Five-Year Review Report

for

Avenue E Site

Traverse City,
Grand Traverse County, Michigan

September 2005

PREPARED BY:

United States Environmental Protection Agency
Region 5
Chicago, Illinois

Approved by:

Richard C. Karl, Director
Superfund Division
U.S. EPA

Date:

9/20/05

Five-Year Review Report

Table of Contents

List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
Avgas plume	Aviation Gas Plume
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CIC	Community Involvement Coordinator
ICs	Institutional Controls
JP-4 Fuel	JP-4 Jet Fuel
MCL	Maximum Contaminant Level
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MOU	Memorandum of Understanding
mg/kg	Milligram Per Kilogram
NCP	National Contingency Plan
NPL	National Priorities List
ppb	Parts Per Billion
ppm	Parts Per Million
PRP	Potentially Responsible Party
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
ROD	Record of Decision
RPM	Remedial Project Manager
USCG	United States Coast Guard
U.S. EPA	United States Environmental Protection Agency
µg/kg	Microgram Per Kilogram
VOC	Volatile Organic Chemical

Executive Summary

The remedial actions for the Avenue E Superfund Site, located in Traverse City (City), Michigan included the following components:

January 1981, Traverse City water supply lines were extended to homes in the area of contamination. Approximately 26 Avenue E homeowners connected their homes to the new line.

June 25, 1982, a Memorandum of Understanding (MOU) between the USCG and U.S. EPA was signed. This agreement required the USCG to connect any remaining residents in the Avenue E area to the City municipal water supply, and conduct a hydro geological study to determine the source of the groundwater contamination.

In 1983, USCG completed its investigation into the nature and extent of contamination at the site.

In 1985, USCG installed two blocking wells to pump groundwater and prevent further contamination from leaving the site.

In 1987, the State of Michigan and USCG reached an agreement for the USCG to pay the cost of implementing the cleanup of contaminated groundwater and some limited soil vapor extraction for remediation of JP-4 jet fuel in soils.

By 1996, the contaminant levels in the groundwater rarely exceeded the cleanup criteria stipulated in the 1987 settlement.

In 1999, the wells were clean and the groundwater treatment system was shut off.

USCG is currently monitoring the groundwater at the site. Monitoring will continue until October 2005.

The trigger action for this five-year review was the completion date for the Preliminary Close-out Report, dated September 27, 2000. A 5 Year Review is being done at this Site as matter of policy to evaluate the implemented remedy.

The remedy at the Avenue E Site is protective of human health and the environment because the treatment system put into place reached cleanup standards indicated in the 1987 settlement agreement between the State and USCG. Current monitoring results indicate that the contaminants in the groundwater remain below the 1987 settlement agreement clean up criteria.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name *(from WasteLAN)*: Avenue E

EPA ID *(from WasteLAN)*: *MID980791461*

Region: 5	**State:** MI	**City/County:** Traverse City, Grand Traverse County

SITE STATUS

NPL status: X Final ☐ Deleted ☐ Other (specify) _____

Remediation status (choose all that apply): ☐ Under Construction X Operating ☐ Complete

Multiple OUs?* ☐ YES X NO	**Construction completion date:** 09/27/2000

Has site been put into reuse? X YES ☐ NO

REVIEW STATUS

Lead agency: X EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____

Author name: Linda Martin

Author title: Remedial Project Manager	**Author affiliation:** U.S. EPA

Review period:** 12/01/2004 to 09/30/2005

Date(s) of site inspection: 08/10/05

Type of review:

X Post-SARA ☐ Pre-SARA ☐ NPL-Removal only
☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead
☐ Regional Discretion

Review number: X 1 (first) 2 (second) ☐ 3 (third) ☐ Other (specify) _____

Triggering action:

☐ Actual RA Onsite Construction at OU #____ ☐ Actual RA Start at OU#____
X Construction Completion Previous Five-Year Review Report
☐ Other (specify) _____

Triggering action date *(from WasteLAN)*: 09/27/2000

Due date *(five years after triggering action date)*: 09/27/2005

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, cont'd.

Issues:

1) NONE

Recommendations and Follow-up Actions:

1) NONE

Protectiveness Statement:

The remedy at the Avenue E Site is protective of human health and the environment because groundwater monitoring results indicate that the cleanup standards set in the 1987 settlement agreement have been met and this result is expected to continue.

Other Comments:

None

Five-Year Review Report

I. Introduction

The purpose of five-year reviews is to determine whether the selected remedy at a site remains protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and recommendations to address them.

The Agency is preparing this five-year review pursuant to the CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The agency interpreted this requirement further in the National Contingency Plan (NCP); 40 CFR §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The United States Environmental Protection Agency (U.S. EPA) Region 5 has conducted a five-year review of the remedial actions implemented at the Avenue E Site, located in Traverse City, Grand Traverse County, Michigan. This review was conducted by the Remedial Project Manager (RPM) from December 2004 to September 2005. This report documents the results of the review.

This is the first five-year review for the Avenue E Site. The triggering action for this policy review is the date for the Construction Completion as shown in U.S. EPA's WasteLAN database: September 27, 2000. This review was done as a matter of policy to evaluate protection of the implemented remedy. No future reviews are required.

II. Site Chronology

Table 1: Chronology of Site Events

Event	Date
Initial Discovery of contaminated drinking water wells.	**June 1982**
Traverse City extends public water supply lines to homes with contaminated wells	**October 1982**
Removal Action: connections of 26 homes to the public water supply system	**December 1982**
USCG completes Nature and Extent of Contamination investigation	**1983**
USCG installed two blocking wells to pump groundwater to prevent further contamination	**1985**
Site listed on the NPL	**June 1986**
State of Michigan and USCG sign a settlement agreement for the actions taken	**June 1987**
Contaminate levels drop to below cleanup standards stipulated in the 1987 settlement agreement	**1996**
Treatment system shut off	**1999**
Site Visit for 5 Year Review	**August 2005**
Last Groundwater monitoring round to occur	**October 2005**
5 Year Review	**September 2005**
MDEQ will continue monitoring off-site monitoring wells MW7, MW8 and MW9	**on-going**

III. Background

Site Characteristics

The Avenue E Superfund Site is a groundwater contamination plume located in East Bay Township in Grand Traverse County, Traverse City, Michigan. The source of the contamination is located on the U.S. Coast Guard (USCG) Air Station. The plume was located west of the intersection of Parsons Road and Aero Park Drive. It was traced to the southwest corner, under Jacklin Steel Company and Nish-Nah-Bee Industries, then to the northwest corner of an industrial park backlot located southwest of Nish-Nah-Bee Industries. The plume eventually extended to the East Arm of the Grand Traverse Bay (see Attachment 1).

Land and Resource Use

The Site is situated in a residential area, near the Traverse City Cherry Capital Airport and USCG air station in East Bay Township. East Bay Township is located in Grand Traverse County in the north west corner of Michigan's Lower peninsula. The source of the contamination includes the US Coast Guard Air Station and the area immediately to the northeast extending to the East Arm of Grand Traverse Bay.

History of Contamination

In 1980, residents of Avenue E in the township complained of odors and foaming in their well water. Subsequent investigation by the Michigan Department of Public Health (MDPH) and the Michigan Department of Natural Resources (MDNR) revealed the existence of a plume of contamination in the underlying sand aquifer. The plume consisted primarily of hydrocarbons found in petroleum distillates, including benzene and toluene, which had the greatest distribution and highest concentrations, and some solvents.

Initial Response and Basis for Taking Action

The geographic origin of the groundwater contamination appeared to be the Coast Guard Air Station and possibly the adjacent Cherry Capital Airport, located approximately ½ mile up gradient of the affected wells. Activities on the base and the commercial airport required the use of hazardous substances including fueling and cleaning operations for the search and rescue aircraft based at the Air Station and the private and commercial aircraft used at the airport. In operation since the 1940's, the Coast Guard Air Station is located on the former site of a US Navy Air Station.

In response to the initial well water discovery, the 9th Coast Guard District, headquartered in Cleveland, Ohio, paid for city water connections for 26 homes in the affected area. The Coast Guard also contracted and supervised additional investigations complementing those of the MDNR to aid in the planning of a long term response. Results of these investigations concluded the following:

- A plume of contamination was found stretching from near the Hanger/Administration (HA) building on the Coast Guard property to East Bay. It was approximately 4300 feet

long and from 180 to 400 feet wide. Hydrocarbon spectra of the contamination are consistent with that of 115/145 aviation gasoline. Major components are benzene, toluene, and xylene with a maximum concentration of 3640 ug/l, 553,000ug/l and 5410 ug/l, respectively

- An additional contaminant plume was discovered on the Coast Guard property with an apparent origin near the Coast Guard's fueling station. Around the fueling station several inches of pure JP-4 jet fuel product were found floating on the water table.

- A third contaminant plume was found along the Coast Guard's south fence line up gradient of the fuel farm area. Possible origins include a 1979 Republic Airlines jet fuel spill and various underground storage tanks in the area that had since been removed.

- The contaminants are located in a sandy aquifer of high permeability. Groundwater flow is to the northeast with a velocity of approximately five feet per day.

- A probable source of the original plume is a fuel spill in 1969 at the Coast Guard base in which about 2500 gallons of aviation gasoline leaked into the ground at a fuel station located under the northwest corner of the new HA building. The second plume may have originated from leaking JP4 fuel tanks at the current fuel station.

To mitigate adverse effects during the investigation, interim responses were implemented. These included providing city water connections to 26 affected residents in the Avenue E area, installing and operating interdiction and purge systems with treatment capability to prevent additional offsite contaminant migration and removing and or repairing tanks at the Coast Guard fueling station.

Soils

The USGS and the University of Michigan (UM) reported numerous measurements of organics in the soils at the Coast Guard Air Station. The UM study found maximum concentrations of 25.4 ug/g benzene, 27.6 ug/g toluene, and 229 ug/g xylene. Analyses were made for seven other hydrocarbons with negative results. Soil borings indicate that much of the organic material was adsorbed on the soil in a 6" to 12" thick layer in the capillary zone immediately above the water table. The UM suggested that this zone is slowly leaking organic contaminants into the groundwater over time and is thus serving as a source for the plume.

Groundwater

The first investigation of the site was conducted by the MDNR in 1982. The State Agency's study objectives were to locate and delineate the contaminant plume, identify and determine the distribution of its component parts and locate the probable source area of the plume. The MDNR drilled 24 wells and two auger holes along Parsons Road and around the lots of Jacklyn Steel and Nish-Nah-Bee Industries.

As a result of the MDNR findings that the Coast Guard Air Station property was part of the suspected source area, the Coast Guard contracted with the United States Geological Service

(USGS) in July 1982 to undertake a study of the areas hydrogeologic conditions. Objectives of this study were:

1) to determine the rate and direction of groundwater flow
2) locate the source or sources of contaminates
3) determine the extent and distribution of contaminates
4) evaluate hydrologically suitable locations for installing purge wells should that be necessary

The USGS installed a total of 138 wells on the Coast Guard property, up gradient of the base and down gradient from the base in and around the industrial areas and residential area. Five wells were installed to conduct a pump test for determining aquifer characteristics.

At the request of the Coast Guard, a team from the University of Michigan conducted a study of the site from February through August 1984. Building on the data and results given in the USGS report, the study was to be complimentary to the USGS effort. By providing data and analysis on the time variation of contaminants, the effect of soil adsorptive characteristics on contaminant distribution and movement, and the potential risk posed by the contamination to public health, probable contaminant sources could be determined and remedial action alternatives developed.

A total of 24 wells including 15 existing and nine new wells were selected for analysis based on previous information. These wells were sampled six times at 21 day intervals. Statistical analysis was performed on the data and various data plots were generated. This information was used to provide supporting information for developing response alternatives. A preliminary risk assessment was made for the various chemical components found in the plume. A contaminant transport computer model was used to help determine the possible origin of the plume and the effectiveness of various purge well combinations. Finally several cleanup alternatives were identified and discussed.

In 1984, the 9th District Coast Guard tasked a contractor to design, construct, operate and evaluate ground water treatment techniques using carbon adsorption and air stripping. A sampling program to monitor the plumes response was also developed. In February 1985, the contract was extended to add the following tasks:

selection of a specific cleanup technology
design, construction and operation of an interdiction well system
design, and installation of monitoring wells
design, construct, operate and evaluate full scale carbon adsorption plant
specifications, assembly, installation and evaluation of an advanced rotary air stripping and incineration system.

