ground. The annulus between the tubing and its outer drive casing (if left in place) will be sealed with hydrated bentonite or other non-volatile product to prevent ambient air infiltration. The sample tubing will be sealed at the ground surface by pushing the ground surface around the sample tubing or placing bentonite or other non-volatile product. The bentonite seal will be given sufficient time to provide for the hydration of the bentonite seal prior to sampling. To ensure that ambient air does not enter the annulus, thus affecting the analytical data, a tracer gas (i.e. helium) will be applied within an enclosed structure at the ground surface above the top of the sealed annulus. The tracer gas will be a constituent that will be analyzed for in the field using a portable instrument capable of detecting the tracer gas. The detector will be attached to the end-portion of the tubing that will eventually be attached to the vacuum canister prior to the commencement of sampling. The helium detector will be utilized prior to the start of sampling and at the conclusion of sampling to verify that ambient air is not infiltrating the probe point annulus. The soil vapor probe will be considered adequately sealed if less than 10% tracer (helium) gas is detected. Additionally, for samples collected within the basement areas of structures, building conditions, such as spills, odors, cracks, floor drains and underground utilities will be noted. In addition, a detailed inventory of potential indoor air contamination, such as VOC containing products used or stored in the structure, will be documented. Containers will be screened with a photoionization detector (PID) and results recorded alongside the product inventory.

6.2 Sample Collection

Prior to the commencement of sampling, two to three volumes of air will be purged from the sampling apparatus. Once the tubing is connected to the vacuum canister, the

laboratory preset flow regulator will be opened for a period of two hours for collection of the soil gas at a rate that will not exceed 0.2 liters per minute. After the two-hour time period is up, close the flow regulator and disconnect the tubing from the Summa canister. Remove remaining soil gas sampling assembly from the ground and discard tubing.

6.3 Decontamination

If possible, decontaminate steel drive monitoring rod and expendable shield point for reuse at other locations. The decontamination procedure should include the following:

- To the greatest extent practical, disassemble equipment during the decontamination process.
- Physically remove (e.g., brush) any soil adhered to the equipment.
- Scrub/wash the items with non-phosphate detergent and tap water.
- Rinse the item using tap water.
- Air-dry the item where practical.
- Wrap the item in clean aluminum foil (or plastic for larger items) if not immediately re-used.
- If sampling equipment is noticeably impacted by organic compounds (i.e. odor, sheen, or detected vapors), discard.
- Document cleaning activities in the daily field notes.

Otherwise, properly dispose the soil gas sampling equipment that can not be adequately decontaminated and use new equipment.

7.0 QUALITY CONTROL DURING SAMPLING IN THE FIELD

Quality control samples will be taken during the field sampling to monitor sampling technique, sampling equipment cleanliness, sample variability, sample handling and laboratory performance (analytical reproducibility). The quality control samples will include replicate samples, equipment/field blanks and transport blanks.

Replicate samples are samples taken from the same location with the same sampling device. Replicate samples are used to check on laboratory reproducibility, sampling technique and sample variability. The replicate samples will be coded so that the laboratory is not biased in performing the analyses. The code that is used will be identified in the field notes and on the sampling logs, but not on laboratory correspondence.

One replicate soil and one replicate groundwater sample will be taken for every twenty (20) samples submitted to the laboratory for analysis. The replicate soil samples will be collected after the desired sampling interval is thoroughly mixed in a stainless steel bowl to achieve a homogeneous sample and then equally spilt into the various analytical containers. The replicate groundwater samples, except for VOC analysis, will be taken by splitting the sample by alternating the discharge tubing between both sets of containers (sample and replicate containers) until the containers are filled. The replicate groundwater sample for VOCs analysis will be taken by filling one container completely and then filling the replicate container completely. Groundwater samples for VOCs analysis are typically taken in triplicate, so this procedure will be repeated three times using a new full bailer of water each time.

Equipment/field blanks are samples taken to monitor sampling equipment cleanliness and decontamination procedures during field sampling. One equipment/field blank will be taken during soil and groundwater sampling for every twenty (20) samples submitted to the laboratory for analysis of all of the parameters of concern. The equipment/field blanks will be taken as follows per the environmental media being sampled:

Soil Sampling - After the split-spoon sampler, sampling trowel, macro-core sampler and/or excavator bucket has been decontaminated and are ready for sampling, pour

deionized water through and/or over the sampling equipment and collect it in the sample container(s).

Groundwater - After the bailer has been decontaminated or a new disposable bailer is removed from its packaging and is ready for sampling, pour deionized water into the bailer and then into the sample container(s).

The equipment field blanks will be identified as such and by the location to be sampled (i.e., equipment blank before TP-8 (2 to 4 feet); or before MW-5).

Transport blanks are prepared when VOCs analysis is to be performed, and they are prepared in the laboratory when the sample containers are prepared. Transport blanks will be prepared in triplicate by filling 40 ml glass containers (with Teflon™ lined septum) with deionized water. These containers will travel unopened with the sample containers and be analyzed for the same volatile constituents as the samples being submitted. The transport blanks are taken to monitor whether the samples have been contaminated during transport, as a result of handling in the field, during shipment or during storage in the laboratory. One transport blank will accompany each set of samples (soil or water) that are shipped/delivered to the laboratory for VOCs analysis.

The analyses to be performed on the replicate, equipment/field blanks and transport blanks are presented in Table 2 of the QAPP. Additional QC/QA procedures are discussed in the QAPP.

8.0 FIELD INSTRUMENTATION OPERATING PROCEDURES

8.1 General

The field instruments that will be utilized during implementation of the site investigation are: a photoionization detector (PID) meter for air monitoring of the total VOCs during drilling, test pitting and soil excavations, and for headspace analysis of soil samples for total VOCs; and a pH/conductivity/thermometer meter and turbidity meter for field analysis of groundwater samples for these parameters. The field instruments used will be calibrated and operated in accordance with the manufacturer's instructions and the procedures identified in the following sections. Additionally, ambient dust monitoring will be conducted during test pitting, drilling and soil excavation activities to provide "real time" measurement of dust generated as part of these activities.

8.2 Photoionization Detector Meter

A MiniRae PID meter and data logger with a 10.6 eV lamp will be utilized to measure total VOCs. The instrument is calibrated at the factory upon purchase and annually thereafter using certified service shops who utilize standards of benzene and isobutylene. Prior to use in the field, the instrument will be calibrated in accordance with the manufacturer's instructions using a disposable cylinder containing isobutylene obtained from Pine Environmental Services, Inc. of Hightstown, New Jersey. The calibration value varies by the manufacturer, however, 105 parts per million is commonly utilized by C.T. Male. During use the PID meter will be calibrated at least once every 8 hours. The calibration procedure is contained in the Photovac Microtip User's Manual.

Care will be taken when handling and using the PID meter to prevent any debris from entering the sample line which will effect the instrument's operation. If this occurs the field personnel will clean the unit or replace it with a functional PID meter.

8.3 Temperature, PH and Specific Conductivity Meter

8.3.1 General

The Oakton Portable pH/Con 10 meter, or equal unit, will be used to measure temperature, pH and conductivity. This instrument is equipped with an automatic temperature control for accurate adjustment to the temperatures of the samples and calibration standards. The temperature range is 0°C to 100°C with an accuracy of ±0.5° C.

8.3.2 pH

Prior to collecting the pH readings, the pH meter will be calibrated with standard buffer solutions of pH 4.0, 7.0 and 10.0 with the unit automatically correcting the temperature. The instrument will be calibrated prior to use each day to ensure accurate measurements. Calibration procedures are presented in the manufacturer's operating instructions.

The pH measurement will be taken by setting the meter function to pH mode, immersing the electrode in the sample (after rinsing the probe with deionized water), gently stirring the water with the electrode probe until equilibrium is reached, and recording the pH when the instrument displays "ready." The pH electrode will be rinsed with deionized water after taking a measurement. The manufacture recommends that the electrode be stored in an electrode storage solution when not in use.

8.3.3 Specific Conductivity

Prior to collecting specific conductance readings, the instrument will be calibrated prior to use each day to ensure accurate measurements. Calibration will be performed using standards of 147.0, 717.8 and 1,413 umhos/centimeter, being sure the instrument is showing automatic temperature correction. Calibration procedures are presented in the manufacturer's operating instructions.

The conductivity cell will be rinsed with distilled water before and after use. The measurement will be taken after rinsing the conductivity probe twice with the sample,

immersing the probe in the sample and recording the measured value when the instrument reads "ready."

8.4 Turbidity Meter

A LaMotte Turbidimeter (Model 2008) or equal unit will be used to measure turbidity. The Model 2008 is a true nephelometer, measuring the amount of light scattered at right angles from a beam of light passing through the test sample. The instrument range is 0 to 19.99 NTU (20 scale) and 0-199.9 (full scale). The accuracy of this instrument is ±2% of the reading or 0.05 NTU, whichever is greater. The turbidity is pre-calibrated from the manufacturer, but is regularly calibrated to known standards of typically 4 and 40 NTU.

The turbidity measurement is collected by pouring a sample into a dedicated VOA vial or cuvette. The cuvette is wiped clean and them inserted into the instrument's chamber and covered. The reading is noted once stabilized.

8.5 Dust Monitors

C.T. Male will utilize two TSI Dust Tracks (or equal unit) real-time particulate monitors capable of continuously measuring concentrations of airborne dust, smoke, mists, haze, and fumes with real time readout (or equivalent). This instrument will detect particles from 0.1 to 10 micrometers in size. The instruments will be placed at temporary monitoring stations based on the prevailing wind direction each day, one upwind and one downwind of the work area. The short-term exposure limit (STEL) is a 15 minute time-weighted average (TWA) exposure that is also measured by the particulate monitors. Dust monitoring equipment is calibrated by the supplier and zeroed daily in the field prior to each day's use.

9.0 SAMPLE HANDLING AND CHAIN OF CUSTODY PROCEDURES

Just prior to sampling and filling the sample containers, the label on the container will be completed with the required information. After filling the sample containers they will be wiped with a paper towel, and placed in a protective bubble or foam wrap to protect it during transport. The container(s) will be placed in a cooler with double bagged ice packs, to maintain a temperature of 4°C.

A Chain of Custody Record will be completed by the sampler in the field after securing analytical samples. The sampler will be responsible for retaining possession of the samples until they are delivered to the laboratory or until they are delivered to a courier or common carrier for shipment to the laboratory. When the samples are released from the custody of the sampling personnel, the Chain of Custody Record will be signed by both relinquishing and receiving parties with the date and time indicated. A copy of the form will be retained by the sampler for inclusion in the project files and the original form will accompany the shipment. The Chain of Custody Record will then be signed by the relinquishing party and receiving laboratory personnel when the samples are ultimately received at the laboratory.

If samples are shipped, a bill of lading or an air bill will be used and retained in the project files as documentation of sample transportation. Prior to shipment, the cooler will be securely wrapped with clear tape to protect it from tampering. A separate additional Chain of Custody Record will be completed for each cooler of samples. This form will be placed in a plastic bag and taped to the underside of the cooler lid. This form will be used by the laboratory personnel as a check to verify that the containers listed on the form are present in the cooler when they are received at the laboratory. A copy of the signed Chain of Custody Record will accompany the laboratory analysis reports. A blank Chain of Custody Record form is enclosed in Appendix A.

10.0 WATER LEVEL MEASUREMENT PROCEDURES

Water levels will be measured in the monitoring wells using a water level indicator probe. The water levels will be measured from the surveyed reference point to the nearest 0.01 foot. Water levels will be measured progressively from upgradient monitoring wells to downgradient monitoring wells, attempting to measure water levels from the cleanest well to the dirtiest well.

To avoid possible cross contamination of the wells, the water level indicator will be decontaminated prior to and following the water measurement of individual wells. The water level indicator will be decontaminated by rinsing it with distilled water or tap water, then rinsing it with methanol and wiping it with a clean cloth or paper towel and then rinsing it with copious amounts of distilled water.

The water depth levels and reference elevations determined from the monitoring well survey will be recorded on a Water Level Record form and the water table elevations calculated. A blank copy of this form is presented in Appendix A.

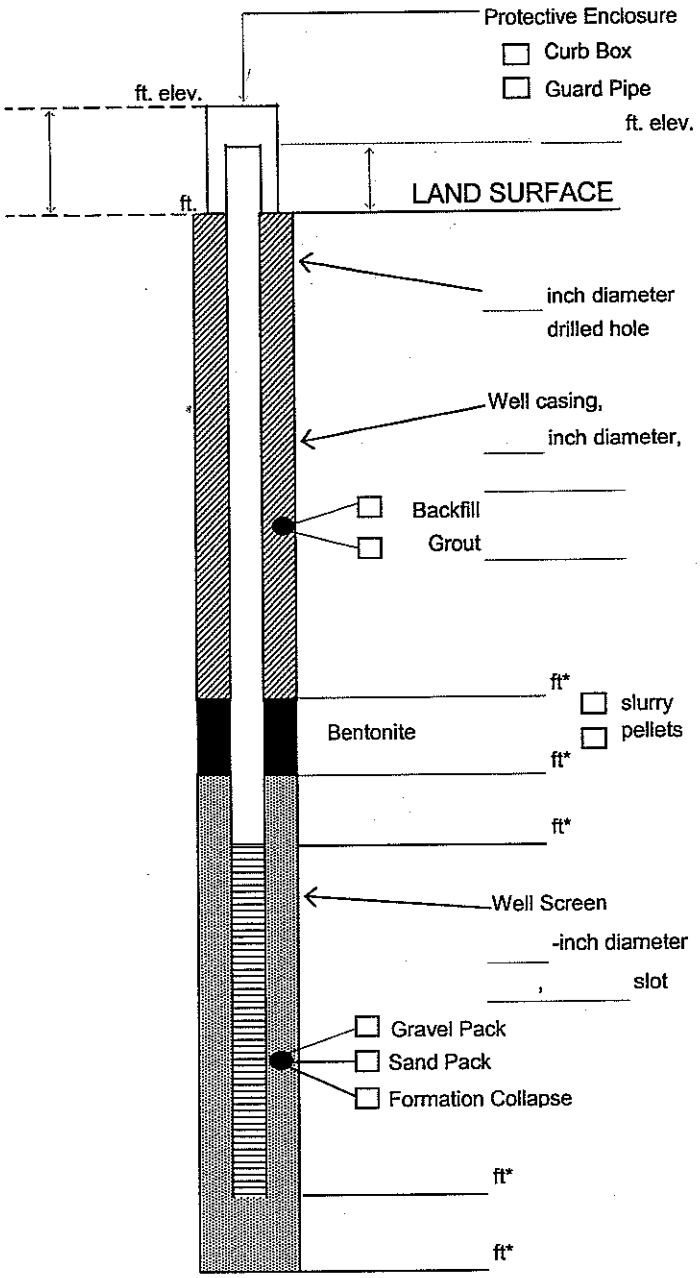
FIGURE 1

TYPICAL OVERBURDEN MONITORING WELL DIAGRAM

Well No. _____

MONITORING WELL CONSTRUCTION LOG

C.T. MALE ASSOCIATES, P.C.



* Depth below land surface.

Project Number _____

Project Name _____

Well No. _____ Boring No. _____

Town/City _____

County _____ State _____

Installation Date(s) _____

Drilling Contractor _____

Drilling Method _____

Water Depth From Top of Riser _____ ft _____ Date

C.T. Male Observer _____

Notes:

APPENDIX A

QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) FORMS

and

FIELD REPORT FORMS

C.T. MALE ASSOCIATES, P.C.

WATER LEVEL RECORD

Project Name ____________________ Project Number ____________________

Location ____________________ Measurement Taken By ____________________

Method or Reading ____________________ Datum ____________________

		Date ________		Date ________		Date ________	
Well No.	Ref. Elev.	Depth	Elev.	Depth	Elev.	Depth	Elev.

Measuring Point(s) ____

____

Groundwater Services Field Log

DATE: _____ PROJECT NAME: _____

PROJECT NO.: _____ PROJECT LOCATION: _____

SAMPLING PERSONNEL: _____

MONITORING WELL ID#: _____ NOTES TAKEN BY: _____

DEPTH TO WATER: _____ FROM: _____ BAILER ID: _____

DEPTH TO BOTTOM: _____ FROM: _____ BAILER: LAB CLEANED / FIELD CLEANED

WATER COLUMN HEIGHT: _____ BAILER: STAINLESS STEEL _____

OTHER _____

CONVERSION FACTORS LINEAR FEET TO GALLONS

1" = 0.041 GALLONS	3" = 0.38 GALLONS
1.25" = 0.064 GALLONS	4" = 0.66 GALLONS
2" = 0.16 GALLONS	6" = 1.47 GALLONS

WELL CASING DIAMETER

WELL VOLUME: _____ GALLONS

VOLUMES PURGED: _____ GALLONS PURGE METHOD: _____

TIME STARTED: _____ ; TIME FINISHED: _____

OBSERVATIONS: COLOR _____ ; ODOR _____

SHEEN _____ ; TURBIDITY _____

OTHER _____ _____

WATER RECOVERY HEIGHT: _____ ; RECOVERY TIME IN MINUTES: _____

FIELD PARAMETERS: pH _____ , TEMPERATURE _____

CONDUCTIVITY _____ UMHO/CM, OTHER _____

SAMPLE COLLECTION TIME: _____

NOTES: _____

_____

_____

C.T. MALE ASSOCIATES, P.C.

SUBSURFACE EXPLORATION LOG

BORING NO.:
ELEV.: **DATUM:**
START DATE: **FINISH DATE:**
SHEET **OF**

PROJECT: _____ CTM PROJECT NO.: _____

LOCATION: _____ CTM INSPECTOR: _____

DEPTH (FT.)	SAMPLE TYPE	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	RECOVERY	SAMPLE CLASSIFICATION	NOTES
5										
10										
15										
20										
25										
30										

N = NO. OF BLOWS TO DRIVE 2" SAMPLER 12" WITH A 140 LB. WT. FALLING 30" PER BLOW

DRILLING CONTRACTOR: _____ DRILL RIG TYPE: _____

METHOD OF INVESTIGATION: _____

GROUNDWATER LEVEL READINGS

DATE	LEVEL	CASING	STABILIZATION TIME

SAMPLE CLASSIFICATION BY:

C.T. MALE ASSOCIATES, P.C.

GEOPROBE SUBSURFACE EXPLORATION LOG

BORING NO.:
ELEV.: **DATUM:**
START DATE: **FINISH DATE:**
SHEET **OF**

PROJECT: _____ CTM PROJECT NO.: _____

LOCATION: _____ CTM OBSERVER: _____

DEPTH (FT.)	SAMPLE INTERVAL	SAMPLE NO.	SAMPLE RECOVERY (FT)	SAMPLE CLASSIFICATION	NOTES
4					
8					
12					
16					
20					
24					
28					

DRILLING CONTRACTOR: _____ GEOPROBE TYPE: _____

METHOD OF SAMPLING: _____

GROUNDWATER LEVEL READINGS

DATE	LEVEL	REFERENCE MEASURING POINT

SAMPLE CLASSIFICATION BY:

C.T. MALE ASSOCIATES, P.C.

Environmental Services Field Log

Date: _____ Time On-Site: _____ Time Off-Site: _____

Project Name: _____ Project No.: _____

Purpose: _____ Field Report No: _____

Weather Conditions: _____

Present at Site: _____

Observations: _____

Items to Verify: _____

List of Attachments: _____

Field Log Prepared by: _____

Copies to:

Environmental Services Field Log
(continued)

Project Name: _____ Project No.: _____

Observations: _____

ORGANIC VAPOR HEADSPACE ANALYSIS LOG

PROJECT:	PROJECT #:	PAGE 1 OF
CLIENT:		DATE COLLECTED:
LOCATION:		
INSTRUMENT USED: LAMP eV		DATE ANALYZED:
DATE INSTRUMENT CALIBRATED: BY:		
TEMPERATURE OF SOIL:		ANALYST:

EXPLORATION NUMBER	SAMPLE NUMBER	DEPTH (FT.)***	SAMPLE TYPE	SAMPLE READING (PPM)**	BACKGROUND READING (PPM)**	REMARKS

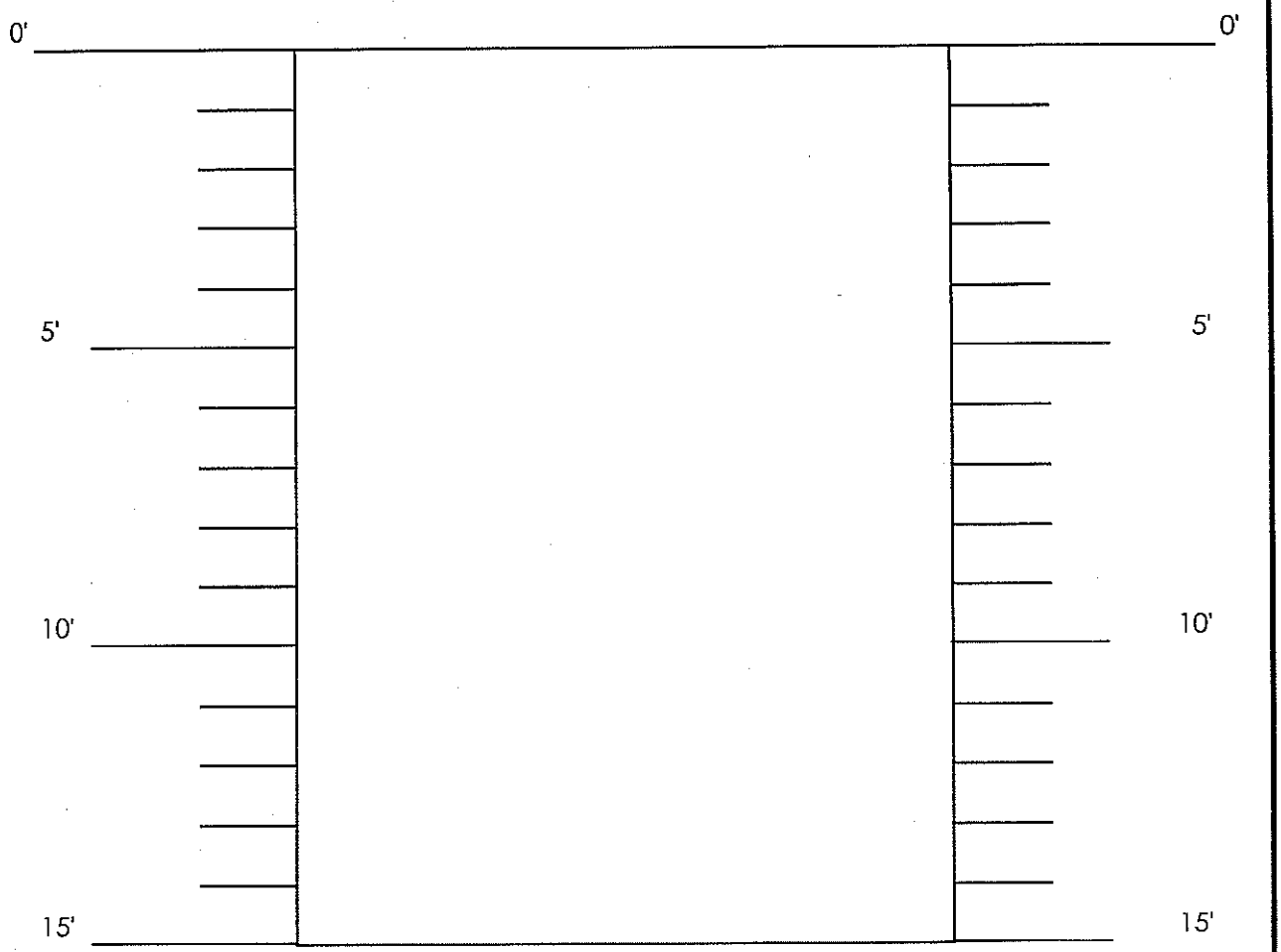
*Instrument was calibrated in accordance with manufacturer's recommended procedure using a calibration gas supplied by the manufacturer.
**PPM represents concentration of detectable volatile and gaseous compounds in parts per million of air.

TEST PIT LOG

C.T. MALE ASSOCIATES, P.C.
50 Century Hill Drive, P.O. Box 727
Latham, NY 12110-0727
(518) 786-7400 • FAX (518) 786-7299
Building Systems • Engineering • Environmental Services • Land Information Services

PROJECT NAME: _____ EXCAVATOR: _____
PROJECT NUMBER: _____ EQUIPMENT: _____
LOGGED BY: _____ DATE: _____

TEST PIT NO. _____



TOTAL DEPTH: _____
WATER AT: _____
SIZE OF TEST PIT: _____

NOTES: _____

APPENDIX B

QUALITY ASSURANCE PROJECT PLAN

NYS ENVIRONMENTAL RESTORATION PROGRAM
QUALITY ASSURANCE PROJECT PLAN
350-352 LIBERTY STREET SITE
CITY OF NEWBURGH
ORANGE COUNTY, NEW YORK

KEY PERSONNEL AND SIGNATURES

Approved: _____ Date: 4/14/10
Project Principal
David Roecker, P.E.
Vice President, Environmental Services Division
C.T. Male Associates, P.C.

Approved: _____ Date: 4-13-10
Project Manager
Kirk Moline
Hydrogeologist
C.T. Male Associates, P.C.

Approved: _____ Date: 4-13-10
Project Scientist & Health and Safety Coordinator
Stephen Bieber
Environmental Scientist
C.T. Male Associates, P.C.

Approved: Elizabeth W. Rovers Date: 4-13-10
Quality Assurance Officer
Elizabeth Rovers, P.E.
Managing Engineer
C.T. Male Associates, P.C.

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QUALITY ASSURANCE PROJECT PLAN
350-352 LIBERTY STREET SITE
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ORANGE COUNTY, NEW YORK

TABLE OF CONTENTS

FIGURES

TABLES

NYS ENVIRONMENTAL RESTORATION PROGRAM
QUALITY ASSURANCE PROJECT PLAN
350-352 LIBERTY STREET SITE
CITY OF NEWBURGH
ORANGE COUNTY, NEW YORK

TABLE OF CONTENTS

APPENDICES

1.0 PROJECT DESCRIPTION

1.1 Introduction

This Quality Assurance Project Plan (QAPP) has been prepared for the implementation of the remedial investigation Interim Remedial Measures (IRMs) activities at the 350-352 Liberty Street Site ("the site") located in the City of Newburgh, Orange County, New York. It has been developed in conjunction with the Remedial Investigation/Interim Remedial Measure Report (RI/IRM) Work Plan as prepared by C.T. Male Associates, P.C. (C.T. Male). A description of the site, available background information, objectives and the remedial investigation scope of work are presented in detail in the referenced RI/IRM Work Plan.

This QAPP presents the organizational structure and data quality objectives (DQOs) for the remedial investigation and IRMs, and the quality assurance (management system) and quality control methods of checks and audits to be implemented to ensure that the quantity and quality of the data required for its intended use is obtained and documented (i.e., that DQOs are met). The measurement parameters used to determine the quality of the data are precision, accuracy, completeness, representativeness and comparability, and are discussed further in this QAPP.

A Field Sampling Plan (FSP) has been prepared by C.T. Male as a separate exhibit and forms an integral part of this QAPP. The field sampling and data gathering procedures are presented in the FSP and incorporated into the QAPP by reference. The QAPP and FSP document the laboratory quality assurance/quality control (QA/QC) procedures and field sampling and data gathering procedures that will be followed during implementation of the remedial investigation and IRMs scope of work so that valid data of a known quality is generated.

The project specific field QA/QC procedures and the project specific laboratory QA/QC procedures are presented in the text of this QAPP. The general internal laboratory QA/QC procedures are presented in the subcontractor laboratory's Quality Manual which is retained at C.T. Male's office. The subcontract laboratory for this project has not yet been determined, and will be selected through a competitive bidding process. The laboratory certifications will be included in Appendix A upon selection of the laboratory.

The QAPP has been prepared in a manner consistent with the following guidance documents:

- Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, EPA/540/G-89/004, USEPA, October 1988.
- Data Quality Objectives for Remedial Response Activities: Development Process, EPA/540/G-87/003, USEPA, March 1987.
- Draft DER-10 Technical Guidance For Site Investigation and Remediation, NYSDEC, December 2002.
- 6 NYCRR Part 375, Environmental Remediation Programs, Subparts 375-1 to 375-4 and 375-6, Effective December 14, 2006.

1.2 Objectives and Scope of Work

It is the objective of the RI/IRMs and this QAPP to obtain and present representative data of a known quality and sufficient quantity. The primary goal is to perform soil and groundwater sampling through a variety of investigation and IRM tasks to evaluate the quality of the site's soils during investigations and upon completion of the IRMs, and to evaluate the quality of soil gas (if necessary) and groundwater during the RI. The data will help document overall protection requirements for human health and the environment based on the site's contemplated use.

To achieve these objectives, the scope of work will include the following items as presented in the RI/IRM Work Plan, in this QAPP and in the FSP. The investigative tasks will include the advancement of test pits, performance of a Ground Penetrating Radar (GPR) survey, collection and analysis of select soil samples, installation of monitoring wells, collection and analysis of groundwater samples, and conduct a vapor intrusion evaluation. The IRM tasks include pre-demolition asbestos abatement and demolition of the site structure, removal and off-site disposal of the USTs and their appurtenances, the removal and off-site disposal dry well and vehicle lifts, excavation and off-site disposal of contaminated soils, dewatering and treatment of contaminated groundwater (if encountered), removal and off-site disposal of aboveground tanks, drums, containers and other ancillary items, collection and analysis of confirmatory excavation end-point samples, and

other unforeseen environmental conditions which may be encountered during investigative and IRM work.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

C.T. Male Associates, P.C. (C.T. Male) is responsible for providing professional services associated with the quality control/quality assurance of the remedial investigation, IRMs and remedial activities. These will include project management, coordination and scheduling of activities in-house and with qualified subcontractors. The work tasks that will be performed by a subcontractor to C.T. Male include: advancement of exploratory test pits, GPR survey, closure of aboveground and underground tanks, closure of vehicle lifts and drainage structures, disposal of drums and containers and their contents, conventional auger drilling of borings/monitoring wells, and analytical laboratory testing.

A project organizational chart listing key individuals of the project and their associated title is presented as Figure 1 at the end of this document. Personnel from C.T. Male, the subcontract laboratory and data validator can be reached at the following addresses:

- C.T. Male Associates, P.C.
  Contact: Stephen Bieber and Kirk Moline
  50 Century Hill Drive, New York 12110
  Phone: (518) 786-7400
  Fax No.: (518) 786-7299
  Email: s.bieber@ctmale.com and k.moline@ctmale.com

- Laboratory: to be determined

- C.T. Male Associates, P.C.
  Contact: Megan Drosky (Data Validator)
  50 Century Hill Drive, Latham, New York 12110
  Phone: (518) 786-7400
  Fax No.: (518) 786-7299
  Email: m.drosky@ctmale.com

A description of the responsibilities by title of the key individuals is presented as follows:

Project Principal is responsible for the review of the RI/IRM activities and reports for their technical adequacy and conformance to the scope of work.

Quality Assurance Officer is responsible for the independent review of the RI/IRM documents and reports to check that the appropriate project documentation, of the quality control activities performed, exist and are maintained; and for conducting field and sampling audits. Analytical data will also be reviewed by this individual for accuracy and completeness.

Project Manager is responsible for the overall coordination and implementation of the project, the management of staff and resources, the implementation of schedules, the conformance by the technical staff and subcontractors to the scope of work, assessing the adequacy of the work being performed, implementing corrective action as necessary, interaction with the client and regulatory agencies, maintaining complete project documentation, and report preparation.

Health and Safety Coordinator is responsible for implementation of the project specific Health and Safety Plan, and resolution of safety issues which arise during the completion of the work. The Health and Safety Coordinator or designee will be present during the completion of the field work.

Laboratory Quality Assurance Officer is responsible for review of the laboratory data quality control procedures and documentation to determine if the QA objectives are being met; and to report non-conforming events to the laboratory technical staff and Project Manager and implement corrective action as necessary.

Laboratory Director is responsible for all activities within the laboratory, and for the performance of the laboratory work tasks in accordance with the project work plans, interactions with the Project Manager, and the adherence to project schedule.

Project Geologist/Engineer/Scientist is responsible for coordinating and conducting the field hydrogeologic activities and subcontractors, the adherence of activities to the QAPP and the FSP, evaluation of the collected data, soil classifications, report preparation and interaction with Project Manager and Project Team.

Project Team is responsible for adequately performing the work tasks in accordance with the project work plans so that the objectives of investigations and the project

are achieved, notifying the Project Manager of any non-conformance to the work plan so that corrective actions can be taken as necessary, and notifying the Project Manager of unforeseen conditions so that modifications to the work plan, if necessary, can be approved and implemented.

Data Validator is responsible for review of all analytical data generated for this project. The data validator will review analytical data in accordance with New York State Department of Environmental Conservation Guidance for the Development of Data Usability Summary Reports and prepare a report documenting if the analytical data is valid and usable. The report will also present data rejection and qualification, where necessary, based on laboratory performance.

3.0 QUALITY ASSURANCE OBJECTIVES FOR DATA MEASUREMENT

3.1 General

The Quality Assurance (QA) objective for this project is to produce data which is technically valid and of a known quality that meets the needs of its intended use. In this section the data quality objectives (DQOs) are defined by describing the intended use of the data; defining the type of data needed (i.e., physical or analytical); specifying the analytical levels, as established by EPA, appropriate to the data uses; specifying the quality control checks on field and laboratory procedures and frequency of checks; and presenting the quality control acceptance criteria.

Laboratory quality assurance objectives for data measurement are established for each measurement parameter in terms of precision, accuracy, completeness, representativeness and comparability. These terms form an integral part of the laboratory's quality assurance programs in that DQOs are set for each parameter.

3.2 Data Uses and Types

The data to be generated during the proposed work will be completion of site investigation and IRMs, and health and safety during implementation of the field activities. Both physical data including air monitoring and analytical data from soil gas, soil and groundwater will be needed to provide the necessary information to complete the steps in the site investigation and IRMs. The specific physical and analytical data proposed and its purposes are presented in the RI/IRM Work Plan.

3.3 Data Quality Needs

To support data collection activities in obtaining quality data, EPA has established a series of analytical levels that are appropriate to site investigation/remediation data uses. The analytical levels are defined as follows:

Level I	Field screening or analysis using portable instruments. Qualitative data.
Level II	Field analyses using more sophisticated portable analytical instruments. Qualitative and quantitative data can be obtained.
Level III	Laboratory analyses using standard EPA approved procedures/methods.

Level IV	Laboratory analyses by NYSDEC ASP (Analytical Services Protocol) - Category B Data Deliverable with QA/QC protocols and documentation.
Level V	Analyses by non-standard methods.

The data collection activities, the environmental media, the intended use of the data and the corresponding analytical levels that will be used to produce the project data are summarized in Table 1.

