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U.S. Army Corps of Engineers
New England District

FINAL REMEDIAL INVESTIGATION / FEASIBILITY STUDY REPORT – REVISION 1

Former Ground Air Transmitter (GAT) Facility
Glenburn, ME

FUDS Property Number D01ME0566
FUDS Project Number 01

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EXECUTIVE SUMMARY

This Remedial Investigation (RI) and Feasibility Study (FS) have been performed for the former Glenburn Ground-Air Transmitter (GAT) facility in Glenburn, Maine (FUDS Property Number D01ME0566, Project Number 01) under the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Sites (FUDS). This document has been prepared by The Johnson Company, Inc. (JCO) under contract with the U.S. Army Corps of Engineers (USACE) (Contract W912WJ-05-D-0006-007). Sections 2.0 through 4.0 constitute the RI portion of the report, and Sections 5.0 through 9.0 constitute the FS portion of the report.

The former Glenburn GAT facility was used by the United Stated Air Force (USAF) from 1958 to 1967. In 1967, the approximately 9 acre property (the Site) was transferred to the General Services Administration (GSA) for re-sale after the USAF no longer required the use of the facility. The Town of Glenburn purchased the property in 1967 and now uses the building originally built by the USAF for Town Offices and the property for a variety of municipal functions.

The primary contaminants of concern at the Site are chlorinated volatile organic compounds; specifically trichloroethene (TCE) and its degradation products cis-1, 2 dichloroethene (cis-1, 2-DCE) and vinyl chloride. TCE was reportedly used by the USAF while they occupied the Site and reviews of historical areal photographs, former GAT Facility site plans, and other documents, suggest several areas that may be potential TCE source areas; however, the exact nature and location of historical releases is still unknown. Low levels of dissolved phase TCE in groundwater (historic maximum of 60 µg/L, detected in 2005) or sorbed-phase TCE in soils (estimated maximum of 16 µg/kg) still exist at the Site, and TCE has been detected below the Maximum Contaminant Level (MCL) of 5 µg/L in several off-site drinking water wells. The on-Site public water supply well that serves the former GAT facility (now municipal offices) has never had any detections of TCE.

The Site has been the subject of many investigations over the years, beginning in 1991 and most recently in 2010 as part of the RI. The nature and extent of contamination, hydrogeologic and geologic conditions, and potential associated human health and ecological risks has been well defined by the extensive investigations completed to date, although no definitive vadose zone source areas have been identified despite the extensive testing done at the Site. The testing completed on and in the vicinity of the Site is summarized as follows:

- Sampling and analysis of 9 overburden and 6 multi-level bedrock monitoring wells and 94 private and public drinking water supply wells (many of which have been sampled multiple times);
- Sampling and analysis of 192 surface and subsurface soil samples;
- Sampling and analysis of 8 subslab soil vapor samples, and indoor air samples from the former GAT facility;

- Sampling of pore water and surface water in areas adjacent to the Site;
- Borehole geophysics in bedrock monitoring wells;
- Photogeologic fracture trace analysis;
- GIS-based historical photo analysis;
- Surface geophysics investigation; and
- Hydraulic conductivity testing

The results of these investigations provided a basis for the following conclusions from the Conceptual Site Model (CSM). It is likely that liquids containing TCE were released onto or buried in the ground more than 40 years ago on the Site, likely in the area between the former GAT facility and the current salt shed. These liquids likely migrated rapidly through the silty gravel (the shallow geologic stratum), ponded in depressions in the underlying low-permeability till surface, and slowly infiltrated through fractures and relict bedding planes in the till, and in the saprolite and bedrock that exists beneath the till. There is very little evidence (after collection and analysis of 192 soil samples from the Site) of any significant residual TCE source material in the unconsolidated deposits. However, residual TCE may still exist in the till, saprolite and/or bedrock in the form of isolated droplets or, more likely sorbed and diffused into the matrix. Low level bedrock aquifer contamination results from groundwater contact with the residual TCE. There is little reductive dechlorination due to oxidizing conditions in the groundwater. The contaminated groundwater flows preferentially along permeable bedding-related pathways towards the northeast and the southwest. Dilution of the TCE concentration to levels below MCLs occurs within a short distance (less than 1,000 feet) from the Site, due to the general high permeability of the upper bedrock unit and frequent changes in head conditions and resulting flow directions.

A human health and ecological risk assessment were completed based on the extensive data available, and current and potential future uses at the Site. The human health risk assessment concluded that there are no unacceptable risks to potential receptors given current Site uses. Several on-Site monitoring wells have TCE concentrations that exceed drinking water guidelines (MCLs), and TCE in one off-site monitoring well and one water supply well has slightly exceeded the MCL on one occasion in the past, indicating that there is the potential that the concentration in future (new) drinking water wells could pose a potential future risk. No MCLs have been exceeded in off-site water supplies since one reported instance of 5.1µg/L TCE in private water supply well GB-DW-22 in May, 2007. The human health risk assessment calculated total carcinogenic risk for a future resident using Site groundwater as a drinking water supply. The calculated risk does not exceed the US Environmental Protection Agency (USEPA) or MEDEP target cancer risk level (based on worst-case groundwater results from the on-site well). The ecological risk assessment concluded that adverse effects to ecological receptors at or near the Site are unlikely.

General response actions, remedial technologies, and process options were identified and screened based on the Preliminary Remediation Goal (PRG) of 5 µg/L TCE in groundwater (the MCL) and CERCLA criteria of effectiveness, technical implementability, and cost.

The following remedial alternatives were developed using the potentially applicable remedial technologies and process options identified for the Site, all of which were carried forward for detailed evaluation:

- Alternative 1: No action
- Alternative 2: Monitored Natural Attenuation including well-head treatment of private drinking water well, long term monitoring, and institutional controls
- Alternative 3: Same as Alternative 2 but with localized groundwater extraction, treatment and re-injection.

Alternative 1 is a no action alternative and Alternative 2 is a limited action alternative that would include well head treatment of one private drinking water supply that has had TCE detections near the MCL; long term monitoring of area drinking water and monitoring wells; and institutional controls to restrict future use of any drinking water supply well on the southern portion of the Site or within the known contaminated bedrock fracture pathway on the Town-owned property immediately east of the site. Additional institutional controls are further described in the FS section of this report. Alternative 3 includes the features of Alternative 2, but also includes long term bedrock groundwater extraction, treatment and re-injection.

The three remedial alternatives were analyzed in detail and compared using the two CERCLA threshold evaluation criteria (overall protection of human health and the environment; and compliance with ARARs), and the five CERCLA balancing criteria (long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost). A synopsis of the comparison of alternatives is summarized below.

The no action Alternative 1 provides no protection to human health associated with the possible future use of contaminated groundwater for drinking water and therefore its effectiveness and permanence is considered poor. The other alternatives include institutional controls that would control future use of both off-Site and on-Site groundwater and therefore are protective and more effective and permanent than Alternative 1. ARARs would ultimately be met with all alternatives except the No Action. The chemical-specific ARAR for TCE (MCL = 5 µg/L), a contaminant of concern in the groundwater, would be met immediately in the off-site water supply wells. However, the time-frame of achieving the MCL for TCE for all on-site groundwater may take decades. The alternatives include long-term monitoring, institutional controls and a point of use water treatment contingency to ensure the remedies remain protective of human health until the MCL for TCE is achieved for all groundwater that is currently or potentially used as a potable water source. The residual TCE that likely still exists in the till, saprolite, and/or rock fractures, with little attenuation occurring either biotically or abiotically (other than dilution), has resulted in the low level dissolved contamination still being detected in the groundwater, even after many decades since the USAF occupied the Site. Therefore, groundwater extraction may not significantly reduce the time frame needed to achieve MCLs in the groundwater as compared to a no action or limited action alternative, which is likely to take decades.

The costs for the three alternatives on a net present value basis increase with increasing complexity. The Alternative 1 (no action) has no associated monetary costs. The estimated net present value cost for Alternatives 2 and 3 are approximately $1.2 M, and $2.1M, respectively.

Other than Alternative 1, which is not protective of human health because of the lack of control over future on-Site use of contaminated groundwater, there are few substantive differences between the alternatives except for cost. Achievement of the MCL for TCE in on-Site groundwater (the selected PRG) will take decades regardless of the alternative. However, there are no current or projected future unacceptable risks associated with current uses, and no other media are being adversely impacted at concentrations that cause unacceptable risk to human health or the environment. Therefore, monitored natural attenuation and institutional controls without active remediation (i.e., Alternative 2) are recommended for risk management of waste left in place.

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LIST OF ACRONYMS

®	Registered Trademark
°C	Degrees Celsius
µg	Micrograms
1,1 DCE	1,1 dichloroethene
µg/kg	microgram per kilogram
µg/L	micro grams per liter
µg/m3	micrograms per cubic meter
µS/cm	micro Siemens per centimeter
ADR	Automated Data Review
AFCCC	Air Force Combat Climatology Center
AFCEE	Air Force Center for Environmental Excellence
AMSL	Above Mean Seal Level
ANL	Argonne National Laboratory
AOT	Advanced Oxidation Technology
ARARs	Applicable or Relevant and Appropriate Requirements
ATSDR	Agency for Toxic Substances And Disease Registry
ATV	Acoustic Televiewer
AWQC	Alternate Water Quality Criteria
BOMARC	Boeing Michigan Aeronautical Research Center
BTAG	EPA Region III Biological Technical Assistance Group
BTEX	benzene, toluene, ethylbenzene, and xylene
btoc	below top of casing
CAA	Clean Air Act
CCS	Contract Compliance Screening
CDC	Center for Disease Control
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
Cis-1,2-DCE	*Cis*-1,2 dichloroethene
CMR	Code of Maine Regulations
COPC	Chemical of Potential Concern
Cps	counts per second
CSM	Conceptual Site Model
CVOC	Chlorinated volatile organic compound
CWA	Clean Water Act
DERP	Defense Environmental Restoration Project
Dia	Diameter
DNAPL	Dense Non Aqueous Phase Liquid
DOD	Department of Defense
DQO	Data Quality Objective
DRO	Diesel Range Organics
EDD	Electronic Data Deliverable
EECA	Engineering Evaluation and Cost Analysis

EGAD	Environmental and Geographic Analysis Database
ELCR	Excess Lifetime Cancer Risk
EM	Electromagnetic
EPC	Exposure Point Concentrations
ERDAS	Earth Resource Data Analysis System
ERH	Electro-Resistive Heating
ESRI	Environmental Systems Research Institute
fbgs	Feet below ground surface
FC	Fluid Conductivity
FIR	Fluid Resistivity
FLUTe	Flexible Liner Underground Technology
FOL	Field Operations Leader
FS	Feasibility Study
Ft	Feet
fbgs	Feet below ground surface
fbtoc	Feet below top of casing
ft/mile	feet per mile
Fpd	Feet per day
ft/s	feet per second
FUDS	Formerly Used Defense Sites
GAC	Granular Activated Carbon
GAI	Geophysical Applications Incorporated
GAT	Ground to Air Transmitter
GIS	Geographic Information System
GPM	Gallons per Minute
GPR	ground penetrating radar
GRO	Gasoline Range Organics
G-SWMP	Groundwater-Surface Water Monitoring Program
HHRA	Human Health Risk Assessment
HPFM	Heat Pulse Flow Meter
HPL	Hydrophysical Logging
HI	Hazard Index
Hr	Hour
HTRW	Hazardous, Toxic, and Radioactive Waste
IAT	Indoor Air Target
IC	Institutional Control
In	Inch
in/wk	inches per week
IDW	Investigation Derived Waste
JCO	The Johnson Company
LADD	Lifetime Average Daily Dose
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
L/minute	Liters per minute

LRZ	Low Resistivity Zone
LVZ	Low Velocity Zone
M	Meters
MCLG	Maximum Contaminant Level Goal
MCLs	Maximum Contaminant Levels
ME	Maine
MEDEP	Maine Department of Environmental Protection
MEDHHS	Maine Department of Health and Human Services
MEG	Maximum Exposure Guidelines
MEGIS	Maine Geographic Information System
mg/L	milligrams per liter
Min	Minute
mL/min	milliliters/minute
MNA	Monitored Natural Attenuation
MRSA	Maine Rules, Statues, and Administration
MS	Matrix Spike
Ms	Millisecond
MSD	Matrix Spike Duplicate
mS/m	milliSiemens per meter
MTBE	methyl-tertiary-butyl-ether
mV	milliVolt
NAD83	North American Datum of 1983
NAVD88	North American Vertical Datum of 1988
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NCRs	Non-conformance Reports
NE	Northeast
NGS	Northeast Geophysical Services
NPDES	National Pollution Discharge Elimination System
NPL	National Priority List
NR	Normal Resistivity
NRCS	Natural Resource Conservation Service
NTU	Nephelometric Units
NW	Northwest
ORP	Oxidation Reduction Potential
OSHA	Occupational Safety and Health Administration
OTV	Optical Televiewer
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethene
ppbV	parts per billion by volume
Ppm	parts per million
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
PRG	Preliminary Remedial Goal

Psi	pounds per square inch
RA	Remedial Alternative
RAO	Remedial Action Objective
RAS	Radon Abatement Systems Integrated Subsurface Evaluation
RBC	Risk Based Concentrations
RHR	Right Hand Rule
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RL	Reporting Limit
RMS	Root Mean Square
RPD	Relative Percent Deviation
RSD	Risk-Specific Doses
RSL	Regional Screening Level
SAGE	semiautomatic ground environment
SAP	Sampling and Analysis Plan
SDWA	Safe Drinking Water Act
Sfpd	Square feet per day
SE	Southeast
SEDD	Staged Electronic Data Deliverables
SHE	Standard Hydrogen Electrode
SI	Scientific International
SLERA	Screening Level Ecological Risk Assessment
SOP	Standard Operating Procedure
SP	Spontaneous Potential
SPR	Single Point Resistance
SRM	Standard Reference Material
SSHP	Site Safety and Health Plan
SSL	Soil Screening Level
SSO	Site Safety Officer
SSURGO	Soil Survey Geographic
SVOC	Semi Volatile Organic Compounds
SW	Southwest
TBC	To Be Considered
TCE	Trichloroethene
TDS	Total Dissolved Solids
TEC	Topographic Engineering Center
TPH-DRO	Total Petroleum Hydrocarbons-Diesel Range Organics
TPH-GRO	Total Petroleum Hydrocarbons-Gasoline Range Organics
Trans-1,2-DCE	*Trans*-1,2 dichloroethene
TSS	Total Suspended Solids
UMO	University of Maine at Orono
USACE	United States Army Corps of Engineers
USAF	United States Air Force
US DoD	United States Department of Defense

USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
UV	Ultra Violet
VC	Vinyl Chloride
VOCs	Volatile Organic Compounds
VSP	Vertical Seismic Profiling
WMP	Work Management Plan
WSP	Wireline Straddle Packer
µS/m	microSeimens per meter
Ω-m	Ohm-meters

1.0 INTRODUCTION AND BACKGROUND

This Remedial Investigation (RI) and Feasibility Study (FS) have been performed under the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Sites (FUDS). This document has been prepared by The Johnson Company, Inc. (JCO) under contract with the U.S. Army Corps of Engineers (USACE) (Contract W912WJ-05-D-0006-007).

1.1 BACKGROUND

The Study Area has been defined as the area extending 1 mile north, south, east, and west of the FUDS property (property location shown on Figure 1.0-1). The FUDS property (FUDS Property Number D01ME0566, Project Number 01; the Site) consists of the 9.09 acres originally used by the United States Air Force (USAF) to construct and operate the Former Ground to Air Transmitter (GAT) Facility, and is now used by the Town of Glenburn for municipal services. The Town currently uses the Former GAT Facility building for offices, town meetings and private gatherings, and storage. The former GAT facility property currently contains the Glenburn Municipal Building, Public Safety Building, Salt Storage Building, a skateboard park (being renovated to basketball courts), on-site sewage disposal systems for the Municipal Building and Public Safety Building, and the Glenburn Municipal Building Well (GB-PW-01) which provides drinking water to the municipal building and public safety building.

The former Glenburn Ground-Air Transmitter facility (GAT) property was used by the USAF from 1958 to 1967. In 1967, the property was transferred to the General Services Administration (GSA) for re-sale after the USAF no longer required the use of the facility. The Town of Glenburn purchased the property in 1967 and now uses the building originally built by the USAF for Town Offices and the property for a variety of municipal functions.

The former GAT property was identified as a site eligible for the DERP in 1998 following an Inventory Project Report prepared for the USACE (USACE, 1998). A Preliminary Assessment and Site Inspection as usually performed under CERCLA were not performed for this Site; however, the investigations performed by the USACE have served the same purpose –

to determine if environmental conditions at the Site have been impacted by release(s) of hazardous substances. The DERP eligibility was based on the finding of groundwater contamination that likely resulted from USAF activities at the Site.

1.2 REGULATORY CONTEXT

The Department of Defense (DOD) has the responsibility for cleaning up former (DOD) facilities under the FUDS Program. The USACE is the lead agency responsible for the former Glenburn GAT. The ultimate goal of the New England District of the Corps of Engineers (NAE) is to close out the Site. All site investigation and remediation activities must meet federal regulations, policy and guidance.

The RI and FS are in compliance with federal laws and regulations including the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and USACE ER 200-3-1 (USACE, 2004). In addition, State of Maine Law and the Maine Department of Environmental Protection (MEDEP) regulations have been met to the extent practical.

1.3 RI/FS PROCESS AND REPORT ORGANIZATION

The RI was conducted to determine the nature and extent of contamination at the Site and the fate and transport of that contamination. A Conceptual Site Model (CSM) was used to guide the investigation and was presented in the December 2008 RI/FS Work Plan (JCO, 2008c). The CSM is an evolving model that is used to represent and communicate the current understanding of the cause and nature of the release(s), the nature and extent of the resulting contamination, contaminant fate and transport processes, and the potential exposure pathways that affect human health and the environment. The CSM has been used throughout the investigation process to assist in the identification of data gaps following the USACE's guidance for Conceptual Site Models for Ordnance and Explosives (OE) and Hazardous, Toxic and Radioactive Waste (HTRW) Projects (USACE, 2003a). Historical investigations and additional data collection necessary to complete the RI are summarized in Section 2.0. An updated version of the CSM

incorporating all data collected by The Johnson Company (JCO), the Geo-Environmental Branch of USACE (NAE), and MEDEP, is presented in Section 3.0. The results of site-specific human health and ecological risk assessments are summarized in Section 4.0. Sections 2.0 through 4.0 constitute the RI portion of the report.

The FS uses the Applicable or Relevant and Appropriate Requirements (ARARs) and other criteria to be considered, combined with the results of the RI, to establish Remedial Action Objectives (RAOs) and Preliminary Remediation Goals (PRGs) which are presented in Section 5.0 along with general response actions and quantities of contaminated media. The RAOs and PRGs form the basis for the identification and screening of remedial technologies which is presented in Section 6.0. Using the screened technologies from Sections 6.0, remedial alternatives were developed and are presented in Section 7.0 followed by detailed evaluation in Section 8.0 and a final comparative analysis of remedial alternatives in Section 9.0. Sections 5.0 through 9.0 constitute the FS portion of the report.

Figures are provided following Section 10.0 (references) and supporting data are provided in the Appendices which are briefly described as follows. Appendix 1 includes the historical photograph interpretation conducted by the US Army Engineer Research and Development Center, Topographic Engineering Center to support the CSM development. Appendix 2 is a series of drawdown graphs from pump tests and well development activities completed at the Site. Appendix 3 includes spreadsheets that present analytical data collected onsite and offsite including historical data and data collected for this RI. The Field Trip Report for an ecological risk assessment Site visit on October 15, 2008 is included as Appendix 4. The Human Health Risk Assessment Report and the Ecological Risk Assessment Report, prepared by AECOM of Westford, MA, are included in Appendix 5 and Appendix 6, respectively. Appendix 7 contains FS remedy cost estimates. Appendix 8 is a CD containing analytical data and other supporting information, including RI data in the state of Maine Environmental and Geographic Analysis Database (EGAD) format. In addition to these supporting documents, this RI/FS relies on data provided in the Trip Report for Overburden Investigation (JCO, 2008b) and the RI/FS

Trip Report (JCO, 2009) which contain detailed hydrogeologic observations and testing data of the bedrock, unconsolidated deposits and groundwater investigations conducted in autumn, 2008. Also evaluated were water quality data provided by USACE for four additional monitoring events; in May and December of 2009, and in June and November of 2010 (USACE, 2009 and USACE, 2010).

During their review of the draft version of this document, MEDEP requested additional soil investigations be performed in order to confirm the lack of a TCE vadose zone source area remaining in the on-site soils. These were conducted in 2010, and the results are provided in Appendix 9: Trip Report for Salt Shed Boring Investigation (JCO, 2010). MEDEP also requested an evaluation of the potential feasibility of implementing enhanced cometabolic biodegradation as a remedial solution. This evaluation is provided as Appendix 10.

2.0 SITE INVESTIGATIONS

Various investigations of the Site have been conducted, primarily by the state of Maine, USACE, and contractors to USACE. The data from these investigations are summarized in this section and have been incorporated into the CSM presented in Section 3.0. A short summary of the various investigations is provided below. Please refer to Figures 2.2-1, 2.2-1A and 2.2-2 for locations of wells and other features referenced below.

2.1 PREVIOUS INVESTIGATIONS

Previous environmental investigations at the Site are described along with the associated references in Table 2.1-1. Historical data from these investigations are provided in Appendix 3, including monitoring results from public and private drinking water wells (PW and DW sample designations, respectively).

Table 2.1-1
Previous Investigations

Date (s)	Investigation Description	Reference(s)
Mid 1980s	Prior to construction of the Town's covered salt storage shed in 1986, MEDEP investigated dissolved road salt contamination of well water likely originating from the uncontained salt piles kept near the Former GAT facility by the Town of Glenburn.	USACE, 2003b; MEDEP, 1996.
1987 & 1989	The Town, under the direction of the Maine Department of Environmental Protection (MEDEP), removed the USAF-installed 1,000-gallon gasoline underground storage tank (UST) in 1987, and a 10,000-gallon Number 2 diesel fuel oil UST in 1989. MEDEP reported that both tanks showed no evidence of leaking.	MEDEP, 1996
1991	In 1991, the University of Maine at Orono (UMO) had two bedrock wells installed adjacent to the sand/salt shed to monitor salt contamination in the groundwater. Samples collected from these wells: GB-MW-01 (formerly UMO-1), and GB-MW-02 (formerly UMO-2), contained high salt levels. Trichloroethene (TCE) was also reported present in both wells at levels above federal maximum contaminant levels (MCLs).	MEDEP, 1996
1994	In September 1994, the Maine Department of Health and Human Services (MEDHHS) reported TCE detections (below MCLs) in the two Homestead Estates Mobile Home Park public water supply wells located adjacent to and west of the Property (GB-PW-02 and GB-PW-03).	MEDEP, 1996
1995	In response to the TCE detections in the Homestead Estates public water supply wells, several nearby residential wells were sampled by MEDEP beginning in 1995.	N/A

Table 2.1-1 Previous Investigations		
Date (s)	**Investigation Description**	**Reference(s)**
1995	As part of MEDEP's investigation of potential sources of TCE detected in individual residential and Homestead Estates public supply wells, MEDEP investigated the GAT Facility cesspool area in 1995.	MEDEP, 1996
2000	The residential well testing program was expanded in 2000 to include domestic wells along Midway Lane, Sunset Avenue, Lakeview Avenue, and the Pine Grove/Beach Grove areas.	N/A
2000	MEDEP performed limited borehole geophysics in 2000 on four bedrock wells. Packer samples were collected based on the results of caliper and single point resistance logs (NGS, 2001) and analyzed for volatile organic compounds (VOCs).	N/A
2002	Twenty-eight residential wells were sampled by USACE in cooperation with the Town between February and March of 2002 and analyzed for volatile organic compounds (VOC) by USEPA method 524.2.	MEDEP, 2006
2002-2012	Residential wells continued to be sampled at various times from 2002-2006. One residential well was equipped with a granulated activated carbon point-of-use treatment system. A sampling plan for residential wells was developed by the USACE for residential well sampling in the spring and fall of each year, which was initiated in 2007. The most recent monitoring round was completed in 2012.	N/A
2002-2012	The Homestead Estates wells (GB-PW-02 and GB-PW-03) were first sampled by the USACE in August of 2002. USACE sampled the Homestead wells at least once per year since 2002.	N/A
2003, 2004, 2007	USACE and the Town conducted a well location survey in 2003 and 2004 for properties within 1,000 feet of the former GAT Facility to determine location of active and inactive wells, well drilling and construction details, and water use. Similar information was requested from the Maine Geological Survey (MGS), the agency responsible for incorporating data filed by Maine drilling companies. The data were augmented in 2007 for new wells completed on southern Midway Lane and the Pine Hill area.	N/A
2003	USACE ERDC Topographic Engineering Center prepared a photogeologic fracture trace analysis in August 2003.	USACE TEC, 2003
2004	US Army Engineer Research and Development Center in conjunction with the Topographic Engineering Center conducted a GIS-based analysis of historical photos of the Site in March 2004.	USACE TEC, 2004
2003-2012	USACE began manual monitoring water levels in accessible wells in July 2003 and continued monitoring through 2012 with additional automated pressure transducers.	N/A
2003	USACE conducted a passive soil gas screening survey around the exterior of the former GAT Facility in the summer of 2003 to identify potential source areas.	USACE, 2004b

Table 2.1-1 Previous Investigations		
Date (s)	**Investigation Description**	**Reference(s)**
2005-2006	Geophysical Applications Incorporated (GAI) conducted fluid (standard and water quality), electric (normal resistivity and induction), caliper, image (acoustic and optical televiewers), vertical heat pulse flow meter, natural gamma, and vertical seismic profiling (VSP) logging. This effort was followed up by RAS, which conducted hydrophysical logging and wireline straddle packer sampling.	GAI, 2005; RAS, 2006
2003-2005	USACE conducted an extensive FUDS property surface geophysics investigation from 2003 to 2005, which was carried out by ANL (ANL, 2006). Goals included determination of the location and extent of potential waste burial sites that may contribute to documented groundwater contamination. Tools used included an EM-31 terrain conductivity meter and an EM-61 Mark 2 as well as a follow up Ground Penetrating Radar investigation. The East Anomaly was detected by the EM-61 instrument adjacent to a former underground fuel storage tank location near the southeast corner of the Former GAT Facility. USACE excavated this geophysical anomaly in June 2006 using intersecting test trenches. The East Anomaly's source was a floor safe and metal debris. Sandy silt and sandy gravel were present to 10 fbgs, but no bedrock was encountered. TCE was not detected in any soil samples. ANL also conducted two-dimensional electrical resistivity and seismic refraction tomography data collection on 10 geophysical profiles within and bounding the FUDS property. The directions were chosen to be perpendicular to the observed northeast-southwest pattern of historic TCE detections.	ANL, 2006
2004	Eight soil gas samples and eight soil samples were collected on March 7, 8, and 9, 2004 through holes cored in the Former GAT Facility floor by USACE and the United States Army Center for Health Promotion and Preventive Medicine.	USACE, 2008b
2006	USACE conducted an indoor air sampling event in the former GAT facility building during 2006.	USACE, 2008b
2006	MEDEP oversaw the June 2006 removal of two municipally owned septic tanks located southwest of the Salt Storage Building, and reported non-detect for soil samples submitted for VOC analyses.	MEDEP, 2006
2006	USACE excavated two geophysical anomalies in 2006 using intersecting test trenches, and excavated a test pit down slope of the former GAT Facility's cesspool.	USACE, 2007
2010	USACE contracted the collection of additional sub-slab soil vapor and indoor air samples from the former GAT facility in November, 2010.	Woods Hole Group, 2011

2.2 RI INVESTIGATIONS

An on-site soils and overburden groundwater investigation was conducted by The Johnson Company for USACE in April, 2008. The goals of the work included identification of contaminant source areas and delineation of contamination in the overburden (JCO, 2008a).

Two additional on-site investigations were conducted by The Johnson Company for USACE in autumn 2008 and in August 2010. The goals of the work included: identification of an on-site source of TCE, if any; evaluation of bedrock hydraulic gradients and hydrogeologic properties; assessment of the on-site and off-site nature and extent of CVOC contamination in groundwater and soil; and evaluation of potential risks to on-site workers and visitors, nearby residents, construction and utility workers, and ecological receptors. Bedrock monitoring wells were installed at four locations, borehole geophysical and hydrogeological testing of the bedrock was conducted, overburden and bedrock ground water quality samples were collected and analyzed, and risk evaluations were prepared. The results from these investigations are summarized in the following sections.

2.2.1 Field Investigations

2.2.1.1 Soils and Overburden Groundwater Investigation (April 2008)

The soils and overburden groundwater investigation included installation of two angled boreholes beneath the building and 18 vertical boreholes on the former GAT property. This work included continuous soil sampling from the ground surface to refusal at each of the locations. Additionally, ten overburden monitoring wells were installed, and eight groundwater samples were collected and analyzed. Laboratory analysis for a short list of CVOCs and toluene, ethylbenzene and xylenes (TEX), and via gas chromatograph/mass spectrometer SW846 Method 8260B modified with SPME was performed on 140 soil samples by a subcontracted on-site laboratory. The results were presented in a trip report (JCO, 2008b).

2.2.1.2 Bedrock Investigation (Autumn 2008)

Borehole Installation

Air rotary drilling of bedrock wells was completed at four locations: GB-MW-03 through GB-MW-06. Prior to drilling, soil cores were collected in order to determine the appropriate depth for installation of the 6-inch steel casing. Soil cores were also collected at an additional location east of the Salt Shed to evaluate potential shallow groundwater contamination.

Boreholes at GB-MW-03, 04, and 05 were advanced to a total depth of approximately 150 feet below ground surface (fbgs), and GB-MW-06 was advanced to 125 fbgs. Descriptions of the rock cuttings and the exact depth at each location are shown on the well logs included in the RI/FS Trip Report (JCO, 2009).

Geophysical Investigation

Geophysical investigations of the four newly installed bedrock boreholes were performed by Hager-Richter Geoscience, Inc. of Salem, NH. The geophysical logging methods, rationale and associated data quality objectives are provided in Table 2.2-1. The results are included as an appendix to the RI/FS Trip Report (JCO, 2009). The objectives of the borehole geophysical logging program in open bedrock were to:

1) Determine the depth and orientation of transmissive bedrock features intersected by the boreholes;
2) Determine the flow conditions in the boreholes under ambient and stressed conditions which will yield data that can be used to calculate bulk hydraulic conductivity;
3) Determine the depths of changes in lithology; and
4) Determine the appropriate depths for interval/packer sampling and installation of the completed well intervals.

Table 2.2-1 Borehole Geophysics Probes and Data Quality Objectives	
Probe Name	**Measured Property and Data Quality Objectives**
Natural Gamma	Measures the formation's clay content and helps interpret electric logs. Also provides quality control on normal resistivity logs.
Caliper	Measures variations in borehole diameter, locating fracture zones, and the base of casing.
Fluid Log Ambient Temperature/Fluid Conductivity (FC), Fluid Resistivity (FlR)	Measures the thermal and electrical properties of the water column. Useful in identifying the salt water-fresh water interface and potential producing zones.
Normal Resistivity (NR) (8-in, 16-in, 32-in)	Measures formation and fluid electrical properties to assess formation type and locate large producing zones. Provides quality control for natural gamma logs.
Spontaneous Potential (SP)/ Single Point Resistance (SPR) /Normal Resistivity	Measures formation, fluid, and degree of electrical connection with surface electrodes. Useful in identifying potential producing zones and small scale lithologic changes.
Acoustic Televiewer (ATV)	Measures fracture and geologic unit contact orientation and vertical extent in turbid borehole fluids. Provides borehole inclination and deviation which will be submitted with the processed logs.
Optical Televiewer (OTV)	Measures fracture and geologic unit contact orientation and vertical extent.
Heat Pulse Flow Meter (HPFM)	Measures ambient and induced head vertical flow capacity in gallons per minute. Readings taken below and above suspected producing zones under ambient and injection conditions. The HPFM test was designed to also provide hydraulic conductivity data (hydraulic head and flow) as a short term pumping or injection test.

Bedrock Borehole Packer Sampling

Following completion of the geophysics, each of the three deep bedrock boreholes (GB-MW-03, 04, and 05) was sampled at multiple intervals using an inflatable packer supplied by MEDEP on August 28 and 29, 2008. Each packer interval was selected based on the borehole geophysical data in an effort to isolate and sample different water bearing units. The interval selections were reviewed and approved by MEDEP and USACE prior to installation (JCO, 2009). The sampled intervals are shown in Table 2.2-2 below.

Table 2.2-2 Bedrock Borehole Packer Sampling Depths		
Borehole ID	**Packer Top/Bottom Depth (Feet btoc)**	**Packer Screen Center (Feet btoc)**
GB-MW-03	27.5/49.5[1]	49[1]
GB-MW-03	51/66	58.5
GB-MW-03	84/99	91.5
GB-MW-03	134.3/149.3	141.8
GB-MW-04	33.8/46.5[1]	46[1]
GB-MW-04	48/63	55.5
GB-MW-04	62/77	69.5
GB-MW-04	86/101	93.5
GB-MW-04	101/116	108.5
GB-MW-05	39.8/54.8	47.3
GB-MW-05	104/119	111.5
GB-MW-05	133.2/148.2	140.7

[1]Due to a lack of water above the packer for these sample depths, and the 1.75-inch diameter packer screen, the sampling pump could not be used inside the packer. The sample was collected from the borehole annulus above the top of the packer.
btoc = below top of casing

FLUTE™ Liner Installation

Existing on-site monitoring wells GB-MW-01 and GB-MW-02 were re-developed on September 18, 2008 utilizing the same air rotary drill rig used to install the bedrock boreholes at MW-03, 04, 05 and 06. Injection of compressed air combined with movement of the air hammer was used to purge the well of stagnant water and remove residual fines. A total of 550 gallons were purged from GB-MW-01 and 1,500 gallons were purged from GB-MW-02. Following re-development, each of these two boreholes was equipped with a Flute™ liner on October 21-22, 2008 (JCO, 2009). The Flute™ liner is an impermeable, tubular and flexible nylon liner that is installed from the top to the bottom of a well borehole. Ports are attached to the liner at specific depths to allow for depth-discreet multi-level groundwater sampling. The liners were deployed with pre-determined sampling ports and pressure transducer data loggers to allow monitoring of water levels and water quality from different water-bearing zones. GB-MW-01 was equipped with three ports and GB-MW-02 with four ports (JCO, 2009). Sampling port depths along with the rationale for their placement for each well are shown in Table 2.2-3 below.

Table 2.2-3 Flute™ Liner Sample Port Depth Intervals			
Well Name	**Sample Port Number**	**Sample Port Depth (feet btoc)**	**Rationale**
GB-MW-01	1	42 – 52	Evaluate weathered rock, upward flow at 50.5' while pumping, oxygen and redox shifts at 49', fractures/bedding on ATV at 42-44' and 51-53', TCE = 30 µg/L (RAS, 2006)
	2	62 – 72	Evaluate seismic unit A, only ambient flow in well is at 70-72', upward flow during pumping at 75' (NGS, 2001), oxygen and redox shifts at 68', spontaneous potential and conductivity shifts at 62', TCE = 60 µg/L (RAS, 2006).
	3	115 – 125	Evaluate seismic unit B, oxygen, pH, and fluid conductivity shifts at 120', fractures/bedding on ATV at 117' and 121', TCE = 19 µg/L (RAS, 2006).
GB-MW-02	1	45 – 55	Evaluate weathered rock, flow at 48' while pumping, oxygen shift at 50' and fluid conductivity shift at 55', fracture/bedding on ATV at 52', TCE = 9 µg/L from packer test 40-65.5' (RAS, 2006).
	2	88 – 98	Evaluate seismic unit A, peak flow while pumping, upward flow while pumping at 86', oxygen shift and fluid conductivity shift at 90', fracture/bedding on ATV at 90-92', TCE = 21 µg/L from packer test 88-98' (RAS, 2006).
	3	127.75 – 132.75	Evaluate seismic unit B, oxygen and fluid conductivity shift at 130', fracture/bedding on ATV at 128-129', TCE = 14 µg/L from packer test 128-138' (RAS, 2006).
	4	194 – 202	Evaluate seismic unit B, OTV/ATV "open" features at 195.6' and 198.8' (GAI, 2005), upward flow during HPFM testing at 194', enlarged caliper 199-200', TCE = 8.7 µg/L from packer test below 194' (RAS, 2006).
btoc = below top of casing (also signified by 'symbol)			

Prior to Flute™ liner installation, the existing pressure transducers/data loggers were removed from each well. New pressure transducers/data loggers were installed into each Flute™ liner to allow water level monitoring at each of the sample ports. Liner installations were performed with the assistance of Flute™ personnel.

Monitoring Well Installations

The primary goals of the monitoring well installations are listed as follows:

1. Confirm the nature and extent of contamination on-site, and confirm contaminant transport pathways for offsite subsurface migration of CVOCs.

2. Better define the piezometric head distribution in the subsurface and transmissive zone connectivity in the saprolite and bedrock (see Section 2.2.2 for descriptions of geology).

Data from the geophysical investigation and interval/packer testing were used to select the depths for bedrock monitoring well completions, which were reviewed and approved by MEDEP and USACE.

Three deep bedrock monitoring wells (GB-MW-03, 04, and 05) were drilled to approximately 150 fbgs to ensure at least one water bearing feature in the relatively unweathered rock zone (Unit B – see Section 2.2.2.1). The A/B unit interface was documented by borehole geophysics to occur between 100 and 115 fbgs in these three rock wells.

The deep (150-ft) wells were completed with two zones, with depths determined based upon the borehole geophysics results (well and geophysical logs are included in the RI/FS Trip Report (JCO, 2009). The upper zone at each well extends from the bottom of the 6-inch steel casing to the top of a sand pack and bentonite seal. This seal which is an open-hole completion which isolates shallow (A Unit) water bearing permeable features from those lower in the aquifer (B Unit). The lower zones were completed using 2-inch ID Schedule 40 PVC screen and casing inserted into the borehole to the desired depth. The shallow zone wells were denoted with an "S" suffix following the well name (e.g., GB-MW-03S), and the deep wells were denoted with a "D" suffix (e.g., GB-MW-03D). Bentonite chips were used to seal the bottom of the open hole to a depth of at least one foot below the bottom-of-screen. Silica sand was added for a filter pack around the screen interval to a depth of at least two feet over the top-of-screen. Bentonite chips were then placed from the top of the filter pack to a depth at least two feet below the bottom of the upper zone. A layer of #4 silica sand, at least a foot thick, was placed over the bentonite chips to isolate them from the upper zone.

An additional shallower monitoring well (GB-MW-06) was drilled adjacent to GB-MW-05 to 125 fbgs and completed with a 2-inch PVC well intersecting the base of the "A" zone. The

purpose of this well was to allow for sample collection from two separate transmissive features (identified in GB-MW-05 by borehole geophysics). GB-MW-06 was located so it is on strike with the orientation of the water bearing features identified in GB-MW-05. GB-MW-06 was completed using 2-inch PVC with the screened interval across the zone of water bearing features in the same manner as described above, but the annulus from the top of the sand pack into the steel casing was sealed with bentonite chips.

One additional overburden/saprolite monitoring well (OB21) was proposed in the sampling and analysis plan (SAP) as shown on Figure 2.2-2. This location was chosen because it is apparently down-gradient of potential chlorinated volatile organic compounds (CVOC) source locations, including the Facility building, the East Anomaly reported from a surface geophysics investigation (ANL, 2006) and historically disturbed soil in the vicinity of OB4 (see Appendix 1). Despite coring more than 10 feet below the top of saprolite layer in OB-21, no groundwater was encountered at the refusal depth of 32 feet bgs (JCO, 2009). Therefore, no well was installed at this location.

All of the newly installed wells were developed by pumping and mechanical surging, without the use of acids, dispersing agents or explosives. All purge water generated during development was pumped through activated carbon and then discharged onto the ground surface for infiltration as specified in the SAP.

Hydraulic Conductivity Test

Hydraulic conductivity testing was performed during the RI, including preliminary pump tests during bedrock well development, testing conducted during the borehole geophysics heat pulse flow meter measurements, and step testing in two on-site wells (GB-MW-06 and GB-MW-04D).

2.2.1.3 Water Quality Sampling (Autumn 2008)

Aqueous samples collected and analyzed during this field program included water from drinking water supply and monitoring wells, injection water, and liquid investigation derived waste (IDW). All new and existing on-site monitoring wells containing water were sampled for VOCs and chloride using low stress sampling techniques. The hydraulic head was measured in each sampled well with an electronic water marker immediately prior to purging and sampling.

Interval/packer sampling of the new deep bedrock wells was conducted on August 28 and 29, 2008. All existing onsite monitoring wells were sampled on November 18-20, 2008 including overburden/saprolite wells with sufficient water (OB-5A, OB-8, OB-11, OB-17, OB-19 and OB-20), GB-MW-01 and GB-MW-02 Flute™ ports, and all new bedrock wells (GB-MW-03S/D, GB-MW-04S/D, GB-MW-05S/D and GB-MW-06).

Each sample was assigned a unique sample identifier that was included on each sample chain of custody (COC) and container labels:

> The first set of characters is the alphanumeric location identification (ID) which identifies the sample location. Each location is then assigned an individual consecutive number preceded by the letters "OB" for overburden investigation, or "GB-MW" for bedrock monitoring wells.
>
> The location ID code is followed by a dash (e.g., "OB21-"). The next characters identify the depth interval from which the sample was collected. The actual depth was rounded to the nearest foot. The depth interval is the depth of the sample in feet below ground surface (fbgs), or in feet below top-of-casing (fbtoc) for wells. If the sample interval sequence was not valid or unknown, an "X" was used. The interval code is followed by a dash.
>
> The last character(s) is a letter(s) identifying the type of sample:
>
> | | |
> |---|---|
> | GW | Groundwater sample |
> | S | Soil sample |
> | D | Field duplicate |
> | EB | Equipment blank |
> | TB | Trip Blank |
> | MS | Matrix spike sample |

MSD Matrix spike duplicate sample
IDW Investigation Derived Waste sample
IW Injection Water sample

Examples of sample IDs are as follows:

- Sample OB1-5-S is a soil sample from the overburden well location OB1. The soil was collected from a depth of 5 fbgs.
- Sample OB1-X-IW is a sample from the water injected during drilling of OB1. The depth interval is not applicable and therefore is not used for this sample.

Equipment and Trip Blanks were identified in relation to the sample location tested immediately prior to their collection/submittal to the laboratory. For instance, OB1-X-EB is an equipment blank collected after the testing of location OB1.

2.2.1.4 Salt Shed Soil Boring Investigation (August 2010)

Additional investigatory data was requested by MEDEP to more accurately document potential sources of chlorinated solvent contamination in the overburden on the former GAT facility property. The field program was designed to determine the maximum concentration of chlorinated VOC contamination at potential vadose zone source areas near the salt storage shed.

The salt shed overburden soil investigation included installing twenty vertical boreholes inside and immediately adjacent to the salt shed via direct push technology. Continuous sampling was achieved with three foot cores from the ground surface to the gravel/top-of-till interface at each of the boring locations. Laboratory analytical samples were collected from each of the soil borings at the top-of-till interface based on the rationale that TCE would have permeated through the coarse grained fill material and residual contamination would therefore most likely reside near the top of the native fine grained dense silty till unit. Soil samples were shipped to ESS Laboratory in Cranston, Rhode Island under chain-of-custody and analyzed for low-level VOCs via SW-846 Method 5035/8260B. The results of this investigation were summarized in a Trip Report (JCO, 2010) provided in Appendix 9.

2.2.1.5 Location and Elevation Survey

All map coordinates for this project are referenced to the Maine State Plane East, units in feet, North American Datum of 1983 (NAD 83) horizontal datum, and North American Vertical Datum of 1988 (NAVD88). The northing and easting of each sample location (borings, wells, etc.) were surveyed to the nearest 0.1 foot. Ground surface elevations were measured to the nearest 0.01 foot and reported to the nearest 0.1 foot and referenced to the NAVD88 datum (in feet) using the existing on-site benchmark elevation provided by the USACE. Top-of-casing elevations were measured to the nearest 0.01 foot. A Site Map showing all new and existing monitoring wells is included on Figure 2.2-2.

2.2.2 Results

2.2.2.1 Geological and Geophysical Investigation Results

A detailed interpretation of Site geology based on all available information is presented in Sections 3.2.3 (bedrock) and 3.2.4 (overburden). Following is a summary of that information, particularly as related to the data specifically collected in the field for the RI.

Overburden stratigraphy at the Site is characterized by one to eight feet of silty gravel ablation till or fill, overlying ten to 25 feet of very dense silty basal till. Cores of the basal silt till indicate that it is generally dry and has very low permeability (JCO, 2008b). Groundwater is generally about 20-30 feet below ground surface (JCO, 2009).

The basal till lies directly upon highly weathered bedrock saprolite which has a soil-like consistency, has very low permeability and is dry in its upper 2-3 feet (JCO, 2008b). The saprolite thickness is between 15-35 feet based upon borehole geophysical logs and drill cuttings collected during bedrock monitoring well installation (JCO, 2009).

Below the saprolite is a highly weathered and oxidized zone of rock (Unit A), with pervasive iron staining and large vugs (holes) as shown by the borehole geophysics. Unit A is between 30-60 feet thick based upon geophysical and drill cutting data (JCO, 2009). In the

deeper portion (Unit B) of the rock, there are little or no solution cavities (vugs). The geophysical log features used to define the Unit A/Unit B contact include a dramatic change in the caliper, from serrated (Unit A) to smooth (Unit B), and a change from iron stained (Unit A) to grey, black and white rock (Unit B). The Unit A/Unit B interface is approximately 100 to 115 fbgs below the Site (JCO, 2009).

The bedrock observed in drill cuttings included phyllite and quartzite. Cuttings from the saprolite contained a large quantity of orange sediment. Photographs of typical cuttings are provided in the RI/FS Trip Report (JCO, 2009).

A table of geologic contact elevations for on-site and selected nearby wells is provided below (JCO, 2008b and 2009):

Table 2.2-4
Geologic Contact Elevations (ft NAVD88)
(blank cells indicate data not available)

Location	Ground Surface	Top of Till	Top of Saprolite	Base of Saprolite	Unit A / Unit B Contact
OB01	240.8	236.8	222.8	--	--
OB02	241.5	237.0	--	--	--
OB03	241.5	236.2	--	--	--
OB04	243.5	239.0	224.8	--	--
OB05	241.0	233.7	221.7	--	--
OB06	241.1	237.1	--	--	--
OB07	241.5	235.5	--	--	--
OB08	237.7	233.6	219.7	--	--
OB09	233.1	231.1	221.0	--	--
OB10	240.2	237.6	--	--	--
OB11	230.9	226.9	--	--	--
OB12	238.7	235.7	--	--	--
OB16	241.4	237.4	220.8	--	--
OB17	239.6	236.9	216.0	--	--
OB18	242.7	239.7	223.9	--	--
OB19	238.8	236.5	217.8	--	--
OB20	238.5	234.5	216.5	--	--
OB21	243.5	237.5	223.5	--	--
OB22	241.76	238.0	--	--	--
OB23	241.77	238.8	--	--	--
OB24	243.36	241.4	--	--	--
OB25	243.66	241.3	--	--	--
OB26	243.64	239.5	--	--	--
OB27	243.91	239.5	--	--	--

Table 2.2-4 Geologic Contact Elevations (ft NAVD88) (blank cells indicate data not available)					
Location	**Ground Surface**	**Top of Till**	**Top of Saprolite**	**Base of Saprolite**	**Unit A / Unit B Contact**
OB28	242.47	238.9	--	--	--
OB29	242.82	238.6	--	--	--
OB30	243.12	239.3	--	--	--
OB31	243.23	238.8	--	--	--
OB32	243.17	239.1	--	--	--
OB33	243.08	241.1	--	--	--
OB34	243.24	239.3	--	--	--
OB35	243.02	238.9	--	--	--
OB36	243.16	239.7	--	--	--
OB37	243.21	239.4	--	--	--
OB38	242.68	239.5	--	--	--
OB39	242.54	239.1	--	--	--
OB40	242.72	239.5	--	--	--
OB41	243.14	239.6	--	--	--
TP01-1	240 est.	238	230	--	--
TP01-2	240 est.	238.7	230	--	--
TP02-1	240 est.	238	230	--	--
TP02-2	240 est.	232	230	--	--
TP03-1	234 est.	232.3	217.5	216	--
TP03-2	234 est.	232.8	226	216.5 to 226	--
TP04-1	234 est.	233.8	219.5	--	--
TP04-2	234 est.	232.3	218.3	216	--
TP05	234 est.	225.5	221.5	--	--
GBDW01	225.7	--	--	204.7	163.7
GBPW01	241.1	--	222.6	>207.6	159.6
GBPW03	234.7	--	226.7	>216.7	142.7
GBMW01	244.3	--	222.7	204.6	139.6
GBMW02	243.5	--	223.2	211.2	140.2
GBMW03	242.9	232.59	223.99	196.9	135.9
GBMW04	242.3	--	213.76	187.0	130.0
GBMW05	240.3	--	--	195.3	125.3
GBMW06	239.6	--	--	--	126.6
Note: -- in a cell indicates strata not reached or not logged in that location					

Geologic maps of the top of till, top and base of saprolite, and rock Unit A/B interface elevations are provided as Figures 2.2-3 through 2.2-6. Figure 2.2-7 shows the locations of three geologic cross sections, and Figures 2.2-8 through 2.2-10 show a profile view of the sections themselves.

Hager-Richter concluded the following based upon the borehole geophysical testing (see the full geophysical report in the RI/FS Trip Report (JCO, 2009):

- The most prominent fracture set detected in the four logged boreholes has dip azimuths trending approximately southeast (120° - 195°) and strike directions towards the northeast.
- The dip angles of fractures detected in the four logged boreholes have a relatively normal distribution with the most prominent angle between approximately 40° - 70° from horizontal.
- The second most prominent fracture set detected in the four logged boreholes has dip azimuths of approximately northwest (300° - 330°) and strike directions towards the northeast.
- In general the two prominent fracture sets detected in the four logged boreholes are approximately parallel to the orientation of foliation detected in the four logged boreholes.
- Flow into and out of the boreholes under ambient and injected conditions occurs through large zones, in some cases more than ten feet thick, of heavily fractured, weathered, and iron-stained bedrock as well as through individual discrete fractures in relatively competent bedrock.
- Boreholes GB-MW-05 and GB-MW-06, both located near the southeast corner of the Municipal Building, hydraulically communicate with a nearby water supply well (possibly GB-PW-03) under ambient and stressed conditions. The hydraulic communication between the nearby water supply well and GB-MW-06 appears to occur through a fracture zone at a depth of approximately 116 feet in GB-MW-06, which is also the primary pathway of flow out of the borehole under ambient conditions.
- The shallow bedrock (Unit A) encountered in the logged boreholes appears to be highly fractured and weathered. There is significant iron staining on most of the fractures detected in the weathered bedrock.
- The bedrock below the highly fractured and weathered bedrock (Unit B) is much less fractured; less weathered, and only has iron staining in discrete fracture zones.

- There is not always a distinct change from the weathered bedrock to the underlying competent bedrock; in many cases, there are zones of interbedded weathered and unweathered bedrock.

2.2.2.2 Bedrock Borehole Packer Sampling Results

The packer samples collected from three new deep bedrock wells (GB-MW-03, GB-MW-04 & GB-MW-05) were analyzed via EPA Method 524.2. Table 2.2-5 below summarizes the detected compounds from the packer testing (JCO, 2009). The sample depth is indicated after the well name in each Sample ID following the sample designation protocol described in Section 2.2.1.9.

Table 2.2-5
Summary of Detected Compounds
Bedrock Borehole Packer Sampling August 28-29, 2008

Sample ID	Sample Date - Time	TCE (µg/L)	Toluene (µg/L)	Xylene P,M (µg/L)
GBMW03-142-GW	8/29/08 – 13:45	2.8	0.6	ND (<0.5)
GBMW03-91-GW	8/29/08 – 15:15	5.1	ND (<0.5)	ND (<0.5)
GBMW03-49-GW	8/29/08 – 16:30	1.9	ND (<0.5)	ND (<0.5)
GBMW03-58-GW	8/29/08 – 17:28	1.4	ND (<0.5)	ND (<0.5)
GBMW04-108-GW	8/28/08 – 12:15	7.3	ND (<0.5)	ND (<0.5)
GBMW04-108-D (duplicate of MW04-108-GW sample)	8/28/08 – 12:15	7.1	ND (<0.5)	ND (<0.5)
GBMW04-93-GW	8/28/08 – 14:00	5.5	ND (<0.5)	ND (<0.5)
GBMW04-70-GW	8/28/08 – 15:20	1.2	ND (<0.5)	ND (<0.5)
GBMW04-46-GW	8/28/08 – 18:03	0.6	ND (<0.5)	ND (<0.5)
GBMW05-141-GW	8/29/08 – 8:05	ND (<0.5)	ND (<0.5)	ND (<0.5)
GBMW05-141-D (Duplicate of MW05-141 sample)	8/29/08 – 8:05	ND (<0.5)	ND (<0.5)	ND (<0.5)
GBMW05-112-GW	8/29/08 – 9:15	1.3	ND (<0.5)	ND (<0.5)
GBMW05-47-GW	8/29/08 – 10:25	1.6	ND (<0.5)	ND (<0.5)
ND (<0.5) indicates compound not detected above the method reporting limit of 0.5 µg/L				

Each of the three bedrock boreholes contained one or more intervals with reported trichloroethene (TCE) concentrations above the laboratory reporting limit. The maximum reported TCE concentration of 7.3 µg/L was in GB-MW-04 at a depth of 108 feet btoc. Only three sample intervals, GB-MW-04 (108'), GB-MW-04 (93'), and GB-MW-03 (91'), contained reported TCE concentrations above the MCL of 5 µg/L (selected as the Preliminary Remediation

Goal for the Site – see Section 5.2.2). The TCE concentrations for these three wells as well as previously existing monitoring wells MW-01 and MW-03 are posted on the geologic cross sections provided as Figures 2.2-11 through 2.2-13 along with TCE concentration isopleths.

No other VOCs were reported in any of the bedrock packer samples or associated quality assurance samples except toluene (reported at 0.6 µg/L in GB-MW-03 (142') and 1.3 µg/L in the equipment blank from GB-MW-04) and xylene (reported at 0.5 µg/L in the equipment blank from GB-MW-04). Copies of the laboratory analytical reports are included in the RI/FS Trip Report (JCO, 2009). Results of all analytical data are also provided on a CD in the MEDEP electronic Data Deliverable (EDD) format for the Environmental and Geographic Analysis Database (EGAD) (Appendix 8).

2.2.2.3 Monitoring Well Sampling Results

All existing onsite monitoring wells were sampled between November 18-20, 2008, including overburden/saprolite wells with sufficient water, GB-MW-01 and GB-MW-02 after Flute™ installations, and all new bedrock wells. Four of the onsite saprolite wells (OB-1A, OB-7, OB-16, and OB-18) did not contain sufficient water and therefore could not be sampled. Samples were collected following parameter stabilization (JCO, 2009).

The groundwater samples, along with the associated quality assurance samples (trip blanks, duplicates, etc.), were shipped via overnight courier to ESS Laboratory on November 28, 2008 for VOC analysis via EPA Method 524.2 and chloride analysis. Two of the sampled wells, OB-8 and OB-19, did not have sufficient recharge to allow for chloride analysis sample collection. Copies of the field sampling forms, the low flow data sheets, and chains of custody are included in the RI/FS Trip Report (JCO, 2009). Table 2.2-6 below summarizes the detected compounds from the November 2008 testing.

Table 2.2-6
Summary of Detected Compounds (µg/L unless otherwise indicated)
Glenburn GAT – November 2008 Groundwater Monitoring Event

Well Name	Sample Name	Sample Depth (fbtoc)	Sample Date	Sample Time	TCE	Toluene	Xylene (P,M)	Xylene (O)	1,3-Dichloropropane	Chloride (mg/L)
MCL (µg/L):					**5**	**1000**	**10000 - total**		**N/A**	**N/A**
OB-5A	GB-OB5A-GW	9	11/19/2008	15:30	<0.5	2.6	1.3	0.5	<0.5	NS
OB-8	GB-OB8-25-GW	24.7	11/19/2008	13:00	0.6	<0.5	<0.5	<0.5	<0.5	NS
OB-11	GB-OB11-11-GW	10.8	11/19/2008	13:50	<0.5	<0.5	<0.5	<0.5	<0.5	36.6
OB-17	GB-OB17-25-GW	25	11/19/2008	9:00	1.4	<0.5	<0.5	<0.5	<0.5	603
OB-19	GB-OB19-26-GW	26.5	11/19/2008	10:05	1.0	1.2	0.8	<0.5	<0.5	NS
OB-20	GB-OB20-26-GW	26	11/19/2008	10:55	<0.5	<0.5	<0.5	<0.5	<0.5	403
MW-01	GBMW-01-52-GW	51.5	11/18/2008	13:40	**48.9**	2.8	<0.5	<0.5	<0.5	812
MW-01	GBMW-01-72-GW	71.5	11/18/2008	14:45	**52.2**	2.2	<0.5	<0.5	<0.5	510
MW-01	GBMW-01-125-GW	124.5	11/18/2008	15:35	**14.7**	46.2	<0.5	<0.5	0.8	919
MW-02	GBMW-02-55-GW	54.5	11/18/2008	9:20	2.9	0.6	<0.5	<0.5	<0.5	1020
MW-02	GBMW-02-98-GW	97.5	11/18/2008	10:00	**24.9**	0.7	<0.5	<0.5	<0.5	1100
Duplicate	GBMW02-98-D	97.5	11/18/2008	10:00	**25.7**	0.6	<0.5	<0.5	<0.5	1080
MW-02	GBMW-02-132-GW	132.25	11/18/2008	11:20	**14.4**	4.9	<0.5	<0.5	<0.5	916
MW-02	GBMW-02-198-GW	198	11/18/2008	12:15	**16.5**	22.6	<0.5	<0.5	<0.5	1210
MW-03S	GBMW-03-45-GW	45	11/19/2008	10:53	1.0	<0.5	<0.5	<0.5	<0.5	660
MW-03D	GBMW-03-86-GW	86	11/19/2008	9:10	4.7	<0.5	<0.5	<0.5	<0.5	2990
MW-04S	GBMW-04-47-GW	47	11/19/2008	12:50	0.7	<0.5	<0.5	<0.5	<0.5	197
MW-04D	GBMW-04-110-GW	110.5	11/18/2008	15:25	**7.8**	<0.5	<0.5	<0.5	<0.5	763
MW-05S	GBMW-05-47-GW	47	11/18/2008	13:42	1.0	<0.5	<0.5	<0.5	<0.5	184
MW-05D	GBMW-05-145-GW	145.5	11/18/2008	11:30	<0.5	<0.5	<0.5	<0.5	<0.5	152
Duplicate	GBMW-05-145-D	145.5	11/18/2008	11:30	<0.5	<0.5	<0.5	<0.5	<0.5	151
MW-06	GBMW-06-113-GW	113.5	11/18/2008	9:35	0.5	<0.5	<0.5	<0.5	<0.5	132

Notes: Bold values exceed MCL. <0.5 = compound not detected above the laboratory reporting limit of 0.5 µg/L
NS = Due to slow recharge collection of sufficient sample volume for chloride analysis was not possible.
NA = not available

Of the 20 monitoring well samples analyzed by the lab, 16 contained reported concentrations of one or more VOC in excess of their respective laboratory reporting limit. Detected VOCs included TCE, toluene, xylene (p,m), xylene (o), and 1,3-dichloropropane. Of the detected VOCs, only TCE was reported above its respective MCL. Similar analytical results were obtained from USACE May 2009 and May 2010 monitoring events of the same wells (USACE, 2009 and 2010; provided in the analytical tables in Appendix 3).

Orthophoto maps of TCE concentration data for the saprolite, rock Unit A, and rock Unit B samples are provided in Figures 2.2-14 through 2.2-16. Cross sections are provided as Figures 2.2-11 through 2.2-13.

2.2.2.4 Salt Shed Soil Boring Results

Review of the laboratory analytical data indicate that there is no vadose zone source area(s) of VOC contamination beneath or adjacent to the on-site salt storage shed. No TCE was detected in any of the soil samples collected during the August 2010 investigation. All other method specific analytes were reported non-detect below the laboratory reporting limits which is based on the dry weight of each sample. All analytical results were orders of magnitude below the MEDEP remedial action guidelines (RAGs) for soil contamination. The results of this investigation were summarized in a Trip Report (JCO, 2010) provided in Appendix 9.

2.2.2.5 Hydraulic Conductivity and Connectivity Testing

Graphs of water levels as measured using automated data loggers, and corrected for atmospheric pressure and with manual measurements, are provided in the RI/FS Trip Report (JCO, 2009). The well locations are shown on Figure 2.2-2. The graphs are organized by time and then by well. Periods of activities at the Site, such as drilling, well development, purging and pump tests are annotated on the graphs.

Transmissivity and Hydraulic Conductivity Assessment

Twenty five tests of transmissivity were conducted during the RI in autumn 2008. The tests included evaluation of pumping rates and drawdown during well development and during two short-term (four hour) pump tests. Note that data were collected during additional packer testing and development efforts, but the results were not suitable for use in evaluating the transmissivity.

For the purpose of the evaluations, the Cooper-Jacob method was used to estimate the aquifer transmissivity. Due to the well construction, and resulting probable partial penetration of the aquifers, no attempt was made to estimate the aquifer storativity. Semi-log graphs of drawdown versus elapsed time are provided in Appendix 2. The best-fit log-based line used to determine the transmissivity is presented on each graph. Additionally, where appropriate, separate log-log derivative graphs showing drawdown and the change in drawdown versus time are also provided. These derivative plots were used in a qualitative way to evaluate the effects of borehole storage and other hydrogeologic properties.

Aquifer thickness is used to translate transmissivity values into hydraulic conductivity. Due to the nature of fractured rock, water can travel through the rock matrix, and also along bedding planes, fractures, and solution cavities if they are connected. The hydraulic testing results are a composite of the various types of flow. Generally, flow in fractures and solution cavities occur at order-of-magnitude greater rates than matrix flow. Ideally, one would measure the vertical thickness of the hydraulically active features in order to determine hydraulic conductivity. However, practically, it is not usually possible to measure fracture thicknesses with sufficient accuracy, either manually or using borehole geophysics.

Hydrogeologists often use the bedrock well sand pack and screen (or open interval) length as an approximation of effective well length and/or aquifer thickness. This can produce order-of-magnitude under-estimated hydraulic conductivity values for the transmissive fractures. One alternative is to estimate the effective thickness by summing up the number of fractures and

multiplying by an assumed effective aperture. However, the aperture is generally unknown without site-specific tracer tests.

For this investigation, the hydraulic conductivity was estimated using fracture zone thicknesses calculated using borehole geophysical data. Specifically, the thickness was assumed to equal the sum of the vertical lengths of borehole containing one or more transmissive fractures in the open or sand pack interval. For instance, a nearly vertical fracture which extended through nine of the ten foot screened section of the borehole would result in a fracture zone thickness of nine feet. Alternatively, a single ½-inch thick horizontal fracture would result in a half-inch fracture zone thickness.

Summaries of the results of the testing are provided below in Table 2.2-7 and are also shown on the Cross Sections on Figures 2.2-17 through 2.2-19. Transmissivity and fracture zone hydraulic conductivity values vary widely, not only vertically between rock units, but also horizontally in the same hydrogeologic unit.

The following observations were made regarding connectivity between fracture zones. The observed connections described below are also shown on the Cross Sections (Figures 2.2-17 through 2.2-19) and on Figures 2.2-20 and 2.2-21 which show the approximate radius of influence while conducting pump tests on GB-MW-04D and GB-MW-06.

- GB-MW-01 Ports 2 and 3 are hydraulically connected to GB-MW-06, the middle producing interval in the open hole GB-MW-05 before well completion.
- GB-MW-02 Ports 1 through 3 are hydraulically connected to GB-MW-04D.
- GB-MW-05D is hydraulically connected to GB-MW-06
- GB-MW-03S and GB-MW-05S are hydraulically connected to open hole GB-MW-02 (before Flute™ installation).
- GB-MW-03S and GB-MW-03D are hydraulically connected to each other.
- No responses in the saprolite wells to the induced stresses in the bedrock wells were observed.

Table 2.2-7 Summary of Transmissivity and Hydraulic Conductivity Data						
Well	**Date**	**Exposed Rock (fbtoc)**	**Flow (gpm)**	**Transmissivity (sfpd)**	**Fracture Zone Thickness**	**Fracture K (fpd)**
GB-MW-01 PORT 2	11/20/08	Flute™ 62-72	4.9 in MW-06	611	A Unit, 2 ft	306
GB-MW-01 PORT 3	11/20/08	Flute™ 115-125	4.9 in MW-06	2,446	B Unit, 3 ft	815
GB-MW-02 PORT 1	11/21/08	Flute™ 45-55	1.7 in MW-4D	1,200	A Unit, 5 ft	240
GB-MW-02 PORT 2	11/21/08	Flute™ 88-98	1.7 in MW-4D	500	A Unit, 3 ft	167
GB-MW-02 PORT 3	11/21/08	Flute™ 127.75-132.75	1.7 in MW-4D	75	B unit, 0.8 ft	94
GB-MW-03	8/24/08	Open hole, 126	2.5	40 - 110	A & B Units	--
GB-MW-03	8/24/08	Open hole, 126	4.0	19	A & B Units	--
GB-MW-03	8/29/08	Packer at 49.5, exposed to 27.5	0.53	1,870	A Unit, 7 ft, 43-50 fbtoc	267
GB-MW-03S	9/17/08	Open from 28-51	2.6	367	A Unit, 7 ft, 43-50 fbtoc	52
GB-MW-03	8/29/08	Packer 84-99	0.50	17.6	B Unit, 1.5 ft, 93.5-95 fbtoc	12
GB-MW-03D	9/17/08	Sand pack 81.5-101	5.1	9.3	B Unit, 1.5 ft, 93.5-95 fbtoc	6.2
GB-MW-03	8/29/08	Packer 134.3-149.3	0.45	0.23	B Unit, 6.5 ft 142.5-149 fbtoc	0.04
GB-MW-04	8/22/09	Open hole, 119	5.2	306	A & B Units	--
GB-MW-04	8/28/09	Packer Tests	Variable	--	data not available	--
GB-MW-04S	Various	Open 34-51	Variable	--	data not available	--
GB-MW-04D	Various	Sand pack 101-121	Variable	--	data not available	--
GB-MW-04D	11/21/08	Sand pack 101-121	1.7	24	A Unit Base, 10.5 ft, 101-104, 105-108.5, 109-111, 112-114 fbtoc	2.3
GB-MW-05	8/25/08	Open hole, 122	Variable	--	data not available	--
GB-MW-05	8/29/08	Packer test 39.8-54.8	0.48	48	A Unit, 9 ft, 40-49 fbtoc	5.3
GB-MW-05S	9/18/08	Open hole 30-54	4.7	329	A Unit, 19 ft, 30-49 fbtoc	17
GB-MW-05	8/29/08	Packer test 133.2-148.2	0.64	75	B Unit, 0.5 ft, 145 fbtoc	150
GB-MW-05D	9/18/08	Sand pack 140-152	3.8	68	B Unit, 0.5 ft, 145 fbtoc	135
GB-MW-05D	11/20/08	Sand pack 140-152	4.9 in MW-06	428	B Unit, 0.5 ft, 145 fbtoc	856
GB-MW-06	Various	Development	Variable	--	data not available	--
GB-MW-06	11/20/08	Sand pack 108-115	4.9	98	A Unit Base, 4 ft, 111-115 fbtoc	25

sfpd = square feet per day
fpd = feet per day
A "--" indicates insufficient data available to complete calculations

Hydrogeologic test data indicate GB-PW-03 is connected to GB-MW-06 and GB-MW-01 through the Unit A bedrock aquifer. Variation of about 0.2 feet in groundwater levels attributed to pumping in GB-PW-03 have been observed 550 feet away in GB-MW-01 and several other on-site monitoring wells.

Summary of Pumping Tests

Summaries of the relevant data for the two short term pumping tests conducted in November, 2008 are provided below.