Two interdiction well fields were installed along the eastern boundary of the base to intercept and prevent the flow of contaminants off the Air Station property. A purge well system was placed to directly remove contaminants from the fuel farm area. Carbon adsorption and air stripping treatment systems were also installed and critically evaluated to compare their treatment

effectiveness and cost efficiencies.

In information found in the OSC report dated May 1982, a memo from the remedial response Section Chief indicated that the State of Michigan had nominated the Avenue E site for inclusion on the NPL. Sometime during 1986, discussions were held between the U.S. EPA and State of Michigan regarding the listing of the Avenue E Site on the NPL(hand written notes from discussion held 9/3/86) . Because the USCG had completed an RI/FS like study and had begun implementation of a remedy for the site, no further studies were required and the site was listed on the NPL in 1986.

IV. Remedial Actions

Remedial Objectives

The remedy implemented on the Avenue E Superfund Site was intended to completely halt the flow of any contaminants and fuel from the site and to treat the water extracted by this system so as to remove the fuel related contaminants found. The system would be operated until the contaminant levels were at or below 5 ug/l for six consecutive months. In addition, the remedy involved some soil cleanup to remove a source of the contamination to the groundwater.

Record of Decision

There was no Record of Decision (ROD) for this site. On June 25, 1982, a Memorandum Of Understanding (MOU) between the USCG and U.S. EPA was signed. In this agreement, U.S. EPA agreed to provide funding pursuant to the Comprehensive Environmental Response Compensation and Liability act (CERCA) to connect the remaining residents in the Avenue E area to the city water supply. The agreement required the USCG to conduct hydro geological studies to determine the source of the groundwater contamination and if studies showed the USCG to be responsible, required them to reimburse U.S. EPA for the expenses incurred for connecting the residents to the city water supply.

In 1983, the USCG completed its investigation into the nature and extent of the contamination at the site. In 1985, the USCG installed two blocking wells to pump groundwater and prevent further contamination from leaving the property. The groundwater was treated to remove contaminants and discharged to the Traverse City sanitary sewer system. Also in 1985, the US Department of Justice (DOJ) and USCG signed a Consent Order requiring the USCG to study contamination at the site and to recommend cleanup alternatives.

In 1987, an agreement between the State of Michigan and the USCG was negotiated. USCG agreed to pay the cost of implementing the cleanup of contamination emanating from the site. The cleanup involved extraction and treatment of contaminated groundwater. Some of the other remedial actions included enhanced biodegradation using hydrogen perxoide and nitrates to reduce plume contaminates. The USCG also implemented a groundwater sparing with vapor extraction, venting with vapor extraction, soil venting, natural attenuation and surfactant injection and extraction. All of these additional remedial measures helped to reduce the

contaminant source in the soil and speed treatment of the groundwater through the pump and treatment system. The contaminated groundwater was treated by activated carbon prior to discharge to the Traverse City Sewer system. By 1996, the contaminant levels rarely exceeded the cleanup criteria stipulated in the 1987 settlement agreement. In 1999, the wells remained clean.

A Preliminary Closeout Report (PCOR) was completed by U.S. EPA in September 2000. The purpose of the PCOR was to document that all construction activity had been completed at the Site. The PCOR indicated that a 5 year review for this site would be conducted as warranted. However, 5-year reviews are not required by statute, since no actions were taken under CERCLA §121 at this site and, this Review was conducted as a matter of policy.

Remedy Implementation

Institutional Controls

There were no provisions for institutional controls in any of the agreements associated with the clean up and monitoring of this site as the groundwater was to be remediated to unrestricted use.

Groundwater Monitoring Program

Per the Settlement agreement with the State of Michigan, the USCG operated two interdiction fields (pump and treatment systems). There was one at the North of the base and one at the south of the base. They consisted of wells IN2, IN3, IN4, IN5 and IN6 in the North Field (avgas plume) and PP5, PP6, PP7, and PP8 in the South Field (JP-4 field). Each interdiction point had point of compliance wells along the USCG property boundary. The north field point of compliance wells were M56, M1, M4, M3, and M55. The south field point of compliance wells were M22, M61, M62, M63, and M64. In addition the Coast Guard monitored the main avgas plume with wells M12, M24, 26, M30, M31, M54 and M59. There were a number of other wells installed over the course of the project for various reason. In 2000, with consent of MDEQ [1], the USCG removed wells PP5, PP6, PP7 and PP8. In 2001, with the consent of MDEQ, wells IN2, IN3, IN4, IN5 and IN6 were removed along with the associated piping, manifolds, carbon treatment units, discharge lines for both the north and south interdiction fields. The remaining monitoring wells will be removed after the 10 year post closure period is complete. The post closure period starts in October 2005 after the final round of monitoring data is collected.

While the selected remedy has addressed the original contamination, data collected from July 2001 through October 2004 indicates that benzene is entering the USCG base from an area associated with the Traverse City Cherry Capital Airport rental car property. Benzene can be

[1]As of October 1995, the State cleanup program responsibilities were transferred from the Michigan Department of Natural Resources (MDNR) to the new Michigan Department of Environmental Quality (MDEQ).

situation. It is U.S. EPA's understanding that the Airport is currently conducting groundwater investigations and that the State's Leaking Underground Storage Tank (LUST) program will review the results of this investigation and determine if a response action is required by the Airport.

Also, in 2004 MDEQ sampled off- site wells MW7, MW8 and MW9 located in the residential area along Avenue E. MDEQ found levels of Trichloroethylene (TCE) in these wells ranging from 2 to 7 part per billion (ppb). The Maximum Contaminant Level (MCL) for TCE is 5 ppb. The off-site TCE was not part of the 1987 Settlement Agreement. There are several sources in the area for the TCE including a local industry and the airport. At this time, it is unclear who is responsible for the elevated TCE. MDEQ will continue monitoring these wells until levels of TCE fall below MCLs. Data from the 2004 sampling event can be found in Attachment 6.

V. Progress Since the Last Review

This is the first Five-Year Review for the Avenue E Site.

VI. Five-Year Review Process

Administrative Components

The Avenue E Site Five-Year Review was led by Linda Martin of the U.S. EPA, Remedial Project Manager for the Site. John Vanderhoof of the MDEQ, assisted in the review as the representative for the support agency. The review, which began in December 2004, consisted of the following components:

1) Community Involvement;
2) Document Review;
3) Data Review;
4) Site Inspection; and,
5) Five-Year Review Report Development and Review.

Community Involvement

Activities to involve the community in the five-year review were initiated with communication between the RPM and the Community Involvement Coordinator (CIC) for the Site. A notice was sent to the Traverse City Record Eagle that a five-year review was being conducted. The notice was published on August 5, 2005 and invited the public to submit any comments to U.S. EPA (see Attachment 2). The results of the review and the report were made available at the U.S. EPA Region 5 Offices as well as the Michigan Department of Environmental Quality Cadillac, Michigan Office. No public comments were received during this five-year review.

Document Review

This five-year review consisted of a review of relevant documents including the nature and extent of contamination report, O&M records and monitoring data (See Attachment 3).

Data Review

Groundwater Monitoring Evaluation reports developed for the Avenue E Site by the USCG were reviewed. These reports were prepared as part of the agreement between USCG and the State of Michigan. Sometime around 2000, the State of Michigan no longer required the submittal of formal groundwater monitoring reports. A data table was submitted to the State project manager covering analytical results collected from July 2001 through October 2004 (See Attachment 4). During the site visit, the USCG indicated that two more rounds of data would be collected, August 2005 and October 2005. The sampling event conducted in October 2005 will be the last monitoring event as prescribed by the Settlement agreement.

Site Inspection

The inspection at the site was conducted on August 10, 2005. In attendance were Linda Martin from U.S. EPA; John Vanderhoof from MDEQ; Frank Blaha and Brian Edminston from USCG. The purpose of the inspection was to assess the protectiveness of the remedy and general conditions of the site.

A complete visual inspection of the remedy was conducted by the entire party. The group performed a walk around of the property. All of the equipment and buildings associated with the treatment plant have been dismantled. The monitoring wells being monitored as part of the monitoring program were in good condition.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

The review of documents, applicable or relevant and appropriate requirements (ARARs), risk assumptions, and the results of the site inspection indicates that the remedy is functioning as intended by the Settlement Agreement entered into by the USCG and the State of Michigan. The system is no longer operating and all equipment associated with the activity have been removed from the Site.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?

There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. Land use remains consistent with that at the time of the original Settlement Agreement. The standards for this site are considered protective and significant

progress has been made toward reaching the remedial action objectives for the site. The USCG will complete its final round of sampling as required by the Settlement Agreement it entered into with the State of Michigan.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

There is no other information that calls into question the protectiveness of the remedy.

Technical Assessment Summary

There have been no changes in the physical conditions of the site that would effect the protectiveness of the remedy. There have been no changes in the toxicity factors for the contaminants of concern that were used in the evaluation of Site conditions and there have been no changes to the standardized risk assessment methodology that could affect the protectiveness of the remedy.

Currently soil vapor intrusion is not considered a possible problem at this site. Down gradient monitoring wells placed along Avenue E in the residential area where the plume was traced, had no detectable levels of contaminants of concern associated with the USCG plume.

VIII. Issues

There were no issues that affect the protectiveness of the implemented remedy.

IX. Recommendations and Follow-up Actions

No recommendations or Follow-up actions are required as a result of this Review.

X. Protectiveness Statement

The remedy at the Avenue E Site is protective of human health and the environment because all groundwater contaminants have reached the clean up standards specified in the 1987 agreement between the Coast Guard and MDNR. All active remediation has been completed and monitoring will end in October 2005. The State of Michigan is addressing the concern related to benzene entering the USCG property. This concern is not related to the actions associated with the previously selected remedy at the Avenue E site. The State of Michigan will also continue monitoring 3 off-site wells for TCE. The TCE detection is also not related to the actions associated with the previously selected remedy at the Avenue E Site.

XI. Next Review

Because all remedial actions are complete and monitoring indicates that all clean up goals have

been reached in connection with the 1987 Settlement Agreement, future 5 year reviews are not required.

Attachment 1

Site Map

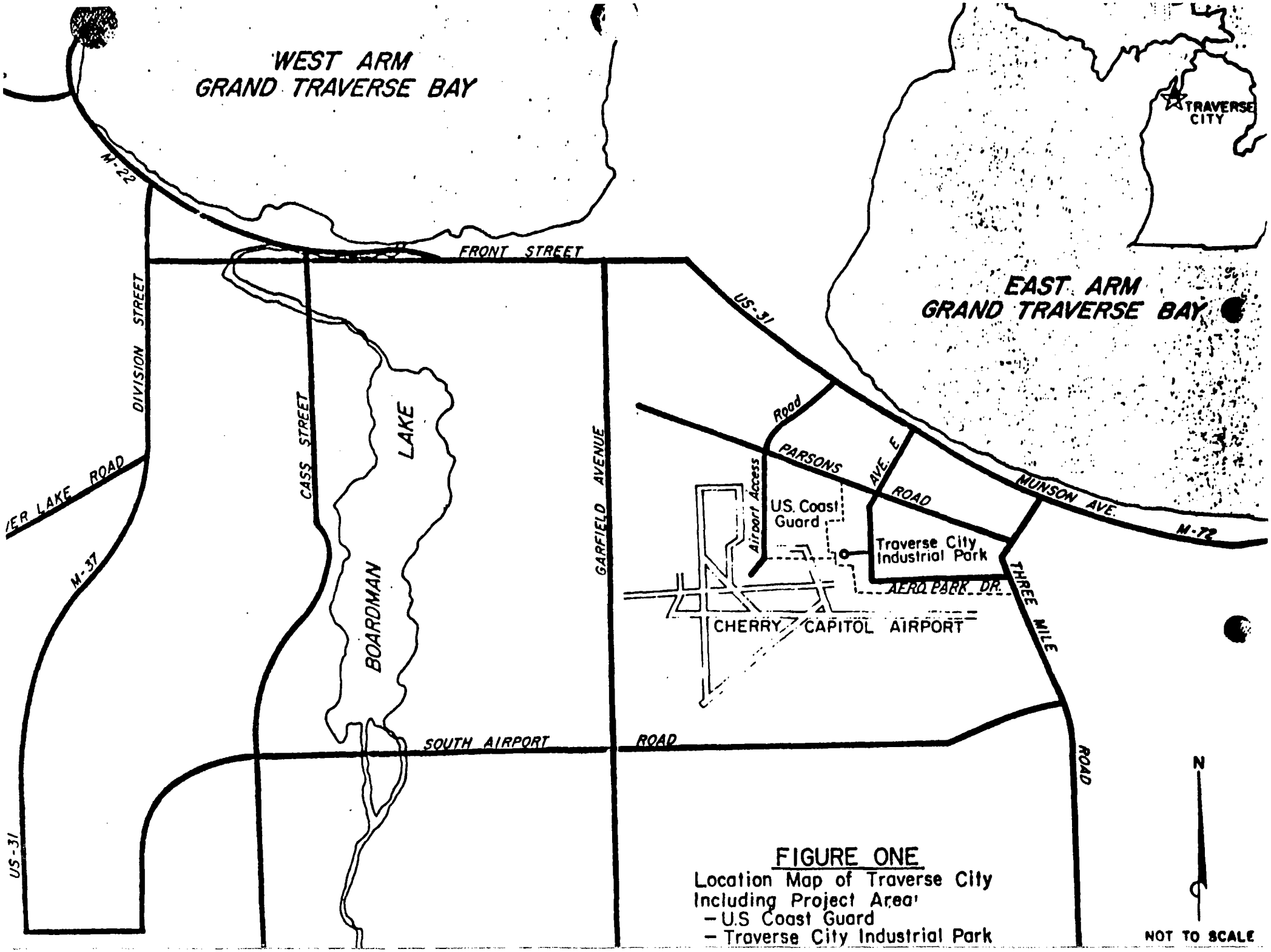

FIGURE ONE

Location Map of Traverse City
Including Project Area
- U.S Coast Guard
- Traverse City Industrial Park