Table 1

Summary of Work Tasks and Corresponding Analytical Levels

Data Collection Activities	Sample Media & Description	Data Use[a]	Analytical Level
PID Monitoring	Soil Vapors	1	II
Air Monitoring	Air/Ambient Air	2	I
Test Pits, Test Borings and Monitoring Wells, and Surface Soil, Subsurface Soil, Soil Gas, and Groundwater Sampling	Surface and Subsurface Soil, Groundwater and Soil Gas for Laboratory Analyses and Field Instrumentation.	1, 3 & 4	I (Field Instrumentation) and IV (Laboratory Analyses)

Note:

(a) Data Uses Key:

1 - Site Characterization.
2 - Health and Safety and Community Air Monitoring During Implementation of Field Activities.
3 - Risk Assessment.
4 - Evaluation of Remediation Alternatives.

Another consideration besides defining the Data Quality Needs is what level of cleanup will be required for the site. The applicable or relevant and appropriate requirements (ARARs) are related to defining satisfactory cleanup efforts. In order to be able to evaluate the data generated with respect to potential ARARs, the samples will need to be analyzed by analytical methods that can achieve detection limits below or at existing ARAR values. The analytical methods selected for this project are designed to achieve ARAR values.

3.4 Quality Control Checks and Acceptance Criteria

To monitor and document the integrity of such factors as sample variability, sampling equipment cleanliness, sampling technique, analytical reproducibility and sample handling which can affect data quality, several field quality control checks will be implemented. These will include taking equipment/field blanks after the sampling equipment has been decontaminated to check for cross contamination and equipment cleanliness; taking replicate samples to monitor analytical precision/ reproducibility and sampling technique; and preparing transport blanks to be transported with the sample containers for volatile analyses to monitor sample handling. For this project the field Quality Control (QC) checks will consist of one equipment/field blank, and one replicate sample during sampling activities for every twenty (20) analytical samples per media type (i.e. soil, groundwater, and soil gas). A transport blank will be prepared for each groundwater sample set to be submitted for volatile analyses. A transport blank will also be prepared for each soil gas sample set should a vapor intrusion survey be conducted on the site.

Laboratory quality control checks will be those specified in EPA Methods or in the NYSDEC ASP (Revised 2000) for the analytical method performed and could consist of some of the following:

- Blanks (method, preparation),
- initial and continuing calibrations,
- surrogate spikes,
- matrix spikes/matrix spike duplicates,
- ambient samples,
- duplicate samples, and
- control samples/matrix spike blanks.

The laboratory will be responsible for performing what is necessary for complying with appropriate standards and certifications of the selected EPA method and ASP requirements. The laboratory quality control acceptance criteria is method specific and will be the laboratory's responsibility to meet ASP (Revised 2000) criteria.

4.0 SAMPLING PROCEDURES

Procedures for sampling are presented in the Field Sampling Plan (FSP) and include the following:

- Selection of sampling sites and media to be sampled,
- specific sampling procedures for each environmental media to be sampled, and for QC samples to be taken,
- field soil screening procedures,
- a description of the containers, procedures and equipment used for sample collection, preservation, transport and storage,
- procedures for preparing the sample containers and sampling equipment prior to sampling and decontamination of sampling equipment during sampling,
- chain of custody procedures and forms, and
- description of the procedures, forms and notebooks to be used to document sampling activities, sample conditions and field conditions.

5.0 SAMPLE CUSTODY

Proper chain of custody will be established and maintained through a series of steps, beginning in the field and ending with final disposition of the analyzed sample. At the time of the field sampling, an external chain of custody form will be utilized to track sample collection until delivery to the analytical laboratory. An internal or "intra-laboratory" chain of custody will be used by laboratory personnel to track the sample(s) from the point it is received/logged and passed through the laboratory process. Chain of custody procedures are discussed in detail in Section 9.0 of the FSP.

6.0 CALIBRATION PROCEDURES

Calibration procedures for field equipment including the photo-ionization detector (PID) meter, pH/conductivity/temperature meter and dust monitors are presented in Section 8.0 of the FSP. Calibration procedures for laboratory equipment/instrumentation consist of the production and use of current certifiable standards and the measurement/adjustment of the instrument response. The laboratory is responsible for maintaining records documenting use of current standards and acceptable instrument responses. The laboratory is required to flag analytical data that has had potential contamination or poor instrument calibration that may have occurred during the analytical process.

7.0 SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

The analytical parameters, sample preparation and analysis methods, acceptable holding times and required method detection limits are presented in Table 2. The analytical methods specified reflect the requirements of the NYSDEC ASP, Revised June 2000.

Table 2
Analytical Methods and Requirements

Analytical Parameters	EPA Method	Holding Times(1)	Contract Required Quantitative Limits (as noted)(2)
TCL Volatile Organic Compounds (VOCs)	8260	Soil/Sediment: 7 Days to Analysis (cool to 4° C). Water: 7 Days Unpreserved to Analysis, 10 Days Preserved (HCl to pH<2) to Analysis.	10-100 ug/kg (Soil) 1 to 10 ug/l (Water)
TCL Semi-Volatile Organic Compounds	8270	5 Days to Extraction, 40 Days to Analyze	330 to 800 ug/kg (Soil) 10-25 ug/l (Water)
TCL Pesticides	8081	5 Days to Extraction, 40 Days to Analyze	1.7 to 170 ug/kg (Soil) 0.05-1 ug/l (Water)
TCL PCBs	8082	5 Days to Extraction, 40 Days to Analyze	33 to 67 ug/kg (Soil) 0.5-1 ug/l (Water)
TAL Metals	6010/7000 Series	180 Days except for Mercury (28 Days)	0.3 to 500 mg/kg (Soil) 3 to 5,000 ug/l (Water)
Soil Gas For VOCs	TO-15	30 Days	1 mcg/m^3 or less

Note:
1) Holding times are relative to the verifiable time of receipt at the laboratory.
2) The listed method detection limits are practical quantitation limits (PQLs). The method detection limit (MDL) is the best possible detection. Laboratories report PQLs which are typically 4 times the MDL for liquids and varies for solids depending on the quantity of contamination present. Efforts will be made to obtain the lowest possible detection limit. When the guidance value or standard value is below the detection limit, achieving the detection limit will be considered acceptable for meeting that guidance or standard value.

Where matrix interference is noted, analytical clean-ups will be required to be performed by the laboratory following the procedures specified in SW-846 or the NYSDEC ASP, as applicable. In general, samples shall not be diluted more than 1 to 5.

8.0 DATA REDUCTION, VALIDATION AND REPORTING

The field measurement data and the laboratory analyses results of detected parameters will be compiled and tabulated to facilitate comparison and evaluation, and will be included in the Final RI/Summary of IRMs Report. The tabulated data will include at a minimum:

- soil analysis results,
- soil gas analysis results,
- groundwater analysis results, and
- quality control results (field blanks, replicates/duplicates and transport blanks).

Field logs will also be compiled and included, in part, in the text and appendices of the Final RI/Summary of IRMs Report, and will consist of:

- monitoring well construction logs,
- test pit logs,
- test boring logs,
- organic vapor headspace analysis logs,
- groundwater services field logs,
- environmental services field logs, and
- water level records.

Any observations or problems encountered during field activities which could affect the quality of the data or its validity will be noted on the appropriate field log.

The laboratory will generate ASP Category B Data Deliverable Package(s) that may be submitted as a separate volume to the RI/Summary of IRMs Report. It will include analytical results and quality control data deliverables as required by NYSDEC ASP (Revised 2000).

Internal data validation will be performed by the laboratory QA officer to ensure that the data package is complete and meets the criteria of the work plan and this QAPP. Any problems encountered in performing the analyses by the laboratory such as out of limits surrogate recoveries, and comments on the quality and limitations of specific data and the validity of the data will be described in the case narrative of the laboratory report.

External data validation will be performed by C.T. Male's in-house data validator who will utilize the USEPA National and Regional Validation Guidelines/Procedures and the NYSDEC Guidance in the Development of Data Usability Summary Reports to determine the applicable qualifications of the data. The validator will then prepare a NYSDEC Data Usability Summary Report (DUSR) in accordance with NYSDEC guidelines. The data validator will not be involved in any other portions of the project. The proposed data validator's qualifications and work experience is presented in Appendix B. The NYSDEC DUSR guidance is presented in Appendix C for reference.

9.0 INTERNAL QUALITY CONTROL

Field QC will consist of taking equipment/field blanks, replicate samples, and having transport blanks with the groundwater volatile organic compounds sample sets. Field instrumentation will also be calibrated prior to use and the calibration maintained as discussed in the FSP (Section 8.0).

Internal laboratory QC will generally consist of:

- Method (instrument) blanks,
- initial and continuing calibrations,
- surrogate spikes,
- matrix spikes/matrix spike duplicates,
- duplicate samples, and
- laboratory control samples/matrix spike blanks.

The QC samples will be run in accordance with the protocols and frequencies specified in the NYSDEC ASP, SW-846 and EPA Methods as applicable for the analyses being performed.

10.0 PERFORMANCE AND SYSTEMS AUDITS

10.1 Field Audits

Field performance audits will consist of taking replicate samples and equipment/field blanks and analyzing them for the same parameters as other samples.

Field system audits will be conducted during field operation to ensure that the field activities are being conducted correctly and in accordance with the RI/IRM Work Plan. The project field supervisor will check that the field instrumentation is calibrated prior to use, that field measurements are taken correctly, that equipment is properly decontaminated, and that the field activities are properly documented. Any deficiencies will be reported to the project manager and discussed with the field staff immediately and corrective action taken. The person conducting the field audits will document the field system audits by use of a field report and submit the report to the project manager for review on a bi-weekly basis at a minimum. The project quality assurance officer, geologist/engineer or project manager will conduct system audits as appropriate or warranted.

The project manager will review the field system audit reports and the field documentation for completeness and correctness, and check that the work is proceeding on schedule and in accordance with the work plans.

10.2 Laboratory Audits

Laboratory system audits are not required, however, if the laboratory is required to maintain New York State Department of Health (NYSDOH) ELAP certification. A copy of the laboratory NYSDOH ELAP certification documentation will be provided. Part of this certification process typically includes periodic performance evaluations and on-site systems audits.

11.0 PREVENTATIVE MAINTENANCE

C.T. Male Associates, P.C. keeps an inventory of all field equipment and it is kept locked in a designated area. The field equipment is signed out when in use and its condition checked upon its return. The equipment is kept in good working order and frequently checked and calibrated by qualified employees. Additionally, select equipment (i.e., PID) is routinely serviced for cleaning and calibration by an independent repair facility.

The project geologist/engineer/scientist and field sampler are responsible for assuring that the field equipment is tested, cleaned, charged and calibrated in accordance with the manufacturer's instructions prior to taking the equipment out into the field.

12.0 DATA ASSESSMENT PROCEDURES

The field and laboratory generated data will be assessed for precision, accuracy, representativeness, completeness, and comparability (PARCC parameters). Both quantitative and qualitative procedures will be used for these assessments.

The criteria for assessment of field measurements will be that the measurements were taken in accordance with the procedures specified in the FSP using calibrated instruments. Assessment of the sampling data with respect to field performance will be based on the criteria that the samples were properly collected and handled. Field replicate and equipment/field blank sample results will be used in assessing the sampling technique and representativeness of the samples collected.

The laboratory will calculate and report the precision, accuracy, and completeness of the analytical data. Precision will be expressed as the relative percent difference (RPD) between values of duplicate samples. Accuracy will be expressed as percent difference (PD) for surrogate standards and matrix spike compounds. Completeness is a measure of the amount of valid data derived from a set of samples based on the total amount expected to be derived under normal conditions. The precision and accuracy results will be compared to the QC acceptance criteria specified for each test method in the NYSDEC ASP (Revised June 2000).

The representativeness of the analysis is dictated primarily by the field sampling technique and sample location, as opposed to laboratory operations. The laboratory will take steps to ensure that the analysis is representative of the sample being submitted. The criteria for ensuring representativeness of the analysis are careful aliquot selection and proper compositing techniques. Laboratory performance will be based on the criteria that the samples were properly handled prior to submission to the laboratory, that the laboratory aliquots taken for analysis are representative (i.e., oversized particles discarded, sample thoroughly mixed except when dealing with volatile organics), that the samples were analyzed within holding times, and that no cross-contamination has occurred based on the method blank results. Data comparability will be assessed based on analyses being performed within required holding times, on consistent units of measure, and that analyses were performed in strict adherence with NYSDEC and EPA analytical methods/protocols.

13.0 CORRECTIVE ACTIONS

The remedial investigation and IRMs will be performed in accordance with the approved work plan, the contents of the approved FSP and the approved QAPP. Any persons identifying unacceptable conditions or deficiencies in the work being performed such as deviation from or omission of health and safety procedures, sampling procedures or other field procedures, will immediately notify the project field supervisor, where applicable, and the project manager. The unacceptable conditions or deficiencies will be documented and submitted to the project manager. The project manager, with assistance from the technical quality review staff, if necessary, will be responsible for developing and initiating appropriate corrective action, documenting the corrective action and verifying that the corrective action has been effective.

Depending on the significance and potential impact of the problem or deficiency requiring corrective action, the NYSDEC and the City of Newburgh will be notified, as warranted, as soon as practical after becoming aware of the situation.

14.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

Field system audit/field reports from the project team, where applicable, will be submitted to the project manager on a bi-weekly basis at a minimum. The field report will include the project name, location, time, date, weather, temperature range, work in progress, conformance with schedule, persons present at the site (arrival and departure times), observations, work start-up and stoppage, items to verify, information or action required, any attachments identified, and the reporting persons signature. The field report notifies the management as to the progress, conformance with the work plan, and any problems that may affect quality control. Field personnel will also keep log books and field notebooks that will discuss day to day procedures followed, any problems encountered, etc. A copy of the field notes will be given to the project manager at least bi-weekly to keep the project manager informed of the project status and as a quality control check. The project manager will review the reports and field notes to assess the quality of the investigate data gathering efforts to make sure the objectives of the work are being met, to make sure the work is progressing on schedule, that the work is being conducted in accordance with the work plan, and that any problems encountered are addressed. These reports will be utilized in assessing the data quality with respect to field activities and the findings will be discussed in the RI/IRM Report where applicable.

Documentation of each phase of the project and all work tasks performed are kept in the file on the project. The documentation is available at all times for review by the Quality Assurance Officer, who will randomly check files for their completeness.

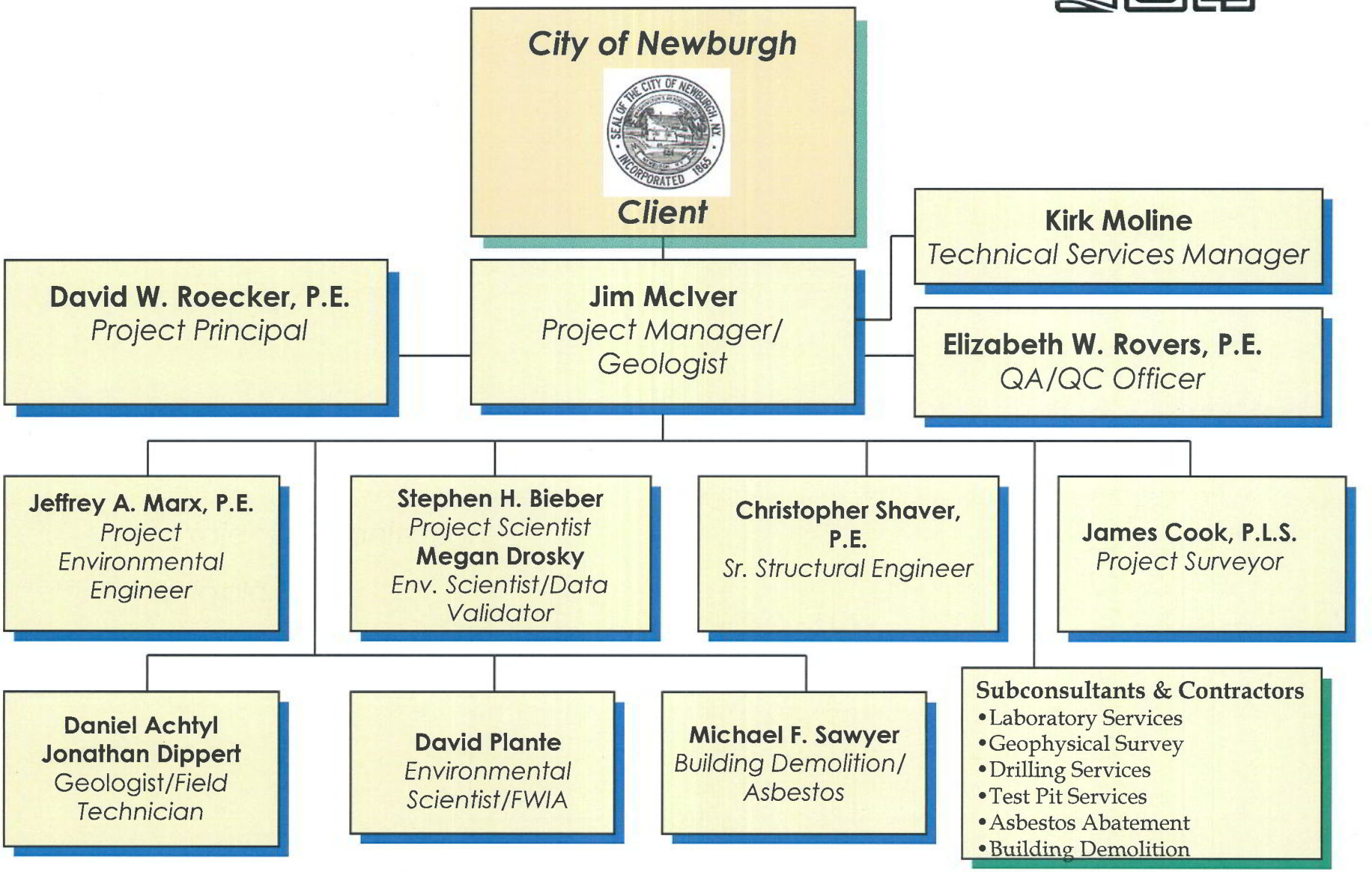
If any occurrences or conditions are encountered during the course of work that may require a change in the scope of work or departure from the approved work plan, the NYSDEC will be notified and the situation reported as soon as possible.

FIGURE 1

Project Organizational Chart

C.T. Male Project Organization

Select Available Staff



APPENDIX A
Laboratory Certifications (Pending)

APPENDIX B

Data Validator Qualifications and Experience

Megan A. Drosky

Environmental Scientist/Data Validator

Ms. Drosky joined C.T. Male in 2005. Her duties include the data validation of analytical data for soil, sediment, water, groundwater and soil vapor samples by various analytical methods (e.g., volatile and semivolatile organics, metals, PCBs, wet chemistry, etc.), and the preparation of full data validation reports or Data Usability Summary Reports (DUSR) for New York State Department of Environmental Conservation (NYSDEC) Brownfields Sites, NYSDEC Environmental Restoration Program Sites, NYS Inactive Hazardous Waste Sites, Landfill Closure and Post Closure Monitoring Sites, and other groundwater monitoring and subsurface investigation Sites.

Data Validation Experience

Pan American Tannery, Gloversville, New York. Performed data validation on Environmental Restoration Program Remedial Investigation soil and groundwater samples following USEPA Region 2 Data Validation Guidelines and NYSDEC Appendix 2B of Draft DER-10 Guidelines, and prepared a DUSR for each data package.

Bedford Hills Correctional Facility – Water Storage Tank Site, Town of Bedford, Westchester, New York. Performed data validation on Remedial Investigation soil samples following USEPA Region 2 Data Validation Guidelines and NYSDEC Appendix 2B of Draft DER-10 Guidelines, and prepared a DUSR for each data package.

Town of Rotterdam MSW and C&D Debris Landfills, Town of Rotterdam, New York. Performed full data validation on 5% of annual monitoring of surface water and groundwater samples following 6 NYCRR Part 360 Guidelines for "Baseline" and "Modified Baseline" parameters, and prepared a Data Validation Report for each data package.

Amenia Town Landfill, Amenia, New York. Performed data validation on Environmental Pre-Design Investigation soil samples following USEPA Region 2 Data Validation Guidelines and NYSDEC Appendix 2B of Draft DER-10 Guidelines, and prepared a DUSR for each data package.

Environmental Planning and Management – Katonah Project. Performed data validation on quarterly groundwater samples following USEPA Region 2 Data Validation Guidelines and NYSDEC Analytical Service Protocols, and prepared a Data Validation Summary Report for each data package.

Village of Dolgeville – 104 and 107 South Main Street Sites, Dolgeville, New York. Performed data validation on Environmental Restoration Program Remedial Investigation soil and groundwater samples following USEPA Region 2 Data Validation Guidelines and NYSDEC Appendix 2B of Draft DER-10 Guidelines, and prepared a DUSR for each data package for two sites.

Schuyler Heights Fire District, Watervliet, New York. Performed data validation on Environmental Restoration Program Remedial Investigation soil and groundwater samples following USEPA Region 2 Data Validation Guidelines and NYSDEC Appendix 2B of Draft DER-10 Guidelines, and prepared a DUSR for each data package.

Schenectady Metroplex Development Authority and the City of Schenectady – 314 Clinton Street Site and 312 Broadway Site, Schenectady, New York. Performed data validation on Environmental Restoration Program Remedial Investigation soil and groundwater samples following USEPA Region 2 Data Validation Guidelines and NYSDEC Appendix 2B of Draft DER-10 Guidelines, and prepared a DUSR for each data package for two sites.

Independent Leather Off-Site, Gloversville, New York. Performed data validation on Enviromental Restoration Program Remedial Investigation soil samples following USEPA Region 2 Data Validation Guidelines and NYSDEC Appendix 2B of Draft DER-10 Guidelines, and prepared a DUSR for each data package.

Arthur Kill Correctional Facility Firing Range, Staten Island, New York. Performed data validation on Remedial Investigation soil and groundwater samples following USEPA Region 2 Data Validation Guidelines and NYSDEC Appendix 2B of Draft DER-10 Guidelines, and prepared a DUSR for each data package.

Durkee Street – Parking Lot Site, Operable Units #1 and #2 Sites, Plattsburgh, New York. Performed data validation on Environmental Restoration Program Remedial Investigation soil vapor and soil samples following USEPA Region 2 Data Validation Guidelines and NYSDEC Appendix 2B of Draft DER-10 Guidelines, and prepared a DUSR for each data package.

Former CP Rail Yard, Plattsburgh, New York. Performed data validation on Brownfield Cleanup Program Remedial Investigation soil samples following USEPA Region 2 Data Validation Guidelines and NYSDEC Appendix 2B of Draft DER-10 Guidelines, and prepared a DUSR for each data package.

South Troy Industrial Park, Troy, New York. Performed data validation on Environmental Restoration Program Remedial Investigation soil and soil vapor samples following USEPA Region 2 Data Validation Guidelines and NYSDEC Appendix 2B of Draft DER-10 Guidelines, and prepared a DUSR for each data package.

Professional Background

- Environmental Scientist/Data Validator, C. T. Male Associates, Latham, New York, September 2005 - Present
- Environmental Scientist, URS Corporation, Morrisville, North Carolina, November 2003 – September 2005.
- Laboratory Technician, Wearcheck USA, Cary, North Carolina, October 2002 – November 2003.
- B.S. in Environmental Science, Long Island University at Southampton College, Southampton, New York, 2002.

Certifications

- OSHA 40-Hour Health and Safety Training Course, 2004
- 8-Hour Health and Safety Refresher Training, 2009
- 5 years prior work experience

APPENDIX C

Guidance for the Development of Data Usability Summary Reports

Appendix 2B
Guidance for Data Deliverables and the Development of Data Usability Summary Reports

1.0 Data Deliverables

(a) DEC Analytical Services Protocol Category A Data Deliverables:

1. A Category A Data Deliverable as described in the most current DEC Analytical Services Protocol (ASP) includes:

i. a Sample Delivery Group Narrative;

ii. contract Lab Sample Information sheets;

iii. DEC Data Package Summary Forms;

iv. chain-of-custody forms; and,

v. test analyses results (including tentatively identified compounds for analysis of volatile and semi-volatile organic compounds)

2. For a DEC Category A Data Deliverable, a data applicability report may be requested, in which case it will be prepared in accordance with the DUSR guidance detailed below.

(b) DEC Analytical Services Protocol Category B Data Deliverables

1. A Category B Data Deliverable is includes the information provided for the Category A Data Deliverable, identified in subdivision (a) above, plus related QA/QC information and documentation consisting of:

i. standards;

ii. surrogates;

iii. blanks;

iv. spike;

v. recoveries;

vi. confirmation samples;

vii. calibration;

viii. chromatograms;

ix. raw data files; and

x. other specific information as described in the most current DEC ASP.

2. A DEC ASP Category B Data Deliverable can only be provided by a NYSDOH ELAP accredited laboratory that also is CLP Tier accredited for the relevant category of analytes.

3. A DEC Category B Data Deliverable is required for the development of a Data Usability Summary Report (DUSR).

2.0 Data Usability Summary Reports (DUSRs)

(a) Background. The Data Usability Summary Report (DUSR) provides a thorough evaluation of analytical data with the primary objective to determine whether or not the data, as presented, meets the site/project specific criteria for data quality and data use.

1. The development of the DUSR must be carried out by an experienced environmental scientist, such as the project Quality Assurance Officer, who is fully capable of conducting a full data validation. The DUSR is developed from:

i. in the most current DEC ASP Category B;

ii. a United States Environmental Protection Agency Contract Laboratory Protocol (USEPA CLP) data deliverables package using USEPA Region 2 validation guidance documents; or

iii. the USEPA Contract Laboratory Program National Functional Data Validation Standard Operating Procedures for Data evaluation and validation.

2. The DUSR and the data deliverables package will be reviewed by DER staff. If data validation is found to be necessary (e.g. pending litigation) this can be carried out at a later date on the same data package used for the development of the DUSR.

(b) Personnel Requirements. The person preparing the DUSR must be pre-approved by the DER. The person must submit their qualifications to the DER documenting experience in analysis and data validation.

(c) Preparation of a DUSR. The DUSR is developed by reviewing and evaluating the analytical data package. In order for the DUSR to be acceptable, during the course of this review the following questions applicable to the analysis being reviewed must be answered in the affirmative.

1. Is the data package complete as defined under the requirements for the most current DEC ASP Category B or USEPA CLP deliverables?

2. Have all holding times been met?

3. Do all the QC data; blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample

data fall within the protocol required limits and specifications?

4. Have all of the data been generated using established and agreed upon analytical protocols?

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

6. Have the correct data qualifiers been used, are:

i. all data qualifiers consistent with the most current DEC ASP;

ii. has the evaluation of the ASP Matrix Spike Blank (MSB) data been correctly qualified, as follows, if the MSB recovery is less than:

(1) the ASP criteria, the positive results should be qualified as J, estimated biased low;

(2) the ASP criteria, but greater than 10%, the nondetects should be qualified J, estimated biased low; or

(3) 10%, the non-detect data must be rejected?

7. Have Any Quality Control exceedances been specifically noted in the DUSR and have the corresponding QC summary sheet from the data package been attached to the DUSR?

(d) Documenting the validation process in the DUSR. Once the data package has been reviewed and the above questions asked and answered the DUSR proceeds to describe the samples and the analytical parameters, including:.

1. Data deficiencies, analytical protocol deviations and quality control problems are identified and their effect on the data is discussed.

2. As well as any recommendations on resampling/reanalysis.

APPENDIX C

SITE SPECIFIC HEALTH AND SAFETY PLAN

SITE SPECIFIC HEALTH AND SAFETY PLAN
350-352 LIBERTY STREET SITE
CITY OF NEWBURGH
ORANGE COUNTY, NEW YORK

TABLE OF CONTENTS

SITE SPECIFIC HEALTH AND SAFETY PLAN
350-352 LIBERTY STREET SITE
CITY OF NEWBURGH
ORANGE COUNTY, NEW YORK

TABLE OF CONTENTS (cont.)

1.0 GENERAL

1.1 Overview

This Health and Safety Plan (HASP) has been prepared for use during implementation of a remedial investigation (RI) and Interim Remedial Measures (IRMs) at the 350-352 Liberty Street Site ("the site") located in the City of Newburgh, Orange County, New York. This HASP has been developed as an integral part of the RI/IRM Work Plan as prepared by C.T. Male Associates, P.C. The RI and IRMs are being performed as part of the NYSDEC 1996 Clean Water/Clean Air Bond Act, Environmental Restoration Projects (Brownfield Program).

A designated Health and Safety Officer (HSO) will be responsible for implementing this HASP during the completion of the field work. All persons or parties who enter the work area (support, decontamination, exclusion zone) must review, sign and comply with this HASP. A list of individuals authorized to enter the exclusion zone at the site is presented in Section 13.0 of this HASP. A copy of this HASP will be maintained at the work area throughout the duration of the project. A complete description of the site investigation work and IRMs is presented in the RI/IRM Work Plan. A brief description of the proposed scope of work is outlined below:

Site Investigation:

- Site Survey
- Building Material Inventory
- Asbestos Survey
- Ground Penetrating Radar Survey
- Advancement of test pits across the site
- Collect and analyze select soil samples from the test pits
- Install monitoring wells and collect groundwater samples
- Conduct a vapor intrusion evaluation
- Collect surface soil samples

IRMs

- Pre-demolition asbestos abatement and demolition of the site structure
- Removal and off-site disposal of the USTs and their appurtenances;
- Dry well and vehicle lift removals and off-site disposal
- Excavation and off-site disposal of contaminated soils
- Dewatering and treatment of groundwater encountered during excavation of contaminated soils
- Collection and off-site disposal of aboveground tanks, drums, containers and other ancillary items
- Other unforeseen environmental conditions which may be encountered during investigative and IRM work

1.2 Contact Names & Numbers

For this project, the following NYSDEC, City of Newburgh, Emergency Response names and telephone numbers are presented below as site contacts.

NYSDEC CONTACTS:

PROJECT MANAGER:	William Bennett Environmental Engineer 1 Division of Environmental Remediation NYSDEC 625 Broadway Albany, New York 12233-7014	(518) 402-9662

CITY OF NEWBURGH CONTACTS:

CURRENT OWNERS:	Mr. Ian Macdougall Project Manager City of Newburgh 83 Broadway Newburgh, New York 12550	(845) 569-9700

NYSDOH CONTACT:

TECHNICAL LEAD:	Kristin Kulow NYSDOH-Oneonta District Office 28 Hill Street, Suite 201 Oneonta, New York 13820	(607) 432-3911

CONSULTANT CONTACTS:

CONSULTING ENGINEER:	C.T. Male Associates, P.C. 50 Century Hill Drive Latham, NY 12110	(518) 786-7400
	David Roecker, Project Principal	(518) 786-7491
		Cell Phone: (518) 265-2117
	Kirk Moline, Project Manager	(518) 786-7502
		Cell Phone: (518) 265-1708
	Stephen Bieber, Health & Safety Officer	(518) 786-7495

EMERGENCY PHONE NUMBERS:

PERSONAL INJURY OR EMERGENCY:	St. Luke's Cornwall Hospital 70 Dubois Street Newburgh, NY 12550	(845) 568-2351
FIRE DEPARTMENT:	Emergency	911
	City of Newburgh Fire Department 22 Grand Street Newburgh, NY 12550	(845) 562-1212
POLICE:	Emergency	911
	City of Newburgh Police Department 55 Broadway Newburgh, NY 12550	(845) 561-3131
	Emergency	911
	NYS Troopers Barracks 55 Crystal Run Road Middletown, NY 10941-9755	(845) 344-5300

UPSTATE NEW YORK REGIONAL POISON CONTROL CENTER:	University Hospital Upstate Medical University SUNY Health Science Center 750 East Adams Street Syracuse, NY 13201	(800) 222-1222
NATIONAL RESPONSE CENTER:	c/o United States Coast Guard (G-OPF) 2100 2nd Street, Southwest - Room 2611 Washington, DC 20593-0001	(800) 424-8802
NYSDEC SPILL HOTLINE:		(800) 457-7362

2.0 HEATLH AND SAFETY PERSONNEL

The Health and Safety Officer (HSO) will be responsible for implementation of the HASP and the delegation of health and safety duties. The HSO will coordinate the resolution of safety issues that arise during site work. When field operations require Level D protection, it will not be necessary for the HSO to be present on-site at all times. When the HSO is not present on-site, a designee will be authorized to perform the duties of the HSO. The designee will be responsible for implementation of the HASP.

The HSO or designee has stop work authorization which the HSO or designee will execute upon the HSO or designee's determination of an eminent safety hazard, emergency situation or other potentially dangerous situations (e.g. weather conditions), when this action is deemed appropriate. Authorization to resume work will be issued by the HSO.

3.0 SITE LOCATION AND DESCRIPTION

The Site consists of a single parcel of land addressed as 350-352 Liberty Street in the City of Newburgh, Orange County, New York. The site is approximately 0.12 acres. The site is currently vacant, predominantly flat, and consists of a single-story structure on its eastern end and a combination of pavement and concrete at the ground surface on its western end. A narrow strip of grassy area is located between the site building and its eastern property boundary. The site has historically been utilized as a gasoline service station and repair shop. This usage began in the 1950s and ceased in the 1980s, when the City of Newburgh took possession of the site for delinquent tax payments. The site has remained idle ever since.

4.0 POTENTIAL SITE CONTAMINANTS

Potential site contaminants which may be encountered during the investigative and IRM work in conjunction with the site's historic use as a petroleum station and motor repair facility include virgin motor oil, used oil, solvents, gasoline, fuel oil, kerosene, diesel fuel, and potentially PCBs. Relevant Material Safety Data Sheets for the potential site contaminants are presented in Exhibit 1.

5.0 HAZARD ASSESSMENT

5.1 General

The hazard assessment, use of specific protective equipment, and monitoring associated with each field work task of the investigation and IRM work to be conducted at the subject site are presented in following subsections.

For this project, C.T. Male will be subcontracting portions of the site investigation and/or IRM activities. Each subcontractor will be responsible for developing and implementing a site specific health and safety plan for their activities, for protection of their employees, and use of personal protective equipment. The subcontractor will also be responsible for developing and following their own Respiratory Protection Program, as applicable.

5.2 Site Survey

The site survey will be performed by a two man crew and their work will not be intrusive. Therefore, exposure to potential site contaminants is considered remote. The potential hazards to the survey crew will include slip and fall hazards from poor terrain, cuts from improper use of vegetation cutting tools, and the possibility of skin and eye damage from walking through brush. To protect against these potential hazards, any personnel completing this work should wear, at a minimum, safety glasses, leather gloves, steel-toe boots, and full length pants.

5.3 Ground Penetrating Radar (GPR) Survey

The GPR survey is a subcontracted service that will involve a one or two person crew that pulls a transmitting/receiving antenna across the surface of the site. The signals are received by a video display through a connected transmitter cable. The radar signals are electromagnetic signals, and present an extremely remote hazard. Exposure to potential site contaminants is considered remote. The potential hazards do include trip and fall hazards from site terrain and GPR equipment. Those individuals observing the GPR survey should were steel-toe boots, and must pay attention to the surroundings prior to running the GPR traverse.