Well GB-MW-06

- Pump on at 10:10 on November 20, 2009 (10:06 data logger time).
- Pumping rate ~ 5 gpm (0.67 cfpm, average 4.85 gpm).
- Equilibrium drawdown of ~ 4 feet reached in GB-MW-06 at elapsed time of ~10 minutes, where it remained until the termination of the test at 245 minutes.
- Well radius ~ 7 inches per HR acoustic caliper in producing fracture interval.
- PVC riser inner diameter = 2 inches (0.17 ft).
- Sand-pack length = 10 ft (105.5-114.5 fbtoc) screened at base of "A" rock unit.
- Primary flow presumed from ~ 1 ft thick north-south striking flat (dip <30 degrees) fracture zone at ~ 113 fbtoc per geophysical logs.

Responses to pumping observed in wells GB-MW-5D and GB-MW-01, Ports 2 and 3:

- GB-MW-5D had ~ 0.3 ft drawdown at a distance of 12.6 ft from GB-MW-06.
- GB-MW-01 Ports 2 & 3 had ~ 0.15 ft drawdown at a distance of 148 ft from GB-MW-06.

Well GB-MW-04D

- Pump on at 8:26 on November 21, 2008.
- Pumping rate ~ 1.7 gpm (0.23 cfpm).
- Drawdown of ~ 34 feet reached in GB_MW_04D at elapsed time of ~260 minutes when the test was terminated, but equilibrium conditions had not been reached.
- Final drawdown during test in GB-MW-04D is ~ 34 feet.
- Well radius ~ 6 inches (0.5 ft) per HR acoustic caliper in screened interval.
- PVC riser inner diameter = 2 inches (0.17 ft).
- Sand-pack length = 19 ft (98-117 fbtoc) screened at base of "A" rock unit.
- Primary flow presumed from 8 fractures each ~ 0.1 ft thick at 106-110 fbtoc per geophysical logs (strike north-northeast and dip 60-70 degrees northwest).

Responses to pumping observed in monitoring well GB-MW-02, Ports 1, 2 and 3. GB-MW-02 is a distance of 81.8 ft from GB-MW-04D:

- Port 1 had ~ 0.1 ft drawdown.
- Port 2 had ~ 0.2 ft drawdown.
- Port 3 had ~ 0.13 ft drawdown.

3.0 CONCEPTUAL SITE MODEL

3.1 SITE PROFILE

3.1.1 Site Description and Location

The Study Area for this RI/FS is located approximately 8 miles northwest of Bangor, Maine on a small hilltop (Figure 1.0-1 Site location map), between Hudson Road to the West and Pushaw Lake to the East. The Site is the former FUDS property shown on Figure 3.1-1.

3.1.2 Site Ownership and Operational History

In 1958, the United States Air Force (USAF) acquired the property and constructed a Ground to Air Transmitter (GAT) facility. The GAT facility was built to support the BOMARC IM99A missile launch and command units intended to respond to Soviet bombers. The Glenburn GAT Facility was phased out of operation circa 1964, and the USAF transferred the land to the General Services Administration. The property was purchased from the General Services Administration and conveyed to the Town of Glenburn in 1967 (USACE, 2002a, 2002b, 1998).

The land was in agricultural use prior to its purchase for the GAT facility. A review of historical United States Geological Survey (USGS) topographic maps and areal photos has been used to develop the operational history of the Site. The full report is presented in Appendix 1. No development is shown on the FUDS property prior to its purchase by USAF in 1958 (see Figure 3.1-2). Figure 3.1-2 includes rectified areal photographs prepared by USACE, Topographic Engineering Center in 2004 (USACE TEC, 2004).

The USAF constructed and used the 2,700 square foot concrete block building between circa 1958 and 1967 (USACE, 1998). The building contained an equipment room, a telephone communications (Telco) room, and a switch and generator room (Figure 3.1-3 building plan) (US Army, 1958). They also installed a pump house and cesspool, two dry wells for the facility's roof drains, two transmitter towers, and two underground fuel storage tanks (USTs). Construction details for the roof drain dry wells and the cesspool are provided in Figure 3.1-4,

and their locations are shown on Figure 3.1-1 Site plan. Review of the historic building plans shows that the dry wells were used to collect and discharge rainwater from the roof of the facility (US Army, 1958). All of the facility's floor drains including the equipment, service, and sanitary drains emptied to the cesspool through a 6-inch vitrified clay pipe exiting from the southern side of the building and continuing approximately 125 feet to the southwest until it reaches the cesspool (US Army, 1958).

When USAF occupied the building, an exterior door was present in the northeast corner of the Telco room that is now the Town Manager's office (the northeast building corner) (US Army, 1958). Two UST s were installed by USAF near the southeast corner of the Former GAT facility. A 10,000-gallon Number 2 diesel fuel UST (shown on Figure 3.1-1 Site Plan) supplied the generators, compressor, and heating system inside the generator room of the Former GAT Facility via a transfer pump and subgrade piping (US Army, 1958). The interior fuel distribution piping raceway and generator pads are still present. A 1,000 gallon gasoline UST was located adjacent to the fuel oil tank. These tanks were removed in the 1980's (MEDEP, 1996).

Additions to the GAT facility building were constructed by the Town and are apparent on the 1969 historic areal photograph (Figure 3.1-2 and Appendix 1). These consist of one 12-ft by 30-ft wing on the southeast face of the building and one 20 ft by 25 ft wing on the northwest face of the building (red-on-yellow cross-hatched areas on Figure 3.1-3 building plan). No construction details for these structures are indicated on the available plans. The Town of Glenburn used the eastern portion of the Former GAT Facility building as a two bay garage with doors on the south side, until the late 1980s (USACE, 2002b).

Various "ground scars" and areas of "disturbed ground" are visible on the areal photographs (Appendix 1), and their locations were transferred to Figures 3.1-2 and 3.1-5. It is notable that any ground disturbance that is visible on the 1969 photo, but not on earlier photos, is probably <u>not</u> DoD related, since the Town owned and operated the property since 1967.

The Town stored uncovered piles of road salt east of the former GAT facility building until 1986 (MEDEP, 1996). In 1986, a salt storage building was constructed on the property (USACE, 2002a, 2002b) (Figure 3.1-1 Site Plan). The Town now uses above ground gasoline and diesel tanks inside concrete vaults. The Town also constructed two septage USTs southwest of the Salt Storage Building, each with a 10,000-gallon capacity. These USTs were used for storing septage from off-site locations, and have since been removed (MEDEP, 2006a). The cesspool has been in continuous operation since the USAF constructed it. The Town also built its emergency services department (fire, ambulance, law enforcement) on the Site northeast of the Former GAT Facility, including a separate on-site sewage disposal system (Figure 3.1-1 Site Plan).

3.2 PHYSICAL PROFILE

3.2.1 Topography, Natural Features and Climate

The Site is located on a south-trending ridge between 230 and 245 ft. elevation. The topographic high point in the vicinity occurs at the Lakeview Cemetery, immediately northeast of the Site. Topography is dominated by four prominent ridges merging into a flat hilltop with an elevation above 240 ft elevation (NAVD88). The Former GAT Facility occupies the southwest corner of a relatively flat, south-trending ridge between 230 and 245 ft elevation. Land surface gently slopes down to the west and south (Figure 3.2-1) away from the emergency services building in the northeast corner of the FUDS property (240-245 ft elevation NAVD88).

The FUDS property contains soils identified as prime or of statewide importance on the National Resource Conservation Service (NRCS) Soil Map for Penobscot County (NRCS, 2009, Figure 3.2-2A, B, C). Although the property was farmed prior to its development for the GAT site, an operating farm no longer exists adjacent to the property, and other former farmland has been converted to residential use or has been allowed to revert to forest (Figure 3.1-2 and Appendix 1). One area in the southwest corner of the property and other areas to the west and south are mapped as very stony. These areas contain occasional boulders up to 3-ft in diameter and few cobbles.

Climate for the Site can be described using data recorded at the Bangor International Airport by the National Weather Service. For the period of record from 1961-1990, the maximum recorded temperature was 102°F and the minimum recorded temperature was 23°F. The average January maximum and minimum temperatures are 27.3°F and 8.6°F and the average July maximum and minimum temperatures are 78.5°F and 58.9°F. Mean annual precipitation is 41.0 inches and mean annual snowfall is 67.3 inches (ESRL, 2009). Precipitation is greatest during the spring and fall months. During the winter, soil may freeze to a depth of 4 feet or more (USACE, 2008a).

3.2.2 Surface Water and Drainage

The study area lies within the Lower Penobscot River watershed and contains several drainages discharging to Pushaw Lake or Kenduskeag Stream, both of which eventually enter the Penobscot River near Bangor. There is no surface water on the Property. Major surface water divides meet in the Lakeview Cemetery, and divide the study area into four major drainage basins (Figure 3.2-1). One small ephemeral or seasonal drainage ditch begins near the FUDS property southern boundary, and flows through part of Homestead Estates.

The northeast quadrant is formed by two sets of drainage divides beginning north of the eastern portion of Lakeview and Sunset Avenue intersections. Flow is east toward Pushaw Lake, east-northeast toward Pushaw Lake, and north-northwest to Kenduskeag Stream beyond the Sunset Avenue cul-de-sac.

The southwest quadrant is formed by drainage divides along the western portion of Lakeview Avenue and Birch Avenue, gently sloping toward Midway Lane, Hollis Bog and Kenduskeag Stream. The southwest quadrant does not contain discrete streams, but the area is very boggy due to groundwater discharge and poor draining soils, with seeps occurring in several places between southern part of Midway Lane and Hollis Bog. (Figure 3.2-1) One small pond is present west of Cressy Avenue, and is named West Pond for this project. West Pond is fed in part from a groundwater discharge area near its northern edge.

The more complex southeast quadrant is formed by drainage divides along the eastern portion of Lakeview Avenue and Birch Avenue. The southeast portion of the study area contains two surface water drainages emptying into Pushaw Lake (Figure 3.2-1). There are areas with groundwater discharge located east and southeast of the Former GAT Facility. The spring closest to Birch Road is near East Pond (Figure 3.2-1), appears to be intermittent, and active during rain events, and discharges enough water to flatten vegetation for several feet (USACE, 2008a). A small U-shaped ridge located east of the site separates the southeast drainage from the eastern drainage (Figure 3.2-1). The eastern drainage contains a known groundwater discharge, GB-SW-01 (a former water supply, GB-DW-23), which is located 0.25 miles east of the Former GAT Facility near Lakeview Road.

Wetlands occur to the northwest about 1/3 mile away from the Site, north of Lakeview Road and east of Lorna Lane (outlined in light green on Figure 3.2-1). Other wetlands occur due north of the Site and north of Sunset Avenue's cul-de-sac at the base of a bedrock-cored steep cliff that drops off to the north. These wetlands feed a small, unnamed stream that eventually discharges into Pushaw Lake. Wetlands are also likely to be present near West Pond, East Pond and Hollis bog.

The year-round spring that feeds West Pond, and the wetlands around the former dug water supply well to the northeast (GB-DW-23), may be related to a penetration of the low permeability till and/or saprolite caprock (or to their absence), and may be fed by bedrock aquifer discharge. This theory is based upon the following observations:

1. Repeated low detections of TCE (presumably related to the bedrock aquifer contamination);
2. Continued flow even during dry August periods
3. The lack of a year-round upgradient aquifer in the overburden as observed at the GAT facility property.

Conversely, East Pond is seasonal and ephemeral in nature, and has not had detections of TCE. Therefore it may be connected to overburden discharges, but likely not those from the bedrock.

3.2.3 Bedrock Geology

A detailed description of bedrock geology is provided in the RI/FS Workplan (JCO 2008c). A summary of the pertinent bedrock geologic features in the proximity of the Site is provided below.

The greywacke bedrock unit in and around the Site is the Vassalboro Formation, which has been metamorphosed to biotite or chlorite greenschist grade (Lincoln, 1989). Metamorphism introduced acidic fluids into these rocks, and may have enhanced primary porosity where these fluids encountered carbonate rocks (Ferry, 1988, 1983).

Based upon observations during the remedial investigation, bedrock outcrops located approximately 1.5 miles southeast of the former GAT facility have quartz veins sub-parallel to the bedding. These veins are highly porous, containing many vugs (holes). Partial secondary infill of euhedral quartz crystals, leaving connected porous channels, was also observed in the outcrops. Additionally, they exhibit preferential weathering along carbonate layers, leaving a corduroy appearance. Solution cavities and vugs, some of which are connected, were observed to be present along 2-4" thick beds. The veins and chemically dissolved carbonate bedding may provide the primary preferential route of contaminant transport in the bedrock aquifer.

Reconnaissance-level mapping in the Glenburn Quadrangle show the study area bedrock is characterized by 0.3-1.8 meter (m) (1 to 6 ft) thick massive beds of fine to medium grained feldspathic wacke (DSv, Figure 3.2-3). Interbeds consist of dark gray phyllite, with minor carbonaceous phyllite and feldspathic coarse sand to granule conglomerate. Reconnaissance bedrock mapping within the Glenburn Quadrangle suggest the Former GAT Facility may be on the apex of an anticline fold (Griffin, 1976). The maroon and green member (Skp, Figure 3.2-3) contains 1.2-7 cm (0.1-3-in) thick layers of maroon and green metasiltstone, quartzite (with biotite), phyllite, and slate. On-site borehole geophysics and saprolite cores suggest that the member extends beneath the Site itself in the vicinity of GB-MW-01, -05 and -06 (JCO, 2009).

Published lineament and bedrock geologic maps (Westerman, 1981, Griffin, 1976) indicate the primary trends for faults and fractures range from N30°E – N60°E. A secondary trend occurs between N40°W and N30°E, which may be a conjugate fracture set roughly perpendicular to bedding, foliation, and/or structural fabric. Side looking aperture radar suggests a prominent lineament trending N20°W may intersect the Site (Caswell, Eichler, and Hill, Inc., 1986). Regional Bouguer gravity maps show features matching both trends, but the regional magnetic anomaly map shows only a weak NE-SW trend (Daniels and Snyder, 2004). Both regional geophysics data sets show a lack of major geologic structures identified by contrasting rock density or iron-bearing minerals.

USACE conducted a site-specific photogeologic analysis included preparing an accurate map of the study area and identifying lineaments, which are defined here as linear features visible on areal photography (USACE TEC, 2003). Lineaments are natural linear features, expressed as topographic characteristics (including straight stream segments), vegetation, or soil tonal alignments. Linear features on areal photographs may reflect geological features such as faults, joints, zones of weakness, or bedrock contacts. Linear features may also reflect man-made structures such as fence lines, buried pipelines, and drainage ditches. The lineaments are shown as brown lines on Figure 3.2-3.

Bedding generally strikes northeast-southwest and dips to the northwest below the Site (See Figure 3.2-4). The bedrock surface forms a NE-SW trending ridge near the northern edge of the Site. The bedrock surface decreases in elevation to the south and east, and in general, mimics the ground surface in a subdued manner (ANL, 2006).

Surface geophysics, particularly seismic refraction tomography, indicates that there are anastomosing (braided) zones of low velocity rock under the Site and parallel to the bedding. These zones are interpreted to represent areas with high porosity, possibly due to fractures or to chemical weathering of the rock (ANL, 2006). Borehole geophysics, particularly optical and acoustical televiewer logs, of wells on-site and nearby show intense chemical weathering of the

upper portion of the rock, including pervasive iron staining and large vugs (holes) (GAI, 2005 and JCO, 2009). This upper portion is called Unit A, and the lower, relatively unweathered portion of the bedrock is called Unit B. A typical borehole geophysical log showing the differences between Unit A and Unit B is provided as Figures 3.2-5A-F. In Unit B there are few or no solution cavities (vugs) and hydraulically transmissive features are generally subparallel to bedding planes striking northeast and dipping steeply northwest (JCO, 2009).

Overlying Unit A below the Site is highly weathered saprolite. Saprolite is rock that has chemically weathered in place, leaving a soil-like consistency with bedding surfaces intact. Cores of the saprolite indicate that it has very low permeability, and it is dry in its upper 2-3 feet. Some of the saprolite cores had relict bedding, primarily composed of biotite mica, and often at angles up to 70 degrees from horizontal (JCO, 2008b). Relict bedding may provide preferential pathways for downward migration of contamination into the underlying bedrock aquifer.

Maps of the top and base of the saprolite, and the contact between the chemically weathered, porous Unit A and the relatively unweathered Unit B are provided as Figures 2.2-4 through 2.2-6.

In summary, the Site is underlain by low permeability saprolite, the upper few feet of which act as an aquitard. Below the saprolite is the porous and permeable Unit A, which probably acts as the primary contaminant preferential flow path. The lower portion of the bedrock, Unit B, has discrete transmissive fractures which also likely allow contaminant migration in the subsurface. Although there are cross-cutting, northwest striking, high angle fractures, the majority of groundwater flow is controlled by chemically weathered features subparallel to the carbonate beds and quartz veins striking northeast-southwest.

3.2.4 Overburden Geology

The study area soils are defined in discrete patterns varying with composition and topographic slope, based on the Natural Resource Conservation Service's Soil Survey

Geographic (SSURGO) database (Natural Resource Conservation Service (NRCS), 2006). Soil composition varies from extremely stony silt loams to shaly silt loams. The higher elevations contain mostly sandy and gravely loam soils. The lower elevations contain mostly silt and shale loam soils.

Former GAT Facility area soils are mapped as Plaistid Gravelly Loam with a small strip of Howland Gravely Loam occurring just west of the Former GAT Facility (Figure 3.2-6 A, B, C). These soil types trend north-northwest – south-southeast, with the Howland Gravely Loam terminating at East Pond. This area is surrounded by the Monarda Silt Loam + Monarda and Burnham very stony Silt Loam. The 1962-era ditch identified in areal photographs (Appendix 1) and its continuation south of the FUDS property are coincident with a narrow north-south trending band of the Howland Gravelly Loam.

Based on glacial deposits mapped near Bangor (Thompson, 1977), glacial till near the study area is likely correlative with early Pleistocene-age (12,600 – 12,800 years ago (Smith and Hunter, 1989)) basal (low permeability) or ablation (high permeability) till sequences.

Seismic refraction tomography and 2D-Resistivity surveys were performed by Argonne National Laboratories for USACE across the study area in 2006 (Figure 3.2-7; ANL, 2006). These data indicate that the overburden materials range in thickness from zero to more than 34 feet thick as shown on Figures 3.2-8 and 3.2-9 (ANL, 2006). Based upon the results of soil cores collected by JCO in April 2008, these geophysical techniques overestimate the depth to bedrock at the Site by 10-20 feet, possibly due to the presence of highly weathered saprolite rock (JCO, 2008b). For instance, the top of weathered rock for GB-MW-01 as determined by geophysics is estimated at 38 fbgs, while the top of saprolite as determined by coring in the adjacent OB4 location was 18.8 feet below ground surface (fbgs). The geophysics indicates that the overburden materials are thinnest northwest and northeast of the Former GAT Facility (Figure 3.2-9), and are thickest directly below and southeast of the Site (ANL, 2006). Figures 3.2-8 and

3.2-9 indicate that the Site property is located in a hollow in the rock surface, possibly providing protection against erosion during the last glacial event.

Similar stratigraphy was observed in all the on-site soil borings and test trenches. The overburden stratigraphy is characterized by one to eight feet of dry silty gravel fill and/or ablation till overlying approximately ten to twenty feet of dry, very dense, low permeability glacial basal silt till. The till, in turn, overlies dry, dense, low permeability, highly weathered bedrock (saprolite) (USACE, 2007 and JCO, 2008b).

The top-of-till surface below the Site is highest in the vicinity of GB-MW-01, OB18 and the salt shed, and slopes towards the southeast and southwest with a dip of approximately 0.4 ft/ft, generally mimicking the ground surface topography (Figure 2.2-3). There are basins cut into the till surface at the locations of the roof drain dry wells, the on-site septic system cesspool and leachfield, the former fuel oil underground storage tank, and a former debris burial area between the Municipal Building and the Salt Shed (the East Anomaly – see Section 2.1).

The till itself was uniformly dry during the April 2008 and the August 2010 overburden investigations. The till likely acts as an aquitard, limiting infiltration, and creating temporary perched groundwater conditions above it during and immediately following precipitation and snow melt events. If liquid wastes were released above the till surface in the past, they would likely migrate easily downwards through the overlying silty gravel, and then flow laterally down the till surface slope until they ponded in low areas, and eventually infiltrated into the till.

3.2.5 Hydrogeology

Beneath the Site itself, overburden groundwater is limited to short duration events in the sandy gravels perched upon the basal silt till. Flow in this perched aquifer is limited areally, and occurs only during brief periods immediately following precipitation or snow melt events.

Groundwater discharges to the surface as springs or seeps near the Site to the northeast, southeast, south, and southwest. Discharges to the south near OB-11 and to the southeast at East Pond (GB-SW-02) are likely the result of perched groundwater surfacing at the contact where the upper sandy gravel ends and the underlying less permeable silt till is present at the ground surface. Natural springs to the southwest at West Pond (GB-SW-04), and to the northeast at GB-SW-01, are likely the result of discharges from the bedrock aquifer through penetrations in the basal silt till and saprolite.

Groundwater was observed on-site in April, 2008 in borings which penetrated the silt till and two to three feet into the underlying bedrock saprolite. The groundwater levels observed following the penetration of these dry low permeability materials invariably rose to levels in the previously unsaturated zone, demonstrating artesian conditions. These data also show that the upper few feet of the saprolite function as an aquitard which confines the bedrock aquifer.

The on-site piezometric head gradient, as measured in autumn 2008 in the saprolite and the Unit A bedrock, is generally towards the most contaminated well, GB-MW-01. The piezometric head in Rock Unit B is generally towards the northeast. Figures 3.2-10 through 3.2-12 show piezometric head elevation contours in the three stratigraphic units, in addition to the orientations of open, transmissive and iron stained fractures based upon borehole geophysical data.

The bedrock groundwater elevations have been monitored on-site since 2003. With the exception of extremely dry periods, the data show artesian conditions with water levels above the top of the bedrock (USACE, 2008a). Maximum groundwater elevations occur during mid-April through June, and late November through January. Minimum groundwater elevations occur during late September and late February through late March. A response in groundwater elevation first occurs anywhere from five to twenty days after major precipitation events. The magnitude of change in the response ranges from a few feet to over 10 feet (USACE, 2008a).

Vertical gradients in on-site bedrock monitoring wells have been observed both upwards and downwards (JCO, 2009).

The heat pulse flow meter data, and autumn 2008 water level datalogger data, suggest that wells GB-MW-05, GB-MW-06 and GB-MW-01 have fractures that are connected to an off-site water supply pumping well. Due to its proximity, water quality, and location along the strike of the bedding, the likely well causing response in these on-site monitoring wells is the public water supply GB-PW-03 (JCO, 2009).

The presence of artesian conditions in many of the on-site monitoring wells indicates that recharge is coming from an upgradient area. Assuming no regional influence, the recharge to the rock aquifer must exist at some location where the rock surface is at a greater elevation than the observed heads on-site which range from 210 to 222 ft NGVD (GB-MW-02 from USACE 2008a). Additionally, the recharge area must be at a location where the bedrock is at or near the ground surface, and not protected by the overlying saprolite and till aquitards. The cemetery is one such location; another potential recharge area, presumably on a seasonal basis, is the bedrock outcrop located northeast of the Site which is identified as 62 Lakeview OC on Figure 3.2-4. The approximate elevation of this outcrop is 215-222 ft NAVD as seen on Figure 3.2-4 as well as regional USGS topographic maps. Additionally, regional influence from miles away is not impossible. It should be noted that an off-site source of recharge could also be an off-site source of contamination to the aquifer.

Decreases with depth in borehole geophysics-derived fracture frequency and TCE concentrations in on-site bedrock wells correspond well with the vertical seismic profiling (VSP) and refraction tomography results from bedrock Units A and B (Northeast Geophysical Services, 2001; ANL, 2006; GAI, 2005; USACE, 2008a and JCO, 2009). Hydrophysics, monitoring well, Flute™ and packer sampling show that the highest concentrations of TCE in groundwater occur within bedrock Unit A in well GB-MW-01(Northeast Geophysical Services, 2001; RAS, 2006 and JCO, 2009).

As discussed in Section 3.2.3 (bedrock), groundwater transport appears to be primarily controlled by preferential pathways subparallel to the bedding strike. Additionally, the interpreted NE-SW bedrock groundwater flow pathways vary from being a single group of transmissive features to at least two groups of features separated by much less fractured bedrock. That is, the permeable zone is made of several anastomosing zones braided together based upon surface geophysical data (See Figure 3.2-13). The position of these zones is primarily interpreted by rapid lateral changes in rock velocity. Surface seismic testing conducted next to wells GB-MW-01 and GB-MW-02 show that they penetrate two of these broad lateral zones of lower velocity bedrock, bounded by higher velocity bedrock (ANL, 2006). Based on the lower velocities measured in the wells, and the agreement of those measurements with the surface seismic data, the low velocity zones are interpreted to be porous zones within the bedrock. The porous zones may be related to fractures, faults, or more likely preferential weathering of carbonate rock.

The presence of low rock velocities combined with low conductivity in the surface seismic data were used as a surrogate for differentiating zones of high rock porosity. These data were then combined with open feature orientations observed in acoustic televiewer (ATV) borehole logs at the depths of interest (either TCE contaminated depths or highly productive depths as shown on Figure 3.2-13) to create a map of probable preferential pathways in the bedrock.

The lateral boundaries of the fracture zones identified in the surface geophysics data and shown on Figure 3.2-13 are supported by the TCE concentrations and pump test data as well. For instance, GB-PW-01 is between two of the permeable zones and contains no TCE, while GB-MW-01 is within a permeable zone, is contaminated, and is hydraulically connected along the strike to wells GB-MW-05 and GB-MW-06 (JCO, 2009). GB-PW-03, the public water supply well, is also in this permeable zone, and heat pulse flow meter data indicates that it is hydraulically connected to GB-MW-05 as well (JCO, 2009). Additionally, GB-MW-02 is in a

permeable zone, is contaminated, and is hydraulically connected to GB-MW-04 located in the same zone (JCO, 2009).

In summary, the overburden does not act as an aquifer, and has only limited duration perched groundwater present in response to recharge events. The bedrock is composed of the upper highly porous and permeable Unit A and the lower unweathered Unit B. Groundwater flow in the bedrock is preferentially controlled by NE-SW striking anastomosing permeable and contaminated zones separated by uncontaminated, relatively low permeability areas. There is a network of hydraulic connections between specific on-site monitoring well transmissive intervals that allows groundwater flow and transport between the wells. The transmissivity and hydraulic conductivity of the transmissive features varies laterally and vertically by orders of magnitude, and is not reliably predictable based upon the rock unit (A or B). The contaminated on-site well GB-MW-01 appears to be hydraulically connected to the nearby public water supply GB-PW-03.

3.3 RELEASE PROFILE

3.3.1 Nature of Release

The primary contaminants of concern at the Site have been identified during previous investigations as CVOCs. Of particular interest is the distribution of the primary VOC detected: TCE and its degradation products; cis-1, 2 dichloroethene (cis-1, 2-DCE) and vinyl chloride. Information collected indicates that low levels of dissolved phase TCE in groundwater (maximum of 53.0 µg/L in the June 2010 monitoring event and 42 µg/L in the November 2010 monitoring event (USACE, 2010)) and sorbed-phase TCE in soils (maximum of an estimated 16 µg/kg (JCO, 2008b) still exist at the Site.

Potential Site contaminants associated land use after the USAF left the Site include various petroleum products (fuel oil diesel, motor oil and gasoline), degreasers (products containing chlorinated solvents), methyl-tert-butyl ether (MTBE, a gasoline additive), and road salt/de-icing materials. MTBE-containing fuel is stored and used by the Town of Glenburn for town vehicles. Road salt was stored in the open before 1986, and a white crust was present on

the ground surface near the Salt Storage Building (MEDEP, 1996). Petroleum-based contaminants and sodium chloride have been reported in the subsurface at the Site (MEDEP, 1996; USACE, 2007 and JCO, 2008b). However, these contaminants are not the responsibility of the Department of Defense, and the RI/FS is not designed to provide a full definition of their sources, nature, and/or extent.

Chlorinated solvents, including TCE, were reportedly used by the USAF to clean electronics and generators, to degrease fittings, and to prepare surfaces for new paint (USACE, 2002b). Reviews of historical areal photographs, former GAT Facility site plans, and MEDEP site study documents, and information obtained from several site visits, suggested several areas may be potential source areas for chlorinated solvents related to USAF operations between 1958 and 1967. These potential source areas and their possible associated contaminants are listed below and shown on Figure 3.1-5.

- Leaking Floor Drain Pipes and Wastewater Lines. It is possible that spent solvents such as TCE, and wastewater from electronic and equipment maintenance areas, may have been released to the vitrified clay sewer pipes below the building, and then leaked from the pipes into the soils underlying the Former GAT Facility floor slab. Potential releases below the building are supported by soil vapor testing completed by USACE in 2003 and 2004 that indicated detections of TCE at concentrations up to 28 parts per billion by volume (ppbV) (150 $\mu g/m^3$) (USACE, 2008b). Additional sub-slab soil vapor testing was conducted in 2010, with a maximum reported TCE concentration of 145 $\mu g/m^3$ (Woods Hole Group, 2010). However, soil testing at the same locations below the building indicated only one detection of TCE, at an estimated 1.1 µg/kg, suggesting that residual soil contamination is either: 1) minimal and well below applicable standards; or 2) isolated in limited discrete areas that could not be found without significantly impacting the integrity of the building. The USACE 2006 indoor air tests had no detections of TCE inside the building (USACE, 2008b). The November 2010 indoor air results were compared with USEPA Regional Screening Levels (RSLs), Department of Defense Risk Based Concentrations (RBCs) and MEDEP Indoor Air Targets (IATs). No VOCs, (including those detected in soil vapor), were detected at concentrations above commercial RSLs, IATs or RBCs. TCE was detected in two indoor air samples at concentrations below RBCs, RSLs, and IATs for residential use, indicating a lack of significant soil vapor intrusion into the building through the slab (Woods Hole Group, 2010).

- Cesspool and Sewer Line. It is possible that wastewater from the equipment and electronics maintenance areas leaked out of the vitrified clay pipe and/or was discharged into the cesspool. However, tests of the cesspool effluent, adjacent soils and groundwater have resulted in no detections of TCE above 2 ppb (µg/L in water and µg/kg in soil) (USACE 2007 and JCO 2008b).

- Eastern Dry Well. If the Telco room's floor drains were mistakenly tied into the rainwater dry well line, wastes from maintenance activities would have been discharged into this drywell. However, tests of the soils and groundwater adjacent to the dry well did not detect any TCE (JCO, 2008b).

- Telco and Generator Exterior Doors. It is possible that spent solvents and other liquid waste were disposed in small quantities outside these doorways, especially during winter. However, tests of the soils in the vicinity of these doors did not detect any TCE (JCO, 2008b).

- 1962-1967-era Ground Scars near the existing on-site salt storage shed. Four ground scars or areas of disturbed ground which may represent historical disposal areas are documented east of the Former GAT Facility. Tests of the soils in these areas did not detect any TCE, with the exception of an estimated 16 µg/kg TCE reported in overburden boring OB-4 at 19 feet below ground surface (fbgs) (JCO, 2008b and JCO, 2010).

- 1962-era Ditch. The ditch draining the southern part of the FUDS property may have transported cesspool overflow offsite via overland flow or may have drained water from melting snow or heavy rains away from the FUDS property. However, as mentioned above, tests in the cesspool area, including downstream, did not detect any TCE above 2 ppb (USACE 2007 and JCO 2008b).

3.3.2 Nature and Extent of Contamination

Soil

No CVOC were detected in 140 soil samples collected on-site in April 2008 at two-foot depth intervals from 20 boring locations with the exception of an estimated 16 µg/kg TCE at 19 fbgs in OB4, adjacent to and west of the salt shed and well GB-MW-01 (JCO 2008b). TCE was detected at an estimated 1.1 µg/kg in one of eight soil samples (GB-SB-04a-3'-5') collected in 2004 from beneath the former GAT facility building between three and five feet below the slab (USACE, 2008b). No TCE was detected in 20 soil borings conducted in the vicinity of the salt shed (JCO, 2010). All on-site test locations with all historical TCE detections in soil and soil gas samples are shown on Figure 3.3-1. TCE was only detected in two soil samples out of a total of

188 samples collected from the Site suggesting that there is not a significant source of CVOC in the soils at the site, and if any exist, they are in small and isolated locations.

Soil Gas and Indoor Air

A 2003 passive soil gas screening study around the exterior of the former GAT facility detected TCE in soil gas, with the highest level detected indicated that at the south side of the Facility where the sewer pipe exits (Figure 3.3-2) followed by the east–center side of the building. The tests of soil gas in the cesspool area were consistently non-detect except one near the cesspool pipe inlet which contained levels near the laboratory reporting limit (USACE, 2008b).

Eight soil gas samples were collected in 2004 from beneath the building slab in Summa Canisters and analyzed using Method TO-14A. The eight soil vapor (and associated soil) samples were collected at four locations (two depths at each location) below the building, including from just beneath the slab and from 2-4 feet below the slab and gravel sub-base, at locations most likely to contain TCE based upon the building former uses, plumbing and the soil vapor results. TCE was detected in seven of the eight samples, with a maximum of 28 ppbV (which equals 150 $\mu g/m^3$) in sample GB-SG-47b-3'-4' (also shown on Figure 3.3-1) (USACE, 2008b). Eight additional soil samples were collected from the same locations in November 2010. The 2010 reported soil vapor concentrations of TCE ranged between 1.1 and 145 $\mu g/m^3$ (Woods Hole Group, 2010). There was no correlation between the shallow and deep locations in the 2006 results (i.e., the highest concentrations in the shallow samples did not correlate with the highest concentrations in the deeper samples), however, the highest two TCE concentrations reported in 2010 were both collected at SG-47, located below the former generator room, near the southeast corner of the building.

A Johnson-Ettinger vapor intrusion model was run as part of the human health risk assessment (see Attachment 3 of Appendix 5). The results of the model runs indicate that groundwater concentrations of 60 μg/L TCE (as reported at the on-site well GB-MW-01) would

result in soil vapor concentrations of TCE at the groundwater surface on the order of 1,800 ppbV. Although this concentration projection is for soil vapor at the water table, which will attenuate some as soil vapor migrates upward towards the slab, it is still significantly higher than the observed concentrations below the building. The lowest groundwater concentration modeled was 1.9 µg/L, which was projected to produce soil vapor concentrations of approximately 58 ppbV (311 $\mu g/m^3$). This projected soil vapor concentration for approximately 2 ppb TCE in groundwater is approximately twice that measured in the soil vapor testing. Thus the observed TCE in soil vapor is likely due to single-digit parts per billion dissolved groundwater contamination, and is much lower than would be expected if NAPL were present.

Indoor air samples were collected from the former GAT Facility building in 2006 and 2010. TCE and its initial breakdown products were not detected above the reporting limits in any of the 2006 indoor air samples. The reporting limits for the 2006 low-level TO-15 method used ranged from 0.054 to 0.54 $\mu g/m^3$ which are significantly lower than the Site-specific indoor air screening level of 12.2 $\mu g/m^3$ (USACE, 2008b and Human Health Risk Assessment in Appendix 5). No VOCs, (including those detected in soil vapor), were detected in the 2010 samples at concentrations in indoor air above commercial RSLs, IATs or RBCs. TCE was detected in two of four indoor air samples at concentrations of 0.124 and 0.145 micrograms per cubic meter, below RBCs, RSLs, and IATs for residential use, and the Site-specific indoor air screening level, indicating a lack of significant soil vapor intrusion into the building through the slab (Woods Hole Group, 2010).

Groundwater-Overburden

In 2006, a water sample collected from a seep exuding from the bedrock in a test pit south of the former GAT Facility building (TP03) contained 1.3 µg/L TCE (USACE, 2007). CVOC were detected in four of eight on-site groundwater samples collected from overburden monitoring wells in April 2008 (JCO, 2008b). Multiple analyses were run on each of several of the samples, including analyses by the on-site laboratory, MEDEP, and the USACE quality assurance laboratory, ESS. The ranges of concentrations reported for the overburden

groundwater samples are presented herein. TCE was detected in three locations, at estimated concentrations of 0.3 µg/L in OB20, 0.7 to 1.4 µg/L in OB17, and 0.91 to 1.7 µg/L in OB19. An estimated concentration of 0.9 µg/L tetrachloroethene (PCE) was reported in the water sample collected from OB8. In November, 2008 the OB wells containing water were re-sampled. Similar concentrations of TCE were reported, including: 0.6 µg/L in OB-8, 1.4 µg/L in OB17, and 1.0 µg/L in OB19 (JCO, 2009). Additional sampling of selected overburden wells was conducted by USACE in May 2009 and November, 2010. Similar results were reported, with less than 1 ppb TCE detected in OB8, OB19 and OB-20 (USACE, 2009 and 2010). These data indicate low level (less than 2 µg/L) CVOC contamination is present in groundwater at the bedrock surface east and south of the former GAT facility building.

Groundwater-Bedrock

Historical hydrophysics and packer sampling in on-site bedrock wells reported TCE detections ranging from 8.7-60 µg/L (Northeast Geophysical Services, 2001; RAS, 2006 and JCO, 2009). The highest TCE concentration was measured in on-site bedrock monitoring well GB-MW-01 (60 µg/L) and the second highest in on-site bedrock monitoring well GB-MW-02 (25 µg/L). The depth to the peak concentration is lower in GB-MW-02 (86-96 feet below top of casing (fbtoc)), than in GB-MW-01 (60-75 fbgs). There have been very few detections of TCE daughter breakdown products that would be indicative of natural biodegradation processes. The on-site water supply well, GB-PW-01, has never had TCE detected in it (MEDEP, 2006; USACE, 2008a; JCO, 2009). As discussed previously, in 2008 Flute™ liners with multiple sample ports were installed in GB-MW-01 and -02 and four bedrock wells were installed with a total of seven separate sampling intervals. The results of a November 2008 on-site groundwater quality monitoring event are shown on Figures 2.2-11 through 2.2-16 (3 plan view maps and 3 x-sections). TCE has been detected to depths of 200 feet below ground surface (16.5 µg/L TCE reported in GB-MW-02, Port 4 in November, 2008). Additional sampling of the GB-MW-01 and -02 Flute ports was conducted by USACE in May 2009 and semi-annually through 2012. Similar results were reported. The data from November 2010 included maximum TCE concentrations reported at 42 and 41 ppb in GB-MW-01 Ports 1 and 2 respectively, and 21 ppb

TCE in GB-MW-01 Port 3. TCE in GB-MW-02 in November 2010 was reported at 22 ppb in Port 2, and 9 ppb in Port 3 (USACE, 2009 and 2010).

Pore water adjacent to surface water bodies has been tested at four locations near the Site: GB-SW-01, -02 (East Pond), -03 and -04 (West Pond). The four porewater sample locations are shown on Figure 3.2-1. TCE was detected in porewater at concentrations up to 4.2 µg/L in GB-SW-01 (previously GB-DW-23) and at concentrations up to 3.6 µg/L at GB-SW-04, but not detected at GB-SW-02 or GB-SW-03 (USACE, 2008a, 2009 and 2010). In June and November 2010, TCE was not detected at GB-SW-02 and -03, but was reported present at concentrations below 1 ppb in GB-SW-01 and -04 (USACE, 2009 and 2010).

Testing of nearby private and public water supplies for TCE has been on-going since the 1980s. Three public water supply wells and 55 domestic supply wells within one mile of the Former GAT Facility have been tested for VOCs (MEDEP, 2006; USACE, 2008a, 2009 and 2010).

Based upon a conservative evaluation of distance versus the June 2010 reported TCE concentrations (Figures 3.3-3 and 3.3-4), the maximum probable areal extent of the bedrock aquifer containing concentrations of TCE greater than 5 µg/L extends approximately 950 feet to the northeast and southwest, and up to 400 feet to the southeast from GB-MW-01. These extrapolations used "worst case" logarithmic interpolations (e.g. all of the data is below the extrapolation line). Due to variation in the fracture network and connectivity, that are many locations that are less than 950 feet in the northeast/southwest direction and still do not exceed the MCL. Additionally, the 400 foot distance to the southeast does not extend the same distance to the northwest, as the water supply GB-PW-01, which is 170 feet northwest of GB-MW-01, has never had a detection of TCE.

The only public supply wells to have documented TCE detections (at concentrations up to 3.7 µg/L, below the USEPA maximum contaminant level (MCL) of 5µg/L) are the Homestead

Estates wells (GB-PW-02 and GB-PW-03) located west-southwest of the Site (see Figure 3.3-5). Six existing private water supplies have had TCE detections. Two of the wells have been replaced (GB-DW-1 and GB-DW-23). Only one well has had TCE concentrations above MCLs (on one occasion, at 5.1 μg/L in GB-DW-22 in May 2007). Subsequent test results of this well have been below the MCL, and that residence is currently equipped with an activated carbon filtration system. Graphs of TCE in water supplies versus time are provided on Figure 3.3-5 (data from MEDEP, 2006; USACE, 2008b, 2009 and 2010; and Woods Hole Group, 2012).

Inspection of the graph for GB-DW-22, northeast of the Site, indicates variation in TCE concentrations relative to seasonal and/or recharge (rain or snow melt) events. Specifically, TCE concentrations are generally higher in the samples collected in April or May, about the time of the spring snow melt recharge to the aquifer. The TCE concentrations in GB-DW-22 intermittently increased between 1995 and 2007 and reached a peak of 5.1 ppb in May, 2007. However, since that time the concentrations have all been less than the MCL of 5 ppb.

In the wells to the southwest (GB-DW-54 & 55 and GB-PW-02 & 03, there are no obvious correlations between TCE concentrations and seasonal changes, however, the saw-toothed nature of the graphs suggests that aquifer responses to recharge events may temporarily alter TCE concentrations in the wells. Figure 3.3-5 also indicates that all TCE concentrations southwest of the Site (GB-PW-02 & -03 and GB-DW-54 & -55) are less than the MCL. Note that the numerous samples in these wells with no detected TCE were plotted at the laboratory reporting limit, and estimated concentrations below that limit were included in the graphs.

The reported TCE detections in water supply wells and other sampling locations were used to prepare a map of the extent of TCE in groundwater which is presented on Figure 3.3-6. This figure is based upon the concentration of the most recent TCE detection in each well (as of October 2010). The data from on-site wells OB-5a, OB-7 and OB-11 were not included in the figure, as those wells are screened in the ephemerally perched overburden aquifer, and are not representative of conditions in the bedrock aquifer. Pore water locations GB-SW-01 and GB-

SW-04 were included on the figure, as those locations are interpreted to be bedrock discharge areas.

Graphs of TCE concentrations in on-site monitoring wells GB-MW-01 and GB-MW-02 are provided on Figure 3.3-7. It is notable that these two wells were "open-hole" completions until October, 2008. That is, the bedrock was exposed the entire length of the wells below the steel casing. This likely allowed mixing and vertical contaminant transport within the wells, and from one fracture or rock zone to another. As described previously, Flute™ liners were installed in both wells during the RI. These liners prevent fluid flow up or down the well, and allow repeated collection of discrete samples at predetermined depths. The data from 2000 and 2005 shown on Figure 3.3-7 is from packer tests, where specific intervals of the wells were isolated by temporary packers for the sample collection (Northeast Geophysics Services, 2001 and RAS, 2006). Thus, the data from these two monitoring events may not be directly comparable to the samples collected in 2008-2010. Overall, allowing for seasonal and recharge induced variation, the data from both wells suggests a decline in TCE concentrations over time except for GB-MW-01 Port 3 at 124.5 fbtoc (Rock Unit B), which increased between 2008 and 2010 (JCO 2009, USACE 2009b and 2010). Due to the limited (3-4 points) time–series data from the Flute™ samplers, predictions of future concentrations for each sample depth are not reliable at this time. However, the rough extrapolation of the two most contaminated zones (Port 2 in both wells) shown on Figure 3.3-7 indicates that TCE concentrations in Bedrock Unit A at the Site will remain above the 5 ppb MCL for decades to come.

Summary

A summary of conclusions regarding the nature and extent of DoD-related contamination at the Site is provided below:

- Multiple on-site soil investigations have only detected TCE twice; at an estimated 16 µg/kg reported at 19 fbgs in OB-4 and an estimated 1.1 µg/kg reported at GB-SB-04 at 3-5 fbgs beneath the slab of the former GAT building.

- The maximum reported TCE soil vapor concentration was 28 ppbV (150 $\mu g/m^3$) detected below the former GAT building. TCE was detected in the 2010 indoor air samples collected in the Municipal Building, but at concentrations below Site specific limits, state residential IATs, and federal RSLs and RBCs.

- The maximum TCE concentration reported in porewater samples collected adjacent to surface water ponds (GB-SW-04 near West Pond and GB-SW-02 near East Pond) or in wetlands (GB-SW-01 and GB-SW-03) - interpreted to be bedrock aquifer discharge locations - was 4.2 µg/L at GB-SW-01. TCE was also detected in GB-SW-04 to the southwest (up to 3.6 µg/L), but not in GB-SW-02 to the southeast or GB-SW-03 to the south.

- The maximum reported TCE concentration in the bedrock aquifer is 60 µg/L in on-site monitoring well GB-MW-01, and the maximum depth of reported contamination is 200 fbgs.

- TCE has been reported in six existing off-site private water supply wells. There have been no reported TCE concentrations in off-site water supplies above the 5 µg/L MCL except for one sample from GB-DW-22 containing 5.1 µg/L in May 2007. Subsequent GB-DW-22 samples collected in 2008 through 2012 have all been below 5 ppb TCE.

- The extent of detected TCE concentrations in bedrock groundwater and porewater is approximately 500 feet wide, and extends approximately 3,000 feet in total, both to the northeast and to the southwest from the Site. The extent of TCE above 5 ppb using a "worst case" extrapolation from the most recent detections is less than 1,900 feet long in the northeast-southwest direction, and less than approximately 400 feet in the southeast direction.

- TCE concentrations vary, probably in response to seasonal and precipitation induced recharge events. Overall, since May 2007, all water supply samples have contained less than the MCL of 5 ppb TCE. However concentrations in on-site monitoring wells GB-MW-01 and GB-MW-02 are likely to remain above the 5 ppb MCL for decades to come.

There is no evidence indicating the presence of dense non-aqueous phase liquids (DNAPL) at the Site. However, the longevity of the low level groundwater contamination (discussed in the next section) may be the result of discrete DNAPL droplets and/or diffused contamination trapped in the till, saprolite or rock matrix and/or fractures.

3.3.3 Contaminant Fate and Transport

This section describes the implications of the Site history, geology, and the hydrogeological setting on contaminant fate and transport, as reflected by changes in groundwater quality over time. Assuming that the TCE observed in soils and groundwater is a result of DoD activities, then the release(s) took place prior to 1968. If that is the case, the TCE contamination is more than 40 years old.

Implications of the overburden geology upon vertical contaminant fate and transport are summarized as follows:

1. The presence of the permeable dry silty gravel over thick, dry, low permeability silt till, suggests that if CVOC were released at the Site, they would accumulate in local depressions in the till surface, and gradually migrate vertically downward towards the water table located in the bedrock aquifer.

2. The relatively low permeability, dry saprolite observed in soil cores may have preferential pathways parallel to the steep bedding, allowing near vertical migration of contaminants downward to the bedrock aquifer.

The bedrock geology suggests that a preferential contaminant transport northeast-southwest pathway exists in the rock as documented below:

1. Two on-site monitoring wells GB-MW-01 and GB-MW-02 have fracture intervals which contain TCE at concentrations in the 20-60 µg/L range in the shallow Unit A bedrock aquifer (the lower fractures in these wells are less contaminated). Data from the most contaminated intervals in these two wells is presented on Figure 3.3-7. These data, combined with the persistence of low level TCE concentrations in GB-DW-22 (see Figure 3.3-5) suggest that the TCE concentration in the worst-case well interval (GB-MW-01 Port 2) will remain above the MCL of 5 µg/L for decades to come. The lack of long-term time series data at this location makes it almost impossible to project accurate estimates of future groundwater contamination concentrations.

2. The majority of the transmissive zones in rock occur within rock Unit A, and have multiple orientations as measured on a well borehole scale. Solution weathering along carbonate beds and veins has created preferential groundwater flow pathways, primarily in the northeast-southwest direction.

3. The few transmissive fractures within rock Unit B are mostly parallel to the northeast-southwest striking bedding, indicating that groundwater flow in this horizon is generally structurally controlled by bedding planes and fold geometry.

4. Anastamosing zones of low velocity rock, interpreted to reflect high porosity areas, extend beneath the Site and create preferential groundwater flow pathways in a northeast/southwest direction.

Implications of the hydraulic gradient upon contaminant fate and transport are summarized below:

1. The piezometric head gradient below the Site in the saprolite, Unit A, and Unit B is generally directed towards the most contaminated well, GB-MW-01. Vertical gradients in the bedrock on-site are generally downward from the saprolite to Unit A, and upward from Unit B to Unit A (USACE, 2008b and JCO, 2009). These gradients may act to limit migration of TCE from the vicinity of GB-MW-01, and encourage rapid dilution and reductions in TCE concentrations with distance from this location.

2. The presence of artesian conditions in many of the wells, such as GB-MW-01 and GB-MW-02, indicates that recharge is coming from an upgradient area. Although regional influence from miles away is not impossible, local recharge to the rock aquifer likely exists at some location where the rock surface is at greater elevation than the observed heads during portions of the hydrological cycle. There are areas northeast of the Site that are above the seasonal low water elevation at the Site, including the cemetery and outcrops further northeast on Lakeview Drive.

3. Long-term measurements in bedrock wells indicate artesian conditions, and suggest that the piezometric head elevation is often higher below the Site than in the off-site well to the northeast, GB-DW-01. This suggests that the hydraulic gradient may support contaminant migration towards the northeast during portions of the year.

4. Water level monitoring indicates that GB-MW-01 is hydraulically connected and within the area of influence of Homestead Estates well GB-PW-3. The pumping in GB-PW-03 could encourage contaminant migration towards the southwest.

Implications of the groundwater chemistry suggesting that significant biodegradation of TCE is unlikely are as follows:

1. Dissolved oxygen (DO) levels in the contaminated bedrock wells ranged from approximately 2 to 8 ppm (see Figure 3.3-8). DO concentrations decrease with depth. These DO concentrations are likely too high for anaerobic microbial dehalogenation to occur (ITRC, 2008).

2. Oxidation Reduction Potential (ORP) levels in the area of the highest TCE groundwater concentrations around monitoring wells GB-MW-01 and GB-MW-02 ranged from 478 to 537 mV (see Figure 3.3-9) (data range represents standard hydrogen electrode (SHE) corrected values). This data in conjunction with the DO levels further supports the presence of an aerobic environment near GB-MW-01 and GB-MW-02.

3. Chloride concentrations in bedrock monitoring wells are generally on the order of 500 to 2,000 parts per million (ppm) (see Figure 3.3-10). These concentrations may inhibit biological activity that could degrade TCE (Lee and Liu, 2006). However, the reduction in TCE degradation observed by Lee and Liu occurred at higher chloride concentrations than measured at the Site, and several bioremediation experts have communicated to MEDEP the opinion that chloride concentrations at the Site would not affect biodegradation.

4. Daughter products of TCE have been detected in only one location. Low concentrations of cis-1,2-DCE were detected in GB-SW-04 (0.3 ppb in December 2009 and 0.6 ppb in May 2007).

5. The reported concentrations of TCE in 2008 at individual intervals of GB-MW-01 and -02 are similar to those reported during packer testing conducted by RAS in 2005 (GB-MW-01 had maximum reported TCE concentrations of 51-60 μg/L in 2005 and 48.9-52.2 μg/L in 2008; GB-MW-02 had maximum reported TCE concentrations of 21 μg/L in 2005 and 24.9-25.7 μg/L in 2008). These data and the analytical results from the more recent sampling support a gradual decrease in TCE concentrations over time, probably due to dilution and dispersion, but insufficient time series data is available to accurately predict future concentrations.

6. Water supply wells monitored since 1989 indicate that seasonal and/or recharge events affect TCE concentrations. Graphs of TCE concentrations versus time for wells with multiple detections are presented as Figure 3.3-5. In general, TCE concentrations in water supplies were below the 5 ppb MCL over the past twenty years. The only detection above the MCL in water supplies was one sample from private water supply well GB-DW-22 containing 5.1 ppb TCE in May 2007. TCE

concentrations in GB-DW-22 intermittently increased between 1995 and 2007 and reached a peak of 5.1 ppb in May, 2007. Subsequent samples have all had concentrations under the 5 ppb MCL. This water supply well (GB-DW-22) is equipped with a point of use filtration device.

3.3.4 Summary and Conclusions

In summary, it is likely that DOD released liquids containing TCE into the environment in the vicinity of the GAT building and GB-MW-01 and OB-4 more than 40 years ago. The liquids migrated rapidly through the silty gravel, ponded in depressions in the till surface, and slowly infiltrated through fractures and relict bedding planes in the till and saprolite. TCE also likely diffused into the rock matrix. Residual TCE probably still exists in the till, saprolite or rock in the form of isolated droplets or sorbed to the matrix. No vadose zone source areas with soil contamination above Maine Soil Remedial Action Guidelines (RAGs) or evidence of non-aqueous phase liquids (NAPLs) were identified during any of the field investigation efforts at the Site.

Bedrock aquifer groundwater currently becomes contaminated due to contact with the residual TCE. There is little reductive dechlorination due to oxidizing conditions in the groundwater. The contaminated groundwater flows preferentially along permeable bedding-related pathways towards the northeast and the southwest. Temporary changes in the direction of flow occur in response to the pumping of GB-PW-03, recharge events, and/or seasonal groundwater piezometric head changes. Dilution of the TCE concentration to levels below MCLs occurs rapidly, due in part to the general high permeability of Unit A, and in part to the frequent changes in head conditions and resulting flow directions. The result is current concentrations less than MCLs in off-site water supplies.

The USACE is committed and required under CERCLA to continue to collect groundwater quality data which will allow on-going updated evaluations of changes in the contaminant levels. Future time series trends in TCE concentrations, including those below the 5

ppb MCL, will continue to be evaluated; and if increasing trends are evident then USACE will act to protect human health.

The following paragraphs are intended to evaluate the adequacy of the investigations and the presence of remaining data gaps. Investigation of this Site has been on-going for two decades. Long term water supply and porewater monitoring combined with extensive surface geophysics and on-site intrusive testing has resulted in an exceptionally comprehensive data set.

The data is more than sufficient to evaluate current on-site and off-site risks to human health and the environment. There is a lack of time-series data in the core of the bedrock aquifer TCE plume on-site; however the monitoring network is now in place to correct the data gap in the future.

The on-site soil and groundwater testing has been concentrated in likely source locations based upon soil vapor testing, historic uses, and historical areal photograph evidence of disturbed soils. While it is true that a limited release of TCE could have occurred between the tested locations, it would require demolition of the former GAT building, and excavation and testing of soils across virtually the entire property in order to prove or disprove the hypothesis that significant residual contamination still exists above Maine Soil Remedial Action Guidelines, (RAGs). Thus the lack of soil data indicating the presence of such a hypothetical source is not considered a data gap.

Numerous overburden wells on-site as well as off-site porewater testing demonstrates the lack of TCE contamination above MCLs in the ephemeral overburden aquifer. The groundwater and porewater data provides non-detect results surrounding the observed TCE contamination in the bedrock aquifer. The only possible exception to this statement is towards the southeast, where the on-site monitoring well GB-MW-04D had a concentration of 5.7 ppb TCE in June 2010, and 5.1 ppb in November 2010 (USACE, 2010). While there are multiple wells 2,000 – 3,000 feet further southeast with repeated tests showing no TCE, there may be exceedances of

the 5 ppb MCL beyond, but in close proximity to the former GAT facility southern property line. Although the extensive geophysical, chemical and geological data support the limits of contamination shown in Figure 3.3-6, due to local geologic variations and preferential pathways there are a number of locations within those limits that are not contaminated, and it is conceivable that there may be locations close to, but outside of those limits that would be contaminated if a rock well were drilled and tested.

Indoor air quality was tested in the former GAT building by USACE under probable worst-case conditions (in March 2006, during the heating season with frost in the ground and in November 2010), and no unacceptable risk to human health was found, even for residential use.

There is limited available analytical data to evaluate the aquifer chemistry in terms of the likelihood of biodegradation of the TCE. However, the absence of daughter products (cis 1,2-dichloroethene for instance) and cometabolites, and the presence of oxidizing conditions suggests that natural biodegradation is not a significant process causing TCE attenuation at the Site. Therefore, this lack of additional geochemical data is not considered a data gap.

3.4 LAND USE AND EXPOSURE PROFILE

3.4.1 Current and Future Land Use

The current land use for the FUDS property is municipal services. The Glenburn Town Offices, Glenburn Emergency Services building, and a Town Highway Department storage facility are located on the property. The municipal offices are located in the former GAT facility building. The Town also maintains some recreation facilities on the property. The land use in the vicinity of the property has changed from predominantly agricultural to rural residential. The decline in agriculture has resulted in an increase in wooded land. At present open land is present between developed properties. Due to Glenburn's proximity to Bangor, Orono, and Old Town, this trend of suburbanization will likely continue into the future (Glenburn, 2000). The study area is currently zoned Rural Residential with minimum lot size of 1.75 acres (Glenburn, 2004b), but the Town subdivision regulations provide for cluster development with smaller lot sizes

(Glenburn, 2004a). The Homestead Mobile Home Park to the south is an area of high density residential development. Future expansion of this development will have to be in conformance with the Town's Mobile Home Park Ordinance (Glenburn, 1994). The Town is not served by municipal water or sewer systems, but a public water supply well is present on the Site, and public and private wells are present in the study area as shown on Figures 3.4-1 and 3.4-2.

Potential human receptors within the FUDS property include personnel working in the Municipal Office building and the Emergency Services Building, residents accessing the Municipal Offices for business or social functions, potential future residents who use the on-site groundwater for a drinking water source, recreational users of the skate board park and horseshoe pits located on the property, and landscape, construction and maintenance workers who might encounter contaminated surface soil. Workers also access the Salt Storage Building area during wintertime, but no one works in this building. No intrusive activities occur routinely within the FUDS property.

Confirmed offsite human receptors are residents consuming or bathing with contaminated groundwater, using it to fill swimming pools, and infrequently wading through potentially contaminated groundwater discharging at the surface as springs and seeps. Potentially exposed workers include utility workers and construction workers involved in excavating, installing foundations and drilling wells in areas underlain by contaminated groundwater.

3.4.2 Natural and Cultural Resources

The Site and study area do not contain significant natural resources. Pushaw Lake is approximately 0.8 mile east of the FUDS property and Hollis Bog is approximately 0.7 mile southwest of the property. The municipal complex now located on the Site provides space in the Municipal Building for community functions and recreational opportunities in the form of horseshoe pits and the skate park. There are no historic resources listed on the National Register of Historic Places in Glenburn (Glenburn, 2000). The Lakeview Cemetery is located immediately northeast of the Site.

3.4.3 Demographics

The population of Glenburn was 4,594 according to the 2010 census, and 3,964 according to the 2000 census. The predominant housing type is single family residences, with a total of 2018 housing units present in 2010, 210 of which were vacant, rented or used seasonally. 97.1 % of the population was white (Maine State Planning Office, 2010).

3.5 ECOLOGICAL PROFILE

3.5.1 Habitat Types

Habitat types on-site and in nearby areas of interest were observed by ecologists from The Johnson Company and AECOM in October, 2008. The habitat types on the FUDS property consist of regularly mowed lawn in the immediate vicinity of the former GAT facility, and old field habitat maintained by seasonal mowing to the west and south of the former GAT facility which grades to the southwest into a birch-maple stand of small trees, mostly less than 2-feet in diameter. The farthest southwest edge of the property contains a stand of mature spruce, pine, and hemlock which forms a buffer between the property and the adjacent mobile home park. Animal trails were observed in the field to the southwest of the property (See photos in Appendix 4).

Maine habitat data indicates high value grasslands on the Site; however, the proximity of the trailer park, municipal complex, and surrounding residential areas reduces the habitat value of the area. Seasonal mowing maintains the grassland habitat, which supports small mammals, song birds, and insects. The young hardwood stand may provide deer browse.

The potential of off-site impact to surface water and wetlands has been investigated at a seasonal pond referred to as East Pond, east of Birch Avenue; a small pond referred to as West Pont, west of Cressy Avenue; and a small emergent and wooded wetland east of 97 Lakeview Road and north of Lakeview Road. Although National Wetland Inventory mapped wetlands do not occur within the study area, site inspection did identify wetlands at these offsite locations

listed above. Delineation of these wetlands was not performed. These surface water features are not identified on current or historical USGS maps.

East Pond has been described in previous studies as seasonal (USACE, 2008a). In October 2008 the ponded area was approximately 12 by 20 feet and contained one to two inches of standing water. The impounded area was surrounded by a low berm. Organic soils and sphagnum moss were visible along the path to the pond. The bottom of the pond was covered with leaves and no aquatic vegetation was observed, which would support the description of the pond as seasonal. Gray birch, white birch, and pines surrounded the pond. Steeplebush was a prominent feature of the understory. At the roadside on Birch Lane, goldenrod, alder, and hemlock were observed (Appendix 4). The vegetation, hydrology, and observed surface soils indicate a wetland habitat.

West Pond is a shallow pond approximately 90 by 60 feet with water depth estimated at approximately 2 feet in October 2008. The south end of the pond is bermed and a slow discharge flow exited through the berm to the south. Duckweed was present at several places around the edge of the pond, and inundated grasses were observed at the southern edge of the pond. Northern white cedar, hemlock, alder and sensitive fern were observed around the pond. Another smaller ponded area was present to the west of West Pond and was connected to it by what appeared to be a drainage ditch. A drainage ditch from one of the nearby residential properties with flowing water entered this smaller ponded area. Duckweed was thick in the drainage ditch between the smaller pond and West Pond. A grove of cedars is located between the two ponds. A spring on the northeast edge of West Pond appears to be the primary water source for the pond. The area was densely wooded to the north and west with mixed conifers and hardwoods. Large white cedars and red maples were the dominant trees. In the more open areas around the pond, grasses, asters, wild geranium and wood mint were observed. Frogs were also observed, but fish were not evident. The area is bordered by the trailer park lots to the east and residences on large wooded lots to the west. Trailer park residents who granted access over

their property reported that a bear had been observed in the vicinity of the pond in the summer. The vegetation and hydrology in these areas indicates a wetland habitat.

East of 97 Lakeview Road, an area with shallow standing water and grassy hummocks approximately 30 feet by 40 feet was present that was surrounded by small trees less than 1 foot in diameter. Asters, rice-cutgrass, steeplebush, jewelweed, ferns, sensitive fern killed by frost, and raspberry were observed. Alder and cedar were present as well as white birch to the north and east of the emergent marsh area. Winterberry was present along the road edge of this wooded area. The extent of the wetland area was not determined. Regional maps characterize the forested area between Lakeview Road and Vista Lane as Evergreen Forest, not Wetland Forest. The road slopes toward the east from the cemetery and the road ditch was wet and had standing water. Cattails, reed canary grass, and rice cutgrass were present in the ditch. The standing water and vegetation in this area indicate a wetland habitat.

On a regional scale, the primary habitats are the lacustrine habitat of Pushaw Lake to the east, evergreen and mixed evergreen and deciduous forests surrounding the study area, and the wetland forest habitat of Hollis Bog to the southwest of the study area.

3.5.2 Environmentally Sensitive Areas and R,T,E Species

No environmentally sensitive areas or state or federally listed rare, threatened, or endangered species occur on the Site or in the surrounding study area (see letters from the Maine Department of Inland Fisheries and Wildlife and the U.S. Fish and Wildlife Service included in Appendix 6). As noted in Section 3.5.1, wetland areas that are not shown on the National Wetland Inventory maps do occur in the study area.

3.6 PATHWAY ANALYSIS

Complete analyses of pathways are provided in the Human Health Risk Assessment (HHRA) report in Appendix 5 and in the Ecological Risk Assessment report in Appendix 6. Summaries are provided in Sections 3.6.1 and 3.6.2 below.

3.6.1 Human Receptors

The HHRA used an exposure assessment process to determine potential receptors (i.e., people who may contact the impacted environmental media of interest). Potential exposure scenarios identifying appropriate environmental media and exposure pathways for current and potential future land uses were then developed. Soils were not evaluated because no DoD related soil contamination has been detected above 3 fbgs. Therefore, the HHRA considers only potential exposure to groundwater and volatilized constituents in indoor air. The exposure scenarios are listed below:

- The off-site groundwater exposure pathways include residential exposure through ingestion of drinking water, inhalation of volatiles during showering and dermal contact with volatiles during showering.

- Potential on-site exposure pathways include the same residential groundwater exposure scenarios listed above for off-site, and also exposure to volatilized constituents in indoor air including a future resident, future worker and future day care child.

3.6.2 Ecological Receptors

The ecological risk assessment included evaluation of data for soil, groundwater and porewater. Porewater and off-site groundwater data were used to represent off-site surface water bodies, as there are no on-site surface water bodies. On-site groundwater data were not evaluated because there is no complete exposure pathway at the site for ecological receptors to be exposed to groundwater. That is, the depth to contaminated groundwater is several feet below ground surface, and there is no surface water on-site. The exposure scenarios used for the ecological risk assessment are listed below.

- Terrestrial plants and invertebrates exposed directly to contaminants of concern in on-site surface soils;

- Terrestrial wildlife receptors exposed to contaminants of concern via consumption of impacted plant items; and

- Amphibians, benthic invertebrates, and aquatic receptors in off-site surface water bodies exposed to contaminants of concern in groundwater discharge.

4.0 RISK ASSESSMENTS

4.1 HUMAN HEALTH RISK ASSESSMENT

The purpose of the HHRA is to evaluate potential human health effects of chronic exposures to constituents detected in samples of environmental media collected from the Site. The HHRA will identify whether there are media and corresponding COCs that risk management must address (e.g., through institutional controls, contaminated media removal, or *in-situ* treatment. The HHRA was conducted to be consistent with USEPA and MEDEP guidance including, but not limited to, the following documents:

- Guidance for Human Health Risk Assessments For Hazardous Substance Sites In Maine. (MEDEP, 2009);
- Risk Assessment Guidance for Superfund (RAGS): Volume 1 - Human Health Evaluation Manual (Part A) (USEPA, 1989);
- Exposure Factors Handbook (USEPA, 1997a);
- Guidance Manual for Human Health Risk Assessments at Hazardous Substance Sites (MEDEP, 1994)." and;
- The most recent version of USEPA's Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites (May, 2011) were used for this HHRA.

The full Human Health Risk Assessment report is presented in Appendix 5.

4.1.1 Data Evaluation

This step of the HHRA involves compiling and summarizing the data for the HHRA, and selecting constituents of potential concern (COPCs), which will be evaluated quantitatively. Site data are available for soil, groundwater and porewater. Groundwater data were divided into on-site and off-site areas. Porewater data were used to represent off-site surface water bodies. There are no on-site surface water bodies. Maximum detected concentrations in each media were compared against appropriate risk-based screening levels. The risk-based screening levels are based on daily exposure and conservative exposure assumptions (such as daily drinking

water exposure). If the maximum detected concentrations are lower than these screening levels, then potential risks are not predicted, and these constituents are not carried through the risk assessment. Furthermore, these constituents would also not pose risks above target levels through other site-specific exposure pathways. The screening level values used in the HHRA were the most recent USEPA's Regional Screening Levels available at the time (RSLs; USEPA, 2011). The RSLs for constituents based on noncancer effects were based on a Hazard Quotient (HQ) of 0.1 (in other words, they were divided by a factor of 10) to account for cumulative effects.

All of the maximum detected concentrations of constituents in soil were found to be lower than residential soil RSLs; therefore soil was not selected as a medium of concern in the HHRA. For off-site groundwater, seven wells (GB-DW-22, GB-DW-23, GB-DW-54, GB-DW-55, GB-DW-56, GB-DW-61 and GB-PW-03) were found to have detected concentrations of one of two constituents that exceeded the drinking water RSLs: trichloroethene (TCE) and methyl-tertiary-butyl-ether (MTBE). TCE was identified as a chemical of potential concern (COPC) for all of the wells, except GB-DW-61. MTBE was a COPC in GB-DW-61 only; however, since DoD ceased operations in 1967, and MTBE did not come into use until the 1980's, MTBE is not considered a DoD-related contaminant. The only detection above the MCL in private water supply wells was one sample from GB-DW-22 which contained 5.1 ppb TCE in May 2007. TCE concentrations in GB-DW-22 intermittently increased between 1995 and 2007 and reached a peak of 5.1 ppb in May, 2007 (the one MCL exceedance). Subsequent samples have all had concentrations under the 5 ppb MCL. This water supply well (GB-DW-22) is equipped with a point of use filtration device. No other constituents were identified as COPCs in off-site groundwater. For on-site groundwater, four constituents in five locations (GB-MW-01, GB-MW-02, GB-MW-03, GB-MW-04 and Cesspool Water) were found to have detected concentrations that exceeded the drinking water RSLs: TCE was identified as a COPC for all of the samples, except for Cesspool Water. COPCs identified in Cesspool Water were 1,3,5-trimethylbenzene, 1,4-dichlorobenzene and naphthalene. No other constituents were identified as COPCs in on-site groundwater.