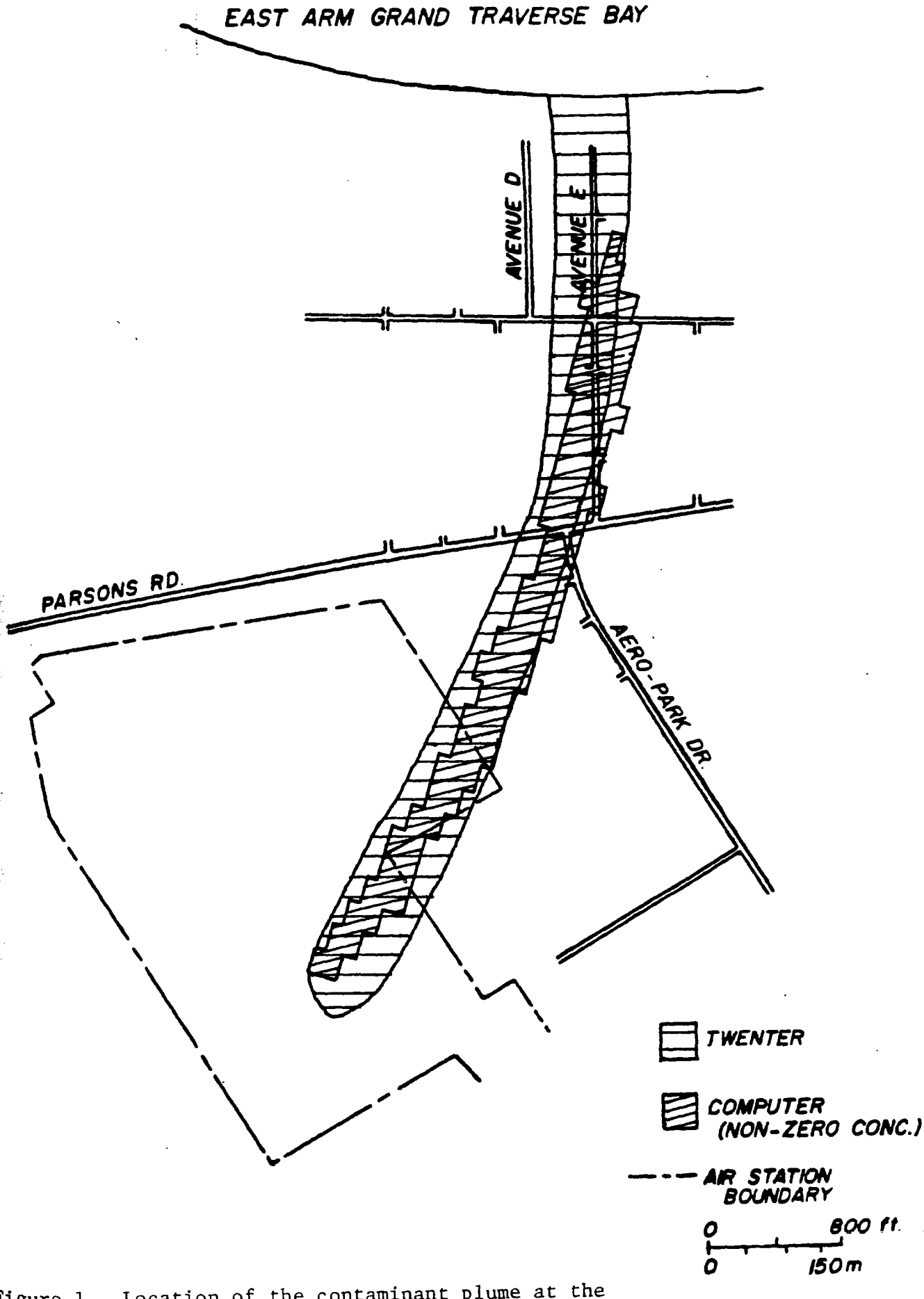

Figure 1. Location of the contaminant plume at the U. S. Coast Guard Station.

Attachment 2

suggests it might help people keep weight off in middle age.

Researchers found that overweight people in their 50s who regularly practiced yoga lost about five pounds over 10 years, while a group in the same age range gained about 13½ pounds over the same period.

Middle-aged people of normal weight generally put on pounds over 10 years, but those who did yoga gained less weight than those who didn't practice yoga.

The link between yoga and weight loss has nothing to terms of weight," said Kristal, who has practiced yoga for 10 years.

Instead, he thinks yoga helps keep people more in tune with their bodies and eating habits and aware of bad habits, such as eating because of stress, boredom or depression.

"You become very sensitive to the feeling of being stuffed," he added.

The researchers collected data from 15,500 people between the ages of 53 and 57 who were asked about exercise, weight, health and diet histories.

EPA Reviews Cleanup of Avenue E Ground Water Contamination Superfund Site Traverse City, Michigan

The Superfund law requires regular reviews (at least every five years) of sites where the cleanup is complete but hazardous waste remains managed on-site. These reviews are done to ensure that the cleanup, in this case a ground water pump and treat system and the extension of municipal water to residential areas, continues to protect human health and the environment.

Cleanup of the Avenue E site involved construction of two wells to pump out and treat contaminated ground water plumes (underground supplies of fresh water). EPA has found the process worked and reached the cleanup standards called for in an agreement between the state of Michigan and the U.S. Coast Guard. Because of this success the pumps were stopped and a preliminary close-out report was signed in 2000.

EPA began the five-year review in early March and is expected to finish it this October. As part of this process, EPA is reviewing all the available data. If you need more information about the background and history of the site contact:

John D. Vanderhoof, EQA 12
Michigan Department of Environmental Quality
Remediation and Redevelopment Division
120 W Chapin St.
Cadillac, MI 49601
(231) 775-3960, Ext. 6307; Fax: (231) 775-1511
vanderhj@michigan.gov

After it is finished, the review will be available online at:
www.epa.gov/R5Super/fiveyear/fyr_index.html

Further information on the five year review can be obtained by contacting:

Linda Martin
EPA Remedial Project Manager
77 W. Jackson Blvd. (SR-6J)
Chicago, IL 60604
(800) 621-8431 x 63854, weekdays 10 a.m. - 5:30 p.m.
martin.lindab@epa.gov

8/5-812006

NO

Attachment 3

Documents Reviewed

U.S. Coast Guard Traverse City Air Station Groundwater Remediation Project Annual Report (September 1998)

Settlement Agreement Between the USCG and the State of Michigan (June 1987)

Superfund Site Preliminary Closeout Report, EPA, September 2000

OSC Report Immediate Action, EPA, May 1982

Groundwater Investigation of East Bay Township, Traverse City, State of Michigan, March 1982

Purge Well Collection System, USCG, May 1985

Draft Report, Remedial Investigation of Groundwater contamination in East Bay Township, Michigan, USCG June1986

Discussion notes dated 9/3/86, USEPA

USCG Letter to USEPA dated July 28, 1986

Attachment 4

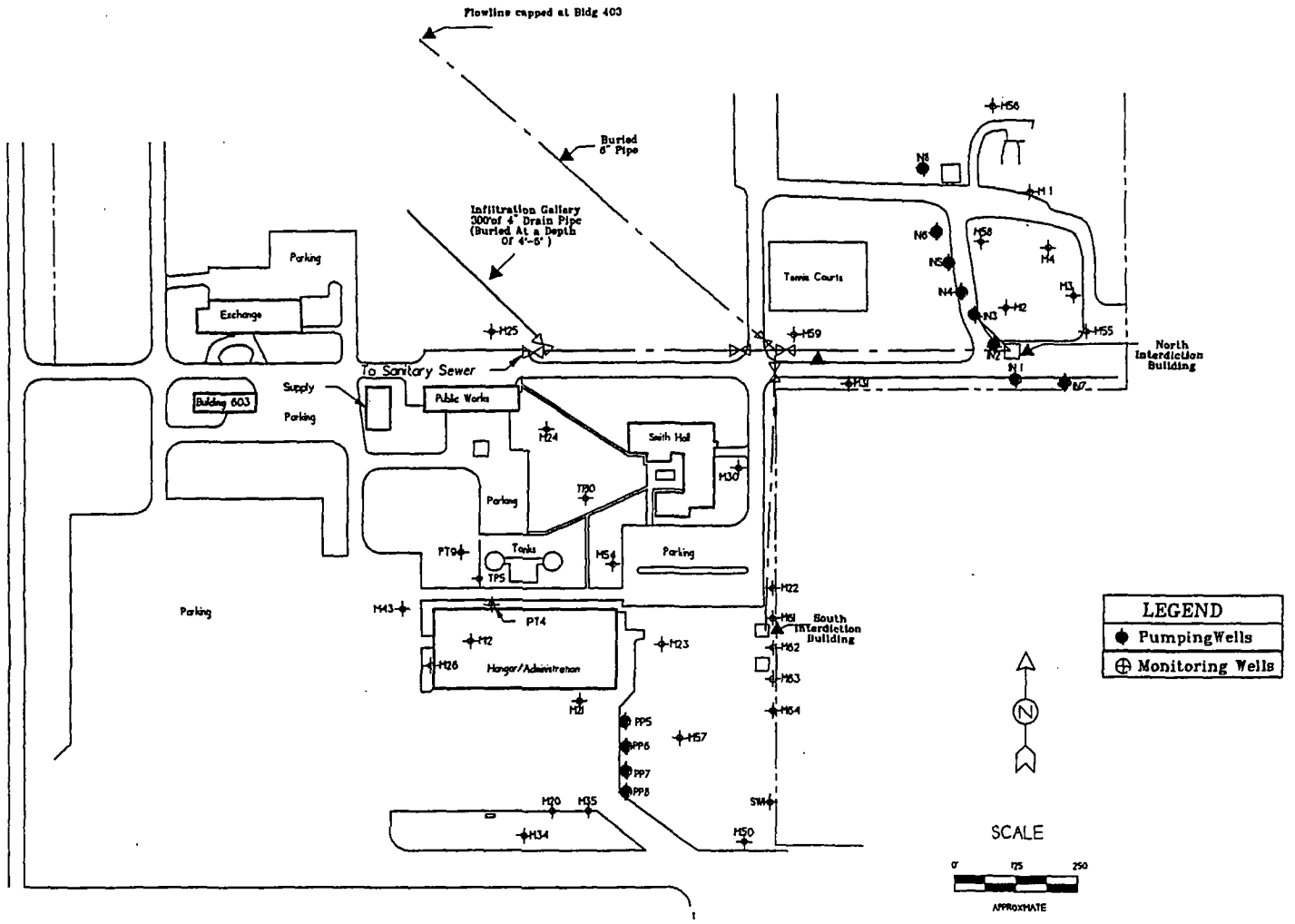

Figure 1

Site Location Plan

U. S. Coast Guard
Air Station
Traverse City, MI

Attachment 5

TABLE 2
Summary of 2001, 2002, 2003 and 2004 Groundwater Monitoring Results
USCG Traverse City Air Station
Traverse City, Michigan