5.4 Subsurface Work

Exploratory test pits, soil test borings (including the installation of monitoring wells) and soil excavations are planned for the site for more than one field task. The potential hazards to personnel during this work are dermal contact and a low potential for vapor inhalation of potential site contaminants. Level D protection should be sufficient to protect against dermal contact during excavation of and/or handling of the subsurface soils and groundwater. If organic vapors are present at the action levels described in Section 5.6, on the basis of organic vapor monitoring of the area during the work, it may be necessary to upgrade to Level C respiratory protection.

5.5 Asbestos and Building Materials Survey

This survey work will include assessment of building materials and the building interiors and collecting of bulk samples for asbestos analyses. The potential hazardous are slip and fall hazards from debris within the buildings, the possibility of head and eye damage from building obstructions, and cuts from handling building materials being sampled. To protect against these potential hazards, personnel completing this work should wear Level D protection, and at a minimum, safety glasses, leather gloves, hard hats, and steel-toe boots, and avoid unsafe portions of building structures. Appropriate sampling methodology will be used during collection of building materials. The power is disconnected and lighting within the buildings is not available, so adequate lighting will be necessary.

5.6 Building Demolition

The demolition of the building will be conducted during the IRM. The potential hazards to personnel during the demolition work include inhalation of building rubble dust and to a lesser degree, asbestos containing materials. Dust monitoring in accordance with the Community Air Monitoring Plan discussed in Section 5.10 will be instituted during the building demolition and NYS Code Rule 56 will be adhered to should asbestos containing building materials be disturbed and/or handled. At a minimum, water will be applied to the structures during demolition to minimize the generation of dust.

5.7 Cleaning and Closure of Storage Tanks

Several storage tanks will be cleaned and permanently closed. C.T. Male personnel will be responsible for observing the tank cleaning and closure activities being completed by a subcontractor. The subcontractor will be responsible for protection of their workers, following confined space requirements, and respiratory protection. For C.T. Male, potential hazards include inhalation of vapor emanating off the tank contents when open, and to a lower potential dermal contact from incidental splatter from the subcontractor's handling of the tank contents. Level D protection should be sufficient to protect against dermal contact during excavation of and/or handling of the subsurface soils and groundwater. If organic vapors are present at the action levels described in Section 5.14, it may be necessary to upgrade to Level C respiratory protection. Work completed with the subcontractor will be coordinated through the subcontractor's HSO.

5.8 Disposition of Abandoned Drums, Containers and Debris

There are abandoned drums, containers and debris scattered throughout the boiling and outside. C.T. Male will be responsible for observing the characterization, consolidation, and ultimate off-site disposal of these items. The subcontractor will be responsible for using appropriate PPE. At the time of opening the containers, C.T. Male personnel will not be within the work area of those activities. By maintaining a safe distance, Level D protection will be sufficient. If within the subcontractor's work area, C.T. Male personnel will coordinate with the subcontractor's HSO to determine the appropriate level of protection.

5.9 Air Monitoring

During the completion of test pits, borings and excavations, the ambient air in the work area will be monitored with a photoionization detection meter (total volatile compound - MiniRAE 2000) prior to the start of work and periodically as conditions warrant. If a concentration of 10 ppm (sustained for 5 minutes) of total volatile compounds is detected within the work area on the instrument, relative to an isobutylene standard (used to calibrate the instrument), work will cease immediately and the workers shall shut down equipment and leave the area immediately. The level of personal protective equipment (PPE) protection will be

evaluated prior to continuing work. If a PPE upgrade to Level C is required, it will include: a half face air purifying respirator equipped with combination organic vapor and particulate cartridges for 10-15 ppm exposure levels; and a full-face air purifying respirator for greater than 15 ppm to less than 50 ppm exposure levels, prior to continuing work. If a concentration greater than 50 ppm is encountered, work will cease immediately and the situation will be evaluated prior to continuation of work. Table 1 summarizes the action levels relative to the required respiratory protection.

Table 1
C.T. Male Action Levels & Required Respiratory Protection

Action Level	Level of PPE	Type of Respiratory Protection
0-10 parts per million	Level D	No respiratory protection
10-15 parts per million	Level C	Negative pressure half-face respirator
15-50 parts per million	Level C	Positive pressure full-face respirator
Greater than 50	Cease Work	Evaluate work procedures

-Facial hair is not permitted while wearing most respirators.

-Workers required to wear a respirator must have a minimum of OSHA 40 Hour training with current medical monitoring and fit test documentation.

5.10 Community Air Monitoring Plan

A site specific Community Air Monitoring Plan (CAMP) will be followed for the project on the basis of the New York State Department of Health Generic Community Air Monitoring Plan dated June 2000 (Appendix C).

5.11 Hazard Identification and Control

The following table presents generalized hazards potentially involved with the tasks to be completed on this project. Table 2 identifies general procedures to follow to prevent or reduce accident, injury or illness. Any worker on-site who identifies a potential hazard must report the condition to the HSO or designee, and initiate control of the hazardous condition.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
Vehicular Traffic	1. Wear safety vest when vehicular hazards exist. 2. Use cones, flags, barricades, and caution tape to define work area. 3. Use vehicle to block work area. 4. Contact police for high traffic situations.
Slip, Trip, and Fall Protection	1. Assess work area to determine if there is a potential for falling. 2. Make sure work area is neat and tools are staged in one general area. 3. Wear steel-toe boots with adequate tread and always watch where the individual is walking. Carry flashlight when walking in poorly lighted areas.
Inclement Weather	1. Stop outdoor work during electrical storms and other extreme weather conditions such as extreme heat or cold temperatures. 2. Take cover indoors or in vehicle. 3. Listen to local forecasts for warnings about specific weather hazards such as tornadoes, hurricanes, and flash floods.
Utility Lines Contact	1. Contact UFPO to have utility lines marked prior to any underground excavation, trenching or drilling. UFPO must be contacted at least 72 hours prior to work. 2. Refer to site drawings for utility locations. 3. Manually dig 3 to 5 feet below grade and 5 feet on each side of utility marked to avoid breaking utility lines.
Noise	1. Wear hearing protection when equipment such as a drill rig, excavator, jackhammer, or other heavy equipment is operating on-site. 2. Wear hearing protection whenever you need to raise your voice above normal conversational speech due to a loud noise source; this much noise indicates the need for protection. 3. Hearing protection is required when measured sound exceeds 85 decibels (dB) where employees stand or conduct work.
Electrical Shock	1. Maintain appropriate distance between heavy equipment and overhead utilities; 20 foot minimum clearance from power lines; and 10 foot minimum clearance from shielded power lines. 2. Contact local underground utility locating service prior to penetrating

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
	the ground surface.
Physical Injury	1. Wear hard hats and safety glasses at all times when on-site. 2. Maintain visual contact with equipment operators and wear orange safety vest when heavy equipment is operating on-site. 3. Avoid loose clothing when working around rotary equipment. 4. Keep hands and feet away from drilling augers and excavation equipment tracks/tires. 5. Test emergency shut-off switches on drill rigs and excavation equipment regularly.
Back Injury	1. Use a mechanical lifting device or a lifting aid where appropriate. 2. Make sure the route is free of obstructions. 3. Bend at the knees and use leg muscles when lifting. 4. Use the buddy system if lifting heavy or awkward objects. 5. Do not twist or jerk your body when lifting.
Heat Stress	1. Increase water intake while working. 2. Avoid excessive alcohol intake the night before working in heat stress situations. 3. Increase number of rest breaks as necessary, and rest in a shaded area. 4. Watch for signs and symptoms of heat exhaustion and fatigue. 5. Rest in cool, dry areas. 6. In the event of heat stress or heat stroke, bring the victim to a cool environment and call 911.
Cold Stress	1. Wear cotton, wool or synthetics (polypropylene) undergarments to absorb perspiration from the body. 2. Wear additional layers of light clothing as needed for warmth. The layering effect holds in air, trapping body heat, and some layers could be removed as the temperature rises during the day. 3. Pay close attention to body signals and feelings (hypothermia symptoms), especially to the extremities. Correct any problem indications by breaking from the work activity and moving to a rest area to warm up and add additional clothing.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
	4. Increase water intake while working. 5. Avoid excessive alcohol intake the night before working in cold conditions. 6. Increase the number of rest breaks as necessary, and rest in a warm area. 7. In the event of hypothermia, frost bite, bring the victim to a warm environment and call 911.
Fire Control	1. Smoke only in designated areas. 2. Keep flammable liquids in closed containers. 3. Isolate flammable and combustible materials from ignition sources. 4. Keep fire extinguisher nearby and use only if deemed safe.
Media Sampling (water, soil, etc.)	1. Wear appropriate PPE to avoid skin, eye, and inhalation contact with contaminated media. 2. Stand upwind to minimize possible inhalation exposure, especially when opening monitoring wells or closed containers/vessels. 3. Conduct air monitoring, whenever necessary to determine level of respiratory protection. 4. If necessary, employ engineering controls to assist in controlling chemical vapors.
Cleaning Equipment	1. Wear appropriate PPE to avoid skin and eye contact with isopropyl alcohol, alconox, or other cleaning materials. 2. Stand upwind to minimize possible inhalation exposure. 3. Properly dispose of spent chemical cleaning solutions and rinse accordingly.
Poor Structural Building Condition	1. Assess building condition prior to entering and note where exit points are at all times. 2. Be cautious when walking inside the building. Always look for holes in the floors or hanging debris which could cause injury. 3. Carry a high power flashlight and use as necessary in low light areas. 4. If working in the building, make sure work area is neat and tools are staged in one general area. 5. Wear steel-toe boots with adequate tread.

Table 2 Potential Hazards and Control	
Potential Hazard	**Control**
	6. Try to employ the buddy system so someone knows what part of the building individuals are in.
Deer Ticks	1. Wear pants and long sleeve shirts 2. Perform personal body checks for the presence of ticks 3. Notify the Health and Safety Officer immediately if you have been bitten by a tick and contact your physician.
Note: A first aid kit and fire extinguisher will be located in the C.T. Male company vehicle.	

Response actions to personal exposure from on-site contaminants include skin contact, eye contact, inhalation, ingestion, and puncture or laceration. The recommended response actions are presented in Section 11.2.

6.0 TRAINING

Site specific training of workers and personnel will be conducted and provided by the HSO or designee prior to any on-site activity. The training will specifically address the activities, procedures, monitoring and equipment for the site operations. It will include area and facility layout, hazards, emergency services (police, hospital, fire, etc.), and review of this HASP. Questions by workers, field personnel, etc. will be addressed at this time.

Workers and personnel conducting and/or supervising the project must have attended and successfully completed a 40 Hour Health and Safety Training Course for Hazardous Waste Operations, an annual 8 hour Refresher Course, and take part in an employer medical surveillance program in accordance with OSHA 1910.120 requirements, specifically, that the workers have had a medical physical within one (1) year prior to the date the work begins and that they are physically able to wear a respirator.

Documentation of training and medical surveillance will be submitted to the HSO or designee prior to the start of any on-site work. A copy of the training certificates shall be inserted into the pocket of this HASP in Appendix A.

7.0 SITE ACCESS

The site investigation and IRMs will be generally performed within the site boundaries. Due to the site location, it is likely that the public or curious bystanders will be present at the time of the work. Therefore, the work area will be considered as a 10 foot radius around the work activity being performed. Only OSHA trained individuals which are qualified to do the work and have read and signed this site specific HASP will be allowed within the 10 foot radius work zone. The work area will be secured with traffic cones and/or flagging to prevent unauthorized entry. The HSO or designee will be responsible for limiting access to unauthorized individuals.

During completion of the site investigation and IRMs, a 10 foot circle around the immediate work area will be considered the Exclusion Zone (contaminated area where investigation/remedial work is to be conducted). The Contamination Reduction Zone (decontamination area), and Support Zone (clean area, everywhere else) will be established outside the Exclusion Zone, as necessary. The exclusion, contamination reduction, and support zone during investigation/remediation work have been identified and designated as follows:

Exclusion Zone - The location of the exclusion zone will be determined in the field prior to the start of work and will vary depending on the work activities conducted. For the most part, the exclusion zone is anticipated to be a 10 foot radius around the work area. The outside exclusion zones may be delineated with cones and yellow caution tape or equal method, where applicable. Only authorized persons with proper training and protective gear will be allowed to enter the exclusion zone. If the exclusion zones, as previously explained, changes orientation during the completion of the work, the HASP will be amended in the field to reflect the change.

Contamination Reduction Zone – If applicable, this zone will generally be a 10'± x 10'± area, marked off with stakes and blue and white colored flagging or equal method, containing the decontamination pad. The location will be determined in the field prior to the start of work and will vary depending on the area(s) the work is being conducted. This zone is where decontamination of personnel and

equipment will take place, as necessary, on the basis of the work being performed. It will be located upwind of the Exclusion Zone, if possible.

Support Zone - Area outside of contamination reduction zone and not including the exclusion zone. Unauthorized or untrained individuals must remain in this zone.

8.0 PERSONAL PROTECTION

8.1 Level of Protection

Based on evaluation of the potential hazards, the minimum level of protection to be worn by workers during implementation of the site investigation and remediation activities is defined as Level D protection, and will be controlled by the HSO or designee.

The minimum level D protective equipment will consist of field clothes, rubber gloves, hard hats, safety glasses, and safety boots (steel-toe preferred). As appropriate, this level of protection may be modified to include polylaminated Tyvek suits, coveralls, leg chaps, or face shield for additional protection. Both full-face and half-face air purifying respirators should be readily available. Appropriate combination organic vapor and particulate cartridge filters will be available at the site, to use, if necessary with the air purifying respirators.

If required, level C protective equipment will consist of the items listed for Level D protection with the added protection of full-face, air purifying (organic vapor and particulate) respirator, chemical resistant clothing, inner and outer chemically resistant gloves (i.e. solvent resistant nitrile, PVC/nitrile), and chemical resistant safety boots/shoes.

Level B is not anticipated, but if required, level B protective equipment will consist of the items listed for Level D protection except a self-contained breathing apparatus (SCBA) will be worn dependent on the level of contaminants present in the work zone, and polylaminated Tyvek suits will be required. When site conditions warrant the need for level B protective equipment, work will cease and the project will be re-evaluated to determine the necessity for employing engineering controls to reduce or eliminate the potential contaminants of concern.

8.2 Safety Equipment

Basic emergency and first aid equipment will be available at an area within the Support Zone clearly marked and available or within C.T. Male's company vehicle. This shall include a first aid kit, fire extinguisher, supply of potable water, soap and towels. The HSO or designee shall be equipped with a cellular phone in case of emergencies. If the cellular phone is not available, or is inoperable, a pay phone in the immediate vicinity will be used.

9.0 COMMUNICATIONS

There are no existing phone services associated with the subject site. The HSO or designee shall be equipped with a cellular phone in case of emergencies. If the cellular phone is not available, or is inoperable, a pay phone in the immediate vicinity will be used. The HSO or designee shall notify the C.T. Male project manager as soon as safely possible in the event of an accident, injury or emergency action.

Hand signals for certain work tasks will be employed, as necessary, and the buddy system will be employed during excavation, drilling and sampling activities.

10.0 DECONTAMINATION PROCEDURES

10.1 Personnel Decontamination Procedures

Decontamination procedures will be carried out by all personnel leaving the Exclusion Zone (except under emergency evacuation). The amount of decontamination performed will be dependent on the level of personal protection currently being worn within the exclusion zone.

1. Do not remove respiratory protection until all steps have been completed.
2. Clean outer protective gloves and outer boots, if worn, with water (preferably with a pressurized washer) over designated wash tubs in the exclusion zone to remove the gross amount of contamination.
3. Deposit equipment used (tools, sampling devices, and containers) at designated drop stations - on plastic drop sheets or in plastic lined containers.
4. Rinse outer boots if worn and gloves with clean water in designated rinse tubs. Remove outer boots if worn and gloves and deposit in designated area to be determined in the field for use the next day or when necessary. If disposable outer boots are worn, remove and discard in designated container.
5. Remove hard hat & safety glasses, rinse with clean water as necessary and deposit in designated area for use the next day or when necessary.
6. Remove Tyvek suit, if worn, and discard in designated container. Remove respirator at this time, if used; wash and rinse with clean water. Organic vapor cartridges, when used, will be replaced daily. Used cartridges will be discarded in the designated waste container. Remove inner gloves and discard in designated container.

10.2 Equipment and Sample Containers Decontamination

All decontamination will be completed by personnel in protective gear appropriate for the level of protection determined by the site HSO or designee. Manual

sampling equipment including trowels, hand augers and macro-core samplers, shovels and split-spoon samplers which come into contact with the site's soils, will be cleaned with a tap water/detergent wash and a tap water rinse. The sampling equipment will be washed after each sample is collected and the wash and rinse water will be allowed to infiltrate the site's soils at each sampling point.

Larger excavation equipment (i.e., rubber-tire backhoe or track excavator) which comes into contact with the site's soils will be decontaminated with a high pressure/hot water wash. The decontamination procedure will focus on portions of the equipment that has come into contact with the site's soils such as the bucket. The cleaning will be performed at the completion of each test pit/excavation and the used cleaning liquids will be stored in 55-gallon drums pending analytical results of the sampled soils.

Drill rig equipment (i.e., augers) which comes into contact with the site's soils will be decontaminated with a high pressure/hot water wash. The decontamination procedure will focus on portions of the equipment that has come into contact with the site's soils such as the augers and drill bits. The cleaning will be performed at the completion of each boring location and the used cleaning liquids will be stored in 55-gallon drums pending analytical results of the sampled soils and groundwater.

Exterior surfaces of sample containers will be wiped clean with disposable wipes in the decontamination zone and transferred to a clean cooler for transportation or shipment to the analytical laboratory. Sample identities will be noted and checked off against the chain-of-custody record. The disposable wipes will be placed in the designated disposal container and disposed of as solid waste.

11.0 EMERGENCY RESPONSE PROCEDURES

THE PROJECT EMERGENCY COORDINATOR IS:

Site Health and Safety Officer (HSO) Stephen Bieber

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

11.1 Personal Injury

Emergency first aid shall be administered on-site as deemed necessary and only by a trained individual, if available at the site. If a trained individual is not available on-site, decontaminate, if feasible, and transport individual to nearest medical facility (St-Luke's Cornwall Hospital). The HSO will supply medical data sheets to appropriate medical personnel and be responsible for completing the incident report. If the HSO is injured or controlling the emergency situation, the medical data sheets are available in Appendix B of this Health and Safety Plan.

11.2 Personal Exposure

The recommended response to worker exposure from contaminants on-site includes the following:

SKIN CONTACT: Use generous amounts of soap and water. Wash/rinse affected area thoroughly, then provide appropriate medical attention, as necessary.

EYE CONTACT: Wash eyes thoroughly with potable water supply provided on site. Eyes should be rinsed for at least 15 minutes subsequent to chemical contamination. Provide medical attention, as necessary.

INHALATION: Move worker to fresh air and outside of the work zone and/or, if necessary, decontaminate and transport to hospital (St. Luke's Cornwall). If respirator use is implemented at the time of

inhalation, worker must not remove respirator until completely away from the work zone.

INGESTION: Decontaminate, if feasible, and transport to hospital (St. Luke's Cornwall).

PUNCTURE WOUND OR LACERATION: Provide first aid at the site and if wound needs medical attention, decontaminate, if feasible, and transport to hospital (St. Luke's Cornwall).

If the affected worker is exposed to contaminants on-site and the injury or accident prevents decontamination of the individual, the emergency responders must be notified of this condition and the exposure must be kept to a minimum.

11.3 Potential or Actual Fire or Explosion

Immediately evacuate area in the event of potential or actual fire or explosion. Notify the local fire and police departments, and other appropriate emergency response groups, as listed in Section 1.2. Perform off-site decontamination and contain wastes for proper disposal. If a fire or explosion occurs, all on-site personnel must meet in the designated area of the site (established by the HSO or designee) for an accurate head count.

11.4 Equipment Failure

Should there be any equipment failure, breakdown, etc. the Project Manager and HSO shall be contacted immediately. The Project Manager or the HSO will make every effort to replace or repair the equipment in a timely manner.

11.5 Spill Response

The site HSO or designee shall initiate a corrective action program with the subcontractors in the event of an accidental release of a hazardous material or suspected hazardous material. The HSO or designee will act as the Emergency Coordinator with the subcontractors for the purposes of: spill prevention; identifying releases; implementing clean up measures; and notification of appropriate personnel.

The corrective action program will be implemented by the HSO and subcontractor to effectively control and minimize any impact accidental releases may have to the environment.

Effective control measures will include:

- Preliminary assessment of the release
- Control of the release source
- Containment of the released material
- Effective clean-up of the released material

Potential sources of accidental releases include: hydraulic oil spills or petroleum leaks from heavy equipment; cooling oils (potentially PCB containing) for electrical equipment handling and cleaning; and spills from drums, vats, vessels, and tanks. The HSO/Emergency Coordinator in conjunction with the subcontractor shall respond to an accidental release in the following manner:

- Identify the character, source, amount and area affected by the release.
- Have subcontractor take all reasonable steps to control the release.
- Notify the NYSDEC Spill Hotline at 1-800-457-7362. Notify NYSDEC Project Manager William Bennett and the City of Newburgh.
- Contain the release with sorbent material which should include speedi-dry, spill socks and sorbent pads.
- Prevent the release from entering sensitive receptors (i.e., catch basins and surface water) using the specified sorbent material or sandbags.
- Coordinate cleanup of the release material.
- Oversee proper handling and storage of contaminated material for disposal.

At no time should personal health or safety be compromised or jeopardized in an attempt to control a release. All health and safety measures as outlined in this HASP should be adhered to.

12.0 ADDITIONAL WORK PRACTICES

Workers will be expected to adhere to the established safety practices. Work on the project will be conducted according to established protocol and guidelines for the safety and health of all involved. The following will be adhered to:

- Employ the buddy system when possible, and for those work tasks which require it. Establish and maintain communications.
- Minimize contact with potentially contaminated soil and water.
- Employ disposable items when possible to minimize risks during decontamination and possible cross-contamination during sample handling.
- Smoking, eating, or drinking after entering the work zone and before decontamination will not be allowed (to prevent oral ingestion of potential on-site contaminants).
- Avoid heat and other work stress related to wearing personal protective equipment. Take breaks as necessary and drink plenty of fluids to prevent dehydration.
- Withdrawal from a suspected or actual hazardous situation to reassess procedures is the preferred course of action.
- The removal of facial hair (except mustaches) prior to working on-site will be required to allow for a proper respiratory face piece fit.
- The Project Manager, the HSO, and sampling personnel shall maintain records recording daily activities, meetings, facts, incidents, data, etc. relating to the project. These records will remain at the project site during the full duration of the project so that replacement personnel may add information while maintaining continuity. These daily records will become part of the permanent project file.

13.0 AUTHORIZATIONS

Personnel authorized to enter the exclusion zone at the Environmental Restoration Project being conducted at the 350-352 Liberty Street Site in the City of Newburgh, Orange County, New York while operations are being conducted must be certified by the HSO. Authorization will involve completion of appropriate training courses and review and sign off of this HASP.

Personnel authorized to perform work on-site are as follows:

1. Kirk Moline C.T. Male
2. Jim McIver C.T. Male
3. Jeffrey Marx C.T. Male
4. Dan Achtyl C.T. Male
5. Stephen H. Bieber C.T. Male
6. Jon Dippert C.T. Male
7. Aimee Gates C.T. Male
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____

14.0 MEDICAL DATA SHEET

This medical data sheet will be completed by all on-site personnel and will be kept on-site during the duration of the project. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

PROJECT: Environmental Restoration Project to be conducted at the 350-352 Liberty Street Site in the City of Newburgh, Orange County, New York.

Name _____ Home Telephone _____

Address _____

Emergency Contact _____

Drug or Other Allergies _____

Particular Sensitivities _____

Do You Wear Contact Lenses _____

Provide a Checklist of Previous Illness or Exposure to Hazardous Chemicals

_____

What Medications Are You Presently Using _____

_____

Do You Have Any Physical or Medical Restrictions _____

_____

Are You Qualified to Wear Respirator (Provide Fit Test Results)_____

Name, Address, and Telephone Number of Personal Physician:

_____

_____

_____

15.0 FIELD TEAM REVIEW

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

I have read and understood this Site Specific Health and Safety Plan, and I will comply with the provisions contained therein.

PROJECT: Environmental Restoration Project
350-352 Liberty Street Site,
City of Newburgh
Orange County, New York

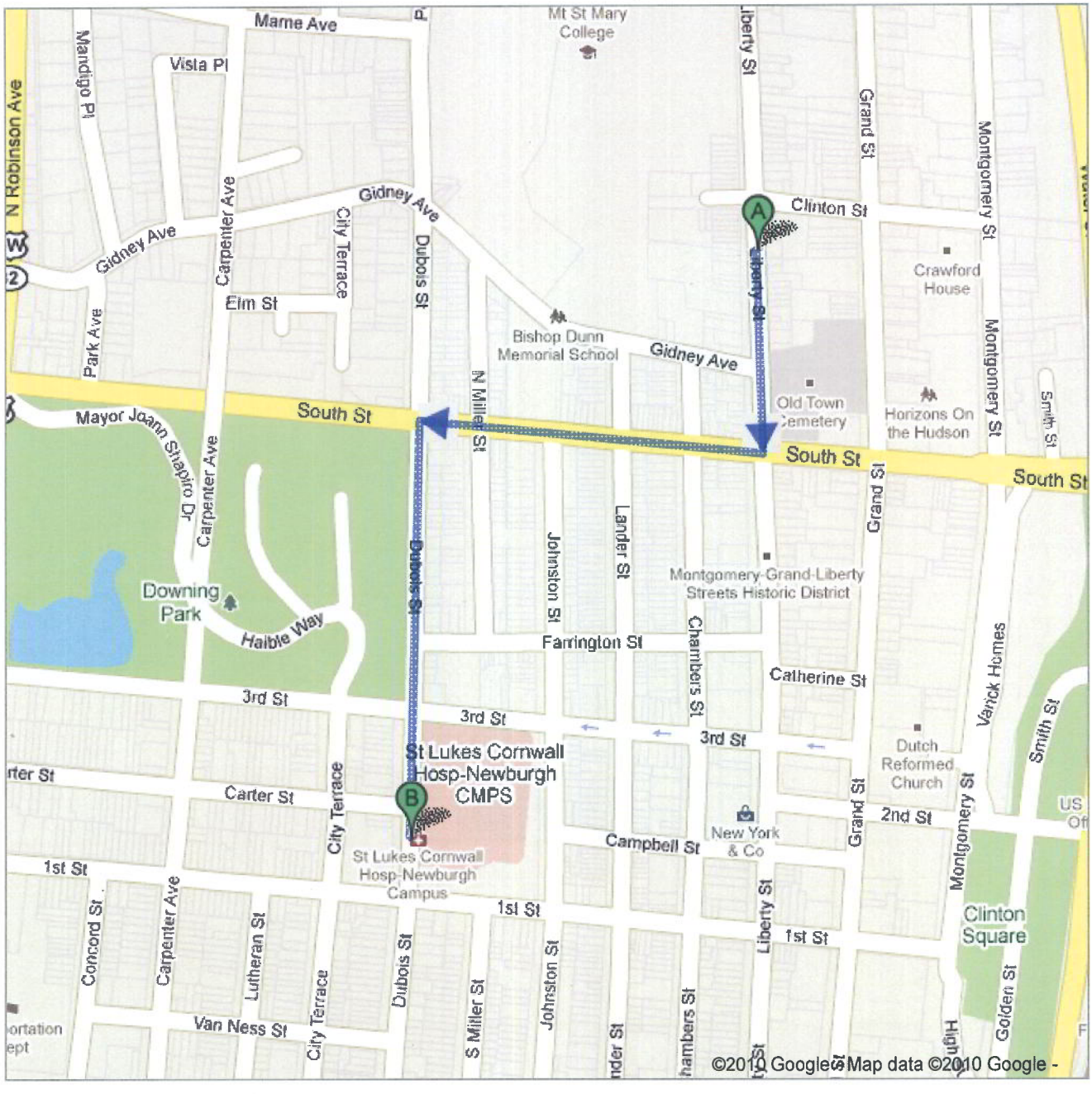
Name: Printed	Signature	Date

FIGURE 1

MAP SHOWING ROUTE TO ST. LUKE'S CORNWALL HOSPITAL

Google maps

To see all the details that are visible on the screen,use the "Print" link next to the map.



Driving directions to 70 Dubois St, Newburgh, NY 12550

350 Liberty St
Newburgh, NY 12550

1. Head **south** on **Liberty St** toward **Gidney Ave**	0.1 mi
2. Take the 2nd **right** onto **South St**	0.2 mi
3. Turn **left** at **Dubois St** Destination will be on the left	0.3 mi

70 Dubois St
Newburgh, NY 12550

APPENDIX A

TRAINING CERTIFICATES

STATEMENT OF TRAINING

This certifies that

Kirk Moline

has successfully completed the

8 Hour Health & Safety Refresher Training for Hazardous Waste Site Activities per 29 CFR 1910.120 (HAZWOPER)

conducted by
ATC Associates Inc.
10 Colvin Avenue, Ste 101
Albany, NY 12206
(518) 438-0451

Principal Instructor

Regional Manager

August 6, 2009
Date of Course

8HMR-14278
Certificate Number

August 6, 2010
Expiration Date

Not Applicable
Examination Date

STATEMENT OF TRAINING

This certifies that

Jim McIver

has successfully completed the

8 Hour Health & Safety Refresher Training for Hazardous Waste Site Activities per 29 CFR 1910.120 (HAZWOPER)

conducted by
ATC Associates Inc.
10 Colvin Avenue, Ste 101
Albany, NY 12206
(518) 438-0451

Principal Instructor

July 2, 2009
Date of Course

July 2, 2010
Expiration Date

Regional Manager

8HMR-14257
Certificate Number

Not Applicable
Examination Date

STATEMENT OF TRAINING

This certifies that

Jeferey A. Marx

has successfully completed the

8 Hour Health & Safety Refresher Training for Hazardous Waste Site Activities per 29 CFR 1910.120 (HAZWOPER)

conducted by
ATC Associates Inc.
10 Colvin Avenue, Ste 101
Albany, NY 12206
(518) 438-0451

Principal Instructor

Regional Manager

April 14, 2008
Date of Course

8HMR-13623
Certificate Number

April 14, 2009
Expiration Date

Not Applicable
Examination Date

STATEMENT OF TRAINING

This certifies that

Dan Achtyl

has successfully completed the

8 Hour Health & Safety Refresher Training for Hazardous Waste Site Activities per 29 CFR 1910.120 (HAZWOPER)

conducted by
ATC Associates Inc.
10 Colvin Avenue, Ste 101
Albany, NY 12206
(518) 438-0451

Principal Instructor

November 5, 2009
Date of Course

November 5, 2010
Expiration Date

Regional Manager

8HMR-14346
Certificate Number

Not Applicable
Examination Date

STATEMENT OF TRAINING

This certifies that

Stephen Bieber

has successfully completed the

8 Hour Health & Safety Refresher Training for Hazardous Waste Site Activities per 29 CFR 1910.120 (HAZWOPER)

conducted by
ATC Associates Inc.
10 Colvin Avenue, Ste 101
Albany, NY 12206
(518) 438-0451

Daniel C. Hoffman
Principal Instructor

Gregory J. Morock
Regional Manager

April 8, 2009
Date of Course

8HMR-14149
Certificate Number

April 8, 2010
Expiration Date

Not Applicable
Examination Date

STATEMENT OF TRAINING

This certifies that

Jonathan Dippert

has successfully completed the

8 Hour Health & Safety Refresher Training for Hazardous Waste Site Activities per 29 CFR 1910.120 (HAZWOPER)

conducted by
ATC Associates Inc.
10 Colvin Avenue, Ste 101
Albany, NY 12206
(518) 438-0451

Principal Instructor

July 2, 2009
Date of Course

July 2, 2010
Expiration Date

Gregory J. Morsch
Regional Manager

8HMR-14248
Certificate Number

Not Applicable
Examination Date

STATEMENT OF TRAINING

This certifies that

Aimee Gates

has successfully completed the

8 Hour Health & Safety Refresher Training for Hazardous Waste Site Activities per 29 CFR 1910.120 (HAZWOPER)

conducted by
ATC Associates Inc.
10 Colvin Avenue, Ste 101
Albany, NY 12206
(518) 438-0451

Principal Instructor

July 2, 2009
Date of Course

July 2, 2010
Expiration Date

Regional Manager

8HMR-14255
Certificate Number

Not Applicable
Examination Date

APPENDIX B

MEDICAL DATA SHEETS

14.0 MEDICAL DATA SHEET

This medical data sheet will be completed by all on-site personnel and will be kept on-site during the duration of the project. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

PROJECT: Environmental Restoration Project to be conducted at the 350-352 Liberty Street Site in the City of Newburgh, Orange County, New York.

Name _____ Home Telephone _____

Address _____

Emergency Contact _____

Drug or Other Allergies _____

Particular Sensitivities _____

Do You Wear Contact Lenses _____

Provide a Checklist of Previous Illness or Exposure to Hazardous Chemicals

_____

What Medications Are You Presently Using _____

_____

Do You Have Any Physical or Medical Restrictions _____

_____

Are You Qualified to Wear Respirator (Provide Fit Test Results)_____

Name, Address, and Telephone Number of Personal Physician:

_____

_____

_____

APPENDIX C

COMMUNITY AIR MONITORING PLAN

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

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

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

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

Community Air Monitoring Plan

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

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

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of

taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

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

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

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

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

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

Particulate Monitoring, Response Levels, and Actions

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

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

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

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

June 20, 2000

EXHIBIT 1

MATERIAL SAFETY DATA SHEETS

Printed in the U.S.A. SS94-63

MATERIAL SAFETY DATA SHEET

IDENTITY (As used on label and list): **MAG 1 SAE 10W 30 MOTOR OIL**
PRODUCT CODE: **MG03135G, MG0313PL, MG031330, MG031322, MG031355, M4136897, M4136890**

NFPA Hazard Identification 0 – Least 1 – Slight 2– Moderate 3 – High 4 - Extreme

Health: 0 Fire: 1 Reactivity: 0

Section I - General Information

Cascade Distributing, Inc.
2130 Superior Avenue
Cleveland, Ohio 44114

Information (402) 341-9397
Emergency **(402) 677-1331** Chemtrec **(800) 424-9300** Reviewed: **12/31/02**

Section II - Composition/Information on Ingredients

COMPONENT NAME % CAS OSHA PEL ACGIH TLV
Lubricating Oil Base Stock 90-100 **MIXTURE** 5mg/m3* 5mg/m3*
Proprietary additives 1-10 **MIXTURE** 5mg/m3* 5mg/m3*
* Numbers are for oil mist
NON-HAZARDOUS INGREDIENTS
No IARC, NTP, OSHA and ACGIH listed carcinogens.