The porewater samples were used to estimate possible concentrations in off-site ephemeral streams and surface water bodies. The maximum detected concentrations of 1,3-dichlorobenzene and TCE exceeded the RSLs for tap water. For both constituents, the exceedance was by less than an order of magnitude. It is likely that porewater would be significantly diluted by the time it discharges into a surface water body, and therefore the actual surface water concentrations would likely be less than the RSLs. In addition, exposure to surface water is expected to be limited because of the small size and ephemeral nature of the surface water bodies. A cumulative screen which compared the maximum detected porewater concentration to the USEPA RSLs for residential tap water (i.e., drinking water) was conducted, and is presented in the HHRA in Appendix 5. The potential cumulative risk and hazard index (HI) associated with ingestion of the maximum concentrations for each compound detected in pore water are below MEDEP target risk/HI levels of $1x10^{-5}$ and 1, respectively. Therefore, since exposure to these concentrations in drinking water does not pose a risk/HI above target levels and concentrations detected in pore water will likely be diluted in a potential downgradient surface water body or drinking water point of exposure, dermal exposure to these concentrations in surface water will also have a cumulative risk/HI below target levels. For these reasons, porewater was not selected as a medium of concern.

Thus, overall, off-site and on-site groundwaters were the only media selected for further quantitative evaluation in the HHRA.

4.1.2 Exposure Assessment

The purpose of the exposure assessment is to estimate the magnitude and frequency of potential human exposure to COPCs identified in media of interest at the site. Groundwater exposure was evaluated for a resident, because a resident is likely to receive the highest exposures. Off-site groundwater samples were collected from existing public water supply and private drinking water wells. Off-site groundwater exposure pathways evaluated in the HHRA included potable use of groundwater (ingestion, inhalation while showering and dermal contact while showering), and exposure to volatilized constituents in indoor air. Potential future on-site

receptors to groundwater included a resident (ingestion and inhalation and dermal contact while showering, as with off-site residents), worker and day care child. These receptors were identified on the assumption that the site could be developed for residential or commercial uses in the future. The site buildings are served with groundwater from the on-site well GB-PW-01. This well has not shown a detection of TCE since it was first tested for TCE in 1995. However, several of the on-site monitoring wells have shown the presence of chlorinated solvents above screening levels, and also above drinking water standards. Another exposure pathway identified for on-site receptors was exposure to volatilized constituents in indoor air. Risk estimates for the vapor intrusion pathway were calculated using the USEPA version of the Johnson and Ettinger model (JEM). Default exposure times and inhalation rates were used. For the on- and off-site residents, potential volatile organic compound (VOC) concentrations in shower air were modeled using a model developed by Foster and Chrostowski (1987).

4.1.3 Dose-Response Assessment

The purpose of the dose-response assessment is to identify the types of adverse health effects a constituent may potentially cause, and to define the relationship between the dose of a constituent and the likelihood or magnitude of an adverse effect (response). Adverse effects are classified by USEPA as potentially carcinogenic or noncarcinogenic (i.e., potential effects other than cancer). Dose-response values for COPCs at the site were selected from USEPA and California EPA sources in accordance with a hierarchy of sources recommended by USEPA (2003).

4.1.4 Risk Characterization

Risk characterization is the process in which the dose-response information is combined with quantitative estimates of human exposure. The result is a quantitative estimate of the likelihood that humans will experience any adverse health effects given the exposure assumptions made. Two general types of health risk are characterized for each potential exposure pathway considered: potential carcinogenic risk and potential noncarcinogenic risk, called Hazard Index (HI). The total cancer risk for each receptor was compared to the USEPA's

target cancer risk range of 10^{-4} to 10^{-6} (one in ten thousand to one in one million). The total cancer risks were also compared to $1x10^{-5}$, which has been set by MEDEP as the upper bound for an acceptable cancer risk level in order to facilitate MEDEP review. The total HI for each receptor was compared to the acceptable HI of 1 defined by USEPA and MEDEP.

For the off-site resident, the total potential carcinogenic risks based on results from individual off-site wells were all within or less than USEPA's target cancer risk range of $1x10^{-4}$ to $1x10^{-6}$, and MEDEP's upper bound cancer risk of $1x10^{-5}$. The total potential carcinogenic risk for the worst case off-site well GB-DW-22 was ($6.11x10^{-7}$). More than 90% of the total risk estimates were due to the water consumption pathways (ingestion, inhalation while showering, and dermal contact while showering). Risk from the vapor intrusion pathway contributed less than 10% to the total risk estimates. The total HIs for each well were below USEPA and MEDEP's upper bound HI of 1.

For the on-site resident, total potential carcinogenic risks based on historical maximum detected concentrations from individual off-site wells were all within or less than USEPA's target cancer risk range of $1x10^{-4}$ to $1x10^{-6}$. Additionally, the total potential carcinogenic risks of the most contaminated on-site well, GB-MW-01, was below the MEDEP's upper bound cancer risk level of $1x10^{-5}$ ($7.2x10^{-5}$). GB-MW-01 is the "worst case" location, with a historical peak 60 ppb TCE which was used for the risk assessment. The total HIs for each well were below USEPA and MEDEP's upper bound HI of 1.

It was assumed that the other on-site receptors, the worker and the day care child, could be exposed to vapors in indoor air arising from groundwater. For both the on-site worker and day care child, the total potential carcinogenic risks based on results from individual on-site wells were within or less than USEPA's target cancer risk range of $1x10^{-4}$ to $1x10^{-6}$, and less than MEDEP's upper bound cancer risk of $1x10^{-5}$. Total HIs for each well were below USEPA and MEDEP's upper bound HI of 1. Indoor air sampling conducted at the former GAT facility in 2006 and 2010 did not report TCE in the indoor air except at concentrations below residential

safe levels as determined by MEDEP IATs, federal RSLs and RBCs, and approximately an order of magnitude below the Site specific risk based value of 12.2 μg/m^3 (reported indoor air TCE was less than 1 μg/m^3).

Comparisons to Drinking Water Standards - The on-site and off-site wells with identified COPCs were also compared to USEPA drinking water guidelines, and Maine Maximum Exposure Guidelines (MEGs) in order to facilitate MEDEP review. For the off-site water supply wells, TCE in well GB-DW-22 (5.1 μg/L) slightly exceeded USEPA's Maximum Contaminant Level (MCL) for TCE of 5 μg/L on one occasion in 2007, but not in more recent tests. All concentrations in the other water supply wells were lower than guidelines. For the on-site wells, the maximum historic TCE in well GB-MW-01 (60 μg/L) exceeded both the USEPA MCL (5 μg/L) and MEG (32 μg/L) for TCE. Maximum reported TCE in wells GB-MW-02 (26 μg/L), GB-MW-03 (5.1 μg/L) and GB-MW-04 (5.7 μg/L) exceeded only the USEPA MCL on one or more occasion. TCE was not detected above the 5 ppb MCL in 2010 in either GB-MW-04 or GB-MW-03. The other COPC concentrations were below relevant guidelines.

In summary, the HHRA concludes that VOCs detected in soil, off-site groundwater and porewater do not result in unacceptable risks to potential receptors.

4.2 ECOLOGICAL RISK ASSESSMENT

The purpose of the Screening Level Ecological Risk Assessment (SLERA) is to evaluate the potential adverse environmental effects of site-related constituents of potential concern (COPCs) on ecological receptors and resources at or near the site. The SLERA will identify whether there are COPCs that require further evaluation by a Baseline Ecological Risk Assessment (BERA). The BERA would identify contaminants of ecological concern that need to be addressed by remedial actions. The SLERA has been conducted in accordance with United States Environmental Protection Agency (USEPA) guidelines for ecological risk assessment under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The full SLERA is presented in Appendix 6.

Previous investigations indicated that the primary COPCs at the site are chlorinated volatile organic compounds (CVOCs); particularly trichloroethene (TCE) and its degradation products; cis-1, 2 dichloroethene (cis-1, 2 DCE) and vinyl chloride. Chlorinated solvents, including TCE, were reportedly used on the site to clean electronics and generators, to degrease fittings, and to prepare surfaces for new paint. These historic site operations may have resulted in direct releases of constituents to soil which may have migrated downward into sub-surface soil and ultimately to on-site groundwater. Dissolved constituents in groundwater may have migrated to off-site groundwater which discharges into downgradient streams and ponds.

Site data are available for soil, groundwater and porewater. Porewater and off-site groundwater data were used to represent off-site surface water bodies, as there are no on-site surface water bodies. On-site groundwater data were not evaluated in this assessment because there is no complete exposure pathway at the site for ecological receptors to be exposed to groundwater.

To evaluate potential for risks to ecological receptors due to exposure to these COPCs, an ecological screening assessment was conducted, in which constituent concentrations from surface soil, pore water, and off-site groundwater samples were compared to ecological risk-based screening levels. Ecological risk-based screening values identified for surface water and soil were derived to be protective of aquatic life (i.e., fish and other aquatic receptors) and herbivorous mammals (i.e., the deer mouse), respectively. Concentrations below these screening values would indicate that risks to ecological receptors are unlikely. Concentrations above these conservative screening values would indicate that additional investigation might be warranted. The results of the screening, summarized below, indicate that adverse effects to ecological receptors at or near the site are unlikely.

As mentioned above, there is no complete exposure pathway at the site for ecological receptors to be exposed to groundwater. However, aquatic and benthic receptors may be exposed to COPCs present in groundwater as it discharges into off-site surface water bodies. To

evaluate this potential exposure pathway, two surface water surrogates were evaluated: off-site porewater and off-site groundwater. No constituents in off-site groundwater were present in excess of the surface water screening values. Toluene in off-site porewater was present above the surface water screening value; however, a conservative consideration of dilution into the water body (i.e., a ten-fold dilution) indicates that toluene is not likely to result in adverse impacts to ecological receptors. Therefore, discharge of groundwater to off-site water bodies is not expected to result in adverse impacts to ecological receptors in the ponds, streams, or wetlands.

The deer mouse was selected as the representative terrestrial receptor for exposure to surface soil. Few VOCs were detected in the surface soil data set. The detected VOC concentrations were converted into doses for the deer mouse and compared against soil screening levels. The screening indicated that none of the detected VOCs is expected to adversely impact the deer mouse.

The results of the evaluation of off-site porewater, off-site groundwater, and on-site surface soil indicate that adverse effects to ecological receptors at or near the Site are unlikely. Therefore, no further investigation is recommended.

5.0 BASIS FOR SITE REMEDIATION AND INTRODUCTION TO THE FEASIBILITY STUDY

This section of the RI/FS report begins the Feasibility Study (FS) of remedial alternatives to address environmental contamination at the former GAT Facility

The primary objective of the FS is to ensure that an appropriate range of remedial alternatives are developed and analyzed in detail such that relevant information concerning these alternatives can be presented to decision-makers and an appropriate remedy selected.

This FS was prepared consistent with the requirements of the 1980 Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended by the 1986 Superfund Amendments and Reauthorization Act (SARA); the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR 300; the *Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (USEPA, October 1988); and *Technical Guidelines for Hazardous and Toxic Waste Treatment and Cleanup Activities* (USACE, April 1994).

Characterization of the Site, including the nature and extent and fate and transport of contamination, a Conceptual Site Model, and a summary of the baseline human health and ecological risk assessments, was discussed in previous report sections. Section 5.1 presents a discussion of the federal and state requirements governing the cleanup of hazardous waste sites, including Applicable or Relevant and Appropriate Requirements (ARARs) and criteria to be considered. Section 5.2 discusses the development of remedial action objectives (RAOs) and preliminary remedial goals (PRGs) that are protective of human health and ecological receptors. This section also identifies the general response actions that satisfy the RAOs for the Site, and discusses the areas or volumes of contaminated media to which general response actions might be applied. Subsequent Sections 6.0, 7.0 and 8.0 identify and screen remedial technologies, develop remedial alternatives, and present a detailed analysis of the remedial alternatives, respectively. Section 9.0 completes the FS with a comparative analysis of the remedial alternatives.

Figure 5-1 illustrates the steps of a CERCLA FS and provides an index for how this FS report is organized.

5.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS AND CRITERIA TO BE CONSIDERED

CERCLA Section 121(d)(2) as amended by SARA requires attainment of Federal and State applicable or relevant and appropriate requirements (ARARs). Subpart E, Section 300.400(g) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (55 FR 8666) describes the process for attaining these ARAR requirements.

5.1.1 Definition and Identification of ARARs

ARARs are Federal and State requirements and guidelines that will be used to: (1) evaluate the appropriate and necessary extent of Site cleanup; (2) define and formulate remedial action alternatives; and (3) govern implementation and operation of the selected remedy.

The NCP defines two types of requirements: (1) applicable requirements, and (2) relevant and appropriate requirements.

Applicable requirements mean those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site (NCP Section 300.5; 55 FR 8814). All jurisdictional prerequisites of the requirement must be met in order for the requirement to be applicable.

Relevant and appropriate requirements are those cleanup standards, standards of control, or other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a site, address problems or situations sufficiently similar to those encountered at the site that their use is well

suited to the particular site (NCP Section 300.5; 55 FR 8817). A requirement that is relevant and appropriate may "miss" on one of more jurisdictional prerequisites for applicability but still make sense at a site, depending on the nature of the site and release.

Other requirements to be considered (TBCs) is a category of requirements developed by U.S. EPA that includes non-promulgated criteria, advisories, guidance, and proposed standards issued by Federal or State governments that are not legally binding and do not have the status of potential ARARS. However, they may be considered in determining necessary cleanup levels for the protection of human health and the environment.

Although not a regulatory requirement, U.S. EPA classifies ARARs into three categories: (1) chemical-specific, (2) location-specific, and (3) action-specific.

Chemical-specific ARARs generally involve health- or risk-based numerical values which, when applied to site-specific conditions, represent cleanup standards or the acceptable concentration of a chemical at the site.

Location-specific ARARs are restrictions placed on the concentration of chemicals or the conduct of operations based on the location of a site. Location-specific ARARs focus on the protection of such things as wetlands, floodplains, historic landmarks, rare and endangered species, and cultural resources.

Action-specific ARARs involve performance, design, or other action-specific requirements for conducting remedial activities. These ARARs are generally technology- or activity-based.

Based on the results of the RI and the baseline risk assessments, the contaminant of concern (COC) at the Site is TCE. Accordingly, the following subsections discuss the chemical-

specific ARARs for TCE since this will contribute to the development of RAOs and PRGs to address TCE contamination at the Site.

Discussion of the location-specific and action-specific ARARs (and TBCs) is deferred to Section 8.0 of the FS (Detailed Analysis of Remedial Alternatives) since they typically pertain to the implementation of specific remedial alternatives and remedial actions. To minimize redundancy, a summary of all ARARs (and TBCs) is presented in a single comprehensive table, Table 5-1.

A TBC that is not chemical-, location-, or action-specific, but rather a reiteration of already established and existing EPA CERCLA policies for groundwater restoration, is OSWER Directive 9283.1-33 (USEPA, 2009a). This TBC has been considered when developing and evaluating remedial alternatives.

5.1.2 Chemical-specific ARARs/TBCs

Chemical-specific ARARs are usually derived from standard-setting sources including: Safe Drinking Water Act (SDWA); Clean Water Act (CWA); Clean Air Act (CAA); and State regulations. Chemical-specific ARARs and TBCs for TCE in the environmental media at the Site are discussed below.

Groundwater. There are Federal and State chemical-specific ARARs for TCE in groundwater. These ARARs are summarized in Table 5-1. The Federal maximum contaminant level (MCL) for TCE is 5 micrograms per liter (µg/L). The MCL is the maximum permissible level of a chemical that is allowed in public drinking water systems. MCLs are enforceable standards and are based on numerous factors including the availability of analytical methods for detection, treatment technologies, and costs for achieving various levels of removal (USEPA, 2009b, c).

Table 5-1
Summary of ARAR/TBC Evaluation
Glenburn (ME) GAT Facility FS

Jurisdiction	Media	Requirement	Status	Description	Action to be Taken to Attain ARARs		
					Alternative 1 **No Action**	**Alternative 2** **Monitored Natural Attenuation with Wellhead Treatment, Long-Term Monitoring, Institutional Controls**	**Alternative 3** **Groundwater Extraction & Ex-Situ Treatment; Wellhead Treatment, Long-Term Monitoring, Institutional Controls**
Chemical-Specific ARARs/TBCs							
Federal	Groundwater	Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs) 40 CFR Part 141.11-141.16; and 141.60 - 141.66	Relevant and Appropriate	MCLs regulate the concentrations of contaminants in public drinking water supplies. The MCL was used as the basis for developing a RAO for site groundwater that prevents the ingestion of groundwater that exceeds the MCL of 5 ppb for TCE.	Alternative 1 would not comply with this ARAR for on-site groundwater. TCE concentrations would not be expected to be reduced over a reasonable period of time via natural attenuation mechanisms. No institutional controls would be implemented to prevent use of this contaminated groundwater.	Alternative 2 would not immediately comply with this ARAR for on-site groundwater. TCE concentrations will be reduced over a period of decades via natural attenuation mechanisms. Institutional controls would prevent use of on-site groundwater as drinking water.	Alternative 3 would implement extraction and treatment of on-site groundwater. This would reduce the mass of TCE in groundwater and reduce the potential for migration of TCE off-site. However, it is not anticipated that these remedial actions would significantly shorten the time period to achieve the MCL over natural attenuation mechanisms. Institutional controls would prevent use of on-site groundwater as drinking water.
State	Surface Water	Safe Drinking Water Act (SDWA) Underground Injection Control Regulations 40 CFR Parts 144 - 146, 42 U.S.C. 300h et seq. Part C 64 FR 68546	Relevant and Appropriate	These standards are applicable in the event that wastewater is discharged to an underground injection well during remedial activities.	There are no remedial activities associated with this alternative that would trigger this ARAR.	Same as Alternative 1	This alternative proposes that treated on-site groundwater will be discharged by re-injection back into the aquifer.
State	Soil	Maine DEP Draft Remedial Action Guidelines for Hazardous Substances in Soil	To Be Considered	These guidelines were established for chemical specific concentrations of hazardous substances in soil for protection of human health through direct contact and from leaching from soil to groundwater.	RI investigations and the HHRA and SLERA indicate no risk to ecological or human receptors from direct contact with TCE-contaminated on-site soils nor a concern for soil-groundwater leaching. Maximum soil concentration of TCE found to date is estimated at 16 ppb, well below the 60 ppb ME DEP guidelines. There are no soil remediation activities associated with this alternative.	Same as Alternative 1	Same as Alternative 2
State	Air	Maine Bureau of Health Ambient Air Guidelines (April 2004)	To Be Considered	These guidelines establish chemical specific, health-based levels for ambient air. They represent Maine recommendations for chemical concentrations in ambient air below which there is minimal risk of deleterious health effects resulting from chronic inhalation exposure.	There are no remedial activities associated with this alternative that would trigger consideration of this TBC.	Same as Alternative 1	Groundwater extraction and treatment activities will be carried out in this alternative. Air monitoring will be conducted and corrective actions will be implemented if necessary.
Location-Specific ARARS/TBCs - there are no Location Specific ARARS/TBCs							

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					Alternative 1 **No Action**	**Alternative 2** **Monitored Natural Attenuation with Wellhead Treatment, Long-Term Monitoring, Institutional Controls**	**Alternative 3** **Groundwater Extraction & Ex-Situ Treatment; Wellhead Treatment, Long-Term Monitoring, Institutional Controls**
Action-Specific ARARs/TBCs							
Federal	Waste	RCRA Standards Applicable to Generators of Hazardous Waste 40 CFR Part 262	Applicable	Maine has the delegated authority to administer these RCRA standards through its state hazardous waste management regulations. Compliance with these regulations would be necessary if treatment residuals or investigation-derived wastes could be characterized as hazardous.	There are no remedial activities associated with this alternative that would trigger this ARAR.	Same as Alternative 1	Actived carbon used to treat groundwater may be a hazardous waste generated by the remedial action.
Federal	Waste	RCRA Use and Management of Containers 40 CFR Part 264 Subpart I	Applicable	These regulations establish standards for the storage of hazardous wastes in containers. If this remedial action requires the staging or storage of hazardous materials or wastes, the requirements of this regulation would be achieved.	There are no remedial activities associated with this alternative that would trigger this ARAR.	Same as Alternative 1	Actived carbon used to treat groundwater may be a hazardous waste generated by the remedial action.
Federal	Waste	USEPA OSWER Publication 9345.3 - 03 FS January 1992	To Be Considered	Management of investigation-derived wastes must ensure protection of human health and the environment. This TBC may need to be considered for wastes produced from sampling or construction activities.	There are no remedial activities associated with this alternative that would trigger consideration of this TBC.	Same as Alternative 1	Actived carbon used to treat groundwater may be a hazardous waste generated by the remedial action.
Federal	Groundwater	Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and UST Sites. EPA OSWER Directive 9200.4-17 (9/97)	To Be Considered	This directive provides guidance regarding the use of monitored natural attenuation (MNA) for the remediation of contaminated groundwater. Groundwater monitoring associated with this remedial action should meet the objectives of this directive.	There are no remedial activities associated with this alternative that would trigger consideration of this TBC.	Monitoring includes the concentration and extent of TCE and breakdown products in groundwater and water supplies. Conftingency GAC treatment is included. Monitoring of other parameters may be warranted if future in-situ treatment technologies are proven not to adversely impact nearby potable public water supply wells.	Same as Alternative 2
State	Waste	ME Standards for Generators of Hazardous Wastes 06-096, Chapter 851	Applicable	These regulations contain requirements for generators of hazardous waste. The regulations apply to generators of sampling waste and to the accumulation of waste prior to off-site disposal. Wastes generated as part of remedial activities, if considered hazardous, need to comply with substantive requirements of these regulations.	There are no remedial activities associated with this alternative that would trigger this ARAR.	Activities related to environmental sampling of monitoring wells would comply with this ARAR.	Same as Alternative 2 and actived carbon used to treat groundwater may be a hazardous waste generated by the remedial action.
State	Surface Water	Maine Waste Discharge Permitting Program	Applicable	This rule requires permits issued by ME DEP for the discharge of pollutants from point sources. The discharge of water generated from investigation or remedial activities need to comply with the substantive requirements of this regulation	There are no remedial activities associated with this alternative that would trigger this ARAR.	Activities related to environmental sampling of monitoring wells would comply with this ARAR.	Same as Alternative 2 and actived carbon used to treat groundwater may be a hazardous waste generated by the remedial action.

Table 5-1
Summary of ARAR / TBC Evaluation
Glenburn (ME) GAT Facility FS

Jurisdiction	Media	Requirement	Status	Description	Action to be Taken to Attain ARARs		
					Alternative 1 **No Action**	**Alternative 2** **Monitored Natural Attenuation with Wellhead Treatment, Long-Term Monitoring, Institutional Controls**	**Alternative 3** **Groundwater Extraction & Ex-Situ Treatment; Wellhead Treatment, Long-Term Monitoring, Institutional Controls**
Action-Specific ARARs / TBCs continued							
State	Spent Filter Media	DEP Standard Operating Procedure for the installation and maintenance of point of entry treatment systems, the disposal of spent granular activated carbon (GAC) filter material	To Be Considered	The disposal of spent GAC filter media that is not regenerated will need to consider this policy.	There are no remedial activities associated with this alternative that would trigger consideration of this TBC.	Continued operation and maintenance of the GAC unit on one domestic well will require periodic replacement of the filter media which may need to consider this TBC.	Same as Alternative 2
State	Hazardous Materials	Hazardous Waste Management Rules, 38 MSRA Sec. 1301 et seq.; 06-096 CMR Chapters 850 to 857.	Relevant and Appropriate	These rules establish performance standards for the treatment, disposal, and/or storage of media contaminated with hazardous waste. If wastes generated during remedial activities are characterized as hazardous, these rules would apply.	There are no remedial activities associated with this alternative that would trigger this ARAR.	Same as Alternative 1	Actived carbon used to treat groundwater may be a hazardous waste generated by the remedial action.
State	Non-Hazardous Materials	Solid Waste Management Rules, 06-096 CMR Chapter 400	Relevant and Appropriate	These rules establish performance standards for the treatment, disposal, and/or storage of media contaminated with non-hazardous waste. These rules would apply to any non-hazardous wastes generated during remedial actions.	There are no remedial activities associated with this alternative that would trigger this ARAR.	Same as Alternative 1	This ARAR would be complied with.
State	Groundwater	Underground Injection Control Program 06-096 Chapter 543	Applicable	These regulations outline minimum program and performance standards to underground injection programs.	There are no remedial activities associated with this alternative that would trigger this ARAR.	Same as Alternative 1	This alternative proposes that treated on-site groundwater will be discharged by re-injection back into the aquifer. Accordingly, this ARAR would be complied with.
State	Wastes	Maine Hazardous Waste, Septic and Solid Waste Management Act	Relevant and Appropriate	These rules define hazardous wastes, and establish requirements for persons who generate hazardous wastes. Performance standards for hazardous waste management units are also defined including requirements for protection of groundwater and surface water. Wastes generated during investigation and remedial activities must comply with these rules.	There are no remedial activities associated with this alternative that would trigger this ARAR.	Same as Alternative 1	Actived carbon used to treat groundwater may be a hazardous waste generated by the remedial action.

The Federal maximum contaminant level goal (MCLG) for TCE is "zero". EPA defines the MCLG as the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. MCLGs are non-enforceable public health goals (USEPA, 2009).

The State of Maine has an interim Maximum Exposure Guideline (MEG) of 32 µg/L for TCE in drinking water. MEGs are established by the Maine Center for Disease Control (CDC), Maine Department of Human Services (ME DHS, 2008). Interim status MEGs are not based on U.S. EPA toxicity data and the Maine Bureau of Health has lower confidence in them than in MEGs based on EPA toxicity data. The Maine MEGs would be considered TBCs, if there was no MCL. However, since there is a 5 ppb MCL for the contaminant of concern (TCE) which is non-zero and less than the MEG, the MEG for TCE is not applicable to this Site. The National Contingency Plan (NCP) states that the federal standard must be used unless a State standard is more stringent, and is promulgated and consistently applied, then the State standard must be used.

Remedial investigations at the Site have determined that TCE is currently present in on-site groundwater at concentrations exceeding the MCL. In accordance with CERCLA guidance, the lowest of the available promulgated values are to be used in developing RAOs and PRGs. Therefore, for TCE in groundwater, the Federal MCL of 5 µg/L will be the actionable ARAR.

Soil. There are no promulgated Federal or State chemical-specific ARARs for TCE in soil. However, the State of Maine has guidelines that establish chemical-specific concentrations in soil for the protection of human health through direct contact and from leaching from soil to groundwater. The remedial investigations that have been conducted at the Site to date have not identified any potential source areas of TCE in on-site soils with concentrations above MEDEP Remedial Action Guidelines (RAGs).

Surface Water. The State of Maine has chemical-specific rules and standards governing the discharge of contaminants into surface waters. Remedial investigations and the baseline risk assessment indicate there are no on-site surface water bodies or areas of sediment, and there are no adverse impacts to off-site surface water or sediment from TCE contamination. Accordingly, these ARARs are not relevant or appropriate.

Air. The State of Maine has both chemical-specific ambient air quality standards and ambient air guidelines. Remedial investigations and the baseline risk assessment indicate no adverse impacts to human health from inhalation of volatized TCE in indoor air. However, air monitoring would likely be implemented as a component of any remedial action involving the extraction and treatment of TCE-contaminated groundwater. Accordingly, chemical-specific ARARS or TBCs for air would have to be evaluated or complied with. Table 5-1 summarizes these TBCs.

5.1.3 ARAR Waivers

CERCLA requires that any remedial alternative selected to address contamination at a site must be protective of human health and the environment and must comply with ARARs. However, the following ARAR waivers described in CERCLA and the NCP (CERCLA Section 121(d)(4) and 40 CFR 300.430(f)(1)(ii)) may be considered when evaluating and selecting a remedial alternative:

1. Interim Action Waiver;
2. Equivalent Standard of Performance Waiver;
3. Greater Risk to Health and the Environment Waiver;
4. Technical Impracticability Waiver;
5. Inconsistent Application of State Standard Waiver; and
6. Fund Balancing Waiver.

A discussion of the potential need for and appropriateness of an ARAR waiver for specific remedial alternatives at this Site is presented in Section 8 (Detailed Analysis of Remedial Alternatives).

5.2 DEVELOPMENT OF REMEDIAL ACTION OBJECTIVES AND PRELIMINARY REMEDIATION GOALS

The development of remedial goals, or remedial action objectives (RAOs), and preliminary remediation goals (PRGs), is the key first step in the development, screening and evaluation of potential remedial alternatives conducted in an FS. The following subsections discuss the RAOs and PRGs that were established for the Site.

5.2.1 Remedial Action Objectives

RAOs consist of media-specific or operable unit-specific goals aimed at mitigating, restoring, and/or preventing existing and future potential threats to human health and the environment. Per CERCLA guidance (USEPA, 1988a), the RAOs should specify the contaminant(s) of concern, the exposure route(s), and the receptor(s). The RAOs (along with the PRGs) permit the development of a range of alternatives that may achieve protection by reducing exposure to contaminated media.

RAOs for the Site were established based on the RI, the Screening Level Ecological Risk Assessment (SLERA), and the Human Health Risk Assessment (HHRA). Results of the RI, the SLERA and HHRA indicate there are no adverse impacts to surface water bodies, sediments, or wetland areas, or to human or ecological receptors in these areas, from TCE contamination. Accordingly, no RAOs were established for these media or receptors.

RI investigations identified that the most likely vadose zone source area of TCE in soil is near the maximum concentration of TCE found in soils and groundwater, an estimated 16 µg/kg in soils near GB-MW-01 (well below the MEDEP RAG of 60 µg/kg). Results of the RI, SLERA and HHRA indicate no risk to human or ecological receptors from exposure to on-site soils. Therefore, no RAOs were developed for soil.

The results of indoor air sampling and the HHRA indicate no unacceptable risk to human health from exposure to volatized TCE in indoor air. Therefore, no RAOs were established for this media or receptor.

RI investigations indicate TCE contamination is present in groundwater beneath the Site (on-site) and downgradient of the Site (off-site). Concentrations of TCE in off-site groundwater are currently below the Federal MCL of 5 μg/L for TCE (USACE, 2010 monitoring data); TCE concentrations in on-site groundwater currently exceed the MCL.

On- and off-site groundwater is currently used as a potable drinking water source. The HHRA concluded that residential exposure to off-site groundwater does not result in risks that exceed USEPA's target cancer risk range or MEDEP's target cancer risk level. Although TCE is present in on-site groundwater above the MCL, TCE has never been detected in the one on-site water supply well (GB-PW-01) used for potable water. This is due to the complex, bedrock fracture network beneath the Site which serves to isolate the TCE-contaminated groundwater from the uncontaminated groundwater supplying GB-PW-01. Therefore, the current potable use scenario does not result in risks from exposure to groundwater. TCE has been detected in on-site monitoring wells, however the HHRA concluded that residential use of that groundwater would not result in a carcinogenic risk that exceeds the USEPA or MEDEP target cancer risk levels.

Because groundwater in the area of the Site, some of which contains TCE, is a potential drinking water source, a RAO must be established that prevents unacceptable human health risks from potential future uses of the groundwater Accordingly, the following RAO was determined to be appropriate for the protection of human health from potential future use of TCE-contaminated groundwater:

- Prevent ingestion of groundwater containing TCE concentrations that exceeds Federal maximum contaminant levels (MCLs) or unacceptable risk thresholds, until it has been restored to safe drinking water levels.

5.2.2 Preliminary Remediation Goals

PRGs are chemical-specific numerical limits that are established to protect human health or the environment, consistent with the RAOs. PRGs are established based on available information from the risk assessment (e.g., risk-specific doses (RSDs)), or frequently used standards (e.g., ARARs).

TCE in off-site groundwater water supplies is currently below the MCL of 5 μg/L; however, the on-site groundwater exceeds the MCL for TCE and poses a risk should this groundwater be used as a potable water supply as long as the groundwater exceeds the MCL for TCE unless the use incorporates treatment for TCE. Accordingly, the PRG for TCE in groundwater was identified to be 5 μg/L, the Federal MCL which is an ARAR. This approach is consistent with the NCP Section 300.430 which states that "remediation goals establish acceptable exposure levels that are protective of human health and the environment and shall be developed considering ARARs."

5.3 GENERAL RESPONSE ACTIONS

General response actions describe those actions that will satisfy the RAOs and provide a framework for identifying specific remedial technologies. Like RAOs, they are medium-specific. For the Site, the media of concern and the focus of the RAO is groundwater. Although no RAO was developed for soil, removal of on-site TCE-contaminated soil, as a potential source of TCE leaching to groundwater, was considered in identifying appropriate general response actions for groundwater.

General response actions identified for the Site include one or a combination of the following:

- **No action** – no remedial activities would be implemented under no action, however, per the NCP and CERCLA guidelines, it is considered throughout the FS process as a baseline against which other alternatives can be compared;
- **Limited actions** – includes institutional controls or administrative actions to limit land use or access, or remedial controls or actions. Examples include deed notices and advisories, long-term environmental monitoring, and wellhead treatment units;
- **Containment** – includes physical barriers or structures to contain contaminated media or to mitigate contaminant migration. Examples include: caps, slurry walls and sheet piles;

- **Collection** – includes methods to physically remove contaminated media from the environment. Examples include: soil excavation and groundwater extraction;

- **Treatment** – includes technologies or processes to physically or chemically remove contaminants from contaminated media. Treatment may be conducted either *in-situ* or *ex-situ.* Examples include: chemical oxidation, bioremediation and organic adsorption

- **Disposal/Discharge** – includes methods for final disposition of contaminants or treated media. Examples include: disposal in on-site or off-site permitted facilities, and discharge of treated media back into the environment through sewer discharge, surface discharge or reinjection.

5.4 AREAS OF CONTAMINATED MEDIA

An initial determination of areas or volumes of contaminated media to which general response actions might be applied is an important step in developing remedial alternatives. The area and volume estimates are useful in evaluating the appropriate remedial technologies and in developing the estimated costs of remediation. Based on the RI and the CSM, the conceptual areas or volumes in which TCE is present are shown in Figures 2.2-14, 2.2-15, 2.2-16 and 3.3-2.

Chemical and hydrogeologic data indicate that TCE contamination in groundwater extends approximately 2,000 feet to the west-southwest and 1,000 feet to the east-northeast of the Site. The lateral extent of the TCE contamination in groundwater is generally less than 500 feet wide. Historical groundwater monitoring data indicate TCE concentrations in off-site groundwater are generally less than 5 µg/L, based on the available historical and recent data (USACE, 2010). However, TCE concentrations in the on-site groundwater have been found in the 20 to 60 µg/L range in the shallow Unit A bedrock aquifer. The area of TCE-impacted on-site groundwater (estimated at 3.5 acres) represents about 10 percent of the total areal extent of TCE groundwater contamination (estimated at 35 acres).

The most likely potential on-site vadose zone source area of TCE in soil has been identified based on historic uses, and low concentrations of TCE in soils and groundwater: as the area near GB-MW-01. As discussed previously in Section 3.3.2, the maximum concentration of

TCE in soil is an estimated16 µg/kg found near GB-MW-01; well below the MEDEP soil-leachability criteria for a groundwater aquifer of 60 µg/kg. The areal extent of this potential source of soil-TCE has not been defined. However, based on the surface and subsurface soil sampling conducted to date, the area could contain a maximum of 1,000 cubic yards of low level TCE contaminated soil. This does not include underlying Saprolite (or deeper bedrock) that may also contain TCE mass.

6.0 IDENTIFICATION AND SCREENING OF REMEDIAL TECHNOLOGIES AND PROCESS OPTIONS

This section of the FS report documents the identification and screening of remedial technology types and process options applicable to each general response action. Technology types and process options retained from the identification and screening step will be used to formulate remedial alternatives discussed in the subsequent sections of the FS.

6.1 APPROACH

Remedial alternatives are developed by assembling combinations of applicable technologies and other unit processes into a sequence of actions which address the specific media to which they would be applied and the RAOs that were developed for the Site. Accordingly, the identification and screening of remedial technology types and process options is a necessary and important first step in the development of alternatives.

The NCP and CERCLA guidance emphasize that a range of technology types and process options be identified and evaluated including innovative treatment technologies and treatment technologies that reduce the toxicity, mobility or volume of contaminants to the extent practicable.

The matrix of process options developed in this section is not intended to be the universe of all processes that exist; it is intended as a broad spectrum of potentially applicable process options considering site conditions, risk assessment results, and the CSM for the Site. Per CERCLA guidance (1988), the goal is to select at least one representative process for each technology type retained in order to simplify the subsequent development and evaluation of remedial alternatives. Also note that the administrative requirement under CERCLA for on-going 5-year reviews of the effectiveness of any selected remedy is assumed to be part of each remedial alternative (except the no-action Alternative 1) although it is not explicitly described or included in the discussions in this section.

In accordance with CERCLA guidance (1988), the evaluation of remedial technology types and process options is a two-step process. The first step is an initial screening of technologies and process options. This is generally done on the basis of technical implementability in order to eliminate process options or entire technology types that would clearly be ineffective or unworkable considering site and waste characteristics. For example, subsurface site conditions such as soil permeability, depth to bedrock, and degree of bedrock fractures can limit many types of containment, in-situ treatment or extraction technologies. The types and concentrations, and physical and chemical properties of the wastes or contaminants can also influence the selection of suitable technologies. Typically, this screening step is site-specific; however, other factors may also need to be considered.

The second step in this process is to evaluate the process options considered to be technically implementable in greater detail in order to select the representative process for each technology type. The evaluation of process options is generally based on three criteria: (1) effectiveness, (2) implementability; and (3) cost. Although these are the same criteria used to screen remedial alternatives prior to detailed analysis, in this section these criteria are applied only to technologies and process options and not to site-wide alternatives. In addition, the evaluation of process options focuses more on assessing effectiveness and less on implementability and cost. Factors relating to effectiveness include how proven and reliable the process is, how well the process can handle large areas or volumes of contaminated media, and how well the process meets the remediation goals. Implementability is considered more from the administrative feasibility or institutional aspects of implementing a process. Factors relating to administrative or institutional implementability include the ability to obtain necessary permits; acceptability to regulatory agencies or the local community; and the availability of necessary treatment services, equipment, and skilled personnel. Finally, the relative overall costs (for design, construction, operations and maintenance) of each process option, expressed in qualitative terms (e.g., low, average, high), is only considered if it contributes to deciding which specific process option should be retained for the development of remedial alternatives.

The information used to compile technology and process options in this section was obtained from multiple sources including technical literature, regulatory guidance documents, internet resources, and technology evaluations conducted for other sites. A listing of representative sources is provided in Section 10.0: References.

6.2 IDENTIFICATION AND SCREENING OF TECHNOLOGIES AND PROCESS OPTIONS

An initial set of technology types and process options was identified for each of the general response actions developed for the Site. Table 6-1 presents a matrix showing representative process options for each of the remedial technologies identified. Technologies and process options are grouped primarily based on combining similar operating principles of technology types. As shown in Table 6-1, several broad technology types are identified for each general response action, and numerous process options are identified within each technology type. The shaded technology types and process options were not considered applicable for this Site and thus were not retained.

6.3 SELECTION OF REPRESENTATIVE REMEDIAL TECHNOLOGY PROCESS OPTIONS

Based on the results of the identification and screening evaluation presented in Table 6-1, the following remedial technology process options are considered to be applicable for the Site. In some cases more than one technology process option is applicable. However, per CERCLA guidance (EPA, 1988), one process option was selected as the representative option for the development and analysis of remedial alternatives. Decision-makers may reconsider the other applicable process options during the selection and design of the remedy.

Limited Actions. Eight process options relating to institutional controls, monitoring, or remedial controls for groundwater were identified. Of the four institutional controls identified, groundwater reclassification was screened out. It is highly unlikely that the groundwater would ever be reclassified for non-potable use as a means of protecting human health since the groundwater is currently being used as a public and private water supply.

Table 6-1
Summary of Retained Remedial Technologies and Process Options
Glenburn (ME) GAT Facility FS

General Response Action	Remedial Technology	Process Options	Description	Screening Comments	Effectiveness	Implementability	Cost
No Action	None	Not Applicable	The No Action alternative serves as a baseline for comparison to other alternatives introduced in an FS. In a No Action alternative there are no institutional, administrative, or remedial actions.	**Required** for consideration by NCP	Does not achieve remedial action objectives.	Not acceptable to local community and/or regulatory agencies.	No costs.
Limited Actions	Institutional Controls (IC)	Deed Notices, Advisories	Deed notices and advisories are non-enforceable information ICs. Deed notices and advisories would alert existing and potential owners of potentially impacted groundwater and risks associated with its use. Deed notices are usually placed on specific properties while advisories are usually issued to owners of private wells within an impacted area.	**Potentially applicable**. Deed notices could be applied on specific properties within the area of contaminated groundwater or a general advisory could be issued to property owners with private wells within the impacted area.	Effective in preventing use of contaminated groundwater but effectiveness would depend on continued future implementation. Does not reduce contamination.	Specific language details and fulfillment of all legal requirements would have to be worked out by local and state governing bodies.	Lower general costs relative to other options.
		Zoning	Zoning relies on the regulatory authority of a governmental entity (i.e., state or local government) to impose restrictions on citizens or property under its jurisdiction. For example, a local jurisdiction may zone a site to disallow uses that are incompatible with a remedy or to control certain exposures not otherwise protected under a remedy.	**Potentially applicable.** Zoning could be used to restrict future use of the Site itself.	Effective in preventing use of contaminated groundwater but effectiveness would depend on continued future monitoring and enforcement. Does not reduce contamination.	Specific language details and fulfillment of all legal requirements would have to be worked out by local and state governing bodies.	Lower general costs relative to other options.
		Groundwater Use Restrictions	Groundwater use restrictions are directed at limiting or prohibiting certain uses of groundwater which may include limitations or prohibitions on well drilling.	**Potentially applicable.** Groundwater use restrictions could be implemented by the Town of Glenburn to limit or prohibit well the drilling of new water supply wells on the Site property.	Effective in preventing use of contaminated groundwater but effectiveness would depend on continued future monitoring and enforcement. Does not reduce contamination.	Specific language details and fulfillment of all legal requirements would have to be worked out by local and state governing bodies.	Lower general costs relative to other options.
		Groundwater reclassification	Reclassification of groundwater for non-potable use	Groundwater currently being used as a potable water source. Reclassification would likely be unacceptable to local community and regulatory agencies. **Not retained.**			
	Monitoring	Long Term Monitoring (LTM)	Periodic monitoring of groundwater using existing monitoring well network.	**Potentially applicable**. There is currently an ongoing monitoring program for domestic and public water supply wells in the area.	Useful for documenting trends in groundwater conditions but does not reduce risk by itself.	Already being implemented but not likely to be acceptable to local community and/or regulatory agencies as a standalone remedy.	Lower general costs relative to other options.
	Remedial Controls (Groundwater)	Domestic Well Treatment	Treatment of individual or shared/public domestic wells using GAC units or other processes such as ozone or UV oxidation. An LTM program would be necessary to monitor the effectiveness of the treatment system.	**Potentially applicable**. Currently, one domestic well in the area has a GAC unit installed and successfully operating.	Effective in preventing use of contaminated groundwater but there is immaterial reduction in contaminant mass.	The services, equipment and skills necessary to implement this process option are readily available.	Lower general costs relative to other options.
		Domestic Well Modification	Re-configuration of existing well boreholes to draw water from water-bearing fractures not impacted by TCE. TCE-containing fractures would be isolated from non-impacted fractures via casing, grouting, or similar techniques.	Limited probability of success and reliability in achieving separation between TCE impacted and non-impacted zones due to multiple cross-connections in fracture network. **Not retained.**			
		Alternate Water Supply	Replacement of individual supply wells that are contaminated or the development of a shared water supply to serve affected users.	Would require an extensive groundwater exploration process. There would still be a reasonable potential for exposure to impacted groundwater through private domestic wells used for consumption or irrigation. **Not retained.**			
Containment	Cap	Materials used for caps include: - Clay and soil - Asphalt - Concrete - Synthetic membranes - Multi-media	Caps are containment devices designed to immobilize a contaminant within a well-defined area and thus prevent its migration. A typical application of a cap is on a municipal or industrial landfill in order to mitigate migration of landfill waste constituents into the underlying groundwater. However, asphalt and concrete caps have also been used to isolate defined vadose zone source areas containing hazardous constituents in soils at commercial and industrial sites.	Remedial investigations conducted to date at the Site have identified isolated and limited TCE soil contamination based on historic uses, soil vapor data, and low ppb concentrations of TCE in soils and groundwater. While a cap is *technically* feasible, it is not needed to prevent direct contact, and would be unlikely to improve groundwater quality. **Not retained.**			

Note: Shading designates General Response Actions, Remedial Technologies, and Process Options that are not considered applicable for the Site and therefore not retained for future consideration.

Table 6-1
Summary of Retained Remedial Technologies and Process Options
Glenburn (ME) GAT Facility FS

General Response Action	Remedial Technology	Process Options	Description	Screening Comments	Effectiveness	Implementability	Cost
Containment	Barriers	Typically-used barrier options include: - Slurry walls - Sheet pile walls - Grout curtains	Like caps, slurry walls, sheet pile walls, and grout curtains are containment devices designed to isolate a contaminant within a defined area to prevent its migration. Slurry walls are trenches around contaminated areas that are filled with a soil or cement (bentonite slurry). Grout curtains involved the pressure injection of the grout material in a regular pattern of drilled holes. Slurry walls and grout curtains have been used at landfill and industrial sites where there is a need to isolate defined sources of soil contamination or deposited wastes.	Unlikely to be feasible or effective in fractured, weathered and porous bedrock where groundwater contaminantion is present. **Not retained.**			
Collection	Extraction (Groundwater)	Extraction wells - Vertical extraction wells - Horizontal/angle-drilled extractions wells	Extraction wells are the traditional method used to collect groundwater. Contaminants are removed from the aquifer as the extraction wells are pumped, and treatment is then performed prior to discharge (See below). The efficiency of a an extraction well system depends on, among other things, aquifer permeability, location, number and yield of the wells.	**Potentially applicable.** Groundwater extraction (and subsequent treatment) using vertical extraction wells could be implemented as a source control to reduce TCE concentrations and mass, and to reduce migration at the Site. However, groundwater pumping from the entire dissolved TCE plume (which extends ~2,000 feet) would be problematic. The extraction well network and estimated flow rates necessary to hydraulically control of the entire TCE plume would likely adversely affect the yield and water levels in adjacent existing private and public water supply wells.	Extraction wells are a reliable and proven process option for collecting groundwater. Additional hydrogeologic testing and pump tests would be conducted to collect the necessary information to design an optimal well network.	The services, equipment and skills necessary to implement this process option are readily available.	Higher general costs relative to other options.
Collection		Interceptor trenches/drains	Collection trenches are used in areas of shallow groundwater and where subsurface heterogeneities make extraction wells problematic. Trenches can either contain drain pipes or a series of sump pumps to pump groundwater. A subsurface drain is typically a buried conduit, backfilled with gravel or sand, to collect/transport groundwater by gravity flow.	Impacted groundwater at the Site resides in a bedrock aquifer more than 20 feet bgs making collection trenches infeasible. **Not retained.**			
		Hydraulic/pneumatic fracturing	This process increases the permeability of soil or bedrock by using bursts of high-pressure water or air to extend existing fractures, thereby improving the performance of in-situ or extraction remediation methods.	Site conditions do not support use of this technology. The complex, interconnected bedrock fracture network would pose a significant risk of causing TCE contamination in currently unimpacted domestic and/or public water supply wells. **Not retained.**			
	Excavation (Soil)	Excavation of potential vadose zone source areas	Contaminated soil is physically removed from the environment using conventional methods such as backhoes or bucket excavators. The excavated soils can then be treated and/or disposed on-site or off-site.	Remedial investigations conducted at the Site to date have identified discrete areas of TCE in Site soils, but only at concentrations less than approximately 20 ppb. The removal of these soils would not significantly reduce risk to human health via direct contact, or improve groundwater quality. **Not retained.**			
Treatment - *In-Situ*	Aeration/Volatilization	Air Sparging	Air is injected directly into groundwater which enhances the volatilization of VOCs from the aqueous to the gaseous phase. The VOCs move up into the unsaturated zone where they can be removed from the soil using a soil vapor extraction system.	The unsaturated soils at the Site include low permeable till which would make it difficult to achieve uniform airflow or collect soil vapors. **Not retained.**			
		In-Well Air Stripping	Water is pumped from the contaminated zone into the base of a well where air-lift pumping is used to lift the water and volatize the contaminants within the well casing. Volatized contaminants can be captured and extracted while the partially treated water is forced out of the well creating a circulation pattern and the cycle is repeated until remedial goals are met.	This process has been shown to be effective in reducing TCE concentrations in groundwater. However, aerating the high iron content surface soils and bedrock at this Site would result in fouling of the treatment well (as has been shown to occur in normal groundwater monitoring wells) and the subsequent loss of circulation and treatment efficiency, along with possible similar impacts to nearby water supply wells. **Not retained.**			

Note: Shading designates General Response Actions, Remedial Technologies, and Process Options that are not considered applicable for the Site and therefore not retained for future consideration.

Table 6-1
Summary of Retained Remedial Technologies and Process Options
Glenburn (ME) GAT Facility FS

General Response Action	Remedial Technology	Process Options	Description	Screening Comments	Effectiveness	Implementability	Cost
Treatment - *In-Situ*	Chemical Oxidation (ISCO)	Commonly used oxidants include: - Hydrogen peroxide - Fenton's Reagent - Potassium permanganate	ISCO involves injecting chemical oxidants into the vadose zone and/or groundwater to oxidize organic contaminants. Complete mineralization to carbon dioxide and water is the desired endpoint of an ISCO process. Fenton's Reagent and hydrogen peroxide are short-lived oxidants best suited to sites with defined source areas and sufficient hydraulic conductivity to allow rapid distribution of the oxidant. Potassium permanganate can persist and continue oxidizing contaminants for longer periods of time.	The complex hydrogeology of this Site includes multiple cross-connections in the bedrock fracture network. Therefore, injection of any treatment process chemicals into the rock aquifer is not recommended since it would be extremely difficult if not impossible to prevent these chemicals from reaching known viable public water supplies currently in use only 300 ft to 500 ft away from the contamination. **Not retained.**			
	Enhanced Bioremediation	Specific processes for chlorinated solvents include: -Bioaugmentation -Enhanced reductive dechlorination -Aerobic Cometabolism	The focus of in-situ enhanced bioremediation is to increase degradation rates of contaminants by stimulating indigenous microbial activity by supplying carbon sources (i.e., food), nutrients or electron acceptors (e.g., oxygen), or controlling rate-limiting factors (e.g., pH and temperature). All forms of enhanced bioremediation require injection of materials into the aquifer. Many of the materials injected are toxic, while others change the reduction/oxidation conditions in the aquifer. Possible problems identified for field applications of cometabolic TCE degradation include clogging due to excessive biological growth near the treatment well. Precipitation or dissolution of iron, manganese or other naturally occurring metals due to the altered groundwater chemistry may also occur.	Based on investigations conducted at the Site, there is little TCE transformation to less chlorinated compounds. The presence of the public water supply well GB-PW-03 approximately 500 feet from the TCE contamination core, combined with demonstrated hydraulic connection between that well and the TCE contamination core, will require: A) complete degradation of injected materials within 500 feet of the injection point; B) hydraulic containment of the injected materials; or C) injection of only non-toxic materials at concentrations below drinking water MCLs. Also of concern is the likely creation of a temporary reducing environment while building the methanotrophic microbial population, which is likely to create indigenous iron-rich conditions, risking contaminating the water supply with staining dissolved iron. Alternatively, the addition of oxidation chemicals (hydrogen peroxide or others) to maintain elevated oxygen could cause precipitation of metals which would reduce the water well yield. The probability of temporary or permanent adverse effects on the currently potable water supply wells is high. **Not retained.**			
	Chemical Reduction (ISCR)	Zero-Valent Iron (ZVI; Fexox^{sm})	ZVI is a process option most often used in the construction of shallow depth permeable reaction walls or funnel and gate systems for the treatment of chlorinated organics in groundwater. As dissolved contaminants pass through the reaction wall, the reduction of the chlorinated hydrocarbons (and heavy metals) occurs. The ZVI powder could also potentially be injected as a slurry directly into targeted treatment areas.	ZVI becomes immobile once injected into the subsurface and is only effective for contaminated groundwater with which it comes in direct contact. Thus, obtaining widespread distribution of ZVI to achieve adequate cleanup would be technically very difficult, and if it was well distributed, it would likely affect water quality in nearby water supply wells. While it might be effective for treating groundwater in defined source areas, no defined sources of TCE have been identified at the Site. **Not retained.**			
	Hydraulic	Cosolvent or Surfactant-Enhanced Remediation (aka *in-situ* flooding, SEAR)	This process is designed to address the removal of non-aqueous phase liquids (NAPLs) in the subsurface of water-bearing units. A solvent or surfactant mixture (e.g., water plus alcohol or special surfactants) is injected into the targeted treatment areas to mobilize or dissolved entrapped NAPLs. Cosolvent/surfactant flooding is usually followed by water flooding to capture and remove residual contaminants, or to enhance the solubility of a NAPL to make it more susceptible to subsequent in-situ treatment (e.g., ISCO).	No evidence of any TCE DNAPL has been found in the remedial investigations conducted at the Site to date. Since the primary intent of this process option is directed toward the removal of NAPLs, this process option is not relevant for further consideration for this Site. Additionally, its use would likely impact water quality in nearby water supply wells. **Not retained.**			
	Passive attenuation	Monitored Natural Attenuation (MNA)	MNA consists of naturally-occurring, subsurface processes which reduce or attenuate contaminant concentrations in groundwater (and soils). MNA can occur through either biotic and/or abiotic mechanisms. Biotic mechanisms include micro-organisms that degrade contaminants aerobically or anaerobically. Abiotic reduction of contaminants occurs through mechanisms including dispersion, dilution, sorption and volatilization. Extensive and long-term monitoring is typically required to verify performance.	TCE concentrations in off-site groundwater are currently below the RAO/MCL. TCE concentrations in on-site groundwater are not expected to diminish materially through NA. The high DO, lack of TCE degradation products and the presence of chloride from a Site salt pile, indicate NA through biotic processes is not prevalent. MNA for this Site is primarily effective through dilution and ispersion. **Retained.**	Relies on natural attenuation processes to achieve RAO/MCLs; monitoring to track progress	Readily Implementable	Lower general costs relative to other options.

Note: Shading designates General Response Actions, Remedial Technologies, and Process Options that are not considered applicable for the Site and therefore not retained for future consideration

Table 6-1
Summary of Retained Remedial Technologies and Process Options
Glenburn (ME) GAT Facility FS

General Response Action	Remedial Technology	Process Options	Description	Screening Comments	Effectiveness	Implementability	Cost
Treatment - *Ex-situ*	Air Stripping	Commonly used processes include: - Packed tower air strippers - Diffused aerators - Tray aerators - Aeration tanks	Air stripping processes treat extracted contaminated groundwater by injecting large volumes of air into the treatment vessels causing the volatile contaminants to volatize from the aqueous phase to the gaseous phase. The vapors are collected, treated and discharged to the environment.	Inefficient due to dilute contaminant concentrations. Operational difficulties due to winter freezing conditions, iron fouling, and off-gas treatment. **Not Retained**		d	d
	UV/Chemical Oxidation	Specific processes include: - Hydrogen peroxide - Ozone - Ultraviolet light - Chlorine - Potassium permanganate	Ex-situ chemical oxidation involves mixing an oxidizing solution or agent with extracted contaminated groundwater in a treatment vessel. UV light is also used, often in combination with chemical oxidation. Oxidation mineralizes most organic compounds to carbon dioxide, water and salts.	High power and chemical costs; not cost effective given the dilute contaminant concentrations; and operational complexities. **Not Retaine**d			
	Biological Treatment	Common processes include: - Activated sludge - Fluidized beds - Batch reactors - Rotating biological contactors (RBCs) - Packed bed reactors	Biological treatment of extracted contaminated groundwater is conducted by stimulating microorganisms to use the contaminants as a carbon and energy source. The microorganisms degrade the organic contaminants to produce carbon dioxide, water and new cells.	Heating of groundwater is likely required to facilitate microbial activity; the process will have design/operational difficuties related to maintaining anaerobic conditions; and difficulty maintaining necessary biomass due to dilute contaminant concentrations**. Not Retained**			
	Chemical Reduction	Zero-Valent Iron (ZVI)	Ex-situ chemical reduction involves placing extracted contaminated groundwater in contact with a reducing agent, causing dechlorination of the TCE molecule into ethene.	Frequent maintenance is required to prevent short-circuiting through iron bed, long contact time (weeks) is possibly required between extracted groundwater and reducing agent, and there is a risk of producing more toxic effluent by incomplete reduction. **Not Retained.**			
	Organic adsorption	Common adsorbents for water treatment: - Granulated Activated Carbon (GAC) - Powdered Activated Carbon (PAC) - Ion exchange resins	Organic adsorption of VOCs, like TCE, is typically done using GAC or PAC. In both processes, extracted contaminated groundwater is brought in contact with activated carbon in reaction vessels where the dissolved organics adhere to the surfaces of the carbon and the treated groundwater is discharged.	**Potentially applicable.** This process option could be implemented as part of a source control measure at the Site.	Organic adsorption is a reliable and proven process option that is highly effective for removing VOCs in water including TCE.	The services, equipment and skills necessary to implement this process option are readily available.	Higher general costs relative to other options.
Disposal	Discharge	Re-injection	Groundwater re-injection may be performed where options for surface water or sewer discharge are not available. Groundwater can be re-injected through injection wells or horizontal infiltration galleries. The feasibility of this process option depends on factors including subsurface permeability, groundwater geochemistry, and depth to groundwater.	**Potentially applicable.** Aquifer re-injection is a viable option for the Site in view of no POTW or surface water options. Subsurface basal till beneath the Site would likely rule out the use of infiltration galleries for re-injection which could lead to flooding of a nearby trailer park. Treated groundwater would need to be re-injected into the bedrock aquifer, ideally in the lowest set of transmissive fractures that would accept it, in order to reduce downward migration of dissolved contamination.	A detailed pilot scale test would be needed in order to predict the effectiveness and evaluate the potential impacts of re-injection upon nearby water supply wells. The geochemical effects of re-injecting treated water would also have to be evaluated.	It is likely that a discharge permit would have to be obtained from the State.	Lower general costs relative to other options.
		Discharge to POTW	One option for the discharge of extracted and treated groundwater is through a publically-owned treatment works (POTW) or wastewater treatment plant (WWTP). Critical parameters to be considered for this option include flow rates and solids loading. The long-term (decades) duration of groundwater treatment might also have to be considered on the long-term operation of the POTW.	Since there is no POTW in Glenburn, ME, the option of discharging extracted and treated groundwater is not available. **Not retained.**			
		Surface water discharge	Extracted and treated groundwater may be discharged to surface water channels or surface water bodies (e.g., streams, rivers, etc.) within the targeted treatment area(s). The long-term (decades) duration of groundwater treatment might necessitate an NPDES permit. Federal AWQCs and State standards would be considered in developing discharge limits.	There are no suitable surface water channels or surface water bodies within proximity of the Site which could be used to discharge extracted and treated groundwater. **Not retained.**			

Note: Shading designates General Response Actions, Remedial Technologies, and Process Options that are not considered applicable for the Site and therefore not retained for future consideration

Although both are potentially applicable, groundwater use restrictions was selected over zoning for this FS in part because it is anticipated that the former could be implemented more easily than the latter.

Two remedial control process options for groundwater, domestic well modification and alternative water supply, were screened out on the basis of technical implementability. The data indicate that the Aquifer is contaminated in both Unit A and Unit B to more than 200 fbgs, therefore, deepening the well casing or the well itself is unlikely to improve water quality to concentrations below the RAO and MCL.

Given the location and size of the contaminant plume, drilling alternative wells on the same property is unlikely to be effective in most cases. Further discussion is provided below. Wells GB-DW-54 and -55 are located on properties of less than two acres, with the majority of the properties within the known extent of contamination (see Lots 3.05 and 3.06 on Figure 6.3-1 and Figure 3.4-1). Therefore, replacement of those wells on the same properties has a low likelihood of success.

The other currently impacted water supply that is in use (after activated carbon treatment) is GB-DW-22, located on Lot 34 (about 4 acres, see Figure 6.3-1 and Figure 3.4-1). While it is true that the delineated extent of TCE contamination covers only half of the approximately 300 ft by 600 ft long Lot 34, the exact edge of the plume is not precisely known. The delineated extent of TCE was based upon the detections of TCE in GB-DW-22 and GB-DW-23 (AKA GB-SW-01) on Lot 34, and the lack of detections in water supply wells on Lots 32, 33, 35 and 43 (See Figure 3.3-2 and Figure 3.4-1). These uncontaminated wells are located between 300 and 600 feet from GB-DW-22 resulting in an uncertainty zone that covers the entire Lot 34 parcel. As a result, it is possible but unlikely that an uncontaminated well could be drilled on Lot 34. Additionally, if a new well were drilled and used as a water supply, it could conceivably draw in contamination during use based upon the approximate 50 foot by 240 foot ellipse radius of influence measured in GB-MW-06 at 5 gallons per minute flow (discussed in Section 2.2).

Estimated costs of drilling and testing a potential replacement well are in the order-of-magnitude of $30,000 to $60,000, based upon the 2008 cost of installation and testing of the on-site rock monitoring wells GB-MW-03 through -06. Current costs of activated carbon treatment for GB-DW-22 are on the order of $3,000 per year. Given the expected decades needed to balance costs between the two alternatives, combined with the low certainty of success (e.g. drilling a clean well), the replacement well option was not carried forward in the feasibility study.

The four limited action process options retained for the development of remedial alternatives are:

- Deed notices and advisories;
- Groundwater use restrictions;
- Long-term groundwater monitoring; and
- Domestic well treatment (using granular activated carbon (GAC) units)

Containment. Two remedial technologies, capping and barriers, were identified but were screened out. Remedial investigations at the Site have identified only a few limited and isolated areas of TCE soil contamination less than approximately 20 ppb. While caps and barriers are technically feasible, it would be more cost-effective to remediate these small areas of contaminated soil by excavation (if warranted).

Collection. Four collection process options were identified. Of these, interceptor trenches/drains to collect groundwater were screened out because of the lack of groundwater in the overburden soils and the infeasibility of this option in bedrock. Hydraulic/pneumatic fracturing was screened out because the use of this option in the highly fractured and interconnected bedrock could potentially result in contamination of currently unimpacted water supply wells. Extraction of groundwater was considered to be technically implementable only on a limited basis for source control and not as a viable option for the entire groundwater plume. Hydraulic control of the entire 35 acre dissolved groundwater plume would require draining the

aquifer to multiple pumping wells. Using a 500 foot pumping influence radius (equal to the approximate width of the plume), and 30% overlap of the radii of influence, approximately 5-10 wells would be required along the length of the plume. Each well would need to pump on the order of 10-20 gpm (2-4 times the 5 gpm pumped at GB-MW-06), for a total pumping rate of 100-200 gpm. The effects of such a long term high flow water withdrawal is uncertain, but would likely adversely affect the yield and water levels in adjacent existing private and public water supply wells. Excavation of discrete, isolated areas of TCE soil contamination on the Site was also considered to be technically implementable, but ineffective as a source control measure. The observed minimal concentrations of less than approximately 20 ppb TCE in soils does not pose an unacceptable risk to human health, and their removal would not significantly affect groundwater quality. Accordingly, the collection process option retained for the development of remedial alternatives is extraction wells.

In-situ Treatment. Seven in-situ treatment process options were identified. However, because of the complex geophysical and hydrogeological subsurface conditions at this Site, all of the active process options were screened out on the basis of technical implementability. Due to the proximity and vulnerability of public water supply wells GB-PW-02 and GB-PW-03, injection of any chemicals into the rock aquifer is not recommended. This includes oxidizers, nutrients, toluene, methane, metals and any other product that could change the groundwater chemistry including, but not limited to changes in pH, Eh and dissolved oxygen.

The paramount reason for rejection of in-situ treatment is that it will be impractical to prevent chemicals and/or chemically altered groundwater from reaching known viable public water supplies currently in use. Active in-situ treatment processes may be re-evaluated during the remedial action phase in the event that site conditions or emerging technologies can be effectively and safely applied without the consequences of negatively impacting viable water supplies currently in use.

Enhanced Aerobic Cometabolic Biodegradation Evaluation: At the request of MEDEP an evaluation of the feasibility of aerobically degrading the approximately 60 micrograms per liter (µg/L) TCE present in fractured bedrock at the Glenburn site was prepared and is included as Appendix 10. The following key Site conditions from the RI Trip Report (JCO, 2009) were considered in this evaluation of enhanced aerobic cometabolic biodegradation:

- <100 µg/L TCE in groundwater at up to 200 foot depth in fractured bedrock
- high dissolved oxygen (9-11 mg/L @ 8-11°C) in the core of contamination
- high chloride (up to 2,990 mg/L) in nearby wells and approximately 600-800 mg/L in the core of contamination
- positive oxidation-reduction potential (400-500 mV SHE corrected ORP) in the core of contamination
- neutral pH (6.8-7.2)
- low groundwater temperatures (8-10°C)
- public water supply is directly hydraulically connected to the preferential fractured bedrock flow pathway
- iron-rich bedrock aquifer environment could precipitate solids or cause increased dissolved concentrations in water supply system (depending upon redox and chemical changes in the aquifer)
- fracture permeability of 100 to 800 ft/day in the core of contamination

Cometabolism is the process by which one compound (the contaminant TCE) is fortuitously transformed (in this case, dechlorinated) by an enzyme produced by a microorganism for metabolism of another compound. Cometabolic transformation is typically of no benefit to the microorganism involved. Thus, cometabolic bioremediation has the potential to degrade contaminants at low to trace concentrations because the biodegrading microorganism is not dependent on that contaminant for carbon or energy. However, because transformation of the contaminant does not yield a growth or energy benefit for the microorganisms, a growth substrate (or cometabolic inducer) must be added at least periodically to the system to sustain microbial activity.

A chlorinated ethene such as TCE can be degraded aerobically directly to carbon dioxide and chloride salts without the production of degradation intermediates such as vinyl chloride, if supporting conditions exist. Microorganisms with demonstrated capability for cometabolic

dechlorination of TCE include methanotrophs and oxidizers of toluene, propane, ammonia, phenol, and ethane (ESTCP, 2005).

Following are conclusions and recommendations regarding enhanced aerobic cometabolic biodegradation of TCE at the Glenburn Site (references are provided in the detailed evaluation in Appendix 10):

1. High background concentrations of the biodegradation end product chloride (Cl) at this site may inhibit degradation of the parent compound TCE. Saline conditions can limit or prevent TCE biodegradation due to (1) high concentrations of chloride ion interfering with the naturally-occurring bacteria's ability to cometabolize TCE, and (2) high chloride concentrations kinetically inhibiting the TCE degradation reaction. The high chloride background, although possibly not a major issue with anaerobic degraders may be injurious under aerobic conditions. Chloride concentrations in bedrock monitoring wells may inhibit biological activity that could degrade TCE (Lee and Liu, 2006). However, the reduction in TCE degradation observed by Lee and Liu occurred at higher chloride concentrations than measured at the Site, and several bioremediation experts have communicated to MEDEP the opinion that chloride concentrations at the Site would not affect biodegradation. McCarty et at (1998) reported success in reducing TCE concentrations in a sand aquifer containing approximately 720 mg/L chloride by injecting between seven and 13.4 mg/L toluene and hydrogen peroxide into aquifer. The dominant effective enzyme system for this remediation was toluene orthomonooxygenase. No results were available for other successful remediation efforts in aquifers with elevated chloride from an admittedly limited background search but high background conditions generally inhibit reactions generating the same species, and microbial reactions are generally subject to universal chemical laws.

2. The high chloride background would make monitoring for Cl production from the TCE impossible given the low production expected from degradation of the TCE contaminant levels at the Glenburn Site. Monitoring of the degradation product Cl is a typical method of confirming the success of chlorinated solvent biodegradation, which will not be possible given the existing background levels. Given the limited time-series TCE data in the contaminant core (at monitoring wells GB-MW-01 and -02), particularly since vertical migration in the two monitoring wells was controlled by the Flute liners only recently (in 2008), it will not likely be possible to assess the effectiveness of a bioremediation method.