Well		July 2001			October 2001			April 2002			June 2002			October 2002			May 2003			October 2003			July 2004			October 2004		
Number	Level	Benzene	TCE	PCE	Benzene	TCE	PCE	Benzene	TCE	PCE	Benzene	TCE	PCE	Benzene	TCE	PCE	Benzene	TCE	PCE	Benzene	TCE	PCE	Benzene	TCE	PCE	Benzene	TCE	PCE
M-1	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	I DUP	NA	NA	NA	NA	NA	NA	<1.0	<1.0	<1.0	NS	NS	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	II	<1.0	<1.0	2.1	<1.0	<1.0	1.4	<1.0	<1.0	1.4	NS	NS	NS	<1.0	<1.0	1.6	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	NS	NS	NS	NS	NS	NS
	II DUP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<1.0	2.4	<1.0	NS	NS	NS	NS	NS	NS
	III	<1.0	<1.0	1.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	1.4	<1.0	2.2	<1.0	<0.40	<0.15	1.8	<0.40	<0.15	1.9
	III DUP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<1.0	<1.0	1.4	NS	NS	NS	NS	NS	NS	NS	NS	NS
M-3	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	NS	NS	NS
	II	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	II DUP	NA	NA	NA	NA	NA	NA	<1.0	<1.0	<1.0	NS	NS	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	III	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
M-4	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	NS	NS	NS
	II	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	III	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	0.96	<0.40	<0.40	<0.15	<0.40
M-13	I	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	I DUP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<1.0	<1.0	<1.0	NS	NS	NS	NS	NS	NS
	II	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	III	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	III DUP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
M-22	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	II	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	III	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
M-24	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	0.69
	II	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	<0.40	<0.15	1.3	<0.40	<0.15	0.91
	II DUP	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	NS	NS	NS	NS	NS	NS
	III	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	<1.0	1	<1.0	<0.40	<0.15	0.77	<0.40	<0.15	0.4
M-26	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	II	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	*<0.40*	*<0.15*	*<0.40*	*<0.40*	*<0.15*	*<0.40*
	III	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	III DUP	NA	NA	NA	NA	NA	NA	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
M-31	I	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	II	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	II DUP	NA	NA	NA	<1.0	<1.0	<1.0	NA	NA	NA	NS	NS	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	III	1.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	III DUP	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	NS	NS	NS	NA	NA	NA	NS	NS	NS	<1.0	<1.0	<1.0	NS	NS	NS	NS	NS	NS
CRITERIA		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

NOTES:

1. All data in micrograms per liter (µg/L)
2. *Boxed data indicates an exceedance of criteria (5µg/L)*
3. TCE: trichloroethylene
4. PCE: tetrachloroethylene
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Criteria by the Michigan Department of Environmental Quality (MDEQ), as established in an agreement between the MDEQ and the U.S. Coast Guard (USCG)

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Summary of 2001, 2002, 2003 and 2004 Groundwater Monitoring Results
USCG Traverse City Air Station
Traverse City, Michigan
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Well		July 2001			October 2001			April 2002			June 2002			October 2002			May 2003			October 2003			July 2004			October 2004		
Number	*Level*	*Benzene*	*TCE*	*PCE*	*Benzene*	*TCE*	*PCE*	*Benzene*	*TCE*	*PCE*	*Benzene*	*TCE*	*PCE*	*Benzene*	*TCE*	*PCE*	*Benzene*	*TCE*	*PCE*	*Benzene*	*TCE*	*PCE*	*Benzene*	*TCE*	*PCE*	*Benzene*	*TCE*	*PCE*
M-47	I	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.40	<0.15	<0.40	NS	NS	NS
M-55	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	II	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	II DUP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<1.0	<1.0	<1.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	III	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
M-56	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	I DUP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<1.0	<1.0	<1.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	II	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	0.44	<0.40	<0.15	<0.40
	III	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	0.40	<0.40	<0.15	0.58
	III DUP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.40	<0.15	0.59
M-57	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.5	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	6.9	<1.0	<1.0	<1.0	<1.0	<1.0	33	<0.15	<0.40	0.54	<0.15	<0.40
	II	140	<1.0	<1.0	40	<1.0	<1.0	8.7	<1.0	<1.0	NS	NS	NS	2.5	<1.0	<1.0	7.8	<1.0	<1.0	11	<1.0	<1.0	180	<0.15	<0.40	96	<0.75	<2.0
	II DUP	NA	NA	NA	38	<1.0	<1.0	NA	NA	NA	NS	NS	NS	2.9	<1.0	<1.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	III	110	<1.0	<1.0	13	<1.0	<1.0	4.2	<1.0	<1.0	NS	NS	NS	2.2	<1.0	<1.0	3.3	<1.0	<1.0	6.7	<1.0	<1.0	140	<0.15	<0.40	85	<0.38	<1.0
	III DUP	110	<1.0	<1.0	NA	NA	NA	NA	NA	NA	NS	NS	NS	NA	NA	NA	NS	NS	NS	6.9	<1.0	<1.0	160	<0.15	<0.40	NS	NS	NS
M-59	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	II	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	III	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
M-60	I	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<1.0	<1.0	<1.0	85	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	93	<0.15	<0.40
	I DUP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.40	<0.15	<0.40	NS	NS	NS
	II	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	67	<1.0	<1.0	330	<1.0	<1.0	25	<1.0	<1.0	890	<0.15	<0.40	170	<1.5	<4.0
	II DUP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	300	<1.0	<1.0	NS	NS	NS	NS	NS	NS	NS	NS	NS
	III	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	70	<1.0	<1.0	240	<1.0	<1.0	48	<1.0	<1.0	600	<0.15	<0.40	130	<0.75	<2.0
CRITERIA		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

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Number	Level	Benzene	TCE	PCE	Benzene	TCE	PCE	Benzene	TCE	PCE	Benzene	TCE	PCE	Benzene	TCE	PCE	Benzene	TCE	PCE	Benzene	TCE	PCE	Benzene	TCE	PCE	Benzene	TCE	PCE
M-61	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	I DUP	NA	NA	NA	NA	NA	NA	<1.0	<1.0	<1.0	NS	NS	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	II	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	II DUP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	NS	NS	NS
	III	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.4	<1.0	<1.0	NS	NS	NS	11	<1.0	<1.0	8.2	<1.0	<1.0	<1.0	<1.0	<1.0	0.62	<0.15	<0.40	<0.40	<0.15	<0.40
	III DUP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	*<0.40*	*<0.15*	*<0.40*
M-62	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	10	<1.0	<1.0	7.8	14	<1.0	<1.0	<1.0	<1.0	4.3	<1.0	<1.0	<1.0	<1.0	<1.0	8.7	<0.15	<0.40	14	<0.15	<0.40
	II	4.9	<1.0	<1.0	4.8	<1.0	<1.0	28	<1.0	<1.0	79	3.8	<1.0	16	<1.0	<1.0	7	<1.0	<1.0	1.4	<1.0	<1.0	6.9	<0.15	<0.40	26	<0.15	<0.40
	II DUP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7.1	<1.0	<1.0	NS	NS	NS	6.5	<0.15	<0.40	NS	NS	NS
	III	3.7	<1.0	<1.0	3.4	<1.0	<1.0	15	<1.0	<1.0	40	1.9	<1.0	14	<1.0	<1.0	8.9	<1.0	<1.0	6.5	<1.0	<1.0	0.42	<0.15	<0.40	2.3	<0.15	<0.40
	III DUP	NA	NA	NA	3.4	<1.0	<1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
M-63	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	I DUP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<1.0	<1.0	<1.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	II	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	III	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	III DUP	<1.0	<1.0	<1.0	NA	NA	NA	NA	NA	NA	NS	NS	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
M-64	I	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	I DUP	*<1.0*	*<1.0*	*<1.0*	NA	NA	NA	NA	NA	NA	NS	NS	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	II	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	*<1.0*	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	III	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.40	<0.15	<0.40	<0.40	<0.15	<0.40
	III DUP	NA	NA	NA	NA	NA	NA	<1.0	<1.0	<1.0	NS	NS	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CRITERIA		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

NOTES:
1. All data in micrograms per liter (µg/L)
2. Boxed data indicates an exceedance of criteria (5 µg/L)
3. TCE: trichloroethylene
4. PCE tetrachloroethylene
5. NS no sample collected
6. <: analyte not detected above provided reporting limit
7. NA: not applicable
8. Only M-62 resampled in June 2002

Criteria by the Michigan Department of Environmental Quality (MDEQ), as established in an agreement between the MDEQ and the U.S. Coast Guard (USCG)

Attachment 6

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY
P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Division: RRD
Report to: JOHN VANDERHOOF
MDEQ-RRD-CADILLAC
CADILLAC DISTRICT OFFICE
120 W. CHAPIN STREET, CADILLAC, MI 49601

Total: $900.00

Lab Work Order # : 41000192
Work Site ID : 28000006
Site Name : AVENUE EAST GROUNDWA
Received: 10/21/2004
Reported: 11/05/2004
Collected By: JOHN V.

Samples Received :

No:	Sample ID	Sample Description	Matrix:	Collection Date
01	AA42665	M7-L1	WATER	10/20/2004
02	AA42666	M7-L2	WATER	10/20/2004
03	AA42667	M7-L3	WATER	10/20/2004
04	AA42668	M8-L1	WATER	10/20/2004
05	AA42669	M8-L2	WATER	10/20/2004
06	AA42670	M8-L3	WATER	10/20/2004
07	AA42671	M9-L1	WATER	10/20/2004
08	AA42672	M9-L2	WATER	10/20/2004
09	AA42673	M9-L3	WATER	10/20/2004

I certify that the analysis performed by the MDEQ Environmental Laboratory are accurate and that the laboratory tests were conducted by methods approved by the U.S. Environmental Protection Agency and other appropriate regulatory agencies.

Bob Avery, Laboratory Director

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TEL: (517) 335-9800
FAX: (517) 335-9600

Sample Number: AA42665 M7-L1

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/24/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
SURROGATE	#Bromofluorobenzene#	102			
SURROGATE	#Dibromofluoromethane#	98.8			
SURROGATE	#Toluene-d8#	100			
630-20-6	1,1,1,2-Tetrachloroethane	Not Detected	1.0		1.0
71-55-6	1,1,1-Trichloroethane	Not Detected	1.0		1.0
79-34-5	1,1,2,2-Tetrachloroethane	Not Detected	1.0		1.0
79-00-5	1,1,2-Trichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethylene	Not Detected	1.0		1.0
87-61-6	1,2,3-Trichlorobenzene	Not Detected	5.0		1.0
96-18-4	1,2,3-Trichloropropane	Not Detected	1.0		1.0
120-82-1	1,2,4-Trichlorobenzene	Not Detected	5.0		1.0
95-63-6	1,2,4-Trimethylbenzene	Not Detected	1.0		1.0
96-12-8	1,2-Dibromo-3-chloropropane	Not Detected	5.0		1.0
106-93-4	1,2-Dibromoethane	Not Detected	1.0		1.0
95-50-1	1,2-Dichlorobenzene	Not Detected	1.0		1.0
107-06-2	1,2-Dichloroethane	Not Detected	1.0		1.0
78-87-5	1,2-Dichloropropane	Not Detected	1.0		1.0
108-67-8	1,3,5-Trimethylbenzene	Not Detected	1.0		1.0
541-73-1	1,3-Dichlorobenzene	Not Detected	1.0		1.0
106-46-7	1,4-Dichlorobenzene	Not Detected	1.0		1.0
78-93-3	2-Butanone (MEK)	Not Detected	5.0		1.0
591-78-6	2-Hexanone	Not Detected	5.0		1.0
91-57-6	2-Methylnaphthalene	Not Detected	5.0	X	1.0
67-64-1	2-Propanone (acetone)	Not Detected	20		1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	Not Detected	5.0		1.0
107-13-1	Acrylonitrile	Not Detected	5.0		1.0
71-43-2	Benzene	Not Detected	1.0		1.0
108-86-1	Bromobenzene	Not Detected	1.0		1.0
74-97-5	Bromochloromethane	Not Detected	1.0		1.0
75-27-4	Bromodichloromethane	Not Detected	1.0		1.0
75-25-2	Bromoform	Not Detected	1.0		1.0
74-83-9	Bromomethane	Not Detected	5.0		1.0
75-15-0	Carbon disulfide	Not Detected	1.0		1.0
56-23-5	Carbon tetrachloride	Not Detected	1.0		1.0
108-90-7	Chlorobenzene	Not Detected	1.0		1.0
75-00-3	Chloroethane	Not Detected	5.0		1.0
67-66-3	Chloroform	Not Detected	1.0		1.0
74-87-3	Chloromethane	Not Detected	5.0		1.0
156-59-2	cis-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-01-5	cis-1,3-Dichloropropylene	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
RL : Reporting Limit
ND : Not Detected

ug / L : microgram / liter (ppb)
mg / L : milligram / liter (ppm)
ug / Kg : microgram / kilogram (ppb)
mg / Kg : milligram / kilogram (ppm)