Section III - Hazards Identification

EYE CONTACT: Contact with eyes may cause eye irritation.
SKIN CONTACT: Prolonged or repeated contact may result in skin irritation or dermatitis.
INHALATION: Breathing oil mist in concentrations that exceed the TLV and PEL may result in respiratory discomfort and irritation.
INGESTION: Although this product has a low order of acute oral toxicity, aspiration of minute amounts into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.
CARCINOGENICITY: This product has not been classified as a carcinogen or probable carcinogen by OSHA, NTP, or IARC.
SIGNS AND SYMPTOMS OF OVEREXPOSURE: May cause skin, eye, or respiratory irritation.
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None recognized
OTHER HEALTH INFORMATION: None

Section IV - First Aid Procedures

EYE CONTACT: If splashed into eyes, flush with water for 15 minutes or until irritation subsides. Get medical attention if irritation persists.
SKIN CONTACT: Remove contaminated clothing. Wash skin thoroughly with soap and water. Get medical attention if irritation persists.
INHALATION: If overcome by vapor from hot product, immediately remove victim to fresh air. If breathing has stopped, administer artificial respiration. Call for medical attention. If overexposed to oil mist, remove from further exposure.
INGESTION: DO NOT induce vomiting, call medical attention immediately.

Section V - Fire and Explosion Hazard Data

Flash Point (deg F): 420 Method Used: COC
Flammable or Explosive Limits (approximate % by volume in air) LEL: .9% UEL: 7%
EXTINGUISHING MEDIA: Use water spray, dry chemical, foam, or carbon dioxide. Use water to keep fireexposed containers cool. Water spray may be used to flush spills away from exposures.
SPECIAL FIRE FIGHTING PROCEDURES: Self-contained breathing apparatus may be required.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Water or foam may cause frothing.

Section VI - Accidental Release Measures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Add sand, earth, or other suitable absorbent to spill area. Keep product out of sewers and waterways by damming or impounding.

Section VII - Handling and Storage

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Store in a cool, dry place with adequate ventilation. Do not expose to extreme temperatures or flames.
OTHER PRECAUTIONS: None

Section VIII - Exposure Controls/Personal Protection

RESPIRATORY PROTECTION: Use supplied-air respiratory protection in confined or enclosed space, if needed.
VENTILATION: Use local exhaust to capture vapor, mists or fumes, if necessary. Provide ventilation sufficient to prevent exceeding recommended exposure limit or buildup of explosive concentrations of vapor in air. Use explosion-proof equipment.
PROTECTIVE GLOVES: Use neoprene gloves, if needed, to avoid prolonged or repeated skin contact.
EYE PROTECTION: Wear goggles if there is likelihood of contact with eye(s).
OTHER PROTECTIVE EQUIPMENT: Use neoprene apron or other clothing, if needed, to avoid prolonged or repeated skin contact.
WORK PRACTICES/ENGINEERING CONTROLS: Keep containers closed when not in use.
PERSONAL HYGIENE: Wash skin thoroughly after contact, before breaks and meals, and at the end of the work period. Thoroughly clean contaminated clothing, including shoes, before re-use.

Section IX- Physical/Chemical Characteristics

Boiling Point (deg F): ND Specific Gravity (H2O=1): .88 Vapor Pressure (mm Hg): <.01
Melting Point (deg F): -30 Vapor Density (Air=1): n/a Solubility in Water : Insoluble
Evaporation Rate (n-butyl Acetate=1): n/a
APPEARANCE AND ODOR: Amber to dark brown liquid, mild petroleum odor.

Section X - Reactivity Data

STABILITY: Stable
INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidants such as liquid chlorine, concentrated oxygen, sodium hypochlorite or calcium hypochlorite
HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Carbon monoxide, sulfur oxides, aldehydes, and other petroleum decomposition products in the case of incomplete combustion. Oxides of nitrogen, phosphorus, sulfur, calcium, copper, magnesium, sodium and hydrogen sulfide may also be present.
HAZARDOUS POLYMERIZATION: Will not occur
CONDITIONS TO AVOID: None

Section XI - Toxicological Information

See Section IV

Section XII - Ecological Information

Section XIII - Disposal Considerations

WASTE DISPOSAL METHOD: Place in an appropriate disposal facility in compliance with local regulations.

Section XIV - Transport Information

NOT A REGULATED ITEM ACCORDING TO DOT.

Section XV-Regulatory Information

SARA SECTION 313: This product contains from 0.5 to 1.4 % zinc compounds
WHMIS classification for product: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

This material safety data sheet and the information it contains is offered to you in good faith as accurate. We have reviewed any information contained in the data sheet which we received from sources outside our company and we believe that information to be correct, but cannot guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as permission or recommendation for the use of any product in a manner that might infringe existing patents. No warranty is made, either expressed or implied.

USED OIL

MATERIAL SAFETY DATA SHEET

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **USED OIL**

SYNONYMS: Waste oil; Used lubricating oil; Oil and water mixture

PRODUCT PART NUMBER(S): Not applicable.

PRODUCT USE: Oil or water mixture for re-refining or reprocessing.
If this product is used in combination with other products, refer to the Material Safety Data Sheets for those products.

These numbers are for emergency use only. If you desire non-emergency product information, please call a phone number listed below.

24-HOUR EMERGENCY PHONE NUMBERS
MEDICAL AND TRANSPORTATION (SPILL):

1-800-468-1760

MANUFACTURER/ SUPPLIER: Safety-Kleen Systems, Inc.
5400 Legacy Drive
Cluster II, Building 3
Plano, Texas 75024
USA
1-800-669-5740
www.Safety-Kleen.com

TECHNICAL INFORMATION: 1-800-669-5740 Press 1 then 1 then Extension 7500

MSDS FORM NUMBER: 81451 **ISSUE:** September 20, 2007

ORIGINAL ISSUE: January 15, 1990 **SUPERSEDES:** June 11, 2007

PREPARED BY: Product MSDS Coordinator **APPROVED BY:** MSDS Task Force

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

				OSHA PEL		ACGIH TLV®			
WT%	NAME	SYNONYM	CAS NO.	TWA	STEL	TWA	STEL	LD[a]	LC[b]
80 to 100	Lubricating oils, used	Used oil	70514-12-4	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.
0 to 20*	Water/solids	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.
0 to 10*	Hydrocarbon solvents. May include gasoline, diesel fuel, jet fuel, mineral spirits, etc.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.
0 to 1.5*	Metals. May include lead, iron, zinc, copper, chromium, arsenic, nickel, and others: each below 1.0 WT%.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.
0 to 1.0*	Polynuclear aromatics. May include naphthalene, fluoranthene, phenanthrene, pyrene, and others: each below 0.3 WT%.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.
0 to 0.5*	Chlorinated solvents.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.

N.Av. = Not Available

*Even though the concentration range does not fall under the ranges prescribed by WHMIS, this is the actual range which varies with each batch of the product.

[a] Oral-Rat LD_{50} (mg/kg)

[b] Inhalation-Rat LC_{50}

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

APPEARANCE

Liquid, black and viscous (thick), petroleum odor.

WARNING!

PHYSICAL HAZARDS

Combustible liquid.

HEALTH HAZARDS

May be harmful if inhaled.
May be harmful if absorbed through skin.
May be harmful or fatal if swallowed.
May irritate the respiratory tract (nose, throat, and lungs), eyes, and skin.
Suspect cancer hazard. Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.
Contains material which can cause birth defects.
Contains material which can cause central nervous system damage.

ENVIRONMENTAL HAZARDS

Product may be toxic to fish, plants, wildlife, and/or domestic animals.

POTENTIAL HEALTH EFFECTS

Effects may vary depending on material composition. Typical effects may include:

INHALATION (BREATHING): High concentrations of vapor or mist may be harmful if inhaled. High concentrations of vapor or mist may irritate the respiratory tract (nose, throat, and lungs). High concentrations of vapor or mist may cause nausea, vomiting, headaches, dizziness, loss of coordination, numbness, and other central nervous system effects. Massive acute overexposure may cause rapid central nervous system depression, sudden collapse, coma, and/or death.

EYES: May cause irritation.

SKIN: May cause irritation. Product may be absorbed through the skin and cause harm as noted under **INHALATION (BREATHING)**.

INGESTION (SWALLOWING): May be harmful or fatal if swallowed. May cause throat irritation, nausea, vomiting, and central nervous system effects as noted under **INHALATION (BREATHING)**. Breathing product into the lungs during ingestion or vomiting may cause lung injury and possible death.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Individuals with pre-existing cardiovascular, liver, kidney, respiratory tract (nose, throat, and lungs), central nervous system, eye, and/or skin disorders may have increased susceptibility to the effects of exposure.

CHRONIC: Prolonged or repeated inhalation may cause oil pneumonia, lung tissue inflammation, fibrous tissue formation, and/or toxic effects as noted under **INHALATION (BREATHING)**. Prolonged or repeated eye contact may cause inflammation of the membrane lining the eyelids and covering the eyeball (conjunctivitis). Prolonged or repeated skin contact may cause drying, cracking, redness, itching, and/or swelling (dermatitis).

CANCER INFORMATION: This product contains mineral oils, untreated or mildly treated, which can cause cancer. This product may contain hydrocarbon and chlorinated solvents; metals, and polynuclear aromatics which can cause cancer. Risk of cancer depends on duration and level of exposure. For more information, see **SECTION 11: CARCINOGENICITY**.

POTENTIAL ENVIRONMENTAL EFFECTS

Product may be toxic to fish, plants, wildlife, and/or domestic animals.
Also see **SECTION 12: ECOLOGICAL INFORMATION**.

SECTION 4: FIRST AID MEASURES

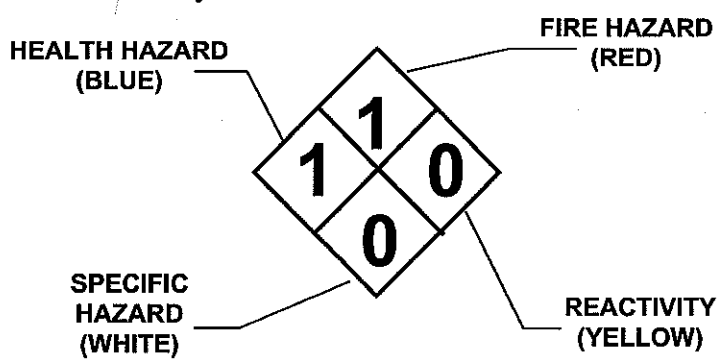
INHALATION: (BREATHING)	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Oxygen should only be administered by qualified personnel. Someone should stay with victim. Get medical attention if breathing difficulty persists.
EYES:	If irritation or redness from exposure to vapor develops, move away from exposure into fresh air. Upon contact, immediately flush eyes with plenty of lukewarm water, holding eyelids apart, for 15 minutes. Get medical attention.
SKIN:	Remove affected clothing and shoes. Wash skin thoroughly with soap and water. Get medical attention if irritation or pain develops or persists.
INGESTION: (SWALLOWING)	Do NOT induce vomiting. Immediately get medical attention. Call 1-800-468-1760 for additional information. If spontaneous vomiting occurs, keep head below hips to avoid breathing the product into the lungs. Never give anything to an unconscious person by mouth.
NOTE TO PHYSICIANS:	Treat symptomatically and supportively. Treatment may vary with condition of victim and specifics of incident. Call 1-800-468-1760 for additional information.

SECTION 5: FIRE FIGHTING MEASURES

FLASH POINT:	>200°F (93°C) (minimum) Pensky-Martens Closed Cup
FLAMMABLE LIMITS IN AIR:	Not available.
AUTOIGNITION TEMPERATURE:	Not available.
HAZARDOUS COMBUSTION PRODUCTS:	Decomposition and combustion materials may be toxic. Burning may produce phosgene gas, nitrogen oxides, carbon monoxide, and unidentified organic compounds.
CONDITIONS OF FLAMMABILITY:	Heat, sparks, or flame. Product may burn but does not ignite readily.
EXTINGUISHING MEDIA:	Use carbon dioxide, regular foam, dry chemical, water spray, or water fog.

NFPA 704 HAZARD IDENTIFICATION:

This information is intended solely for the use by individuals trained in this system.



FIRE FIGHTING INSTRUCTIONS:

Keep storage containers cool with water spray. A positive-pressure, self-contained breathing apparatus (SCBA) and full-body protective equipment are required for fire emergencies.

FIRE AND EXPLOSION HAZARDS:

Heated containers may rupture. "Empty" containers may retain residue and can be dangerous. Product is not sensitive to mechanical impact. Product may be sensitive to static discharge, which could result in fire or explosion.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Remove all ignition sources. Do not touch or walk through spilled product. Stop leak if you can do it without risk. Wear protective equipment and provide engineering controls as specified in **SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Ventilate area and avoid breathing vapor or mist. A vapor suppressing foam may be used to reduce vapors. Contain spill away from surface waters and sewers. Contain spill as a liquid for possible recovery, or sorb with compatible sorbent material and shovel with a clean, sparkproof tool into a sealable container for disposal.

Additionally, for large spills: Water spray may reduce vapor, but may not prevent ignition in closed spaces. Dike far ahead of liquid spill for collection and later disposal.

There may be specific federal regulatory reporting requirements associated with spills, leaks, or releases of this product. Also see **SECTION 15: REGULATORY INFORMATION.**

SECTION 7: HANDLING AND STORAGE

HANDLING: Keep away from heat, sparks, or flame. Where flammable mixtures may be present, equipment safe for such locations should be used. Use clean, sparkproof tools and explosion-proof equipment. When transferring product, storage tanks, tanker trucks, and rail tank cars should be grounded and bonded. Do not breathe vapor or mist. Use in a well ventilated area. Avoid contact with eyes, skin, clothing, and shoes. Do not smoke while using this product.

SHIPPING AND STORING: Keep container tightly closed when not in use and during transport. Do not pressurize, cut, weld, braze, solder, drill, or grind containers. Keep containers away from heat, flame, sparks, static electricity, or other sources of ignition. Empty product containers may retain product residue and can be dangerous. See **SECTION 14: TRANSPORT INFORMATION** for Packing Group information.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Use general ventilation, process enclosures, local exhaust ventilation, or other engineering controls to control air-borne levels. Where explosive mixtures may be present, equipment safe for such locations should be used.

PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION: A respiratory protection program which meets USA's OSHA General Industry Standard 29 CFR 1910.134 or Canada's CSA Standard Z94.4-M1982 requirements must be followed whenever workplace conditions warrant a respirator's use. Consult a qualified Industrial Hygienist or Safety Professional for respirator selection guidance.

EYE PROTECTION: Wearing chemical goggles is recommended.
Contact lens may be worn with eye protection.

SKIN PROTECTION: Where prolonged or repeated skin contact is likely, wear neoprene, nitrile (4 mil minimum), PVC (polyvinyl chloride), or equivalent protective gloves; wearing natural rubber or equivalent gloves is not recommended.

When product is heated and skin contact is likely, wear heat-insulating gloves, boots, and other protective clothing.

To avoid prolonged or repeated contact with product where spills and splashes are likely, wear appropriate chemical-resistant faceshield, boots, apron, whole body suits, or other protective clothing.

PERSONAL HYGIENE:	Wash thoroughly with soap and water after handling product and before eating, drinking, or using tobacco products. Clean affected clothing, shoes, and protective equipment before reuse. Discard affected clothing, shoes, and/or protective equipment if they cannot be thoroughly cleaned. Discard leather articles, such as shoes, saturated with the product.
OTHER PROTECTIVE EQUIPMENT:	Where spills and splashes are likely, facilities storing or using this product should be equipped with an emergency eyewash and shower, both equipped with clean water, in the immediate work area.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE, APPEARANCE, AND ODOR:	Liquid, black and viscous (thick), petroleum odor.
ODOR THRESHOLD:	Not available.
MOLECULAR WEIGHT:	Not applicable.
SPECIFIC GRAVITY:	0.8 to 1.0 at 60°F (15.6°C) (water = 1)
DENSITY:	6.7 to 8.3 LB/US gal (800 to 1000 g/l) (approximately)
VAPOR DENSITY:	greater than 1 (air = 1) (based on kerosene)
VAPOR PRESSURE:	Not available.
BOILING POINT:	Not available.
FREEZING/MELTING POINT:	Not available.
pH:	Not applicable.
EVAPORATION RATE:	less than 1 (butyl acetate = 1)
SOLUBILITY IN WATER:	Slight.
FLASH POINT:	>200°F (93°C) (minimum) Pensky-Martens Closed Cup
FLAMMABLE LIMITS IN AIR:	Not available.
AUTOIGNITION TEMPERATURE:	Not available.

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Stable under normal temperatures and pressures. Avoid heat, sparks, or flame.

INCOMPATIBILITY: Avoid acids, alkalies, oxidizing agents, reducing agents, reactive halogens, or reactive metals.

REACTIVITY: Polymerization is not known to occur under normal temperatures and pressures. Not reactive with water.

HAZARDOUS DECOMPOSITION PRODUCTS: None under normal temperatures and pressures. Also see **SECTION 5: HAZARDOUS COMBUSTION PRODUCTS.**

SECTION 11: TOXICOLOGICAL INFORMATION

SENSITIZATION: Based on best current information, there may be known human sensitization associated with this product.

MUTAGENICITY: Based on best current information, there may be mutagenicity associated with this product.

CARCINOGENICITY: Mineral oils, untreated or mildly treated are listed by IARC as a known carcinogen. Mineral oils, untreated or mildly treated are classified by NTP as having limited evidence of carcinogenicity in humans or sufficient evidence of carcinogenicity in experimental animals.

There may be hydrocarbon and chlorinated solvents; metals, and polynuclear aromatics present in this product which are listed by OSHA as known carcinogens. There may be hydrocarbon and chlorinated solvents; metals, and polynuclear aromatics present in this product which are listed by IARC as known, probable, or possible carcinogens. There may be hydrocarbon and chlorinated solvents; metals, and polynuclear aromatics present in this product which are classified by NTP as known carcinogens or as having limited evidence of carcinogenicity in humans or sufficient evidence of carcinogenicity in experimental animals. There may be hydrocarbon and chlorinated solvents; metals, and polynuclear aromatics present in this product which are recognized by ACGIH as confirmed or suspected human carcinogens.

Also see **SECTION 3: CANCER INFORMATION.**

REPRODUCTIVE TOXICITY: Based on best current information, there may be reproductive toxicity associated with this product.

TERATOGENICITY: Based on best current information, there may be teratogenicity associated with this product.

TOXICOLOGICALLY SYNERGISTIC PRODUCT(S): Based on best current information, there may be toxicologically synergistic products associated with this product.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICITY: Not available.

OCTANOL/WATER PARTITION COEFFICIENT: Not available.

VOLATILE ORGANIC COMPOUNDS: Not available.
As per 40 CFR Part 51.100(s).

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose in accordance with federal, state, provincial, and local regulations. Regulations may also apply to empty containers. The responsibility for proper waste disposal lies with the owner of the waste. Contact Safety-Kleen regarding proper recycling or disposal.

SECTION 14: TRANSPORT INFORMATION

DOT: Not regulated.

TDG: Not regulated.

EMERGENCY RESPONSE GUIDE NUMBER: Not applicable.
Reference *North American Emergency Response Guidebook*

SECTION 15: REGULATORY INFORMATION

USA REGULATIONS SARA SECTIONS 302 AND 304: Based on the ingredient(s) listed in **SECTION 2**, this product does not contain any "extremely hazardous substances" listed pursuant to Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) Section 302 or Section 304 as identified in 40 CFR Part 355, Appendix A and B.

SARA SECTIONS 311 AND 312: This product poses the following physical and health hazards as defined in 40 CFR Part 370 and is subject to the requirements of sections 311 and 312 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA):
Immediate (Acute) Health Hazard
Delayed (Chronic) Health Hazard

SARA SECTION 313: This product may contain "toxic" chemicals subject to the requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR Part 372.

CERCLA: This product may contain "hazardous substances" listed pursuant to Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) in 40 CFR Part 302, Table 302.4.

TSCA: Not available.

CALIFORNIA: This product is not for sale or use in the State of California.

CANADIAN REGULATIONS
WHMIS: Not regulated

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): Not available.

SECTION 16: OTHER INFORMATION

REVISION INFORMATION: Change from MSIS to MSDS.

LABEL/OTHER INFORMATION: Not available.

MATERIAL SAFETY DATA SHEET

MSDS NO. 054-2

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910. 1200. Standard must be consulted for specific requirements.

Important: Do not leave any blank spaces. If required information is unavailable, unknown, or doesn't apply, so indicate.
***N/A=No information available** ***N/AP=Not Applicable**

Section 1 - Company and Chemical Identification

DAYCON PRODUCTS COMPANY, INC.
16001 TRADE ZONE AVENUE
UPPER MARLBORO, MD 20774
PRODUCT USE: DEGREASER

EMERGENCY PHONE: 800-535-5053
PHONE: 301-218-7100
DATE: FEBRUARY 22, 2000

Section 2 - Hazardous Ingredients/Identity

Hazardous Component(s) (chemical & common name)	OSHA PEL	ACGIH TLV	Other Exposure Limits	% (optional)	CAS No.
Petroleum Distillate,	300ppm			50-70	64742-88-7
onochlorotoluene	50ppm			15-25	95-49-8

NPCA-HMIS Rating: Health - 3 Flammability - 3 Reactivity - 0 PPE - X

Section 3 - Health Hazard Identification

Acute: Respiratory irritation

Chronic: None known

Signs and Symptoms of Exposure:
Irritation of skin, eyes, or mucous membrane.

Medical Conditions Generally Aggravated by Exposure:
Respiratory problems, asthma, dermatitis, difficulty breathing, cough, central nervous system depression, transient anesthesis.

Chemical Listed as Carcinogen or Potential Carcinogen	National Toxicology Program	I.A.R.C	OSHA
	Yes No X	Yes No X	Yes No X

Section 4 - First Aid Measures

Routes of Entry and Emergency/First Aid Procedures

1. Inhalation:
Remove to fresh air.

2. Eyes:
Irritant - flush eyes with water for 15 minutes and seek prompt medical attention.

3. Skin:
Irritant- wash with soap and water

4. Ingestion:
Drink water - seek medical attention, do not induce vomiting

Section 5 - Fire Fighting Measures & Data

Flash Point	Method Used	Flammable Limits in Air % by Volume	LEL Lower	UEL Upper
140°F	T.C.C.	0.8 est	N/AP	

Auto-Ignition Temperature: N/AP

Extinguisher Media: Foam, CO_2, water fog

Special Fire Fighting Procedures:
Use self contained breathing apparatus.

Unusual Fire and Explosion Hazards:

Chlorine, hydrogen chloride, and carbon monoxide may be given off.

DOT Hazard Classification:

Combustible

Section 6 - Accidental Release Measures

Steps to be Taken in Case Material is Released or Spilled:

Absorb with oil absorbent, sand, or rags. Vacuum up into a metal drum or tank.

Waste Disposal Methods (Consult federal, state, and local regulations):

Incinerate or approved waste disposal for solvents in accordance with Federal, State and Local regulations.

Section 7 - Special Precautions, Handling, and Storage

Precautions to be Taken in Handling and Storage:

Keep away from sparks, open flames, and strong oxidizers. Keep container tightly closed when not in use.

Other Precautions:

KEEP OUT OF REACH OF CHILDREN. Avoid eye and skin contact. Remove contaminated clothing.

Use only in well ventilated areas.

Section 8 - Special Protection Information/Control Measures

Respiratory Protection (Specify Type):

Organic solvent vapor mask.

Ventilation:	Local Exhaust:	Mechanical (General) :	Special:	Other:
		Fan		

Protective Gloves:	Eye Protection:
Neoprene gloves	Chemical splash safety goggles

Other Protective Clothing or Equipment:

Rubber (neoprene) boots, pants, or apron as needed.

Work/Hygienic Practices:

Wash hands immediately after use and before eating, drinking, or smoking.

Section 9 - Physical & Chemical Characteristics

Boiling Point:	Specific Gravity (H2O):	Vapor Pressure (mm Hg);	Vapor Density (Air = 1):
160°F	0.95 ± 0.02	2.3 approx.	4.0 ± 0.5

Solubility in Water :	Reactivity in Water:
Insoluble	None

Appearance and Odor:	Melting Point:
Amber liquid with solvent odor	N/A

Section 10 - Stability and Reactivity

Stability:	Unstable	Stable	Conditions to Avoid:
		X	Heat above 120°F, open flames or sparks

Incompatibility (Materials to Avoid):

Oxidizing agents

Hazardous Decomposition Products:

Hydrogen chloride

Hazardous Polymerization:	May Occur	Will Not Occur	Conditions to Avoid:
		X	None known

MATERIAL SAFETY DATA SHEET

SUBSTANCE IDENTIFICATION — **CAS-NUMBER 8006-61-9**

SUBSTANCE: GASOLINE; ETHANOL-ENHANCED GASOLINE; AUTOMOTIVE, UNLEADED PREMIUM

TRADE NAMES/SYNONYMS:
GASOHOL; GASOLINE-ETHANOL MIXTURE; PETROL; MOTOR SPIRITS; BENZIN; GASOLINE; UNLEADED GASOLINE; PREMIUM UNLEADED GASOLINE; GASOHOL - 10% ETHANOL; GASOHOL; STCC 4908178; UN 1203; OHS10343; OHS10340

CHEMICAL FAMILY: PETROLEUM HYDROCARBON

PRODUCT MANUFACTURER:
WESTERN REFINING
Po Box 159
BLOOMFIELD, NEW MEXICO 87413

EMERGENCY PHONE: (505) 722-3833
INFORMATION PHONE: (505) 722-3833
DATE PREPARED: FEBRUARY 15, 1989
LAST REVISION: January 10, 2007

CERCLA RATINGS (SCALE 0-3): HEALTH = 3 FIRE = 3 REACTIVITY = 0 PERSISTENCE = 1
NFPA RATINGS (SCALE 0-4): HEALTH = 1 FIRE = 3 REACTIVITY = 0

COMPONENTS AND CONTAMINANTS

COMPONENT: GASOLINE, AUTOMOTIVE, UNLEADED — PERCENT: 100.0
MAY CONTAIN ANY OF THE FOLLOWING DEPENDING ON BLEND:

COMPONENT	CAS #	PERCENT WT.
BENZENE	71-43-2	1.5-3.0
CYCLOHEXANE	110-82-7	0.5-2.0
ETHANOL	64-17-5	0.0 – 10.0
ETHYL BENZENE	100-41-4	1.0-1.5
TOLUENE	108-88-33	6.0-8.0
XYLENE	1330-20-7	4.0-8.0
HEXANE	110-54-3	1.0-5.0
CUMENE	98-82-8	0.0-0.1
1,2,4-TRIMETHYLBENZENE	95-63-6	1.0-2.5
NAPHTHALENE	91-20-3	0.1-0.2

BENZENE:
1 PPM OSHA TWA; 5 PPM OSHA 15 MINUTE STEL;
0.5 PPM OSHA ACTION LEVEL
10 PPM (30 MG/M3) ACGIH TWA;

ACGIH A2-SUSPECTED HUMAN CARCINOGEN
1 PPM (3.2 MG/M3) NIOSH RECOMMENDED 15 MINUTE CEILING
10 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY
SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING AND 40 C.F.R. PART 373 (EPA TOXIC CHEMICAL RELEASE REPORTING REGULATIONS) SUBJECT TO CALIFORNIA PROPOSITION 65 CANCER AND/OR REPRODUCTIVE TOXICITY WARNING AND RELEASE REQUIREMENTS - (FEBRUARY 27, 1987)

OTHER CONTAMINANTS:
MAY CONTAIN ADDITIVES IN SMALL CONCENTRATION

EXPOSURE LIMITS:
GASOLINE (BULK HANDING):
300 PPM (900 MG/M3) OSHA TWA; 500 PPM (1,500 MG/M3) OSHA STEL
300 PPM (900 MG/M3) ACGIH TWA; 500 PPM (1,500 MG/M3) ACGIH STEL

ETHYL ALCOHOL (ETHANOL):
1000 PPM (1900 MG/M3) OSHA TWA
1000 PPM (1900 MG/M3) ACGIH TWA
SUBJECT TO CALIFORNIA PROPOSITION 65 CANCER AND/OR REPRODUCTIVE TOXICITY WARNING AND RELEASE REQUIREMENTS (ALCOHOLIC BEVERAGES) - (OCTOBER 1, 1987)

PHYSICAL DATA

DESCRIPTION: CLEAR COLORLESS TO AMBER, AROMATIC, VOLATILE LIQUID **BOILING POINT:** 100-400 F (38-204C) **SPECIFIC GRAVITY:** 0.7 - 0.8 **SOLUBILITY IN WATER:** INSOLUBLE
ODOR THRESHOLD: 0.25 PPM **VAPOR DENSITY:** 3.0 - 4.0 **SOLVENT SOLUBILITY:** ABSOLUTE ALCOHOL, ETHER, CHLOROFORM, BENZENE

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD: DANGEROUS FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASHBACK.

VAPOR-AIR MIXTURES ARE EXPLOSIVE ABOVE FLASHPOINT.

FLASH POINT: -45 F(-43 C) (CC) **UPPER EXPLOSIVE LIMIT:** 7.6% **LOWER EXPLOSIVE LIMIT:** 1.2% **AUTOIGNITION TEMP.:** 536-853 F (280-456 C) **FLAMMABILITY CLASS (OSHA/NFPA):** IB

FIREFIGHTING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, HALON, WATER SPRAY OR STANDARD FOAM (1987 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.4).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR STANDARD FOAM (1987 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.4).

FIREFIGHTING: MOVE CONTAINER FROM FIRE AREA IF POSSIBLE. COOL FIRE-EXPOSED CONTAINERS WITH WATER FROM SIDE UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM STORAGE TANK ENDS. FOR MASSIVE FIRE IN STORAGE AREA, USE UNMANNED HOSE HOLDER OR MONITOR NOZZLES, ELSE WITHDRAW FROM AREA AND LET FIRE BURN. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF STORAGE TANK DUE TO FIRE (1987 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.4, GUIDE PAGE 27).

EXTINGUISH ONLY IF FLOW CAN BE STOPPED; USE WATER IN FLOODING AMOUNTS AS FOG, SOLID STREAMS MAY SPREAD FIRE. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER, APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING VAPORS, KEEP UPWIND. EVACUATE TO A RADIUS OF 1500 FEET FOR UNCONTROLLABLE FIRES. CONSIDER EVACUATION OF DOWNWIND AREA IF MATERIAL IS LEAKING. WATER MAY BE INEFFECTIVE (NFPA FIRE PROTECTION GUIDE ON HAZARDOUS MATERIALS, EIGHTH EDITION).

DEPARTMENT OF TRANSPORTATION REQUIREMENTS

NAME: GASOLINE HAZARD CLASS: 3

IDENTIFICATION NUMBER: UN1203

PACKING GROUP: II; EXCEPTIONS 49 C.F.R. 173.150

TOXICITY

GASOLINE, AUTOMOTIVE, UNLEADED: (DATA DERIVED FROM UNSPECIFIED AND UNLEADED GASOLINE)
IRRITATION DATA: 500 MG/24 HOURS SKIN-RABBIT MILD; 500 PPM/1 HOUR EYE-MAN MODERATE; 140 PPM/8 EYE-HUMAN MILD.
TOXICITY DATA: 900 PPM/1 HOUR INHALATION-MAN TCLO; 300 GM/M3/5 MINUTES INHALATION-RAT LC50; 300 GM/M3/5 MINUTES INHALATION-MOUSE LC50; 300 GM/M3/5 MINUTES INHALATION-GUINEA PIG LC50; 3000 PPM/5 MINUTES INHALATION-MAMMAL LCLO; 18,000 MG/K3 ORAL-RAT LD50; 13.6 GM/KG ORAL-RAT LD50 (AETODY); TUMORIGENIC DATA (RTECS).
CARCINOGEN STATUS: NONE
LOCAL EFFECTS: IRRITANT - INHALATION, SKIN, EYE.
ACUTE TOXICITY LEVEL: RELATIVELY NON-TOXIC BY INHALATION AND INGESTION.
TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT; SIMPLE ASPHYXIANT.
ADDITIONAL DATA: THE USE OF ALCOHOLIC BEVERAGES ENHANCES THE TOXIC EFFECTS. STIMULANTS SUCH AS EPINEPHRINE MAY INDUCE VENTRICULAR FIBRILLATION.
BENZENE:
IRRITATION DATA: 20 MG/24 HOURS SKIN-RABBIT MODERATE; 15 MG/24 HOURS OPEN SKIN-RABBIT MILD; 88 MG EYE-RABBIT MODERATE; 2 MG/24 HOURS EYE-RABBIT SEVERE.
TOXICITY DATA: 2000 PPM/5 MINUTES INHALATION-HUMAN LCLO; 2 PPH/5 MINUTES INHALATION-HUMAN LCLO; 210 PPM INHALATION-HUMAN TCLO; 65 MG/M3/5 YEARS INHALATION-HUMAN LCLO; 100 PPM INHALATION-HUMAN TCLO; 150 PPM/1 YEAR INTERMITTENT INHALATION-MAN TCLO; 20,000 PPM/5 MINUTES INHALATION-MAMMAL LCLO; 10,000 PPM/7 HOURS INHALATION-RAT LC50; 9980 PPM INHALATION-MOUSE LC50; 145,000 MG/M3 INHALATION-DOG LCLO; 170,000 MG/M3 INHALATION-CAT LCLO; 50 MG/KG ORAL-MAN LDLO; 3305 MG/KG ORAL-RAT LD50; 4700 MG/KG ORAL-MOUSE LD50; 2000 MG/KG ORAL-DOG LDLO; 88 MG/KG INTRAVENOUS-RABBIT LDLO; 2890 UG/KG INTRAPERITONEAL-RAT LD50; 1011 MG/KG INTRAPERITONEAL-MOUSE LD50; 527 MG/KG INTRAPERITONEAL-GUINEA PIG LDLO; 194 MG/KG UNREPORTED-MAN LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS); TUMORIGENIC DATA (RTECS).
CARCINOGEN STATUS: OSHA CARCINOGEN; KNOWN HUMAN CARCINOGEN (NTP); HUMAN SUFFICIENT EVIDENCE, ANIMAL SUFFICIENT EVIDENCE (IARC CLASS 1). THE RELATIONSHIP BETWEEN EXPOSURE TO BENZENE AND THE DEVELOPMENT OF ACUTE MYELOGENOUS LEUKEMIA HAS BEEN ESTABLISHED IN EPIDEMIOLOGICAL STUDIES.
LOCAL EFFECTS: IRRITANT - SKY, EYE.
ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INGESTION; SLIGHTLY TOXIC BY INHALATION.
TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT; BONE MARROW DEPRESSANT, POISONING MAY ALSO AFFECT THE IMMUNE, HEMTOPOIETIC AND NERVOUS SYSTEMS.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH CERTAIN IMMUNOLOGICAL TENDENCIES.
ADDITIONAL DATA: USE OF ALCOHOLIC BEVERAGES MAY ENHANCE THE TOXIC EFFECTS. USE OF STIMULANTS SUCH AS EPINEPHRINE MAY CAUSE CARDIA ARRYTHMIAS.
ETHYL ALCOHOL (ETHANOL):
IRRITATION DATA: 500 MG/24 HOURS EYE-RABBIT MILD; 79 MG EYE-RABBIT; 100 MG/4 SECONDS RINSED EYE-RABBIT MODERATE; 400 MG OPEN SKIN-RABBIT MILD; 20 MG/24 HOURS SKIN-RABBIT MODERATE.
TOXICITY DATA: 20,000 PPM 10 HOURS INHALATION-RAT LC50; 39 GM/M3/4 HOURS INHALATION-MOUSE LC50; 20 GM/KG SKIN-RABBIT LDLO; 700 MG/KG ORAL-MAN TDLO; 2000 MG/KG ORAL-CHILD LDLO; 50 MG/KG ORAL-MAN TDLO; 1430 UG/KG ORAL-MAN TDLO; 256 GM/KG/12 WEEKS ORAL-WOMAN TDLO; 1400 MG/KG ORAL-HUMAN LDLO; 7060 MG/KG ORAL-RAT LD50; 3450 MG/KG ORAL-MOUSE LD50; 5000 MG/KG ORAL-CAT LDLO; 5500 MG/KG ORAL-DOG LDLO; 5560 MG/KG ORAL-GUINEA PIG LD50; 19,440 MG/KG SUBCUTANEOUS-INFANT LDLO; 1440 MG/KG INTRAVENOUS-RAT LD50; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS); TUMORIGENIC DATA (RTECS).
CARCINOGEN STATUS: NONE
LOCAL EFFECTS: IRRITANT - INHALATION, SKIN, EYE.
ACUTE TOXICITY LEVEL: SLIGHTLY TOXIC BY INHALATION, DERMAL ABSORPTION AND INGESTION.
TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT; HEPATOTOXIN.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH LIVER DISEASE.
ADDITIONAL DATA: ALLERGIC REACTIONS TO ALCOHOLS HAVE BEEN REPORTED.