3. The presence of the public water supply well GB-PW-03 approximately 500 feet from the TCE contamination core, combined with demonstrated hydraulic

connection between that well and the TCE contamination core, will require: A) complete degradation of injected materials within 500 feet of the injection point; B) hydraulic containment of the injected materials; or C) injection of only non-toxic materials at concentrations below drinking water MCLs. Also of concern is the likely creation of a temporary reducing environment while building the methanotrophic microbial population, which is likely to create indigenous iron-rich bedrock dissolution conditions, risking contaminating the water supply with red staining dissolved iron. Alternatively, the addition of oxidation chemicals (hydrogen peroxide or others) to maintain elevated oxygen could cause precipitation of metals which would reduce the yield of the water supplies. Even if computer modeling were used to predict redox conditions and concentrations, a trial-and-error approach would be required to balance and stabilize the groundwater quality, and the likelihood of temporary or permanent adverse effects on the currently potable public water supply is high.

4. Successful cometabolic biodegradation will likely require the injection of nitrogen, phosphorous and/or other nutrients in addition to a growth substrate. Proven growth substrates with demonstrated effectiveness in stimulating naturally-occurring bacteria to cometabolize chlorinated ethenes include methane, propane, toluene, phenol, and butane. Except possibly for methane, these compounds are all (to one extent or another) considered contaminants if they are present in a water supply, and therefore injection of these substrates would carry a significant risk of adversely impacting the GB-PW-03 water supply. As with attempts to balance the redox conditions, even if computer modeling were used, a trial-and-error approach would be required to balance and stabilize the groundwater quality, and the likelihood of temporary or permanent adverse effects on the currently potable public water supply is high.

5. Possible problems identified for field applications of cometabolic TCE degradation include clogging due to excessive biological growth near the treatment well. Precipitation of iron, manganese or other naturally occurring metals due to the altered groundwater chemistry may also occur and cause plugging. The ongoing occurrence of recirculation well biofouling will be a limiting factor in the continuous operation and maintenance of a remedial system, with the potential for excessive biomass growth in the fractures resulting in decreases in fracture permeability and corresponding decrease in the effectiveness of the substrate delivery system. These impacts will also need to be kept away from the public water supply well. Pulsed substrate injections, and the use of hydrogen peroxide has been successful at reducing fouling near the injection points (McCarty, et al, 1998), but no documentation of downgradient effects on metals precipitation or dissolution and biological growth was found in the literature search. Given the inherent uncertainties in predicting the formation of these clogging agents, as well as their transport and depletion, hydraulic

containment of the treatment area would be the only responsible method to protect the GB-PW-03 water supply.

6. Conceptual sources of on-going contamination in groundwater at the Glenburn Site include residual DNAPL droplets in relatively low permeability fractures and TCE diffused into the rock matrix. Therefore, the delivery of the materials needed to enhance aerobic degradation would require either 1) dispersion into the low permeability fractures and/or 2) diffusion into the rock matrix. Either of these processes requires the long-term maintenance of elevated concentrations of cometabolizing enzymes, substrate, and nutrients in the highly porous and permeable contaminant zone where one can expect rapid transport and mass flux of groundwater. Given the estimated 40 year historical presence of TCE in the aquifer, diffusion in particular (which is concentration and time driven) will likely take decades for full remediation (i.e., to the RAO and MCL). This matrix diffusion process often represents a long-term source of TCE impacts to groundwater in fractured bedrock. If full remediation of these residual source areas is not achieved, rebound (post-treatment increases in TCE) is likely to occur, although there is limited evidence in the literature one way or the other for cometabolic bioremediation efforts. That is, no documentation was found of permanent reduction in TCE to concentrations below MCLs as a result of cometabolic aerobic biodegradation, particularly in fractured rock. In the absence of any proven successful projects, the use of these technologies at this Site where human health is not directly at risk is not warranted (particularly given the potential adverse impacts to public water supplies).

Conceptually, cometabolism is an attractive approach for the Glenburn Site since it requires existing aerobic conditions, it results in rapid degradation rates, and it does not produce vinyl chloride as a degradation product (unlike anaerobic biodegradation processes). However, the technology has not received widespread application in the US, with reports of only limited field applications at CERCLA sites in the period 2005-2008. This absence of wide-spread application of co-metabolic bioremediation results from the significant challenges to the successful field application of the technology.

In summary, enhanced aerobic cometabolic biodegradation of TCE in bedrock is unlikely to be effective at reducing the relatively low concentrations of TCE observed in groundwater at the Site more quickly than natural attenuation due to the limitations caused by the heterogeneous rock and the inability to speed up matrix diffusion. Potential adverse impacts to nearby water supplies are very likely, and the potential impacts to human health that may result from

implementation of this experimental technology out-weigh potential benefits (in the absence of current unacceptable impacts to human health). The application of this technology would dramatically increase remedial costs without providing significant reductions in risk to human health or significantly reducing the time frame necessary to achieve the RAOs. Further research or evaluation is not warranted, and use of enhanced aerobic cometabolic biodegradation is not recommended.

In-Situ Chemical Treatment Process: At the request of MEDEP, an evaluation of the feasibility of an in-situ chemical treatment process was evaluated. A presentation was provided by Plant Products to the MEDEP and USACE on May 3, 2011. One purpose of the meeting was to discuss the advantages and disadvantages of Plant Products chemicals for use in in-situ remediation of chlorinated volatile organic compounds (CVOC) at the Glenburn former GAT Site. Plant Products has a product called ERDenhanced, which is a dry powder containing nutrients, carbohydrates and organic carbon. It is soluble and is injected into the sub-surface as a liquid. The nutrients include ammonia nitrogen, phosphorous, potassium, and micro-nutrients including copper and others (not specified). The product is intended to reduce TCE concentrations in groundwater by at least 50% by creating an anaerobic environment and feeding dehalococoides and other methanogenic bacteria. The ammonia nitrates are changed to nitrites in this process.

At a North Andover, Massachusetts overburden site, approximately 250 parts per million (ppm) TCE were treated to approximately 4 ppm in two months. In a Wisconsin overburden example, initial concentrations of hundreds of ppm TCE were treated to approximately 200 ppb in six months. Dissolved iron and manganese concentrations increased during the treatment, as expected due to the changes in redox conditions intended by the treatment. It is not known if the technology would be effective for treating groundwater under conditions which exist at the Glenburn GAT site (historical maximum of 60 ppb TCE in fractured rock).

ERDenhanced will drive the groundwater system within the treatment zone from its existing aerobic condition to anaerobic conditions that are suitable to stimulate the dehalorespiration of native bacteria present (assuming their presence). In the process, groundwater conditions will reduce iron and manganese if present (rendering them more soluble). However, outside the treatment zone, the process reverses itself, returning to less reducing/more oxidizing conditions where the Fe2+ and Mn2+ return to their oxidized Mn4+ and Fe3+ states. The primary assumption in the use of this chemical at Glenburn is that there is enough distance, time, or a hydraulic gradient that prevents treatment zone conditions from impacting the existing, potable sensitive receptor: public water supply well GB-PW-03. If these conditions or engineering controls can't be assured this treatment process is not a good choice.

Prior to testing the effectiveness of Plant Products at Glenburn, additional hydrogeologic testing would be needed to confirm that the public water supply well GB-PW-03 currently in hydraulic communication with GB-MW-01 would not be adversely affected by the proposed remedial technology. This testing would probably need to include inorganic groundwater testing and a tracer test designed to allow calculation of dilution, porosity, flux and travel times. Additionally, a second bedrock injection well adjacent to GB-MW-01 would be needed because: 1) GB-MW-01 has a Flute liner and sampling set-up, which only now is beginning to provide time-series data, and 2) GB-MW-01 has a relatively shallow zone of peak TCE concentrations that should be treated, but has 160 feet of open hole (with the liner removed) which would require plugging to prevent vertical preferential contaminant transport. Also, background, pilot test monitoring and post-test monitoring would be needed, including two or four monitoring rounds pre-test monitoring for a year, six to eight months of monitoring during the pilot test, and another year post-test monitoring.

In summary, the Plant Products in-situ amendment has not been proven to successfully treat TCE in bedrock to concentrations at or below the RAO and MCL. The nature, magnitude and extent of the changes it creates in the aquifer by the injection of nutrients, nitrates and other chemicals are not completely predictable. Two to three years of work would be needed to

complete a pilot test, if one could be safely performed at all. In summary, the primary concern is the same as for any in-situ treatment (even a pilot test): injection of chemicals into the aquifer could adversely impact the nearby public water supply well, which is currently safe to drink and has no feasible replacement.

Ex-situ Treatment. Five ex-situ treatment process options were identified to be potentially applicable. All five options are proven and effective technologies for treating TCE-contaminated groundwater.

Two of the options, air stripping and biological treatment, typically have lower costs relative to other options. However, ex-situ biological treatment processes are sensitive to temperature (heating of the groundwater would likely be required), and require careful maintenance of anaerobic conditions. In addition, it would be difficult to maintain the necessary biomass in the process tank given the relatively dilute contaminant concentration (which would become more dilute with groundwater pumping). Air stripping would also be inefficient due to dilute concentrations, and would have operational challenges resulting from winter freezing conditions, iron fouling, and off-gas treatment. The bright orange color of the rock in the optical televiewer as well as iron stained fractures detected using the acoustic caliper were used as the basis to conclude high iron in the bedrock (see Figure 3.2-5 and additional borehole geophysics logs in the RI Trip Report (JCO, 2009)).

Ex-situ treatment using zero-valent iron is a somewhat less proven technology although it has been used for treating TCE-contaminated water. It has the limitations of long contact time requirements, possible short circuiting of the bed, and incomplete reduction (resulting in more toxic compounds in the effluent (e.g., vinyl chloride).

Organic adsorption (using granular activated carbon (GAC)) and ultra violet (UV)/chemical oxidation are reliable and proven technologies. GAC-based systems are commercially available as “packaged” units in treatment capacities readily suited for potential application at the Site. UV

oxidation units are also commercially available and have the added advantage over GAC of destroying TCE; carbon adsorption extracts and concentrates the TCE which then must be removed from the carbon and disposed. However, UV/chemical oxidation would not be considered cost effective for the expected dilute concentrations of contaminants when compared to GAC due to high power and chemical costs, and operational complexities. Therefore, only one ex-situ treatment process option is retained for the development of remedial alternatives: granular activated carbon.

Discharge. Three discharge process options were identified. However, two options, discharge of treated groundwater to a POTW or to a surface water channel/body, are not possible at this Site because neither exist. Accordingly, the only discharge option retained for the development of remedial alternatives is aquifer re-injection.

Monitored Natural Attenuation (MNA). MNA is the reliance on natural attenuation processes (within the context of a carefully controlled and monitored clean-up approach) to achieve site-specific remedial objectives within a time frame that is reasonable compared to other methods. The 'natural attenuation processes' include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or ground water. These attenuation processes can include microbial degradation, abiotic chemical and physical transformations, dispersion and dilution. Evidence for the viability of MNA at the Site discussed below includes qualitative evaluations that suggest groundwater restoration to the RAO due to dispersion and dilution of the contaminants (MNA processes) will be achieved within a similar timeframe (decades) as compared to other remedial technologies.

Performance monitoring would be part of a MNA remedy and would be used to determine if natural attenuation is proceeding as anticipated and continues to be protective of human health and the environment.

Natural processes (specifically dilution and dispersion) are expected to achieve remedial objectives in a time frame that is similar to other alternatives. A quantitative model that could accurately predict future concentrations under an MNA scenario is not possible at this time due to a lack of long-term monitoring data on the Site. There are insufficient time-series data at the on-Site wells GB-MW-01 and -02 to reliably predict future concentrations because only post-2008 data are valid for determining trends in the two monitoring wells. This is because these wells were re-constructed in 2008 to isolate specific fracture intervals. Additionally, the hydraulic gradient data do not support a simple transport/flushing model through GB-MW-01 (groundwater gradients generally flow towards this well from all directions). Analysis of natural attenuation rates from many sites indicates that a measured decrease in contaminant concentrations of at least one order of magnitude is necessary to determine the appropriate rate law to describe the rate of attenuation, and to demonstrate that the estimated rate is statistically different from zero at a 95% level of confidence (EPA 1999b). Statistical evaluation of the water quality data would need to be re-evaluated during the 5 year reviews to determine the continued applicability of MNA.

The general lack of detections of TCE break-down (daughter) products indicates that on-going natural attenuation will not result in unacceptable concentrations of these compounds. Available water quality data from nearby public water supply wells also indicate that the TCE plume is not causing unacceptable increases in naturally occurring metals (arsenic, for instance) that would adversely impact human health.

The following issues were considered during the evaluation of the feasibility of MNA at the Site.

- The size of the contaminant plume appears to be stable or decreasing (based upon available data). There are no anticipated environmental conditions that would cause plume stability to change over time.
- Human health, surface water, sediments, air, or other environmental resources are unlikely to be adversely impacted as a consequence of selecting MNA.

- Most of the properties within the known area of TCE contamination currently have existing water supply wells which are tested annually (and treated as necessary). There are no anticipated significant increases in demand for groundwater in the affected area in the next few decades.
- Due to the likely presence of residual TCE in the bedrock matrix, the estimated timeframe of remediation with MNA is similar to other, more active, measures,
- The residual sources of contamination have been controlled where possible (open bedrock boreholes on-site were sealed).
- Few daughter (transformation) products of TCE have been detected that could present a greater risk, due to increased toxicity and/or mobility, than the parent contaminant (TCE).

7.0 DEVELOPMENT AND INITIAL SCREENING OF REMEDIAL ALTERNATIVES

This section of the FS report documents the development and initial screening of remedial alternatives. The alternatives retained in this process are carried forward for detailed analysis in Section 8.0.

7.1 APPROACH

The NCP requires that a range of remedial alternatives be considered in an FS. "The number and type of alternatives to be analyzed shall be determined at each site, taking into account the scope, characteristics, and complexity of the site problem that is being addressed." (NCP 300.430; 55 FR 8848).

The NCP requires the development of remedial alternatives to address source control and groundwater response actions, and a no-action alternative (NCP 300.430; 55 FR 8848). To address source control response actions, alternatives should be developed that: consider the use of treatment options that reduce the toxicity, mobility, or volume of contaminants as a principle element; and involve little or no treatment but provide protection of human health and the environment through engineering controls or institutional controls.

To address groundwater response actions, alternatives should be developed that attain site-specific remediation levels within different restoration time periods utilizing one or more different technologies.

For this FS, the technology process options evaluated, screened, and ultimately retained in Section 6.0 were combined to create a range of remedial alternatives that achieve the RAOs and meet the requirements of the NCP to the extent practicable.

7.2 DEVELOPMENT AND INITIAL SCREENING OF REMEDIAL ALTERNATIVES

The remedial alternatives developed for this FS are presented in Table 7-1. The first alternative is the No Action alternative which is required by the NCP and used as a baseline for comparison to other alternatives. The remaining alternatives, Alternatives 2 and 3, provide

increasingly aggressive options for remediation ranging from limited response options to active restoration options.

The primary purpose of the initial screening of remedial alternatives is to refine and to reduce the number of alternatives that will be analyzed in detail. However, CERCLA guidance (USEPA, 1988a) provides that in those situations where the number of viable or appropriate alternatives is limited, the screening effort may be minimized or eliminated if unnecessary. Accordingly, the three remedial alternatives developed in this section as summarized in Table 7-1 were carried forward for detailed analysis in Section 8.0.

Table 7-1
Remedial Alternatives Developed for Detailed Analysis
Glenburn (ME) GAT Facility FS

Technology / Process	Relevant Information	Alternative 1 No Action[1]	Alternative 2 Monitored Natural Attenuation with Wellhead Treatment; Long-Term Monitoring; Institutional Controls	Alternative 3 Groundwater Extraction & Ex-situ Treatment; Wellhead Treatment; Long-Term Monitoring; Institutional Controls
Five-year Site Reviews	Conducted to assess the effectiveness of the remedy		✓	✓
Long-term Environmental Monitoring (LTM)	Existing private and public drinking water wells, and selected groundwater wells		✓	✓
Domestic Wellhead Treatment	GAC units installed on individual drinking water well(s)		✓	✓
Institutional Controls	Deed Notices, advisories & groundwater use restrictions where appropriate		✓	✓
Extraction Wells	Extraction of groundwater in the apparent source area as downgradient hydraulic migration control			✓
GAC	Ex-situ treatment of groundwater extracted from the apparent source area			✓
Aquifer Re-Injection	Re-injection of extracted and treated groundwater at the Site			✓

Notes:
1. LTM conducted for Alternatives 2 and 3 will provide the necessary data for five-year reviews for those alternatives.

8.0 DETAILED ANALYSIS OF REMEDIAL ALTERNATIVES

This section documents the detailed analysis of remedial alternatives for the Site. The level of detail presented here for these alternatives is conceptual. Once an alternative has been chosen as the selected remedy by the decision-makers, additional information and data will be collected and/or compiled during the pre-design and design phases to develop the detail necessary to implement that alternative.

8.1 APPROACH

The focus of this FS is the development and evaluation of remedial alternatives to address TCE contaminated groundwater and soil associated with the Site. The purpose of the detailed analysis of remedial alternatives is to provide information to decision-makers to allow them to compare alternatives with respect to the evaluation criteria and to select an appropriate remedy that best meets the following CERCLA requirements:

- is protective of public health and the environment;
- restores the aquifer to its beneficial use in a reasonable time frame;
- attains ARARs (or provides grounds for invoking a waiver);
- is cost-effective;
- is a permanent solution using treatment technologies or resource recovery technologies to the maximum extent practicable; and
- provides preference for treatment that reduces toxicity, mobility, or volume as a principal element.

The NCP requires that the detailed analysis of remedial alternatives be conducted using nine criteria (NCP 300.430; 55 FR 8849). The nine criteria, which encompass statutory requirements and technical, cost and institutional considerations, are divided into three categories: (1) threshold criteria, (2) balancing criteria, and (3) modifying criteria. Table 8-1 presents a summary of the nine evaluation criteria.

The two threshold criteria are:

- overall protection of human health and the environment;
- compliance with ARARs

Table 8-1
CERCLA Evaluation Criteria for the Detailed Analysis of Remedial Alternatives [1]
Glenburn (ME) GAT Facility FS

Category	Criteria	General Description	Factors to Consider
Threshold Criteria	Overall Protection of Human Health and the Environment	Describes how the alternative, as a whole, achieves and maintains protection of human health and the environment	+ Elimination, reduction or control of site risks posed through each pathway + Unacceptable short-term or cross-media impacts
	Compliance with ARARs	Describes how the alternative complies with ARARs, or if a waiver is required and how it is justified	+ Compliance with Action-Specific ARARs + Compliance with Location-Specific ARARs + Compliance with other criteria, advisories & guidance
Balancing Criteria	Long-Term Effectiveness & Permanence	Evaluates the long-term effectiveness of alternatives in maintaining protection of human health and the environment after the response objectives have been met.	+ Magnitude of residual risk + Adequacy and reliability of controls
	Reduction of Toxicity, Mobility, and Volume Through Treatment	Evaluates the anticipated performance of the specific treatment technologies that an alternative may incorporate.	+ Treatment process used and materials treated + Amount of hazardous materials destroyed or treated + Degree of expected reductions in toxicity, mobility, and volume + Degree to which treatment is irreversible + Type and quantity of residuals remaining after treatment + Degree to which treatment reduces principal threats
	Short-Term Effectiveness	Examines the effectiveness of alternatives in protecting human health and the environment during construction and implementation of a remedy until the response objectives have been achieved.	+ Protection of the local community during remedial actions + Protection of workers during remedial actions + Environmental impacts + Time until remedial action objectives are achieved
	Implementability	Evaluates the technical and administrative feasibility of alternatives and the availability of services, equipment and skilled manpower	+ Ability to construct and operate the technology + Reliability of the technology + Ease of undertaking additional remedial actions if necessary + Ability to monitor effectiveness of remedy + Coordination with other agencies + Availability of offsite treatment, storage, disposal services & capacity + Availability of necessary equipment and specialists + Availability of prospective technologies
	Cost	Assesses the capital and operation and maintenance (O&M costs of each alternative	+ Capital costs + Operating and maintenance costs + Present worth cost + Accuracy of cost estimates: +50% to -30% + Performance period: 30 years
Modifying Criteria	State Acceptance	Assesses the state's or supporting agency's apparent preferences among or concerns about the alternatives	[No specific factors provided]
	Community Acceptance	Assesses the community's apparent preferences among or concerns about the alternatives	[No specific factors provided]

1. Sources: NCP 300.430; 55 FR 8849; USEPA. *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA.* EPA/540/G-89/004. October 1988.

The two threshold criteria determine if a remedial alternative is protective of human health and the environment and comply with the ARARs. An alternative must meet both criteria to be eligible for selection as the site remedy.

The five balancing criteria are:

- long-term effectiveness and permanence;
- reduction of toxicity, mobility, or volume through treatment;
- short-term effectiveness;
- implementability; and
- cost

The balancing criteria are the primary criteria upon which the core evaluation of each alternative is based. The level of detail required to analyze each alternative against these criteria will depend on the type and complexity of the site and other project-specific considerations.

The two modifying criteria are:

- state acceptance; and
- community acceptance

The modifying criteria are used to determine if the recommended alternative is acceptable to a state or support agency and to the local community. State concurrence and community acceptance are assessed during the public comment period after a Proposed Plan is published, and documented in the final Decision Document. Accordingly, the detailed analysis of alternatives presented in this FS report is based on an evaluation of the first seven criteria.

The NCP and CERCLA guidance outline factors to be considered for each of the nine criteria that facilitate a thorough analysis of the alternatives. Factors for each criterion are summarized in Table 8-1. The costs presented in this FS are based on existing data and knowledge of the Site and will be re-evaluated at the time of remedial design of the selected alternative. In general, cost estimates consist of two components: (1) capital costs, and (2) on-going operation and maintenance (O&M) and administrative costs. Capital costs consist of direct and indirect costs that typically include expenditures initially incurred to develop, construct, and

implement the remedial alternative. O&M and administrative costs refer to expenditures associated with activities such as operation and maintenance costs for treatment systems, long-term environmental monitoring, and the cost for five-year reviews. Per the CERCLA guidance, the costs are intended to be accurate with a range of -30 to +50 percent of the actual costs. For comparative purposes, the costs for each alternative are estimated for 30 years, regardless of the anticipated time frames beyond 30 years to meet RAOs. Because the estimated time frame to achieve RAOs for all of the alternatives is estimated to be in excess of 30 years, the actual total cost associated with each alternative may increase as a result of the longer time frame.

The following subsections present the detailed analysis of remedial alternatives proposed for the Site. For each alternative, a general description of the individual components of the alternative is provided followed by an evaluation of the alternative against the seven criteria. Highlights of the criteria evaluations are presented here. A detailed summary of the chemical-specific, location-specific and action-specific ARARs and how they apply to each of the remedial alternatives is presented in Table 5-1. Additional details of the evaluations of the other criteria for each alternative are presented in Table 9-1.

8.2 ALTERNATIVE 1 – NO ACTION

8.2.1 Description

The No Action alternative is required under CERCLA as a baseline with which to compare other remedial alternatives. In a No Action alternative there are no institutional, administrative, monitoring, or remedial actions implemented at a site.

As part of the detailed analysis of alternatives, the time required to meet the PRG in groundwater (i.e., the time to achieve the RAO/MCL of 5 μg/L) should be estimated to the extent possible. However, the actual time to achieve the RAO/MCL cannot be accurately predicted because of uncertainty regarding: (1) the mechanisms and rates of natural attenuation processes (e.g., biodegradation, dispersion, dilution, volatilization, etc.) occurring at the Site; (2) the actual subsurface conditions (e.g., potential but undefined residual material remaining in the soil and

bedrock); (3) the physical and chemical mechanisms associated with remediation of groundwater; and (4) the effectiveness of various treatment technologies. Additionally, due to the absence of sufficient time-series data to evaluate existing conditions and rates of attenuation in the core of the plume, the best available estimate for the No Action alternative is that it will take decades to reach the RAO/MCLs on-site.

8.2.2 Detailed Evaluation

Overall Protection of Human Health and the Environment

The assessment of this criterion relies on, among other things, the result of the risk assessments and comparison of site conditions against chemical-specific ARARs

Based on the results of the baseline ecological risk assessment, there are no adverse risks to ecological receptors.

For off-site groundwater, the HHRA concludes there are no unacceptable risks to humans from ingestion or inhalation of, or dermal contact with, any of the VOCs, including TCE, that were detected (see Section 4.1.4). The most recent TCE detections in off-site groundwater were all below the Federal MCL and the RAO for TCE (5 µg/L) except for a reported 4-7 µg/L in monitoring well GB-MW-03D located on the Town-owned Lot 45 (USACE, 2010 and Woods Hole Group, 2012). While one domestic water well, GB-DW-22, had an historical maximum TCE level of 5.1 µg/L in May 2007, subsequent monitoring events indicate concentrations below the RAO/MCL in that well. Sampling of GB-DW-22 in October 2007, and biannual sampling through spring 2012, all resulted in TCE concentrations below the RAO/MCL (USACE, 2008b, 2009 and 2010, and Woods Hole Group, 2012). Monitoring results from May 2009 through spring 2012 for wells GB-MW-04D and GB-MW-03D indicate that the contaminant plume concentration is approximately 4-7 ppb near the eastern and southern property lines of the former GAT parcel (USACE, 2009 and 2010 and Figure 2.2-15). Accordingly, Alternative 1 would be protective of human health based on current off-site groundwater conditions.

For on-site groundwater, the HHRA found no unacceptable risk to human health from exposure to volatized TCE in indoor air (see Section 4.1.4). Therefore, Alternative 1 would be protective of human health for inhalation exposure to TCE in indoor air.

TCE exceeding the MCL was detected in the groundwater beneath the Site. Currently, on-site groundwater is being used as a drinking water source as drawn from public water supply well GB-PW-01. However, TCE has never been detected in this well because GB-PW-01 is drawing water from an uncontaminated bedrock fracture zone. Therefore, there is no current exposure pathway between human receptors and TCE-contaminated groundwater on-site. However, should the Site be re-developed for residential or commercial uses in the future, there is a potential for new water supply wells to be constructed on-site. Using worst-case data from on-site monitoring wells, the HHRA determined that the total carcinogenic risk to an on-site resident, the most vulnerable receptor, does not exceed the MEDEP target cancer risk level. Alternative 1 does not include any institutional controls (i.e., deed notices or groundwater use restrictions) that would warn about the potential risks from contaminated groundwater or that would limit or regulate the development of new water supply wells. Therefore, Alternative 1 would not be protective of human health in the future for on-site groundwater used as a potable water supply.

Because no active remediation is included in Alternative 1, it would not have any short-term impacts to human health.

Compliance with ARARS

The chemical specific ARAR of 5 µg/L MCL and RAO for TCE would be met under Alternative 1 for the current conditions in the off-site groundwater, but this same ARAR would not be met for the on-site groundwater.

No location-specific ARARs would be triggered since no active remediation is included in Alternative 1 that would cause an adverse impact to natural resources. It should be noted that

the remedial investigation indicated there were no nearby sensitive areas such as wetlands and floodplains that are being impacted above acceptable risk levels under current conditions.

No action-specific ARARs would be triggered since no active remediation is included in Alternative 1.

Long-Term Effectiveness and Permanence

Alternative 1 does not implement institutional controls to prevent potential future exposure to groundwater and does not include remedial actions to reduce concentrations of TCE in on-site groundwater that exceeds the MCL and RAO.

TCE concentrations in off-site groundwater are currently below the RAO/MCL. However, TCE concentrations in on-site groundwater do exceed the RAO/MCL and under Alternative 1 will not likely diminish to the 5 μg/L RAO/MCL for decades. Therefore, future potential exposure to TCE in the on-site groundwater would continue to pose a residual risk for the foreseeable future.

Reduction of Toxicity, Mobility, and Volume Through Treatment

Alternative 1 has no active treatment process that would reduce toxicity, mobility or volume. Passive treatment through natural attenuation processes is likely to continue. However, the absence of TCE degradation products (e.g., DCE and vinyl chloride) in the groundwater suggests the absence of indigenous microbial degradation of TCE. Therefore, the reduction in TCE concentrations in groundwater is likely to occur through abiotic processes such as adsorption, dilution, dispersion and volatilization over a long period of time.

Short-Term Effectiveness

There are no remedial activities involved in Alternative 1. Therefore, there are no risks, threats or adverse impacts posed to the community, workers, or to the environment. Because

there is no active remediation of the groundwater, it has been estimated it will take decades for the natural attenuation processes to achieve the RAO/MCL for TCE in the on-site groundwater.

Implementability

Alternative 1 would not involve any construction or remedial activities, and would not require approvals or coordination with regulatory agencies.

Cost

Because no actions are proposed there are no associated costs for Alternative 1.

8.3 ALTERNATIVE 2: MONITORED NATURAL ATTENUATION WITH WELLHEAD TREATMENT, LONG-TERM MONITORING & INSTITUTIONAL CONTROLS

8.3.1 Description

Alternative 2 for the Site would consist of the following components:

- Monitored Natural Attenuation
- Continued operation of the GAC unit on GB-DW-22 (and others as needed);
- Long-term environmental monitoring (LTM);
- Institutional Controls; and
- Five-year site reviews

These components are described in the following subsections.

To achieve the PRG/RAO associated with groundwater restoration under Alternative 2 will most likely take decades; the same as for Alternative 1, No Action, as Alternative 2 does not include any remediation features that would accelerate the clean-up time frame.

Domestic Well Treatment

Historical data from one domestic well, GB-DW-22 (replacement well for shallow dug well Gb-DW-23), showed a maximum TCE concentration of 5.1 µg/L in 2007; slightly exceeding the RAO/MCL of 5 µg/L. More recent monitoring data from GB-DW-22 shows TCE

concentrations below the RAO/MCL (Figure 3.3-6). Nonetheless, as a conservative and protective measure, a GAC unit was installed on DW-22 by MEDEP in 2002 and continues to operate. USACE has contracted maintenance of the GAC unit since 2002. One carbon tank is changed out, as necessary (based on chemical data results) and samples are collected twice per year, in spring and fall. Alternative 2 assumes that GAC treatment of this well will continue along with the appropriate monitoring of the unit's performance to ensure long term protection of the residents. Point of use treatment systems will also be provided under this alternative for other active water supplies if TCE is detected above the MCL/RAO of 5 ppb in the future, and for those supplies where increasing concentration trends indicate that such treatment is necessary in order to protect human health.

Long-Term Environmental Monitoring

Long term environmental monitoring is assumed to include sampling and VOC analyses once per year from six overburden and seven bedrock monitoring wells, pore water locations GB-SW-01, GB-SW-02 and GB-SW-04, and approximately 28 water supplies. Monitoring of water supply wells that have historically contained TCE, with reports issued to the individual well owners and MEDEP, is included in this alternative. Most of the properties within the known area of groundwater contamination are already developed, and have a water supply that is currently being sampled on an on-going basis. Until RAOs are reached, USACE will offer to test any new water supply well drilled within the limits of contamination. Selected monitored natural attenuation parameters may also be added to the LTM program at some sample locations as a means of assessing the extent that MNA processes are occurring. A Long Term Monitoring (LTM) Plan will be developed that will include criteria for discontinuing the LTM program. The LTM Plan will include optimization of the sampling program, and criteria for discontinuing the LTM program.

Institutional Controls

Institutional controls (ICs) are administrative and/or legal instruments that help minimize the potential for human exposure to contamination by ensuring appropriate land or resource use. Both CERCLA and the NCP support the use of ICs as part of the remedial alternative at sites if necessary to protect human health. (CERCLA 121(d); NCP 300.430(a); USEPA, 2009a). ICs can be layered (i.e., using different types of ICs at the same time to enhance protectiveness of the remedy), or implemented in series to ensure both the short-term and long-term effectiveness of the remedy.

A layered IC approach was selected for evaluation in this Alternative (as well as all subsequent alternatives). CERCLA guidance encourages the use of layered ICs as a means of providing overlapping assurances of protection (USEPA, 2000).

The implementation of ICs as a remedial component of Alternative 2 was based on three areas or zones of concern based upon preferential northeast-southwest migration pathways in the bedrock structure, historical and recent groundwater quality monitoring, and property boundaries. The estimated extent of contamination and property boundaries are provided on Figure 6.3-1.

The first area of concern (Zone 1) where ICs were considered is the on-site groundwater (i.e., groundwater beneath the central and southern portions of the Site (Lot 46 on Figure 6.3-1)) and groundwater beneath the northern portion of the adjacent property east of Birch Avenue owned by the Town of Glenburn (Lot 45 on Figure 6.3-1). The boundaries of Zone 1 are depicted as a dark black line on Figure 6.3-1. This area includes locations where TCE concentrations currently may exceed the 5 μg/L RAO/MCL. Zone 1 also includes areas where residual TCE may be present in soils, specifically below the former GAT building. The proposed institutional controls for Zone 1 include restrictions on excavation and construction intended to protect human health under potential future uses of the properties. It should be

noted that the Town and/or the State would likely have jurisdictional authority to re-define the IC areas or boundaries to be consistent with local practice or state law.

The second zone of concern is the off-site groundwater where historical and current monitoring data of domestic wells indicate the presence of TCE shown by the blue area on Figure 6.3-1. While the TCE concentrations on-site below the southern portion of the former GAT property are above the 5 µg/L RAO/MCL, TCE in domestic wells has universally been below the 5 µg/L RAO/MCL except for a one-time maximum of 5.1 µg/L in GB-DW-22 in May 2007. Subsequent monitoring in GB-DW-22 demonstrated TCE concentrations less than 5µg/L. As discussed previously, GB-DW-22 currently is the only water supply well in the area with a GAC unit installed and operating. Since the precise location of the edge of TCE contamination is unknown due to the spatial variation in the data (e.g. the locations of the wells), this Zone 2 will include the entire properties, whether they are impacted in part or in total. Properties included in the second zone of concern are: Lots 3.04 through 3.07, 3.13, Lots 48 A through 48 H, Lots 48 M through 48 R , Lot 33, Lot 34, Lot 35, Lot 42, Lot 43, Lot 44 and Lot 47.

The third area of concern includes properties which are abutting or adjacent to properties included in the Zone 2 area of concern. The edges of this Zone 3 are shown by green lines on Figure 6.3-1. This Zone 3 is included due to the indeterminate nature of the precise edge of the contamination, and due to the possibility of new wells drawing the contamination towards them during use.

Appropriate ICs are recommended below, based upon the need to protect human health under current and potential future use conditions, and upon discussions with Town representatives and the MEDEP in June, 2010. Prohibitions against drilling new wells and/or testing requirements for new wells on private property are unlikely to be implementable. There is no regulation at the State level for private wells that could be implemented. In order for such a prohibition to be implemented by the Town (such as incorporating it in the building permit), it would require a town-wide vote.

ZONE 1

Currently, GB-PW-01, the on-site public water supply well, is being used for potable purposes (Municipal Building). Historical monitoring data indicates no TCE concentrations have been reported to date in this well. However, within the Site boundaries, groundwater sampled from other bedrock wells has TCE concentrations exceeding the RAO/MCL. Additionally, there is concern that TCE concentrations may exceed the 5 ppb RAO/MCL on the northern portion of the adjacent Town property (Lot 45). For Town-owned Lots 45 and 46, the following ICs are considered appropriate:

- A deed notice on Lot 45 and Lot 46 that TCE is present in groundwater. A deed notice would provide an informational alert to the property owner (currently the Town of Glenburn) and to potential future owners of the property, that TCE is present in on-site groundwater potentially at concentrations exceeding the MCL and that there is a need for continued monitoring of drinking water drawn from GB-PW-01, and any new water supply wells, even though no TCE has been detected in GB-PW-01 to date. USACE will provide support for on-going water quality testing of GB-PW-01 and initial testing of any new wells in any of the three areas of concern.

- A deed restriction including a Declaration of Environmental Covenant against drilling new wells on the southern portion of Lot 46 (south of GB-PW-01).

- A deed restriction including a Declaration of Environmental Covenant requiring notification to MEDEP and USACE, and use of appropriate measures acceptable to MEDEP to protect human health of the workers prior to and during and excavation under the foot-print of the existing Municipal Building. USACE would conduct additional soil investigations at the time of demolition of the Municipal Building, but could need up to 18 months prior notice in order to appropriate the funds.

- A deed restriction including a Declaration of Environmental Covenant requiring any additional construction on Lots 45 and 46 to include measures to protect indoor air quality acceptable to MEDEP. Generally such measures prohibit cellars, include placement of permeable gravel vapor collection layers and vapor barriers (polyethylene) below concrete slabs, and passive or low level fan systems to maintain a slight vacuum below the slab, and route collected soil vapor to vent stacks.

- Annual inspections of the properties by USACE with reports to MEDEP to confirm that the deed restrictions are being complied with, and annual testing of

the water supply GB-PW-01 by USACE as long as it is in use to confirm that it remains uncontaminated.

ZONES 2 and 3

Zone 2 includes those properties which have TCE in groundwater below the MCL. Zone 3 includes those properties that may have TCE in groundwater. The IC considered appropriate is an advisory to property owners. An advisory is a non-enforceable warning or. Proposed details are provided below.

- Annual notices provided by USACE to landowners of the potential for TCE contamination in the groundwater below their property, and an offer by USACE to test their water supply if a new well is drilled. These notices (with copies to MEDEP) would be sent to the owner-of-record (checked at the Town Office annually) for properties within both Zones 2 and 3.

- Annual monitoring by USACE of water quality in wells that have historically contained TCE, with reports issued to the individual well owners and MEDEP.

- Point of use treatment systems provided by USACE for those active water supplies with TCE above the RAO/MCL of 5 ppb, and for those supplies where increasing concentration trends indicate that such treatment is necessary in order to protect human health.

Five-Year Site Reviews

Five-year Site reviews would involve the USACE, USEPA, and MEDEP with coordination of these reviews being the responsibility of the USACE as the lead agency. The review would evaluate whether human health and the environment continue to be protected by the alternative. If appropriate, additional actions may be implemented as a result of these reviews. The five-year Site reviews described here are also applicable to Alternative 3 described later in this section.

There are six components to the five-year review process: (1) community involvement and notification to ensure that all potentially interested parties are aware this review will be conducted; (2) review of documents including the Decision Document, RI/FS, risk assessment, remedial design and construction, and remedy performance to ensure that site conditions have not changed such that these documents are no longer applicable; (3) data review and analysis of

sampling and monitoring plans, remedy performance data, O&M data, and data from supplemental sampling if necessary; (4) site inspection to visually confirm and document the conditions of the remedy; (5) interviews of the site manager, site personnel, and people who live or work near the site to compile information about the site's status and/or identify remedy issues; and (6) a determination of protectiveness in which the lead agency decides if the remedy is, or is expected to be, protective of human health and the environment. It is anticipated that data collected during the long-term environmental monitoring program, which is included in this alternative, would be sufficient for use in the five-year reviews.

8.3.2 Detailed Evaluation

Overall Protection of Human Health and the Environment

The results of the baseline ecological risk assessment indicate there are no adverse risks to ecological receptors.

As discussed for Alternative 1, there are currently no unacceptable risks to humans from ingestion or inhalation of, or dermal contact with, any of the VOCs, including TCE, that were detected. Nonetheless, continued operation of the GAC unit on GB-DW-22 would be expected to provide an additional measure of protection of human health. In addition, annual water quality monitoring and advisories to the owners of private wells within the Zone 2 and Zone 3 areas of concern would serve as a secondary layer of protection. Accordingly, Alternative 2 would be protective of human health for off-site groundwater.

Similar to Alternative 1, Alternative 2 would provide no active remediation of on-site groundwater where TCE concentrations exceed the RAO/MCL. However, ICs in the form of deed notices and restrictions implemented for the two properties owned by the Town would provide a dual layer of protection against human ingestion of contaminated groundwater should the properties be considered for residential or commercial re-development in the future. Therefore, Alternative 2 would be expected to be protective of human health in the long-term for on-site groundwater used as a potable water supply.

Short-term impacts to human health posed by Alternative 2 are anticipated to be limited to those individuals involved in activities such as maintenance of the GAC unit and groundwater sampling as part of the LTM, or potentially workers excavating beneath the Municipal Building. However, these activities would legally only be conducted by professionals familiar with the potential risks and the methods to mitigate them (i.e., health and safety plans, protective equipment and clothing, etc., as required by OSHA CFR 1910.12).

Compliance with ARARS

The chemical-specific ARAR of 5 µg/L for TCE (the MCL) would be met under Alternative 2 for the current conditions in the off-site groundwater water supplies. On-site groundwater would not immediately meet this ARAR but would include measures to ensure the protectiveness of this remedy until the ARAR is achieved in the future.

No location-specific ARARs would be triggered since no remedial activities are being implemented in Alternative 2 that would cause an adverse impact to natural resources. It should be noted that the remedial investigation indicated there were no nearby sensitive areas such as wetlands and floodplains currently impacted. However, if a decision is made to install additional monitoring wells as part of the LTM, then this activity could trigger location-specific ARARs. In this situation, it is anticipated that all relevant location-specific ARARs would be complied with by the professionals conducting this work.

Action-specific ARARs might be triggered through activities such as GAC maintenance, well construction, and groundwater sampling which would generate waste materials requiring handling and disposal. However, these activities would only legally be conducted by trained environmental professionals who would ensure that all relevant action-specific ARARs were complied with.

EPA has recently re-iterated that whenever practicable, the restoration of contaminated groundwater to beneficial use is one of the primary objectives of the Superfund program

(USEPA, 2009a). However, EPA has also recognized that restoring groundwater to the established cleanup performance standards in certain cases is impracticable. At the Glenburn Site, the ARAR of 5 µg/L for TCE that was established as the RAO and PRG is likely technically impracticable from an engineering perspective (CERCLA Section 121(d)(4) and 40 CFR 300.430(f)(1)(ii), USEPA, 2009a, and USEPA, 1993). The extensive amount of data collected and analyzed during the RI/FS strongly suggest that restoration (through natural processes or active remediation) of the on-site groundwater to the TCE ARAR of 5 µg/L is likely to take decades due to the inaccessibility of the residual TCE contamination in the till, saprolite, and fractured bedrock beneath the Site which will continue to contribute to dissolved contamination of on-site groundwater at levels above the ARAR. However, the RI/FS has also demonstrated that the TCE-contaminated groundwater on-site has neither impacted the on-site water supply well used for drinking water purposes, nor caused unacceptable risks or long term ARAR exceedances off-Site. Therefore, plume containment or alternate water supplies are currently not required nor anticipated to be needed to prevent migration and/or to protect public health.

Long-Term Effectiveness and Permanence

For the off-site groundwater, the existing GAC unit on GB-DW-22 and the ICs are expected to be adequate and reliable in providing long-term effectiveness and permanence in protecting human health related to exposure to offsite groundwater. Periodic review of Town records for new development, water supply monitoring, annual notification of testing results to property owners, and contingency implementation of additional GAC units as needed, is included as part of this alternative.

The timeframe to achieve the 5 µg/L MCL under Alternative 2 is expected to be similarly lengthy (decades) as for Alternative 1 due to the fact that the reduction in TCE concentrations in on-site groundwater will occur primarily through abiotic natural attenuation processes. The implementation of on-going monitoring, deed notices and restrictions would provide a mechanism to ensure long-term effectiveness and permanence of Alternative 2 in controlling

exposure to contaminated groundwater via ingestion over time. However, the long-term effectiveness of the ICs will depend on the willingness and ability of the responsible entity to take enforcement action if necessary.

Reduction of Toxicity, Mobility, and Volume Through Treatment

Similar to Alternative 1, there is no active treatment process included in Alternative 2. Accordingly, future reduction in TCE concentrations in groundwater will be limited to the effects of passive, abiotic natural attenuation processes over a long period of time.

Short-Term Effectiveness

There are no remedial construction activities involved in Alternative 2. Thus, there are no risks, threats or adverse impacts posed to the community, workers, or the environment under this alternative. Because there is no active remediation of the groundwater, it has been estimated it will take decades for natural attenuation processes to achieve the RAO/MCL for TCE in the on-Site groundwater.

Implementability

Alternative 2 would involve continued operation and maintenance of the GAC unit on GB-DW-22, long-term monitoring of the groundwater, monitoring of compliance with deed restrictions, and advisory notices to land owners. GAC is a reliable and easily maintained technology. Groundwater monitoring would entail periodic sampling of the wells. Access to the domestic supply wells in the monitoring program, inspection of the Town properties, and confirmation of the property owners' contact information will have to be coordinated with property owners and/or the Town.

Coordination with property owners and appropriate state and/or local agencies and the Town of Glenburn would be required to implement institutional controls. The long-term monitoring and the five-year site reviews would be subject to regulatory review.

The services, equipment and trained personnel needed to conduct the activities in Alternative 2 are readily available.

Cost

Costs associated with Alternative 2 include both capital and ongoing O&M and LTM costs. The capital costs for Alternative 2 consist of costs associated with implementation of the institutional controls. It is anticipated that one pair of new bedrock monitoring wells will be required for the LTM program. MEDEP has requested the installation of an additional bedrock monitoring well pair located south-southeast of the Site and GB-MW-04. The estimated cost of the well pair is approximately $57,000, including work plan preparation, drilling, borehole geophysics, one round of water quality monitoring, and reporting. On-going costs for Alternative 2 include expenditures associated with the LTM program, continued operation and maintenance of the GAC unit at GB-DW-22, and five-year site reviews.

The estimated present worth cost (at 2 percent discount rate (OMB, 2011) for 30 years) of Alternative 2 is approximately $1.2M. Details of the Alternative 2 cost estimate are presented in Appendix 7.

8.4 ALTERNATIVE 3: GROUNDWATER EXTRACTION, EX-SITU TREATMENT & HYDRAULIC CONTAINMENT, WELLHEAD TREATMENT, LONG-TERM MONITORING & INSTITUTIONAL CONTROLS

8.4.1 Description

Alternative 3 for the Site would consist of the following components:

- Installation of a groundwater extraction and treatment system for on-site groundwater;
- Downgradient hydraulic migration control via hydraulic containment and ex-situ treatment;
- Continued operation of the GAC unit on GB-DW-22;
- Long-term environmental monitoring (LTM);
- Institutional Controls; and
- Five-year site reviews

The components of Alternative 3 are described in the following subsections.

The estimated time to achieve the RAO for groundwater restoration under Alternative 3 is decades, similar to Alternatives 1 and 2. The removal of some TCE mass through long-term groundwater extraction and treatment has the potential to reduce the clean-up time frame. However, this is an uncertain premise which can't be quantified - moreover; the data suggest that TCE source material is present in the saprolite and/or bedrock which will still take decades to attenuate.

On-Site Groundwater Extraction and Ex-Situ Treatment

As discussed throughout this report, TCE concentrations in off-site groundwater are currently below the 5 μg/L RAO/MCL. However, two on-site monitoring wells, GB-MW-01 and GB-MW-02, have fracture intervals which contain TCE at concentrations in the 20-60 μg/L range in the shallow "Unit A" bedrock aquifer (lower fractures in these wells are less contaminated). Available historical data suggests the TCE concentration in on-site groundwater will remain above the RAO/MCL for decades.

Alternative 3 incorporates active treatment of localized on-site groundwater. Pumping, ex-situ treatment with granular activated carbon, and reinjection of treated water into the aquifer would provide a level of hydraulic containment in the higher concentration area that would help reduce downgradient migration of dissolved TCE. While active ex-situ treatment of the on-site groundwater is not expected to remove residual TCE droplets from the aquifer, it would likely reduce contaminant concentrations and mass. Therefore, implementation of this remedy *may* result in improved water quality off-site, particularly at GB-DW-22, and thus eliminate the need for point-of-use treatment of that well.

As demonstrated during the installation of GB-MW-06, and based upon borehole geophysical data from GB-MW-05, it is feasible to drill new wells 10-15 feet away from existing wells in the appropriate direction (east-northeast or west-southwest), and still encounter the same fracture zones with a high degree of certainty. Therefore, one pumping well is proposed, located about ten feet west-southwest of GB-MW-01. The well would be completed to approximately 75

feet bgs in the Unit A rock such that it pumps water from transmissive features equivalent to the highest TCE concentrations detected in the Unit A rock aquifer in GB-MW-01.

Using the GB-MW-06 pump test data, a pumping rate of approximately 5 gpm next to GB-MW-01 would likely have a 250 foot elliptical radius of influence to the northeast/southwest, approximately equal to the worst-case logarithmic expected limits of 5 µg/L TCE in the bedrock aquifer in those directions (see Figures 2.2-15 and 3.3-3). The anticipated radius of influence to the southeast is 50 feet, which is less than the 400 foot expected limit of 5 µg/L TCE in the bedrock aquifer in that direction (see Figures 2.2-15 and 3.3-4)

Nominally, there are four options to dispose of the treated groundwater: (1) discharge to a public sewer system, (2) discharge to a surface water body, (3) discharge to the surface soils through infiltration galleries, and (4) re-injection into the aquifer. However, at this site, discharge options are limited. There is no public sewer system on-site and the Birch Street storm drains appear to be isolated infiltration basins with limited capacity. There is no surface water on-site. Infiltration into the overburden would be possible because the upper 5-10 feet of sandy gravel is permeable enough, however the gravels lie on top of low permeability till, and pinch out to the south and southeast. Existing seasonal groundwater discharge seeps to the south and southeast are interpreted as perched water discharges to the ground surface. If the treated water is injected into the upper sandy-gravel layer, it will likely to come back out (surface) in the back yards of the mobile homes to the south.

Therefore, the treated water would need to be re-injected into the bedrock aquifer, ideally in the lowest set of transmissive fractures that would accept it, in order to reduce downward migration of dissolved contamination to Unit B of the bedrock aquifer. Two likely re-injection points include the fractures at 120-130 ft NAVD in GB-MW-01 and those at 126-131 ft NAVD in GB-MW-06. Prior to the design and implementation of Alternative 4, a detailed pilot scale test would be needed in order to predict the effectiveness and evaluate the potential impacts upon nearby water supply wells. Potential chemical effects on the aquifer and water supply well water

quality due to re-injection of treated water (such as changes in dissolved oxygen or pH) would also need to be evaluated during detailed design.

Domestic Well Treatment

As part of this alternative, there would be continued operation and maintenance of the GAC unit on GB-DW-22 as described in Section 8.3.1. Note that the implementation of hydraulic containment may reduce TCE concentrations in GB-MW-22 to levels where this point of use treatment is no longer needed to protect human health.

Long-Term Environmental Monitoring

As part of this alternative, a long-term environmental monitoring program would be implemented as discussed in Section 8.3.1.

Institutional Controls

As part of this alternative, institutional controls would be implemented as described in Section 8.3.1.

Five-Year Site Reviews

It is anticipated that data collected during the long-term environmental monitoring program, which is included in this alternative, would be sufficient for use in the five-year reviews.

8.4.2 Detailed Evaluation

Overall Protection of Human Health and the Environment

The results of the baseline ecological risk assessment indicate there are no adverse risks to ecological receptors.

Alternative 3 contains the same protective features (e.g., continued GAC operation on GB-DW-22 and ICs) as Alternative 2 and thus would also be expected to be protective of human health for off-site groundwater.

The extraction and treatment of on-site groundwater under this alternative would serve to mitigate potential migration of TCE beyond the site boundaries and may, over a period of time, contribute to further reduction in the TCE concentrations (currently below the MCL) in off-site groundwater. However, TCE concentrations in on-site groundwater are expected to remain above the MCL for decades even with groundwater treatment. Therefore, Alternative 3 would include the same ICs as in Alternative 2 to be protective of human health in the long-term for on-site groundwater used as a potable water supply.

Short-term impacts to human health posed by Alternative 3 might be created by remedial activities such as maintenance of the GAC unit, groundwater sampling as part of the LTM, and groundwater extraction and treatment. These short-term impacts would be manageable if conducted by professionals familiar with the potential risks and the methods to mitigate them (i.e., health and safety plans, protective equipment and clothing, etc., as required by OSHA CFR 1910.120).

Compliance with ARARS

The chemical specific ARAR of 5 μg/L MCL for TCE would be met under Alternative 3 for the current conditions in the off-site groundwater. Removal of TCE mass through the removal of on-site soils, and extraction and treatment of on-site groundwater, would likely reduce contaminant concentrations in the on-site groundwater over time but not likely within decades to achieve this same ARAR.

Location-specific ARARs might be triggered for Alternative 3 for groundwater extraction and treatment activities. However, groundwater extraction and treatment is anticipated to be confined within the Site property boundaries and since there are no on-site sensitive areas such

as wetlands and floodplains, no adverse impact to natural resources is expected. Therefore, it is likely that all location-specific ARARs can be met with Alternative 3.

Action-specific ARARs might be triggered through activities such as GAC maintenance, groundwater sampling, and groundwater extraction and treatment, all of which would generate waste materials requiring handling and disposal. However, these activities would be conducted by professionals who would ensure that all relevant action-specific ARARS were complied with.

Long-Term Effectiveness and Permanence

For the off-site groundwater, the existing GAC unit on GB-DW-22 and the ICs are expected to be adequate and reliable in providing long-term effectiveness and permanence in protecting human health related to off-site groundwater.

Extraction and treatment of on-site groundwater has the potential to reduce the estimated time frame to achieve the MCL as compared to Alternatives 1 and 2 which rely on abiotic natural attenuation processes alone. However, site investigations and historical monitoring data suggest that TCE source material may be present in the bedrock fracture zones, thus, on-site groundwater extraction and treatment may not constitute a permanent solution. Nonetheless, the extraction and treatment of on-site groundwater would reduce the concentrations of TCE in on-site groundwater and mitigate potential migration of TCE downgradient.

As with Alternative 2, the implementation of a deed notices and restrictions would provide a mechanism to ensure long-term effectiveness and permanence of Alternative 3 in limiting the use of on-site groundwater over time, assuming these ICs are continuously monitored and enforced.

Reduction of Toxicity, Mobility, and Volume through Treatment

Groundwater extraction and treatment would reduce the mobility, toxicity, and volume of TCE in the aquifer. Treatment using GAC would produce treatment residuals that would require off-site treatment/disposal of the spent carbon.

Short-Term Effectiveness

Alternative 3 would not have significant short-term, impacts on the community, workers, or the environment. Vehicular traffic will increase during well installation and treatment system construction activities. The work is expected to occur within the property boundaries of the Site and therefore would not be expected to expose the community to any site-related risks.

Short-term impacts to human health posed by Alternative 3 might be created by remedial activities such as well drilling. However, these short-term impacts would be manageable if conducted by professionals familiar with the potential risks and the methods to mitigate them (i.e., health and safety plans, protective equipment and clothing, etc. as required by OSHA CFR 1910.120).

Although removal of some TCE mass by excavating soils and with long term extraction and treatment of the on-Site groundwater could reduce the clean-up timeframe, it is still expected to take decades.

Implementability

Administratively, the components of Alternative 3 would generally be straightforward to implement since the remedial activities would take place within the property boundaries of the Site which is owned by the Town of Glenburn. The implementability of continuing the operation and maintenance of the GAC unit on GB-DW-22, institutional controls, and the long-term monitoring of the groundwater was discussed in Alternative 2.

Groundwater extraction is a demonstrated and reliable method for capturing and collecting contaminated groundwater. GAC is a proven technology for treatment of TCE. Discharge of treated groundwater via a re-injection system is considered a reliable means of disposal. Therefore, all of these features of Alternative 3 are considered easily implementable. Treatment system effluent would be monitored on a routine basis to evaluate the effectiveness of the treatment system and verify that reinjection criteria are achieved. High maintenance of the extraction and re-injection system may be required to prevent fouling caused by the high iron content in the groundwater. Prior to implementation, pre-design, pilot-scale studies, and treatability tests to determine the requirements for extraction/reinjection systems and treatment parameters would be performed.

The equipment, materials and trained personnel for construction of the groundwater extraction, treatment, and reinjection systems are readily available. The estimated time to design and construct the system is approximately three to six months.

Cost

Costs associated with Alternative 3 include both capital and O&M costs. Capital costs for Alternative 3 consist of costs associated with implementation of the institutional controls, and the construction of the groundwater extraction and re-injection systems and the treatment and control systems. Costs of one new bedrock monitoring well pair for the LTM program are included in the estimate. Annual O&M costs for Alternative 3 include expenditures associated with the LTM program, continued operation and maintenance of the GAC unit at GB-DW-22, O&M of the groundwater extraction and treatment (GAC) system, and five-year site reviews. The implementation of this remedy may eliminate the need for the GB-DW-22 point of use treatment, but the costs of such treatment are still included in the estimate.

The estimated present worth cost (at a 2 percent discount rate (OMB, 2011)) for 30 years) of Alternative 3 is approximately $2.1M. Details of the Alternative 3 cost estimate are presented in Appendix 7.

9.0 COMPARATIVE ANALYSIS OF ALTERNATIVES

This section of the FS documents the comparative analysis of remedial alternatives for the Site. This analysis evaluates the relative performance of each of the alternatives analyzed in detail (Section 8.0) relative to the same specific evaluation criterion. This provides decision-makers with another tool by which to select an appropriate remedy.

9.1 APPROACH

The purpose of the comparative analysis is to identify the advantages and disadvantages of each alternative relative to one another to aid in the selection of the remedy. To the extent practicable, the selected alternative should:

- be protective of human health and the environment;
- comply with ARARs (or provide grounds for invoking a waiver);
- use permanent solutions and alternative treatment technologies to the maximum extent practicable;
- satisfy the preference for treatment that reduces toxicity, mobility, or volume as a principal element; if this preference is not satisfied, the ROD must explain why; and
- be cost-effective.

The remedy selected for the Site must reflect the scope and purpose of the actions being undertaken and how these actions relate to other actions and the long-term response at the Site. This FS does not conclude with a recommended remedy. The identification of the preferred alternative and the final remedy selection are based on an evaluation of the more significant trade-offs among the alternatives. This evaluation will be conducted by the USACE, MEDEP and other stakeholders during the remedy selection process (i.e., through the Proposed Plan and public review process) using the information presented in this FS.

The comparative analysis of alternatives is conducted using the same seven evaluation criteria (the two threshold criteria and the five balancing criteria) used for the detailed analysis of alternatives. A discussion of these criteria was presented earlier in Section 8.1.

The results of, and conclusions from, the alternatives evaluation are summarized in Section 9.2.8.

9.2 COMPARATIVE ANALYSIS OF ALTERNATIVES

9.2.1 Overall Protection of Human Health and the Environment

The results of the baseline risk assessment indicate no current adverse risks to ecological receptors, and no unacceptable risks to humans from ingestion or inhalation of, or dermal contact with TCE that were detected in soil or existing drinking water wells.

Concentrations of TCE in off-site groundwater are currently below the RAO/MCL of 5 µg/L (using the latest available USACE data) throughout the impacted area except for a reported 4-7 µg/L in monitoring well GB-MW-03D located on the Town-owned Lot 45. Currently, groundwater on the Site is being used as a potable water supply through GB-PW-01, and historical monitoring data indicate no detections of TCE in this well. However, groundwater in other bedrock fracture zones beneath the Site has TCE contamination exceeding the RAO/MCL of 5 µg/L but at concentrations that would result in a total cancer risk level less than the USEPA and MEDEP target risk level if a future resident were to use the groundwater as a potable water supply (based on worst-case groundwater results from the on-site monitoring wells). Although there does not appear to be an exposure pathway between the contaminated and non-contaminated bedrock fracture zones, there may be a potential future risk to on-site groundwater users if new water supply wells are developed on the Site. Given this scenario, all of the alternatives, except Alternative 1, No Action, would be protective of human health and the environment by eliminating, reducing or controlling risks posed by the potential future use of on-site groundwater through institutional controls.

Alternative 2, Monitored Natural Attenuation/Wellhead Treatment/Long-Term Monitoring/Institutional Controls, would not involve any active remediation to achieve the PRGs but it would provide additional overall protection through the continued operation of the GAC unit on one domestic well, GB-DW-22, and the implementation of layered institutional controls

to control future use of both off-site and on-site groundwater. Alternative 2 also includes a long-term monitoring program which would provide a mechanism to monitor the effectiveness of this alternative, and a contingency plan to use additional GAC treatment as needed. However, as with Alternative 1, TCE concentrations would be reduced in the on-site groundwater only through natural attenuation processes and would be expected to remain in excess of the MCL for decades.

Alternative 3, Source Removal/Groundwater Extraction and Treatment/Wellhead Treatment/Long-Term Monitoring/Institutional Controls, includes the components of Alternative 2 plus groundwater extraction and ex-situ treatment for on-site groundwater which would provide some level of control over TCE migration downgradient and reduce contaminant mass. While extraction and treatment of on-Site groundwater under this alternative could potentially reduce the overall clean-up time frame, natural attenuation processes would be expected to be the dominant mechanism in reducing TCE concentrations in groundwater and TCE concentrations in on-Site groundwater, as with the other alternatives, are expected to remain above the MCL for decades. Alternative 3 would also be protective of human health in the long-term due to its inclusion of the institutional controls, monitoring and point-of-use treatment included in Alternative 2.

9.2.2 Compliance with ARARS

The chemical-specific ARAR for TCE is the Federal MCL of 5 μg/L. This ARAR would be met immediately for all alternatives in the off-site groundwater (using the most recent monitoring data). However, this same ARAR would not be met for any of the alternatives for on-Site groundwater where TCE currently exceeds the MCL. Because of the likely till, saprolite, and fractured bedrock TCE residuals, the time frame to achieve the MCL for the active remedial alternative (Alternative 3) is not expected to be significantly reduced as compared to the no action or limited action alternatives (Alternatives 1 and 2).

Alternative 1 has no location-specific ARARs since there are no remedial activities being implemented. Alternative 2 may have location-specific ARARS relating to the environmental sampling of off-site monitoring wells located nearby surface water bodies and wetland areas. These potential ARARs would be relatively easy to comply with since the potential impacts from these activities would be minor to begin with. In addition to long-term environmental monitoring activities, Alternative 3 includes remedial construction activities on-site which may also trigger location-specific ARARS to be complied with. However, all of the construction activities are anticipated to occur within the property boundaries of the Site. Furthermore, there are no on-site sensitive areas such as wetlands and floodplains, so no adverse impact to natural resources is expected.

Alternative 1 has no action-specific ARARs since there are no remedial construction activities being implemented. Alternatives 2 and 3 include activities that may trigger action-specific ARARS which would be relatively easy to comply with using conventional approaches well proven in site remediation projects across the country.

9.2.3 Long-Term Effectiveness and Permanence

Alternative 1, No Action, would provide the least long-term effectiveness because no remedial actions would be taken to reduce contaminant mass in either soil or groundwater or to restrict the future use of on-site, untreated groundwater exceeding the RAO/MCL for TCE. Naturally occurring attenuation processes would be the only mechanism acting to reduce TCE concentrations in groundwater.

Alternative 2 would be more effective than Alternative 1 in the long term because of the limited actions and institutional controls that would be implemented. Alternative 3 would achieve the same level of effectiveness as Alternative 2 since the extraction and treatment of on-site groundwater isn't expected to meaningfully reduce the time frame to achieve the RAO.

9.2.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

Although natural attenuation processes will likely continue to reduce the concentrations of TCE in groundwater, no reduction of toxicity, mobility, or volume through treatment would be achieved under Alternatives 1 and 2 because no active treatment processes are proposed.

Alternative 3 would provide limited reductions in the toxicity, mobility, and volume of TCE in groundwater as a result of TCE mass that would be removed via groundwater withdrawal and treatment and the hydraulic control on potential migration down-gradient.

9.2.5 Short-Term Effectiveness

Alternatives 1 and 2 would have no anticipated short-term impacts since no remedial measures requiring construction would be implemented under either of these alternatives. Alternative 3 is expected to have minimal and controllable short-term impacts to the local community, on-site remedial workers and the environment.

9.2.6 Implementability

Alternatives 1 and 2 are readily implementable because remedial construction is not required. Continued operation and maintenance of the GAC unit on GB-DW-22 (Alternative 2 only) is ongoing. Implementation of a long-term monitoring program is anticipated to be simple to implement assuming the use of selected existing groundwater monitoring and domestic water supply wells and readily available laboratory methods. Implementation of the institutional controls will require coordination among appropriate legal services, State or local regulatory authorities, the Town, and individual property owners.

Alternative 3 is readily implementable even with the addition of active remediation components. Commercial services, equipment, materials and specialists for construction and operation of the on-site groundwater extraction, treatment, and reinjection systems are readily available. The groundwater pump and treat system in Alternative 3 will require an estimated three to six months to implement. Prior to construction, pre-design studies and treatability tests

will need to be performed to determine the requirements for extraction/reinjection systems and treatment parameters. In addition, this alternative would require post-construction O&M since this activity would be expected to continue for a period of several decades.

9.2.7 Cost

The estimated net present value (NPV) of each of the three alternatives is presented in Table 9-1. Details of the cost estimates for each alternative are presented in Appendix 7. Alternative 1 has no costs, as no actions are included. Alternative 2 ($1.2M) is less costly than Alternative 3 since it requires no remedial construction activities. Alternative 3 ($2.1M) incorporates remedial components and is the most expensive due to the higher capital and long term O&M costs of the groundwater extraction and ex-situ treatment component in addition to the point-of-use treatment and monitoring costs included in Alternative 2.

9.2.8 Summary

A summary of the comparative analysis of alternatives is provided in Table 9-1

Other than Alternative 1, which is not protective of human health because of the lack of control over future use of on-Site contaminated groundwater, there are few substantive differences between the alternatives in the context of the evaluation criteria, except for cost. Alternative 2 is significantly less costly than 3.

OSWER Directive 9283.1-33 (USEPA, 2009a) reiterates several overarching expectations for groundwater restoration under CERCLA:

- a remedial action should seek to restore the aquifer to beneficial use wherever practicable;
- groundwater should not be allowed to migrate and further contaminate the aquifer or other media;
- technical impracticability waivers may be considered when groundwater clean-up is impracticable;

- early actions should be considered as soon as possible;
- institutional controls may be useful to protect the public but shall not substitute for active response measures as the sole remedy unless such active measures are not practicable, based on the balancing of trade-offs among alternatives.

Table 9-1
Comparative Analysis of Alternatives Summary
Glenburn (ME) GAT Facility FS

Criteria and Associated Factors	Alternative 1 No Action	Alternative 2 Monitored Natural Attenuation with Wellhead Treatment, Long-term Monitoring, Institutional Controls	Alternative 3 Groundwater Extraction & Ex-Situ Treatment; Wellhead Treatment, Long-term Monitoring, Institutional Controls
OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT			
- Human Health Protection			
- Direct Contact/Inhalation (Soil & Groundwater)	No current risk from direct contact/inhalation.	No current risk from direct contact/inhalation.	No current risk from direct contact/inhalation.
- Groundwater Ingestion for Current Users	No current groundwater ingestion risk.	No current groundwater ingestion risk.	No current groundwater ingestion risk.
- Groundwater Ingestion for Potential Future Users	No potential future risk to users of off-site groundwater therefore this alternative would be protective of human health. A potential future risk exists to users of on-site groundwater drawn from new water supply wells that tap into contaminated bedrock fracture zones where groundwater currently exceeds the MCL for TCE.	Non-enforceable, informational institutional controls (deed notice and advisories) and continued O&M of one domestic well GAC unit would provide an added level of protection for users of off-site groundwater. An unforceable deed notice on the existing on-site water supply well and enforceable groundwater use restrictions to limit or restrict the development of new water supply wells on-site would be protective of human health. A Contingency Plan including additional GAC treatment of water supplies will be implemented if needed.	See Alternative 2 for protection of users of off-site groundwater. Groundwater extraction and treatment would remove TCE mass and limit migration of TCE off-site. However, because of the likely presence of TCE in the complex bedrock fracture zones, these remedial actions aren't anticipated to reduce the time frame to achieve the GAO/MCL for TCE. Accordingly, institutional controls would be needed for the protection of human health during this period.
- Environmental Protection	No current risk to ecological receptors.	No current risk to ecological receptors	No current risk to ecological receptors
COMPLIANCE WITH ARARS			
- Chemical Specific ARARS (TCE MCL of 5 ug/L)	Would be achieved immediately for off-site groundwater. May be achieved through natural attenuation processes for on-site groundwater but not within a reasonable period of time.	Would be achieved immediately for off-site groundwater. Will be achieved through natural attenuation processes for on-site groundwater after a period of decades.	Would be achieved immediately for off-site groundwater. May be achieved through groundwater extraction and treatment, and natural attenuation processes for on-site groundwater after a period of decades.
- Location-Specific ARARs	No location-specific ARARs.	No location-specific ARARs.	Construction and operation of the groundwater extraction and treatment system would be conducted within the property boundaries of the Site. Furthermore, there are no on-site sensitive areas such as wetlands and floodplains, so no adverse impact to natural resources is expected.
- Action-Specific ARARS	No action-specific ARARs.	No action-specific ARARs.	Would be designed to comply with any action-specific ARARS that may be triggered.