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Organic Unit Mgr: Carol Smith
Systems Mgmt Unit: George Krisztian

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TEL: (517) 335-9800
FAX: (517) 335-9600

Sample Number: AA42665 M7-L1

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/24/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
124-48-1	Dibromochloromethane	Not Detected	1.0		1.0
74-95-3	Dibromomethane	Not Detected	1.0		1.0
75-71-8	Dichlorodifluoromethane	Not Detected	5.0		1.0
60-29-7	Diethyl ether	Not Detected	5.0		1.0
100-41-4	Ethylbenzene	Not Detected	1.0		1.0
67-72-1	Hexachloroethane	Not Detected	5.0		1.0
98-82-8	Isopropylbenzene	Not Detected	1.0		1.0
108383,106423	m & p - Xylene	Not Detected	2.0		1.0
74-88-4	Methyl iodide	Not Detected	1.0		1.0
75-09-2	Methylene chloride	Not Detected	5.0		1.0
1634-04-4	Methyltertiarybutylether	Not Detected	1.0		1.0
91-20-3	Naphthalene	Not Detected	5.0	X	1.0
104-51-8	n-Butylbenzene	Not Detected	1.0		1.0
103-65-1	n-Propylbenzene	Not Detected	1.0		1.0
95-47-6	o-Xylene	Not Detected	1.0		1.0
99-87-6	p-Isopropyl toluene	Not Detected	1.0		1.0
135-98-8	sec-Butylbenzene	Not Detected	1.0		1.0
100-42-5	Styrene	Not Detected	1.0		1.0
98-06-6	tert-Butylbenzene	Not Detected	1.0		1.0
127-18-4	Tetrachloroethylene	Not Detected	1.0		1.0
109-99-9	Tetrahydrofuran	Not Detected	5.0		1.0
108-88-3	Toluene	Not Detected	1.0		1.0
156-60-5	trans-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-02-6	trans-1,3-Dichloropropylene	Not Detected	1.0		1.0
110-57-6	trans-1,4-Dichloro-2-butene	Not Detected	5.0		1.0
79-01-6	Trichloroethylene	Not Detected	1.0		1.0
75-69-4	Trichlorofluoromethane	Not Detected	1.0		1.0
75-01-4	Vinyl chloride	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
RL : Reporting Limit
ND : Not Detected

ug / L : microgram / liter (ppb)
mg / L : milligram / liter (ppm)
ug / Kg : microgram / kilogram (ppb)
mg / Kg : milligram / kilogram (ppm)

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FAX: (517) 335-9600

Sample Number: AA42666 M7-L2

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/24/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
SURROGATE	#Bromofluorobenzene#	100			
SURROGATE	#Dibromofluoromethane#	98.1			
SURROGATE	#Toluene-d8#	100			
630-20-6	1,1,1,2-Tetrachloroethane	Not Detected	1.0		1.0
71-55-6	1,1,1-Trichloroethane	Not Detected	1.0		1.0
79-34-5	1,1,2,2-Tetrachloroethane	Not Detected	1.0		1.0
79-00-5	1,1,2-Trichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethylene	Not Detected	1.0		1.0
87-61-6	1,2,3-Trichlorobenzene	Not Detected	5.0		1.0
96-18-4	1,2,3-Trichloropropane	Not Detected	1.0		1.0
120-82-1	1,2,4-Trichlorobenzene	Not Detected	5.0		1.0
95-63-6	1,2,4-Trimethylbenzene	Not Detected	1.0		1.0
96-12-8	1,2-Dibromo-3-chloropropane	Not Detected	5.0		1.0
106-93-4	1,2-Dibromoethane	Not Detected	1.0		1.0
95-50-1	1,2-Dichlorobenzene	Not Detected	1.0		1.0
107-06-2	1,2-Dichloroethane	Not Detected	1.0		1.0
78-87-5	1,2-Dichloropropane	Not Detected	1.0		1.0
108-67-8	1,3,5-Trimethylbenzene	Not Detected	1.0		1.0
541-73-1	1,3-Dichlorobenzene	Not Detected	1.0		1.0
106-46-7	1,4-Dichlorobenzene	Not Detected	1.0		1.0
78-93-3	2-Butanone (MEK)	Not Detected	5.0		1.0
591-78-6	2-Hexanone	Not Detected	5.0		1.0
91-57-6	2-Methylnaphthalene	Not Detected	5.0	X	1.0
67-64-1	2-Propanone (acetone)	Not Detected	20		1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	Not Detected	5.0		1.0
107-13-1	Acrylonitrile	Not Detected	5.0		1.0
71-43-2	Benzene	Not Detected	1.0		1.0
108-86-1	Bromobenzene	Not Detected	1.0		1.0
74-97-5	Bromochloromethane	Not Detected	1.0		1.0
75-27-4	Bromodichloromethane	Not Detected	1.0		1.0
75-25-2	Bromoform	Not Detected	1.0		1.0
74-83-9	Bromomethane	Not Detected	5.0		1.0
75-15-0	Carbon disulfide	Not Detected	1.0		1.0
56-23-5	Carbon tetrachloride	Not Detected	1.0		1.0
108-90-7	Chlorobenzene	Not Detected	1.0		1.0
75-00-3	Chloroethane	Not Detected	5.0		1.0
67-66-3	Chloroform	Not Detected	1.0		1.0
74-87-3	Chloromethane	Not Detected	5.0		1.0
156-59-2	cis-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-01-5	cis-1,3-Dichloropropylene	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
RL : Reporting Limit
ND : Not Detected

ug / L : microgram / liter (ppb)
mg / L : milligram / liter (ppm)
ug / Kg : microgram / kilogram (ppb)
mg / Kg : milligram / kilogram (ppm)

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P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Sample Number: AA42666 M7-L2

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/24/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
124-48-1	Dibromochloromethane	Not Detected	1.0		1.0
74-95-3	Dibromomethane	Not Detected	1.0		1.0
75-71-8	Dichlorodifluoromethane	Not Detected	5.0		1.0
60-29-7	Diethyl ether	Not Detected	5.0		1.0
100-41-4	Ethylbenzene	Not Detected	1.0		1.0
67-72-1	Hexachloroethane	Not Detected	5.0		1.0
98-82-8	Isopropylbenzene	Not Detected	1.0		1.0
108383,106423	m & p - Xylene	Not Detected	2.0		1.0
74-88-4	Methyl iodide	Not Detected	1.0		1.0
75-09-2	Methylene chloride	Not Detected	5.0		1.0
1634-04-4	Methyltertiarybutylether	Not Detected	1.0		1.0
91-20-3	Naphthalene	Not Detected	5.0	X	1.0
104-51-8	n-Butylbenzene	Not Detected	1.0		1.0
103-65-1	n-Propylbenzene	Not Detected	1.0		1.0
95-47-6	o-Xylene	Not Detected	1.0		1.0
99-87-6	p-Isopropyl toluene	Not Detected	1.0		1.0
135-98-8	sec-Butylbenzene	Not Detected	1.0		1.0
100-42-5	Styrene	Not Detected	1.0		1.0
98-06-6	tert-Butylbenzene	Not Detected	1.0		1.0
127-18-4	Tetrachloroethylene	5.5	1.0		1.0
109-99-9	Tetrahydrofuran	Not Detected	5.0		1.0
108-88-3	Toluene	Not Detected	1.0		1.0
156-60-5	trans-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-02-6	trans-1,3-Dichloropropylene	Not Detected	1.0		1.0
110-57-6	trans-1,4-Dichloro-2-butene	Not Detected	5.0		1.0
79-01-6	Trichloroethylene	Not Detected	1.0		1.0
75-69-4	Trichlorofluoromethane	Not Detected	1.0		1.0
75-01-4	Vinyl chloride	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
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ug / L : microgram / liter (ppb)
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TEL: (517) 335-9800
FAX: (517) 335-9600

Sample Number: AA42667 M7-L3

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/24/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
SURROGATE	#Bromofluorobenzene#	101			
SURROGATE	#Dibromofluoromethane#	97.6			
SURROGATE	#Toluene-d8#	98.7			
630-20-6	1,1,1,2-Tetrachloroethane	Not Detected	1.0		1.0
71-55-6	1,1,1-Trichloroethane	Not Detected	1.0		1.0
79-34-5	1,1,2,2-Tetrachloroethane	Not Detected	1.0		1.0
79-00-5	1,1,2-Trichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethylene	Not Detected	1.0		1.0
87-61-6	1,2,3-Trichlorobenzene	Not Detected	5.0		1.0
96-18-4	1,2,3-Trichloropropane	Not Detected	1.0		1.0
120-82-1	1,2,4-Trichlorobenzene	Not Detected	5.0		1.0
95-63-6	1,2,4-Trimethylbenzene	Not Detected	1.0		1.0
96-12-8	1,2-Dibromo-3-chloropropane	Not Detected	5.0		1.0
106-93-4	1,2-Dibromoethane	Not Detected	1.0		1.0
95-50-1	1,2-Dichlorobenzene	Not Detected	1.0		1.0
107-06-2	1,2-Dichloroethane	Not Detected	1.0		1.0
78-87-5	1,2-Dichloropropane	Not Detected	1.0		1.0
108-67-8	1,3,5-Trimethylbenzene	Not Detected	1.0		1.0
541-73-1	1,3-Dichlorobenzene	Not Detected	1.0		1.0
106-46-7	1,4-Dichlorobenzene	Not Detected	1.0		1.0
78-93-3	2-Butanone (MEK)	Not Detected	5.0		1.0
591-78-6	2-Hexanone	Not Detected	5.0		1.0
91-57-6	2-Methylnaphthalene	Not Detected	5.0	X	1.0
67-64-1	2-Propanone (acetone)	Not Detected	20		1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	Not Detected	5.0		1.0
107-13-1	Acrylonitrile	Not Detected	5.0		1.0
71-43-2	Benzene	Not Detected	1.0		1.0
108-86-1	Bromobenzene	Not Detected	1.0		1.0
74-97-5	Bromochloromethane	Not Detected	1.0		1.0
75-27-4	Bromodichloromethane	Not Detected	1.0		1.0
75-25-2	Bromoform	Not Detected	1.0		1.0
74-83-9	Bromomethane	Not Detected	5.0		1.0
75-15-0	Carbon disulfide	Not Detected	1.0		1.0
56-23-5	Carbon tetrachloride	Not Detected	1.0		1.0
108-90-7	Chlorobenzene	Not Detected	1.0		1.0
75-00-3	Chloroethane	Not Detected	5.0		1.0
67-66-3	Chloroform	Not Detected	1.0		1.0
74-87-3	Chloromethane	Not Detected	5.0		1.0
156-59-2	cis-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-01-5	cis-1,3-Dichloropropylene	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
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ug / L : microgram / liter (ppb)
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Sample Number: AA42667 M7-L3