HEALTH EFFECTS AND FIRST AID

INHALATION:
GASOLINE, AUTOMOTIVE, UNLEADED: IRRITANT/NARCOTIC/ASPHYXIANT.

ACUTE EXPOSURE - AT 150-270 PPM THROAT IRRITATION MAY OCCUR WITHIN SEVERAL HOURS. AT 2000 PPM MILD ANESTHESIA MAY OCCUR WITHIN 30 MINUTES. OTHER SYMPTOMS OF CENTRAL NERVOUS SYSTEM DEPRESSION MAY INCLUDE HEADACHE, NAUSEA, VOMITING, DIZZINESS, DROWSINESS, FACIAL FLUSHING, BLURRED VISION, SLURRED SPEECH, DIFFICULTY SWALLOWING, STAGGERING, CONFUSION AND EUPHORIA. AT HIGHER LEVELS DYSPNEA, PULMONARY EDEMA AND BRONCHOPNEUMONIA MAY DEVELOP. FURTHER DEPRESSION MAY OCCUR WITH WEAK RESPIRATION AND PULSE, NERVOUSNESS, TWITCHING, IRRITABILITY, AND ATAXIA. SEVERE INTOXICATION MAY RESULT IN DELIRIUM, UNCONSCIOUSNESS, COMA, AND CONVULSIONS WITH EPILEPTIFORM SEIZURES. THE PUPILS MAY BE CONSTRICTED OR, IN COMATOSE STATES, FIXED AND DILATED OR UNEQUAL; NYSTAGMUS MAY ALSO OCCUR. MAY ALSO AFFECT THE LIVER, KIDNEYS, SPLEEN, BRAIN, MYOCARDIUM AND PANCREAS. DEATH MAY BE DUE TO RESPIRATORY OR CIRCULATORY FAILURE OR VENTRICULAR FIBRILLATION. EXTREMELY HIGH CONCENTRATION MAY CAUSE ASPHYXIATION.

CHRONIC EXPOSURE - WITH FEW EXCEPTIONS, MOST OF THE REPORTED EFFECTS OF REPEATED INHALATION ARE FROM INTENTIONAL "SNIFFING" OF GASOLINE RATHER THAN WORKPLACE EXPOSURE. REPORTED SYSTEMS INCLUDE HEADACHE, NAUSEA, FATIGUE, ANOREXIA AND WEIGHT LOSS, PALLOR, DIZZINESS, INSOMNIA, MEMORY LOSS, NERVOUSNESS, CONFUSION, MUSCULAR WEAKNESS AND CRAMPS, PERIPHERAL NEUROPATHY, POLYNEURITIS, AND NEURASTHENIA. IT IS UNCLEAR WHETHER SOME OF THESE SYMPTOMS MAY HAVE BEEN DUE TO GASOLINE CONTAINING LEAD. LIVER AND KIDNEY DAMAGE ARE ALSO POSSIBLE. IN A 90 DAY STUDY, MALE BUT NOT FEMALE RATS EXHIBITED A SEVERE, DOSE-RELATED RENAL TOXICITY. IN ANOTHER STUDY, AN INCREASE IN RENAL ADENOMAS AND CARCINOMAS IN MALE RATS AND AN INCREASE IN HEPATOCELLULAR ADENOMAS AND CARCINOMAS IN FEMALE MICE WERE REPORTED.

BENZENE: NARCOTIC/BONE MARROW DEPRESSANT/CARCINOGEN.

ACUTE EXPOSURE-HIGH CONCENTRATIONS, AROUND 3000 PPM, MAY CAUSE RESPIRATORY TRACT IRRITATION, AND MORE SEVERE EXPOSURES MAY RESULT IN PULMONARY EDEMA. SYSTEMIC EFFECTS ARE MAINLY ON THE CENTRAL NERVOUS SYSTEM AND DEPEND ON THE CONCENTRATION AND EXPOSURE TIME. NO EFFECTS WERE NOTED AT 25 PPM FOR 8 HOURS, BUT SIGNS OF INTOXICATION BEGAN AT 50-150 PPM, WITHIN 1 HOUR, AT 7500 PPM, WITHIN 30 MINUTES; AND 20,000 PPM MAY BE FATAL WITHIN 5-10 MINUTES. EFFECTS MAY INCLUDE NAUSEA, VOMITING, HEADACHE, DIZZINESS, DROWSINESS, WEAKNESS, SOMETIMES PRECEDED BY A BRIEF

PERIOD OF EXHILARATION OR EUPHORIA, IRRITABILITY, MALAISE, INCOHERENT SPEECH, STAGGERING, INCREASED PULSE RATE, CHEST PAIN AND TIGHTNESS WITH BREATHLESSNESS, PALLOR, AND TINNITUS, IN SEVERE EXPOSURES THERE MAY BE BLURRED VISION, SHALLOW, RAPID BREATHING, DELIRIUM, CARDIAC ARRHYTHMIAS, UNCONSCIOUSNESS, DEEP ANESTHESIA, PARALYSIS, AND COMA CHARACTERIZED BY MOTOR RESTLESSNESS, TREMORS AND HYPEREFLEXIA, SOMETIMES PRECEDED BY CONVULSIONS. RECOVERY DEPENDS ON THE SEVERITY OF EXPOSURE, BREATHLESSNESS, NERVOUS IRRITABILITY AND UNSTEADY GAIT MAY PERSIST FOR 2-3 WEEKS. A PECULIAR YELLOW SKIN COLOR AND CARDIAC DISTRESS MAY PERSIST FOR 4 WEEKS. LIVER AND KIDNEY EFFECTS MAY OCCUR, BUT ARE USUALLY MILD, TEMPORARY IMPAIRMENTS, CHRONIC EFFECTS MAY ARISE AND PERSIST LONG AFTER AN ACUTE EXPOSURE. ALTHOUGH GENERALLY HEMATOTOXICITY IS NOT A SIGNIFICANT CONCERN IN ACUTE EXPOSURE, DELAYED HEMATOLOGIC EFFECTS, INCLUDING ANEMIA, HAVE BEEN REPORTED, AS HAVE PETECHIAL HEMORRHAGES, SPONTANEOUS BLEEDING, SECONDARY INFECTIONS, AND SKIN RASHES. IN FATAL EXPOSURES, DEATH MAY BE DUE TO CENTRAL NERVOUS SYSTEM DEPRESSION, CARDIAC OR RESPIRATORY FAILURE AND CIRCULATORY COLLAPSE, OR OCCASIONALLY, SUDDEN VENTRICULAR FIBRILLATION. IT MAY OCCUR WITHIN A FEW MINUTES TO SEVERAL HOURS, OR CARDIAC ARRYTHMIA MAY OCCUR AT ANY TIME WITHIN 24 HOURS. ALSO, DEATH FROM CENTRAL NERVOUS SYSTEM, RESPIRATORY OR HEMORRHAGIC COMPLICATIONS MAY OCCUR UP TO 5 DAYS AFTER EXPOSURE. PATHOLOGIC FINDINGS HAVE INCLUDED RESPIRATORY INFLAMMATION WITH EDEMA AND HEMORRHAGE OF THE LUNGS, RENAL CONGESTION, CEREBRAL EDEMA, AND EXTENSIVE PETECHIAL HEMORRHAGES IN THE BRAIN, PLEUREA, PERICARDIUM, URINARY TRACT, MUCOUS MEMBRANES, AND SKIN. BENZENE CROSSES THE PLACENTAL BARRIER AND THEREFORE MAY AFFECT UNBORN CHILDREN.

CHRONIC EXPOSURE - LONG TERM EXPOSURE MAY CAUSE SYMPTOMS REFERABLE TO THE CENTRAL NERVOUS, HEMATOPOIETIC AND IMMUNE SYSTEMS. EARLY EFFECTS ARE VAGUE AND VARIED AND MAY INCLUDE HEADACHE, LIGHT-HEADEDNESS, DIZZINESS, NAUSEA, ANOREXIA, ABDOMINAL DISCOMFORT, AND FATIGUE. LATER THERE MAY BE DYSPNEA, PALLOR, SLIGHTLY INCREASED TEMPERATURE, DECREASED BLOOD PRESSURE, AND VISUAL DISTURBANCES. DIZZINESS WHEN COLD WATER IS PLACED IN THE EAR AND HEARING IMPAIRMENT HAVE BEEN REPORTED AS HAVE DIFFUSE CEREBRAL ATROPHY ASSOCIATED WITH ATAXIA, TREMORS AND EMOTIONAL LIABILITY. WORKERS EXPOSED TO BENZENE IN COMBINATION WITH OTHER SOLVENTS HAVE EXHIBITED POLYNEURITIS. HEMATOLOGIC EFFECTS VARY WIDELY AND MAY APPEAR AFTER A FEW WEEKS OR MANY YEARS OF EXPOSURE OR EVEN MANY YEARS AFTER EXPOSURE HAS CEASED. THE DEGREE OF EXPOSURE BELOW WHICH NO BLOOD EFFECTS WILL OCCUR CANNOT BE ESTABLISHED WITH CERTAINTY. IN THE EARLY STAGES, THERE MAY BE BLOOD CLOTTING DEFECTS DUE TO FUNCTIONAL, MORPHOLOGICAL AND QUANTITATIVE PLATELET ALTERATION WITH RESULTANT BLEEDING FROM THE NOSE AND GUMS AND EASY BRUISING; LEUKOPENIA WITH PREDOMINANT LYMPHOCYTOPENIA OR NEUTROPENIA; AND ANEMIA WHICH MAY BE NORMOCHROMIC OR MACROCYTIC AND HYPOCHROMIC. HEMATOPOIESIS, BOTH IN THE BONE MARROW AND EXTRAMEDULLARY SITES, MAY BE HYPER-OR HYPOACTIVE WHICH MAY ACCOUNT FOR THE LACK OF CORRELATION, IN SOME CASES, BETWEEN THE BONE MARROW AND THE PERIPHERAL BLOOD PICTURES. ALSO, THE SYMPTOMS DO NOT ALWAYS PARALLEL THE LABORATORY FINDINGS. IF TREATED AT THIS STAGE, THE EFFECTS APPEAR REVERSIBLE, ALTHOUGH RECOVERY MAY BE PROTRACTED AND THERE MAY BE RELAPSES. HEMOLYSIS, DECREASED ERYTHROCYTE SURVIVAL, IRON METABOLISM DISTURBANCES, INTERNAL HEMORRHAGES, AND INCREASED SERUM BILIRUBIN LEVELS HAVE ALSO BEEN REPORTED. EXPOSURE TO HIGH DOSES FOR LONGER PERIODS MAY RESULT IN APLASIA AND FATTY DEGENERATION OF THE BONE MARROW WITH PANCYTOPENIA AND IS CONSIDERED TO BE IRREVERSIBLE. ENORMOUS VARIABILITY IN INDIVIDUAL RESPONSE, INCLUDING NON-DOSE DEPENDENT APLASIA, AND THE FINDING OF EOSINOPHILIA, SUGGESTS THAT IN SOME CASES, THE BLOOD DYSCRASIA MAY PARTIALLY BE AN ALLERGIC REACTION. IN A SERIES OF EPIDEMIOLOGICAL STUDIES THERE WAS A STATISTICALLY SIGNIFICANT EXCESS OF LEUKEMIAS, PREDOMINATELY MYELOGENOUS, IN PERSONS EXPOSED PRIMARILY TO BENZENE. ALSO, MANY CASE REPORTS AND SERIES HAVE DESCRIBED THE ASSOCIATION OF LEUKEMIA AND BENZENE EXPOSURE. MOST WERE ACUTE MYELOGENOUS, ALTHOUGH SOME WERE MONOCYTIC, ERYTHROBLASTIC, OR LYMPHOCYTIC, SOME LYMPHOMAS WERE NOTED ALSO. ALTHOUGH APLASTIC ANEMIA IS PROBABLY THE MORE LIKELY CONSEQUENCE OF LONG TERM EXPOSURE, IT IS NOT UNCOMMON FOR AN INDIVIDUAL SURVIVING THIS, TO GO THROUGH A PRELEUKENIC PHASE INTO FRANK LEUKEMIA. CONVERSELY, LEUKEMIA WITHOUT PRECEDENT APLASTIC ANEMIA CAN OCCUR. IN ONE STUDY THE RANGE OF TIME FROM THE START OF THE EXPOSURE TO THE DIAGNOSIS OF LEUKEMIA WAS 3-24 YEARS. IT HAS BEEN SUGGESTED THAT THE CHROMOSOMAL ABERRATIONS WHICH CAN ARISE IN PERIPHERAL BLOOD AND BONE MARROW CELLS AND PERSIST FOR A LONG TIME AFTER EXPOSURE CEASES, MAY BE ASSOCIATED WITH THE INCREASED INCIDENCE OF LEUKEMIA. THE IMMUNOSUPPRESSIVE EFFECT HAS ALSO BEEN SUGGESTED AS ASSOCIATED WITH THE LEUKEMOGENESIS. ADVERSE EFFECTS ON THE IMMUNOLOGICAL SYSTEM HAVE BEEN SHOWN TO MAKE RABBITS MORE SUSCEPTIBLE TO TUBERCULOSIS AND PNEUMONIA AND MAY EXPLAIN WHY THE TERMINAL EVENT IN SOME CASES OF BENZENE INTOXICATION MAY BE OVERWHELMING INFECTION. MENSTRUAL DISTURBANCES HAVE BEEN REPORTED MORE FREQUENTLY IN EXPOSED WOMEN. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

ETHYL ALCOHOL (ETHANOL): IRRITANT/NARCOTIC.

ACUTE EXPOSURE - EXPOSURE OF HUMANS TO 1000-10,000 PPM HAS CAUSED TEMPORARY IRRITATION OF THE UPPER RESPIRATORY TRACT AND COUGHING; AND IF CONTINUED, HEADACHE, STUPOR, FATIGUE, DROWSINESS, LASSITUDE, AND LOSS OF APPETITE. A LEVEL OF 20,000 PPM WAS CONSIDERED JUST TOLERABLE, AND ABOVE THIS LEVEL, THE ATMOSPHERE WAS DESCRIBED AS INTOLERABLE AND SUFFOCATING ON EVEN BRIEF EXPOSURES. CENTRAL NERVOUS SYSTEM DEPRESSION WITH HEADACHE, DIZZINESS, DULLNESS, AND DROWSINESS MAY OCCUR. EXPOSURE OF ANIMALS TO VARIOUS CONCENTRATIONS HAS RESULTED IN SLIGHT IRRITATION OF ANIMALS TO VARIOUS CONCENTRATIONS HAS RESULTED IN SLIGHT IRRITATION OF THE MUCOUS MEMBRANES, EXCITATION, FOLLOWED BY ATAXIA, INCOORDINATION, PROSTRATION, DROWSINESS, TWITCHING, NARCOSIS, GENERAL PARALYSIS, DYSPNEA, AND OCCASIONALLY DEATH DUE TO RESPIRATORY FAILURE.

CHRONIC EXPOSURE - REPEATED OR PROLONGED INHALATION OF VAPORS MAY CAUSE IRRITATION OF THE MUCOUS MEMBRANES, HEADACHE, DIZZINESS, NERVOUSNESS, TREMORS, FATIGUE, NAUSEA, NARCOSIS, LACK OF CONCENTRATION, AND SOMNOLENCE. TOLERANCE MAY BE A FACTOR IN INDIVIDUAL RESPONSE TO A GIVEN AIR CONCENTRATION. FETAL DEVELOPMENTAL ABNORMALITIES HAVE BEEN REPORTED FROM REPEATED INHALATION BY PREGNANT RATS.

FIRST AID - REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD PRESSURE AND ADMINISTER OXYGEN IF AVAILABLE. KEEP AFFECTED PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. ADMINISTRATION OF OXYGEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:

GASOLINE, AUTOMOTIVE, UNLEADED: IRRITANT.

ACUTE EXPOSURE - LIQUID MAY CAUSE IRRITATION WITH ERYTHEMA AND PAIN. PROLONGED OR EXTENSIVE CONTACT MAY CAUSE BLISTERING AND, IN EXTREME CASES EPIDERMAL NECROLYSIS. A 12 YEAR OLD BOY PARTIALLY IMMERSED IN A POOL OF GASOLINE FOR 1 HOUR EXPERIENCED HYPOTENSION, ABDOMINAL TENDERNESS, DISSEMINATED INTRAVASCULAR COAGULATION, TRANSIENT HEMATURIA, NONOLIGURIC RENAL FAILURE AND AN ELEVATED SERUM AMYLASE. AUTOPSY REVEALED CEREBRAL EDEMA, DIFFUSE BILATERAL PNEUMONIA, BIVENTRICULAR CARDIAC ENLARGEMENT, TOXIC NEPHROSIS, FATTY INFILTRATION OF LIVER AND PERIPANCREATIC FAT NECROSIS.

CHRONIC EXPOSURE - REPEATED OR PROLONGED CONTACT WITH THE LIQUID MAY CAUSE IRRITATION, DERMATITIS AND DEFATTING OF THE SKIN WITH DRYING AND CRACKING OR BURNS AND BLISTERING. SOME INDIVIDUALS MAY DEVELOP HYPERSENSITIVITY, PROBABLY DUE TO ADDITIVES.

BENZENE: IRRITANT.

ACUTE EXPOSURE - DIRECT CONTACT MAY CAUSE IRRITATION. EFFECTS MAY INCLUDE ERYTHEMA, A BURNING SENSATION, AND IN MORE SEVERE CASES, BLISTERING AND EDEMA. PROLONGED CONTACT MAY CAUSE LESIONS RESEMBLING 1st and 2nd DEGREE BURNS. UNDER NORMAL CONDITIONS, SIGNIFICANT SIGNS OF SYSTEMTIC INTOXICATION ARE UNLIKELY FROM SKIN CONTACT ALONE, DUE TO THE SLOW RATE OF ABSORPTION AND THE HIGH VOLATILITY. APPLICATION TO GUINEA PIGS RESULTED IN INCREASED DERMAL PERMEABILITY.

CHRONIC EXPOSURE - REPEATED OR PROLONGED CONTACT DEFATS THE SKIN AND MAY RESULT IN DERMATITIS WITH ERYTHEMA, SCALING, DRYNESS, VESICULATION, AND FISSURING, POSSIBLY ACCOMPANIED BY PARESTHESIAS OF THE FINGERS WHICH MAY PERSIST SEVERAL WEEKS AFTER THE DERMATITIS SUBSIDES. SECONDARY INFECTIONS MAY OCCUR. TESTS ON GUINEA PIGS INDICATE SENSITIZATION IS POSSIBLE. ALTHOUGH STUDIES HAVE FAILED TO ESTABLISH A RELATIONSHIP BETWEEN SKIN CONTACT AND A CARCINOGENIC EFFECT, SOME PAPILLOMAS AND HEMATOPOIETIC EFFECTS HAVE BEEN REPORTED.

ETHYL ALCOHOL (ETHANOL): IRRITANT.

ACUTE EXPOSURE - DIRECT CONTACT MAY CAUSE MILD REDNESS AND BURNING. SENSITIZATION HAS OCCASIONALLY BEEN REPORTED TO OCCUR IN SOME INDIVIDUALS RESULTING IN ALLERGIC CONTACT DERMATITIS IN THE FORM OF ECZEMATOUS ERUPTIONS OR, RARELY, ERYTHEMATOUS FLUSH OR CONTACT URTICARIA AT THE EXPOSED SITE. ANIMAL STUDIES INDICATE THAT DEPENDING ON CONCENTRATION AND DURATION OF EXPOSURE, VARYING DEGREES OF IRRITATION MAY OCCUR RANGING FROM MILD TO SEVERE.

CHRONIC EXPOSURE - REPEATED OR PROLONGED CONTACT WITH THE LIQUID CAN CAUSE DEFATTING OF THE SKIN, PRODUCING A DRY, FISSURED DERMATITIS, OR OTHER SYMPTOMS AS IN ACUTE EXPOSURE. A 21-DAY MODIFIED DRAIZE OPEN TEST STUDY RESULTED IN NO IRRITATION IN MEN, WHEREAS AN OCCLUSIVE TEST RESULTED IN ERYTHEMA AND INDURATION TOWARD THE END OF THE EXPOSURE PERIOD.

FIRST AID - REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:

GASOLINE, AUTOMOTIVE, UNLEADED: IRRITANT.

ACUTE EXPOSURE - CONCENTRATIONS BETWEEN 270 AND 900 PPM MAY CAUSE A SENSATION OF IRRITATION OFTEN BEFORE SIGNS SUCH AS CONJUNCTIVAL HYPEREMIA ARE VISIBLE. LIQUID SPLASHED IN THE EYES MAY CAUSE PAIN, SMARTING AND SLIGHT, TRANSIENT CORNEAL EPITHELIAL DISTURBANCE. BLEPHAROSPASM AND CONJUNCTIVAL HYPEREMIA AND EDEMA MAY OCCUR.

CHRONIC EXPOSURE - REPEATED OR PROLONGED EXPOSURE MAY CAUSE CONJUNCTIVITIS AND POSSIBLE GRADUAL, IRREVERSIBLE LOSS OF CORNEAL AND CONJUNCTIVAL SENSITIVITY.

BENZENE: IRRITANT.

ACUTE EXPOSURE - VAPOR CONCENTRATIONS OF 3000 PPM ARE VERY IRRITATING, EVEN ON BRIEF EXPOSURE. DROPLETS CAUSE MODERATE BURNING SENSATION, BUT ONLY A SLIGHT, TRANSIENT EPITHELIAL INJURY WITH RAPID RECOVERY.

CHRONIC EXPOSURE - REPEATED OR PROLONGED EXPOSURE TO IRRITANTS MAY CAUSE CONJUNCTIVITIS. SEVERAL CASE REPORTS, ONE OF THEM AN ACUTE EXPOSURE, SUGGEST THAT SYSTEMIC EXPOSURE MAY BE ASSOCIATED WITH RETROBULBAR OR OPTIC NEURITIS. 50% OF RATS EXPOSED TO 50 PPM FOR MORE THAN 600 HOURS DEVELOPED CATARACTS.

ETHYL ALCOHOL (ETHANOL): IRRITANT.

ACUTE EXPOSURE - VAPOR CONCENTRATIONS OF 1,000 TO 10,000 PPM MAY CAUSE TEMPORARY EYE IRRITATION, WITH 15,000 PPM CAUSING CONTINUOUS LACRIMATION. DIRECT CONTACT WITH THE LIQUID MAY CAUSE IMMEDIATE BURNING AND STINGING, WITH REFLEX CLOSURE OF THE LIDS, TEARING. TEMPORARY INJURY OF THE CORNEAL EPITHELIUM AND HYPEREMIA OF THE CONJUNCTIVA. HEALING IS USUALLY SPONTANEOUS AND COMPLETE. DEPENDING ON THE CONCENTRATION, CONTACT WITH RABBIT EYES MAY CAUSE A RESPONSE RANGING FROM MILD IRRITATION TO SEVERE INJURY. IRRIGATION OF RABBIT EYES WITH A 10% SOLUTION FOR SEVERAL MINUTES CAUSED NO SERIOUS DISTURBANCES.

CHRONIC EXPOSURES - REPEATED APPLICATION TO RABBIT EYES OF 40-80% SOLUTIONS CAUSED CORNEAL CLOUDINESS, CONJUNCTIVAL NECROSIS, AND LOSS OF CORNEAL EPITHELIUM AND ENDOTHELIUM, FOLLOWED BY CONJUNCTIVAL HEMORRHAGING AND EDEMA, INFILTRATION AND FASCULARIZATION OF THE CORNEAL STORMA.

FIRST AID - WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:

GASOLINE, AUTOMOTIVE, UNLEADED: NARCOTIC.

ACUTE EXPOSURE - MAY CAUSE IRRITATION AND BURNING OF THE GASTROINTESTINAL TRACT WITH NAUSEA, VOMITING AND DIARRHEA. ABSORPTION MAY CAUSE INITIAL CENTRAL NERVOUS STIMULATION FOLLOWED BY DEPRESSION. SYMPTOMS MAY INCLUDE MILD EXCITATION, RESTLESSNESS, NERVOUSNESS, IRRITABILITY, TWITCHING, WEAKNESS, BLURRED VISION, HEADACHE, DIZZINESS, DROWSINESS, INCOORDINATION, CONFUSION, DELIRIUM, UNCONSCIOUSNESS, CONVULSIONS AND COMA. CARDIAC ARRYTHMIAS MAY OCCUR. TRANSIENT LIVER DAMAGE IS POSSIBLE. DIRECT OR INDIRECT ASPIRATION MAY CAUSE CHEMICAL PNEUMONITIS WITH PULMONARY EDEMA AND HEMORRHAGE, POSSIBLY COMPLICATED BY BACTERIAL PNEUMONIA AND LESS FREQUENTLY, BY EMPHYSEMA AND PNEUMONTHORAX. SIGNS OF PULMONARY INVOLVEMENT MAY INCLUDE COUGHING, DYSPNEA, SUBSTERNAL PAIN, SUDDEN DEVELOPMENT OF RAPID BREATHING, CYANOSIS, TACHYCARDIA AND FEVER. EVEN SMALL AMOUNTS MAY BE FATAL WITH DEATH CAUSED BY CARDIAC ARREST, ASPHYXIA OR RESPIRATORY PARALYSIS. DEPENDING ON AMOUNT ASPIRATED, DEATH MAY OCCUR RAPIDLY OR WITHIN 24 HOURS.

CHRONIC EXPOSURE - NO DATA AVAILABLE.

BENZENE: NARCOTIC/CARCINOGEN.

ACUTE EXPOSURE - MAY CAUSE LOCAL IRRITATION AND BURNING SENSATION IN THE MOUTH, THROAT, AND STOMACH. SIGNS AND SYMPTOMS OF SYSTEMIC INTOXICATION MAY INCLUDE NAUSEA, VOMITING, HEADACHE, DIZZINESS, WEAKNESS, STAGGERING, CHEST PAIN AND TIGHTNESS, SHALLOW, RAPID PULSE, BREATHLESSNESS, PALLOR FOLLOWED BY FLUSHING, AND A FEAR OF IMPENDING DEATH. THERE MAY BE VISUAL DISTURBANCES AND CONVULSIONS, VIOLENT EXCITEMENT, EUPHORIA OR DELIRIUM MAY PRECEDE WEARINESS, FATIGUE AND SLEEPINESS FOLLOWED BY UNCONSCIOUSNESS, COMA AND DEATH. THOSE WHO SURVIVE THE CENTRAL NERVOUS SYSTEM EFFECTS MAY DEVELOP BRONCHITIS, PNEUMONIA, PULMONARY EDEMA, AND INTRAPULMONARY HEMORRHAGE. ASPIRATION MAY CAUSE IMMEDIATE PULMONARY EDEMA AND HEMORRHAGE. THE USUAL LETHAL DOSE IN HUMANS IS 10-15 MILLILITERS, BUT SMALLER AMOUNTS HAVE BEEN REPORTED TO CAUSE DEATH. A SINGLE EXPOSURE MAY PRODUCE LONG TERM EFFECTS WITH PANCYTOPENIA PERSISTING UP TO A YEAR.

CHRONIC EXPOSURE - DAILY ADMINISTRATION TO HUMANS OF 2-5 GRAMS IN OLIVE OIL HAS CAUSED HEADACHE, VERTIGO, BLADDER IRRITABILITY, IMPOTENCE, GASTRIC DISTURBANCES, AND RENAL DYSFUNCTION IN FEMALE RATS TREATED WITH 132 SINGLE DAILY DOSES OVER 187 DAYS. NO EFFECTS WERE OBSERVED AT 1 MG/KG; SLIGHT LEUKOPENIA AT 10 MG/KG; AND BOTH LEUKOPENIA AND ANEMIA AT 50 AND 100 MG/G. IN A 2 YEAR GAVAGE STUDY WITH RATES AND MICE THERE WAS AN INCREASED INCIDENCE OF LYMPHOMAS AND TUMORS OF THE ORAL CAVITY, SKIN, LUNGS, OVARIES, AND MAMMARY, HARDERIAN, AND PREPUTIAL GLANDS. IN A ONE YEAR GAVAGE STUDY, RATS GIVEN 50 OR 250 MG/KG, 4-5 DAYS/WEEK FOR 52 WEEKS DID NOT EXHIBIT ACUTE OR SUBACUTE TOXIC EFFECTS, BUT A DOSE CORRELATED INCREASE OF LEUKEMIAS AND MAMMARY CARCINOMAS WAS OBSERVED. REPRODUCTIVE EFFECTS HAVE BEEN REPORTS IN ANIMALS.

ETHYL ALCOHOL (ETHANOL): NARCOTIC/HEPATOTOXIN.

ACUTE EXPOSURE - INGESTION OF ETHANOL FIRST ACTS AS A STIMULANT PRODUCING EMOTIONAL LIABILITY AND DECREASED INHIBITIONS, WITH EXHILARATION, BOASTFULNESS, TALKATIVENESS, REMORSE, AND BELLIGERENCY; FOLLOWED BY GRADUAL VISUAL IMPAIRMENT, MUSCULAR INCOORDINATION, SLOWING OF REACTION TIME, SENSORY DISTURBANCES, AND SLURRING OF SPEECH. OTHER SYMPTOMS MAY INCLUDE FLUSHING OF THE FACE, DILATED PUPILS, RAPID PULSE, NAUSEA, VOMITING, SWEATING, AND DIURESIS, INGESTION OF LARGE AMOUNTS MAY CAUSE CONFUSION, DISORIENTATION, LOSS OF MOTOR NERVE CONTROL, SHALLOW RESPIRATION, INVOLUNTARY DEFECATION AND URINATION, DROWSINESS, STUPOR, AND POSSIBLE COMA. CONVULSIONS DUE TO HYPOGLYCEMIA AND SHOCK WITH HYPOTENSION, TACHYCARDIA, COLD PALE SKIN, HYPOTHERMIA, RESPIRATORY DEPRESSION, AND DECREASED REFLEXES MAY OCCUR. DEATH MAY OCCUR FROM RESPIRATORY OR CIRCULATORY FAILURE OR LATER FROM ASPIRATION PNEUMONITIS, OR PULMONARY EDEMA. RECOVERY MAY BE ACCOMPANIED BY HEADACHE, INSOMNIA, GASTRITIS, INFECTION, TREMORS, RESTLESSNESS, PSYCHOSES WITH UNCONTROLLABLE FEAR, AND VISUAL, AUDITORY, OR GUSTATORY HALLUCINATIONS, EXAGGERATED REFLEXES, TACHYCARDIA, AND CONVULSIONS. SOME INDIVIDUALS SENSITIZED BY EXTERNAL CONTACT MAY SUFFER FROM A GENERALIZED ERYTHEMA, STOMATITIS, URTICARIA, ANGIOEDEMA, MORBILLIFORM ERUPTIONS, OR EXCZEMATOUS DERMATITIS AT SITES PREVIOUSLY AFFECTED BY EXTERNAL CONTACT. EFFECTS ON FERTILITY HAVE BEEN REPORTED FROM ACUTE ORAL EXPOSURE IN RABBITS.

CHRONIC EXPOSURE - CHRONIC INTOXICATION MAY RESULT IN WEIGHT LOSS, WITH ANOREXIA AND DIARRHEA, AND CIRRHOSIS OF THE LIVER. POLYNEURITIS WITH PAIN, MOTOR AND SENSORY LOSS IN THE EXTREMITIES, AND OPTIC ATROPHY MAY OCCUR. AMNESIA, TREMORS, CONFUSION, IMPAIRED JUDGMENT, AND LOSS OR IMPAIRMENT OF MENTAL ABILITIES ARE POSSIBLE. MANY YEARS OF CHRONIC INGESTION HAVE CAUSED ACUTE MYOPATHY WITH TENDERNESS, ACHING, EDEMA, AND DEGENERATION OF THE MUSCLES. THE HEART MAY BE AFFECTED, CAUSING PALPITATIONS, EXTRASYSTOLE, TACHYCARDIA, OR OTHER ARRHYTHMIAS, WHICH MAY PROGRESS TO IRREVERSIBLE MYOCARDIAL FIBROSIS AND CIRCULATORY FAILURE. ETHYL ALCOHOL HAS BEEN CLEARLY DEMONSTRATED TO CAUSE REPRODUCTIVE EFFECTS. THE NEWBORNS OF ALCOHOLIC MOTHERS MAY EXHIBIT FETAL ALCOHOL SYNDROME WITH LOW BIRTH WEIGHTS. PROMINENCE OF THE FOREHEAD AND MANDIBLE, CLEFT PALATE, MAXILLARY HYPOPLASIA, SHORT PALPEBRAL FISSURES, MICROPHTHALMIA, EPICANTHAL FOLDS, SEVERE GROWTH RETARDATION, MENTAL RETARDATION, MICROCEPHALY, CARDIAC ANOMALIES, AND POSSIBLY MALORIENTATION OF THE BRAIN. 9 NEWBORNS OF A HIGH RISK GROUP, THAT IS WOMEN WHO DRINK MORE THAN 2 OUNCES PER DAY, SHOWED INCREASED TREMORS AND NON-ALERT WAKE STATES AND DECREASED VIGOROUS ACTIVITY. REPEATED ORAL ADMINISTRATION HAS BEEN REPORTED TO CAUSE EFFECTS ON THE MALE RODEN REPRODUCTIVE SYSTEMS, OTHER ANIMAL STUDIES, IN WHICH CHRONIC FEEDING WAS DONE PRIOR TO MATING AND DURING AND AFTER GESTATION, REPORTED FETAL DEVELOPMENTAL ABNORMALITIES, EFFECTS ON THE FEMALE REPRODUCTIVE SYSTEM, EFFECTS ON THE EMBRYO OR FETUS, AND EFFECTS ON THE NEWBORN.