Table 9-1 - Continued
Comparative Analysis of Alternatives Summary
Glenburn (ME) GAT Facility FS

Criteria and Associated Factors	Alternative 1 No Action	Alternative 2 Monitored Natural Attenuation with Wellhead Treatment, Long-term Monitoring, Institutional Controls	Alternative 3 Groundwater Extraction & Ex-Situ Treatment; Wellhead Treatment, Long-term Monitoring, Institutional Controls
LONG-TERM EFFECTIVENESS AND PERMANENCE			
- Magnitude of Residual Risk			
- Direct Contact/Inhalation (Soil & Groundwater)	No current risk from direct contact/inhalation.	No current risk from direct contact/inhalation.	No current risk from direct contact/inhalation.
- Groundwater Ingestion for Current Users	No current groundwater ingestion risk.	No current groundwater ingestion risk.	No current groundwater ingestion risk.
- Groundwater Ingestion for Potential Future Users	No potential future risk to users of off-site groundwater. TCE concentrations in existing water supplies are currently below the MCL and meet the RAO. A potential future risk exists to users of on-site groundwater drawn from new water supply wells that tap into contaminated bedrock fracture zones where groundwater currently exceeds the MCL for TCE. Natural attenuation processes may reduce TCE concentrations to below the MCL but not within a reasonable time frame. Institutional controls would not be implemented to prevent groundwater use during that time.	Non-enforceable, informational institutional controls (deed notice and advisories) and continued O&M of one domestic well GAC unit would provide an added level of protection for users of off-site groundwater. Institutional controls would limit or restrict on-site groundwater use thereby providing long-term effectiveness and permanence until natural attenuation processes reduced TCE concentrations to below the RAO/MCL.	See Alternative 2 for protection of users of off-site groundwater. On-site groundwater extraction and treatment isn't anticipated to significantly reduce the magnitude of residual risk to potential future users of on-site groundwater. Institutional controls would provide long-term effectiveness and permanence.
- Adequacy and Reliability of Controls	No controls proposed.	Continued GAC treatment for one domestic well (DW-22) and institutional controls would provide adequate and reliable long-term effectiveness if continually monitored and enforced.	The adequacy and reliability of institutional controls for both off-site and on-site groundwater are expected to be high provide they are continually monitored and enforced. The reliability of extracting and treating groundwater is dependent on a thorough understanding of surface hydrogeologic and geochemical conditions. Pre-design and pilot studies may be conducted to optimize effectiveness of this system.
REDUCTION OF TOXICITY, MOBILITY OR VOLUME THROUGH TREATMENT			
- Treatment Process Used	None.	None.	Extraction and ex-situ treatment using carbon adsorption followed by reinjection of the treated groundwater.
- Amount Destroyed or Treated	None, except by natural attenuation processes.	None, except by natural attenuation processes.	The amount of TCE destroyed or treated via groundwater extraction and ex-situ treatment is dependent on subsurface conditions and the effectiveness of the extraction system.

Table 9-1 - Continued
Comparative Analysis of Alternatives Summary
Glenburn (ME) GAT Facility FS

Criteria and Associated Factors	Alternative 1 No Action	Alternative 2 Monitored Natural Attenuation with Wellhead Treatment, Long-term Monitoring, Institutional Controls	Alternative 3 Groundwater Extraction & Ex-Situ Treatment; Wellhead Treatment, Long-term Monitoring, Institutional Controls
REDUCTION OF TOXICITY, MOBILITY OR VOLUME THROUGH TREATMENT continued			
- Reduction of Toxicity, Mobility, or Volume Through Treatment	None, except by natural attenuation processes.	None, except by natural attenuation processes.	Groundwater extraction and ex-situ treatment would provide some reduction in the toxicity, mobility and volume of TCE in the on-site groundwater.
- Degree to Which Treatment is Irreversible	None, except by natural attenuation processes.	None, except by natural attenuation processes.	Treatment of TCE-contaminated groundwater with carbon adsorption and subsequent regeneration of carbon is also irreversible.
- Type and Quantity of Residuals Remaining After Treatment	No treatment proposed.	No treatment proposed.	Treatment of groundwater using activated carbon would produce treatment residuals that would require regeneration and/or disposal at a licensed facility.
- Degree to Which Treatment Reduces Principle Threats	No treatment proposed.	No treatment is proposed.	Groundwater extraction/ex-situ treatment would provide a limited reduction in the threat of migration of TCE to downgradient groundwater.
SHORT-TERM EFFECTIVENESS			
- Protection of Community During Remedial Action	Not applicable - no remedial actions.	No construction activities would be implemented.	Vehicular traffic may increase during well and system installation activities but it is of limited duration. Perimeter monitoring of fugitive air emissions and corrective actions if necessary would be implemented.
- Protection of Workers During Remedial Action	Not applicable - no remedial actions.	Training and use of personal protective equipment may be required for workers conducting environmental sampling or O&M of the one domestic well GAC unit.	Adherence to health safety plans, use of protective equipment and trained personnel should prevent any short-term impacts caused by remedial activities.
- Environmental Impacts	Not applicable - no remedial actions.	No construction activities would be implemented.	Groundwater extraction, treatment and reinjection would be conducted within the boundaries of the Site property.
- Time Until Remedial Action Objectives Are Achieved	Decades	Decades	Decades

Table 9-1 - Continued
Comparative Analysis of Alternatives Summary
Glenburn (ME) GAT Facility FS

Criteria and Associated Factors	Alternative 1 No Action	Alternative 2 Monitored Natural Attenuation with Wellhead Treatment, Long-term Monitoring, Institutional Controls	Alternative 3 Groundwater Extraction & Ex-Situ Treatment; Wellhead Treatment, Long-term Monitoring, Institutional Controls
IMPLEMENTABILITY			
- Ability to Construct and Operate	No construction or O&M.	No construction activities but continued operation and maintenance of one domestic well GAC unit.	Construction and operation of groundwater extraction, treatment and reinjection systems would require pre-design and bench-scale and/or pilot scale studies to evaluate optimum operating parameters.
- Ease of Doing More If Needed	Would not limit further actions.	Would not limit further actions.	Should not limit further actions.
- Ability to Monitor Effectiveness	No long-term monitoring to establish the effectiveness of No Action.	Long-term environmental monitoring would effectively monitor TCE distribution and concentrations in the groundwater.	Environmental monitoring to evaluate short- and long-term effectiveness of the alternative would be simple to implement.
- Ability to Obtain Approvals and Coordinate with Other Agencies	No approvals necessary.	Coordination among appropriate legal services, ME DEP, Town of Glenburn and property owners, would be required to implement institutional controls.	Coordination of construction and implementation of institutional controls will require coordination with state and local authorities.
- Availability of Equipment, Materials, Specialists, and Off-site Support Services	None required.	Equipment, materials and specialists to conduct O&M of the one domestic GAC unit and to conduct environmental sampling are readily available.	Equipment, materials, specialists, and off-site support services required to implement all components of this alternative are readily available.
- Availability of Technologies	None required.	GAC technology (including replacement parts and carbon cartridges) is readily available.	Groundwater extraction technology is a proven and readily available technology; GAC is a proven technology for treating TCE in groundwater and are readily available as packaged systems.
COST (values rounded up to nearest $1,000)			
- Capital Cost	$ -	$ 136,000	$ 245,000
- Annual O&M Cost (including system monitoring)	$ -	$ 3,000	$ 40,000
- Annual Long-term Monitoring Cost	$ -	$ 45,000	$ 45,000
- Present Net Worth - Five-Year Reviews	$ -	Included with annual monitoring costs	Included with annual monitoring costs
- Total Present Net Worth Cost	$ -	$ 1,206,000	$ 2,139,000
STATE ACCEPTANCE	USACE will seek state concurrence on the ROD.	Same as Alternative 1	Same as Alternative 1
COMMUNITY ACCEPTANCE	Comments received during the public comment period will be incorporated into the ROD in a responsiveness summary.	Same as Alternative 1	Same as Alternative 1

The RI/FS results demonstrate that achievement of RAOs/MCLs in groundwater on-Site will take decades regardless of the alternative selected, and the contaminants are not currently nor likely in the future to adversely impact other media such as surface water or indoor air. Early actions such as source removal, plume containment or alternate water supplies are either not practicable (e.g., limited residual source material in the till, saprolite, and bedrock is inaccessible) or necessary (e.g., plume containment or alternative water supplies are not required to prevent migration and protect public health). Therefore, institutional controls seem to be a reasonable approach to control future exposure. Review of the protectiveness of the recommended alternative will be completed through 5-year reviews and include a review of future monitoring results. In addition, if RAOs are not achieved in the interim, then an Explanation of Significant Differences or a Decision Document amendment can be completed to ensure the remedial action is protective of human health and the environment.

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FIGURES

K:\1-2128-9\GIS\Site Location.mxt





LOCATION

0 1,000 2,000 4,000 6,000 Feet

N

Figure 1.0 - 1
General Site Location
Former Glenburn GAT Facility
Glenburn, Maine

The Johnson Company

100 State Street, Suite 600
Montpelier, VT 05602

Drawn by: DPB Date: 06/04/09
Reviewed by: DMM Date: 06/04/09

Scale: 1:25,000 Project: 1-2128-9

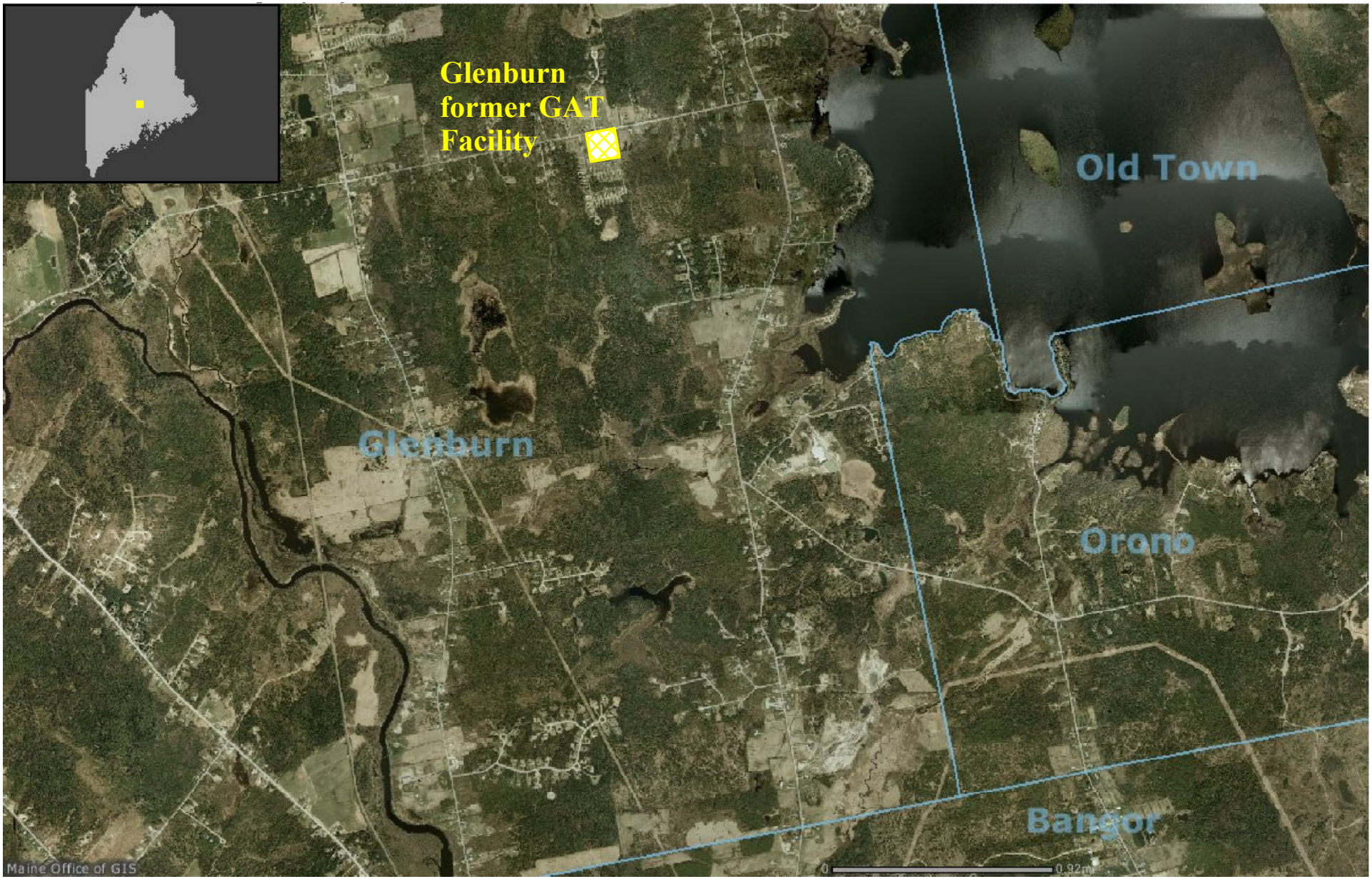


Figure 2.2-1: Site Location Aerial Photograph - Former GAT Facility - Glenburn, Maine

From Maine GIS On-line photograph downloaded August 13, 2008 Prepared by The Johnson Co., Montpelier, VT 1-2128-9_RIFS Report_PreDraftRoughFigures_Figure2.2-1.srf-pdf

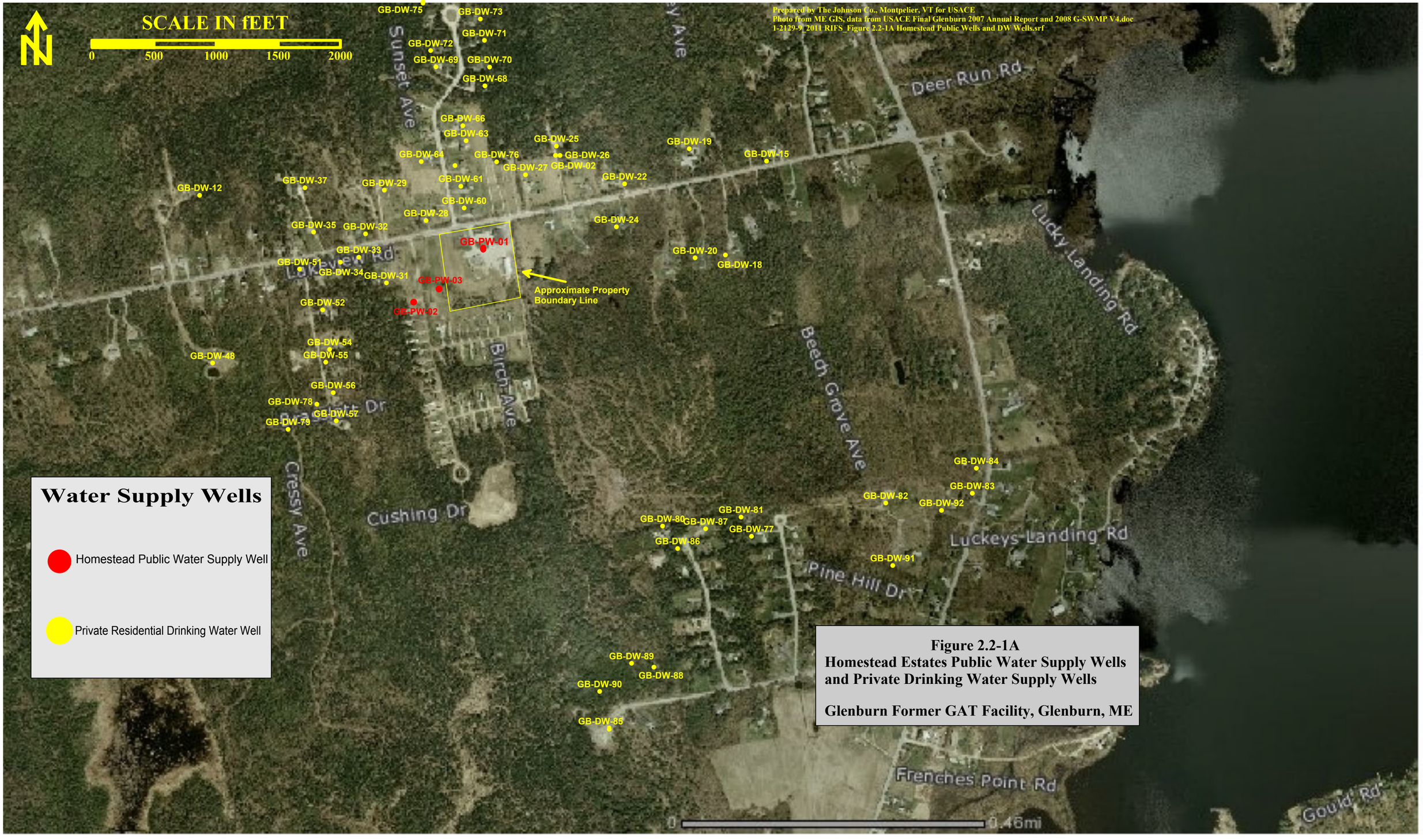
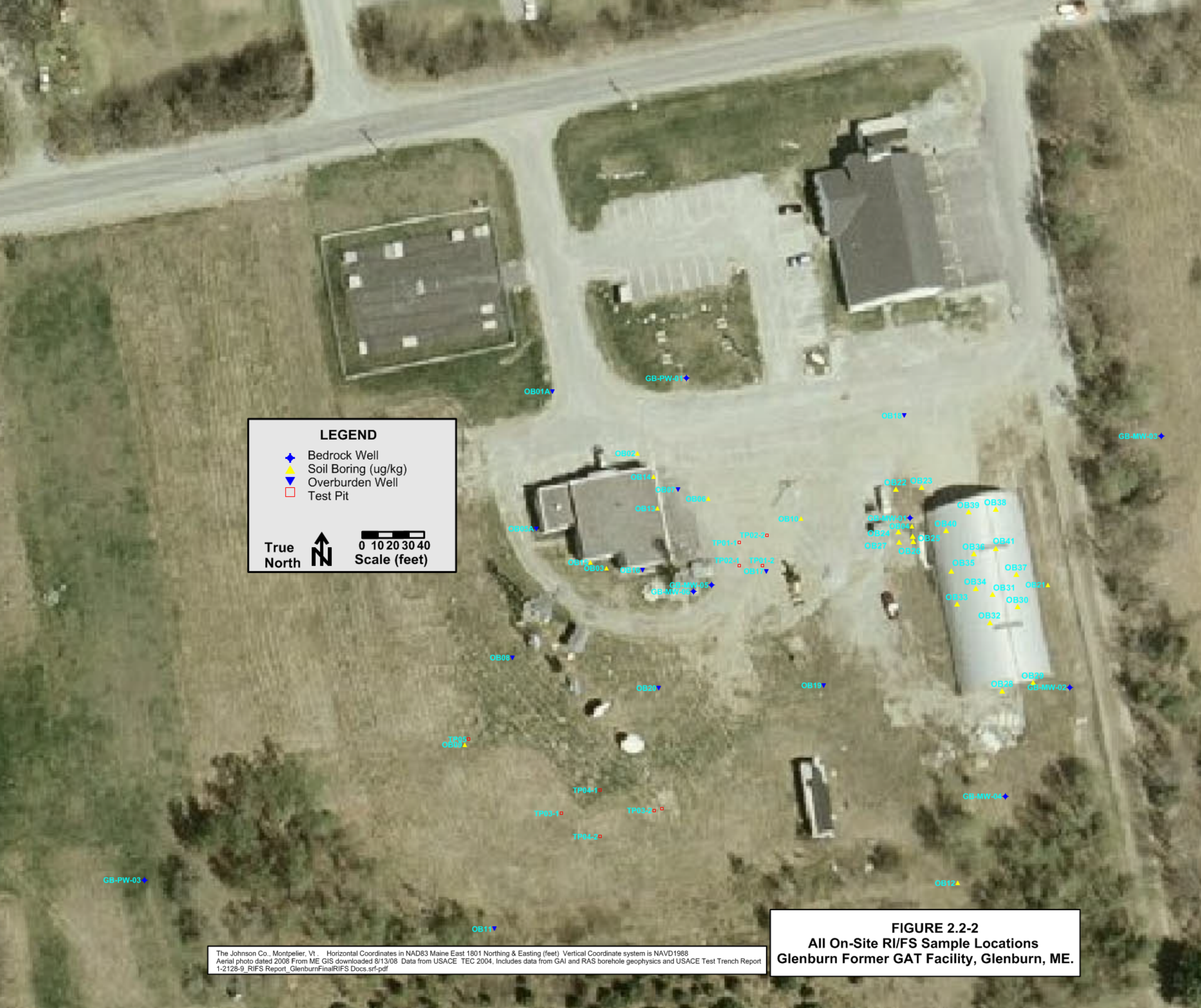


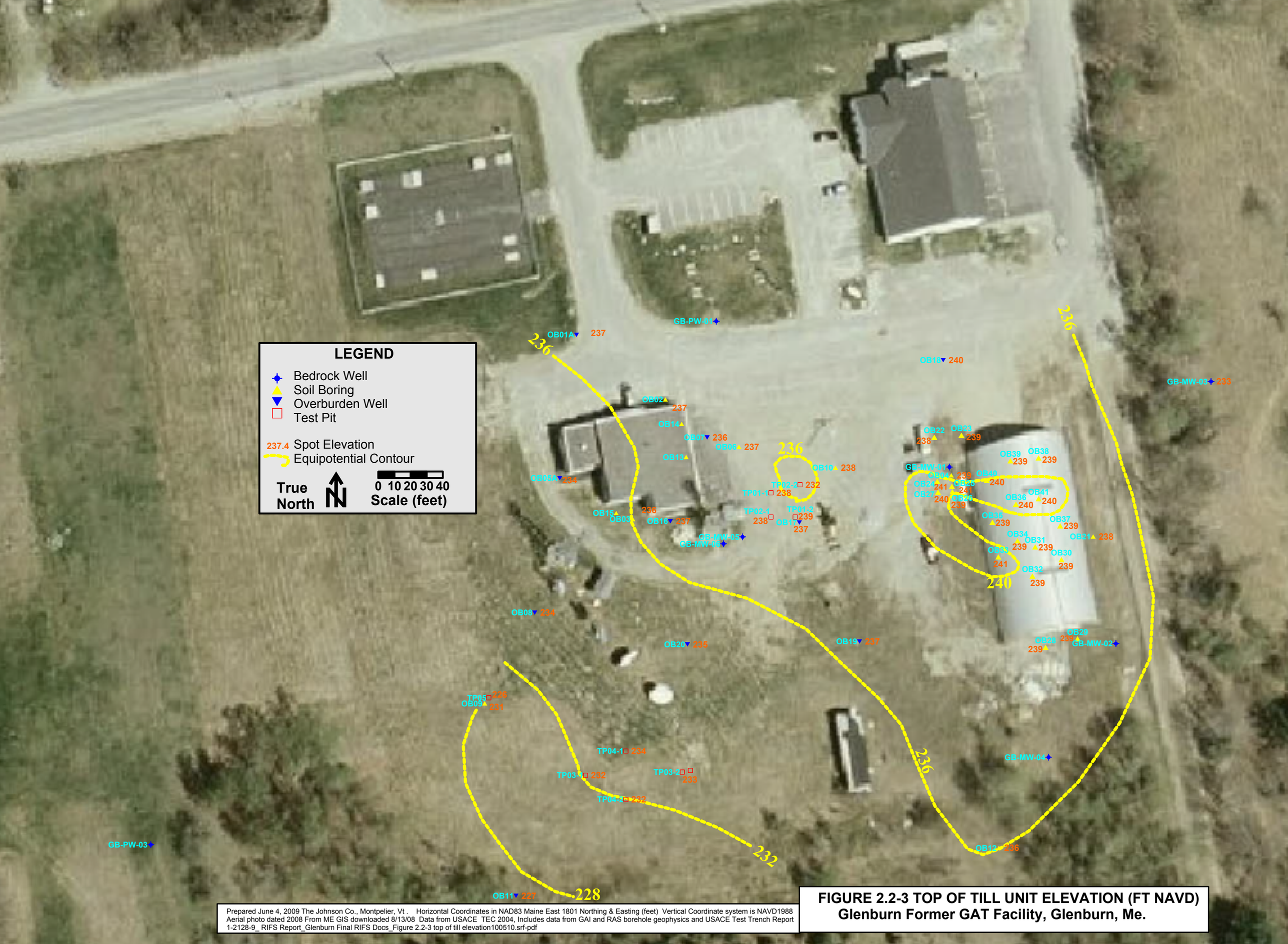
Figure 2.2-1A
Homestead Estates Public Water Supply Wells and Private Drinking Water Supply Wells

Glenburn Former GAT Facility, Glenburn, ME



The Johnson Co., Montpelier, Vt . Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet) Vertical Coordinate system is NAVD1988
Aerial photo dated 2008 From ME GIS downloaded 8/13/08 Data from USACE TEC 2004, Includes data from GAI and RAS borehole geophysics and USACE Test Trench Report 1-2128-9_RIFS Report_GlenburnFinalRIFS Docs.srf-pdf

FIGURE 2.2-2
All On-Site RI/FS Sample Locations
Glenburn Former GAT Facility, Glenburn, ME.



Prepared June 4, 2009 The Johnson Co., Montpelier, Vt . Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet) Vertical Coordinate system is NAVD1988
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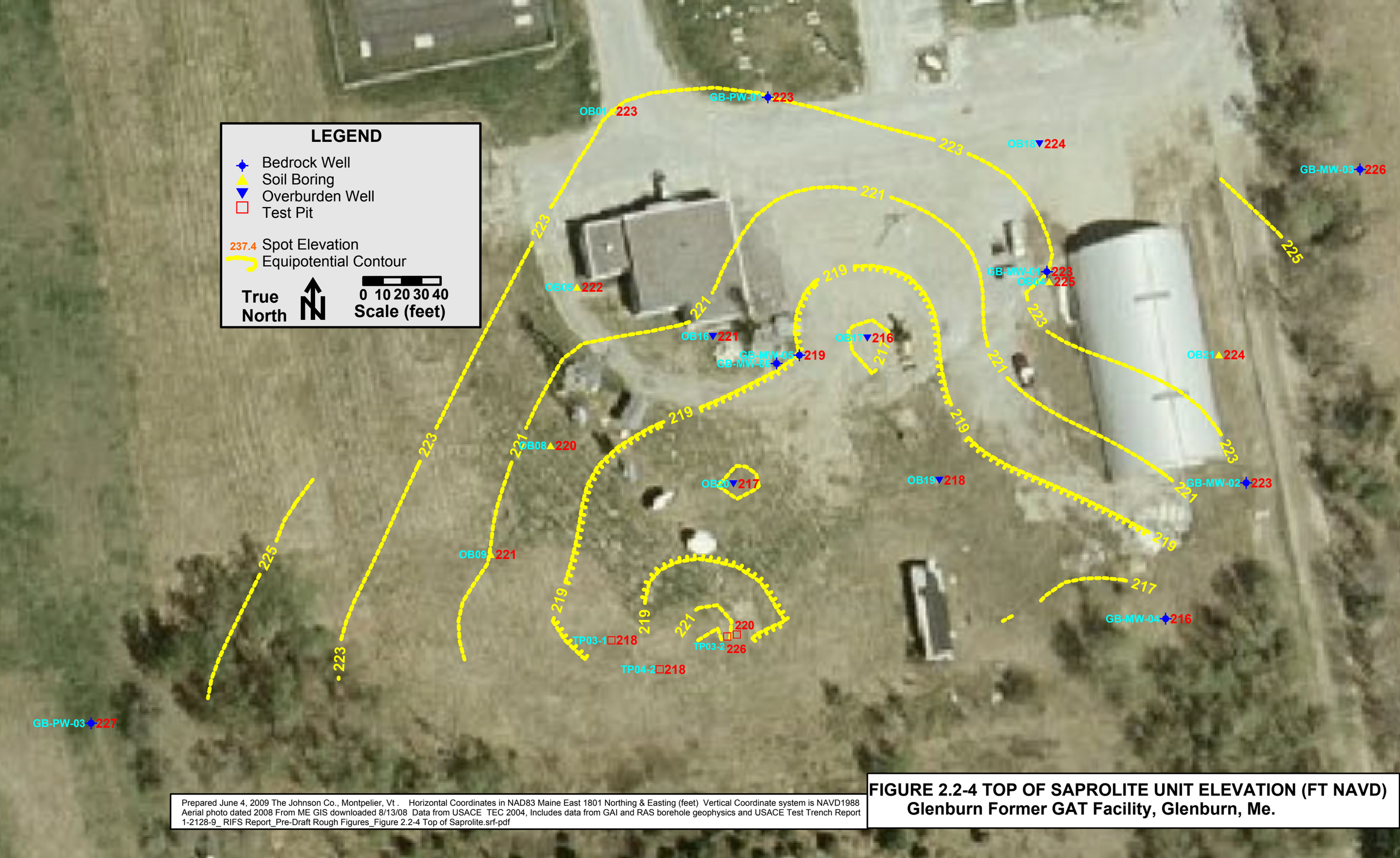
1-2128-9_ RIFS Report_Glenburn Final RIFS Docs_Figure 2.2-3 top of till elevation100510.srf-pdf

FIGURE 2.2-3 TOP OF TILL UNIT ELEVATION (FT NAVD)
Glenburn Former GAT Facility, Glenburn, Me.



Prepared June 4, 2009 The Johnson Co., Montpelier, Vt . Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet) Vertical Coordinate system is NAVD1988
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FIGURE 2.2-4 TOP OF SAPROLITE UNIT ELEVATION (FT NAVD)
Glenburn Former GAT Facility, Glenburn, Me.

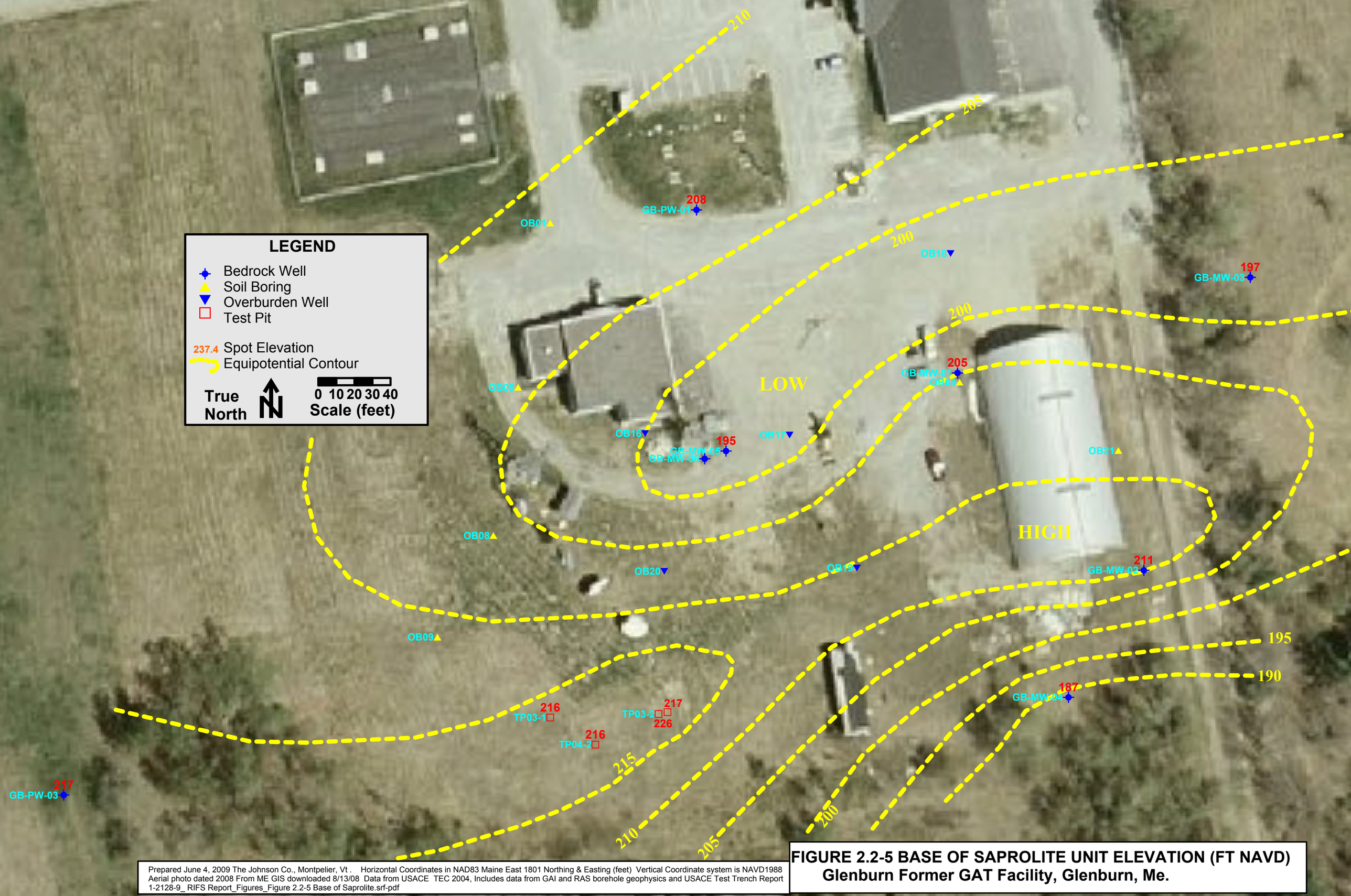

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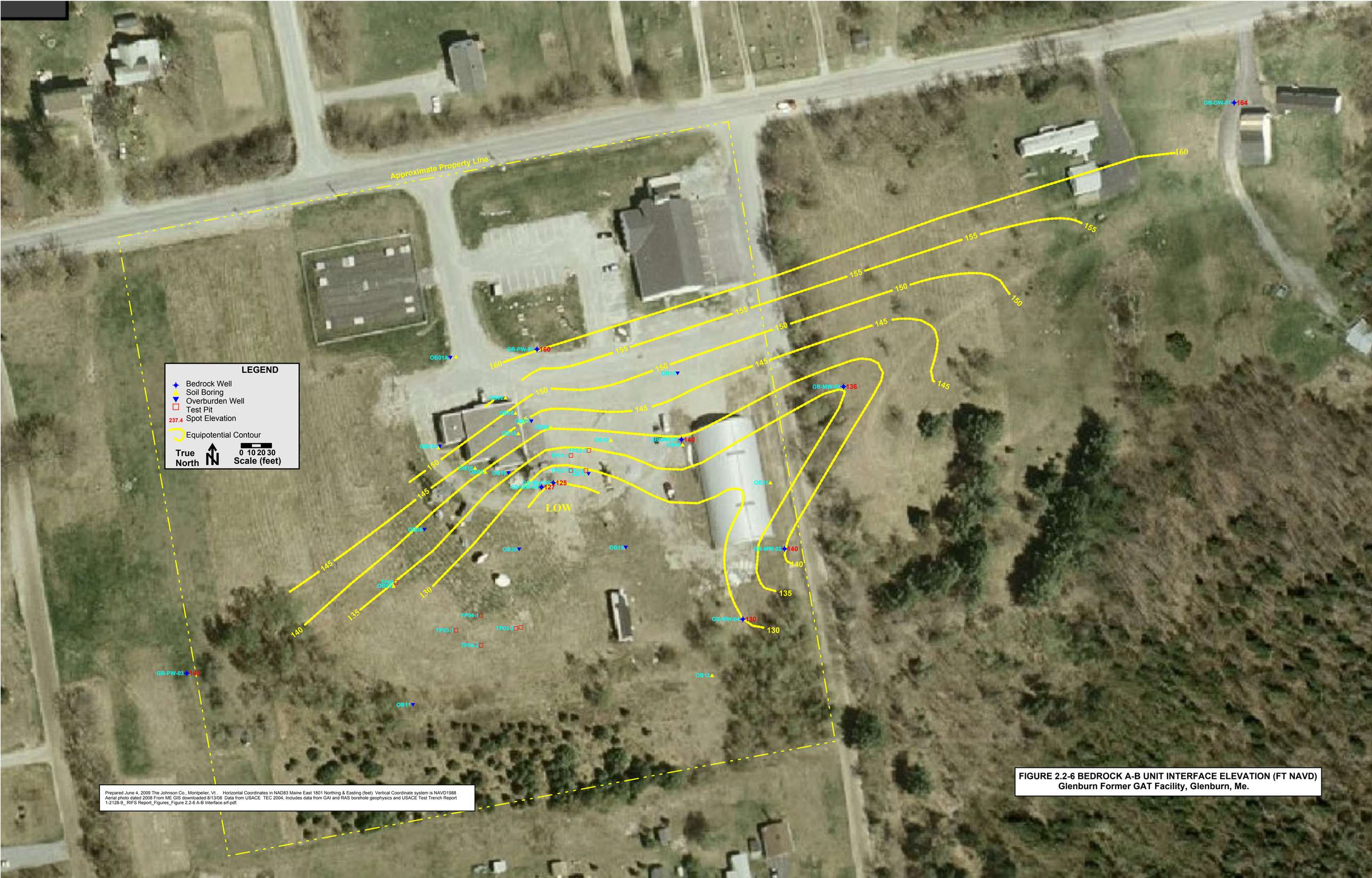
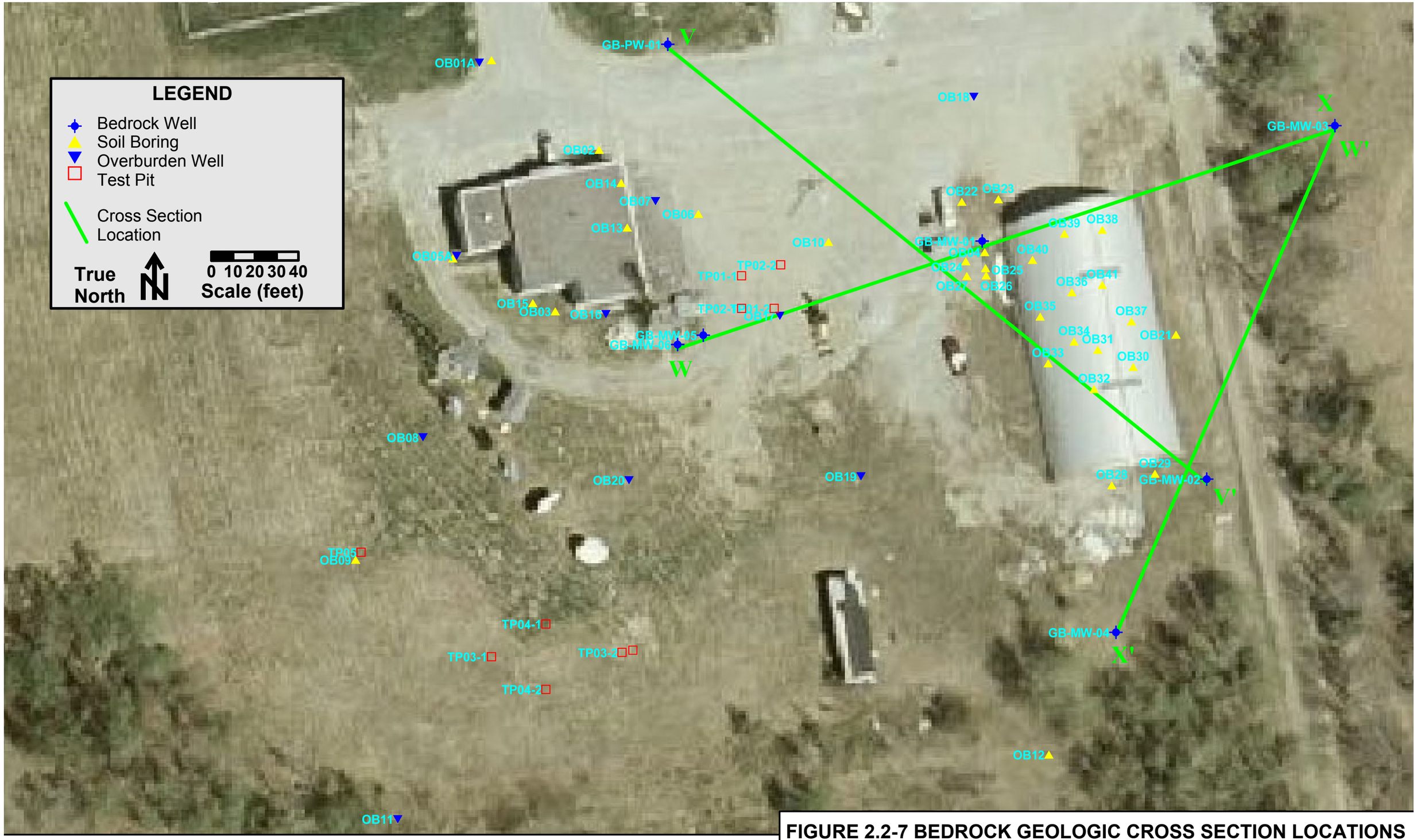
FIGURE 2.2-5 BASE OF SAPROLITE UNIT ELEVATION (FT NAVD)
Glenburn Former GAT Facility, Glenburn, Me.



Prepared June 4, 2009 The Johnson Co., Montpelier, Vt. Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet) Vertical Coordinate system is NAVD1988 Aerial photo dated 2006 From ME GIS downloaded 8/13/08 Data from USACE TEC 2004, Includes data from GAI and RAS borehole geophysics and USACE Test Trench Report 1-2128-9_ RIFS Report_Figures_Figure 2.2-6 A-B Interface.srf-pdf.

FIGURE 2.2-6 BEDROCK A-B UNIT INTERFACE ELEVATION (FT NAVD)
Glenburn Former GAT Facility, Glenburn, Me.



Prepared June 4, 2009 The Johnson Co., Montpelier, Vt . Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet) Vertical Coordinate system is NAVD1988
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1-2128-9_ RIFS Report_Final Glenburn RIFS Docs_Figure2.2-7XSectionLocs.srf-pdf

FIGURE 2.2-7 BEDROCK GEOLOGIC CROSS SECTION LOCATIONS
Glenburn Former GAT Facility, Glenburn, Me.

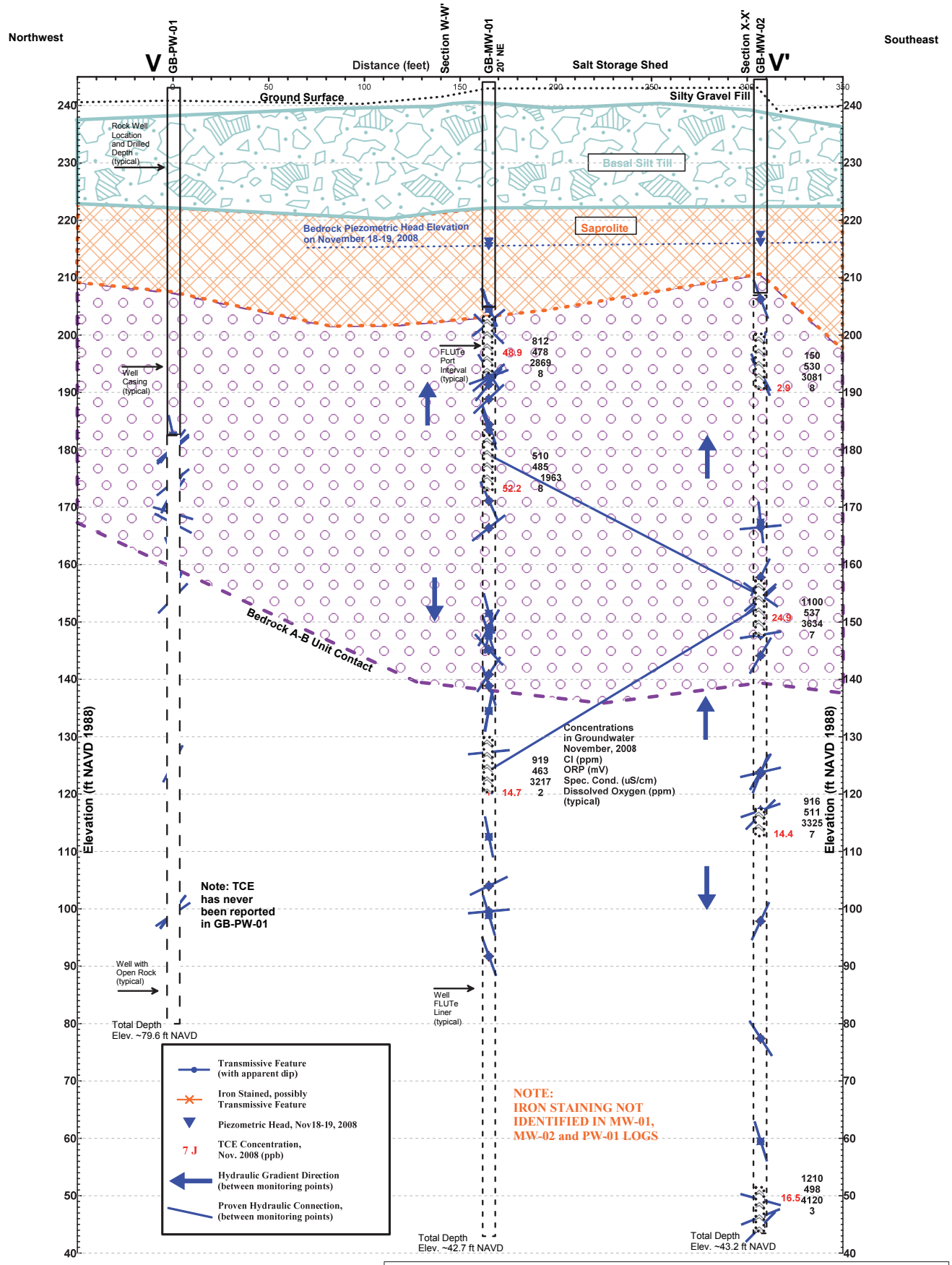
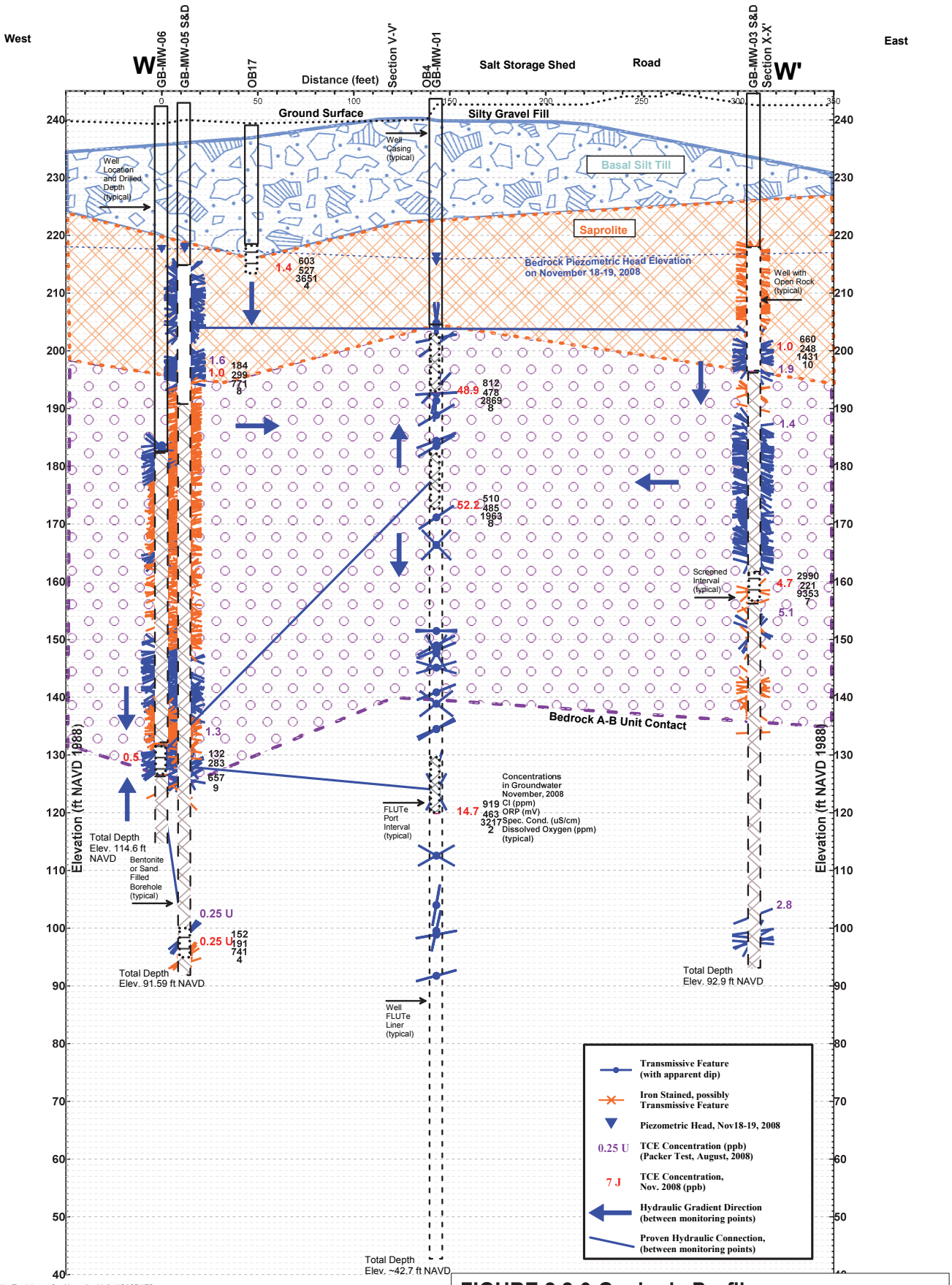


FIGURE 2.2-8 Geologic Profile over Cross-Section V-V' Vertical Exageration of 3:1

Prepared by The Johnson Co., Montpelier, Vt. for USACE NED
1-2128-9_RIFS Report_Glenburn Final RI Fs docs_X-Sect VV TCE 100510.srf
Data in: Map and Profile rock WQ data 021309.xls and X-SECT V W AND X 022509.xls



Prepared by The Johnson Co., Montpelier, Vt. for USACE NED
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Data in: Map and Profile rock WQ data 021309.xls and X-SECT V W AND X 022509.xls
Apparent dip corrected for X-section direction and 3:1 VE.
Sources include Hager Richter Borehole Geophysics, USACE survey data, and borehole/surface geophysics data

FIGURE 2.2-9 Geologic Profile over Cross-Section W-W' Vertical Exagerration of 3:1

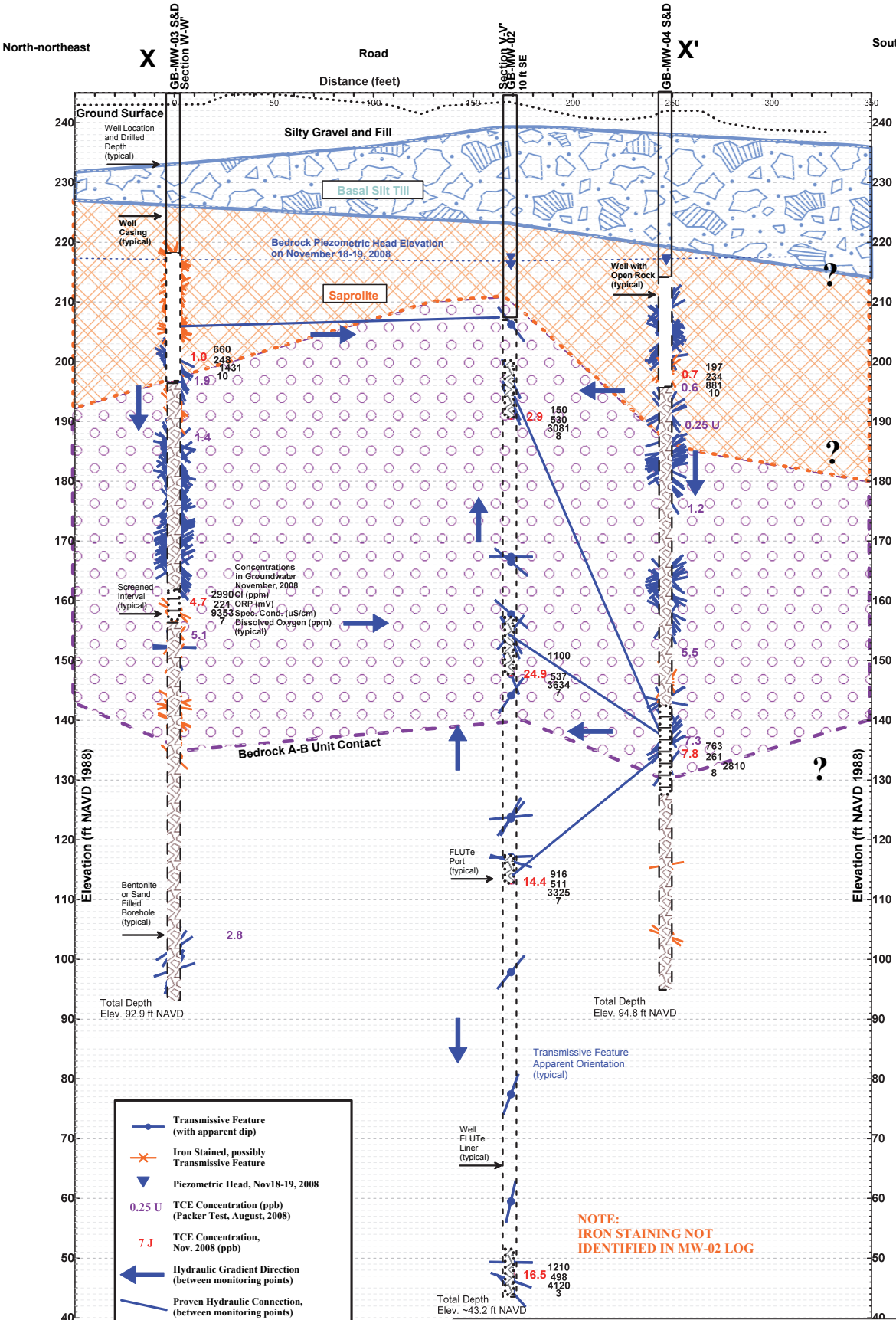

FIGURE 2.2-10 Geologic Profile over Cross-Section X-X' Vertical Exaggeration of 3:1

Prepared by The Johnson Co., Montpelier, Vt. for USACE NED
1-2128-9_RIFS Report_Glenburn Final RI Fs docs_ X-Sect XX TCE 100510.srf-pdf
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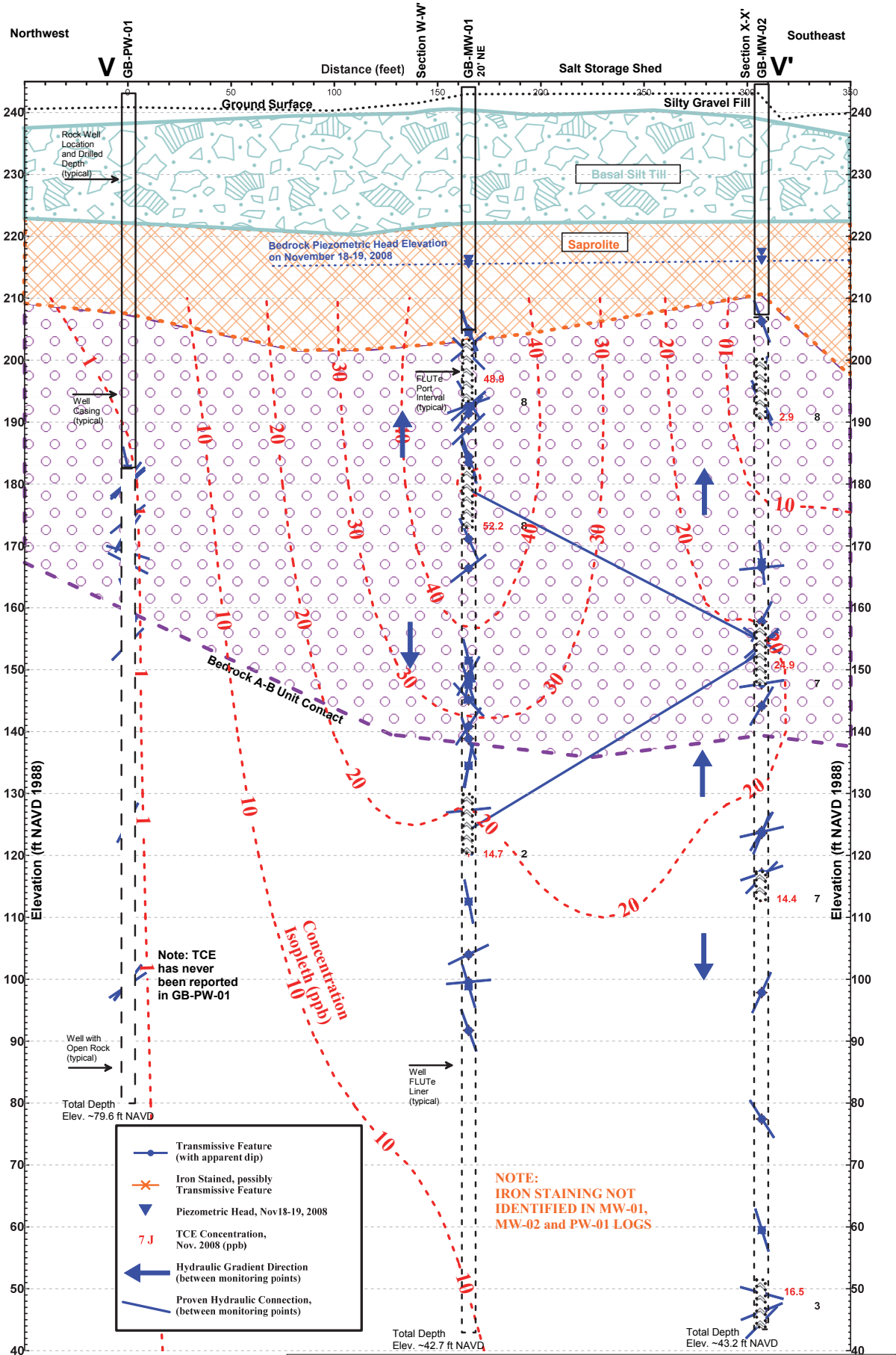
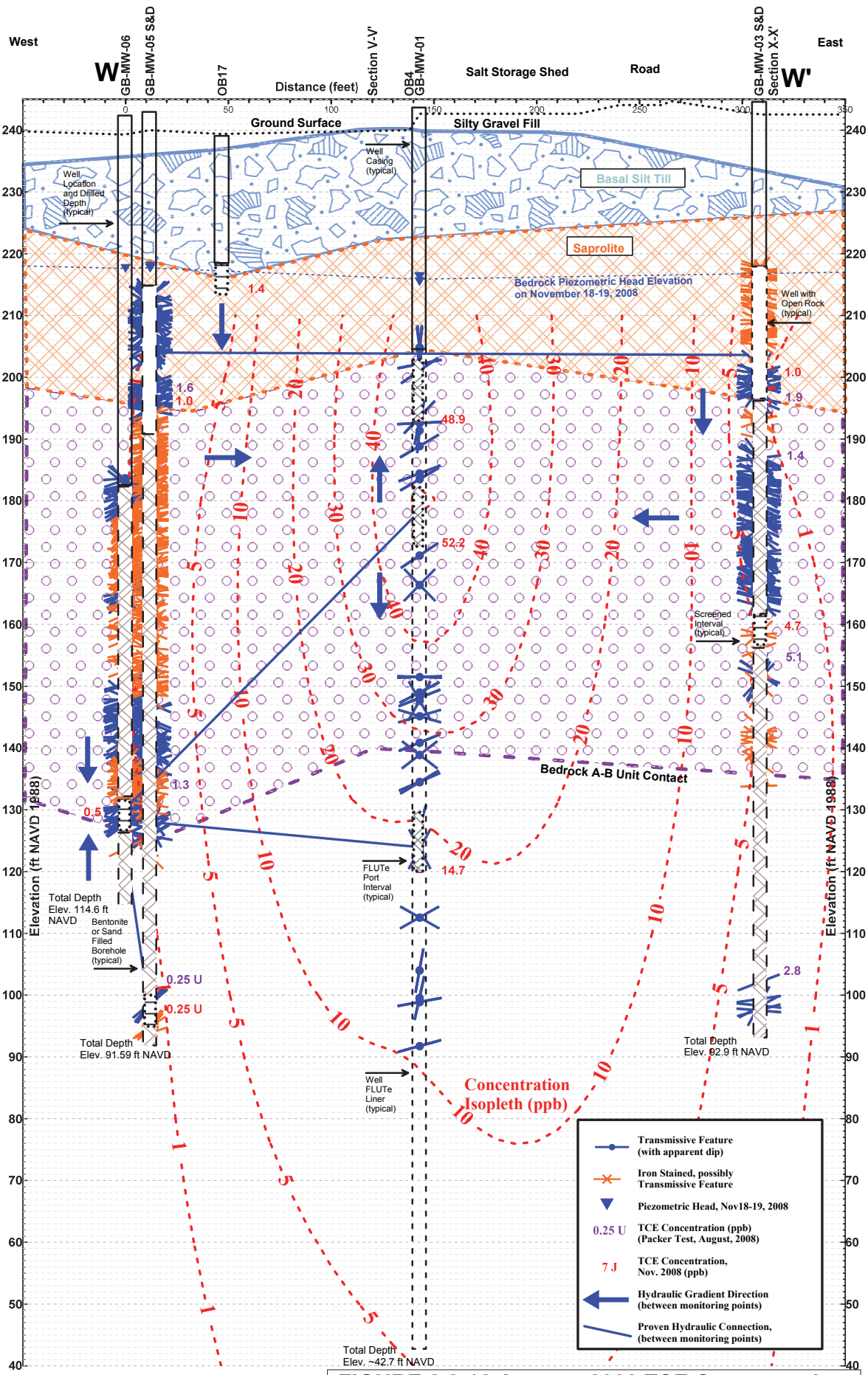


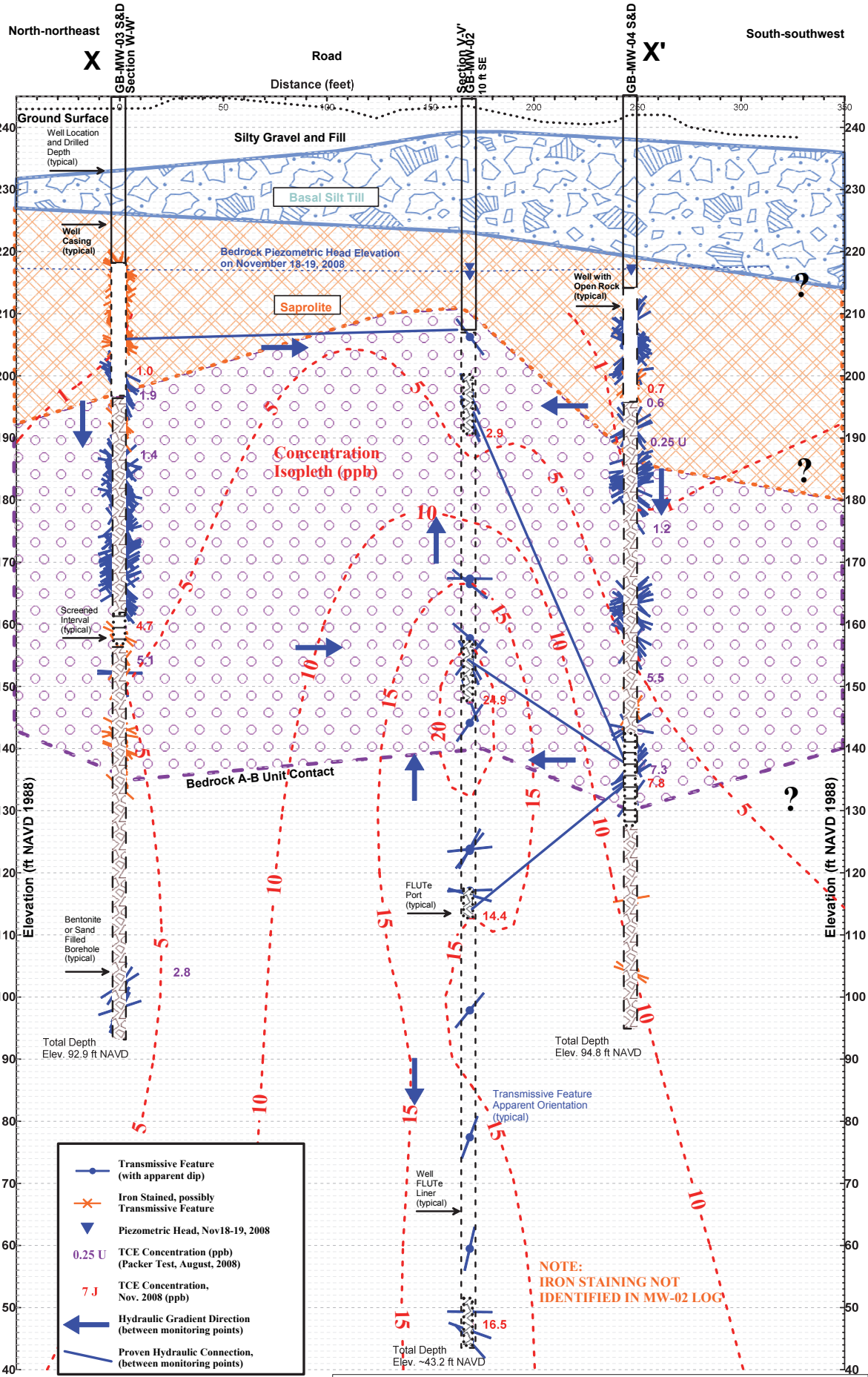
Prepared by The Johnson Co., Montpelier, Vt. for USACE NED
1-2128-9_2011 RIFS_Figure 2.2-11 X-SectionVVTCE 063011.srf
Data in:
Map and Profile rock WQ data 021309.xls and X-SECT V W AND X 022509.xls

FIGURE 2.2-11 Autumn 2008 TCE Concentrations
Cross-Section V-V' Vertical Exageration of 3:1



Prepared by The Johnson Co., Montpelier, Vt. for USACE NED
1-2128-9 2011 RIFS FIG 2.2-12 X-SECT WW tce 063011.srf
Data in: Map and Profile rock WQ data 021309.xls and X-SECT V W AND X 022509.xls
Apparent dip corrected for X-section direction and 3:1 VE.
Sources: Hager Richter Borehole Geophysics, USACE survey and borehole/surface geophysics data

FIGURE 2.2-12 Autumn 2008 TCE Concentration Cross-Section W-W' Vertical Exaggeration of 3:1



Prepared by The Johnson Co., Montpelier, Vt. for USACE NED
1-2128-9_2011 RIFS FIG 2.2-13 X-SECT XX TCE 063011.srf
Data in: Map and Profile rock WQ data 021309.xls and X-SECT V W AND X 022509.xls
Sources: Hager Richter Borehole Geophysics, USACE survey and borehole/surface geophysics data

FIGURE 2.2-13 Autumn 2008 TCE Concentration Cross-Section X-X' Vertical Exageration of 3:1