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/24/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
124-48-1	Dibromochloromethane	Not Detected	1.0		1.0
74-95-3	Dibromomethane	Not Detected	1.0		1.0
75-71-8	Dichlorodifluoromethane	Not Detected	5.0		1.0
60-29-7	Diethyl ether	Not Detected	5.0		1.0
100-41-4	Ethylbenzene	Not Detected	1.0		1.0
67-72-1	Hexachloroethane	Not Detected	5.0		1.0
98-82-8	Isopropylbenzene	Not Detected	1.0		1.0
108383,106423	m & p - Xylene	Not Detected	2.0		1.0
74-88-4	Methyl iodide	Not Detected	1.0		1.0
75-09-2	Methylene chloride	Not Detected	5.0		1.0
1634-04-4	Methyltertiarybutylether	Not Detected	1.0		1.0
91-20-3	Naphthalene	Not Detected	5.0	X	1.0
104-51-8	n-Butylbenzene	Not Detected	1.0		1.0
103-65-1	n-Propylbenzene	Not Detected	1.0		1.0
95-47-6	o-Xylene	Not Detected	1.0		1.0
99-87-6	p-Isopropyl toluene	Not Detected	1.0		1.0
135-98-8	sec-Butylbenzene	Not Detected	1.0		1.0
100-42-5	Styrene	Not Detected	1.0		1.0
98-06-6	tert-Butylbenzene	Not Detected	1.0		1.0
127-18-4	Tetrachloroethylene	6.6	1.0		1.0
109-99-9	Tetrahydrofuran	Not Detected	5.0		1.0
108-88-3	Toluene	Not Detected	1.0		1.0
156-60-5	trans-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-02-6	trans-1,3-Dichloropropylene	Not Detected	1.0		1.0
110-57-6	trans-1,4-Dichloro-2-butene	Not Detected	5.0		1.0
79-01-6	Trichloroethylene	Not Detected	1.0		1.0
75-69-4	Trichlorofluoromethane	Not Detected	1.0		1.0
75-01-4	Vinyl chloride	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
RL : Reporting Limit
ND : Not Detected

ug / L : microgram / liter (ppb)
mg / L : milligram / liter (ppm)
ug / Kg : microgram / kilogram (ppb)
mg / Kg : milligram / kilogram (ppm)

Laboratory Contacts
Inorganic Unit Mgr: Sandy Gregg
Organic Unit Mgr: Carol Smith
Systems Mgmt Unit: George Krisztian

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P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Sample Number: AA42668 M8-L1

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/24/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
SURROGATE	#Bromofluorobenzene#	102			
SURROGATE	#Dibromofluoromethane#	101			
SURROGATE	#Toluene-d8#	100			
630-20-6	1,1,1,2-Tetrachloroethane	Not Detected	1.0		1.0
71-55-6	1,1,1-Trichloroethane	Not Detected	1.0		1.0
79-34-5	1,1,2,2-Tetrachloroethane	Not Detected	1.0		1.0
79-00-5	1,1,2-Trichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethylene	Not Detected	1.0		1.0
87-61-6	1,2,3-Trichlorobenzene	Not Detected	5.0		1.0
96-18-4	1,2,3-Trichloropropane	Not Detected	1.0		1.0
120-82-1	1,2,4-Trichlorobenzene	Not Detected	5.0		1.0
95-63-6	1,2,4-Trimethylbenzene	Not Detected	1.0		1.0
96-12-8	1,2-Dibromo-3-chloropropane	Not Detected	5.0		1.0
106-93-4	1,2-Dibromoethane	Not Detected	1.0		1.0
95-50-1	1,2-Dichlorobenzene	Not Detected	1.0		1.0
107-06-2	1,2-Dichloroethane	Not Detected	1.0		1.0
78-87-5	1,2-Dichloropropane	Not Detected	1.0		1.0
108-67-8	1,3,5-Trimethylbenzene	Not Detected	1.0		1.0
541-73-1	1,3-Dichlorobenzene	Not Detected	1.0		1.0
106-46-7	1,4-Dichlorobenzene	Not Detected	1.0		1.0
78-93-3	2-Butanone (MEK)	Not Detected	5.0		1.0
591-78-6	2-Hexanone	Not Detected	5.0		1.0
91-57-6	2-Methylnaphthalene	Not Detected	5.0	X	1.0
67-64-1	2-Propanone (acetone)	Not Detected	20		1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	Not Detected	5.0		1.0
107-13-1	Acrylonitrile	Not Detected	5.0		1.0
71-43-2	Benzene	Not Detected	1.0		1.0
108-86-1	Bromobenzene	Not Detected	1.0		1.0
74-97-5	Bromochloromethane	Not Detected	1.0		1.0
75-27-4	Bromodichloromethane	Not Detected	1.0		1.0
75-25-2	Bromoform	Not Detected	1.0		1.0
74-83-9	Bromomethane	Not Detected	5.0		1.0
75-15-0	Carbon disulfide	Not Detected	1.0		1.0
56-23-5	Carbon tetrachloride	Not Detected	1.0		1.0
108-90-7	Chlorobenzene	Not Detected	1.0		1.0
75-00-3	Chloroethane	Not Detected	5.0		1.0
67-66-3	Chloroform	Not Detected	1.0		1.0
74-87-3	Chloromethane	Not Detected	5.0		1.0
156-59-2	cis-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-01-5	cis-1,3-Dichloropropylene	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
RL : Reporting Limit
ND : Not Detected

ug / L : microgram / liter (ppb)
mg / L : milligram / liter (ppm)
ug / Kg : microgram / kilogram (ppb)
mg / Kg : milligram / kilogram (ppm)

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FAX: (517) 335-9600

Sample Number: AA42668 M8-L1

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/24/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
124-48-1	Dibromochloromethane	Not Detected	1.0		1.0
74-95-3	Dibromomethane	Not Detected	1.0		1.0
75-71-8	Dichlorodifluoromethane	Not Detected	5.0		1.0
60-29-7	Diethyl ether	Not Detected	5.0		1.0
100-41-4	Ethylbenzene	Not Detected	1.0		1.0
67-72-1	Hexachloroethane	Not Detected	5.0		1.0
98-82-8	Isopropylbenzene	Not Detected	1.0		1.0
108383,106423	m & p - Xylene	Not Detected	2.0		1.0
74-88-4	Methyl iodide	Not Detected	1.0		1.0
75-09-2	Methylene chloride	Not Detected	5.0		1.0
1634-04-4	Methyltertiarybutylether	Not Detected	1.0		1.0
91-20-3	Naphthalene	Not Detected	5.0	X	1.0
104-51-8	n-Butylbenzene	Not Detected	1.0		1.0
103-65-1	n-Propylbenzene	Not Detected	1.0		1.0
95-47-6	o-Xylene	Not Detected	1.0		1.0
99-87-6	p-Isopropyl toluene	Not Detected	1.0		1.0
135-98-8	sec-Butylbenzene	Not Detected	1.0		1.0
100-42-5	Styrene	Not Detected	1.0		1.0
98-06-6	tert-Butylbenzene	Not Detected	1.0		1.0
127-18-4	Tetrachloroethylene	Not Detected	1.0		1.0
109-99-9	Tetrahydrofuran	Not Detected	5.0		1.0
108-88-3	Toluene	Not Detected	1.0		1.0
156-60-5	trans-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-02-6	trans-1,3-Dichloropropylene	Not Detected	1.0		1.0
110-57-6	trans-1,4-Dichloro-2-butene	Not Detected	5.0		1.0
79-01-6	Trichloroethylene	Not Detected	1.0		1.0
75-69-4	Trichlorofluoromethane	Not Detected	1.0		1.0
75-01-4	Vinyl chloride	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
RL : Reporting Limit
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ug / L : microgram / liter (ppb)
mg / L : milligram / liter (ppm)
ug / Kg : microgram / kilogram (ppb)
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Sample Number: AA42669 M8-L2

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/24/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
SURROGATE	#Bromofluorobenzene#	101			
SURROGATE	#Dibromofluoromethane#	99.0			
SURROGATE	#Toluene-d8#	101			
630-20-6	1,1,1,2-Tetrachloroethane	Not Detected	1.0		1.0
71-55-6	1,1,1-Trichloroethane	Not Detected	1.0		1.0
79-34-5	1,1,2,2-Tetrachloroethane	Not Detected	1.0		1.0
79-00-5	1,1,2-Trichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethylene	Not Detected	1.0		1.0
87-61-6	1,2,3-Trichlorobenzene	Not Detected	5.0		1.0
96-18-4	1,2,3-Trichloropropane	Not Detected	1.0		1.0
120-82-1	1,2,4-Trichlorobenzene	Not Detected	5.0		1.0
95-63-6	1,2,4-Trimethylbenzene	Not Detected	1.0		1.0
96-12-8	1,2-Dibromo-3-chloropropane	Not Detected	5.0		1.0
106-93-4	1,2-Dibromoethane	Not Detected	1.0		1.0
95-50-1	1,2-Dichlorobenzene	Not Detected	1.0		1.0
107-06-2	1,2-Dichloroethane	Not Detected	1.0		1.0
78-87-5	1,2-Dichloropropane	Not Detected	1.0		1.0
108-67-8	1,3,5-Trimethylbenzene	Not Detected	1.0		1.0
541-73-1	1,3-Dichlorobenzene	Not Detected	1.0		1.0
106-46-7	1,4-Dichlorobenzene	Not Detected	1.0		1.0
78-93-3	2-Butanone (MEK)	Not Detected	5.0		1.0
591-78-6	2-Hexanone	Not Detected	5.0		1.0
91-57-6	2-Methylnaphthalene	Not Detected	5.0	X	1.0
67-64-1	2-Propanone (acetone)	Not Detected	20		1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	Not Detected	5.0		1.0
107-13-1	Acrylonitrile	Not Detected	5.0		1.0
71-43-2	Benzene	Not Detected	1.0		1.0
108-86-1	Bromobenzene	Not Detected	1.0		1.0
74-97-5	Bromochloromethane	Not Detected	1.0		1.0
75-27-4	Bromodichloromethane	Not Detected	1.0		1.0
75-25-2	Bromoform	Not Detected	1.0		1.0
74-83-9	Bromomethane	Not Detected	5.0		1.0
75-15-0	Carbon disulfide	Not Detected	1.0		1.0
56-23-5	Carbon tetrachloride	Not Detected	1.0		1.0
108-90-7	Chlorobenzene	Not Detected	1.0		1.0
75-00-3	Chloroethane	Not Detected	5.0		1.0
67-66-3	Chloroform	Not Detected	1.0		1.0
74-87-3	Chloromethane	Not Detected	5.0		1.0
156-59-2	cis-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-01-5	cis-1,3-Dichloropropylene	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
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ug / L : microgram / liter (ppb)
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Sample Number: AA42669 M8-L2

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/24/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
124-48-1	Dibromochloromethane	Not Detected	1.0		1.0
74-95-3	Dibromomethane	Not Detected	1.0		1.0
75-71-8	Dichlorodifluoromethane	Not Detected	5.0		1.0
60-29-7	Diethyl ether	Not Detected	5.0		1.0
100-41-4	Ethylbenzene	Not Detected	1.0		1.0
67-72-1	Hexachloroethane	Not Detected	5.0		1.0
98-82-8	Isopropylbenzene	Not Detected	1.0		1.0
108383,106423	m & p - Xylene	Not Detected	2.0		1.0
74-88-4	Methyl iodide	Not Detected	1.0		1.0
75-09-2	Methylene chloride	Not Detected	5.0		1.0
1634-04-4	Methyltertiarybutylether	Not Detected	1.0		1.0
91-20-3	Naphthalene	Not Detected	5.0	X	1.0
104-51-8	n-Butylbenzene	Not Detected	1.0		1.0
103-65-1	n-Propylbenzene	Not Detected	1.0		1.0
95-47-6	o-Xylene	Not Detected	1.0		1.0
99-87-6	p-Isopropyl toluene	Not Detected	1.0		1.0
135-98-8	sec-Butylbenzene	Not Detected	1.0		1.0
100-42-5	Styrene	Not Detected	1.0		1.0
98-06-6	tert-Butylbenzene	Not Detected	1.0		1.0
127-18-4	Tetrachloroethylene	Not Detected	1.0		1.0
109-99-9	Tetrahydrofuran	Not Detected	5.0		1.0
108-88-3	Toluene	Not Detected	1.0		1.0
156-60-5	trans-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-02-6	trans-1,3-Dichloropropylene	Not Detected	1.0		1.0
110-57-6	trans-1,4-Dichloro-2-butene	Not Detected	5.0		1.0
79-01-6	Trichloroethylene	2.5	1.0		1.0
75-69-4	Trichlorofluoromethane	Not Detected	1.0		1.0
75-01-4	Vinyl chloride	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
RL : Reporting Limit
ND : Not Detected

ug / L : microgram / liter (ppb)
mg / L : milligram / liter (ppm)
ug / Kg : microgram / kilogram (ppb)
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FAX: (517) 335-9600