FIRST AID - EXTREME CARE MUST BE USED TO PREVENT ASPIRATION. IF MORE THAN ML/KG IS INGESTED AND RETAINED OR IF A TOXIC INGREDIENT IS PRESENT, USE GASTRIC LAVAGE WITH ACTIVATED CHARCOAL AND A CUFFED ENDOTRACHEAL TUBE WITHIN 15 MINUTES. IN THE ABSENCE OF DEPRESSION OR CONVULSIONS OR IMPAIRED GAS REFLEX, IPECAC EMESIS CAN BE DONE. WHEN VOMITING BEGINS, KEEP HEAD BELOW THE HIPS TO PREVENT ASPIRATION. AFTER VOMITING STOPS, GIVE 30-60 MILLILITERS OF FLEET'S PHOSPHO-SODA DILUTED 1:4 IN WATER. MAINTAIN AIRWAY AND BLOOD PRESSURE. GIVE ARTIFICIAL RESPIRATION WITH OXYGEN IF RESPIRATION IS DEPRESSED. (DREISBACH, HANDBOOK OF POISONING, 11TH ED.) TREATMENT MUST BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL. GET MEDICAL ATTENTION.

ANTIDOTE: NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY: STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES: GASOLINE, AUTOMOTIVE, UNLEADED; ETHYL ALCOHOL; METHYL TERT-BUTYL ETHER; OXIDIZERS (STRONG); FIRE AND EXPLOSION HAZARD.

DECOMPOSITION: THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF CARBON.

POLYMERIZATION: HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

STORE IN ACCORDANCE WITH 29 CFR 1910.106.

BONDING AND GROUNDING: SUBSTANCES WITH LOW ELECTROCONDUCTIVITY WHICH MAY BE IGNITED BY ELECTROSTATIC SPARKS, SHOULD BE STORED IN CONTAINERS WHICH MEET THE BONDING AND GROUNDING GUIDELINES SPECIFIED IN NFPA 77-1993, RECOMMENDED PRACTICE ON STATIC ELECTRICITY.

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE. 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D001.

CONDITIONS TO AVOID

MAY BE IGNITED BY HEAT, SPARKS, OR FLAMES. VAPORS MAY TRAVEL TO A SOURCE OF IGNITION AND FLASH BACK. CONTAINER MAY EXPLODE IN HEAT OR FIRE. VAPOR EXPLOSION HAZARD INDOORS, OUTDOORS OR IN SEWERS. RUNOFF TO SEWER MAY CREATE FIRE OR EXPLOSION HAZARD.

IMPROPER FILLING OF PORTABLE GASOLINE CONTAINERS CREATES DANGER OF FIRE. ONLY DISPENSE GASOLINE INTO APPROVED AND PROPERLY LABELED GASOLINE CONTAINERS. ALWAYS PLACE PORTABLE CONTAINERS ON THE GROUND. BE SURE PUMP NOZZLE IS IN CONTACT WITH THE CONTAINER WHEN FILLING. DO NOT USE A NOZZLE'S LOCK OPEN DEVICE. DO NOT FILL PORTABLE CONTAINERS THAT ARE INSIDE A VEHICLE OR TRUCK/TRAILER BED.

NEVER SIPHON GASOLINE BY MOUTH. USE ONLY AS A MOTOR FUEL. DO NOT USE FOR CLEANING, PRESSURE APPLIANCE FUEL, OR ANY OTHER SUCH USE.

SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL:
SHUT OFF IGNITION SOURCES. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. FOR SMALL SPILLS, TAKE UP WITH STAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA. KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND RESTRICT ENTRY.

REPORTABLE QUANTITY (RQ):
THE SUPERFUND AMENDMENTS AND REEAUTHORIZATION ACT (SARA) SECTION 304 REQUIRES THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY ESTABLISHED FOR THAT SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE AND THE STATE EMERGENCY RESPONSE COMMISSION (40 CFR 355.40). IF THE RELEASE OF THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) 424-8802 OR (202) 426-2675 IN THE METROPOLITAN WASHINGTON, D.C. AREA (40 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST OR PROCESS EXCLOSURE VENTILATION TO MEET THE PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON THE CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION.

THE FOLLOWING RESPIRATORS ARE RECOMMENDED BASED ON THE DATA FOUND IN THE PHYSICAL DATA, HEALTH EFFECTS AND TOXICITY SECTIONS. THEY ARE RANKED IN ORDER FROM MINIMUM TO MAXIMUM RESPIRATORY PROTECTION:

TYPE 'C' SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE OR WITH A FULL FACEPIECE, HELMET OR HOOD OPERATED IN CONTINUOUS-FLOW MODE.

SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

SUPPLIED-AIR RESPIRATOR WITH FULL FACEPIECE AND OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE. CONTACT LENSES SHOULD NOT BE WORN.

ENVIRONMENTAL DATA SHEET

SUPPLEMENT TO MSDS: **Gasoline; Ethanol-Enhanced Gasolines; Automotive, Unleaded Premium**

DATE PREPARED: **JANUARY 1, 1995**
DATE REVISED: **January 10, 2007**

SARA - TITLE III INFORMATION

This material is regulated under the indicated section(s) of TITLE III of the Superfund Amendments and the Reauthorization Act ("SARA"), 42 U.S.C. Section 11001 et seq. Please note that regulations pertaining to Sections 302 and 304 of SARA are found in the Code of Federal Regulations at 40 CFR Part 355 and that regulations pertaining to Section 313 of SARA are found at 40 CFR Part 372.

1. This product contains the following toxic chemicals (Section 313):

Chemical Name	CAS #	WT%
Benzene	71-43-2	1.5-3.0
Cyclohexane	110-82-7	0.5-2.0
Ethylbenzene	100-41-4	1.0-1.5
Toluene	108-88-3	6.0-8.0
Xylene	1330-20-7	4.0-8.0
Hexane	110-54-3	1.0-5.0
Cumene	98-82-8	0.0-0.1
1,2,4-Trimethylbenzene	95-63-6	1.0-2.5
Naphthalene	91-20-3	0.1-0.2

If you are unsure if you are subject to the reporting requirements of Section 313, or need more information, call the EPA Emergency Planning and Community Right-To-Know Information Hotline: (800) 535-0202. Your other suppliers should also be notifying you if Section 313 chemicals are present in mixtures, trade name products, or chemicals they sell to you. Please note that if you repackage or redistribute this product to industrial customers, a notice should be sent to those customers.

Avoid spilling gasoline as it can result in environmental damage. Spilled gasoline can penetrate soil and contaminate groundwater. Although gasoline is biodegradable, it may persist for extended periods of time, especially under conditions of reduced oxygen levels. The hydrocarbon components of gasoline are slightly soluble in water. Due to their differential solubility, the occurrence of gasoline hydrocarbon components in groundwater may be in different proportions than in the original spilled gasoline mixture. Local environmental conditions (e.g., temperature, wind, soil type, wave action in water, etc.) will affect the weathering and biodegradation of spilled materials.

Gasoline contains components that are potentially toxic to freshwater and saltwater ecosystems. The components most likely to cause toxicity are highly volatile and can be readily degraded by microorganisms. Spilled gasoline will tend to float on water. In general, the components of gasoline tend to evaporate rapidly. Evaporated components may contribute to atmospheric smog formation.

Ethanol and other oxygenates are much more soluble in water and are less likely to adsorb to soils and sediment than other gasoline components. Ethanol tends to travel much faster in groundwater than the other hydrocarbon components of gasoline and, due to its solvent properties, will tend to enhance the spread of gasoline spills in groundwater. Because bacteria will tend to preferentially consume ethanol rather than other hydrocarbons in a gasoline plume, the biodegradation of spilled gasoline which contains ethanol may be inhibited, potentially resulting in groundwater plumes being more widely spread. Ethanol is not expected to bioconcentrate in the aquatic environment.

Should gasoline, including gasoline containing oxygenates, be released to the soil, impacted soils should be removed or remediated as soon as possible to avoid impact to groundwater. Due to its relatively high taste and odor threshold, ethanol may not be detectable by ordinary sensory means.

Ecological testing has not been conducted on this material by WESTERN REFINING.

2. This product contains the following extremely hazardous substance(s) (Section 302 and 304):

Chemical Name	TPQ (lbs)	RQ (lbs)
None	N/A	N/A

3. CERCLA Sections 102a/103 Hazardous Substances and Reportable Quantities (40 CFR Part 302.4):
This material is exempt from the CERCLA reporting requirements under 40 CFR Part 302.4 because the EPA's Petroleum Exclusion applies to it. However, if spilled into the waters of the United States, it may be reportable under 33 CFR Part 153 if it produces a sheen. It also may be reportable by individual constituents for the following substances.

Chemical Name	WT%	RQ (lbs)
Unlisted "Hazardous Waste" Characteristic of Ignitability	100	100
2,2,4-Trimethylpentane	0.0-14.0	1
Benzene	1.5-3.0	10
Cyclohexane	0.5-2.0	1000

Ethylbenzene	1.0-1.5	1000
Toluene	6.0-8.0	1000
Xylene	4.0-8.0	1000
Hexane	1.0-5.0	1
Cumene	0.0-0.1	5000
Naphthalene	0.1-0.2	100

Note: Sections 2 and 3 are required for emergency response reporting. This Environmental Data Sheet ("EDS") is a Supplement to the Material Safety Data Sheet ("MSDS"). It is an integral part of the MSDS and must not be detached from the MSDS. If the MSDS is copied, this EDS must also be copied. If the MSDS is redistributed, this EDS must be redistributed with the MSDS.

MATERIAL SAFETY DATA SHEET

SUBSTANCE IDENTIFICATION

SUBSTANCE: KEROSENE **CAS-NUMBER 8008-20-6**

TRADE NAMES/SYNONYMS: FUEL OIL NO. 1; COAL OIL; RANGE OIL; KEROSINE; STCC 4915171; UN 1223; K-10; 0HS10090

CHEMICAL FAMILY: HYDROCARBON ALIPHATIC HYDROCARBON, AROMATIC

PRODUCT MANUFACTURER:
WESTERN REFINING
ROUTE 3 BOX 7
GALLUP, NEW MEXICO 87301

EMERGENCY PHONE: (505) 722-3833
INFORMATION PHONE: (505) 722-3833

DATE PREPARED: FEBRUARY 15, 1989
LAST REVISION: August 17, 2006

CERCLA RATINGS (SCALE 0-3): HEALTH = 3 FIRE = 2 REACTIVITY = 0 PERSISTENCE = 1
NFPA RATINGS (SCALE 0-4): HEALTH = 0 FIRE = 2 REACTIVITY = 0

COMPONENTS AND CONTAMINANTS

COMPONENT: KEROSENE **PERCENT:** > 99.0

OTHER CONTAMINANTS: MAY CONTAIN TRACES OF SULFUR AND BENZENE. MAY CONTAIN ADDITIVES IN CONCENTRATIONS LESS THAN 0.1%.

EXPOSURE LIMITS:
KEROSENE (FUEL OIL NO. 1): 100 MG/M3 (14 PPM) NIOSH RECOMMENDED 10 HOUR TWA.

PHYSICAL DATA

DESCRIPTION: COLORLESS TO LIGHT-BROWN, MOBILE, OILY LIQUID WITH A MILD PETROLEUM ODOR. **BOILING POINT:** 304-574 F (151-301 C) **MELTING POINT:** 0 F (-18 C)
SPECIFIC GRAVITY: 0.8 **VAPOR PRESSURE:** 5 MMHG @ 38 C **SOLUBILITY IN WATER:** INSOLUBLE **ODOR THRESHOLD:** 0.09 PPM (0.6 MG/M3) **VAPOR DENSITY:** 4.5
VISCOSITY: > 1.3 CST @ 40 C

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD: MODERATE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

VAPOR-AIR MIXTURES ARE EXPLOSIVE ABOVE FLASH POINT.

VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASHBACK.

DUE TO LOW ELECTROCONDUCTIVITY OF THE SUBSTANCE, FLOW OR AGITATION MAY GENERATE ELECTROSTATIC CHARGES RESULTING IN SPARKS WITH POSSIBLE IGNITION.

FLASH POINT: > 120 F (> 49 C)(CC) **UPPER EXPLOSIVE LIMIT:** 5.0% **LOWER EXPLOSIVE LIMIT:** 0.7% **AUTO IGNITION TEMP.:** 410 F (210 C) **FLAMMABILITY CLASS (OSHA):** II

FIREFIGHTING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, HALON, WATER SPRAY OR STANDARD FOAM (1987 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.4). FOR LARGER FIRES, USE WATER SPRAY, FOG OR STANDARD FOAM (1987 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.4).

FIREFIGHTING: MOVE CONTAINER FROM FIRE AREA IF POSSIBLE. COOL FIRE-EXPOSED CONTAINERS WITH WATER FROM SIDE UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM STORAGE TANK ENDS. FOR MASSIVE FIRE IN STORAGE AREA, USE UNMANNED HOSE HOLDER OR MONITOR NOZZLES, ELSE WITHDRAW FROM AREA AND LET FIRE BURN. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF STORAGE TANK DUE TO FIRE (1987 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.4, GUIDE PAGE 27).

EXTINGUISH ONLY IF FLOW CAN BE STOPPED; USE WATER IN FLOODING AMOUNTS AS FOG, SOLID STREAMS MAY BE INEFFECTIVE. COAL CONTAINERS WITH FLOODING AMOUNTS OF WATER, APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING VAPORS, KEEP UPWIND.

FIREFIGHTING PHASES: USE WATER SPRAY, DRY CHEMICAL, FOAM, OR CARBON DIOXIDE. USE WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL. IF A LEAK HAS NOT IGNITED, USE WATER SPRAY TO DISPERSE THE VAPORS AND TO PROTECT PERSONS ATTEMPTING TO STOP A LEAK. WATER SPRAY MAY BE USED TO FLUSH SPILLS AWAY FROM EXPOSURES (NFPA 49, HAZARDOUS CHEMICALS DATA, 1975).

DEPARTMENT OF TRANSPORTATION REQUIREMENTS

NAME: KEROSENE HAZARD CLASS: 3

IDENTIFICATION NUMBER: UN1223

PACKING GROUP: III; EXCEPTIONS 49 C.F.R. 173.150

TOXICITY

KEROSENE (FUEL OIL NO. 1): 3570 MG/KG ORAL-MAN TDLO; 500 MG/KG ORAL-MAN LDLO; 1176 MG/KG UNREPORTED-MAN LDLO; 4 GM/KG ORAL-DOG LDLO; 36 GM/KG ORAL-RAT LD50; 7072 MG/KG ORAL-RABBIT LD50; 20 GM/KG ORAL-GUINEA PIG LD50; 800 MG/KG INTRATRACHEAL-DOG LDLO; 800 MG/KG INTRATRACHAEL-RAT LDLO; 200 MG/KG INTRATRACHEAL-RABBIT LD50; 403 MG/KG INTRAVENOUS-MAN TDLO; 200 MG/KG INTRAVENOUS-DOG LDLO; 180 MG/KG INTRAVENOUS-RABBIT LD50; 10800 MG/KG INTRAPERITONEAL-RAT LDLO; 6600 MG/KG INTRAPERITONEAL-RABBIT LD50.

CARCINOGEN STATUS: NONE.

KEROSENE IS A SKIN AND MUCOUS MEMBRANE IRRITANT AND CENTRAL NERVOUS SYSTEM DEPRESSANT. EPINEPHRINE OR SIMILAR STIMULANTS MAY INDUCE VENTRICULAR FIBRILLATION.

EPIDEMIOLOGICAL STUDIES INVOLVING PETROLEUM REFINERY WORKERS INDICATE PERSONS WITH ROUTINE EXPOSURE TO PETROLEUM OR ONE OF ITS CONSTITUENTS MAY BE AT AN INCREASED RISK TO THE DEVELOPMENT OF BENIGN NEOPLASMS, DIGESTIVE SYSTEM CANCERS, AND SKIN CANCER, PARTICULARLY MELANOMA.

HEALTH EFFECTS AND FIRST AID

INHALATION: KEROSENE: (FUEL OIL NO. 1): IRRITANT/NARCOTIC.

ACUTE EXPOSURE: INHALATION HAZARD IS LOW DUE TO THE LOW VAPOR PRESSURE. ONE STUDY CONCLUDED THAT THERE IS NO INDICATION OF TOXICITY AT CONCENTRATIONS OF 100 MG/M3 OR BELOW. HIGH CONCENTRATIONS OF MIST OR VAPOR MAY CAUSE MUCOUS MEMBRANE IRRITATION. A BURNING SENSATION IN THE CHEST, AN ODOR OF KEROSENE ON THE BREATH, AND CHEMICAL PNEUMONITIS. THERE MAY BE TRANSIENT EUPHORIA AND EXCITEMENT FOLLOWED BY SYMPTOMS OF CENTRAL NERVOUS SYSTEM DEPRESSION WHICH MAY INCLUDE HEADACHE, NAUSEA, DIZZINESS, WEAKNESS, ATAXIA, RESTLESSNESS, AND RINGING IN THE EARS. DISORIENTATION AND CONFUSION MAY PROGRESS TO DROWSINESS AND COMA, SOMETIMES WITH CONVULSIONS. VASOMOTOR DISTURBANCES, POSSIBLY WITH CYANOSIS OF THE EXTREMITIES MAY OCCUR. DEATH IS USUALLY DUE TO RESPIRATORY ARREST, BUT RARELY SUDDEN DEATH MAY OCCUR, PRESUMABLY DUE TO VENTRICULAR FIBRILLATION.

CHRONIC EXPOSURE: REPEATED OR PROLONGED EXPOSURE TO KEROSENE MIST MAY CAUSE MUCOUS MEMBRANE IRRITATION AND POLYEMIA. AEROSOL EXPOSURE AT 500-12,000 MG/M3 FOR 2 HOURS/DAY FOR 2-4 WEEKS CAUSED LEUKOCYTOSIS, TRACHEITIS, BRONCHITIS, AND PNEUMONIA, MALAISE, WEAKNESS, TREMOR, TWITCHING, VERTIGO, AND PAIN IN THE EXTREMITIES HAVE ALSO BEEN REPORTED. DOGS AND RATS EXPOSED TO 100 MG/M3 FOR 6 HOURS/DAY, 5 DAYS/WEEK FOR 67 DAYS SHOWED NO TOXIC EFFECTS.

FIRST AID: REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD PRESSURE AND ADMINISTER OXYGEN IF AVAILABLE. KEEP AFFECTED PERSON WARM AND AT REST. ADMINISTRATION OF OXYGEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT: KEROSENE (FUEL OIL NO. 1): IRRITANT.

ACUTE EXPOSURE: DIRECT CONTACT MAY CAUSE DEFATTING WITH DRYNESS, IRRITATION, DERMATITIS, AND EDEMA. SECONDARY INFECTIONS ARE POSSIBLE. IN ONE STUDY, SKIN DEVELOPED A BURNING SENSATION DURING THE FIRST HOUR OF EXPOSURE, ERYTHEMA BY THE SECOND, AND BLISTER FORMATION BY THE TWELFTH. ALTHOUGH ABSORPTION THROUGH INTACT SKIN IS SLIGHT, IT MAY BE MODERATE THROUGH INJURED SKIN. KEROSENE MAY AUGMENT THE TOXICITY OF SKIN-SENSITIZING AGENTS.

CHRONIC EXPOSURE: REPEATED OR PROLONGED EXPOSURE MAY CAUSE DEFATTING AND DERMATITIS. SEVERAL CASES HAVE BEEN REPORTED IN HUMANS WHERE MISUSE OF KEROSENE TO MASSAGE EXTREMITIES RESULTED IN APLASTIC ANEMIA AND DEATH, PROBABLY DUE TO ABSORPTION OF BENZENE. RABBITS TREATED FOR 3 DAYS WITH 3 ML/KG/DAY EXPERIENCED HAIR LOSS, SCALING, CRACKING OF THE EPIDERMIS, BUT NO SYSTEMIC TOXICITY.

AN EPIDEMIOLOGICAL STUDY OF PETROLEUM REFINERY WORKERS HAS REPORTED ELEVATIONS IN STANDARD MORTALITY RATIOS FOR SKIN CANCER ALONG WITH A DOSE-RESPONSE RELATIONSHIP WHICH INDICATES AN ASSOCIATION BETWEEN ROUTINE WORKPLACE EXPOSURE TO PETROLEUM OR ONE OF ITS CONSTITUENTS AND SKIN CANCER, PARTICULARLY MELANOMA.

FIRST AID: REMOVE CONTAMINATED CLOSING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT: KEROSENE (FUEL OIL NO. 1):

ACUTE EXPOSURE: APPLICATION TO THE HUMAN EYE IS REPORTED TO CAUSE NO DISCOMFORT OR INJURY.

CHRONIC EXPOSURE: NO DATA AVAILABLE.

FIRST AID: WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION: KEROSENE (FUEL OIL NO. 1): NARCOTIC.

ACUTE EXPOSURE: MAY CAUSE LOCAL IRRITATION WITH A BURNING SENSATION IN THE MOUTH, ESOPHAGUS, AND STOMACH, AND VOMITING, BELCHING, AND DIARRHEA WITH BLOOD-TINGED FECES. ASPIRATION INTO THE LUNGS MAY OCCUR READILY DURING INGESTION OR SUBSEQUENT VOMITING OR BELCHING. EVEN SMALL AMOUNTS MAY CAUSE CHEMICAL PNEUMONITIS WHICH MAY BE COMPLICATED BY PULMONARY EDEMA AND HEMORRHAGE AND POSSIBLY SECONDARY BACTERIAL PNEUMONIA. SIGNS OF LUNG INVOLVEMENT ARE SUDDEN DEVELOPMENT OF RAPID, LABORED BREATHING, DISTRESS, CYANOSIS WITH RALES, FEVER, AND TACHYCARIDA. DROWSINESS AND CENTRAL NERVOUS SYSTEM DEPRESSION MAY PROGRESS TO COMA. SEVERE CASES MAY BE FATAL.

CHRONIC EXPOSURE: REPEATED DOSING TO RATS AND RABBITS BY GASTRIC INTUBATION DID NOT RESULT IN PULMONARY INJURY.

FIRST AID: EXTREME CARE MUST BE USED TO PREVENT ASPIRATION. USE GASTRIC LAVAGE WITH ACTIVATED CHARCOAL AND A CUFFED ENDOTRACHEAL TUBE WITHIN 15 MINUTES. IN THE ABSENCE OF DEPRESSION OR CONVULSIONS OR IMPAIRED GAG REFLEX, IPECAC EMESIS CAN BE DONE. WHEN VOMITING BEGINS, KEEP HEAD BELOW THE HIPS TO PREVENT ASPIRATION. AFTER VOMITING STOPS, GIVE 30-60 MILLILITERS OF FLEET'S PHOPHO-SODA DILUTED 1:4 IN WATER. MAINTAIN AIRWAY, BLOOD PRESSURE AND RESPIRATION. (DREISBACH, HANDBOOK OF POISONING, 11TH ED.). GET MEDICAL ATTENTION. TREATMENT MUST BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL.

ANTIDOTE: EPINEPHRINE AND RELATED SUBSTANCES SHOULD BE AVOIDED BECAUSE THEY MAY INDUCE CARDIAC ARRHYTHMIAS. (85 IDAC).

REACTIVITY

REACTIVITY: STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES: KEROSENE (FUEL OIL NO. 1):
OXIDIZERS: POSSIBLE VIOLENT REACTION OR IGNITION.
NITROGEN TETROXIDE: POSSIBLE EXPLOSION.
CHLORINE: VIGOROUS REACTION OR POSSIBLE IGNITION OR EXPLOSION.
FLUORINE: POSSIBLE IGNITION OR EXPLOSION.
MAGNESIUM PERCHLORATE: POSSIBLE EXPLOSION ON HEATING.

DECOMPOSITION: THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE HYDROCARBON AND HYDROCARBON DERIVATIVES, CARBON DIOXIDE, CARBON MONOXIDE AND SULFUR DIOXIDE.

POLYMERIZATION: HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE.

STORAGE

STORE IN ACCORDANCE WITH 29 CFR 1910.106.

BONDING AND GROUNDING: SUBSTANCES WITH LOW ELECTROCONDUCTIVITY WHICH MAY BE IGNITED BY ELECTROSTATIC SPARKS, SHOULD BE STORED IN CONTAINERS WHICH MEET THE BONDING AND GROUNDING GUIDELINES SPECIFIED IN NFPA 77-1983, RECOMMENDED PRACTICE ON STATIC ELECTRICITY.

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE. 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D001.

CONDITIONS TO AVOID

MAY BE IGNITED BY HEAT, SPARKS OR FLAMES. VAPOR MAY TRAVEL TO A SOURCE OF IGNITION AND FLASHBACK. CONTAINER MAY EXPLODE IN HEAT OF FIRE. VAPOR EXPLOSION HAZARD INDOORS, OUTDOORS OR IN SEWERS. RUNOFF TO SEWER MAY CREATE FIRE OR EXPLOSION HAZARD.

IMPROPER FILLING OF PORTABLE CONTAINERS CREATES DANGER OF FIRE. ONLY DISPENSE INTO APPROVED AND PROPERLY LABELED CONTAINERS. ALWAYS PLACE PORTABLE CONTAINERS ON THE GROUND. BE SURE PUMP NOZZLE IS IN CONTACT WITH THE CONTAINER WHEN FILLING. DO NOT USE A NOZZLE'S LOCK OPEN DEVICE. DO NOT FILL PORTABLE CONTAINERS THAT ARE INSIDE A VEHICLE OR TRUCK/TRAILER BED.

NEVER SIPHON BY MOUTH.

SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL: SHUT OFF IGNITION SOURCES. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. FOR SMALL SPILLS, TAKE UP WITH STAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA. KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND RESTRICT ENTRY.

PROTECTIVE EQUIPMENT

VENTILATION: PROVIDE LOCAL EXHAUST VENTILATION AND/OR GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR: THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION.

THE FOLLOWING RESPIRATORS ARE RECOMMENDED BASED ON THE DATA FOUND IN THE PHYSICAL DATA, HEALTH EFFECTS AND TOXICITY SECTIONS. THEY ARE RANKED IN ORDER FROM MINIMUM TO MAXIMUM RESPIRATORY PROTECTION:

TYPE 'C' SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE OR WITH A FULL FACEPIECE, HELMET OR HOOD OPERATED IN CONTINUOUS-FLOW MODE.

SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

CLOTHING: WEAR OIL IMPERVIOUS CLOTHING. AVOID PROLONGED OR REPEATED CONTACT WITH SUBSTANCE. AVOID WEARING OIL SOAKED CLOTHING.

GLOVES: EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION: EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE. CONTACT LENSES SHOULD NOT BE WORN.

ENVIRONMENTAL DATA SHEET

SUPPLEMENT TO MSDS: Kerosene

DATE PREPARED: January 1, 1995
DATE REVISED: March 4, 2002

SARA - TITLE III INFORMATION

This material is regulated under the indicated section(s) of TITLE III of the Superfund Amendments and the Reauthorization Act ("SARA"), 42 U.S.C. Section 11001 et seq. Please note that regulations pertaining to Sections 302 and 304 of SARA are found in the Code of Federal Regulations at 40 CFR Part 355 and that regulations pertaining to Section 313 of SARA are found at 40 CFR Part 372.

1. This product contains the following toxic chemicals (Section 313):

Chemical Name	CAS #	WT%
Cyclohexane	110-82-7	0.0-0.04
Toluene	108-88-3	0.1-0.2
Ethylbenzene	100-41-4	0.0-0.1
Xylene	1330-20-7	0.3-0.8
Cumene	98-82-8	0.0-0.08
1,2,4-Trimethylbenzene	95-63-6	0.5-1.5
Naphthalene	91-20-3	0.6

If you are unsure if you are subject to the reporting requirements of Section 313, or need more information, call the EPA Emergency Planning and Community Right-To-Know Information Hotline: (800) 535-0202. Your other suppliers should also be notifying you if Section 313 chemicals are present in mixtures, trade name products, or chemicals they sell to you. Please note that if you repackage or redistribute this product to industrial customers, a notice should be sent to those customers.

2. This product contains the following extremely hazardous substance(s) (Section 302 and 304):

Chemical Name	TPQ (lbs)	RQ (lbs)
None	N/A	N/A

3. This product contains the following CERCLA hazardous substance(s) (Section 302 and 304):

Chemical Name	WT%	RQ (lbs)
Unlisted Hazardous Waste Characteristic of Ignitability 100	100	
2,2,4-Trimethylpentane	<0.1	1
Cyclohexane	0.0-0.04	1000
Toluene	0.1-0.2	1000
Ethylbenzene	0.0-.01	1000
Xylene	0.3-0.8	1000
Cumene	0.0-0.08	5000
Naphthalene	0.6	100

Note: Sections 2 and 3 are required for emergency response reporting. This Environmental Data Sheet ("EDS") is a Supplement to the Material Safety Data Sheet ("MSDS"). It is an integral part of the MSDS and must not be detached from the MSDS. If the MSDS is copied, this EDS must also be copied. If the MSDS is redistributed, this EDS must be redistributed with the MSDS.

Material Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

DIESEL FUEL (GENERIC)

Product Use: Fuel

Company Identification: Western Refining
6500 Trowbridge Drive
El Paso, Texas 79905-3402

Emergency Telephone Number: (800) 424-9300

SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Diesel Fuel No. 2	68476-34-6	100 %weight
Distillates, hydrodesulfurized, middle	64742-80-9	< 99 %weight
Distillates, straight run middle (gas oil, light)	64741-44-2	< 99 %weight
Kerosine	8008-20-6	< 99 %weight
Kerosine, hydrodesulfurized	64742-81-0	< 99 %weight
Distillates (petroleum), light catalytic cracked	64741-59-9	< 99 %weight
Total sulfur	OTHER	0.03 - 0.5 %weight

SECTION 3 HAZARDS IDENTIFICATION

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EMERGENCY OVERVIEW

Liquid, with a faint petroleum hydrocarbon odor.

- COMBUSTIBLE LIQUID AND VAPOR
- HARMFUL OR FATAL IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE
- CAUSES SKIN IRRITATION
- SUSPECT CANCER HAZARD - MAY CAUSE CANCER

****

IMMEDIATE HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.
Skin: Not expected to be harmful to internal organs if absorbed through the skin. Contact with the skin causes irritation. Symptoms may include pain, itching, discoloration, swelling, and blistering.
Ingestion: Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death. May be irritating to mouth, throat, and stomach. Symptoms may include nausea, vomiting, and diarrhea.

Inhalation: Mists of this material may cause respiratory irritation. Symptoms of respiratory irritation may include coughing and difficulty breathing. Excessive or prolonged breathing of this material may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of consciousness, coma or death.

DELAYED OR OTHER HEALTH EFFECTS:
Cancer: Prolonged or repeated exposure to this material may cause cancer. Whole diesel engine exhaust was reviewed by the International Agency for Research on Cancer (IARC) in their Monograph 46 (1989). Evidence for causing cancer was considered sufficient in animals and limited in humans. IARC placed diesel exhaust in category 2A, considering it probably carcinogenic to humans. Diesel exhaust is known to the State of California to cause cancer.

Risk depends on duration and level of exposure. See Section 11 for additional information.

SECTION 4 FIRST AID MEASURES

Eye: No specific first aid measures are required because this material is not expected to cause eye irritation. As a precaution, remove contact lenses, if worn, and flush eyes with water.
Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.
Ingestion: If swallowed, do not induce vomiting. Give the person a glass of water or milk to drink and get immediate medical attention. Never give anything by mouth to an unconscious person.
Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue.
Note to Physicians: Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

SECTION 5 FIRE FIGHTING MEASURES

See Section 7 for proper handling and storage.

FIRE CLASSIFICATION:
OSHA Classification (29 CFR 1910.1200): Combustible liquid.

NFPA RATINGS: Health: 0 Flammability: 2 Reactivity: 0

FLAMMABLE PROPERTIES:
Flashpoint: (Pensky-Martens Closed Cup) 125 °F Minimum
Autoignition: 494°F (256.7°C)
Flammability (Explosive) Limits (% by volume in air): Lower: 0.6 Upper: 4.7

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

PROTECTION OF FIRE FIGHTERS:
Fire Fighting Instructions: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.
Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator.
Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.
Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7. HANDLING AND STORAGE

Precautionary Measures: Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive force. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85F.
Do not get in eyes, on skin, or on clothing. Do not breathe vapor or fumes. Do not breathe mist. Do not taste or swallow. Wash thoroughly after handling. Keep out of the reach of children.
Unusual Handling Hazards: WARNING! Do not use as portable heater or appliance fuel. Toxic fumes may accumulate and cause death.
Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating an accumulation of electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'.
General Storage Information: DO NOT USE OR STORE near heat, sparks or open flames. USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.
Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:
Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:
If user operations generate airborne material, use process enclosures, local exhaust ventilation, or other engineering controls to control exposure.

PERSONAL PROTECTIVE EQUIPMENT
Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.
Skin Protection: Wear protective clothing to prevent skin contact. Selection of protective clothing may include gloves, apron, boots, and complete facial protection depending on operations conducted. Suggested materials for protective gloves include: Chlorinated Polyethylene (or Chlorosulfonated Polyethylene), or Nitrile Rubber, or Polyurethane, or Viton
Respiratory Protection: Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Organic Vapors
Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Limit	TWA	STEL	Ceiling	Notation
Diesel Fuel No. 2	WESTERN	350 mg/m3	1000 mg/m3		

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Liquid, with a faint petroleum hydrocarbon odor.
pH: NA
Vapor Pressure: .04 psia @ 40 °C
Vapor Density (Air = 1): >1
Boiling Point: 348 °F - 698 °F
Solubility: Soluble in hydrocarbons; insoluble in water
Freezing Point: NA
Melting Point: NA
Specific Gravity: .84 @ 15.6 °C
Viscosity: 1.9 cSt - 4.1 cSt @ 40 °C

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Incompatibility With Other Materials: May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Hazardous Decomposition Products: None known (None expected)
Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS
Eye Irritation: Minimal effects clearing in less than 24 hours.
Skin Irritation: For a 4-hour exposure, the Primary Irritation Index (PII) in rabbits is: >4.
Skin Sensitization: This material did not cause skin sensitization reactions in a Buehler guinea pig test.
Acute Dermal Toxicity: The 8 hour(s) LD50 in the rabbit is > 5ml/kg.

Acute Oral Toxicity: The LD50 in the rat is > 5 ml/kg.
Acute Inhalation Toxicity: The 4 hour(s) LC50 in the rat is > 5mg/l.

ADDITIONAL TOXICOLOGY INFORMATION:
This product may contain significant amounts of polynuclear aromatic hydrocarbons (PAH's) which have been shown to cause skin cancer after prolonged and frequent contact with the skin of test animals. Brief or intermittent skin contact with this product is not expected to have serious effects if it is washed from the skin. While skin cancer is unlikely to occur in human beings following use of this product, skin contact and breathing, of mists, vapors or dusts should be reduced to a minimum.