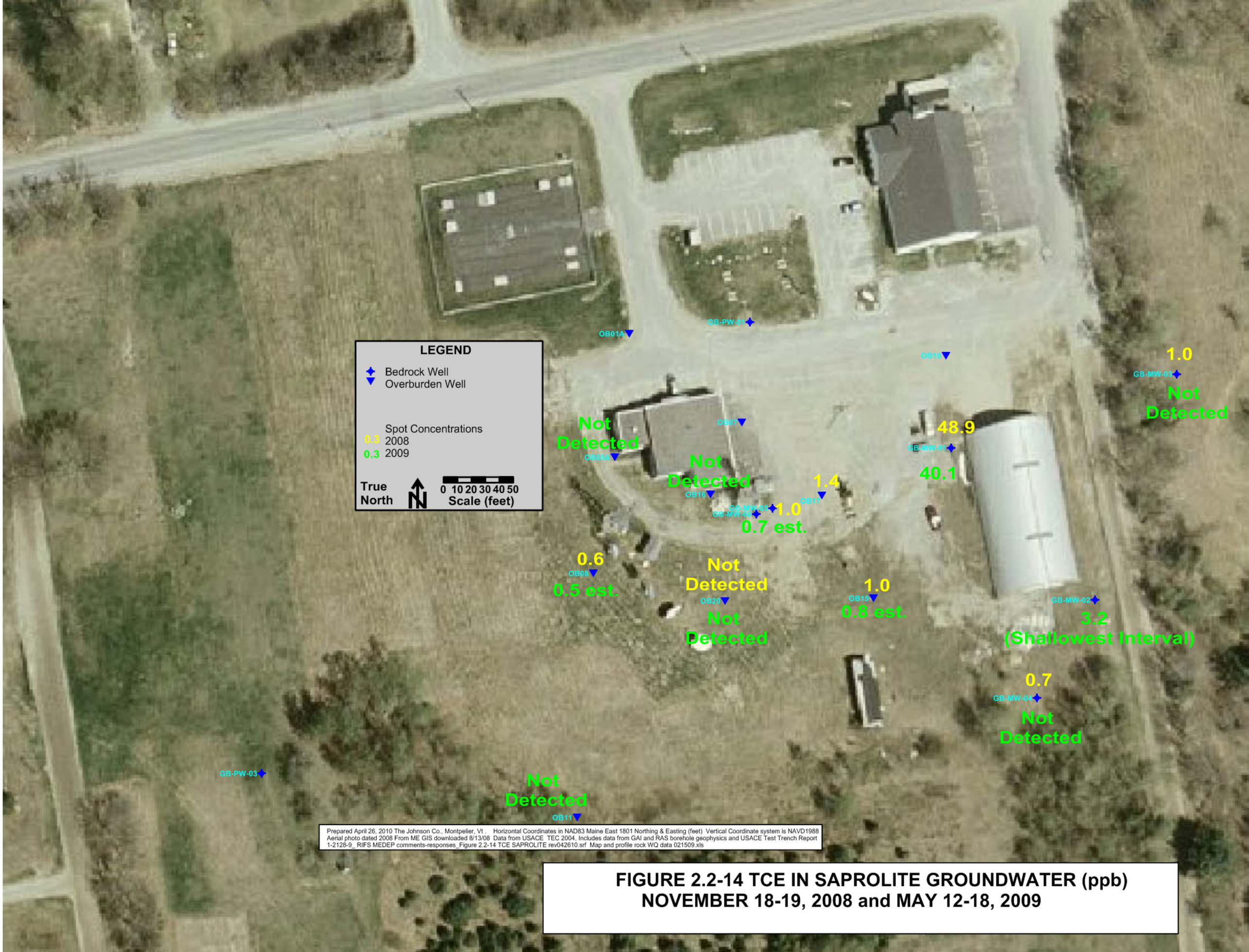


FIGURE 2.2-14 TCE IN SAPROLITE GROUNDWATER (ppb)
NOVEMBER 18-19, 2008 and MAY 12-18, 2009



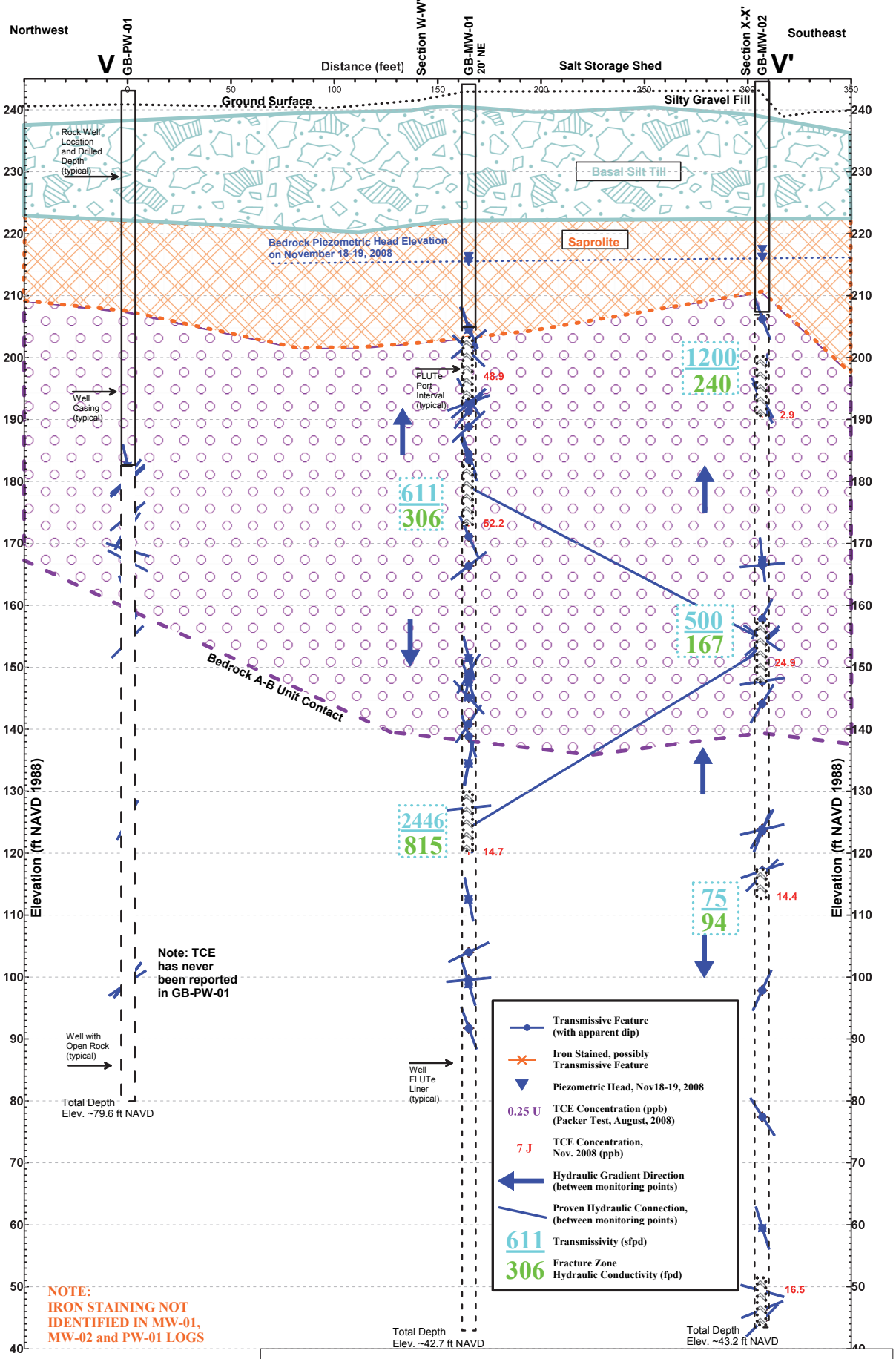
Prepared March 2, 2009 The Johnson Co., Montpelier, Vt . Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet) Vertical Coordinate system is NAVD1988
Aerial photo dated 2008 From ME GIS downloaded 8/13/08 Data from USACE TEC 2004, Includes data from GAI and RAS borehole geophysics and USACE Test Trench Report 1-2128-9_ RIFS MEDEP COMMENTS-RESPONSES_ Figure 2.2-15 Nov08 TCE Unit A GW REV042810.srf

FIGURE 2.2-15 TCE IN ROCK UNIT A GROUNDWATER (ppb)
NOVEMBER-DECEMBER 2008 AND MAY 12-18, 2009



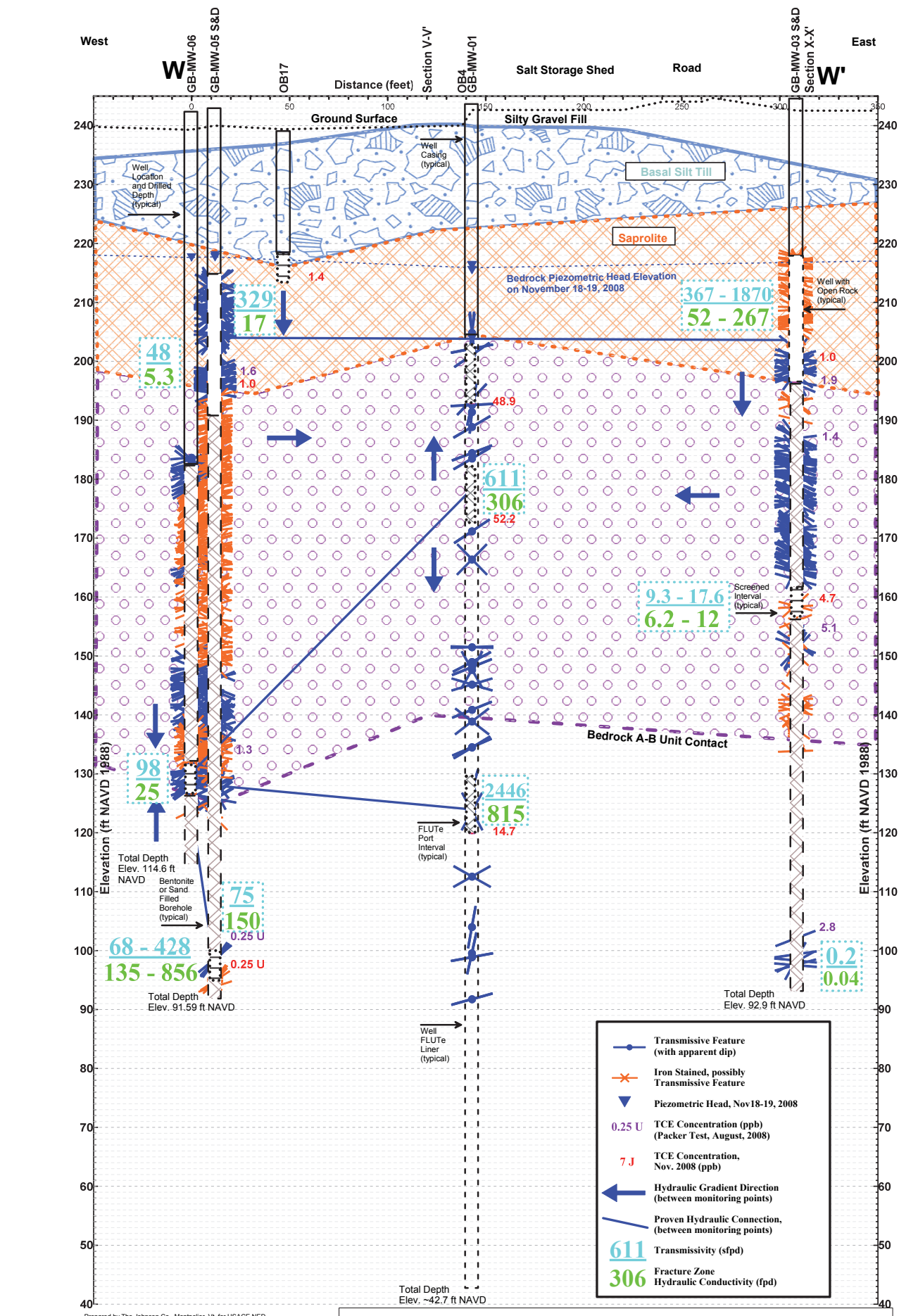
Prepared April 26, 2010 The Johnson Co., Montpelier, Vt . Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet) Vertical Coordinate system is NAVD1988
Aerial photo dated 2008 From ME GIS downloaded 8/13/08 Data from USACE TEC 2004, Includes data from GAI and RAS borehole geophysics and USACE Test Trench Report
1-2128-9_ RIFS MEDEP comments-responses_Figure2.2-16 Nov08 TCE ROCK B GW rev042610.srf Map and profile rock WQ data 021509.xls

FIGURE 2.2-16 TCE IN ROCK UNIT B GROUNDWATER (ppb)
NOVEMBER-DECEMBER, 2008 AND MAY 12-18, 2009



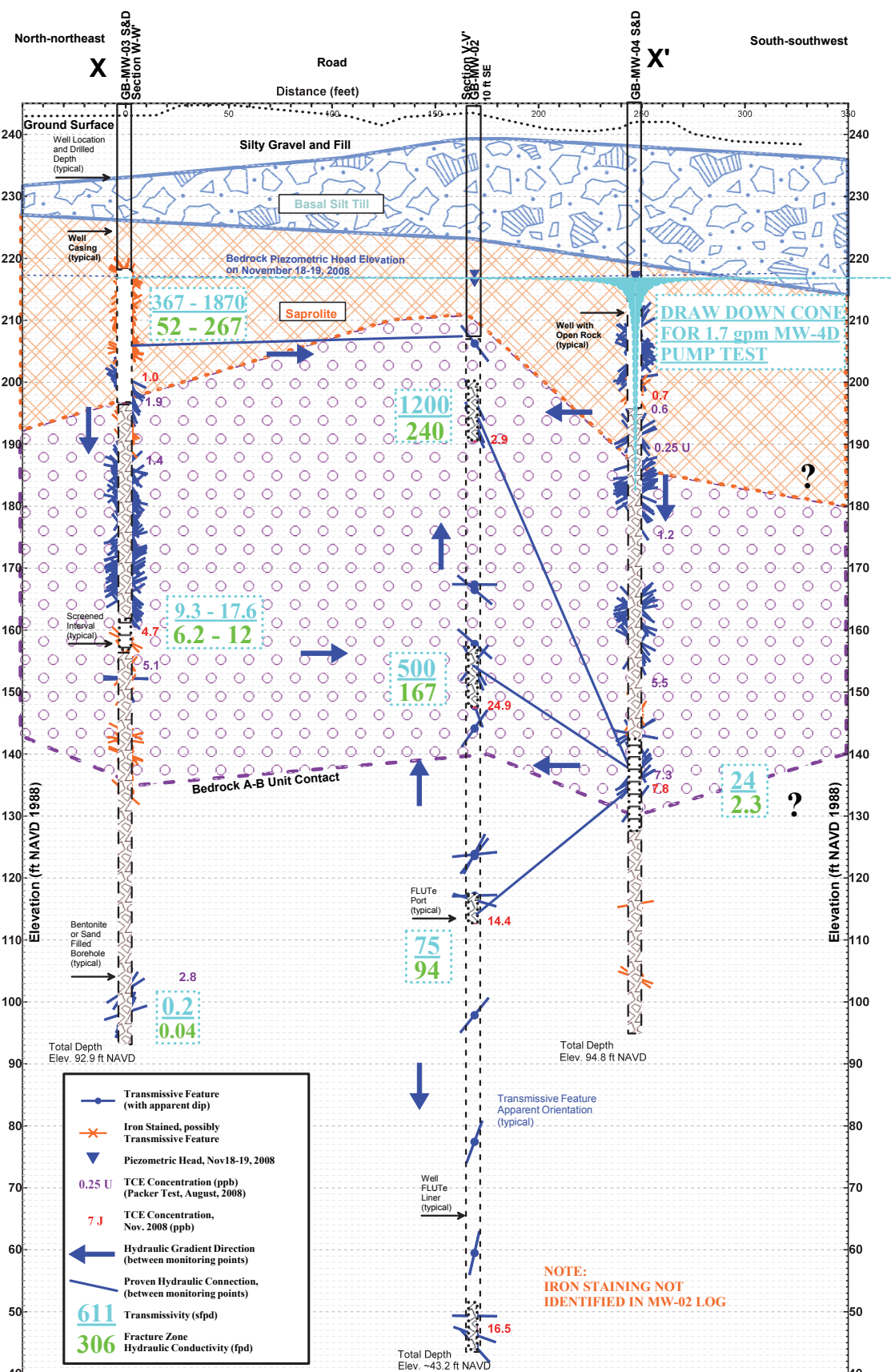
Prepared by The Johnson Co., Montpelier, Vt. for USACE NED
1-2128-9_2011 RIFS_Figure 2.2-11 X-SectionVV K 063011.srf
Data in:
Map and Profile rock WQ data 021309.xls and X-SECT V W AND X 022509.xls

FIGURE 2.2-17 Hydrogeological Properties Cross-Section V-V'
Glenburn Former GAT Facility Vertical Exageration of 3:1



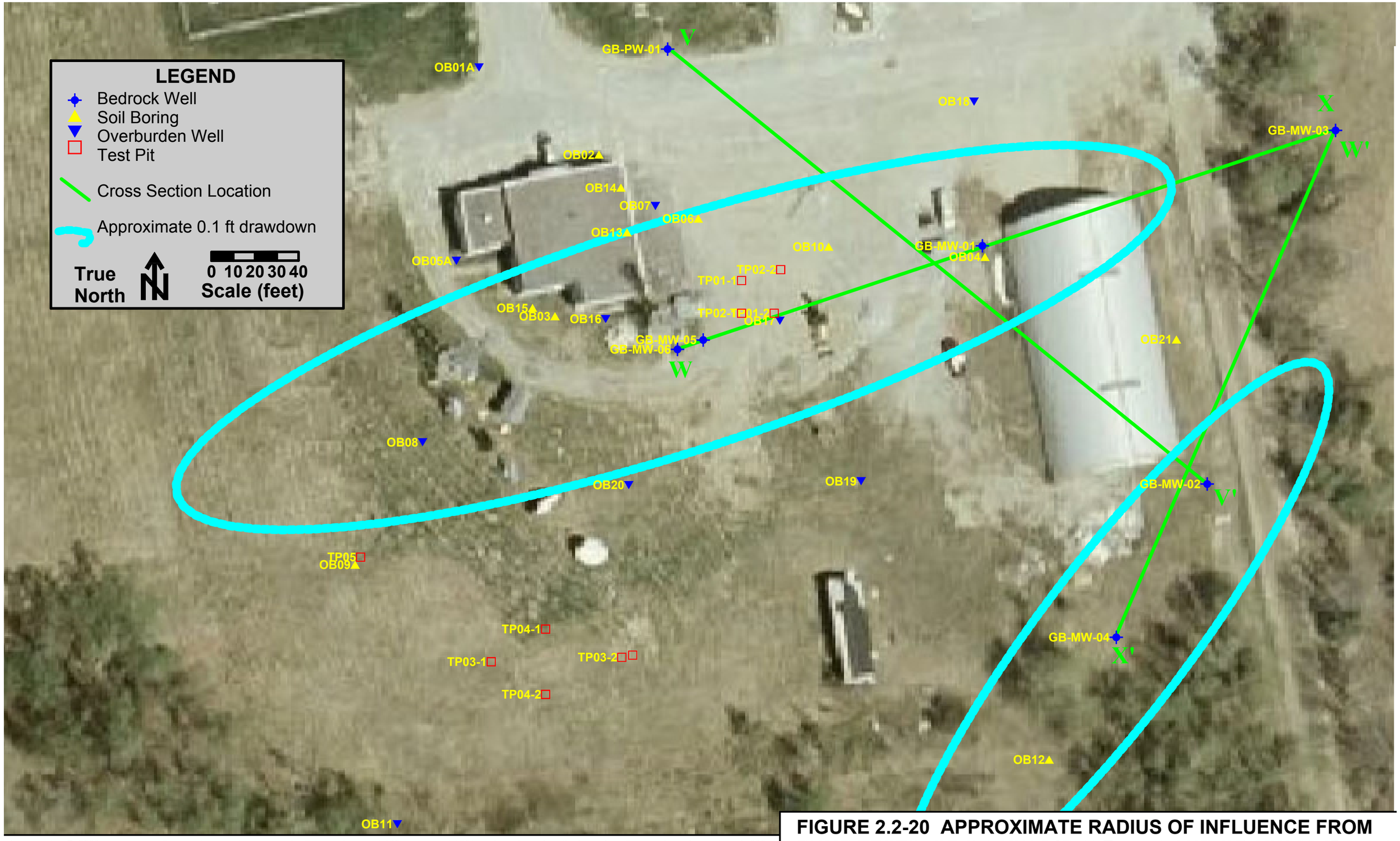
Prepared by The Johnson Co., Montpelier, Vt. for USACE NED
1-2128-9 2011 RIFS FIG 2.2-12 X-SECT WW K 063011.srf
Data in: Map and Profile rock WQ data 021309.xls and X-SECT V W AND X 022509.xls
Apparent dip corrected for X-section direction and 3:1 VE.
Sources: Hager Richter Geophysics, USACE survey and geophysics data

FIGURE 2.2-18 Hydrogeological Properties Cross-Section W-W'
Glenburn Former GAT Facility Vertical Exageration of 3:1



Prepared by The Johnson Co., Montpelier, Vt. for USACE NED
1-2128-9_2011 RIFS FIG 2.2-19 X-SECT XX K 063011.srf
Data in: Map and Profile rock WG data 021309.xls and X-SECT V W AND X 022509.xls
Sources: Hager Richter Geophysics, USACE survey and geophysics data

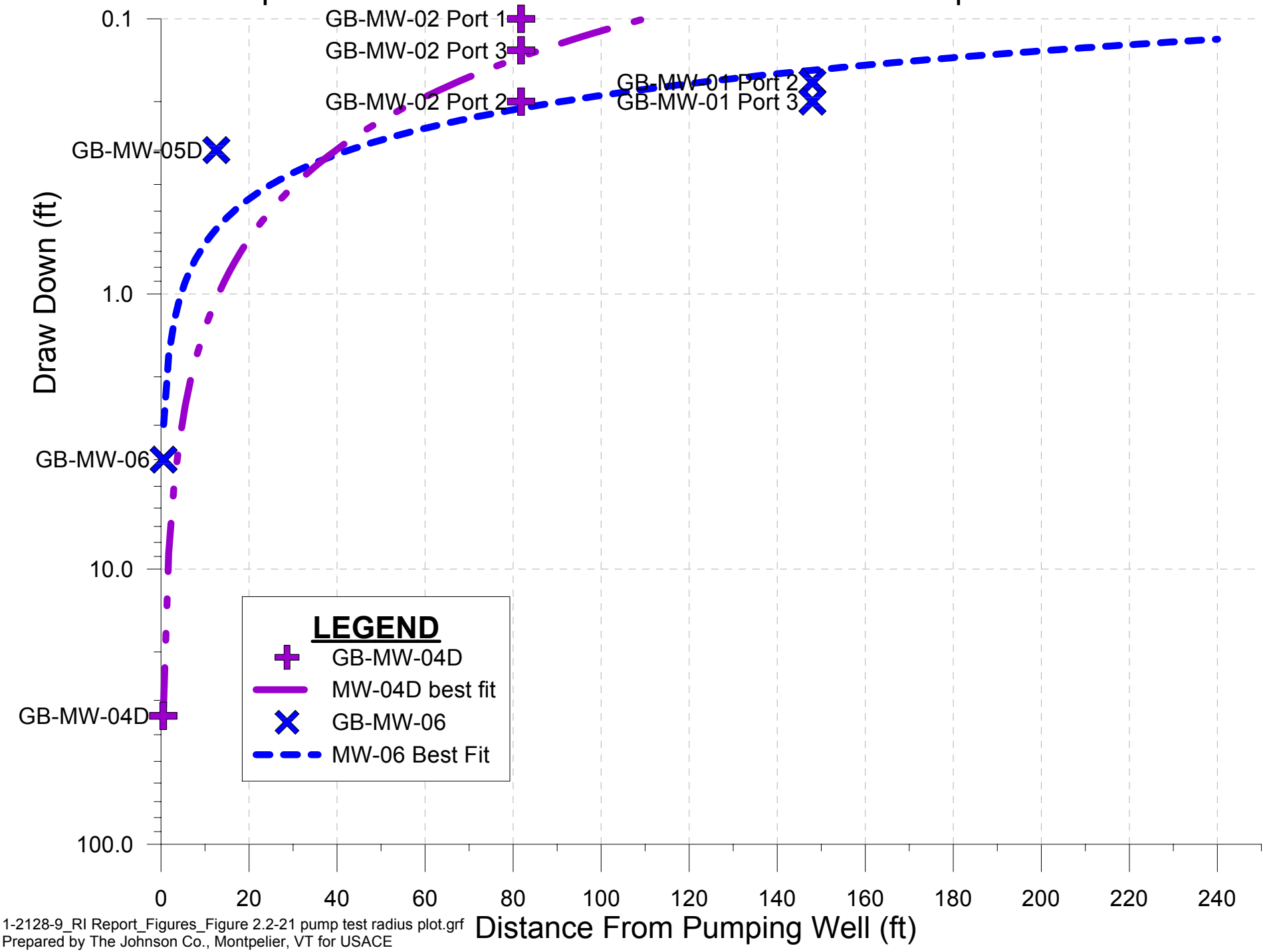
FIGURE 2.2-19 Hydrogeological Properties - Cross-Section X-X'
Glenburn Former GAT Facility Vertical Exaggeration of 3:1



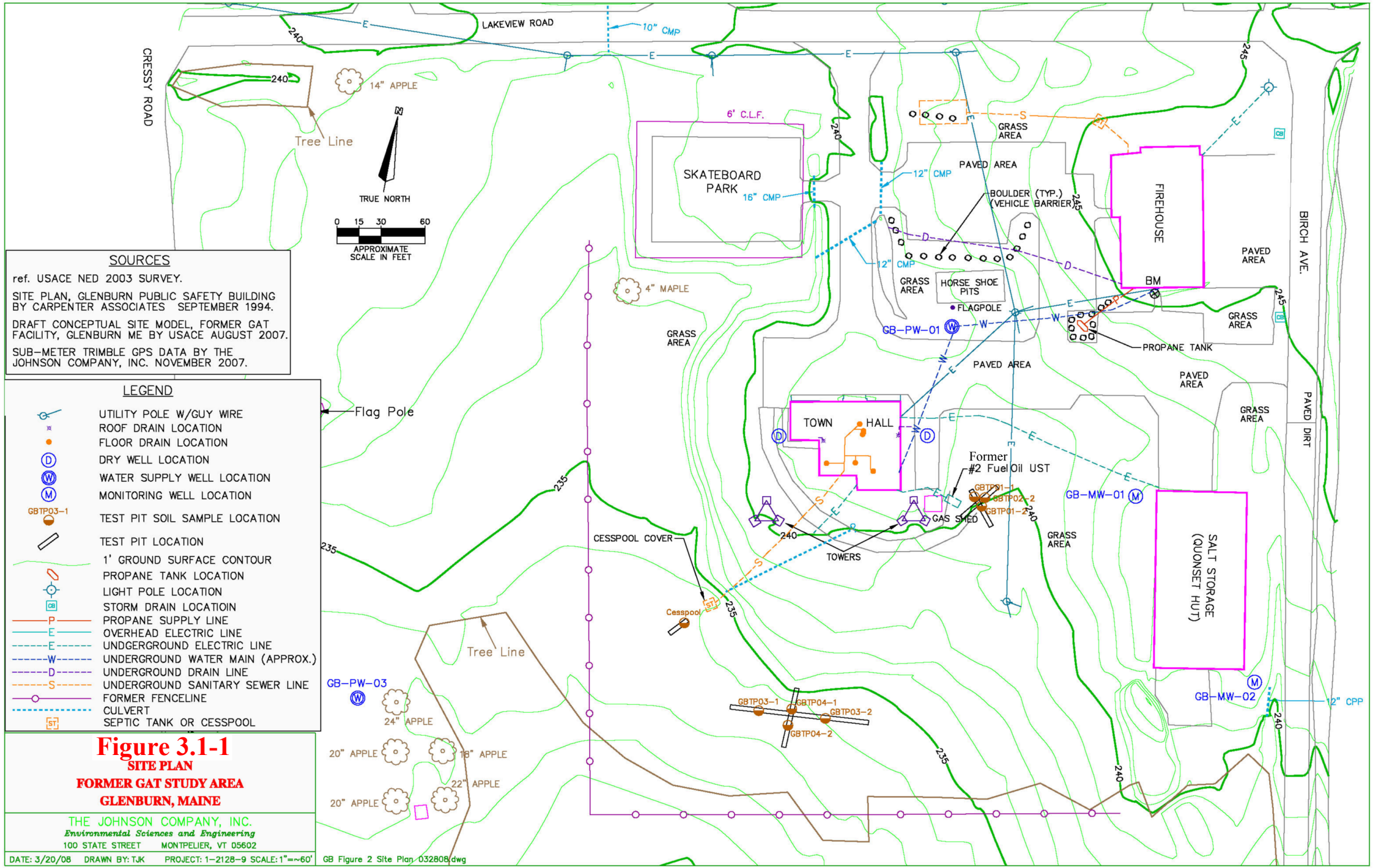
Prepared May7, 2009 The Johnson Co., Montpelier, Vt . Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet) Vertical Coordinate system is NAVD1988 Aerial photo dated 2008 From ME GIS downloaded 8/13/08 Data from USACE TEC 2004, Includes data from GAI and RAS borehole geophysics and USACE Test Trench Report 1-2128-9_ RIFSReport_Figures_Figure2.2-20PumpTestMap.srf Map and profile rock WQ data 021509.xls

FIGURE 2.2-20 APPROXIMATE RADIUS OF INFLUENCE FROM PUMP TESTS OF GB-MW-04D (1.7 gpm) AND GB-MW-06 (5 gpm)

Figure 2.2-21
Best Fit Extrapolation of GB-MW-04D and GB-MW-06 Pump Test Radii of Influence



1-2128-9_RI Report_Figures_Figure 2.2-21 pump test radius plot.grf
Prepared by The Johnson Co., Montpelier, VT for USACE



SOURCES

ref. USACE NED 2003 SURVEY.

SITE PLAN, GLENBURN PUBLIC SAFETY BUILDING BY CARPENTER ASSOCIATES SEPTEMBER 1994.

DRAFT CONCEPTUAL SITE MODEL, FORMER GAT FACILITY, GLENBURN ME BY USACE AUGUST 2007.

SUB-METER TRIMBLE GPS DATA BY THE JOHNSON COMPANY, INC. NOVEMBER 2007.

LEGEND

- UTILITY POLE W/GUY WIRE
- ROOF DRAIN LOCATION
- FLOOR DRAIN LOCATION
- (D) DRY WELL LOCATION
- (W) WATER SUPPLY WELL LOCATION
- (M) MONITORING WELL LOCATION
- GBTP03-1 TEST PIT SOIL SAMPLE LOCATION
- TEST PIT LOCATION
- 1' GROUND SURFACE CONTOUR
- PROPANE TANK LOCATION
- LIGHT POLE LOCATION
- CB STORM DRAIN LOCATIOIN
- P PROPANE SUPPLY LINE
- E OVERHEAD ELECTRIC LINE
- E UNDGERGROUND ELECTRIC LINE
- W UNDERGROUND WATER MAIN (APPROX.)
- D UNDERGROUND DRAIN LINE
- S UNDERGROUND SANITARY SEWER LINE
- FORMER FENCELINE
- CULVERT
- ST SEPTIC TANK OR CESSPOOL

Figure 3.1-1

SITE PLAN

FORMER GAT STUDY AREA

GLENBURN, MAINE

THE JOHNSON COMPANY, INC.

Environmental Sciences and Engineering

100 STATE STREET MONTPELIER, VT 05602

DATE: 3/20/08 DRAWN BY: TJK PROJECT: 1-2128-9 SCALE: 1"=~60'

GB Figure 2 Site Plan 032808.dwg

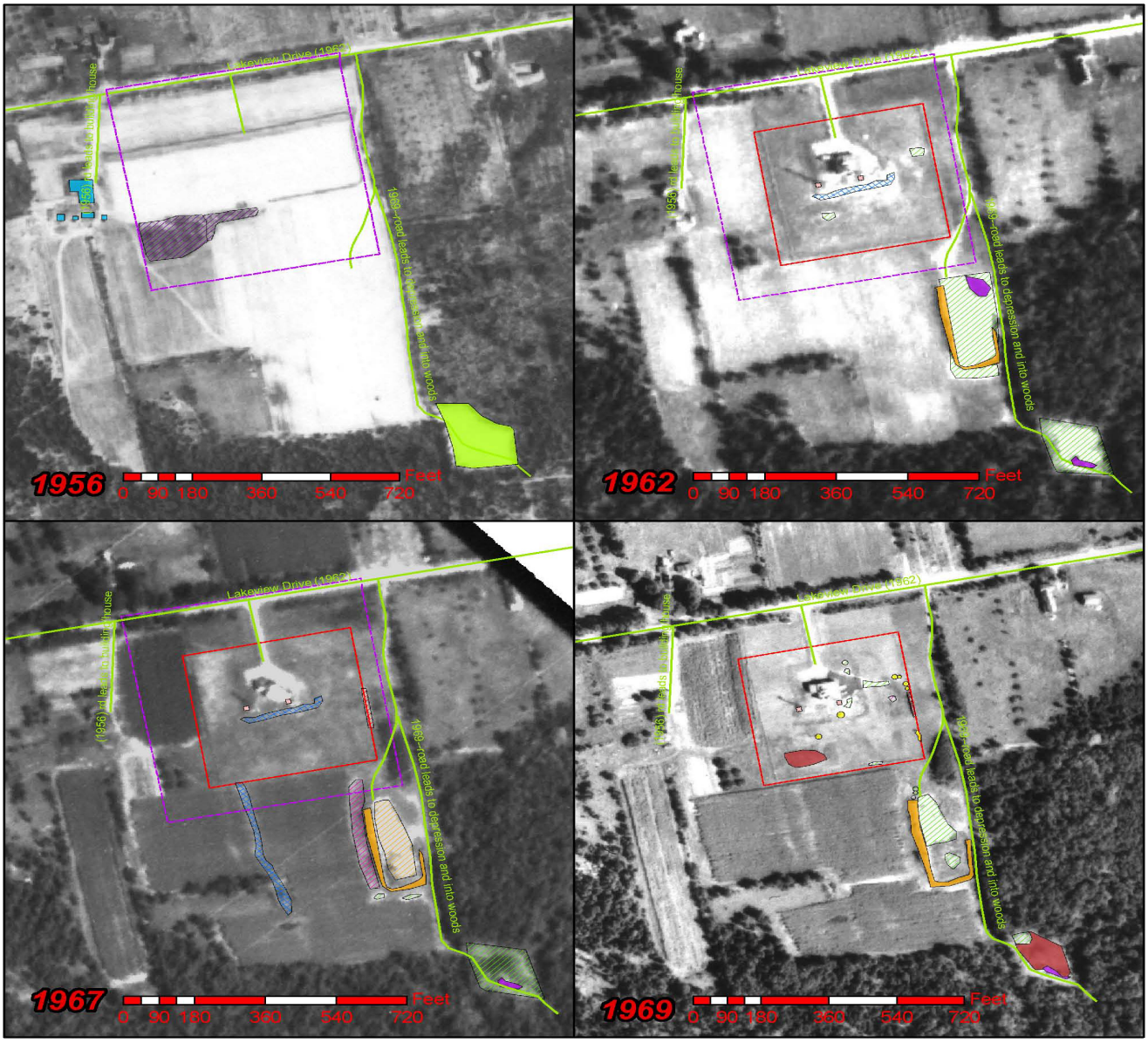
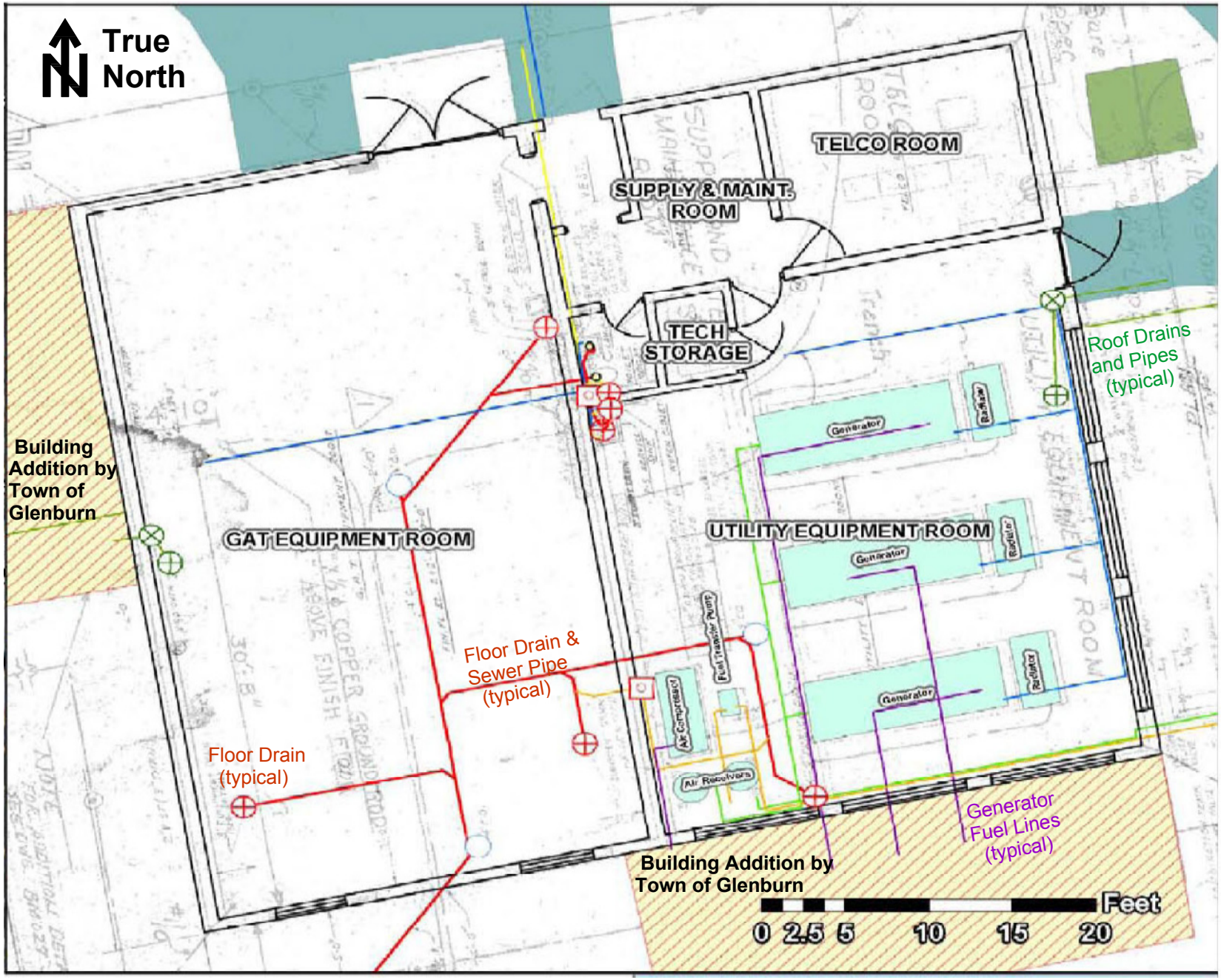
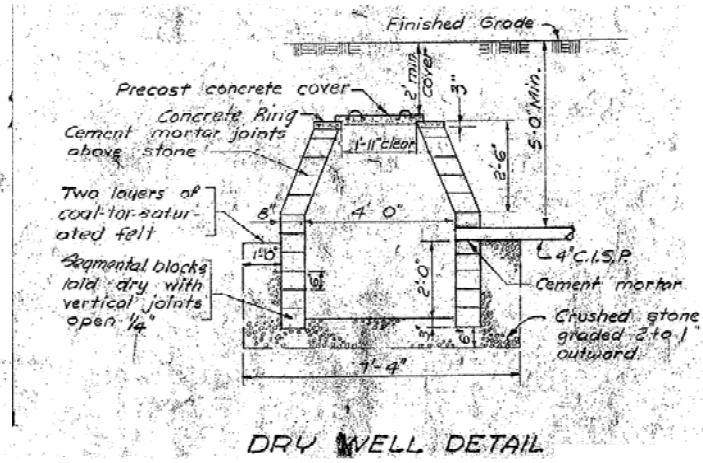


Figure 3.1-2 Historic aerial photographs of the FUDS property spanning the operational history of the Former GAT Facility (USACE TEC, 2004, 2003)

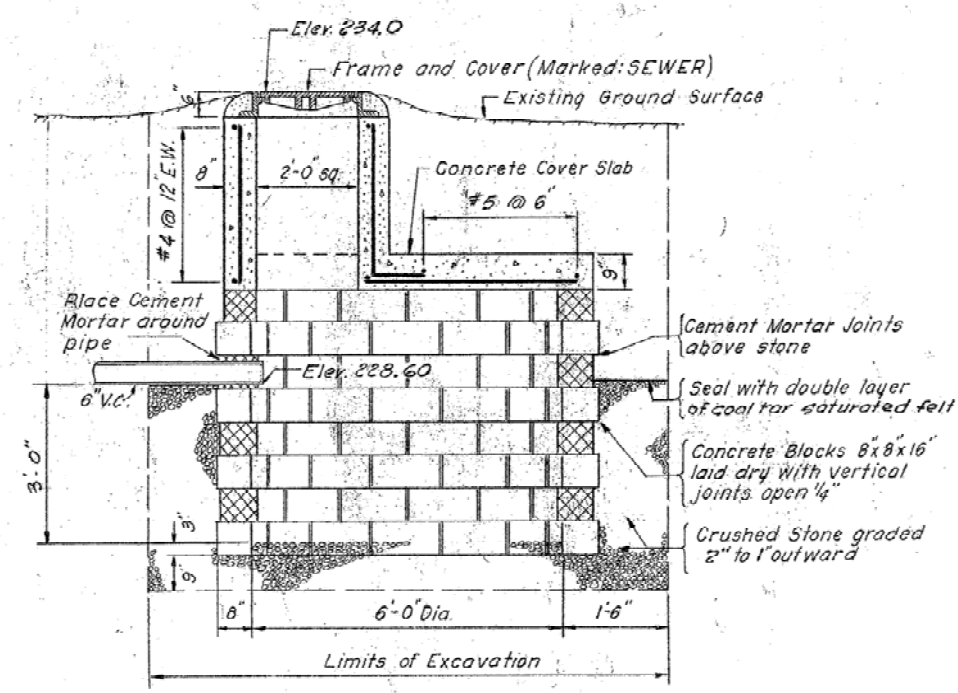


The Johnson Co., Montpelier, Vt. 1-2128-9_RIFS Report_Figures_Figure 3.1-3 building plan.srf
Details from USACE and the Former GAT Facility's generator and wastewater utility plans
(Fay, Spofford & Thorndike, Inc., 1959, Fay, Spofford & Thorndike, Inc. and Alonzo J. Harriman, Inc., 1958a-d, J. Gordon Turnbull, Inc., 1958a-)

Figure 3.1-3
Building Plan



DRY WELL DETAIL



SECTION B-B

Scale: 1/2"=1'-0"

LEACHING CESSPOOL DETAIL

The Johnson Co., Montpelier, Vt. 1-2128-9_RIFS Report_Figures_Figure 3.1-4 details.srf
Details from USACE and the Former GAT Facility's As-built Plans
(Fay, Spofford & Thorndike, Inc., 1959, Fay, Spofford & Thorndike, Inc. and Alonzo J. Harriman, Inc., 1958a-d)

Figure 3.1-4
Cesspool and Drywell Details

Prepared June 5, 2009 for USACE The Johnson Co., Montpelier, Vt .
Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet)
Aerial photo dated 2008 From ME GIS downloaded 8/13/08
Data from USACE TEC 2004.
1-2128-9_ RIFS REPORT_FIGURES_figure 3.1-5 potential sources.srf

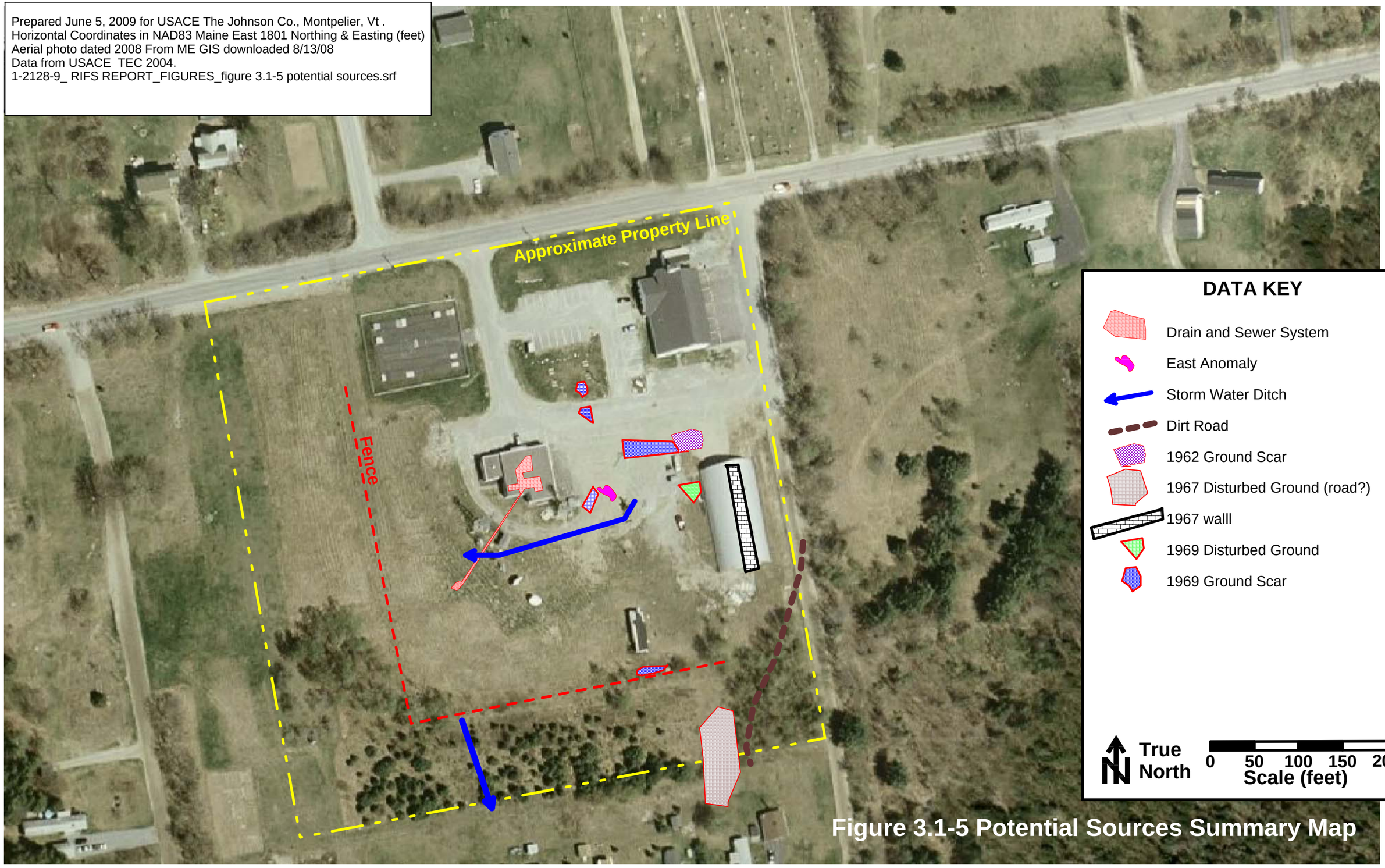
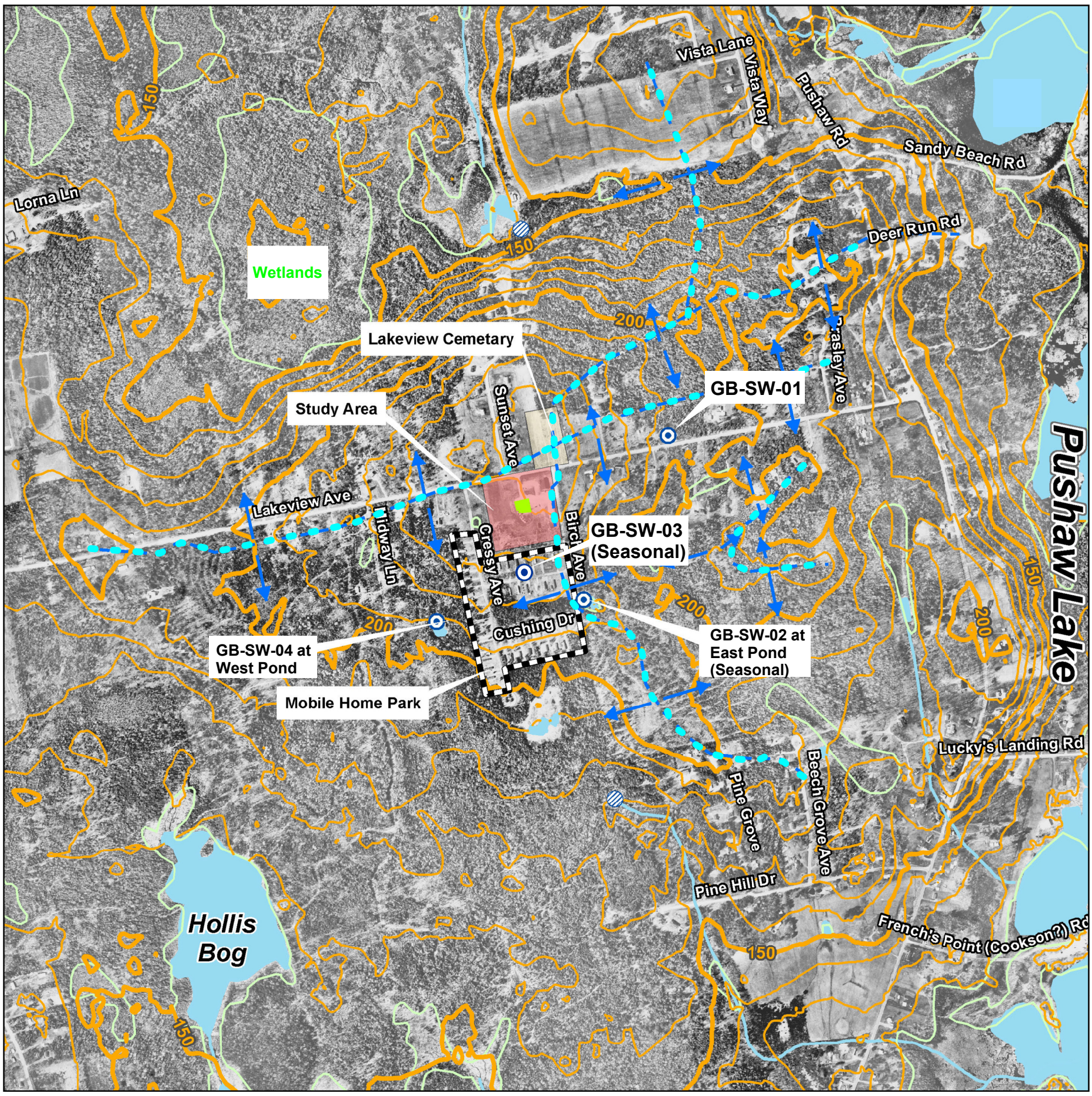


Figure 3.1-5 Potential Sources Summary Map



LEGEND

Lower Penobscot Watershed Features

- Lakes, streams, and rivers
- Drainage Divide
- Wetlands Boundaries
- Springs
- Suspected Springs

FUDS Structures

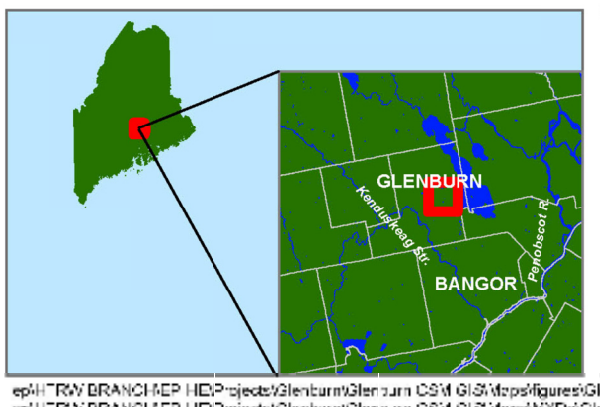
- Former GAT Facility

Elevation Contours

- 10 ft contours
- 50 ft contours

Figure 3.2-1
Site Topography,Penobscot Watershed Features, and Known and Suspected Springs

Map provided by USACE NED
1-2128-9_RIFS Report_Figures_
Figure 3.2-1 surface water drainage
Maine East State Plane NAD83 (feet), NAVD88



GLENBURN, ME
FORMER GAT STUDY AREA

US ARMY CORPS
OF ENGINEERS
NEW ENGLAND DISTRICT

N
0 0.125 0.25 0.5 0.75 1 Miles
0 0.25 0.5 1 Kilometers

Data Sources:
MEGIS (2002; 2003 a; 2004 a-c; 2005 a-c) , USACE TEC (2003)

epl\TRAV BRANCH\EP HDP\projects\Glenburn\Glenburn GSM GIS\Maps\figures\Glenburn_Study_Area_082107.pdf
epl\TRAV BRANCH\EP HDP\projects\Glenburn\Glenburn GSM GIS\Maps\MXDs\Glenburn_Study_Area_082107.mxd

Farmland Classification—Penobscot County, Maine; and Penobscot County, Maine, Southern Part
(Former Glenburn GAT Site Agricultural Soils)



Figure 3.2-2A

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Political Features

- Cities

Water Features

- Oceans
- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:7,630 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Penobscot County, Maine
Survey Area Data: Version 8, Jan 5, 2009

Soil Survey Area: Penobscot County, Maine, Southern Part
Survey Area Data: Not available

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Date(s) aerial images were photographed: 5/9/1996

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Figure 3.2-2B

Farmland Classification

Farmland Classification— Summary by Map Unit — Penobscot County, Maine				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
BmB	Bangor silt loam, moderately deep, 2 to 8 percent slope s	All areas are prime farmland	2.5	1.0%
DxB	Dixmont silt loam, 2 to 8 percent slopes	Farmland of statewide importance	1.7	0.7%
DyA	Dixmont very stony silt loam, 0 to 2 percent slopes	Not prime farmland	5.0	2.0%
HoB	Howland gravelly loam, 0 to 8 percent slopes	Farmland of statewide importance	22.3	8.7%
HvB	Howland very stony loam, 0 to 8 percent slopes	Not prime farmland	35.8	14.0%
MrB	Monarda and Burnham very stony silt loams, 0 to 8 perce nt slopes	Not prime farmland	133.7	52.1%
Pa	Peat and Muck	Not prime farmland	1.2	0.5%
PgB	Plaisted gravelly loam, 2 to 8 percent slopes	All areas are prime farmland	49.0	19.1%
PrC	Plaisted very stony loam, 5 to 15 percent slopes	Not prime farmland	5.0	2.0%
TvB	Thorndike very stony silt loam, 2 to 8 percent slopes	Not prime farmland	0.1	0.1%
Subtotals for Soil Survey Area			**256.3**	**100.0%**
Totals for Area of Interest			**256.3**	**100.0%**

Description

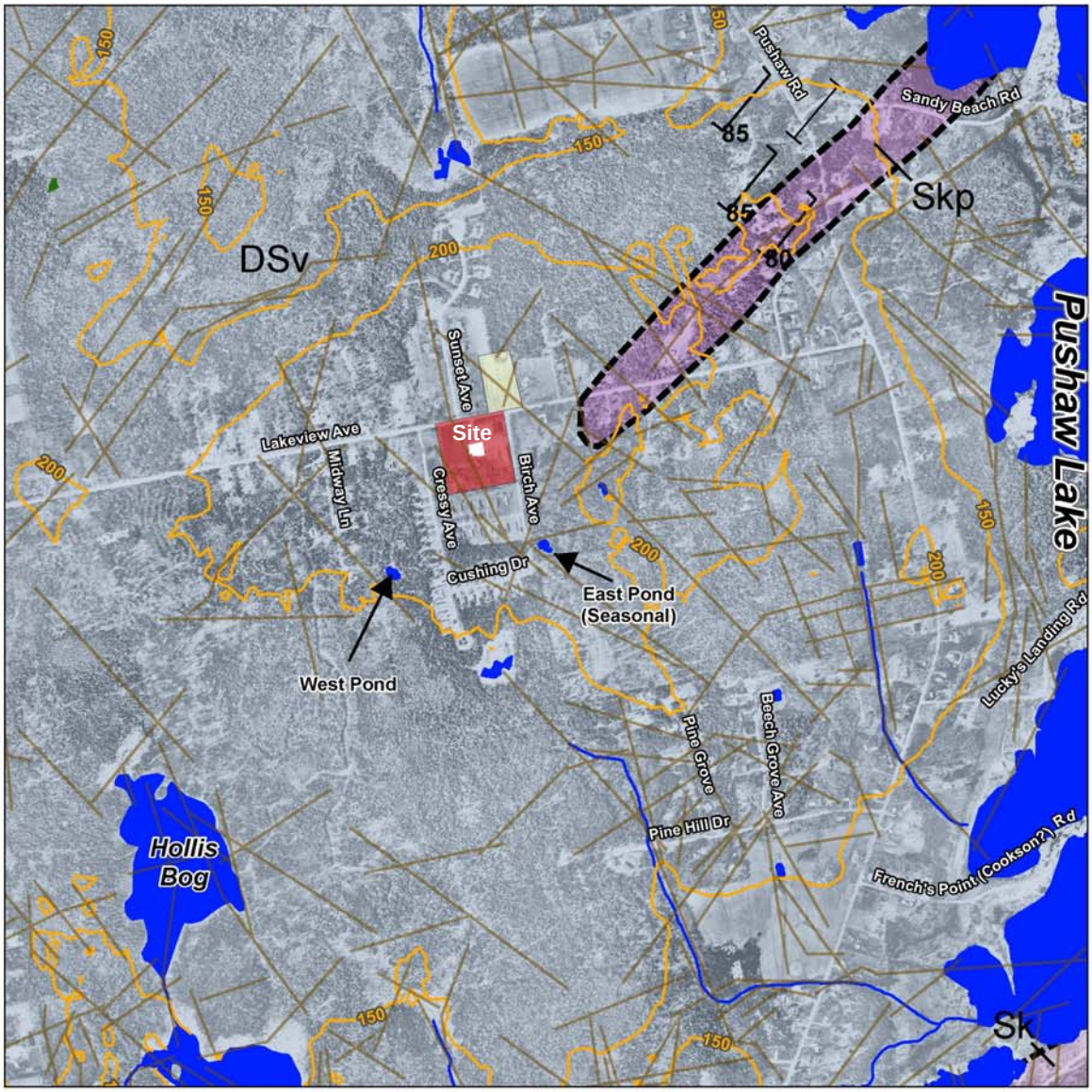
Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Figure 3.2-2C



LEGEND

Bedrock Units

Dsv Vassalboro and Fall Brook Formations; massive, beds 0.3-1.8 m. thick, fine to medium grained, feldspathic wacke, 8-15 cm. thick interbeds of dark gray phyllite, minor black carbonaceous phyllite and feldspathic coarse sand to granule conglomerate.

Sk Kenduskeag Unit; extremely variable in bedding thickness, sequence of massive quartzite alternating with sequences of 0.6-2.4 cm. thick interbedded phyllite and metasiltstone, portions of the unit consist of sedimentary brecca and chaotic zones of slump origin.

Skp Maroon and green member; 0.3-1.2 cm. thick layers of maroon and green metasiltstone, phyllite, and slate.

Map Features

- FUDS Property Boundary
- Lakeview Cemetery
- Lakes, Streams, & Rivers
- Former GAT Facility
- 50 ft contours
- Photo Lineaments
- Fault
- Cleavage, Inclined
- Cleavage, Vertical

Reprinted from USACE NED 2007

Data Source[illegible]n (1976), MEGIS (2002; 2003 a; 2004 a-c[illegible] USACE TEC (2003)

Maine East State Plane NAD83 (feet), NAVD88

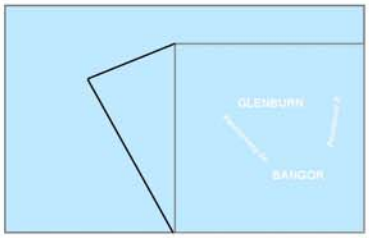


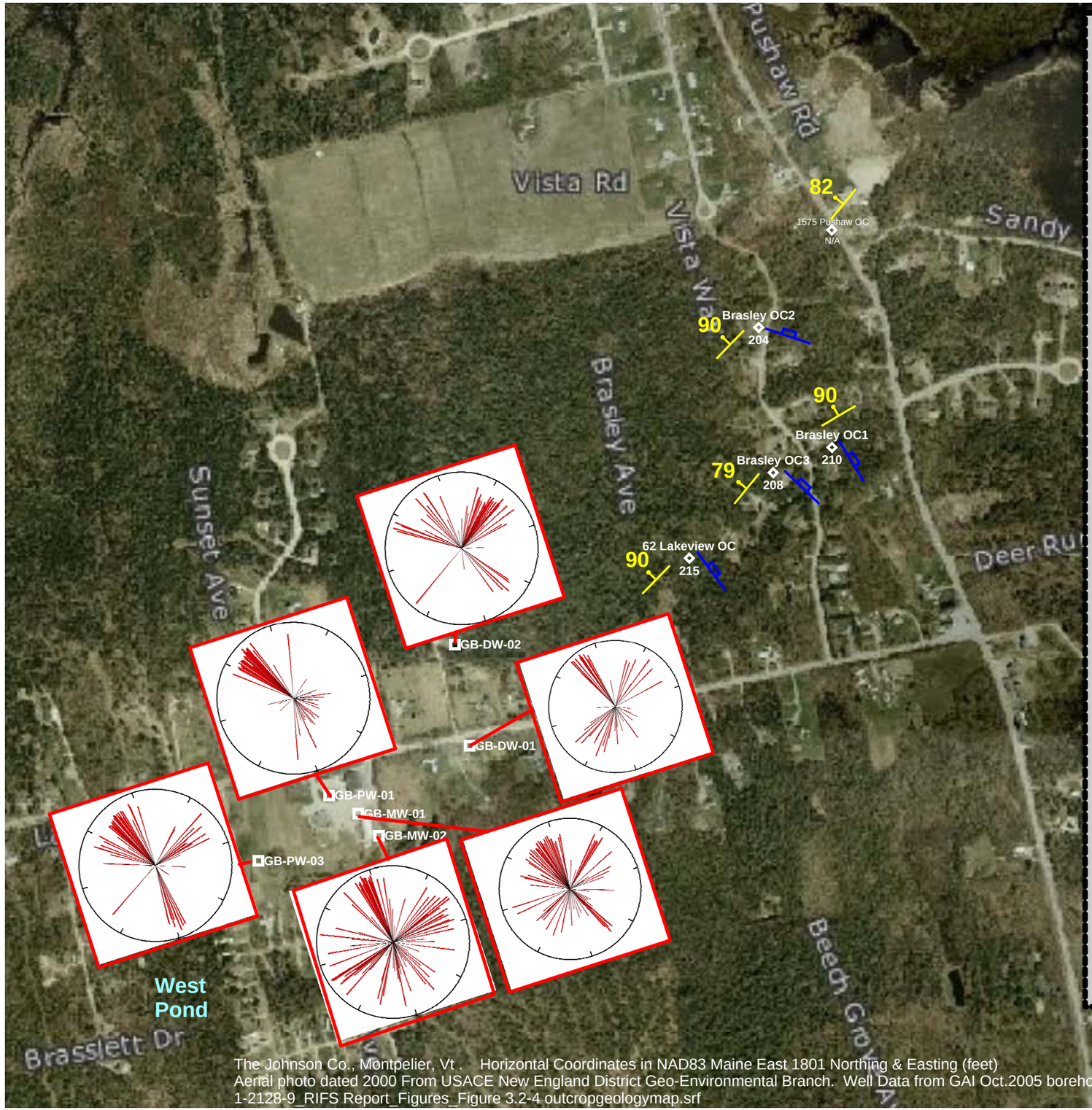
Figure 3.2-3
Bedrock Geology Map

US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT

0 0.125 0.25 0.5 0.75 1 Miles

0 0.25 0.5 1 Kilometers

ep\HTRW BRANCH\EP-HE\Projects\Glenburn\Glenburn CSM GIS\Maps\figures\Glenburn_Bedrock_062107.pdf
ep\HTRW BRANCH\EP-HE\Projects\Glenburn\Glenburn CSM GIS\Maps\MXDs\Glenburn_Bedrock_062107.mxd
June 21, 2007 DWN: MJC CHKD: MTW DMC



Outcrop Description and Key

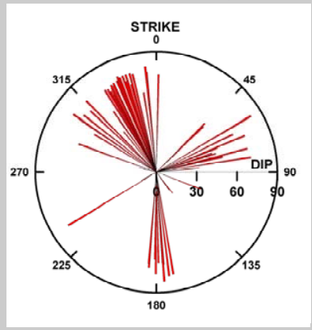
Name
Elevation

Outcrop approximate location with elevation (+-5 ft NAVD)

10

General Bedding Strike and Dip

Fracture Strike



Borehole Geophysics Fracture/Bedding Dip Direction and Magnitude

Name

Well Location and Name

1575 Pushaw OC: Alternating 6-8" layers of fissile phyllite with 1-4" layers of blocky quartzite

Brasley OC2: Undulating 1/4-1/2-inch layers of micaceous greywacke

Brasley OC1: Blocky greywacke

Brasley OC3: Northern portion is blocky 10-18-inch beds of pitted quartzite with 1-2-inch interbeds of eroded (2-3-inches deep) calcareous? phyllite. Southern portion is 2-4-inch beds of green fissile phyllite alternating with 1-2 inch layers of eroded phyllite as above. A three-foot wide bed containing mutliple contorted and eroded quartz and calcareous veins is present in the north.

62 Lakeside OC: Blocky greywacke with 1/4-1/2" ripple bedding

True North

0 500 1000 1500
Scale (feet)

The Johnson Co., Montpelier, Vt . Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet)
Aerial photo dated 2000 From USACE New England District Geo-Environmental Branch. Well Data from GAI Oct.2005 borehole logging report.
1-2128-9_RIFS Report_Figures_Figure 3.2-4 outcropgeologymap.srf

Figure 3.2-4
Map of Bedrock Orientation Data

Figure 3.2-5A: Typical Borehole Geophysical Log

HAGER-RICHTER GEOSCIENCE, INC.