Sample Number: AA42670 M8-L3

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/24/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
SURROGATE	#Bromofluorobenzene#	100			
SURROGATE	#Dibromofluoromethane#	98.9			
SURROGATE	#Toluene-d8#	102			
630-20-6	1,1,1,2-Tetrachloroethane	Not Detected	1.0		1.0
71-55-6	1,1,1-Trichloroethane	Not Detected	1.0		1.0
79-34-5	1,1,2,2-Tetrachloroethane	Not Detected	1.0		1.0
79-00-5	1,1,2-Trichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethylene	Not Detected	1.0		1.0
87-61-6	1,2,3-Trichlorobenzene	Not Detected	5.0		1.0
96-18-4	1,2,3-Trichloropropane	Not Detected	1.0		1.0
120-82-1	1,2,4-Trichlorobenzene	Not Detected	5.0		1.0
95-63-6	1,2,4-Trimethylbenzene	Not Detected	1.0		1.0
96-12-8	1,2-Dibromo-3-chloropropane	Not Detected	5.0		1.0
106-93-4	1,2-Dibromoethane	Not Detected	1.0		1.0
95-50-1	1,2-Dichlorobenzene	Not Detected	1.0		1.0
107-06-2	1,2-Dichloroethane	Not Detected	1.0		1.0
78-87-5	1,2-Dichloropropane	Not Detected	1.0		1.0
108-67-8	1,3,5-Trimethylbenzene	Not Detected	1.0		1.0
541-73-1	1,3-Dichlorobenzene	Not Detected	1.0		1.0
106-46-7	1,4-Dichlorobenzene	Not Detected	1.0		1.0
78-93-3	2-Butanone (MEK)	Not Detected	5.0		1.0
591-78-6	2-Hexanone	Not Detected	5.0		1.0
91-57-6	2-Methylnaphthalene	Not Detected	5.0	X	1.0
67-64-1	2-Propanone (acetone)	Not Detected	20		1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	Not Detected	5.0		1.0
107-13-1	Acrylonitrile	Not Detected	5.0		1.0
71-43-2	Benzene	Not Detected	1.0		1.0
108-86-1	Bromobenzene	Not Detected	1.0		1.0
74-97-5	Bromochloromethane	Not Detected	1.0		1.0
75-27-4	Bromodichloromethane	Not Detected	1.0		1.0
75-25-2	Bromoform	Not Detected	1.0		1.0
74-83-9	Bromomethane	Not Detected	5.0		1.0
75-15-0	Carbon disulfide	Not Detected	1.0		1.0
56-23-5	Carbon tetrachloride	Not Detected	1.0		1.0
108-90-7	Chlorobenzene	Not Detected	1.0		1.0
75-00-3	Chloroethane	Not Detected	5.0		1.0
67-66-3	Chloroform	Not Detected	1.0		1.0
74-87-3	Chloromethane	Not Detected	5.0		1.0
156-59-2	cis-1,2-Dichloroethylene	1.2	1.0		1.0
10061-01-5	cis-1,3-Dichloropropylene	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
RL : Reporting Limit
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ug / L : microgram / liter (ppb)
mg / L : milligram / liter (ppm)
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Sample Number: AA42670 M8-L3

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/24/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
124-48-1	Dibromochloromethane	Not Detected	1.0		1.0
74-95-3	Dibromomethane	Not Detected	1.0		1.0
75-71-8	Dichlorodifluoromethane	Not Detected	5.0		1.0
60-29-7	Diethyl ether	Not Detected	5.0		1.0
100-41-4	Ethylbenzene	Not Detected	1.0		1.0
67-72-1	Hexachloroethane	Not Detected	5.0		1.0
98-82-8	Isopropylbenzene	Not Detected	1.0		1.0
108383,106423	m & p - Xylene	Not Detected	2.0		1.0
74-88-4	Methyl iodide	Not Detected	1.0		1.0
75-09-2	Methylene chloride	Not Detected	5.0		1.0
1634-04-4	Methyltertiarybutylether	Not Detected	1.0		1.0
91-20-3	Naphthalene	Not Detected	5.0	X	1.0
104-51-8	n-Butylbenzene	Not Detected	1.0		1.0
103-65-1	n-Propylbenzene	Not Detected	1.0		1.0
95-47-6	o-Xylene	Not Detected	1.0		1.0
99-87-6	p-Isopropyl toluene	Not Detected	1.0		1.0
135-98-8	sec-Butylbenzene	Not Detected	1.0		1.0
100-42-5	Styrene	Not Detected	1.0		1.0
98-06-6	tert-Butylbenzene	Not Detected	1.0		1.0
127-18-4	Tetrachloroethylene	Not Detected	1.0		1.0
109-99-9	Tetrahydrofuran	Not Detected	5.0		1.0
108-88-3	Toluene	Not Detected	1.0		1.0
156-60-5	trans-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-02-6	trans-1,3-Dichloropropylene	Not Detected	1.0		1.0
110-57-6	trans-1,4-Dichloro-2-butene	Not Detected	5.0		1.0
79-01-6	Trichloroethylene	6.6	1.0		1.0
75-69-4	Trichlorofluoromethane	Not Detected	1.0		1.0
75-01-4	Vinyl chloride	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
RL : Reporting Limit
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ug / L : microgram / liter (ppb)
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mg / Kg : milligram / kilogram (ppm)

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Inorganic Unit Mgr: Sandy Gregg
Organic Unit Mgr: Carol Smith
Systems Mgmt Unit: George Krisztian

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
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P.O. Box 30270
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TEL: (517) 335-9800
FAX: (517) 335-9600

Sample Number: AA42671 M9-L1

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/24/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
SURROGATE	#Bromofluorobenzene#	101			
SURROGATE	#Dibromofluoromethane#	98.6			
SURROGATE	#Toluene-d8#	100			
630-20-6	1,1,1,2-Tetrachloroethane	Not Detected	1.0		1.0
71-55-6	1,1,1-Trichloroethane	Not Detected	1.0		1.0
79-34-5	1,1,2,2-Tetrachloroethane	Not Detected	1.0		1.0
79-00-5	1,1,2-Trichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethylene	Not Detected	1.0		1.0
87-61-6	1,2,3-Trichlorobenzene	Not Detected	5.0		1.0
96-18-4	1,2,3-Trichloropropane	Not Detected	1.0		1.0
120-82-1	1,2,4-Trichlorobenzene	Not Detected	5.0		1.0
95-63-6	1,2,4-Trimethylbenzene	Not Detected	1.0		1.0
96-12-8	1,2-Dibromo-3-chloropropane	Not Detected	5.0		1.0
106-93-4	1,2-Dibromoethane	Not Detected	1.0		1.0
95-50-1	1,2-Dichlorobenzene	Not Detected	1.0		1.0
107-06-2	1,2-Dichloroethane	Not Detected	1.0		1.0
78-87-5	1,2-Dichloropropane	Not Detected	1.0		1.0
108-67-8	1,3,5-Trimethylbenzene	Not Detected	1.0		1.0
541-73-1	1,3-Dichlorobenzene	Not Detected	1.0		1.0
106-46-7	1,4-Dichlorobenzene	Not Detected	1.0		1.0
78-93-3	2-Butanone (MEK)	Not Detected	5.0		1.0
591-78-6	2-Hexanone	Not Detected	5.0		1.0
91-57-6	2-Methylnaphthalene	Not Detected	5.0	X	1.0
67-64-1	2-Propanone (acetone)	Not Detected	20		1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	Not Detected	5.0		1.0
107-13-1	Acrylonitrile	Not Detected	5.0		1.0
71-43-2	Benzene	Not Detected	1.0		1.0
108-86-1	Bromobenzene	Not Detected	1.0		1.0
74-97-5	Bromochloromethane	Not Detected	1.0		1.0
75-27-4	Bromodichloromethane	Not Detected	1.0		1.0
75-25-2	Bromoform	Not Detected	1.0		1.0
74-83-9	Bromomethane	Not Detected	5.0		1.0
75-15-0	Carbon disulfide	Not Detected	1.0		1.0
56-23-5	Carbon tetrachloride	Not Detected	1.0		1.0
108-90-7	Chlorobenzene	Not Detected	1.0		1.0
75-00-3	Chloroethane	Not Detected	5.0		1.0
67-66-3	Chloroform	Not Detected	1.0		1.0
74-87-3	Chloromethane	Not Detected	5.0		1.0
156-59-2	cis-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-01-5	cis-1,3-Dichloropropylene	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
RL : Reporting Limit
ND : Not Detected

ug / L : microgram / liter (ppb)
mg / L : milligram / liter (ppm)
ug / Kg : microgram / kilogram (ppb)
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Sample Number: AA42671 M9-L1

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/24/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
124-48-1	Dibromochloromethane	Not Detected	1.0		1.0
74-95-3	Dibromomethane	Not Detected	1.0		1.0
75-71-8	Dichlorodifluoromethane	Not Detected	5.0		1.0
60-29-7	Diethyl ether	Not Detected	5.0		1.0
100-41-4	Ethylbenzene	Not Detected	1.0		1.0
67-72-1	Hexachloroethane	Not Detected	5.0		1.0
98-82-8	Isopropylbenzene	Not Detected	1.0		1.0
108383,106423	m & p - Xylene	Not Detected	2.0		1.0
74-88-4	Methyl iodide	Not Detected	1.0		1.0
75-09-2	Methylene chloride	Not Detected	5.0		1.0
1634-04-4	Methyltertiarybutylether	Not Detected	1.0		1.0
91-20-3	Naphthalene	Not Detected	5.0	X	1.0
104-51-8	n-Butylbenzene	Not Detected	1.0		1.0
103-65-1	n-Propylbenzene	Not Detected	1.0		1.0
95-47-6	o-Xylene	Not Detected	1.0		1.0
99-87-6	p-Isopropyl toluene	Not Detected	1.0		1.0
135-98-8	sec-Butylbenzene	Not Detected	1.0		1.0
100-42-5	Styrene	Not Detected	1.0		1.0
98-06-6	tert-Butylbenzene	Not Detected	1.0		1.0
127-18-4	Tetrachloroethylene	Not Detected	1.0		1.0
109-99-9	Tetrahydrofuran	Not Detected	5.0		1.0
108-88-3	Toluene	Not Detected	1.0		1.0
156-60-5	trans-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-02-6	trans-1,3-Dichloropropylene	Not Detected	1.0		1.0
110-57-6	trans-1,4-Dichloro-2-butene	Not Detected	5.0		1.0
79-01-6	Trichloroethylene	Not Detected	1.0		1.0
75-69-4	Trichlorofluoromethane	Not Detected	1.0		1.0
75-01-4	Vinyl chloride	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
RL : Reporting Limit
ND : Not Detected

ug / L : microgram / liter (ppb)
mg / L : milligram / liter (ppm)
ug / Kg : microgram / kilogram (ppb)
mg / Kg : milligram / kilogram (ppm)

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Sample Number: AA42672 M9-L2