This product contains kerosene. CONCAWE (product dossier 94/106) has summarized current health, safety and environmental data available for a number of kerosenes (typically straight-run kerosene, CAS 8008-20-6, or hydrodesulfurized kerosene, CAS 64742-81-0). ACUTE/SUBCHRONIC: Following acute exposure to kerosene, signs observed in rats and rabbits were of a low order of toxicity: central nervous system depression occurred following oral exposure, skin irritation (ranging from slight to severe irritation) occurred with dermal exposure, and respiratory tract irritation occurred with inhalation exposure. None of the kerosenes tested produced more than slight eye irritation and none were skin sensitizers. However, intratracheal administration or artificial aspiration of small volumes (0.1 to 0.2 ml) of kerosene into the lungs of rats, chickens and primates resulted in lung damage and/or death. In a study in which rats, mice, rabbits and cats were exposed to kerosene aerosol concentrations in the range 0.05 to 120 mg/l for up to four weeks, reductions in respiratory rate, pulmonary hyperaemia, leucocytosis, monocytosis and decreased erythrocyte sedimentation rate were observed, and histological examination revealed inflammatory changes in the respiratory tract (tracheitis, bronchitis and pneumonia).

CANCER: Chronic (3 to 24 months) mouse dermal toxicity studies of kerosenes and jet fuels produced mild to moderate skin irritation, while long-term (2+ years) studies showed moderate to severe skin damage as well as an increased incidence of tumors after long latency periods (probably due to a secondary mechanism related to skin irritancy). DEVELOPMENTAL/REPRODUCTION: Hydrodesulfurized kerosene was tested by the Petroleum Product Stewardship Council in a OECD Guideline 421 Reproductive/Developmental Toxicity Study. The kerosene sample was diluted to 494 (60%), 330 (40%),and 165 (20%) mg/kg/day in food grade mineral oil and applied daily during pre-mating and mating to day 19 of gestation. There was noa pparent maternal, reproductive, or developmental toxicity at any dose. Males treated for eight weeks had increased relative kidney weights in the high dose group but no microscopic changes in testes or epididymides. No gross anomalies were observed in the pups.

The National Institute of Occupational Safety and Health (NIOSH) has recommended that whole diesel exhaust be regarded as potentially causing cancer. This recommendation was based on test results showing increased lung cancer in laboratory animals exposed to whole diesel exhaust.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY
The 96 hour(s) LC50 for rainbow trout (Salmo gairdneri) is 21-210 mg/l.
The 48 hour(s) EC50 for water flea (Daphnia magna) is 20-210 mg/l.
The 72 hour(s) EC50 for algae (Raphidocellus subcapitata) is 2.6-25 mg/l.

ENVIRONMENTAL FATE
On release to the environment the lighter components of diesel fuel will generally evaporate but depending on local environmental conditions (temperature, wind, mixing or wave action, soil type, etc.) the remainder may become dispersed in the water column or absorbed to soil or sediment. Diesel fuel would not be expected to be readily biodegradable. In a modified Strum test (OECD method 301B) approximately 40% biodegradation was recorded over 28 days. However, it has been shown that most hydrocarbon components of diesel fuel are degraded in soil in the presence of oxygen. Under anaerobic conditions, such as in anoxic sediments, rates of biodegradation are negligible.

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Name: GAS OIL
DOT Hazard Class: COMBUSTIBLE LIQUID
DOT Identification Number: UN1202
DOT Packing Group: III

SECTION 15 REGULATORY INFORMATION

SARA 311/312 CATEGORIES:

1.	Immediate (Acute) Health Effects:	YES
2.	Delayed (Chronic) Health Effects:	YES
3.	Fire Hazard:	YES
4.	Sudden Release of Pressure Hazard:	NO
5.	Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

4A=IARC Group 1	12=TSCA Section 8(a) PAIR	21=TSCA Section 5(a)
4B=IARC Group 2A	13=TSCA Section 8(d)	25=CAA Section 112 HAPs
4C=IARC Group 2B	15=SARA Section 313	26=CWA Section 311
05=NTP Carcinogen	16=CA Proposition 65	28=CWA Section 307
06=OSHA Carcinogen	17=MA RTK	30=RCRA Waste P-List
09=TSCA 12(b)	18=NJ RTK	31=RCRA Waste U-List
10=TSCA Section 4	19=DOT Marine Pollutant	32=RCRA Appendix VIII
11=TSCA Section 8(a) CAIR	20=PA RTK	

The following components of this material are found on the regulatory lists indicated.

Kerosine	17, 18, 20		

CHEMICAL INVENTORIES:
UNITED STATES: All of the components of this material are on the Toxic Substances Control Act (TSCA) Chemical Inventory.
EU RISK AND SAFETY PHRASES:
R10: Flammable.
R20: Harmful by inhalation.
R38: Irritating to skin.
R45: May cause cancer.

R65: Harmful: may cause lung damage if swallowed.
S24: Avoid contact with skin.
S37: Wear suitable gloves.
S51: Use only in well-ventilated areas.
S53: Avoid exposure - obtain special instructions before use.
S62: If swallowed do not induce vomiting: seek medical advice immediately and show this container or label.
S36/37: Wear suitable protective clothing and gloves.

NEW JERSEY RTK CLASSIFICATION:

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A.34:5A-1 et. seq., the product is to be identified as follows:
DIESEL FUEL

WHMIS CLASSIFICATION:

Class B, Division 3: Combustible Liquids
Class D, Division 2, Subdivision A: Very Toxic Material - Carcinogenicity
Class D, Division 2, Subdivision B: Toxic Material - Skin or Eye Irritation

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 0 Flammability: 2 Reactivity: 0

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT: This revision updates all Sections of the Material Safety Data Sheet.

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV	-	Threshold Limit Value	TWA	-	Time Weighted Average
STEL	-	Short-term Exposure Limit	PEL	-	Permissible Exposure Limit
			CAS	-	Chemical Abstract Service Number
NDA	-	No Data Available	NA	-	Not Applicable
<=	-	Less Than or Equal To	>=	-	Greater Than or Equal To

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

MATERIAL SAFETY DATA SHEET

NO. 2 FUEL OIL

MSDS No. 9

1.0 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: NO. 2 FUEL OIL

MANUFACTURER/SUPPLIER:
Western Refining
2201 Goodwin Neck Road
Grafton, VA 23692
USA

EMERGENCY SPILL INFORMATION:
(800) 424-9300 CHEMTREC (USA)

PRODUCT INFORMATION:
(757) 898-9660 or (480) 585-8933

2.0 COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS#	Range % by Wt.
Petroleum distillate	68476-30-2	95-100
Naphthalene	91-20-3	0-1
Xylene	1330-20-7	0-1

(See Section 8.0, "Exposure Controls/Personal Protection", for exposure guidelines)

3.0 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Warning! Combustible. Harmful or fatal if liquid is aspirated into lungs. Causes skin irritation on prolonged or repeated contact.

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: No significant health hazards identified.

SKIN CONTACT: Causes skin irritation on prolonged or repeated contact. See "Toxicological Information" section (Section 11.0).

INHALATION: No significant health hazards identified for the liquid fuel. See "Toxicological Information" section (Section 11.0).

INGESTION: Harmful or fatal if liquid is aspirated into lungs. See "Toxicological Information" section (Section 11.0).

HMIS CODE: (Health:2) (Flammability:2) (Reactivity:0)

NFPA CODE: (Health:2) (Flammability:2) (Reactivity:0)

4.0 FIRST AID MEASURES

EYE: Flush eyes with plenty of water.

SKIN: Wash exposed skin with soap and water. Remove contaminated clothing, including shoes, and thoroughly clean and dry before reuse.

INHALATION: If adverse effects occur, remove to uncontaminated area.

INGESTION: If swallowed, do NOT induce vomiting. Get immediate medical attention.

5.0 FIRE FIGHTING MEASURES

FLASHPOINT: 120-180°F (Tag closed cup)

UEL: 7.5%

LEL: 0.6%

AUTOIGNITION TEMPERATURE: Not determined.

FLAMMABILITY CLASSIFICATION: Combustible Liquid.

EXTINGUISHING MEDIA: Agents approved for Class B hazards (e.g., dry chemical, carbon dioxide, foam, steam) or water fog.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Combustible liquid.

FIRE-FIGHTING EQUIPMENT: Firefighters should wear full bunker gear, including a positive pressure self-contained breathing apparatus.

PRECAUTIONS: Keep away from sources of ignition (e.g., heat and open flames). Use with adequate ventilation.

HAZARDOUS COMBUSTION PRODUCTS: Incomplete burning can produce carbon monoxide and/or carbon dioxide and other harmful products.

6.0 ACCIDENTAL RELEASE MEASURES

Remove or shut off all sources of ignition. Prevent spreading by diking, ditching, or absorbing on inert materials. Keep out of sewers and waterways.

7.0 HANDLING AND STORAGE

HANDLING: Use with adequate ventilation. Keep away from ignition sources (e.g., heat, sparks, or open flames). Ground and bond containers when transferring materials. Wash thoroughly after handling.

STORAGE: Store in combustible liquids storage area. Store away from heat, ignition sources, and open flame in accordance with applicable regulations.

8.0 EXPOSURE CONTROLS / PERSONAL PROTECTION

EYE: None required; however, use of eye protection is good industrial practice.

SKIN: Avoid prolonged or repeated skin contact. Wear protective gloves if prolonged or repeated contact is likely.

INHALATION: Use with adequate ventilation.

ENGINEERING CONTROLS: Control airborne concentrations below the exposure guidelines.

EXPOSURE GUIDELINES:

Component	CAS#	Exposure Limits
Petroleum distillate	68476-30-2	No exposure limit established
Naphthalene	91-20-3	OSHA PEL: 10 ppm (1989)(1971) OSHA STEL: 15 ppm (1989); Not established. (1971) ACGIH TLV-TWA: 10 ppm ACGIH TLV-STEL: 15 ppm
Xylene	1330-20-7	OSHA PEL: 100 ppm (1989)(1971) OSHA STEL: 150 ppm (1989); Not established. (1971) ACGIH TLV-TWA: 100 ppm ACGIH TLV-STEL: 150 ppm

9.0 CHEMICAL AND PHYSICAL PROPERTIES

APPEARANCE AND ODOR: Liquid. Clear. Red. Petroleum odor.

pH: Not determined.

VAPOR PRESSURE: Not determined.

VAPOR DENSITY: Not determined.

BOILING POINT: 340-675°F (approximate range)

MELTING POINT: Not determined.

SOLUBILITY IN WATER: Negligible, below 0.1%.

SPECIFIC GRAVITY (WATER=1): 0.85 to 0.88

VISCOSITY: 1.8-3.6cSt at 100°F

10.0 STABILITY AND REACTIVITY

STABILITY: Stable.

CONDITIONS TO AVOID: Keep away from ignition sources (e.g. heat, sparks, and open flames).

MATERIALS TO AVOID: Avoid chlorine, fluorine, and other strong oxidizers.

HAZARDOUS DECOMPOSITION: None identified.

HAZARDOUS POLYMERIZATION: Will not occur.

11.0 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY DATA:

EYE IRRITATION: Testing not conducted. See Other Toxicity Data.

SKIN IRRITATION: Testing not conducted. See Other Toxicity Data.

DERMAL LD50: Testing not conducted. See Other Toxicity Data.

ORAL LD50: Testing not conducted. See Other Toxicity Data.

INHALATION LC50: Testing not conducted. See Other Toxicity Data.

OTHER TOXICITY DATA: Similar products have produced maximum eye irritation scores ranging from 0.33 to 1.0/110.0; 24 hours (rabbits). Similar products have produced primary skin irritation scores ranging from 0.67 to 3.83/8.0 (rabbits). Dermal LD50 for similar products was greater than 2g/kg; practically non-toxic for acute exposures by this route. For similar products oral LD50 was greater than 5g/kg; practically non-toxic for acute exposures by this route.

Middle distillate: From skin-painting studies of petroleum distillates of similar composition and distillate range, it has been shown that these types of materials often possess weak carcinogenic activity in laboratory animals. In these tests, the material is painted on the shaved backs of mice twice a week for their lifetime. The material is not washed off between applications. Therefore, there may be a potential risk of skin cancer from prolonged or repeated skin contact with this product in the absence of good personal hygiene. This particular product has not been tested for carcinogenic activity, but we have chosen to be cautious in light of the findings with other distillate streams.

Occasional skin contact with this product is not expected to have serious effects, but good personal hygiene should be practiced and repeated skin contact avoided. This product can also be expected to produce skin irritation upon prolonged or repeated skin contact. Personal hygiene measures taken to prevent skin irritation are expected to be adequate to prevent risk of skin cancer.

Materials of this type have been shown to produce kidney damage in male rats following prolonged inhalation exposures. Following extensive research, this effect appears to be unique to the male rat and is considered to be of little or no relevance in terms of human health risk.

This product has a sufficiently low vapor pressure to prevent a hazardous buildup of vapors unless the product is heated, used in a confined space with inadequate ventilation or misted. Inhalation of mist or high concentrations of vapors can produce dizziness, headache, and nausea and possibly irritation of the eye, nose and throat.

Aspiration of this product into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this product. Do not siphon by mouth.

NIOSH has recommended that whole diesel exhaust be regarded as a potential occupational carcinogen, based on findings of carcinogenic responses in laboratory animals exposed to whole diesel exhaust. The excess cancer risk for workers exposed to diesel exhaust has not been calculated; however, exposure should be minimized to reduce potential risk.

No component of this product present at levels greater than 0.1% is identified as a carcinogen by the U.S. National Toxicology Program, the U.S. Occupational Safety and Health Act, or the International Agency on Research on Cancer (IARC).

12.0 ECOLOGICAL INFORMATION

Ecological testing has not been conducted on this product.

13.0 DISPOSAL INFORMATION

Disposal must be in accordance with applicable federal, state, or local regulations. Enclosed-controlled incineration is recommended unless directed otherwise by applicable ordinances.

The container for this product can present explosion or fire hazards, even when emptied! To avoid risk of injury, do not cut, puncture, or weld on or near this container. Since the emptied containers retain product residue, follow label warnings even after container is emptied.

14.0 TRANSPORTATION INFORMATION

U.S. DEPT OF TRANSPORTATION

Shipping Name	Fuel Oil, No. 2
Hazard Class	Combustible liquid.
Identification Number	NA1993
Packing Group	III

INTERNATIONAL INFORMATION:

Sea (IMO/IMDG)

Shipping Name Not determined.

Air (ICAO/IATA)

Shipping Name Not determined.

European Road/Rail (ADR/RID)

Shipping Name Not determined.

Canadian Transportation of Dangerous Goods

Shipping Name Not determined.

15.0 REGULATORY INFORMATION

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR Part 302.4): This product is exempt from the CERCLA reporting requirements under 40 CFR Part 302.4. However, if spilled into waters of the United States, it may be reportable under 33 CFR Part 153 if it produces a sheen.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR Part 355): This product is not regulated under Section 302 of SARA and 40 CFR Part 355.

SARA TITLE III SECTIONS 311/312 HAZARDOUS CATEGORIZATION (40 CFR Part 370): This product is defined as hazardous by OSHA under 29 CFR Part 1910.1200(d).

SARA TITLE III SECTION 313 (40 CFR Part 372): This product contains the following substance(s), which is on the Toxic Chemicals List in 40 CFR Part 372:

Component/CAS Number	Weight Percent
Xylene 1330-20-7	1
Naphthalene 91-20-3	1

U.S. INVENTORY (TSCA): Listed on inventory.

OSHA HAZARD COMMUNICATION STANDARD: Combustible liquid. Irritant.

EC INVENTORY (EINECS/ELINCS): Not determined.

JAPAN INVENTORY (MITI): Not determined.

AUSTRALIA INVENTORY (AICS): Not determined.

KOREA INVENTORY (ECL): Not determined.

CANADA INVENTORY (DSL): Not determined.

PHILIPPINE INVENTORY (PICCS): Not determined.

16.0 OTHER INFORMATION

Prepared by:

Environment, Health and Safety Department

Issued: August 5, 2002

This material Safety Data Sheet conforms to the requirements of ANSI Z400.1.

This material safety data sheet and the information it contains is offered to you in good faith as accurate. We have reviewed any information contained in this data sheet which we received from sources outside our company. We believe that information to be correct but cannot guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as a permission or recommendation for the use of any product in a manner that might infringe existing patents. No warranty is made, either express or implied.

PCB DISPOSAL

MATERIAL SAFETY DATA SHEET

(POLYCHLORINATED BIPHENYLS)

COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients Name: polychlorinated biphenyls (PCBs)

HAZARD IDENTIFICATION

Reports of Carcinogenicity: YES

HEALTH HAZARDS ACUTE AND CHRONIC

- **Eyes**: Moderately irritating to eye tissues.
- **Skin**: Can be absorbed through intact skin, may cause de-fatting, potential for chloracne.
- **Inhalation**: Possible liver injury.
- **Ingestion**: Slightly toxic; reasonably anticipated to be carcinogenic.

EFFECTS OF OVER-EXPOSURE

Can cause dermatological symptoms; however, these are reversible upon removal of exposure source.

FIRST AID MEASURES

- **Eyes**: Irrigate immediately with copious quantities of running water for at least 15 minutes if liquid or solid PCBs get into them.
- **Skin:** Contaminated clothing should be removed and the skin washed thoroughly with soap and water. Hot PCBs may cause thermal burns.
- **Inhalation**: Remove to fresh air; if skin rash or respiratory irritation persists, consult a physician (if electrical equipment arcs over, PCBs may decompose to produce hydrochloric acid).
- **Ingestion**: Consult a physician. Do not induce vomiting or give any oily laxatives. (If large amounts are ingested, gastric lavage is suggested).

FIRE FIGHTING MEASURES: Flash Point: >141 °C (285.8 °F)

EXTINGUISHING MEDIA: PCBs are fire-resistant compounds.

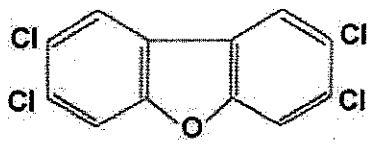
FIRE-FIGHTING PROCEDURES

Standard fire-fighting wearing apparel and self-contained breathing apparatus should be worn when fighting fires that involve possible exposure to chemical combustion products. Fire fighting equipment should be thoroughly cleaned and decontaminated after use.

UNUSUAL FIRE/EXPLOSION HAZARD

If a PCB transformer is involved in a fire-related incident, the owner of the transformer is required to report the incident. Consult and follow appropriate federal, provincial and local regulations.

***Note**: When askarel liquid becomes involved in a fire, toxic by-products of combustion are typically produced including polychlorinated dibenzofurans and polychlorinated dibenzodioxins, both known carcinogens. The structures of these chemical species are as follows:*

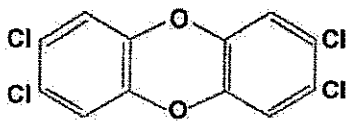


$C_{12}H_{8-n}Cl_nO$

$n = 4 - 8$

TCDF

2,3,7,8-tetrachlorodibenzofuran



$C_{12}H_{8-n}Cl_nO_2$

$n = 4 - 8$

TCDD

2,3,7,8-tetrachloro-dibenzo-p-dioxin

***Note**: 2,3,7,8-tetrachloro-dibenzo-p-dioxin is one of the most potent teratogenic, mutagenic and carcinogenic agents known to man.*

SPILL RELEASE PROCEDURES

Cleanup & disposal of liquid PCBs are strictly regulated by the federal government. Ventilate area. Contain spill/leak. Remove spill by means of absorptive material. Spill clean-up personnel should use proper protective clothing. All wastes and residues containing PCBs should be collected, containerized, marked and disposed of in the manner prescribed by applicable federal, provincial and local laws.

HANDLING AND STORAGE PRECAUTIONS

Care should be taken to prevent entry into the environment through spills, leakage, use, vaporization, or disposal of liquid. Avoid prolonged breathing of vapours or mists. Avoid contact with eyes or prolonged contact with skin. Comply with all federal, provincial and local regulations.

OTHER PRECAUTIONS

Federal regulations require PCBs, PCB items, storage areas, transformer vaults, and transport vehicles to be appropriately labelled.

RESPIRATORY PROTECTION

Use OHSA approved equipment when airborne exposure limits are exceeded. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical splash goggles. The respirator use limitations specified by the manufacturer must be observed.

VENTILATION

Provide natural or mechanical ventilation to control exposure levels below airborne exposure levels.

PROTECTIVE GLOVES: Wear appropriate chemical resistant gloves to prevent skin contact.

EYE PROTECTION: Wear chemical splash goggles and have eye baths available.

OTHER PROTECTIVE EQUIPMENT

Wear appropriate protective clothing. Provide a safety shower at any location where skin contact can occur.

WORK HYGIENIC PRACTICES

Wash thoroughly after handling. Supplemental safety and health : none

PHYSICAL/CHEMICAL PROPERTIES

- **Vapour pressure:** (mm Hg @100 °F) 0.005 - 0.00006
- **Viscosity:** (CENTISTOKES) 3.6 - 540
- **Stability indicator/materials to avoid:** Yes
- **Stability Condition to Avoid:** PCBs are very stable, fire-resistant compounds.

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, carbon dioxide, hydrogen chloride, phenolics, aldehydes, furans, dioxins

WASTE DISPOSAL METHODS

Consult the applicable PCB regulations prior to any disposal of PCBs or PCB-contaminated items.

EXHIBITS

EXHIBIT 1

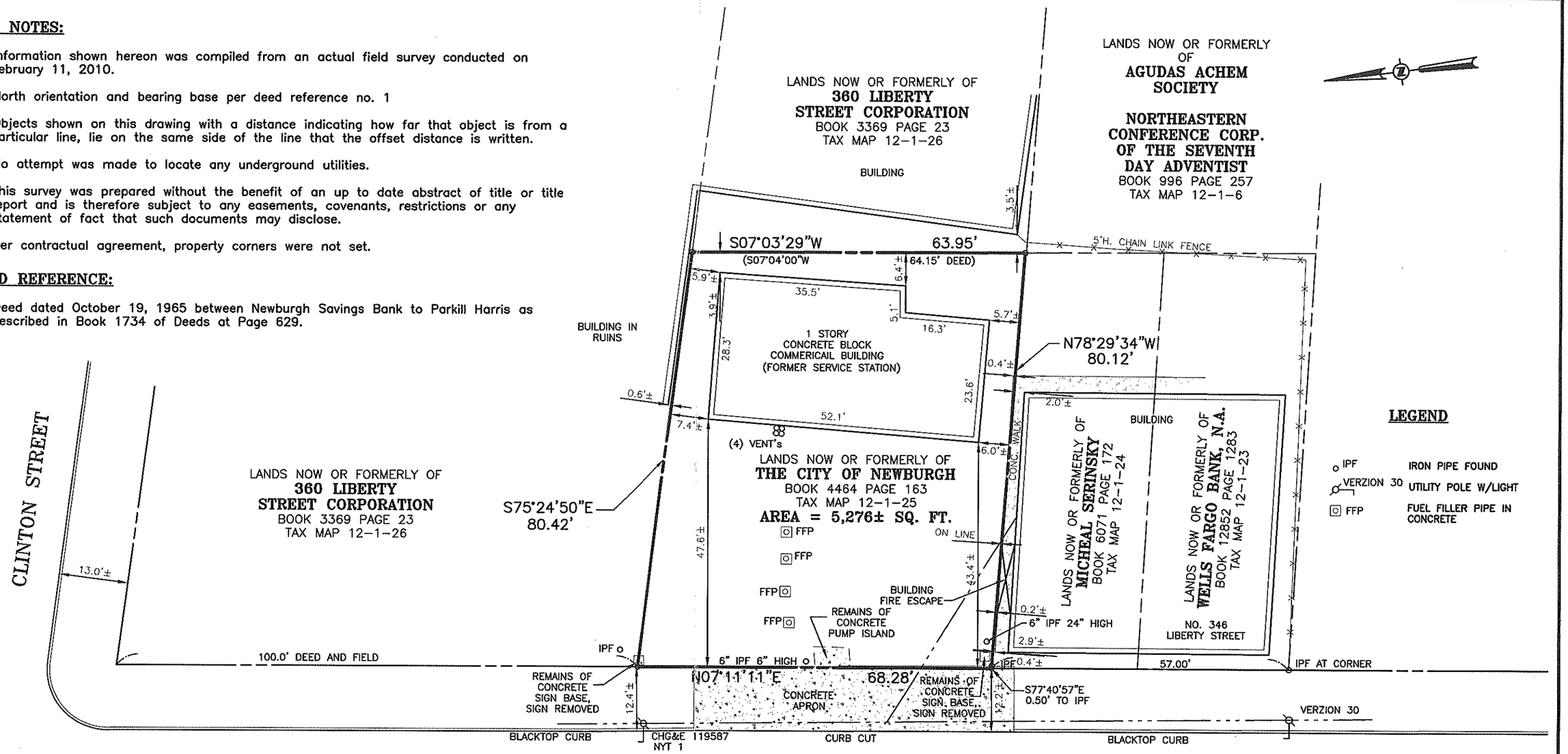
MAP OF SURVEY PREPARED FOR THE 350-352 LIBERTY STREET SITE

MAP NOTES:

1. Information shown hereon was compiled from an actual field survey conducted on February 11, 2010.
2. North orientation and bearing base per deed reference no. 1
3. Objects shown on this drawing with a distance indicating how far that object is from a particular line, lie on the same side of the line that the offset distance is written.
4. No attempt was made to locate any underground utilities.
5. This survey was prepared without the benefit of an up to date abstract of title or title report and is therefore subject to any easements, covenants, restrictions or any statement of fact that such documents may disclose.
6. Per contractual agreement, property corners were not set.

DEED REFERENCE:

1. Deed dated October 19, 1965 between Newburgh Savings Bank to Parkill Harris as described in Book 1734 of Deeds at Page 629.



LIBERTY STREET
60' R.O.W.

"ONLY COPIES OF THIS MAP SIGNED IN RED INK AND EMBOSSED WITH THE SEAL OF AN OFFICER OF C.T. MALE ASSOCIATES, P.C. OR A DESIGNATED REPRESENTATIVE SHALL BE CONSIDERED TO BE A VALID TRUE COPY".

BAR SCALE
20 0 10 20 40
1 inch = 20 ft.

ROBERT N. STEWART
PLS 49426

DATE		REVISIONS RECORD/DESCRIPTION	DRAFTED	CHECK	APPR.
	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				

APPROVED: RNS
DRAFTED : MDD
CHECKED : WJN
PROJ. NO: 10.1045
SCALE : 1"=20'
DATE : FEB. 11, 2010

BOUNDARY SURVEY

LANDS NOW OR FORMERLY OF

THE CITY OF NEWBURGH

350-352 LIBERTY STREET

CITY OF NEWBURGH — ORANGE COUNTY, NEW YORK

C.T. MALE ASSOCIATES, P.C.
50 CENTURY HILL DRIVE, LATHAM, NY 12110
518.786.7400 * FAX 518.786.7299
ARCHITECTURE & BUILDING SYSTEMS ENGINEERING * CIVIL ENGINEERING
ENVIRONMENTAL SERVICES * SURVEY & LAND INFORMATION SERVICES

SHEET 1 OF 1
DWG. NO: 10-190

CAD DWG. FILE NAMEBS 10-1045.DWG

EXHIBIT 2

PRE-DEMOLITION ASBESTOS CONTAINING MATERIAL SURVEY

February 2010

Pre-Demolition Asbestos Containing Material Survey

350 Liberty Street
Vacant Structure & Garage Building
City of Newburgh
Orange County, New York

Prepared for:

Mr. Ian MacDougall
CITY OF NEWBURGH
83 Broadway
Newburgh, New York 12550

Prepared by:
C.T. MALE ASSOCIATES, P.C.
50 Century Hill Drive
Latham, New York 12110
(518) 786-7400
FAX (518) 786-7299

C.T. Male Project No: 10.1045

ASBESTOS CONTAINING MATERIAL SURVEY

350 Liberty Street
Vacant Structure & Garage Building
Newburgh, NY

TABLE OF CONTENTS

1.0 INTRODUCTION

This report presents the findings of a pre-demolition asbestos containing material (ACM) survey of the structures located at 350 Liberty Street in Newburgh, New York. The service station structure is a one story concrete block building with a flat roof. It was formerly a service and repair building and is currently partially collapsed.

The purpose of this report was to determine whether there are asbestos containing materials in the structure prior to demolition activities. The survey included identification of suspect asbestos containing materials, quantification, and bulk sampling of suspect asbestos containing materials. Laboratory analysis was performed to determine the presence and type of asbestos in sampled materials. Any material is considered asbestos containing if it contains one percent, or more, asbestos by weight.

What is known as "destructive" inspection and sampling techniques may have been used when necessary. Destructive techniques are used, where appropriate, to look behind walls, above ceilings and under floors to access any piping, sub-structures or miscellaneous materials that may exist.

C.T. Male Associates, P.C. (C.T. Male) personnel conducted this ACM survey. C.T. Male possesses EPA accreditation and asbestos certification, as required by the New York State Department of Labor, as Inspectors for asbestos.

2.0 SITE VISIT - ASBESTOS CONTAINING MATERIALS

C.T. Male personnel visited the site on February 9, 2010.

A walk through of the subject areas was conducted during which suspect asbestos containing materials were identified. Three major categories of suspect materials are categorized during asbestos inspections: Surfacing Materials, Thermal System Insulation (TSI) and Miscellaneous Materials. These categories are described below:

> **Surfacing Material** - Materials that are sprayed-on, trowelled-on or otherwise applied to surfaces. Examples include acoustical plaster on ceilings and/or walls, fireproofing materials on structural members, or decorative applications.

Thermal System Insulation - Materials, usually found on piping, fittings, boilers, tanks, ducts or other mechanical components to prevent heat loss or gain.

Miscellaneous ACM - Any other materials including, but not limited to, floor and ceiling tiles, gaskets, felts, paper products, etc. that are neither surfacing materials nor thermal system insulation.

During the course of the site visit, suspect materials of similar type, texture and appearance are grouped together and considered homogeneous. Each homogeneous material is quantified and, depending on overall quantity as well as the locations of the material throughout the site, an appropriate number of bulk samples were secured.

Suspect Materials Located

Pipe Insulation
Chimney Sealant
Vinyl Floor Tile and Mastic
Gypsum Wallboard & Joint Compound
Plaster Wall Material
Window Glazing
Asphalt Roofing Materials

3.0 SAMPLING AND LABORATORY ANALYSIS

C.T. Male's representative collected twenty four (24) bulk samples during the site-visit. The samples were analyzed using Polarized Light Microscopy (PLM). Non-friable organically bound materials were analyzed using the Matrix Reduction Method in conjunction with PLM based on the New York State Department of Health Environmental Laboratory Approval Program recommendations. Any negative sample analysis results by this method are then analyzed further by Transmission Electron Microscopy (TEM). Non-friable organically bound materials are bound by cements or adhesives. Examples include floor tile, floor tile mastic and sheet floor covering. Scientific Laboratories Inc. of New York, New York performed analysis of the bulk samples by PLM or TEM. Table 3.0 provides a summary of analysis results.

TABLE 3.0
BULK SAMPLE ANALYSIS RESULTS

Sample Location	% ASBESTOS BY WEIGHT	TYPE OF ASBESTOS
020910MS01 Exterior Roof – Left Section Built-up Asphalt (bottom)	NA	NAD
020910MS02 Exterior Roof – Left Section Built-up Asphalt (middle)	NA	NAD
020910MS03 Exterior Roof – Left Section Built-up Asphalt (top)	NA	NAD
020910MS04 Exterior Roof – Middle Section Built-up Asphalt (bottom)	NA	NAD

NA = Not Applicable **NAD = No Asbestos Detected** **PB = Positive Stop**

Sample Location	% ASBESTOS BY WEIGHT	TYPE OF ASBESTOS
020910MS05 Exterior Roof – Middle Section Built-up Asphalt (top)	2.2%	Chrysotile
020910MS06 Exterior Roof – Right Section Built-up Asphalt (bottom)	<0.25%	Chrysotile
020910MS07 Exterior Roof – Right Section Built-up Asphalt (middle)	<0.25%	Chrysotile
020910MS08 Exterior Roof – Right Section Built-up Asphalt (bottom)	9.3%	Chrysotile
020910MS09 Interior Office Area Floor Mastic	NA	NAD
020910MS10 Interior Office Area Floor Tile	8.3%	Chrysotile
020910MS11 Interior Office Area Floor Tile	NA	NAD

NA = Not Applicable **NAD = No Asbestos Detected**

Sample Location	% ASBESTOS BY WEIGHT	TYPE OF ASBESTOS
020910MS12 Interior Office Areas Drywall	NA	NAD
020910MS13 Interior Office Areas Drywall	NA	NAD
020910MS14 Interior Office Areas Taping Compound	NA	NAD
020910MS15 Interior Office Areas Taping Compound	NA	NAD
020910MS16 Interior Right Side Plaster (finish)	2.0%	Chrysotile
020910MS17 Interior Right Side Plaster (finish)	1.8%	Chrysotile
100609MS18 Interior Right Side Plaster (finish)	1.8%	Chrysotile

NA = Not Applicable **NAD = No Asbestos Detected** **PB = Positive Stop**

Sample Location	% ASBESTOS BY WEIGHT	TYPE OF ASBESTOS
020910MS19 Interior Right Side Plaster (scratch)	1.5%	Chrysotile
020910MS20 Interior Right Side Plaster (scratch)	2.0%	Chrysotile
020910MS21 Interior Right Side Plaster (scratch)	1.8%	Chrysotile
020910MS22 Exterior Roof Area Built-up Asphalt	NA	NAD
020910MS23 Exterior Windows Caulk	Trace	Anthophyllite
020910MS24 Exterior Windows Caulk	<0.1%	Anthophyllite

NA = Not Applicable **NAD = No Asbestos Detected** **PB = Positive Stop**

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based upon observations during the inspection and the laboratory analysis results, the following asbestos containing materials were located.

Location	ACM Located	Quantity	Friable/Condition
Interior			
Office Area	Floor Tile (not mastic)	300 sq.ft.	Non-Friable/Damaged
Right Side	Plaster	600 sq.ft.	Friable/Damaged
Garage Exterior			
Center & Right	Built-up Roofing	880 sq.ft.	Non-Friable/Damaged

NOTE: All quantities are approximate. Abatement contractor will need to verify quantities prior to bid production.

NOTE: Due to the condition of the building, it is improbable that the asbestos containing material can be abated prior to building demolition. Therefore the abatement will be performed under the NYSDOL ICR-56 Section 11.5 "Controlled Demolition with Asbestos in Place"

In addition, as the condition of the asbestos material is "damaged" and the quantity is "large" (defined in NYSDOL ICR-56) Section 11.2(f) "Corrective Actions for Incidental Disturbance of Asbestos Containing Material" needs to be implemented. Under this Section, amongst other requirements, the area of damaged asbestos containing material needs to be restricted from the public, a NYSDOL Site-Specific Variance is to be submitted describing proposed methods and a timeline for abatement, and if not immediate, what is the reasoning.