8 Industrial Way - D10
Salem, NH 03079
Phone: 603-893-9944
Fax: 603-893-8313

BOREHOLE ID: GB-MW-04

DATE LOGGED: August 25 and 26, 2008

CLIENT:	The Johnson Company	H-R FILE:	08RG29
PROJECT:	Former Glenburn GAT Facility	LOG DATUM:	Top of the 6-Inch Casing
CITY, STATE:	Glenburn, Maine	LOG DATUM ELEVATION:	244.96 (NAVD88)
LOGGING GEOPHYSICIST(S):	Robert Garfield & Nick DeCristofaro	ORIENTATION REFERENCE:	True North (Declination = 17 Degrees West)
PROJECT REPRESENTATIVE(S):	Donald Maynard	CASING STICK-UP:	3.0 Feet
BOREHOLE LOCATION (NORTHING):	454271.20 Feet	BOREHOLE DIAMETER:	6 Inches
BOREHOLE LOCATION (EASTING):	900232.14 Feet	WATER LEVEL DEPTH:	32.2 Feet

STRUCTURE LEGEND

Foliation or Vein; Fracture Rank 1; Fracture Rank 2; Fracture Rank 3; Iron Stained Fracture; Possible Transmissive Fracture

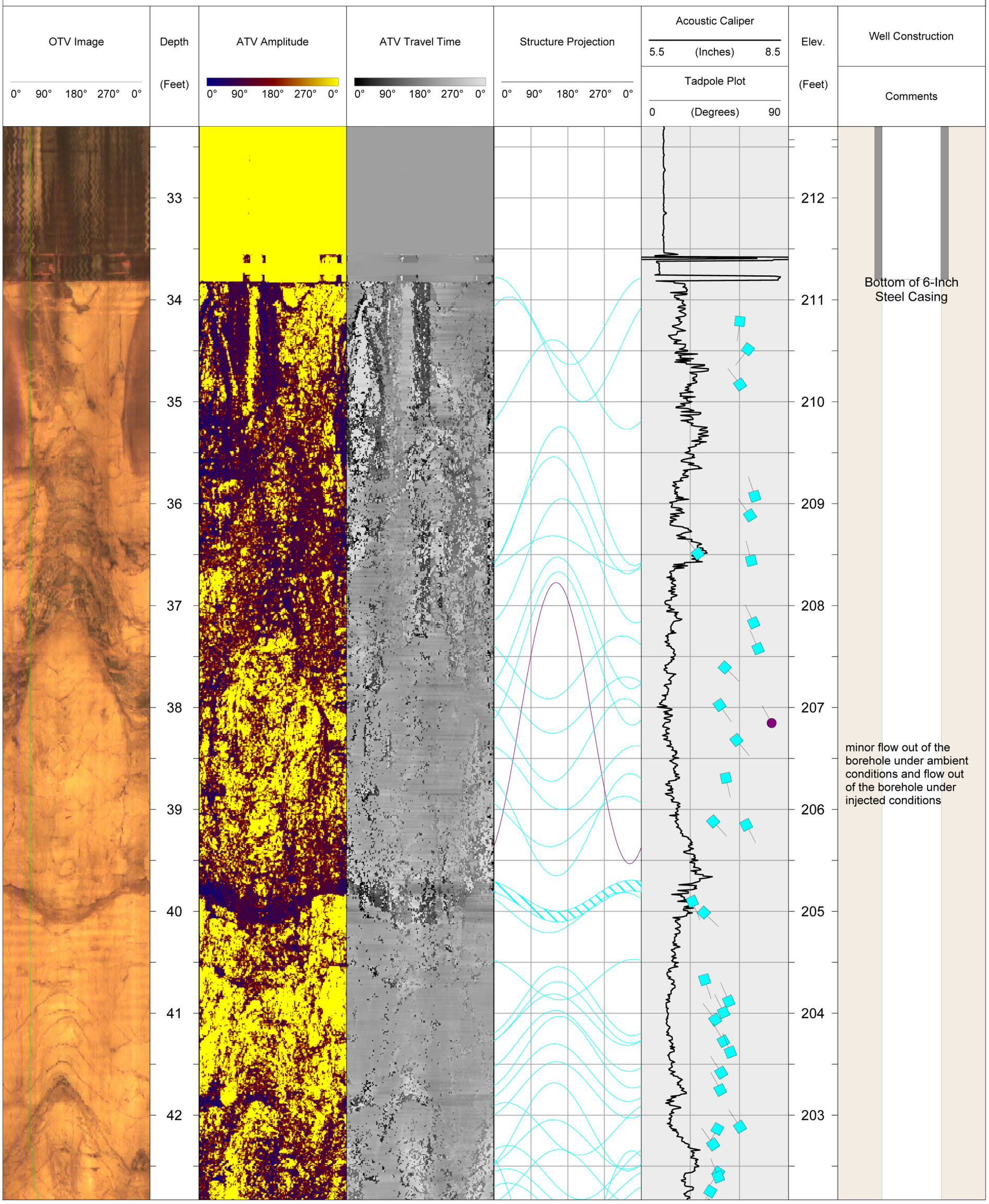


Figure 3.2-5B: Typical Borehole Geophysical Log

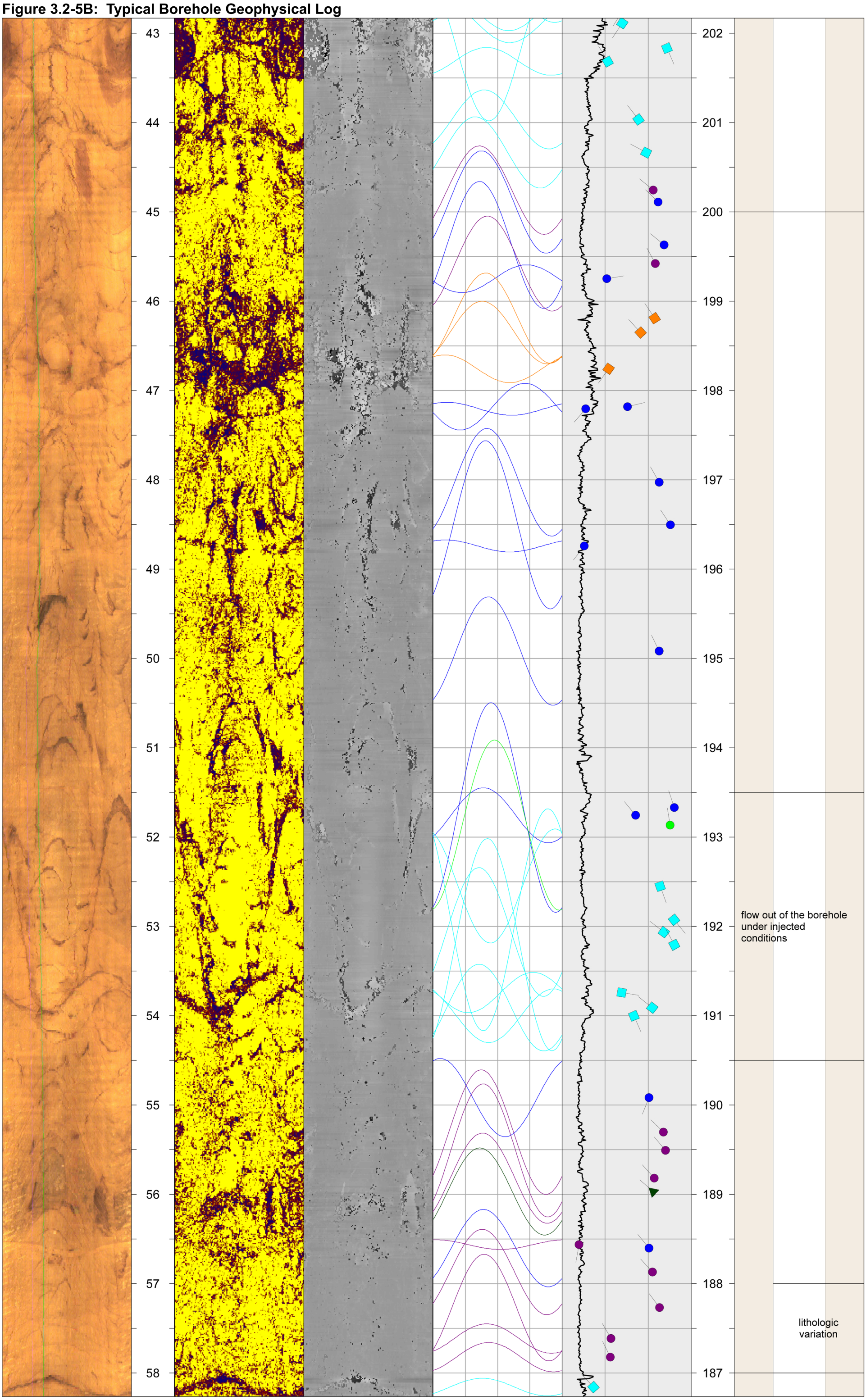


Figure 3.2-5C: Typical Borehole Geophysical Log

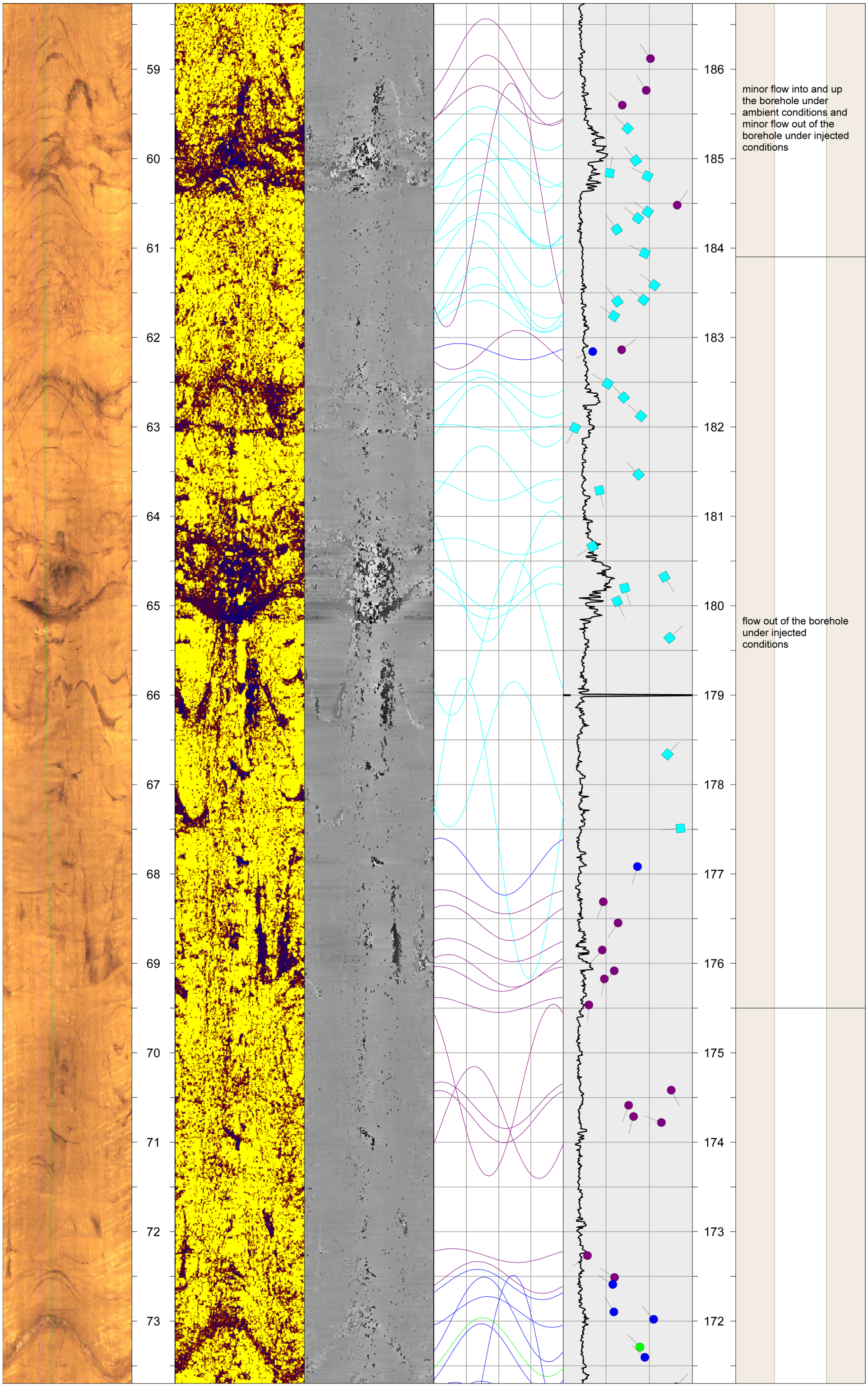


Figure 3.2-5D: Typical Borehole Geophysical Log

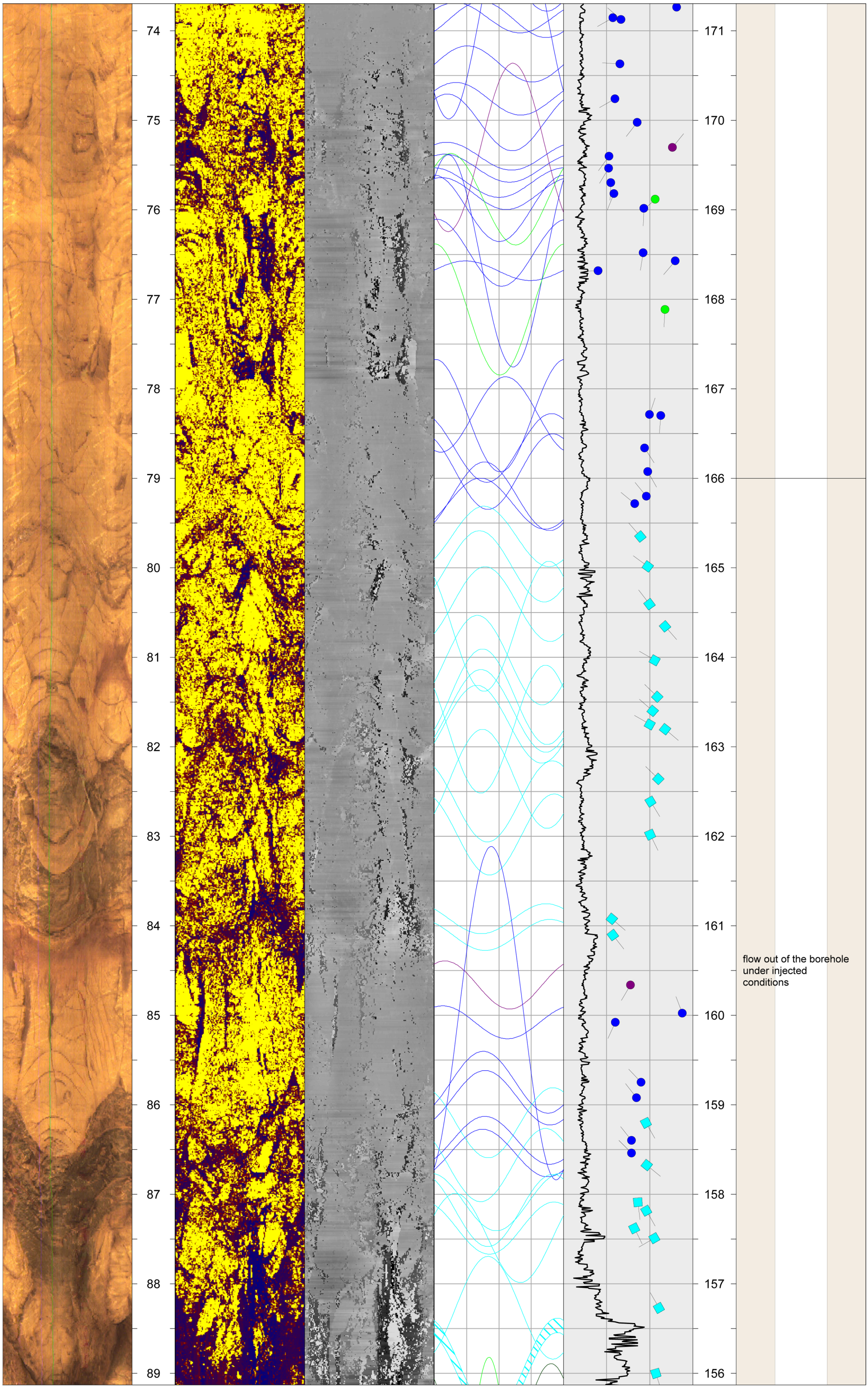


Figure 3.2-5E: Typical Borehole Geophysical Log

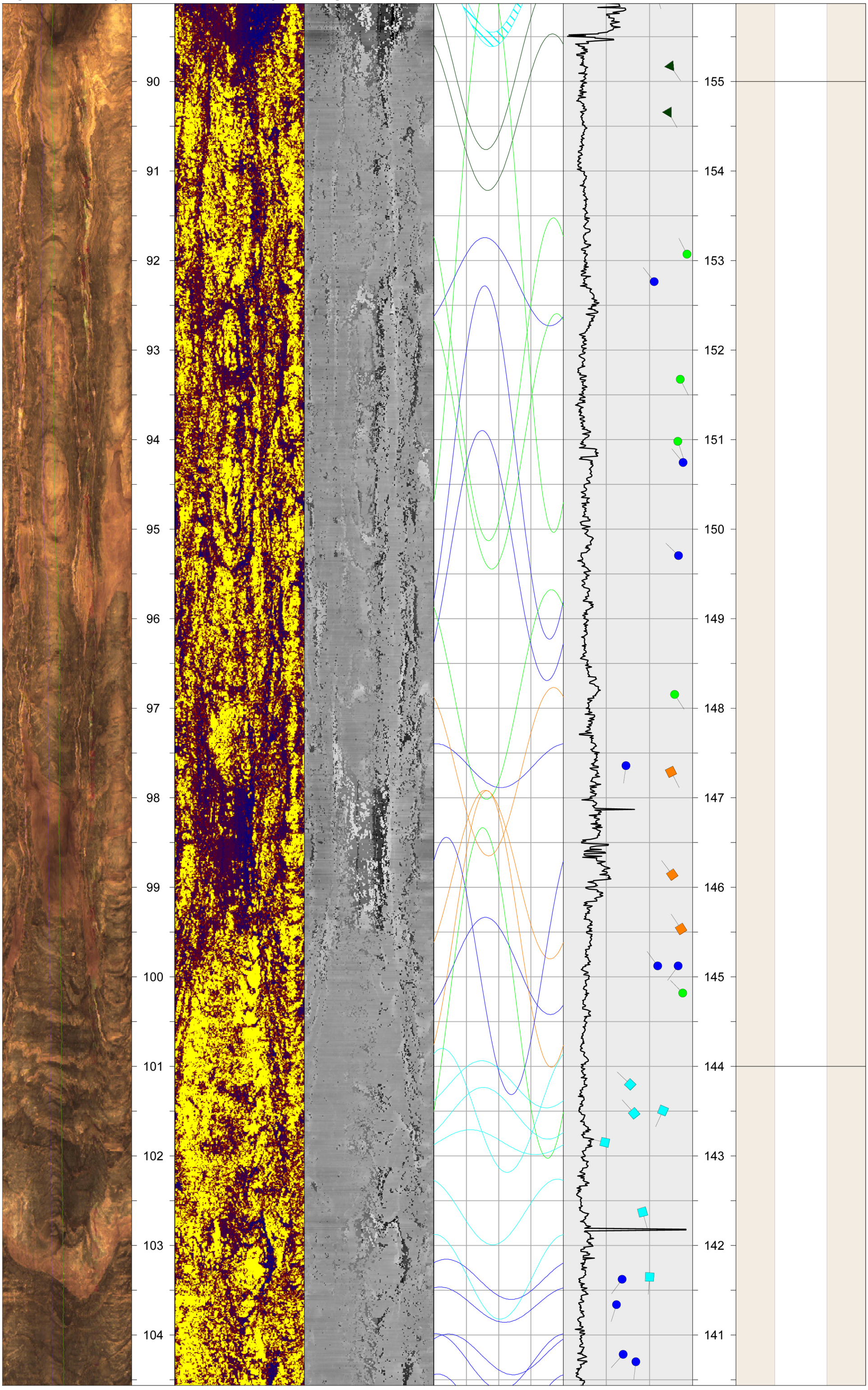


Figure 3.2-5F: Typical Borehole Geophysical Log

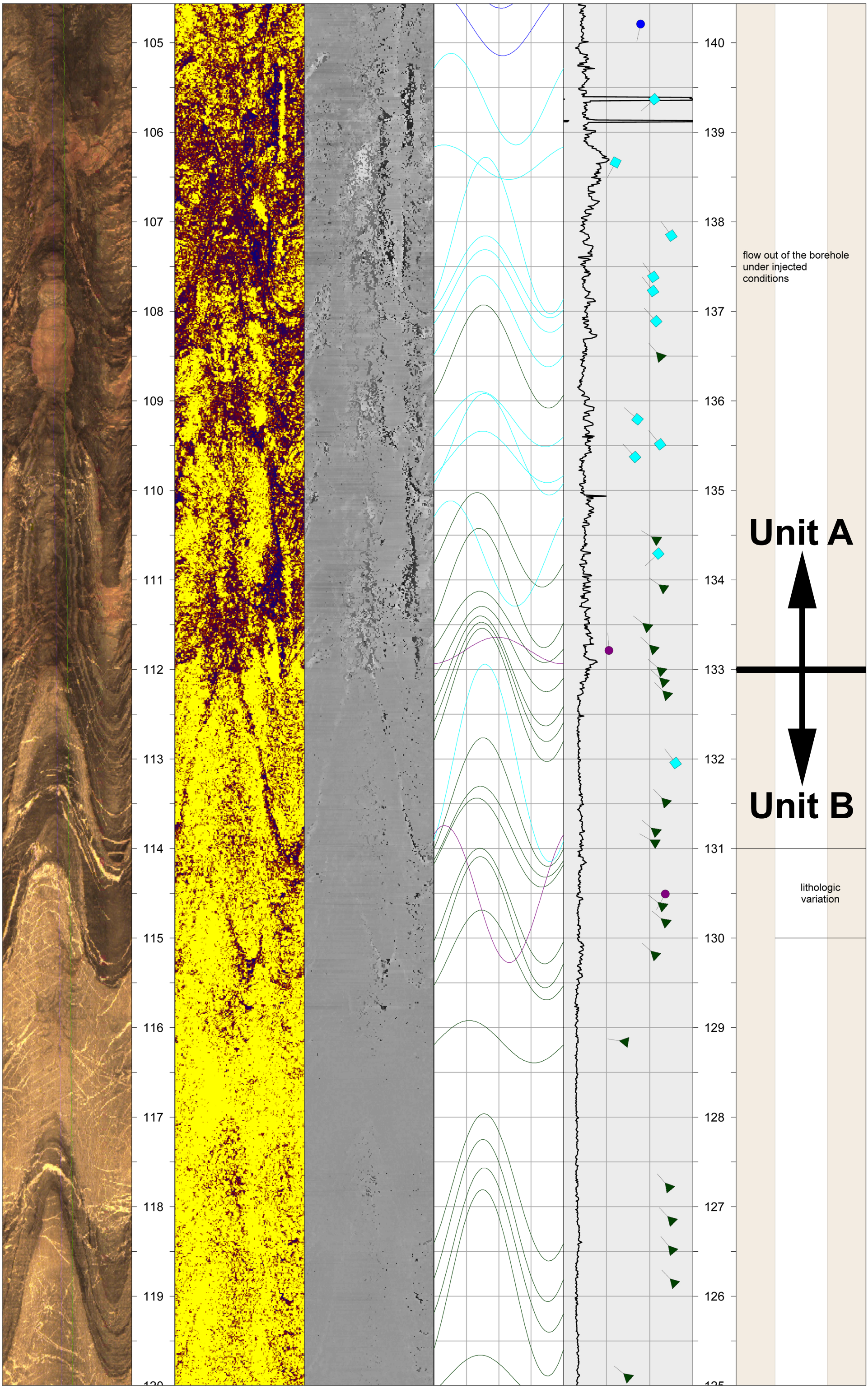


Figure 3.2-5G: Typical Borehole Geophysical Log

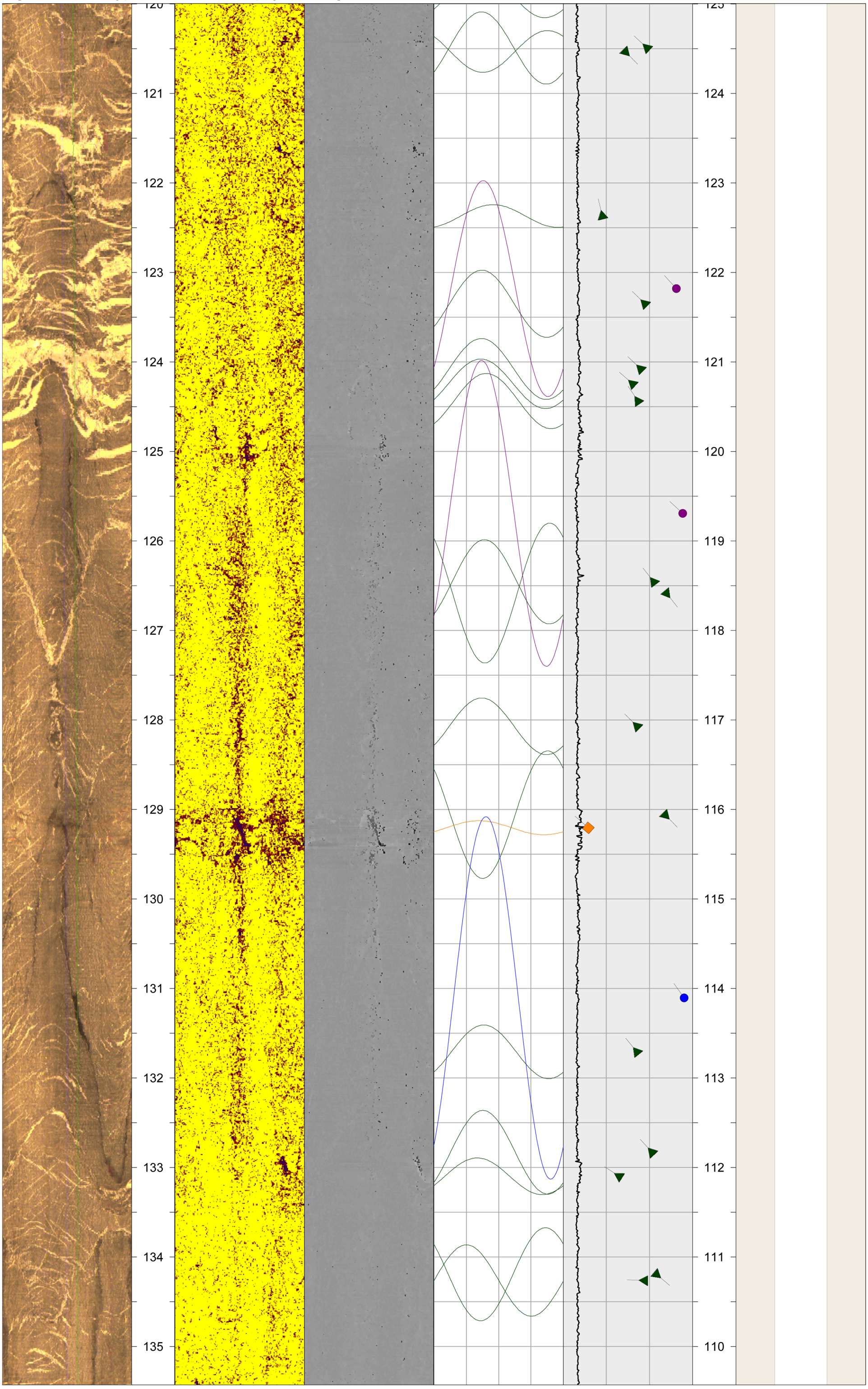


Figure 3.2-5H: Typical Borehole Geophysical Log

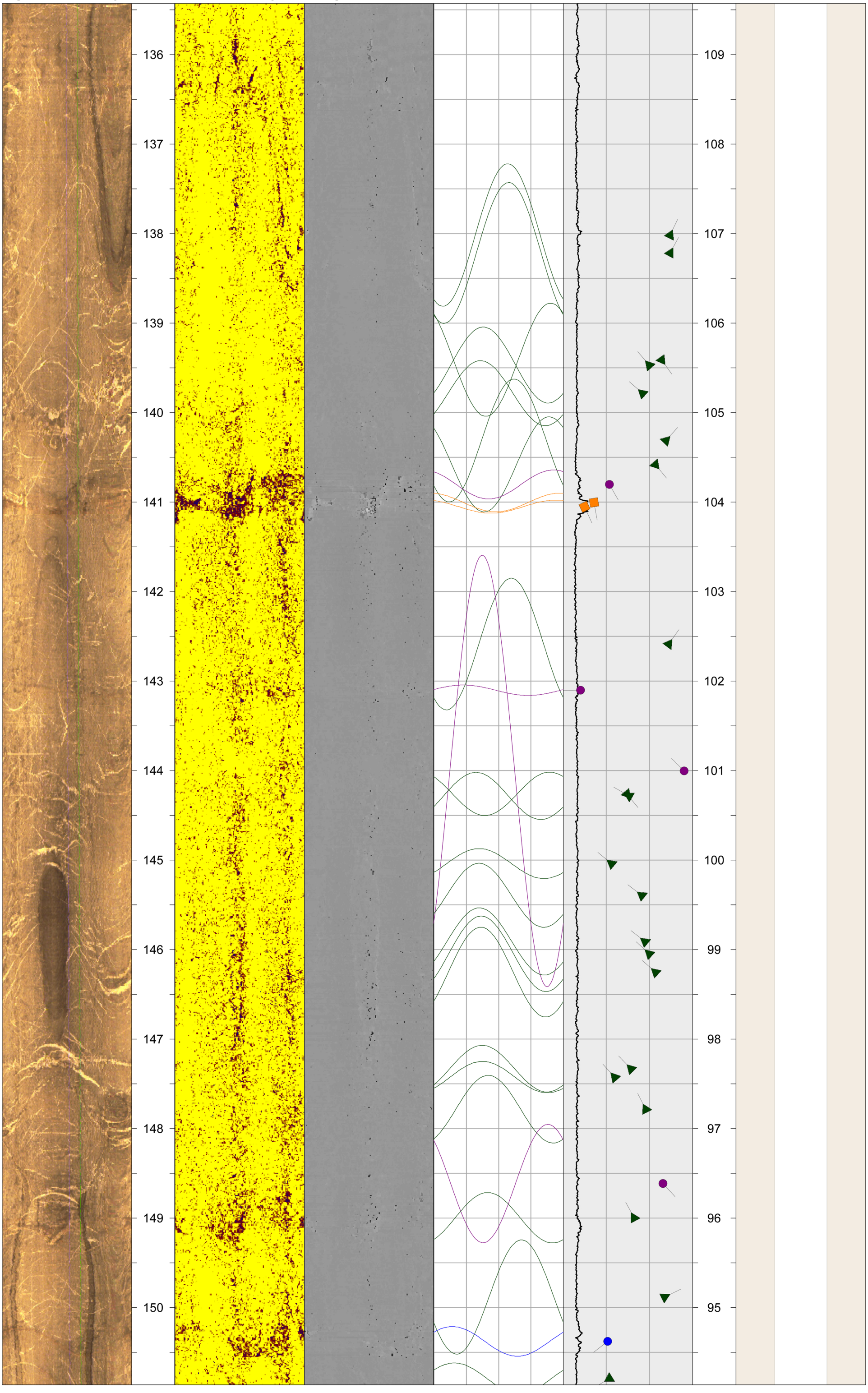


Figure 3.2-5l: Typical Borehole Geophysical Log

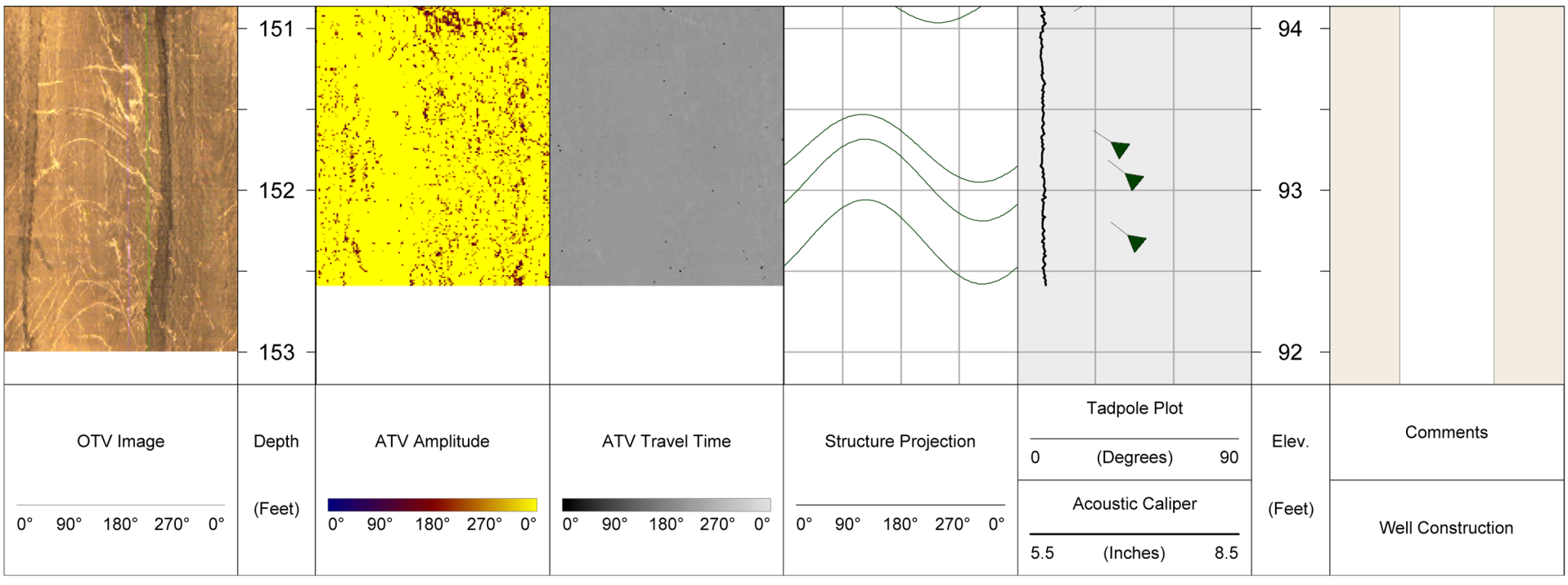


Figure 3.2-5J: Typical Borehole Geophysical Log

HAGER-RICHTER GEOSCIENCE, INC.

8 Industrial Way - D10
Salem, NH 03079
Phone: 603-893-9944
Fax: 603-893-8313

BOREHOLE ID: GB-MW-04

DATE LOGGED: August 25 and 26, 2008

CLIENT:	The Johnson Company	H-R FILE:	08RG29
PROJECT:	Former Glenburn GAT Facility	LOG DATUM:	Top of the 6-Inch Casing
CITY, STATE:	Glenburn, Maine	LOG DATUM ELEVATION:	244.96 (NAVD88)
LOGGING GEOPHYSICIST(S):	Robert Garfield & Nick DeCristofaro	ORIENTATION REFERENCE:	True North (Declination = 17 Degrees West)
PROJECT REPRESENTATIVE(S):	Donald Maynard	CASING STICK-UP:	3.0 Feet
BOREHOLE LOCATION (NORTHING):	454271.20 Feet	BOREHOLE DIAMETER:	6 Inches
BOREHOLE LOCATION (EASTING):	900232.14 Feet	WATER LEVEL DEPTH:	32.2 Feet

STRUCTURE LEGEND

Foliation or Vein; Fracture Rank 1; Fracture Rank 2; Fracture Rank 3; Iron Stained Fracture; Possible Transmissive Fracture

NOTE: TCE, chloride, and dissolved oxygen data were acquired by JCO using MEDEP packers.

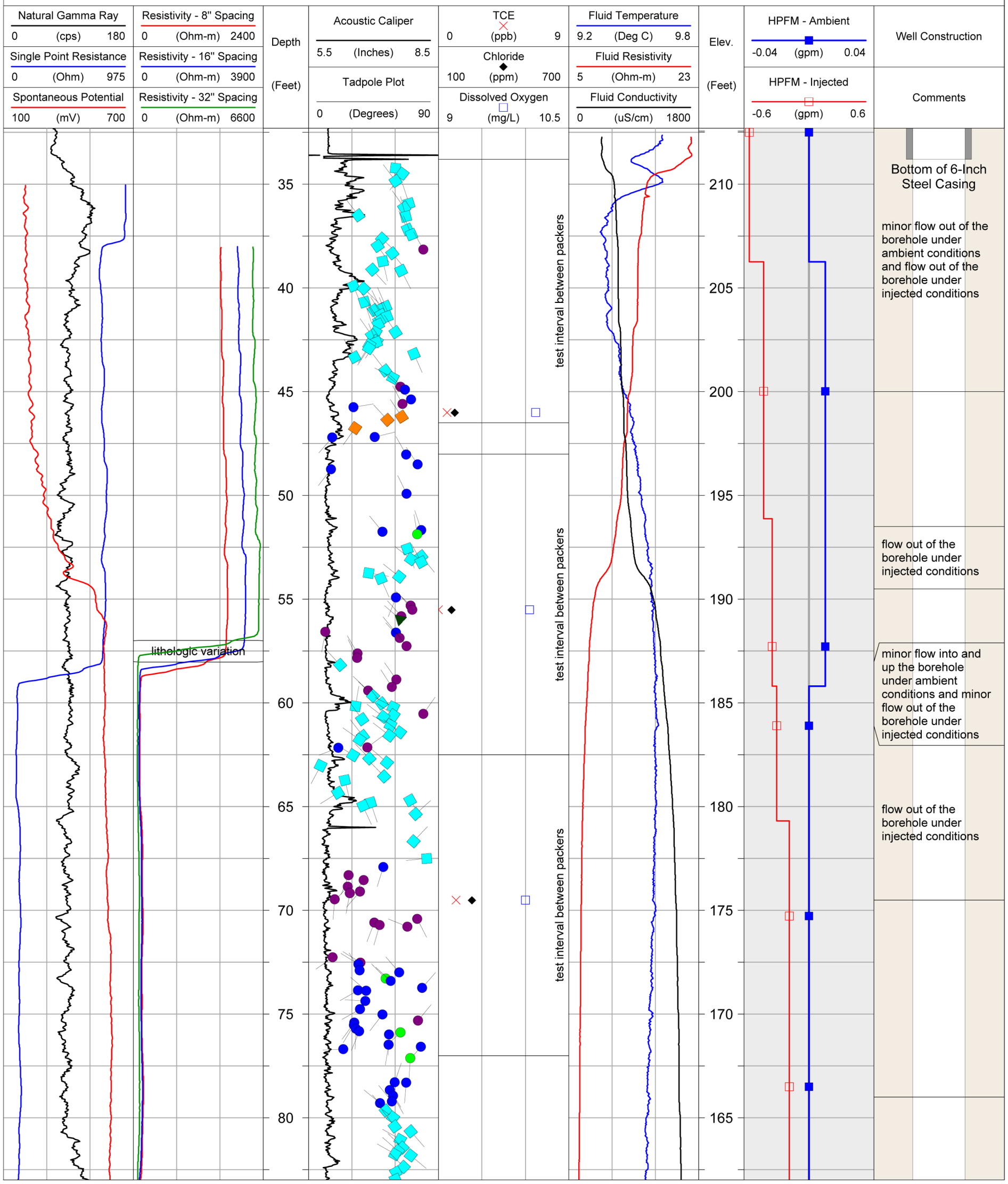
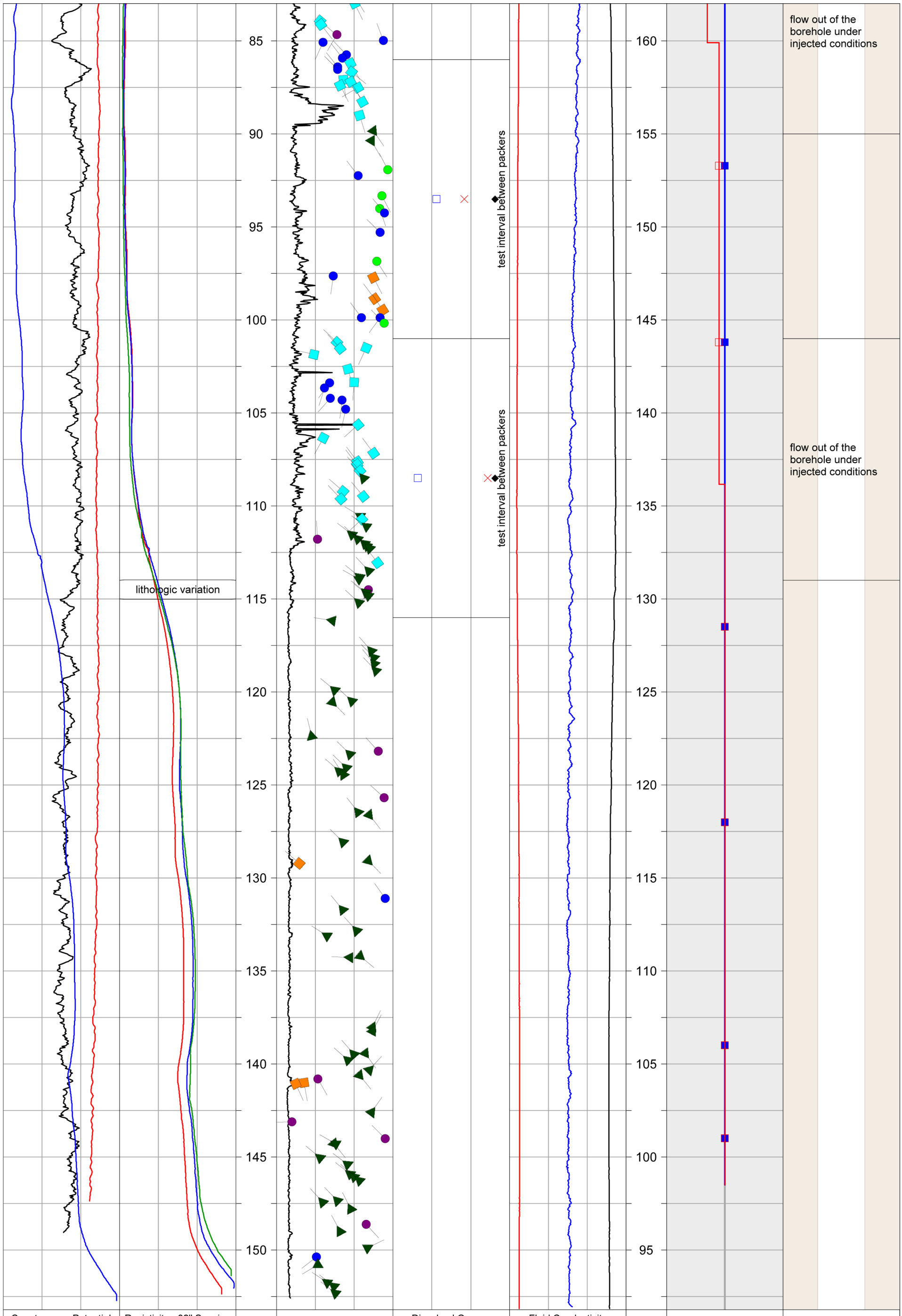


Figure 3.2-5K: Typical Borehole Geophysical Log



Soil Map—Penobscot County, Maine; and Penobscot County, Maine, Southern Part
(Former Glenburn GAT Site)



Figure 3.2-6A

USDA Natural Resources Conservation Service

Web Soil Survey 2.2
National Cooperative Soil Survey

5/4/2009

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:7,630 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Penobscot County, Maine
Survey Area Data: Version 8, Jan 5, 2009

Soil Survey Area: Penobscot County, Maine, Southern Part
Survey Area Data: Not available

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Date(s) aerial images were photographed: 5/9/1996

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

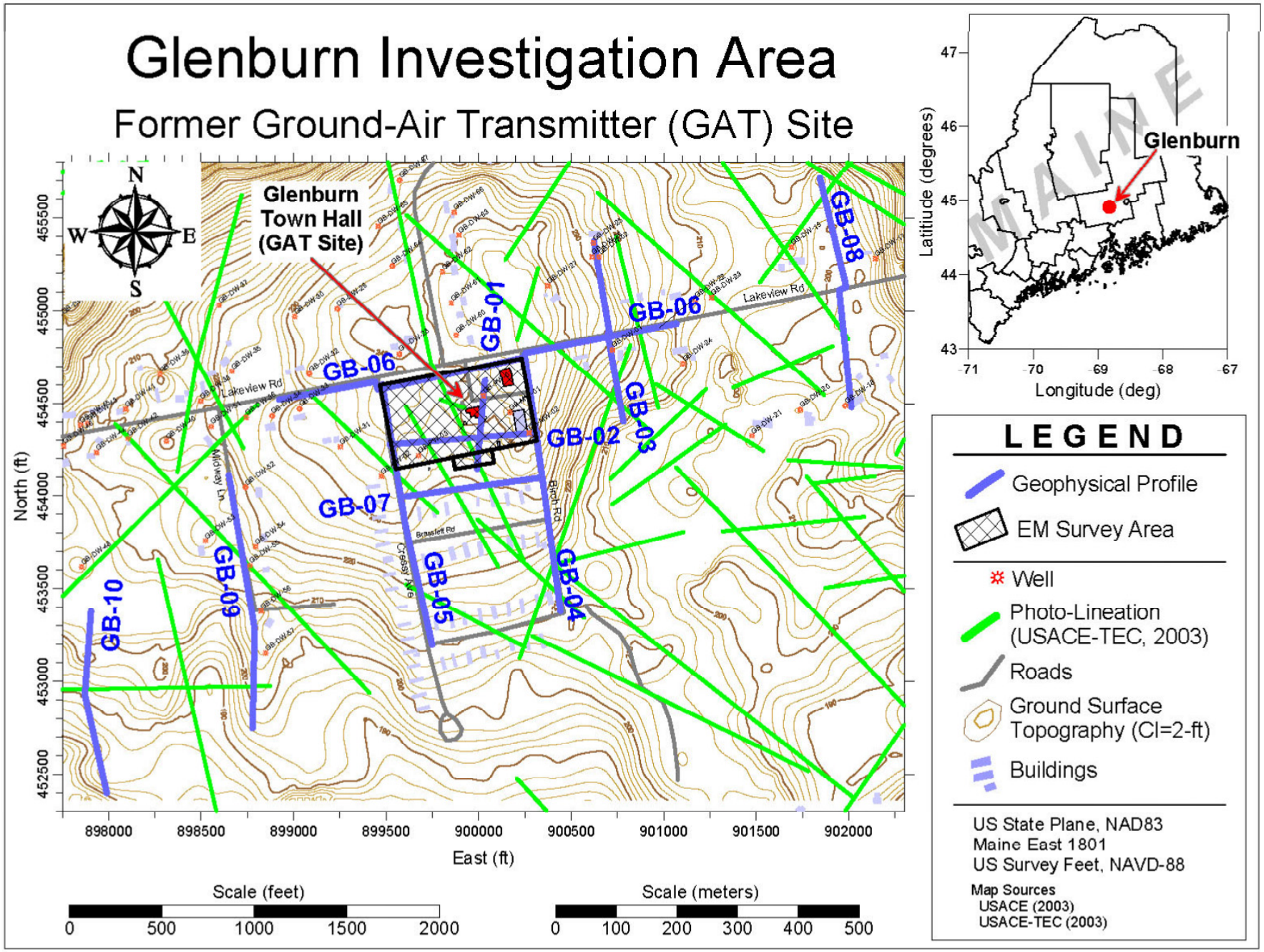
Figure 3.2-6B

Map Unit Legend

Penobscot County, Maine (ME614)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BmB	Bangor silt loam, moderately deep, 2 to 8 percent slope s	2.5	1.0%
DxB	Dixmont silt loam, 2 to 8 percent slopes	1.7	0.7%
DyA	Dixmont very stony silt loam, 0 to 2 percent slopes	5.0	2.0%
HoB	Howland gravelly loam, 0 to 8 percent slopes	22.3	8.7%
HvB	Howland very stony loam, 0 to 8 percent slopes	35.8	14.0%
MrB	Monarda and Burnham very stony silt loams, 0 to 8 perce nt slopes	133.7	52.1%
Pa	Peat and Muck	1.2	0.5%
PgB	Plaisted gravelly loam, 2 to 8 percent slopes	49.0	19.1%
PrC	Plaisted very stony loam, 5 to 15 percent slopes	5.0	2.0%
TvB	Thorndike very stony silt loam, 2 to 8 percent slopes	0.1	0.1%
Subtotals for Soil Survey Area		**256.3**	**100.0%**
Totals for Area of Interest		**256.3**	**100.0%**

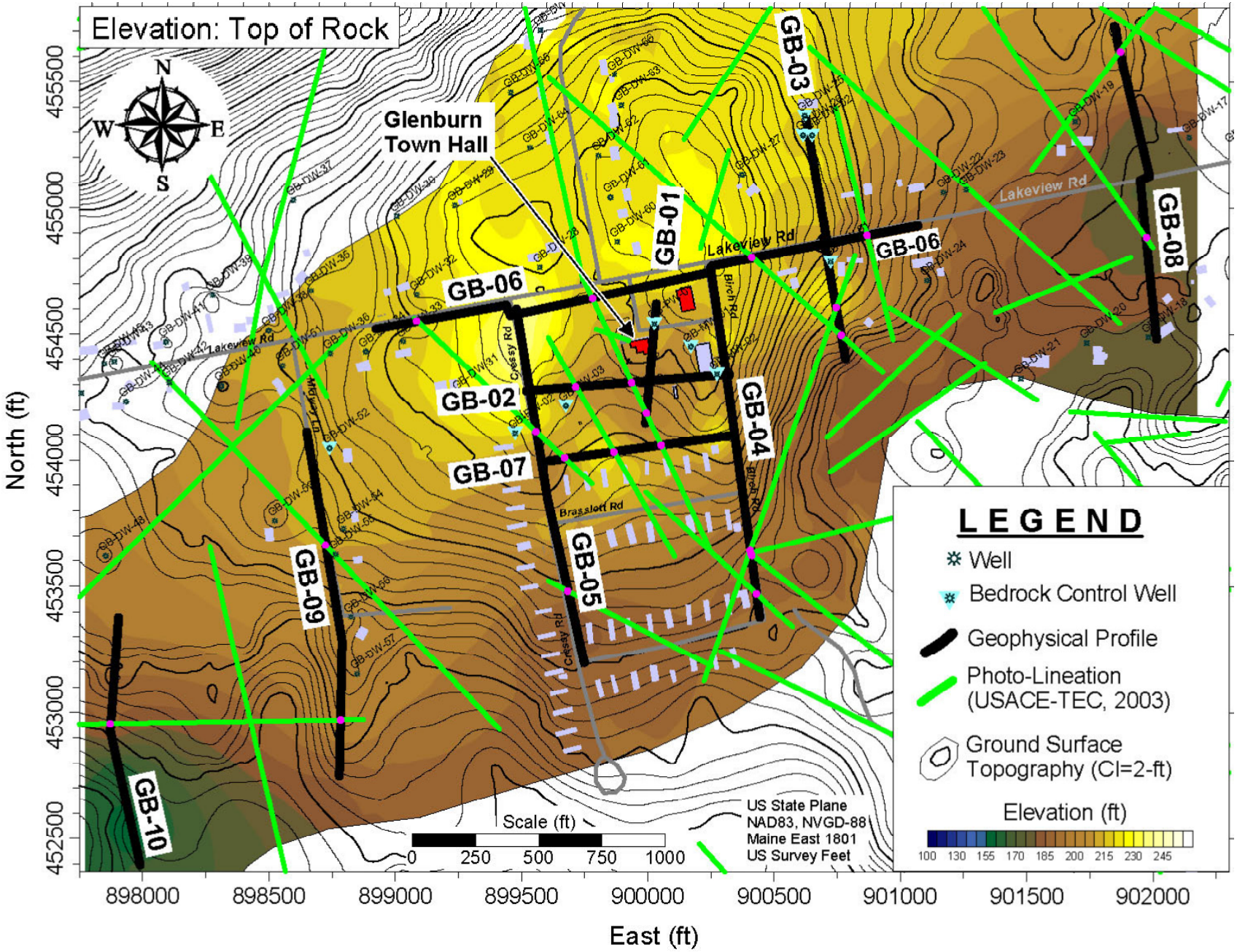
Penobscot County, Maine, Southern Part (ME612)			
No soil data available for this soil survey area.			
Totals for Area of Interest		**256.3**	**100.0%**

Figure 3.2-6C



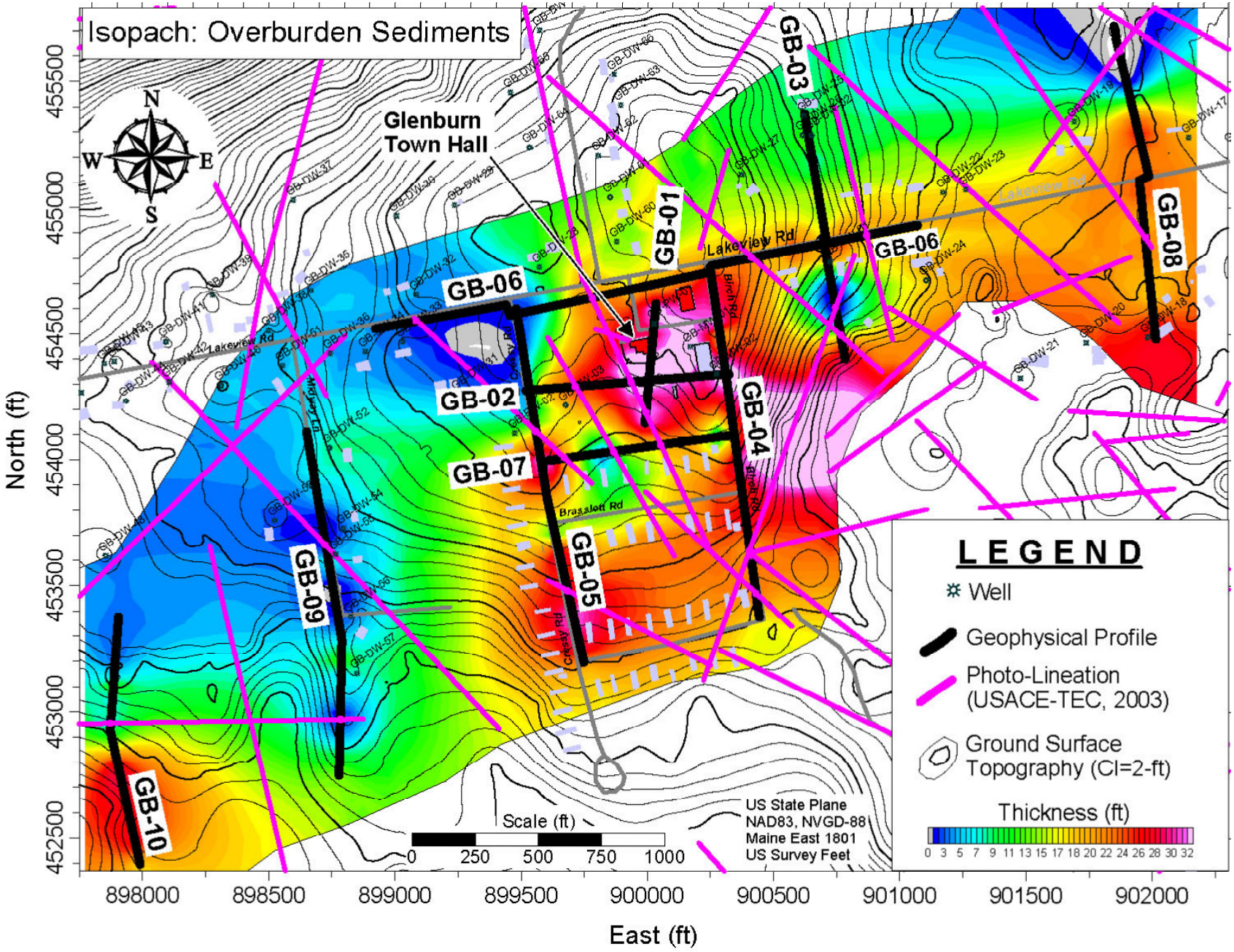
Prepared June 30, 2008 The Johnson Co., Montpelier, Vt . Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet)
Re-printed from ANL 2006 Geophysical Investigation Report prepared for USACE NED
1-2128-9_ RIFS Report_Figures_Figure 3.2-7 geophys lines from ANL2006.srf

Figure 3.2-7 Geophysical Line Locations



Prepared June 30, 2008 The Johnson Co., Montpelier, Vt . Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet)
Re-printed from ANL 2006 Geophysical Investigation Report prepared for USACE NED
1-2128-9_ RIFS Report_Figures_Figure 3.2-8 geophys top-of-rock ANL2006.srf

Figure 3.2-8 Geophysical Top-of-Rock (Wx)



Prepared June 30, 2008 The Johnson Co., Montpelier, Vt . Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet)
Re-printed from ANL 2006 Geophysical Investigation Report prepared for USACE NED
1-2128-9_ RIFS Report_Figures_Figure 3.2-9 geophys OB thick ANL2006.srf

Figure 3.2-9 Geophysical Overburden Thickness

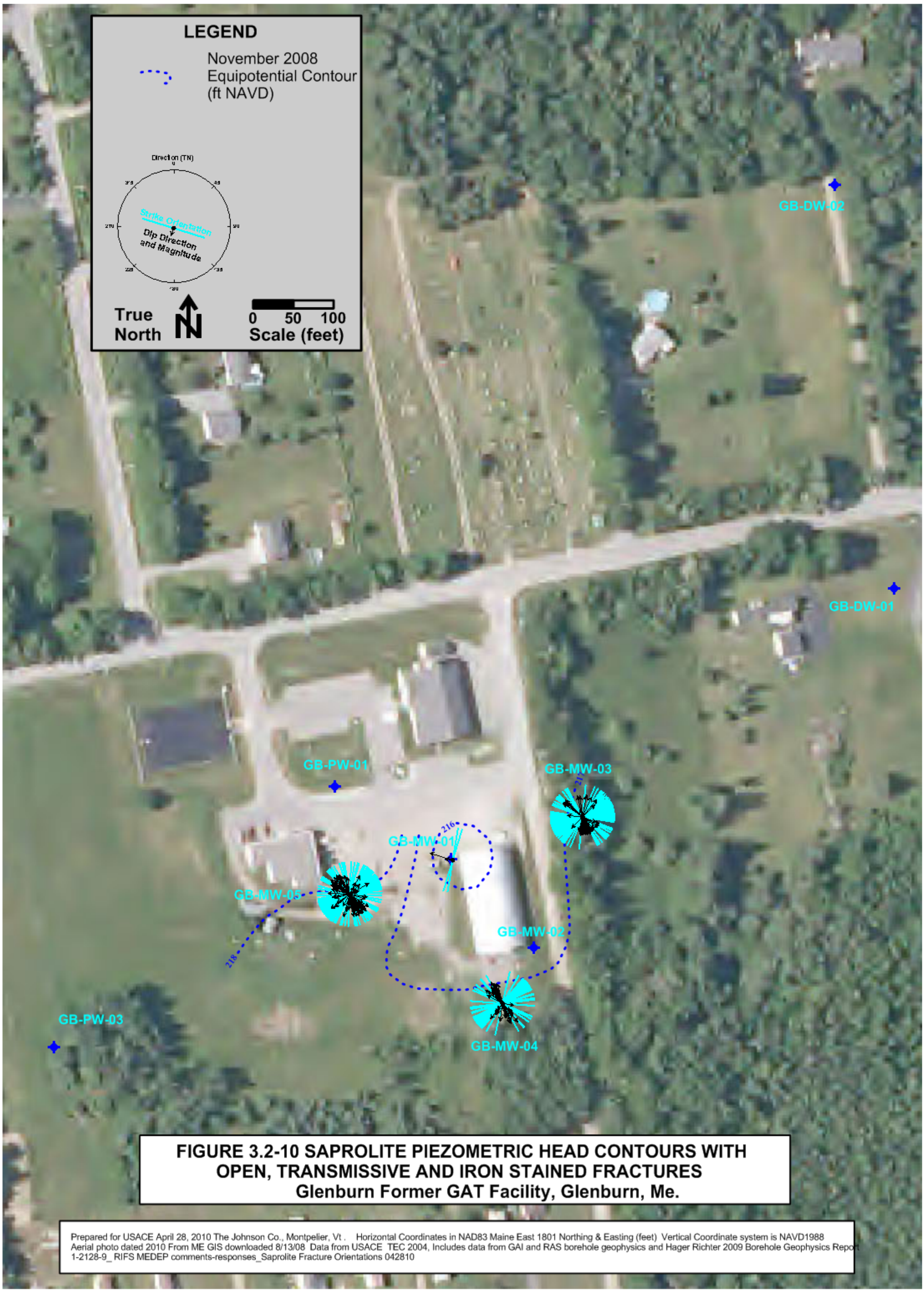


FIGURE 3.2-10 SAPROLITE PIEZOMETRIC HEAD CONTOURS WITH OPEN, TRANSMISSIVE AND IRON STAINED FRACTURES
Glenburn Former GAT Facility, Glenburn, Me.

Prepared for USACE April 28, 2010 The Johnson Co., Montpelier, Vt . Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet) Vertical Coordinate system is NAVD1988
Aerial photo dated 2010 From ME GIS downloaded 8/13/08 Data from USACE TEC 2004, Includes data from GAI and RAS borehole geophysics and Hager Richter 2009 Borehole Geophysics Report 1-2128-9_ RIFS MEDEP comments-responses_Saprolite Fracture Orientations 042810

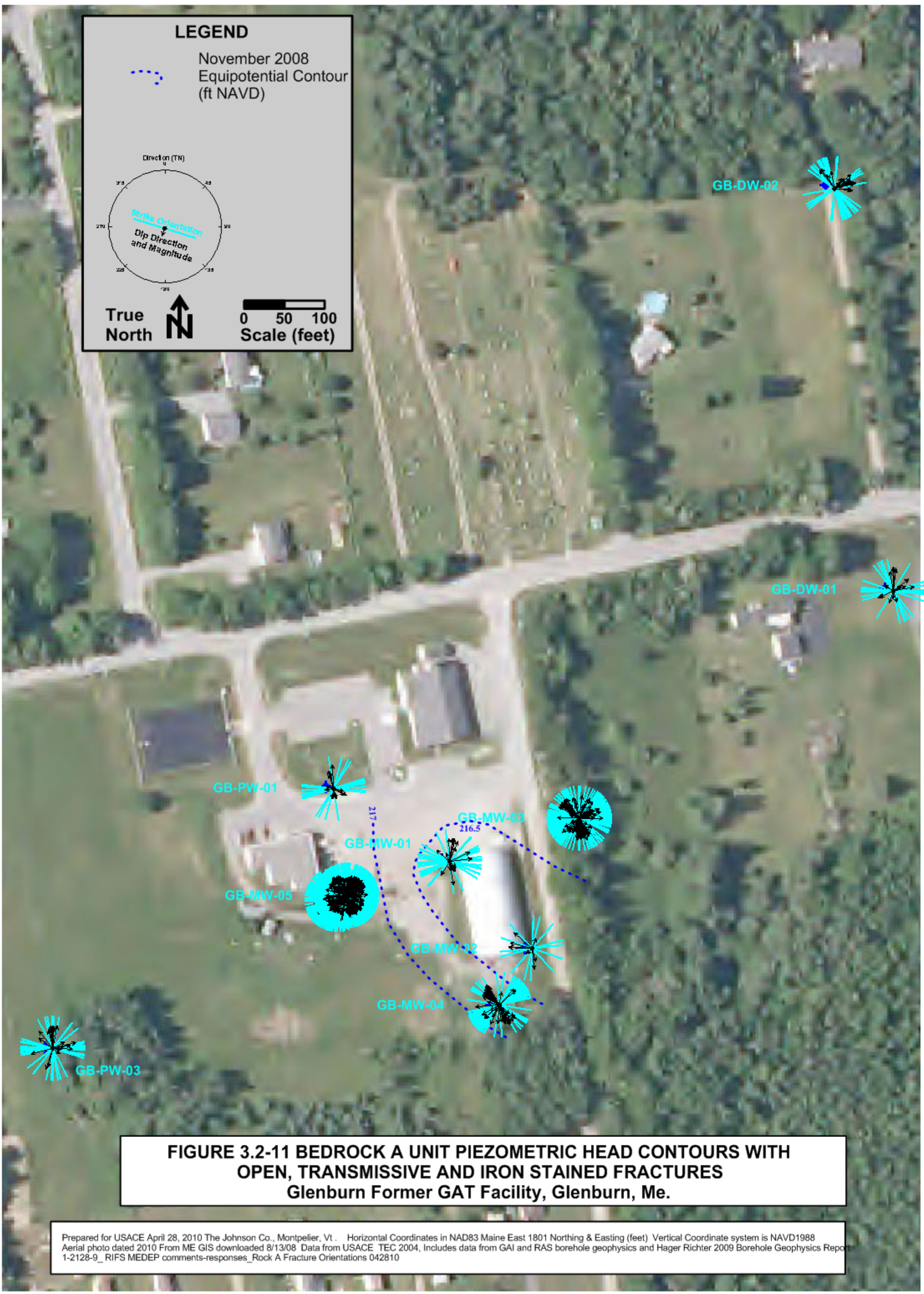


FIGURE 3.2-11 BEDROCK A UNIT PIEZOMETRIC HEAD CONTOURS WITH OPEN, TRANSMISSIVE AND IRON STAINED FRACTURES
Glenburn Former GAT Facility, Glenburn, Me.

Prepared for USACE April 28, 2010 The Johnson Co., Montpelier, Vt . Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet) Vertical Coordinate system is NAVD1988
Aerial photo dated 2010 From ME GIS downloaded 8/13/08 Data from USACE TEC 2004, Includes data from GAI and RAS borehole geophysics and Hager Richter 2009 Borehole Geophysics Report
1-2128-9_ RIFS MEDEP comments-responses_Rock A Fracture Orientations 042810

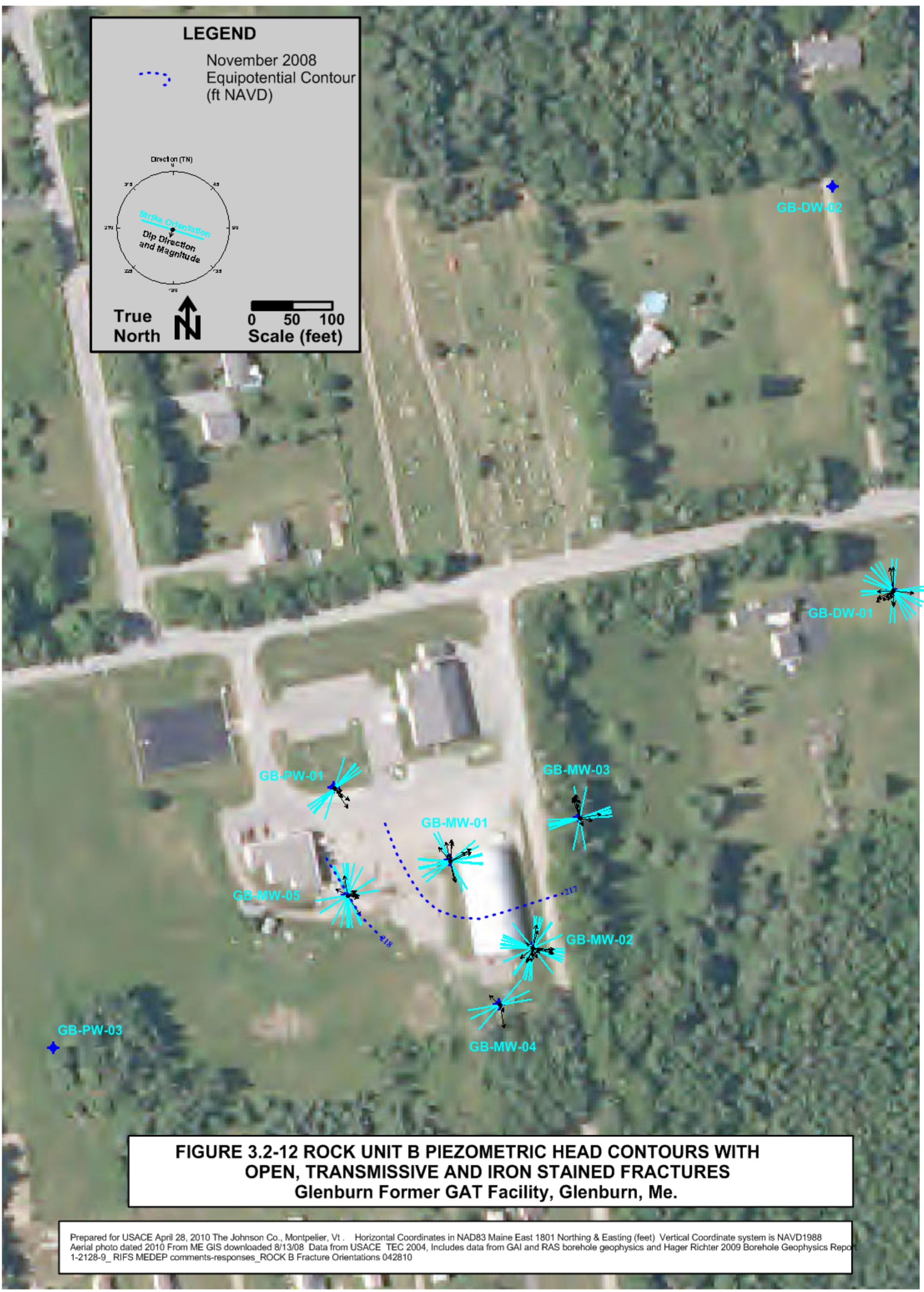


FIGURE 3.2-12 ROCK UNIT B PIEZOMETRIC HEAD CONTOURS WITH OPEN, TRANSMISSIVE AND IRON STAINED FRACTURES
Glenburn Former GAT Facility, Glenburn, Me.

Prepared for USACE April 28, 2010 The Johnson Co., Montpelier, Vt . Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet) Vertical Coordinate system is NAVD1988
Aerial photo dated 2010 From ME GIS downloaded 8/13/08 Data from USACE TEC 2004, Includes data from GAI and RAS borehole geophysics and Hager Richter 2009 Borehole Geophysics Report
1-2128-9_ RIFS MEDEP comments-responses_ROCK B Fracture Orientations 042810

Prepared for USACE 10-15-10 The Johnson Co., Montpelier, Vt .
Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet)
Aerial photo dated 2008 from ME GIS downloaded 081308.
Data from ANL 2006, USACE ERDT TEC 2003, GAI 2005.
1-2128-9_2011 final RIFS_supporting and supeceded files_Figure 3.2-13 geophysicsmap 061411.srf

GB-DW-60
GB-DW-28
GB-DW-01
GB-PW-01
GB-MW-03
GB-MW-01
GB-MW-05
GB-MW-06
GB-MW-02
GB-MW-04
GB-PW-03
GB-PW-02
?

DATA KEY

- Photo Lineament
- Bedrock Well
- Primary Borehole Transmissive Feature Orientation in Zone of Interest (average of selected features)
- Low Velocity/Resistivity by Surface Geophysics
- Interpreted Transmissive Rock Zone

True North

Scale (feet)

0 0.056mi

Figure 3.2-13
Surface Geophysics Summary Map



The Johnson Co., Montpelier, Vt . Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet) Vertical Coordinate system is NAVD1988
Aerial photo dated 2008 From ME GIS downloaded 8/13/08 Data from USACE TEC 2004, Includes data from GAI and RAS borehole geophysics and USACE Test Trench Report 1-2128-9_RIFS Report_GlenburnFinalRIFS Docs.srf-pdf

FIGURE 3.3-1
All On-Site Sample Locations with Historic Soil and Soil Gas TCE Detections
Glenburn Former GAT Facility, Glenburn, ME.