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/24/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
SURROGATE	#Bromofluorobenzene#	101			
SURROGATE	#Dibromofluoromethane#	99.3			
SURROGATE	#Toluene-d8#	99.7			
630-20-6	1,1,1,2-Tetrachloroethane	Not Detected	1.0		1.0
71-55-6	1,1,1-Trichloroethane	Not Detected	1.0		1.0
79-34-5	1,1,2,2-Tetrachloroethane	Not Detected	1.0		1.0
79-00-5	1,1,2-Trichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethylene	Not Detected	1.0		1.0
87-61-6	1,2,3-Trichlorobenzene	Not Detected	5.0		1.0
96-18-4	1,2,3-Trichloropropane	Not Detected	1.0		1.0
120-82-1	1,2,4-Trichlorobenzene	Not Detected	5.0		1.0
95-63-6	1,2,4-Trimethylbenzene	Not Detected	1.0		1.0
96-12-8	1,2-Dibromo-3-chloropropane	Not Detected	5.0		1.0
106-93-4	1,2-Dibromoethane	Not Detected	1.0		1.0
95-50-1	1,2-Dichlorobenzene	Not Detected	1.0		1.0
107-06-2	1,2-Dichloroethane	Not Detected	1.0		1.0
78-87-5	1,2-Dichloropropane	Not Detected	1.0		1.0
108-67-8	1,3,5-Trimethylbenzene	Not Detected	1.0		1.0
541-73-1	1,3-Dichlorobenzene	Not Detected	1.0		1.0
106-46-7	1,4-Dichlorobenzene	Not Detected	1.0		1.0
78-93-3	2-Butanone (MEK)	Not Detected	5.0		1.0
591-78-6	2-Hexanone	Not Detected	5.0		1.0
91-57-6	2-Methylnaphthalene	Not Detected	5.0	X	1.0
67-64-1	2-Propanone (acetone)	Not Detected	20		1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	Not Detected	5.0		1.0
107-13-1	Acrylonitrile	Not Detected	5.0		1.0
71-43-2	Benzene	Not Detected	1.0		1.0
108-86-1	Bromobenzene	Not Detected	1.0		1.0
74-97-5	Bromochloromethane	Not Detected	1.0		1.0
75-27-4	Bromodichloromethane	Not Detected	1.0		1.0
75-25-2	Bromoform	Not Detected	1.0		1.0
74-83-9	Bromomethane	Not Detected	5.0		1.0
75-15-0	Carbon disulfide	Not Detected	1.0		1.0
56-23-5	Carbon tetrachloride	Not Detected	1.0		1.0
108-90-7	Chlorobenzene	Not Detected	1.0		1.0
75-00-3	Chloroethane	Not Detected	5.0		1.0
67-66-3	Chloroform	Not Detected	1.0		1.0
74-87-3	Chloromethane	Not Detected	5.0		1.0
156-59-2	cis-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-01-5	cis-1,3-Dichloropropylene	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
RL : Reporting Limit
ND : Not Detected

ug / L : microgram / liter (ppb)
mg / L : milligram / liter (ppm)
ug / Kg : microgram / kilogram (ppb)
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Sample Number: AA42672 M9-L2

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/24/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
124-48-1	Dibromochloromethane	Not Detected	1.0		1.0
74-95-3	Dibromomethane	Not Detected	1.0		1.0
75-71-8	Dichlorodifluoromethane	Not Detected	5.0		1.0
60-29-7	Diethyl ether	Not Detected	5.0		1.0
100-41-4	Ethylbenzene	Not Detected	1.0		1.0
67-72-1	Hexachloroethane	Not Detected	5.0		1.0
98-82-8	Isopropylbenzene	Not Detected	1.0		1.0
108383,106423	m & p - Xylene	Not Detected	2.0		1.0
74-88-4	Methyl iodide	Not Detected	1.0		1.0
75-09-2	Methylene chloride	Not Detected	5.0		1.0
1634-04-4	Methyltertiarybutylether	Not Detected	1.0		1.0
91-20-3	Naphthalene	Not Detected	5.0	X	1.0
104-51-8	n-Butylbenzene	Not Detected	1.0		1.0
103-65-1	n-Propylbenzene	Not Detected	1.0		1.0
95-47-6	o-Xylene	Not Detected	1.0		1.0
99-87-6	p-Isopropyl toluene	Not Detected	1.0		1.0
135-98-8	sec-Butylbenzene	Not Detected	1.0		1.0
100-42-5	Styrene	Not Detected	1.0		1.0
98-06-6	tert-Butylbenzene	Not Detected	1.0		1.0
127-18-4	Tetrachloroethylene	Not Detected	1.0		1.0
109-99-9	Tetrahydrofuran	Not Detected	5.0		1.0
108-88-3	Toluene	Not Detected	1.0		1.0
156-60-5	trans-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-02-6	trans-1,3-Dichloropropylene	Not Detected	1.0		1.0
110-57-6	trans-1,4-Dichloro-2-butene	Not Detected	5.0		1.0
79-01-6	Trichloroethylene	2.2	1.0		1.0
75-69-4	Trichlorofluoromethane	Not Detected	1.0		1.0
75-01-4	Vinyl chloride	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
RL : Reporting Limit
ND : Not Detected

ug / L : microgram / liter (ppb)
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Sample Number: AA42673 M9-L3

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/26/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
SURROGATE	#Bromofluorobenzene#	98.9			
SURROGATE	#Dibromofluoromethane#	99.1			
SURROGATE	#Toluene-d8#	98.0			
630-20-6	1,1,1,2-Tetrachloroethane	Not Detected	1.0		1.0
71-55-6	1,1,1-Trichloroethane	Not Detected	1.0		1.0
79-34-5	1,1,2,2-Tetrachloroethane	Not Detected	1.0		1.0
79-00-5	1,1,2-Trichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethane	Not Detected	1.0		1.0
75-34-3	1,1-Dichloroethylene	Not Detected	1.0		1.0
87-61-6	1,2,3-Trichlorobenzene	Not Detected	5.0		1.0
96-18-4	1,2,3-Trichloropropane	Not Detected	1.0		1.0
120-82-1	1,2,4-Trichlorobenzene	Not Detected	5.0		1.0
95-63-6	1,2,4-Trimethylbenzene	Not Detected	1.0		1.0
96-12-8	1,2-Dibromo-3-chloropropane	Not Detected	5.0		1.0
106-93-4	1,2-Dibromoethane	Not Detected	1.0		1.0
95-50-1	1,2-Dichlorobenzene	Not Detected	1.0		1.0
107-06-2	1,2-Dichloroethane	Not Detected	1.0		1.0
78-87-5	1,2-Dichloropropane	Not Detected	1.0		1.0
108-67-8	1,3,5-Trimethylbenzene	Not Detected	1.0		1.0
541-73-1	1,3-Dichlorobenzene	Not Detected	1.0		1.0
106-46-7	1,4-Dichlorobenzene	Not Detected	1.0		1.0
78-93-3	2-Butanone (MEK)	Not Detected	5.0		1.0
591-78-6	2-Hexanone	Not Detected	5.0		1.0
91-57-6	2-Methylnaphthalene	Not Detected	5.0	X	1.0
67-64-1	2-Propanone (acetone)	Not Detected	20		1.0
108-10-1	4-Methyl-2-pentanone (MIBK)	Not Detected	5.0		1.0
107-13-1	Acrylonitrile	Not Detected	5.0		1.0
71-43-2	Benzene	Not Detected	1.0		1.0
108-86-1	Bromobenzene	Not Detected	1.0		1.0
74-97-5	Bromochloromethane	Not Detected	1.0		1.0
75-27-4	Bromodichloromethane	Not Detected	1.0		1.0
75-25-2	Bromoform	Not Detected	1.0		1.0
74-83-9	Bromomethane	Not Detected	5.0		1.0
75-15-0	Carbon disulfide	Not Detected	1.0		1.0
56-23-5	Carbon tetrachloride	Not Detected	1.0		1.0
108-90-7	Chlorobenzene	Not Detected	1.0		1.0
75-00-3	Chloroethane	Not Detected	5.0		1.0
67-66-3	Chloroform	Not Detected	1.0		1.0
74-87-3	Chloromethane	Not Detected	5.0		1.0
156-59-2	cis-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-01-5	cis-1,3-Dichloropropylene	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
RL : Reporting Limit
ND : Not Detected

ug / L : microgram / liter (ppb)
mg / L : milligram / liter (ppm)
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Sample Number: AA42673 M9-L3

Volatile Compounds

Analytical Method: 8260 **Date Tested:** 10/26/2004 **Analyst:** PCR

CAS #	Compound	Result ug/L	RL	Qualifier	Dilution Factor
124-48-1	Dibromochloromethane	Not Detected	1.0		1.0
74-95-3	Dibromomethane	Not Detected	1.0		1.0
75-71-8	Dichlorodifluoromethane	Not Detected	5.0		1.0
60-29-7	Diethyl ether	Not Detected	5.0		1.0
100-41-4	Ethylbenzene	Not Detected	1.0		1.0
67-72-1	Hexachloroethane	Not Detected	5.0		1.0
98-82-8	Isopropylbenzene	Not Detected	1.0		1.0
108383,106423	m & p - Xylene	Not Detected	2.0		1.0
74-88-4	Methyl iodide	Not Detected	1.0		1.0
75-09-2	Methylene chloride	Not Detected	5.0		1.0
1634-04-4	Methyltertiarybutylether	Not Detected	1.0		1.0
91-20-3	Naphthalene	Not Detected	5.0	X	1.0
104-51-8	n-Butylbenzene	Not Detected	1.0		1.0
103-65-1	n-Propylbenzene	Not Detected	1.0		1.0
95-47-6	o-Xylene	Not Detected	1.0		1.0
99-87-6	p-Isopropyl toluene	Not Detected	1.0		1.0
135-98-8	sec-Butylbenzene	Not Detected	1.0		1.0
100-42-5	Styrene	Not Detected	1.0		1.0
98-06-6	tert-Butylbenzene	Not Detected	1.0		1.0
127-18-4	Tetrachloroethylene	Not Detected	1.0		1.0
109-99-9	Tetrahydrofuran	Not Detected	5.0		1.0
108-88-3	Toluene	Not Detected	1.0		1.0
156-60-5	trans-1,2-Dichloroethylene	Not Detected	1.0		1.0
10061-02-6	trans-1,3-Dichloropropylene	Not Detected	1.0		1.0
110-57-6	trans-1,4-Dichloro-2-butene	Not Detected	5.0		1.0
79-01-6	Trichloroethylene	Not Detected	1.0		1.0
75-69-4	Trichlorofluoromethane	Not Detected	1.0		1.0
75-01-4	Vinyl chloride	Not Detected	1.0		1.0

CAS# : Chemical Abstract Service Registry Number
RL : Reporting Limit
ND : Not Detected

ug / L : microgram / liter (ppb)
mg / L : milligram / liter (ppm)
ug / Kg : microgram / kilogram (ppb)
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Qualifier Code	Qualifier Description
1	Result(s) and RL(s) are estimated due to low surrogate recovery.
2	Result is estimated due to high surrogate recovery.
3	*Result(s) and RL(s) are estimated due to low matrix spike recovery.*
4	Result is estimated due to high matrix spike recovery.
5	Result and RL are estimated due to low continuing calibration standard criteria failure.
6	Result is estimated due to high continuing calibration standard criteria failure.
7	Result(s) and RL(s) are estimated due to poor precision.
8	Result(s) and RL(s) are estimated due to low recovery of batch QC.
9	Result outside QC acceptance criteria.
A	Value reported is the mean of two or more determinations.
C	Value calculated from other independent parameters.
D	Analyte value quantified from a dilution(s); reporting limit (RL) raised.
E	Result is estimated due to high recovery of batch QC.
F	Free cyanide was not analyzed due to low level of total cyanide.
G	Result and RL are estimated due to initial calibration standard criteria failure.
H	Recommended laboratory holding time was exceeded.
I	Dilution required due to matrix interference; reporting limit (RL) raised.
J	Analyte was positively identified. Value is an estimate.
JA	Result is estimated due to multiple Aroclors present.
JC	Result is estimated since confirmation analysis did not meet acceptance criteria
JD	Due to severe degradation, specific Aroclor identification is difficult and quantitation is estimated.
K	RL(s) raised due to matrix interferences.
KR	RL(s) raised due to low sample volume submitted.
KS	RL(s) raised due to low total solids.
KW	RL(s) raised due to light sample weight.
LB	Reported library search compounds are tentative identifications with estimated concentrations.
M	*The level of the method preparation blank (MPB) is reported in the qualifier column.*
N	Non-homogeneous sample made analysis of sample questionable.
O	Result and RL estimated due to analysis from an open vial.
P	Recommended sample collection/preservation technique not used; reported result(s) is an estimate.
Q	Quantity of sample insufficient to perform analyses requested.
R	Result confirmed by re-extraction and analysis.
S	Supernatant analyzed.
T	Reported value is less than the reporting limit (RL).
V	Value not available due to dilution.
W	Reported value is less than the method detection limit (MDL).
X	Methods 8260 & 624 are used to analyze volatile organics that have boiling points below 200°C. 2-Methylnaphthalene & naphthalene have boiling points above 200°C and are better suited to analysis by methods 8270 or 625 as semivolatile organics.

CAS# : Chemical Abstract Service Registry Number
RL : Reporting Limit
ND : Not Detected

ug / L : microgram / liter (ppb)
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Inorganic Unit Mgr: Sandy Gregg
Organic Unit Mgr: Carol Smith
Systems Mgmt Unit: George Krisztian