Per the regulatory requirements of the National Emissions Standards for Hazardous Air Pollutants (40 CFR 61), all asbestos containing materials must be removed from a structure prior to its demolition. New York State requires that if a facility is found to have asbestos containing materials, NYS Industrial Code Rule 56 (12 NYCRR Part 56) must be followed when performing any work which might disturb the asbestos containing materials. Any disturbance of asbestos containing materials, including removal, repair, encapsulation, enclosure, etc. must be conducted by trained individuals with valid asbestos certification, and in accordance with federal, state and local regulations.

C.T. Male recommends that the asbestos containing materials located during this inspection and documented in this report, be removed prior to renovation or demolition activities by a New York State Licensed Asbestos Abatement Contractor, in accordance with 12 NYCRR Part 56 (Code Rule 56), OSHA 29 CFR 1926.58 and USEPA 40 CFR Part 61, Subpart M (NESHAPS).

Per the requirements of NYSDOL Industrial Code Rule 56 (as amended January 12, 2006), the building owner shall transmit copies of this inspection pre-renovation report to 1) the local agency charged with issuing the building demolition/renovation permit; 2) the local Asbestos Control Bureau Office (Albany District, State Office Campus, Room 157, Albany, New York 12240); and 3) as required, this report is to be kept on site during any abatement activities and/or demolition, renovation, remodeling or repair activities.

If you have any questions regarding this report, please contact this office at (518) 786-7400.

Respectfully submitted,

C.T. MALE ASSOCIATES, P.C.

Michael F. Sawyer
Managing Industrial Hygienist

K:\Projects\101045\Admin\ACM\R - 350 Liberty St - ACM Report.doc

APPENDIX A

C.T. MALE ASSOCIATES, P.C.

CERTIFICATIONS

C.T. MALE ASSOCIATES, P.C.

CERTIFICATIONS

C.T. Male's Asbestos Contractor's License:

License Number:	29050
Date of Issue:	10-7-08
Expiration Date:	10-30-10

Michael F. Sawyer

NYSDOL Asbestos Certificate Number:	AH88-06552
Inspector:	09-10
Project Designer:	09-10
OSHA 40-HR Certified	

NEW YORK STATE - DEPARTMENT OF LABOR
DIVISION OF SAFETY AND HEALTH
LICENSE AND CERTIFICATE UNIT
STATE CAMPUS BUILDING 12
ALBANY, NY 12240

ASBESTOS HANDLING LICENSE

C.T. Male Associates, P.C.

50 Century Hill Drive

Latham, NY 12110

FILE NUMBER: 990722
LICENSE NUMBER: 29050
LICENSE CLASS: RESTRICTED
DATE OF ISSUE: 10/20/2009
EXPIRATION DATE: 10/31/2010

Duly Authorized Representative – David W. Roecker

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.

Maureen A. Cox, Director
FOR THE COMMISSIONER OF LABOR

SH 432 (4-07)

STATE OF NEW YORK - DEPARTMENT OF LABOR

ASBESTOS CERTIFICATE

MICHAEL E SAWYER
CLASS(EXPIRES)
C ATEC(09/10) D INSP(09/10)
H PM (09/10) I PD (09/10)

CERT# 88-06552
DMV# 437658014

MUST BE CARRIED ON ASBESTOS PROJECTS

EYES BRO
HAIR BRO
HGT 6' 00"

IF FOUND RETURN TO:
NYSDOL - L&C UNIT
ROOM 161A BUILDING 12
STATE OFFICE CAMPUS
ALBANY NY 12240

APPENDIX B

LABORATORY CERTIFICATIONS

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER
RICHARD F. DAINES, M.D.

Expires 12:01 AM April 01, 2010
Issued April 01, 2009

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. PAUL MUCHA
AMERICA SCIENCE TEAM NEW YORK INC
117 EAST 30TH ST
NEW YORK, NY 10016

NY Lab Id No: 11480
EPA Lab Code: NY01378

is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved subcategories and/or analytes are listed below:

Miscellaneous

Asbestos in Friable Material	EPA 600/M4/82/020
	Item 198.1 of Manual
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	ITEM 198.4 OF MANUAL

Serial No.: 38968

APPENDIX C

LABORATORY ANALYSIS REPORTS & CHAIN OF CUSTODY

AMERI SCI

AmeriSci New York
117 EAST 30TH ST.
NEW YORK, NY 10016
TEL: (212) 679-8600 • FAX: (212) 679-3114

PLM Bulk Asbestos Report

C. T. Male & Associates
Attn: Michael Sawyer
50 Century Hill Drive
P.O. Box 727
Latham, NY 12110

Date Received 02/11/10
Date Examined 02/14/10
ELAP # 11480
RE: 10.1045; 350 Liberty St

AmeriSci Job # 210022069
P.O. #
Page 1 **of** 6

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
020910MS-01 1 **Location:** Bulk Material	210022069-01	*No*	NAD (by NYS ELAP 198.6) by Ivan H. Reyes on 02/14/10
Analyst Description: Black, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 23.2 %			
020910MS-02 1 **Location:** Bulk Material	210022069-02	*No*	NAD (by NYS ELAP 198.6) by Ivan H. Reyes on 02/14/10
Analyst Description: Green/Black, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 19 %			
020910MS-03 1 **Location:** Bulk Material	210022069-03	*No*	NAD (by NYS ELAP 198.6) by Ivan H. Reyes on 02/14/10
Analyst Description: Black, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 4.1 %			
020910MS-04 2 **Location:** Bulk Material	210022069-04	*No*	NAD (by NYS ELAP 198.6) by Ivan H. Reyes on 02/14/10
Analyst Description: Black, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 0.8 %			
020910MS-05 2 **Location:** Bulk Material	210022069-05	*Yes*	2.2 % (by NYS ELAP 198.6) by Ivan H. Reyes on 02/14/10
Analyst Description: Black, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** Chrysotile 2.2 % **Other Material:** Non-fibrous 15.9 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

10.1045; 350 Liberty St

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
020910MS-06 3 **Location:** Bulk Material	210022069-06	***Yes***	Trace (<0.25 % pc) (ELAP 198.6; 400pc) by Ivan H. Reyes on 02/14/10
Analyst Description: Black, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** Chrysotile <0.25 % pc **Other Material:** Non-fibrous 3.9 %			
020910MS-07 3 **Location:** Bulk Material	210022069-07	***Yes***	Trace (<0.25 % pc) (ELAP 198.6; 400pc) by Ivan H. Reyes on 02/14/10
Analyst Description: Black, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** Chrysotile <0.25 % pc **Other Material:** Non-fibrous 0.9 %			
020910MS-08 3 **Location:** Bulk Material	210022069-08	***Yes***	9.3 % (by NYS ELAP 198.6) by Ivan H. Reyes on 02/14/10
Analyst Description: Black, Homogeneous, Fibrous, Bulk Material **Asbestos Types:** Chrysotile 9.3 % **Other Material:** Non-fibrous 28 %			
020910MS-09 **Location:** Bulk Material	210022069-09	***No***	NAD (by NYS ELAP 198.6) by Ivan H. Reyes on 02/14/10
Analyst Description: Black, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 7.1 %			
020910MS-10 4 **Location:** Bulk Material	210022069-10	***Yes***	8.3 % (by NYS ELAP 198.6) by Ivan H. Reyes on 02/14/10
Analyst Description: Green, Homogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 8.3 % **Other Material:** Non-fibrous 45.5 %			
020910MS-4 **Location:** Bulk Material	210022069-11		NA
Analyst Description: Bulk Material **Asbestos Types:** **Other Material:**			

See Reporting notes on last page

PLM Bulk Asbestos Report

10.1045; 350 Liberty St

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
020910MS-12	210022069-12	*No*	NAD (by NYS ELAP 198.1) by Ivan H. Reyes on 02/14/10
Location: Bulk Material			
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose 2 %, Non-fibrous 98 %			
020910MS-13	210022069-13	*No*	NAD (by NYS ELAP 198.1) by Ivan H. Reyes on 02/14/10
Location: Bulk Material			
Analyst Description: Grey, Homogeneous, Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose 4 %, Non-fibrous 96 %			
020910MS-14	210022069-14	*No*	NAD (by NYS ELAP 198.1) by Ivan H. Reyes on 02/14/10
Location: Bulk Material			
Analyst Description: OffWhite, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose Trace, Non-fibrous 100 %			
020910MS-15	210022069-15	*No*	NAD (by NYS ELAP 198.1) by Ivan H. Reyes on 02/14/10
Location: Bulk Material			
Analyst Description: OffWhite, Homogeneous, Non-Fibrous, Bulk Material			
Asbestos Types:			
Other Material: Cellulose Trace, Non-fibrous 100 %			
020910MS-16	210022069-16.1	*Yes*	2 % (ELAP 198.1; 400pc) by Ivan H. Reyes on 02/14/10
Location: Bulk Material			
Analyst Description: OffWhite, Homogeneous, Fibrous, Bulk Material			
Asbestos Types: Chrysotile 2.0 %			
Other Material: Cellulose Trace, Non-fibrous 98 %			
Comment: OffWhite Coat			

See Reporting notes on last page

AmeriSci Job #: 210022069

Client Name: C. T. Male & Associates

Table I
Summary of Bulk Asbestos Analysis Results
10.1045; 350 Liberty St

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
01	020910MS-01	1	0.465	72.7	4.1	23.2	NAD	NAD
Location: Bulk Material								
02	020910MS-02	1	0.578	75.8	5.2	19.0	NAD	NAD
Location: Bulk Material								
03	020910MS-03	1	0.510	94.1	1.8	4.1	NAD	NAD
Location: Bulk Material								
04	020910MS-04	2	0.473	97.3	1.9	0.8	NAD	NA
Location: Bulk Material								
05	020910MS-05	2	0.554	74.2	7.8	15.9	Chrysotile 2.2	NA
Location: Bulk Material								
06	020910MS-06	3	0.675	92.4	3.7	3.9	Chrysotile <0.25	NA
Location: Bulk Material								
07	020910MS-07	3	0.457	95.0	4.2	0.9	Chrysotile <0.25	NA
Location: Bulk Material								
08	020910MS-08	3	0.437	51.0	11.7	28.0	Chrysotile 9.3	NA
Location: Bulk Material								
09	020910MS-09		0.113	80.5	12.4	7.1	NAD	NAD
Location: Bulk Material								
10	020910MS-10	4	0.416	28.4	17.8	45.5	Chrysotile 8.3	NA
Location: Bulk Material								
11	020910MS-4		0.422	26.8	19.7	53.6	NA	NA
Location: Bulk Material								
12	020910MS-12		----	----	----	----	NAD	NA
Location: Bulk Material								
13	020910MS-13		----	----	----	----	NAD	NA
Location: Bulk Material								
14	020910MS-14		----	----	----	----	NAD	NA
Location: Bulk Material								
15	020910MS-15		----	----	----	----	NAD	NA
Location: Bulk Material								
16.1	020910MS-16		----	----	----	----	Chrysotile 2.0	NA
Location: Bulk Material								

See Reporting notes on last page

Table I
Summary of Bulk Asbestos Analysis Results
10.1045; 350 LIberty St

AmeriSci Sample #	Client Sample#	HG Area	Sample Weight (gram)	Heat Sensitive Organic %	Acid Soluble Inorganic %	Insoluble Non-Asbestos Inorganic %	** Asbestos % by PLM/DS	** Asbestos % by TEM
16.2	020910MS-16		----	----	----	----	Chrysotile 0.3	NA
Location:	Bulk Material							
17.1	020910MS-17		----	----	----	----	Chrysotile 1.8	NA
Location:	Bulk Material							
17.2	020910MS-17		----	----	----	----	Chrysotile 0.3	NA
Location:	Bulk Material							
18.1	020910MS-18		----	----	----	----	Chrysotile 1.8	NA
Location:	Bulk Material							
18.2	020910MS-18		----	----	----	----	Chrysotile 0.3	NA
Location:	Bulk Material							
19	020910MS-19		----	----	----	----	Chrysotile 1.5	NA
Location:	Bulk Material							
20	020910MS-20		----	----	----	----	Chrysotile 2.0	NA
Location:	Bulk Material							
21	020910MS-21		----	----	----	----	Chrysotile 1.8	NA
Location:	Bulk Material							
22	020910MS-22	1	0.555	60.2	11.0	28.8	NAD	NAD
Location:	Bulk Material							
23	020910MS-23	5	0.432	6.9	74.3	18.7	NAD	Anthophyllite Trace
Location:	Bulk Material							
24	020910MS-24	5	0.423	5.2	74.5	20.1	NAD	Anthophyllite <1.0
Location:	Bulk Material							

Analyzed by: Madell E. Collins Madell E Collins ; Date Analyzed 2/14/2010

**Quantitative Analysis (Semi/Full); Bulk Asbestos Analysis - PLM by EPA 600/M4-82-020 per 40 CFR or ELAP 198.1 for New York friable samples or ELAP 198.6 for New York NOB samples; TEM (Semi/Full) by EPA 600/R-93/116 (not covered by NVLAP Bulk accreditation); or ELAP 198.4 for New York samples; NAD = no asbestos detected during a quantitative analysis; NA = not analyzed; Trace = <1%; Quantitation for beginning weights of <0.1 grams should be considered as qualitative only; Qualitative Analysis: Asbestos analysis results of "Present" or "NVA = No Visible Asbestos" represents results for Qualitative PLM or TEM Analysis only (no accreditation coverage available from any regulatory agency for qualitative analyses); AIHA Lab # 102843, NVLAP Lab Code 200546-0, NYSDOH ELAP LAB ID 11480.

Warning Note: PLM limitation, only TEM will resolve fibers <0.25 micrometers in diameter. TEM bulk analysis is representative of the fine grained matrix material and may not be representative of non-uniformly dispersed debris for which PLM evaluation is recommended (i.e. soils and other heterogenous materials).

Reviewed By:_____

APPENDIX D

ACM SURVEY
ABATEMENT COST ESTIMATES

Proj. No.: 10.1045 Date: 2/28/2010

Project: 350 Liberty Street, Newburgh, NY

LOCATION \ MATERIAL	UNIT	QTY	UNIT PRICE	COST	TOTAL COST
Exterior					
All Roofing Materials*					
Byult Up Roofing	Sq. Ft.	880	$ 6.00	$ 5,280.00	$ 5,280.00
Interior					
Office Area					
Floor Tile (not mastic)	Sq. Ft.	300	$ 5.00	$ 1,500.00	$ 1,500.00
Plasters	Sq. Ft.	600	$ 10.00	$ 6,000.00	$ 6,000.00
			Sub-Total		$ 12,780.00
ASSOCIATED ASBESTOS ABATEMENT COSTS (Estimated)					
Project/Air Monitoring					$ 3,500.00
ESTIMATED ASSOCIATED COSTS			**TOTAL**		$ 3,500.00
TOTAL					$ 16,280.00

NOTE: Costs generated above reflect the additional cost the presence of asbestos containing material will add to normal building demolition costs.

EXHIBIT 3

GPR SPECIFICATIONS AND OUTPUT

SIR-3000

Rugged, High-Performance Single-Channel GPR Data Acquisition System

The SIR-3000 is the industry's number one choice for data accuracy and versatility. This small, lightweight control unit is designed for single-user operation. The SIR-3000 provides the essential features and flexibility that experienced GPR users require, as well as simplified, application-specific user interfaces for novice GPR users.

The SIR-3000 incorporates advanced signal processing and display capability for 'in-the-field' 3D imaging. Unlike other data acquisition products on the market, the SIR-3000 is interchangeable with all GSSI antennas, making it an affordable and flexible option for multi-application users.

Typical Uses

- Concrete inspection
- Utility location
- Geological investigation
- Archaeology
- Forensics
- Bridge deck inspection
- Mining
- And many other custom applications

Modular Design

- Compatible with all GSSI antennas
- Lightweight and portable
- Removable, rechargeable batteries

Integrated System

- Windows-based user interface
- GPS integration
- High-resolution color screen that is visible over a wide range of light conditions
- Rugged and weather resistant

Deliver Results

- Removable compact flash card memory
- Large internal data storage

GSSI

www.geophysical.com

SIR-3000 System Specifications

System	
Antennas	Compatible with all GSSI antennas
Number of Channels	1 (one)
Data Storage	Internal memory: 2 GB Flash memory card Compact Flash port: Accepts CF memory up to 2 GB (using FAT 16 file format)
Display	Enhanced 8.4: TFT, 800x600 resolution, 64K colors
Display Modes	Linescan, O-scope, 3D
Data Acquisition	
Data Format	RADAN (.dzt)
Scan Rate Examples	220 scans/sec at 256 samples/scan, 16 bit 120 scans/sec at 512 samples
Scan Interval	User-selectable
Number of Samples per Scan	256, 512, 1024, 2048, 4096, 8192
Operating Modes	Free run, survey wheel, point mode
Time Range	0-8,000 nanoseconds full scale, user-selectable Gain: Manual or automatic, 1-5 gain points (-20 to +80 dB)
Filters	Vertical: Low Pass and High Pass IIR and FIR Horizontal: Stacking, Background Removal
Languages	
	English, French, Italian, German, Spanish, Japanese, Chinese
Operating	
Operating Temperature	-10°C to 40°C ambient
Charger Power Requirements	15 V DC, 4 amps
Battery	10.8 V DC, internal
Transmit Range	Up to 100 KHz
Input/Output	
Available Ports	Antenna input DC power input Serial RS232 (GPS port) Compact Flash memory USB master slave
Mechanical	
Dimensions	12.4 (l) x 8.7 (w) x 4.1 (h) in (31.5 x 22 x 10.5 cm)
Weight	9 lbs (4.1 kg) including battery
Environmental	Water Resistant

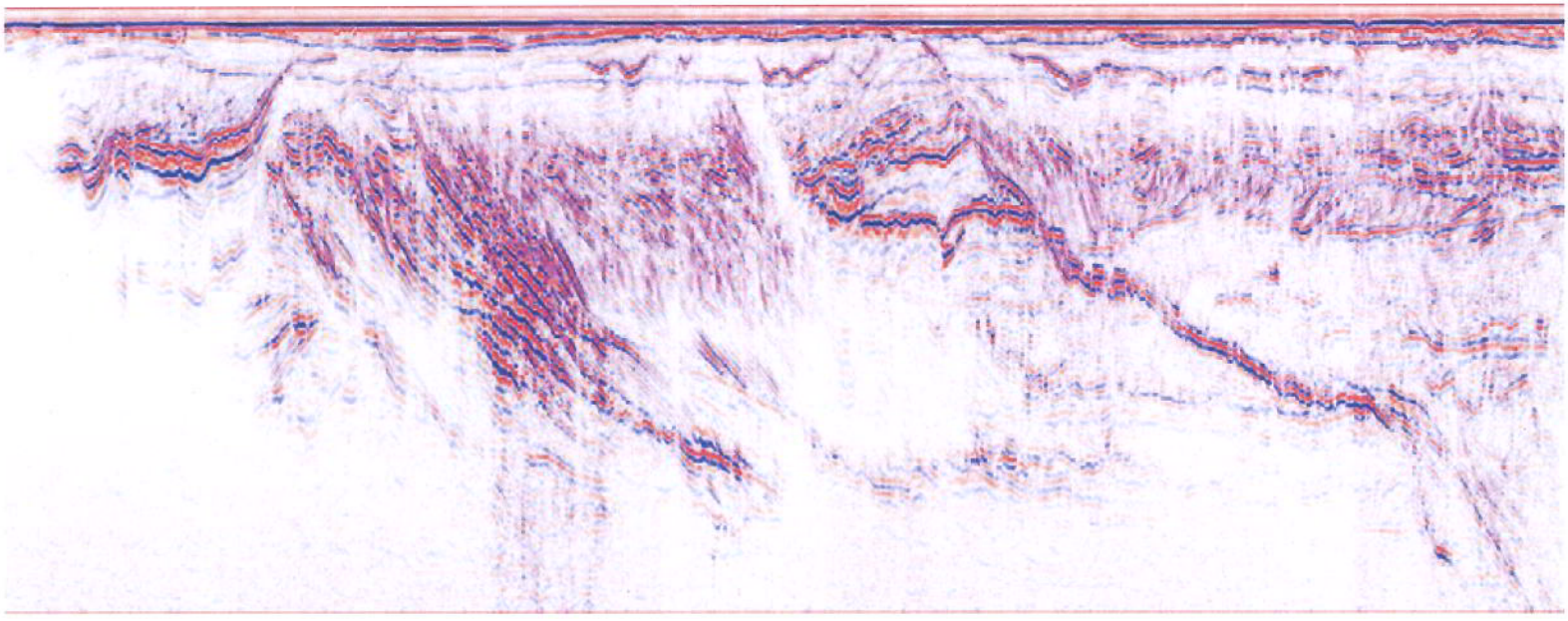
SIR-3000 System Includes

- SIR-3000 control unit
- Transit case
- 2 batteries
- Battery charger
- AC adapter (also works as charger)
- User manual
- Sunshade

Antennas and accessories sold separately

CE and FCC Compliant

www.geophysical.com • sales@geophysical.com
12 Industrial Way • Salem, NH 03079-4843
Tel: (603) 893-1109 • Fax: (603) 889-3984

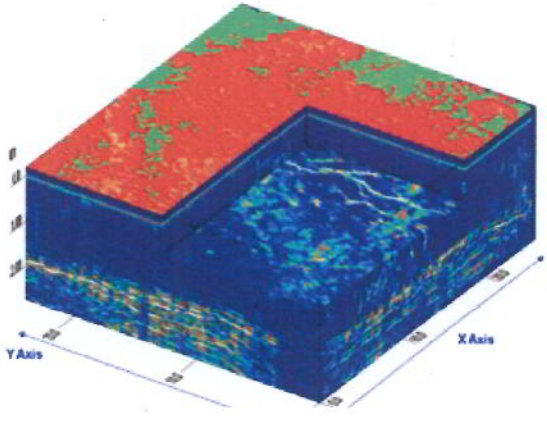


RADAN

The World's Most Advanced GPR Data Processing Software

RADAN™ is GSSI's post-processing software for GPR data. With its modular design, RADAN allows users to select the processing functions that best suit their professional needs. RADAN is Windows based, providing a familiar and easy –to-use environment for all levels of experience.

The RADAN software features bold and intuitive menu screens and clear data views for easier interpretation and enhanced post-processing capabilities. This software also gives users a host of useful functions for more easily examination their survey sites. RADAN provides complete post-processing solutions with more ways to analyze the data than any other GPR processing software in the industry. It is the culmination of over twenty years of R&D experience.



3D data volume created with RADAN showing tree root distribution over a sandy soil horizon.

Built for All Levels

- Familiar Windows-based interface
- Application specific modules
- On-screen help features

Manage Data

- Identify, clarify and interpret data
- Enhanced 3D capabilities
- Application specific modules
- Uncompromised data quality

Deliver Results

- Automatic GPS integration
- Generic ASCII files for simple data export

GSSI

www.geophysical.com

RADAN Solutions

Customize your RADAN: Choose the RADAN Modules That Fit your Needs

Interactive 3D—The Interactive 3D module provides enhanced 3D viewing options in a single viewing box.

- Analyze multiple views of 2D and 3D data simultaneously
- Draw in or edit shapes that relate to your survey site (i.e. pipes, drums, lines)
- Stretch, shrink or zoom-in on files as desired for customized presentation results
- Can be used with any and all RADAN modules

Structure ID—This powerful module allows for easy creation of plan-view slices to aid in interpretation of StructureScan data files.

- Semi-automatic mapping of reinforcement locations and depths on simple concrete structures
- Interactive mapping of conduits or other subsurface features within concrete structures
- Semi-automatic mapping of deterioration zones within concrete structures
- Typical applications are the processing of rebar and conduits, areas of deterioration, slab thickness, and voids

Bridge Assessment—The Bridge Assessment module provides robust post-processing capabilities for the condition evaluation and mapping bridge decks.

- Semi-automatic target recognition and layer picking
- Semi-automatic mapping of deterioration zones within concrete structures
- Generic ASCII output files for simple integrations with spreadsheets or other evaluation programs
- Primary application is for bridge deck condition assessments

Road Structure Assessment—This module provides powerful features for processing GSSI's air-launched horn antennas used for collecting pavement data at highway speeds.

- No coring required- automatically recalculates velocity at each individual scan location
- Semi-automatic layer picking
- GPS integration- external data logger accepts data from any GPS producing a NMEA GCA output
- Primary application is for road assessments

BallastVue—The BallastVue module provides enhanced processing for ballast condition assessment.

- Automatic calculation for degree of ballast fouling
- Generic ASCII output files for simple integrations with spreadsheets or other evaluation programs
- Primary application is for railroad ballast condition assessment

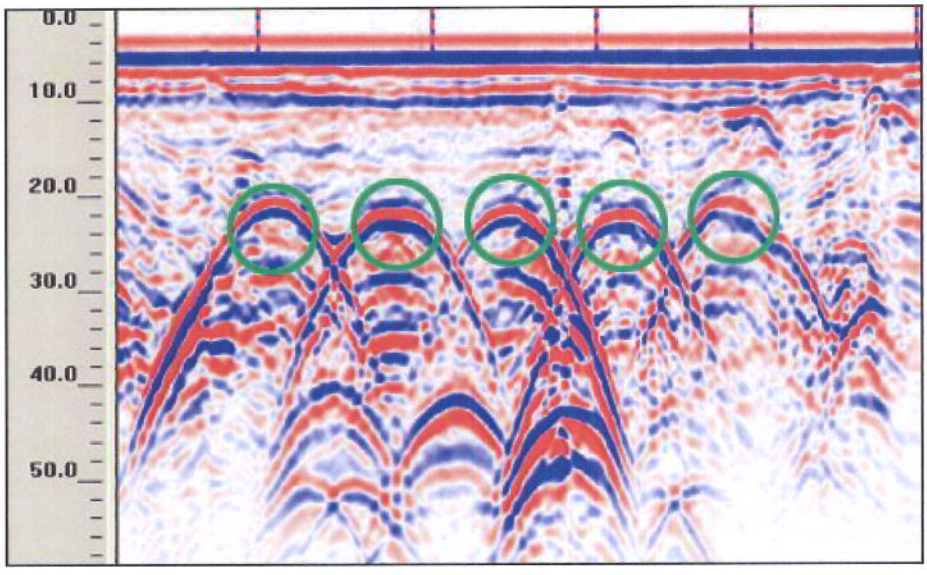
Recommended System Requirements for RADAN

- Microsoft Windows Vista Business (32 or 64 bit)
- 2.0 GHz or better Dual Core or Quad Core Processor
- 2 GB or better of system memory
- 200+ GB hard drive with a minimum of 100 GB available space
- USB Port required for hardware security key
- 256 MB Open GL 2.0 Graphics Card (ex. NVidia GeForce 8000 series or better

Minimum System Requirements for RADAN

- Microsoft Windows XP
- 1.0+ GHz Pentium 4
- 512 MB or better of system memory
- 40 GB hard drive with a minimum of 20GB available space
- USB Port required for hardware security key
- 32 MB Graphics card running in 32-bit color mode that supports Open GL and has up-to-date video drivers. We recommend NVidia GeForce or higher chipsets

www.geophysical.com • sales@geophysical.com
12 Industrial Way • Salem, NH 03079-4843
Tel: (603) 893-1109 • Fax: (603) 889-3984



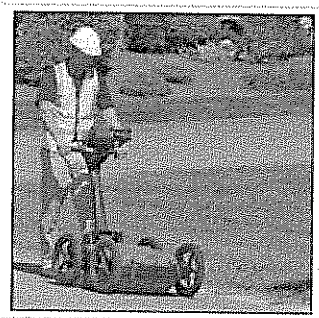
Tanks

Products

StructureScan Optical
StructureScan Professional
StructureScan Standard
StructureScan Mini
UtilityScan
RoadScan
BridgeScan
BallastScan
TerraVision
Profiler
SIR-20
SIR-3000
Antennas
Software
Training
Rentals

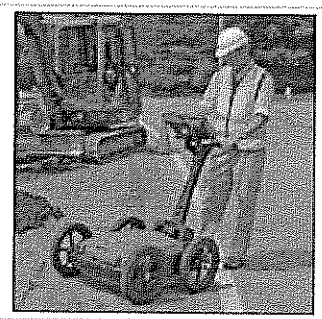
UtilityScan

Overview | Benefits | Systems | Utility Antennas | Survey Carts | Specifications



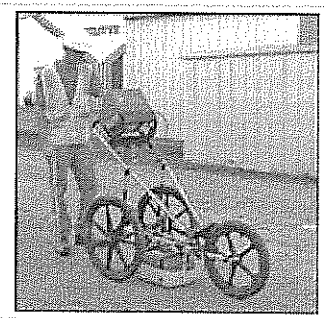
400 MHz UtilityScan Rugged System

- 400 MHz antenna
- SIR-3000
- Rugged terrain survey cart with encoder wheel
- 2-meter control cable
- Transit case for control unit
- Two batteries and battery charger
- AC adapter



270 MHz UtilityScan Rugged System

- 270 MHz antenna
- SIR-3000
- Rugged terrain survey cart with encoder wheel
- 2-meter control cable
- Transit case for control unit
- Two batteries and battery charger
- AC adapter



400 MHz UtilityScan Standard System

- 400 MHz antenna
- SIR-3000
- 3-Wheel survey cart with encoder wheel
- 2-meter control cable
- Transit case for control unit
- Two batteries and battery charger
- AC adapter

Geophysical
Survey
Systems, Inc.

CERTIFICATE

13 Klein Drive - P.O. Box 97 North Salem, NH 03073-0097, U.S.A. / Telephone (603) 893-1109 / Toll Free (800) 524-301 / Fax (603) 889-3984

To Whom it may concern:

This is to certify that electromagnetic radiation emissions from transducers (antenna with transmitting and receiving electronics) manufactured by Geophysical Survey Systems, Inc. (GSSI) DO NOT constitute a safety or health hazard to operating personnel.

Emissions from GSSI transducers are below the 10mW/cm² (100W/m²) level specified by the United States Occupational Safety and Health Administration (OSHA) regulations

Paragraph 1910.97 states:

"For normal environmental conditions and for incident electromagnetic frequencies from 100 MHz to 100 GHz, the radiation protection guide is 10 mW/cm² (milliwatt per square centimeter) as averaged over any possible 0.1 hour period."

Emissions data using GPR SIR System-10, SIR-2, SIR-3, SIR-4, SIR-8, SIR-20, SIR-2000 and SIR-3000 (at the standard Pulse Repetition Frequency of 100 KHz) with the antenna Models listed and levels of Electromagnetic Radiation are specified herein:

Following is the average power density data at 5cm and wide band.

ANTENNA (MHz)	AVERAGE POWER DENSITY (W/m^2 @ 5 cm)	OSHA SPEC. (W/m^2)
100	Less than 0.0001	100
200	Less than 0.0001	100
300	Less than 0.0001	100
270	Less than 0.0001	100
400	Less than 0.0001	100
500	Less than 0.0001	100
900	Less than 0.0001	100
1000	Less than 0.0001	100
1600	Less than 0.0001	100

GEOPHYSICAL SURVEY SYSTEMS, INC.

Alan E. Schutz
Director of Engineering

March 3, 2005

EXHIBIT 4

PROPOSED SCHEDULE

Proposed Schedule

Remedial Investigation/Interim Remedial Measures

350-352 Liberty Street ERP Site

City of Newburgh, New York

TASK	MARCH 2010				APRIL 2010					MAY 2010					JUNE 2010					JULY 2010				AUGUST 2010					SEPTEMBER 2010				OCTOBER 2010				NOVEMBER 2010				DECEMBER 2010				JANUARY 2011					FEBRAUARY 2011				MARCH 2011				APRIL 2011		
	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24	31	7	14	21	28	7	14	21	28	4	11	18	25
PREPARATION OF RI/IRM WORK PLAN																																																										
Submission of Draft RI/IRM Work Plan																																																								
NYSDEC Review of Draft RI/IRM Work Plan/Comments																																																								
Revise and Submit Final RI/IRM Work Plan																																																							
Place Final RI/IRM Work Plan in Document Repositories																																																							
Public Release - Fact Sheet																																																							
REMEDIAL INVESTIGATION (PHASE I)																																																							
Develop and Review Contractor Bids for GPR Survey and Test Pitting																																																							
Ground Penetrating Radar (GPR) Survey																																																							
Test Pitting Field Work																																																							
Preparation of PBS Application and Submission to DEC																																																						
Receipt of Laboratory Data from Test Pits																																																						
Data Validation of Laboratory Data from Test Pits																																																						
Review of Preliminary Data from Test Pits																																																						
Development of SCGs																																																						
Determine Need for Supplementary Phase I Investigations																																																						
Development of Engineer's Estimate for Remaining Work and Discuss with City and NYSDEC																																																						
INTERIM REMEDIAL MEASURES																																																						
Submission of Draft Scope, Plans, Specifications and Bidding Documents																																																					
NYSDEC Review of Draft Scope, Plans, Specifications and Bidding Documents/Comments																																																					
Revise and Submit Final Scope, Plans, Specifications and Bidding Documents																																																				
Solicitation of IRM Contractor Bids																																																					
Review of IRM Contractor Bids																																																					
IRM Contract Award and Execution																																																				
Conduct IRM Field Work																																																				
Update PBS Application and Submission to DEC																																																				
Receipt of Laboratory Data from Samples Collected During IRM Field Work																																																				
Data Validation of Laboratory Data During IRM Field Work																																																				
Review of Preliminary Data from Samples Collected During IRM Field Work																																																			
Determine the Need for Additional Investigations and/or IRMs																																																			
REMEDIAL INVESTIGATION (PHASE II)																																																			
Monitoring Wells																																																			
Installation of Monitoring Wells																																																		
Develop Monitoring Wells																																																		
Groundwater Sampling																																																		
Receipt of Laboratory Data from Groundwater Sampling																																																	
Data Validation of Laboratory Data from Groundwater Sampling																																																
Review of Preliminary Data from Groundwater Sampling																																															
Surface Soil Sampling (if needed)																																														
Conduct Surface Soil Sampling																																													
Receipt of Laboratory Data from Surface Soil Sampling																																												
Data Validation of Laboratory Data from Surface Soil Sampling																																										
Review of Preliminary Data from Surface Soil Sampling																																									
Vapor Intrusion Survey (to be determined)																																								
PREPARATION OF DRAFT RI/IRM REPORT																																							
Meeting with City/ NYSDEC to discuss AAR																																							
PREPARATION OF DRAFT ALTERNATIVES ANALYSIS REPORT (AAR)																																							
Meeting with City / NYSDEC to discuss Preferred Alternative																																							
Submission of Draft RI/IRM and AA Reports																																							
NYSDEC Review of Draft RI/IRM and AA Reports/Comments																																							
Revise and Submit Final RI/IRM and AA Reports																																							
Public Release - Fact Sheet																																							
Development of PRAP and Public Notice																																							
Public Meeting & Comment Period																																							
Responsiveness Summary																																							
RECORD OF DECISION																																							

NOTES:

The dates illustrated (i.e. March 1, 2010) on the project schedule correspond to Monday of each week. Highlights placed on these dates indicates that the deliverable will be submitted and/or completed during the referenced week

Allerations to the Project Schedule will be discussed in the monthly project progress reports. If needed, a revised Project Schedule will be submitted with the monthly progress reports.