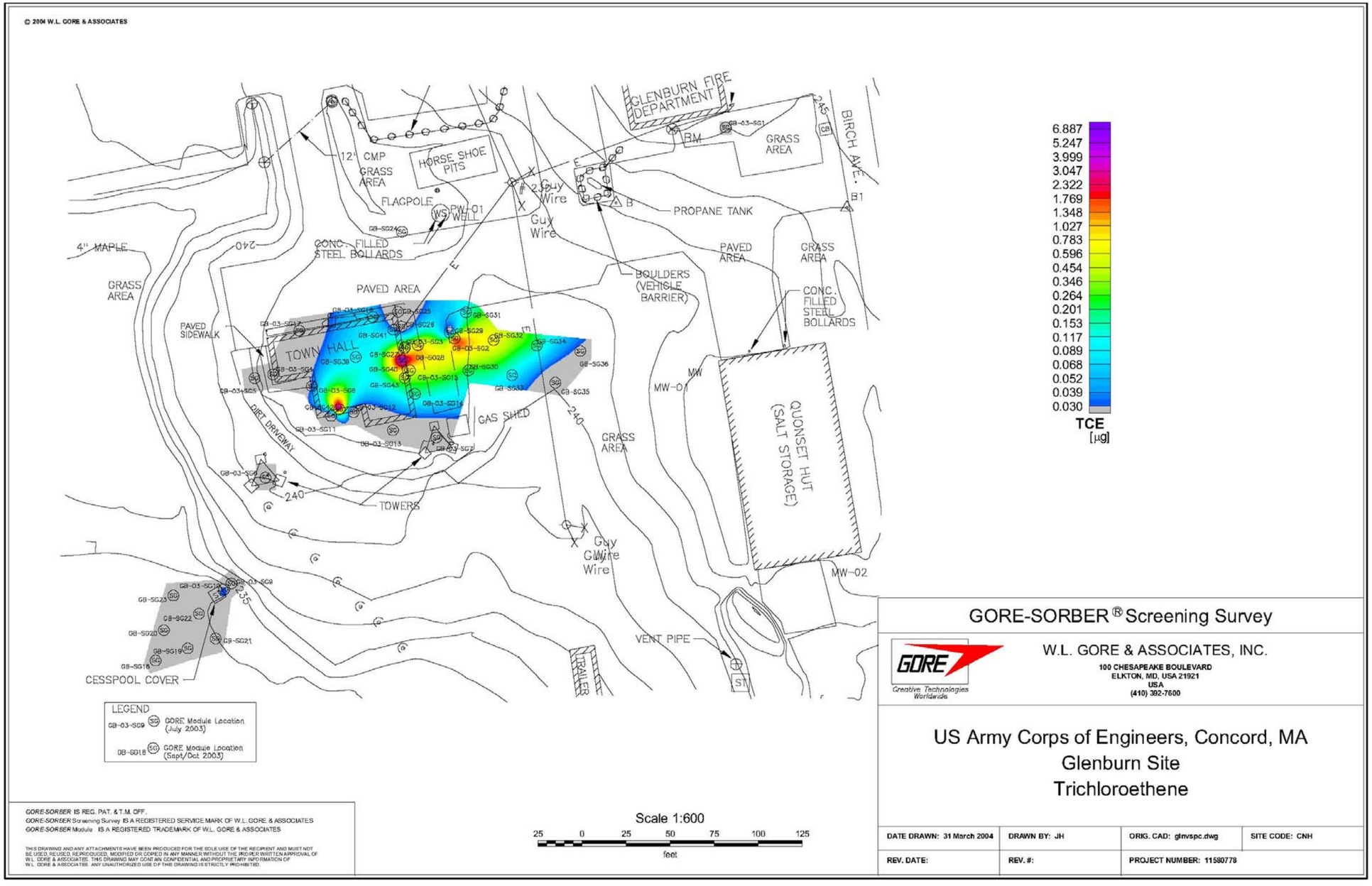


FIGURE 3.3-2 Passive Soil Gas Sampling Locations and Results for TCE

FIGURE 3.3-3

Northeast-Southwest TCE Concentrations in Groundwater versus Distance from GB-MW-01

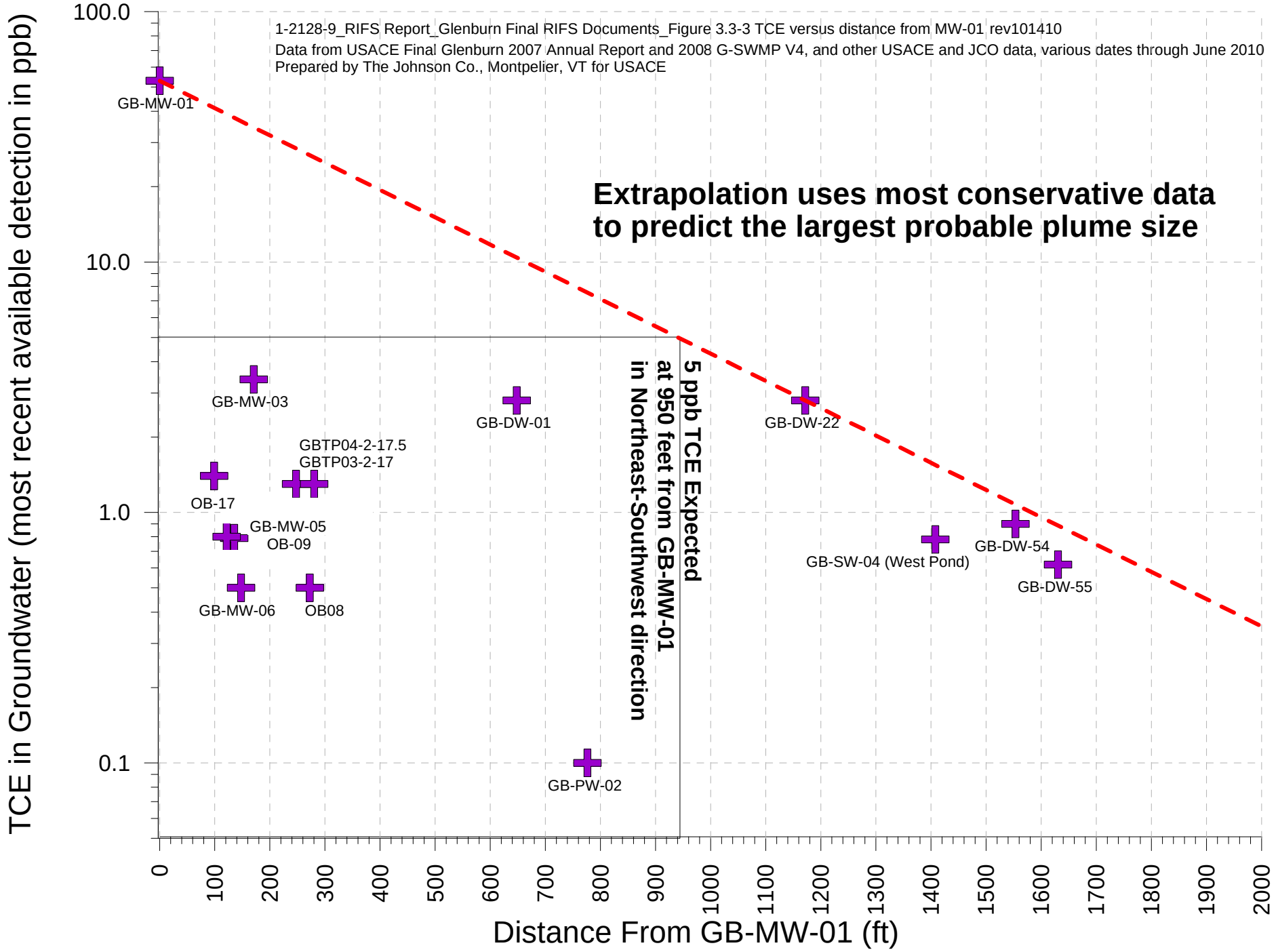
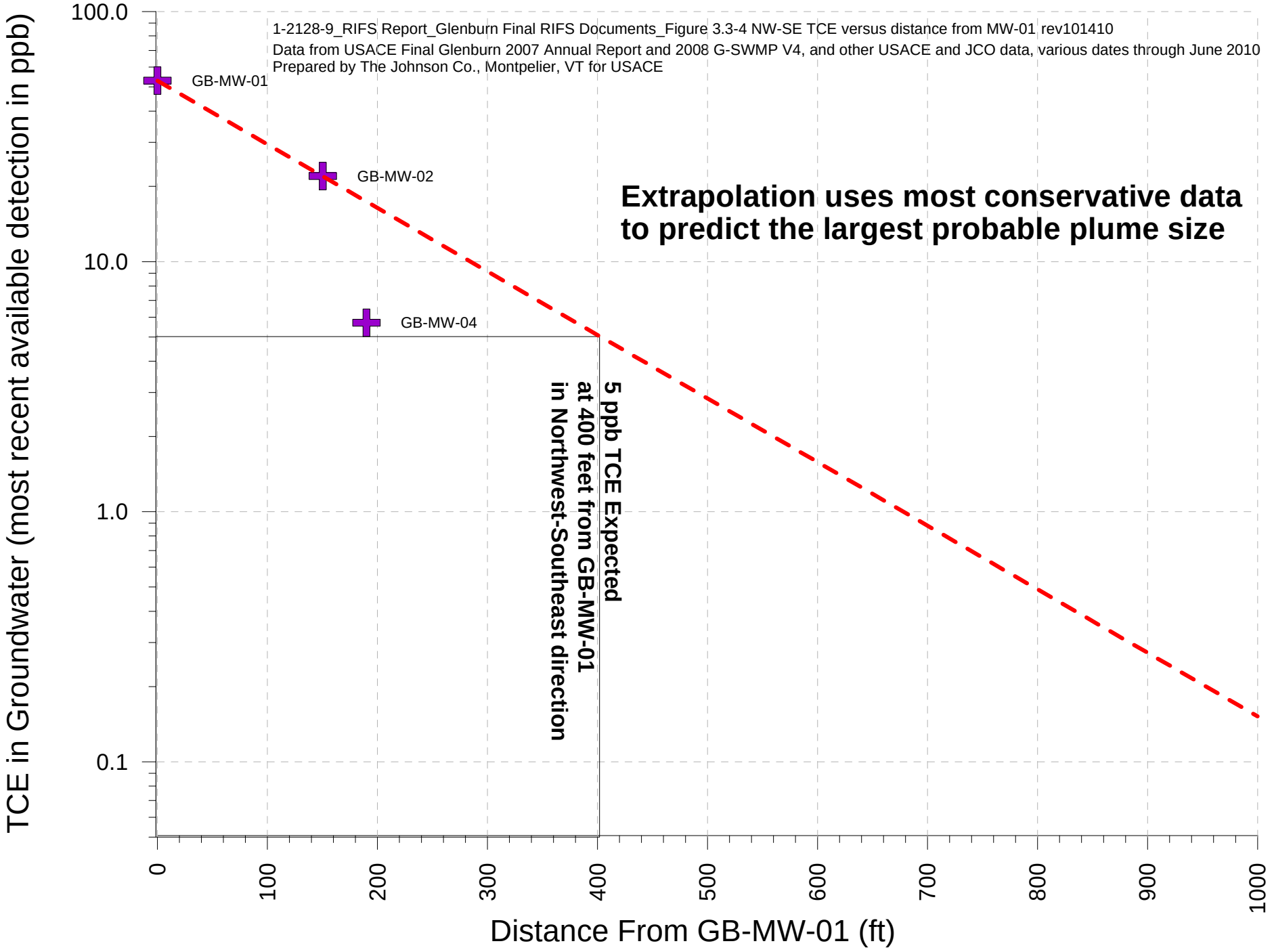


FIGURE 3.3-4

Northwest-Southeast TCE Concentrations in Groundwater versus Distance from GB-MW-01



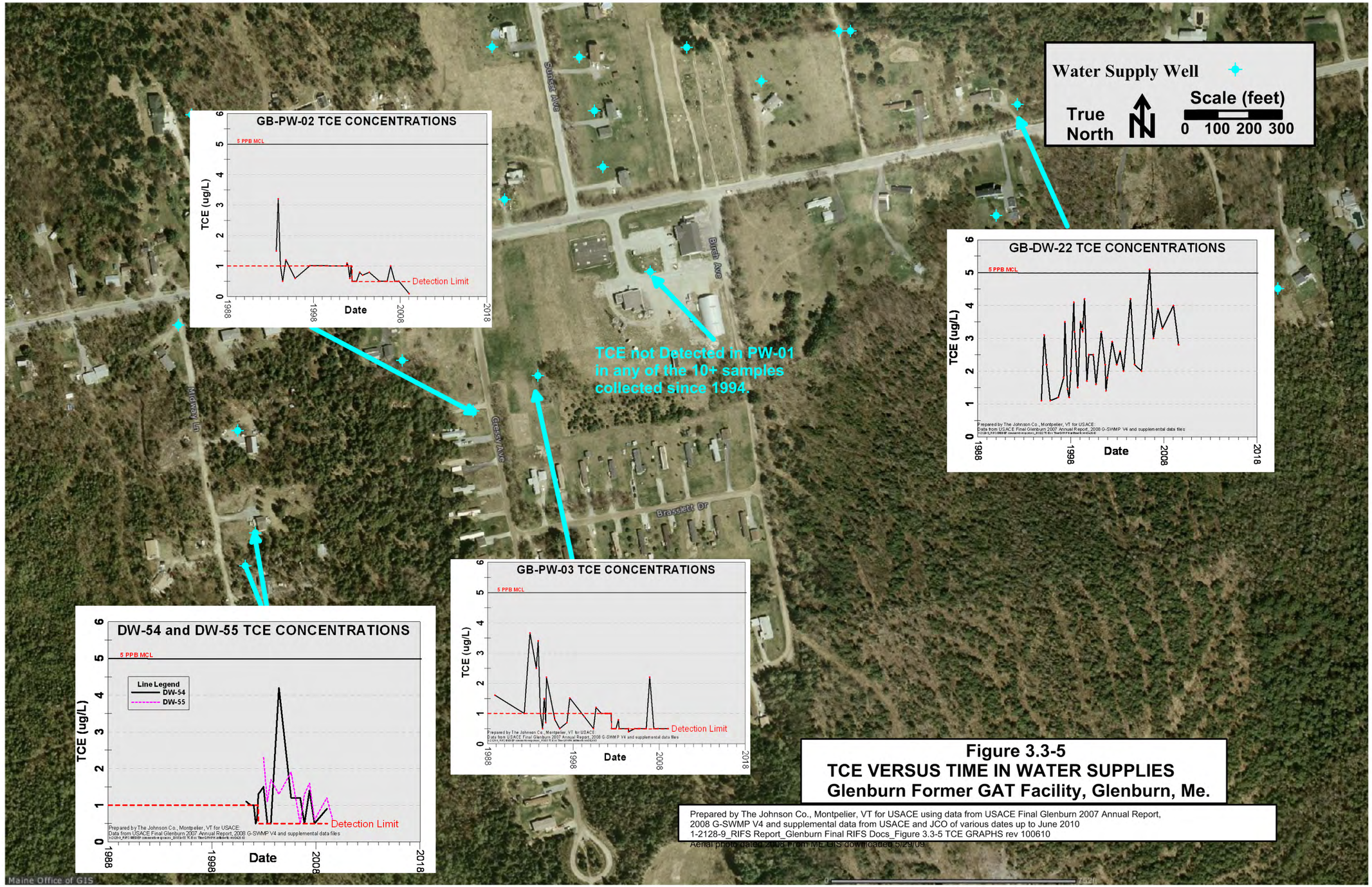


Figure 3.3-5
TCE VERSUS TIME IN WATER SUPPLIES
Glenburn Former GAT Facility, Glenburn, Me.

Prepared by The Johnson Co., Montpelier, VT for USACE using data from USACE Final Glenburn 2007 Annual Report,
2008 G-SWMP V4 and supplemental data from USACE and JCO of various dates up to June 2010
1-2128-9_RIFS Report_Glenburn Final RIFS Docs_Figure 3.3-5 TCE GRAPHS rev 100610
Aerial photo dated 2008 from ME GIS downloaded 5/29/09

Prepared by The Johnson Co., Montpelier, VT for USACE
Photo from ME GIS, data from USACE Final Glenburn 2007 Annual Report, 2008 G-SWMP V4.doc and subsequent USACE monitoring reports through 2012
1-2129-9_2012 RIFS_010313 submittal_Appendix 8 Raw Data (CD only)_Figures_Revised Figure 3.3-6 Public and DW Wells 010313.srf

SCALE IN fEET

0 500 1000 1500 2000

Sunset Ave

Deer Run Rd

Lakeview Rd

Lucky Landing Rd

Approximate Property Boundary Line

Birch Ave

Brassett Dr

Beech Grove Ave

Cushing Dr

Luckeys Landing Rd

Pine Hill Dr

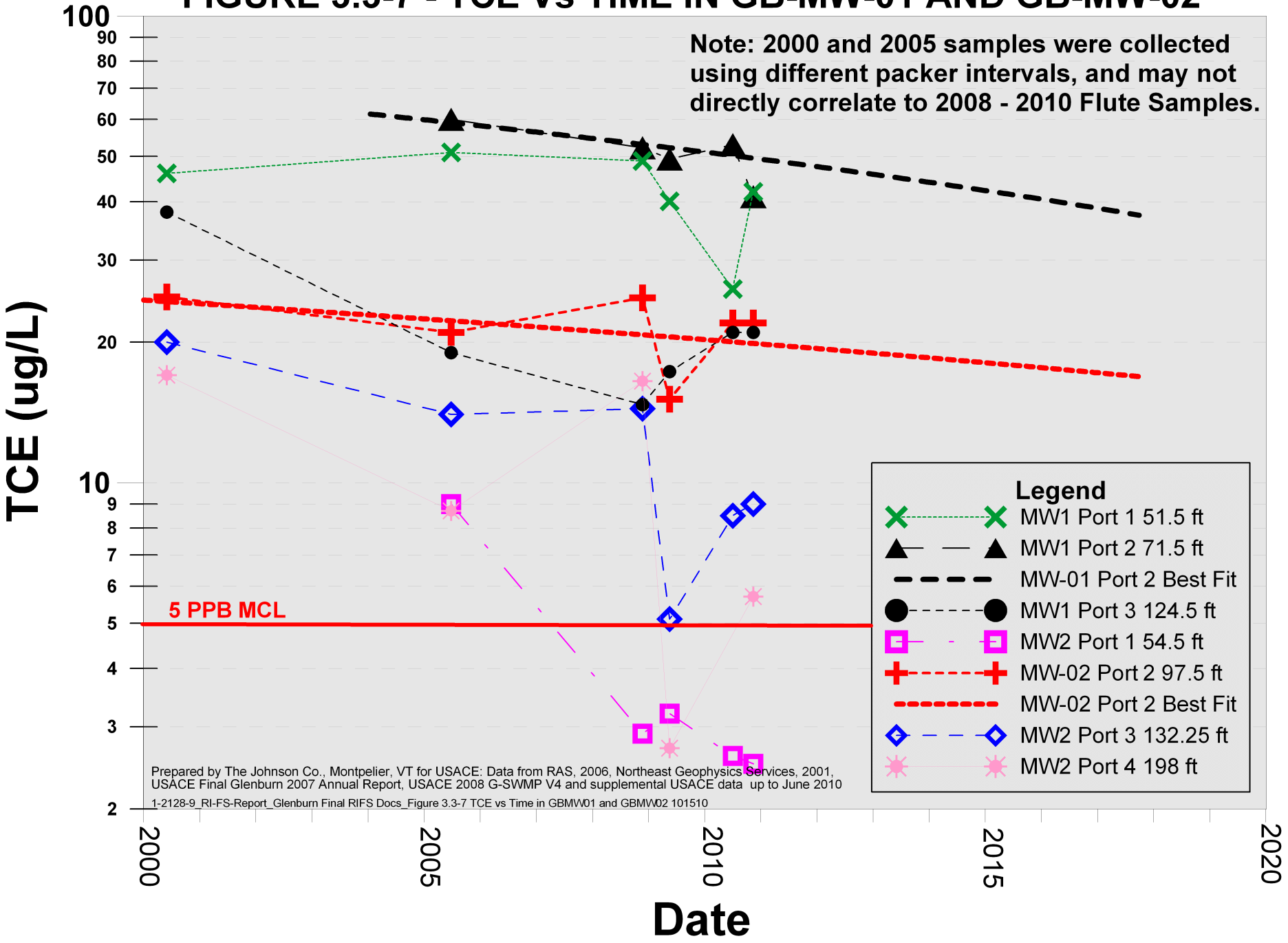
Water Quality Key

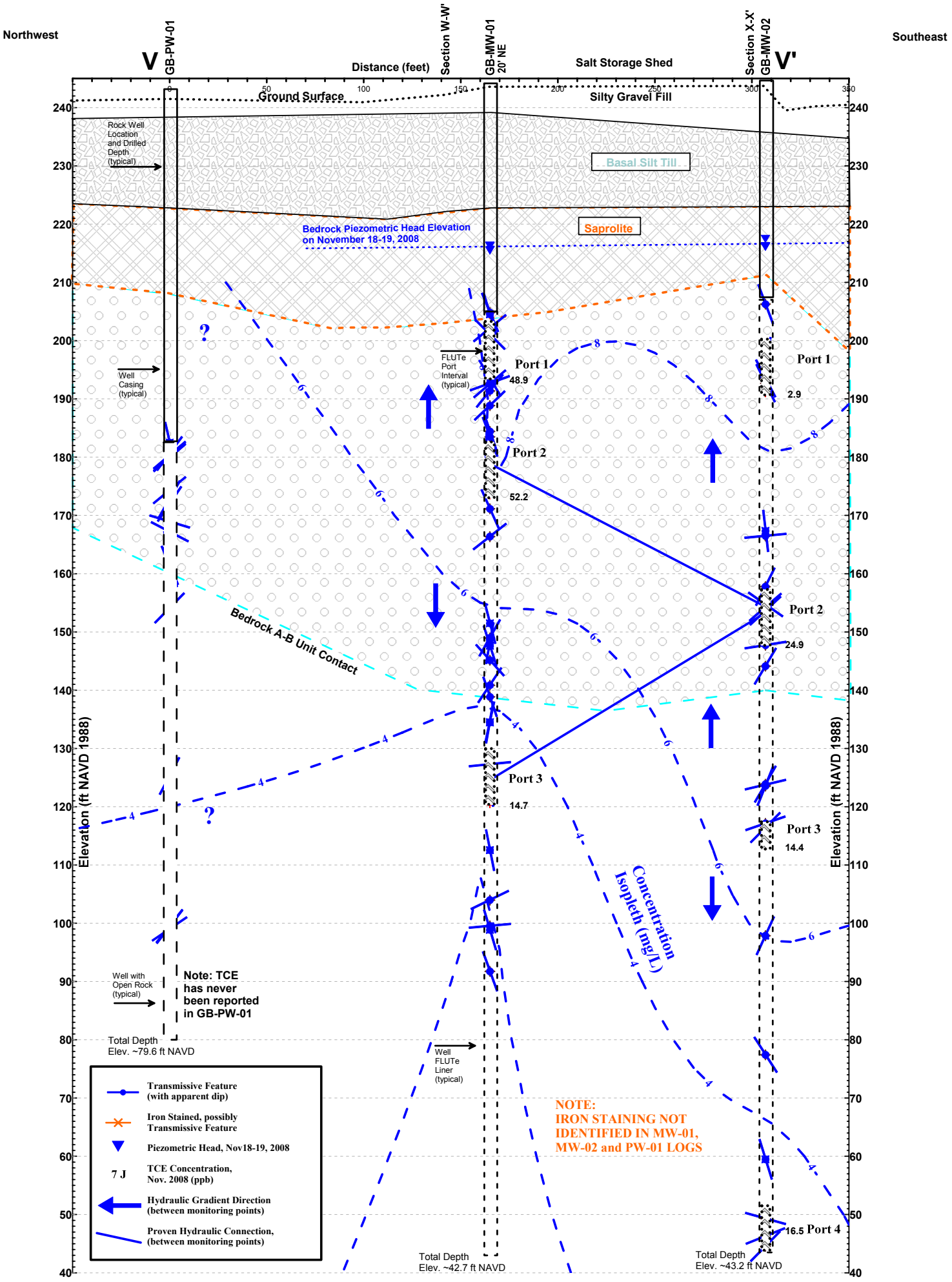
Symbols indicate most recent concentration up to April, 2012

- Maximum Extent of TCE Ever Detected
- No TCE Detected at the Reporting Limit of 0.5 or 1 ppb
- 0.5 to 2.5 ppb TCE
- 2.5 to 5.0 ppb TCE
- 5.0 to 46 ppb TCE

Figure 3.3-6
TRICHLOROETHENE CONCENTRATIONS IN GROUNDWATER AND POREWATER MOST RECENTLY AVAILABLE DATA
Glenburn Former GAT Facility, Glenburn, ME

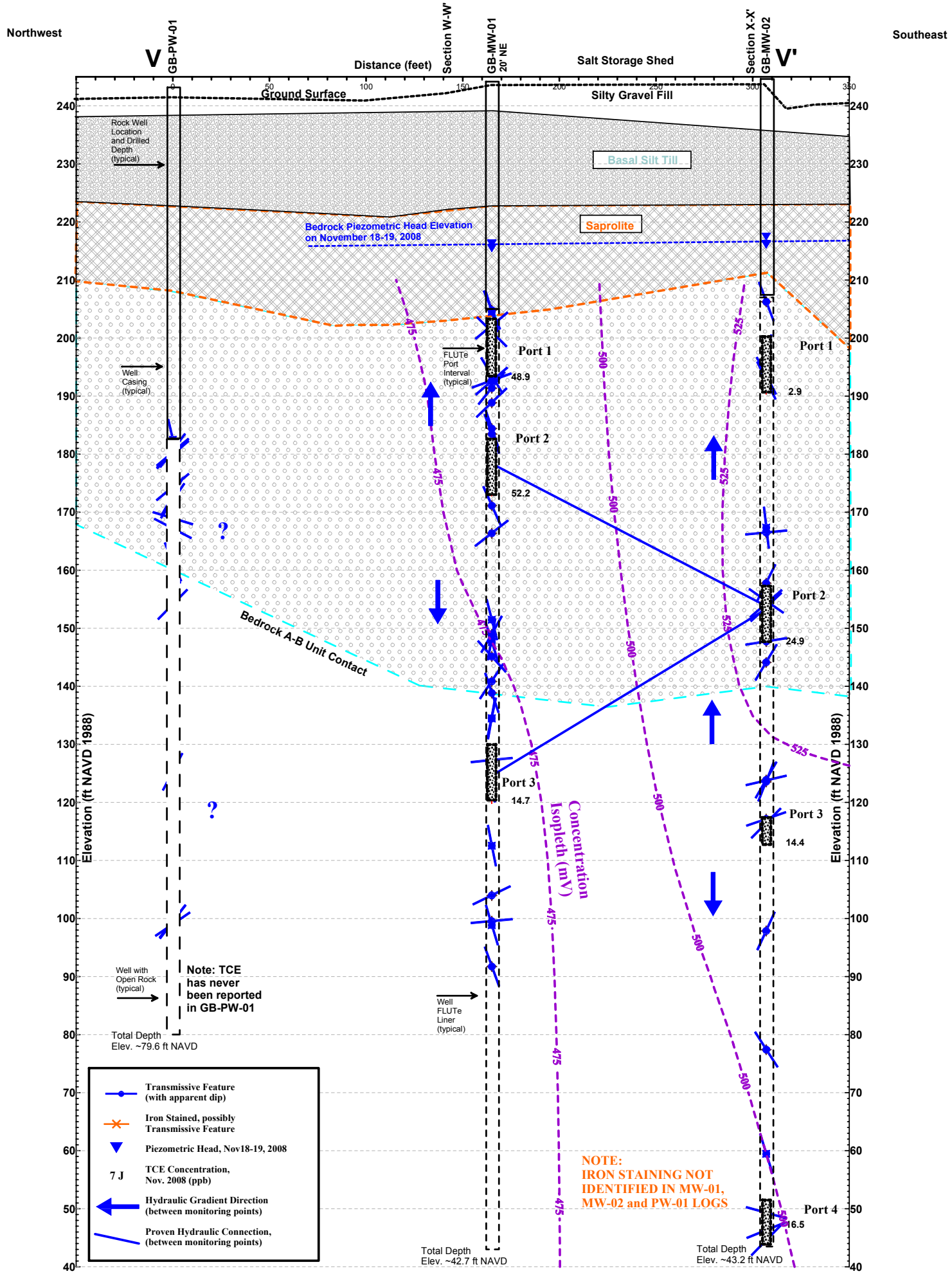
FIGURE 3.3-7 - TCE Vs TIME IN GB-MW-01 AND GB-MW-02





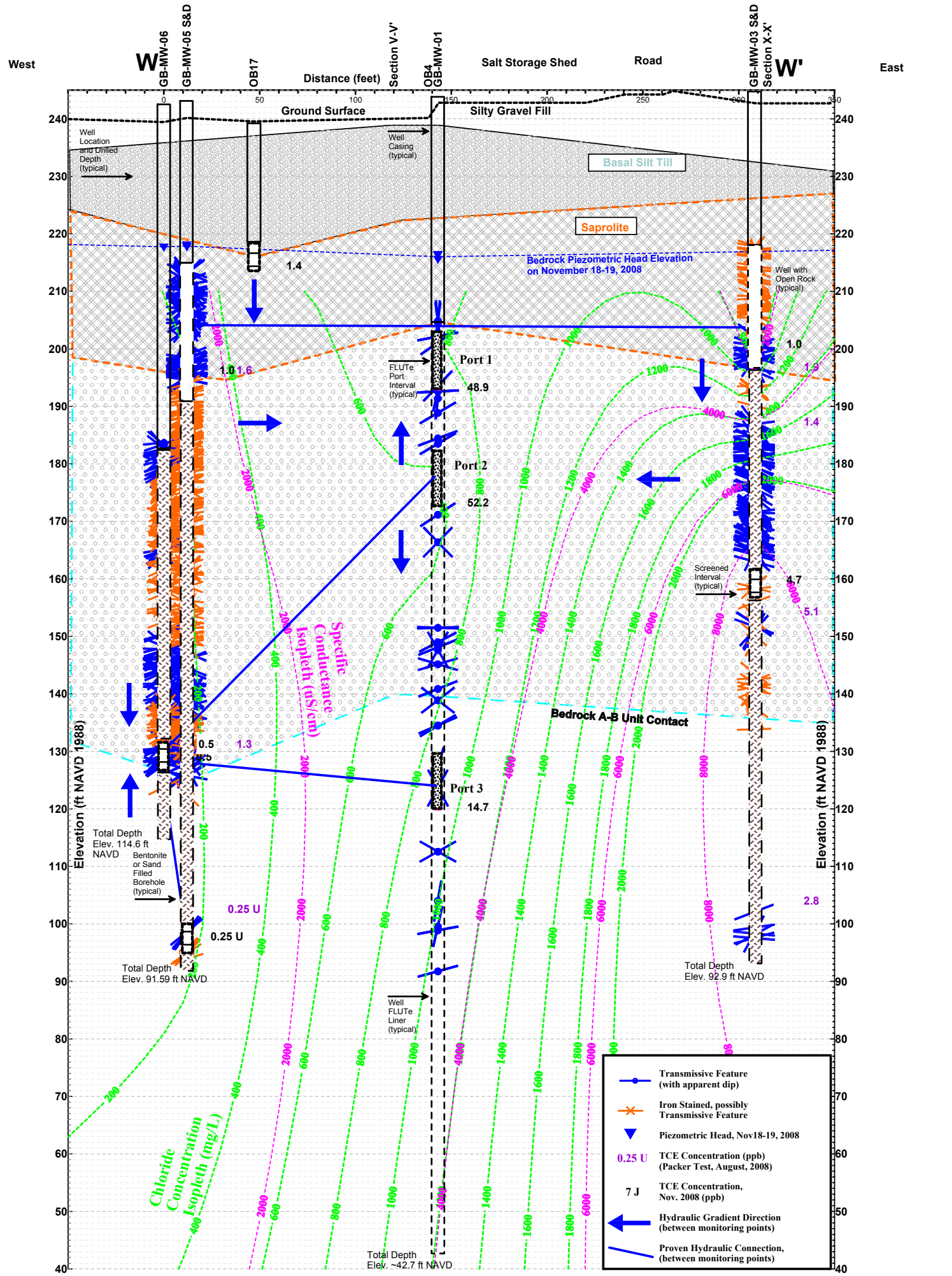
Prepared by The Johnson Co., Montpelier, Vt. for USACE NED
1-2128-9 RIFS FIELD DATA X-Sect VV DO 022509.srf
Apparent dip corrected for X-section direction and 3:1 VE.
Data in: Map and Profile rock WQ data 021309.xls and X-SECT V W AND X 022509.xls

FIGURE 3.3-8 Autumn 2008 Dissolved Oxygen Conc.Cross-Section V-V'
Glenburn Former GAT Facility Vertical Exageration of 3:1



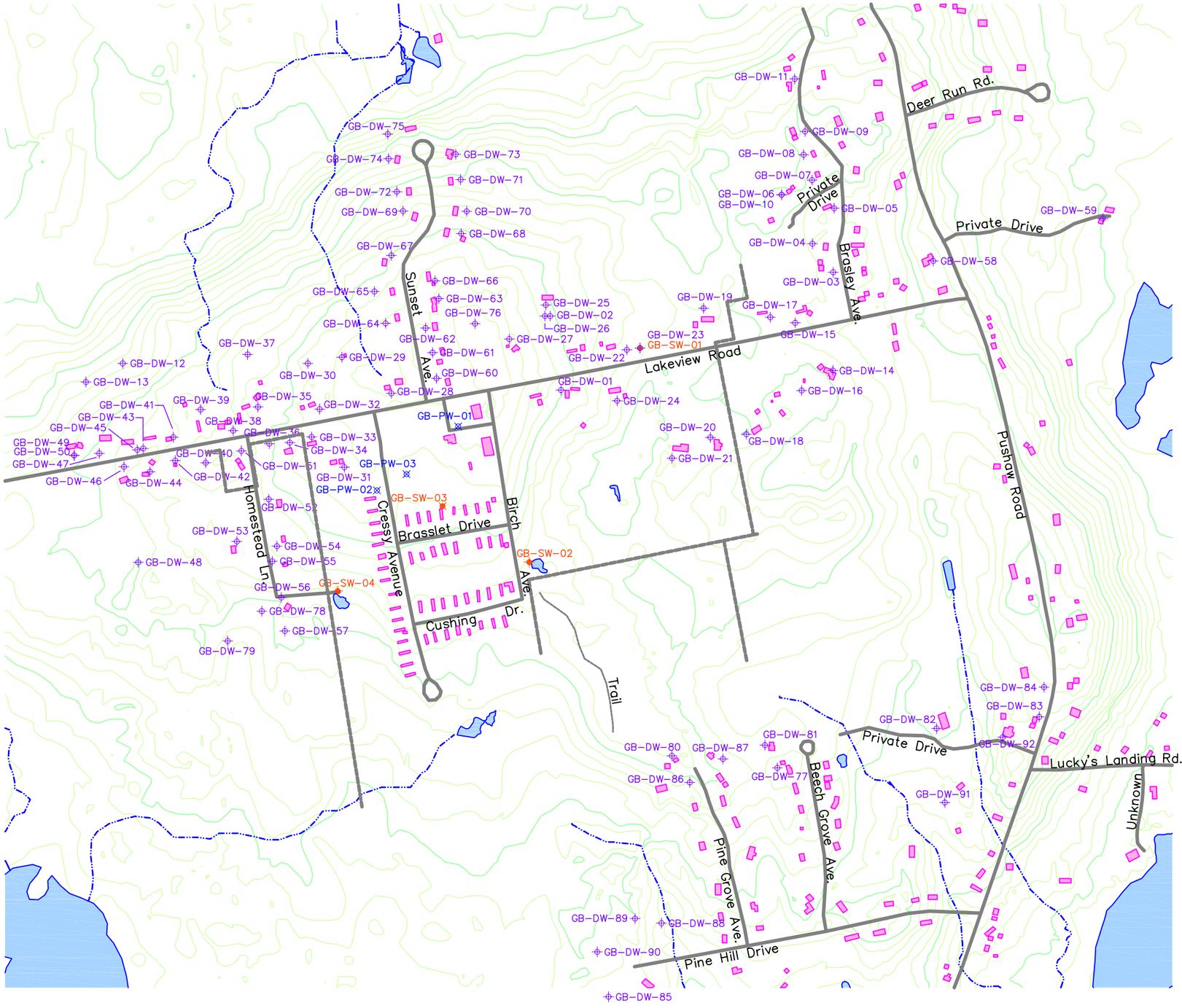
Prepared by The Johnson Co., Montpelier, Vt. for USACE NED
1-2128-9 RIFS FIELD DATA X-Sect VV ORP 022509.srf
Apparent dip corrected for X-section direction and 3:1 VE.
Data in: Map and Profile rock WQ data 021309.xls and X-SECT V W AND X 022509.xls

FIGURE 3.3-9 Autumn 2008 ORP (SHE corrected) Cross-Section V-V'
Glenburn Former GAT Facility Vertical Exageration of 3:1



Prepared by The Johnson Co., Montpelier, Vt. for USACE NED
1-2128-9 RIFS FIELD DATA X-Sect WW CLSC 022509.srf
Data in: Map and Profile rock WQ data 021309.xls and X-SECT V W AND X 022509.xls
Apparent dip corrected for X-section direction and 3:1 VE.
Sources include Hager Richter Borehole Geophysics, USACE survey data, and borehole/surface geophysics data

FIGURE 3.3-10 Autumn 2008 Chloride and Specific Conductance Section W-W'
Glenburn Former GAT Facility Vertical Exageration of 3:1



LEGEND

- ON-SITE GROUNDWATER SAMPLING LOCATION
- OFF-SITE GROUNDWATER SAMPLING LOCATION
- ON-SITE PORE WATER SAMPLLING LOCATION
- OFF-SITE PORE WATER SAMPLLING LOCATION
- EXISTING BUILDING LOCATION
- SURFACE WATER BODY
- SURFACE WATER / DRAINAGE
- 5' GROUND SURFACE CONTOUR (FT NAD83)
- 25' GROUND SURFACE CONTOUR (FT NAD83)
- ROAD

NOTE: CONTENTS FROM USACE TEC 2004

N

TRUE NORTH

0 250 500 750

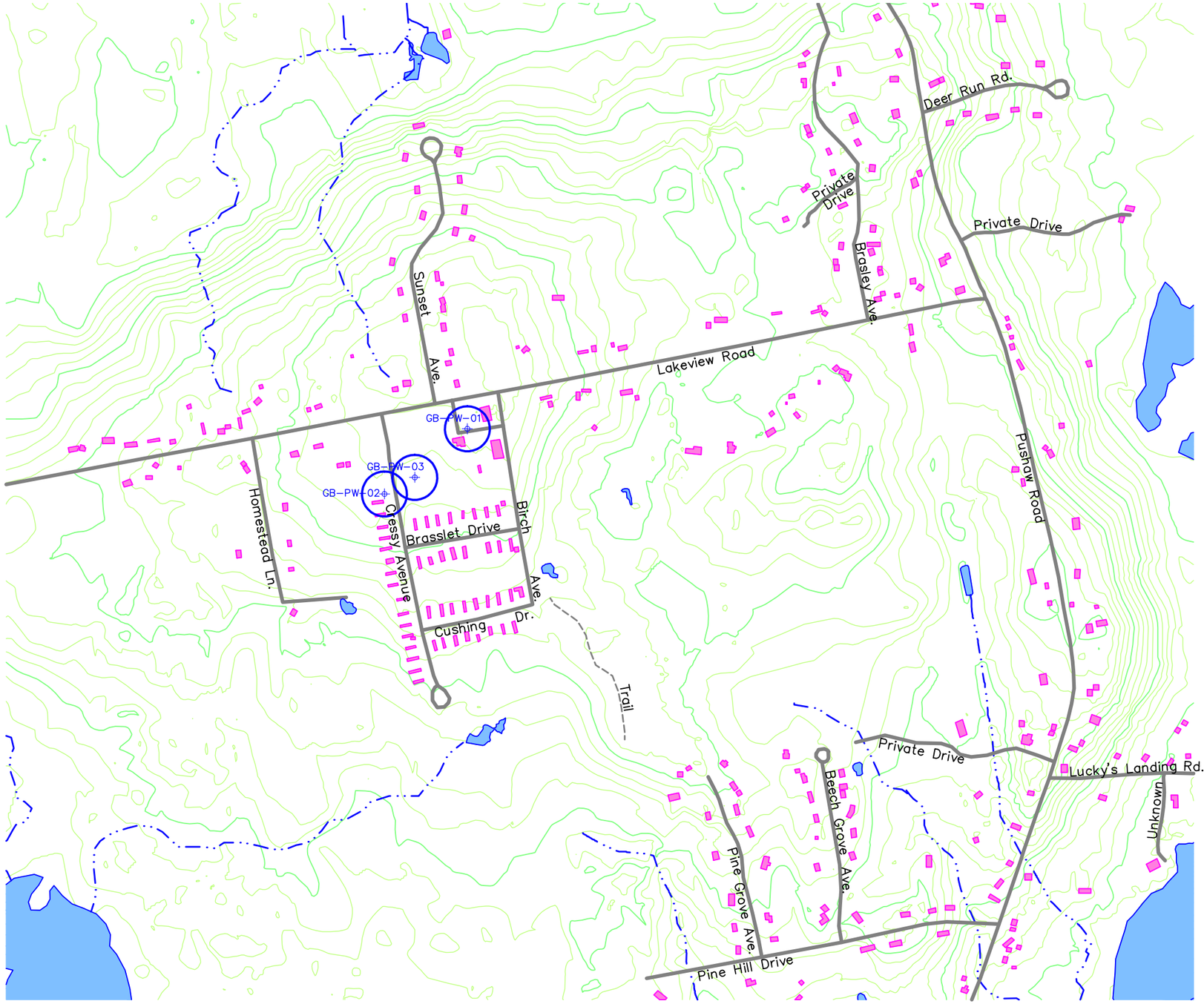
SCALE IN FEET

Sample Locations.dwg

The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602
(802) 229-4600

Drawn by: TJK Date: 10/19/10
Chk'd by: SMD Date: 10/19/10
Scale: As Shown Project: 1-2128-9

FIGURE 3.4-1: WATER SUPPLY AND PORE WATER SAMPLE LOCATIONS FORMER GAT STUDY AREA GLENBURN, MAINE



LEGEND

- PUBLIC WATER SUPPLY WELL LOCATION
- EXISTING BUILDING LOCATION
- SURFACE WATER BODY
- SURFACE WATER / DRAINAGE
- 5' GROUND SURFACE CONTOUR (FT. NAD83)
- 25' GROUND SURFACE CONTOUR (FT. NAD83)
- ROAD
- WELL HEAD PROTECTION AREAS

N

TRUE NORTH

0 250 500 750

SCALE IN FEET

NOTE: CONTENTS FROM USACE TEC 2004

Sample Locations.dwg

The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602
(802) 229-4600

Drawn by: TJK Date: 5/19/09
Chk'd by: Date:
Scale: As Shown Project: 1-2128-9

FIGURE 3.4-2
WELL HEAD PROTECTION AREAS
FORMER GAT STUDY AREA
GLENBURN, MAINE

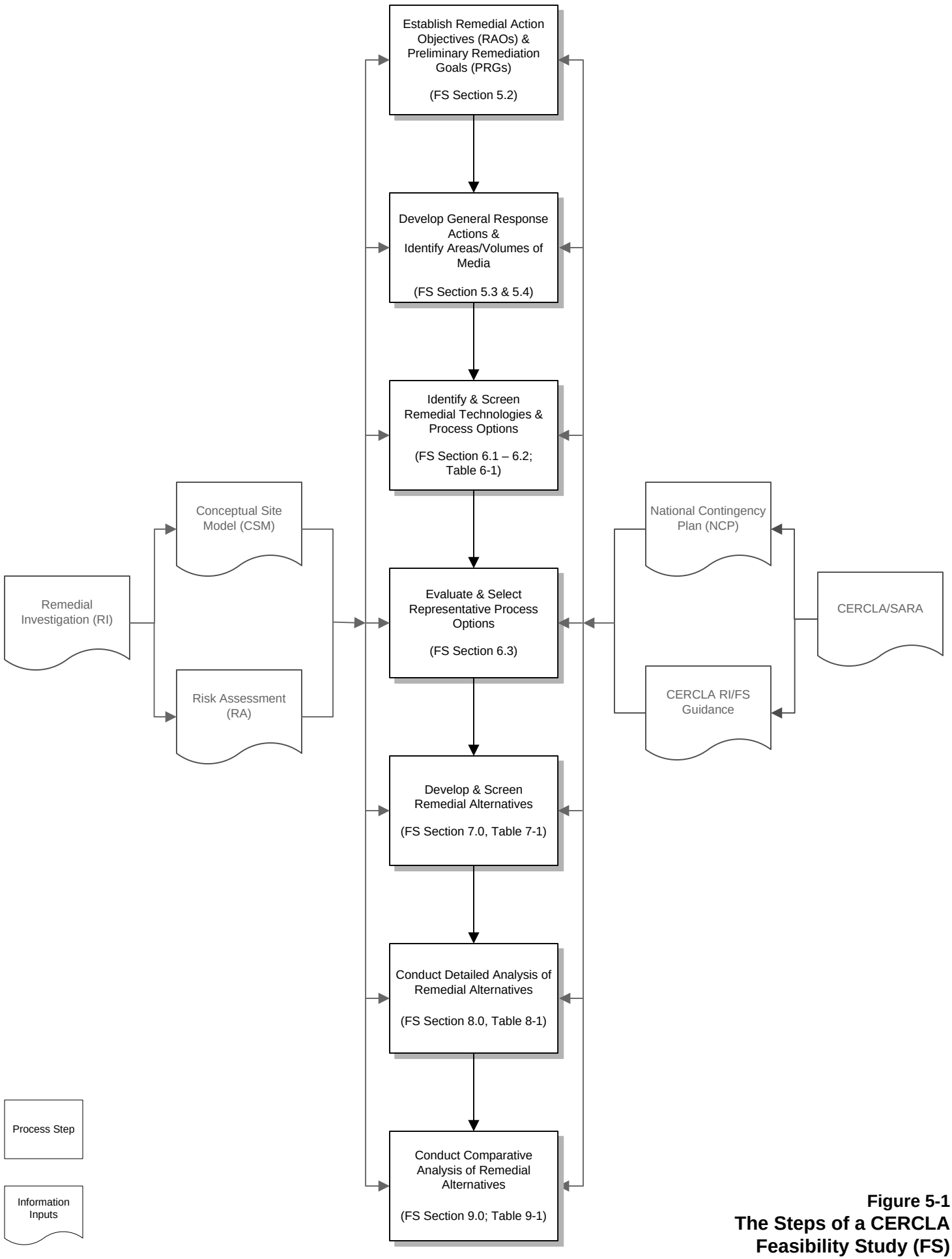
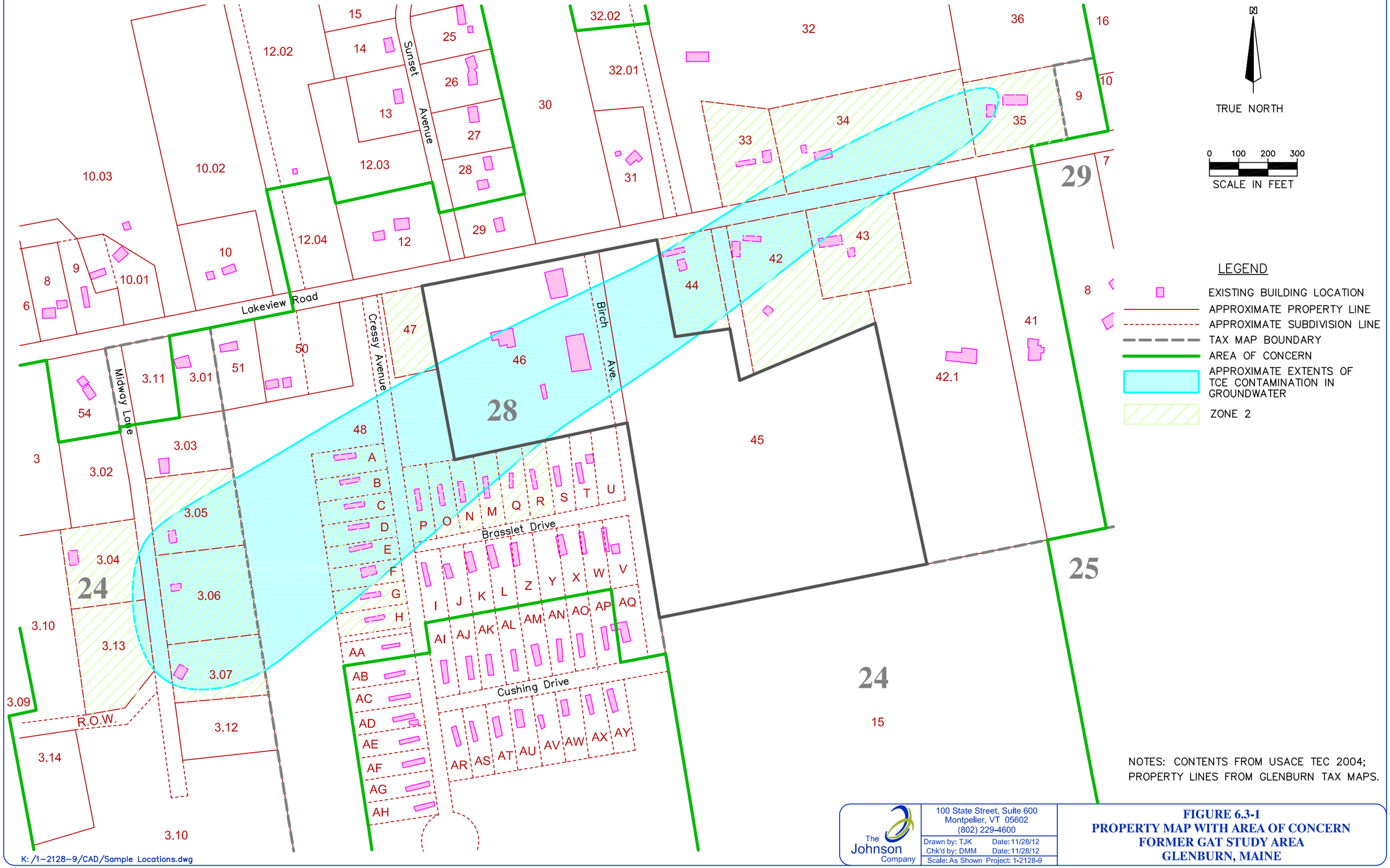


Figure 5-1
The Steps of a CERCLA Feasibility Study (FS)



NOTES: CONTENTS FROM USACE TEC 2004; PROPERTY LINES FROM GLENBURN TAX MAPS.

The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602
(802) 229-4600

Drawn by: TJK Date: 11/28/12
Chk'd by: DMM Date: 11/28/12
Scale: As Shown Project: 1-2128-9

FIGURE 6.3-1
PROPERTY MAP WITH AREA OF CONCERN
FORMER GAT STUDY AREA
GLENBURN, MAINE

K: /1-2128-9/CAD/Sample Locations.dwg

APPENDIX 1

HISTORICAL PHOTO INTERPRETATION

Glenburn, Maine

GLENBURN TOWN HALL AREA

GIS-Based Historical Photo Analysis

1939-1969

Produced for the

New England District

by the US Army Engineer Research and Development Center,
Topographic Engineering Center,
Alexandria, Virginia

March 2004

US Army Corps of Engineers®

NOTICE

The views, opinions, and conclusions in this report are those of the author and should not be construed as official Department of Army positions or policy unless so designated by other documentation.

INTRODUCTION

This document presents the results of a historical aerial photographic analysis for the former U.S. Air Force (USAF) Guidance and Tracking Facility, Glenburn, Maine.

The US Army Engineer Research and Development Center, Topographic Engineering Center (TEC), Hydrologic and Environmental Analysis Branch of the Operations Division was tasked to search, collect, and analyze historical aerial photographic records relative to this Formerly Used Defense Site (FUDS) area covering its operational period. Areas of potential concern (such as ground scars) were identified and mapped based on the analysis of collected historical aerial photographs. In addition to this analysis TEC has produced a photogeologic analysis ("fracture trace study) in August 2003 for the Glenburn area.

The analysis presented in this document is primarily based upon interpretation of black and white, vertical aerial photography spanning selected years from 1939 to 1969. Stereo viewing was employed where overlapping photographs permitted its use. Selected features, derived through photo analysis, are displayed on selected photos in this study. A year 2000 digital orthophoto (or photomap) created by TEC was used to support this analysis. Also, selected rectified images were created to support mapping and analysis for various years. ERDAS 8.6 software was used to rectify these selected historical photos to the 2000 photomap of the site. ESRI's ArcView 3.2 software was used to digitize and create a historical vector layers (shape file format) for the site. This data can be shown in a Geographic Information System (GIS) such as ArcView. Digital analysis is presented using ArcView 3.2 shape files and that data along with digital orthophotos, rectified photos, maps and the report are on a CDROM. PowerPoint 2000 was used to create this report.

The mapping coordinates for this project are referenced to Maine State Plane East, units in feet, NAD83 horizontal datum.

Brief Site History (as provided by the New England District)

In 1958, the United States Air Force (USAF) acquired 9.9 acres from the late George Cressy to construct a Guidance And Tracking (GAT) facility in Glenburn, Maine for the BOMARC Missile Defense system.

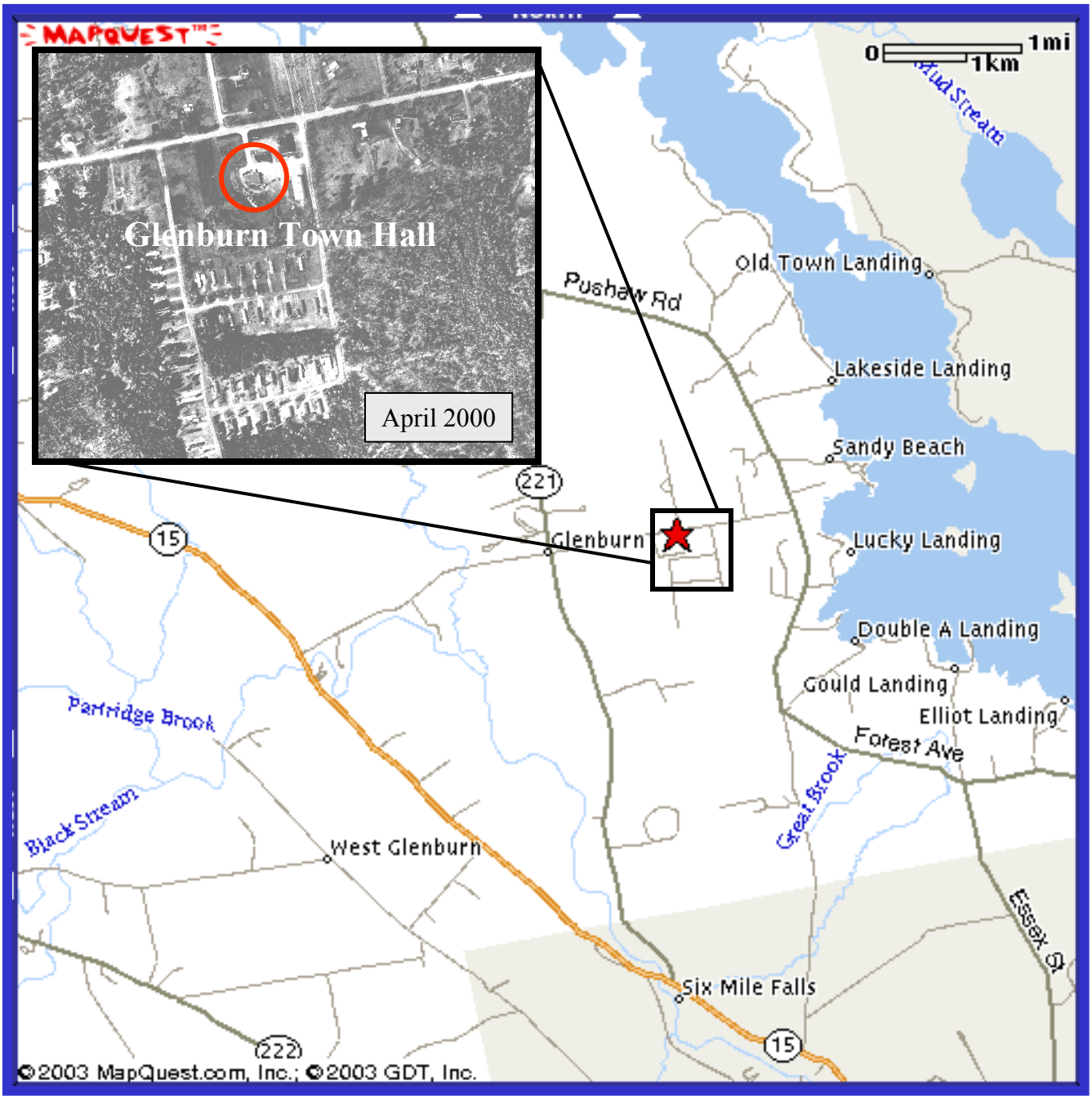
The site is approximately 8 miles northwest of Bangor Maine, and located on a small hilltop. Mr. Cressy used the land for farming and orchards (MEDEP, 1996, USACE, 1997).

The USAF constructed a 2,700 square foot concrete block building in 1958 that contained an equipment room, a telephone communications room, a switch and generator room, and two observation/antenna towers (USAF, 1958). They also installed a pump house and cesspool, two dry wells for the facility's floor drains, and two underground fuel storage tanks (USTs). One UST was a 10,000-gallon diesel fuel tank, and the other UST was a 1,000-gallon tank for gasoline. Review of floor plans shows the dry wells were used to collect and discharge rain water from the roof. All floor drains discharged to the cesspool.

The USAF also used a nearby gravel pit for marksmanship practice by their security personnel. Pit materials from this area were later used as road base for surrounding paved roads.

The property was conveyed to the Town of Glenburn in 1967. The Town renovated the building and use the facility for administration, meetings, and storage. It has also built a three bay Fire House and a salt storage shed on the property. The Town removed both UST fuel tanks in the late 1980s, and received a clean closure from the Maine Department of Environmental Protection (MEDEP) (MEDEP, 1996). They now use an above ground gasoline tank inside a concrete vault. The town also constructed two septage two USTs, each with a 10,000 gallon capacity. The cesspool has been in continuous operation since the USAF constructed it. The septage UST's are slated for removal.

SITE LOCATION



Glenburn, Maine
Penobscot County



AERIAL PHOTOGRAPHIC SOURCES

Date	Scale	Source
May 10, 1939	1:20,000	NARA Record Group 145, Can # ON2281
May 11, 1956	1:25,000	NOAA, National Geodetic Survey, Silver Spring, MD
September 7, 1962	1:36000	NOAA, National Geodetic Survey, Silver Spring, MD
September 5, 1967	1:30,000	NOAA, National Geodetic Survey, Silver Spring, MD
August 22, 1969	1:16,000	USDA
April 18, 2000	1:12,000	James W. Sewall Company Corporate Headquarters 136 Center Street, PO Box 433 Old Town, Maine 04468-0433

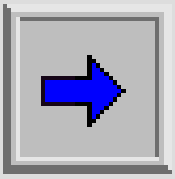
NARA = National Archives and Records Administration (College Park, Maryland).

USDA = US Department of Agriculture, Aerial Photography Field Office, Salt Lake City, Utah.

NOAA = National Oceanic and Atmospheric Administration

ON = original negative

Interpretation Of Historical Aerial Photography



ANALYSIS GLOSSARY

BERM—A linear, raised feature, often made of earthen material. May be associated with range activity.

CLEARED AREA—An area from which man has removed trees, shrubs or other natural vegetation cover.

DISTURBED GROUND—Rough ground surface that has been cleared, overturned, dug up, filled and/or changed from the surrounding area. This differs from a ground scar, which generally have a more uniform appearance.

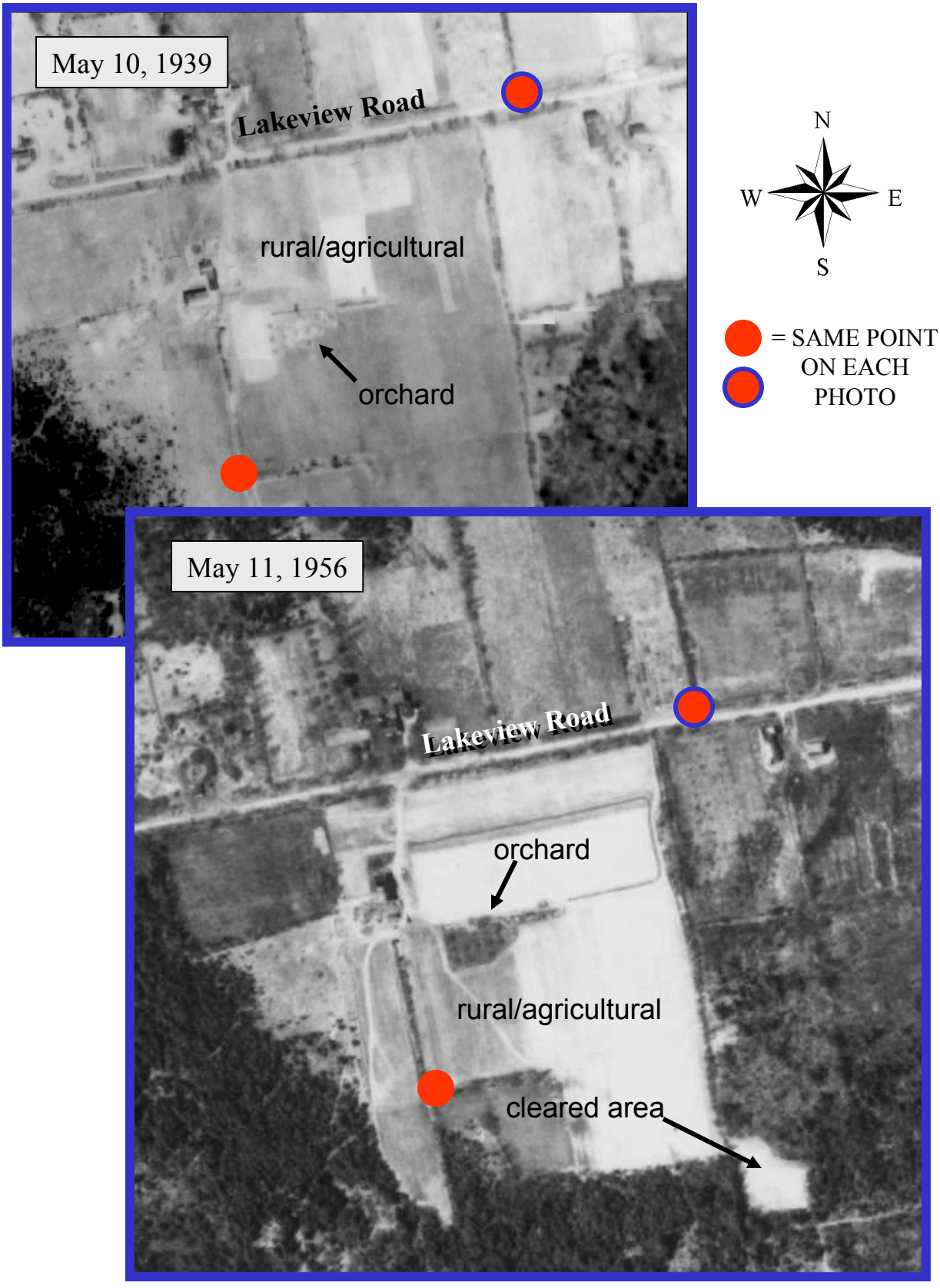
EXCAVATION—A cavity in the earth formed by digging or scooping out materials.

GROUND SCAR—Ground surface, vegetated or not, where marks from a previous activity or feature, or from a subterranean feature are visible. Ground scars can result from many things and therefore vary greatly in appearance (e.g. pipelines, archaeological features, waste disposal pits, filled trenches, etc).

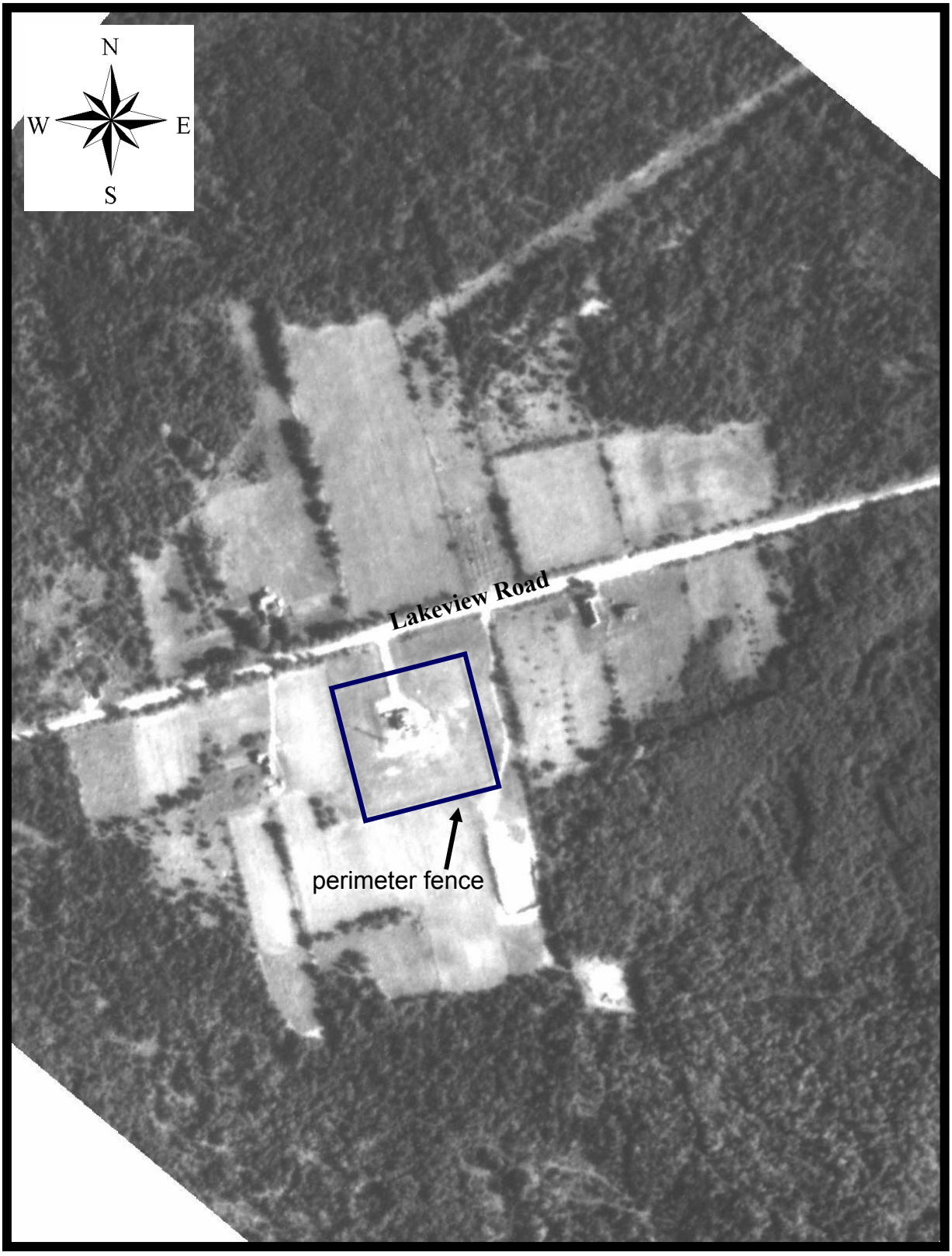
MOUNDED MATERIAL—Material that has been placed in a pile or mound.

ORTHOPHOTO—Continuous-tone image created from aerial photographs with geometric distortions and relief displacements removed. Depicts terrain features in their true geographic position. This image can also be referred to as a photomap.

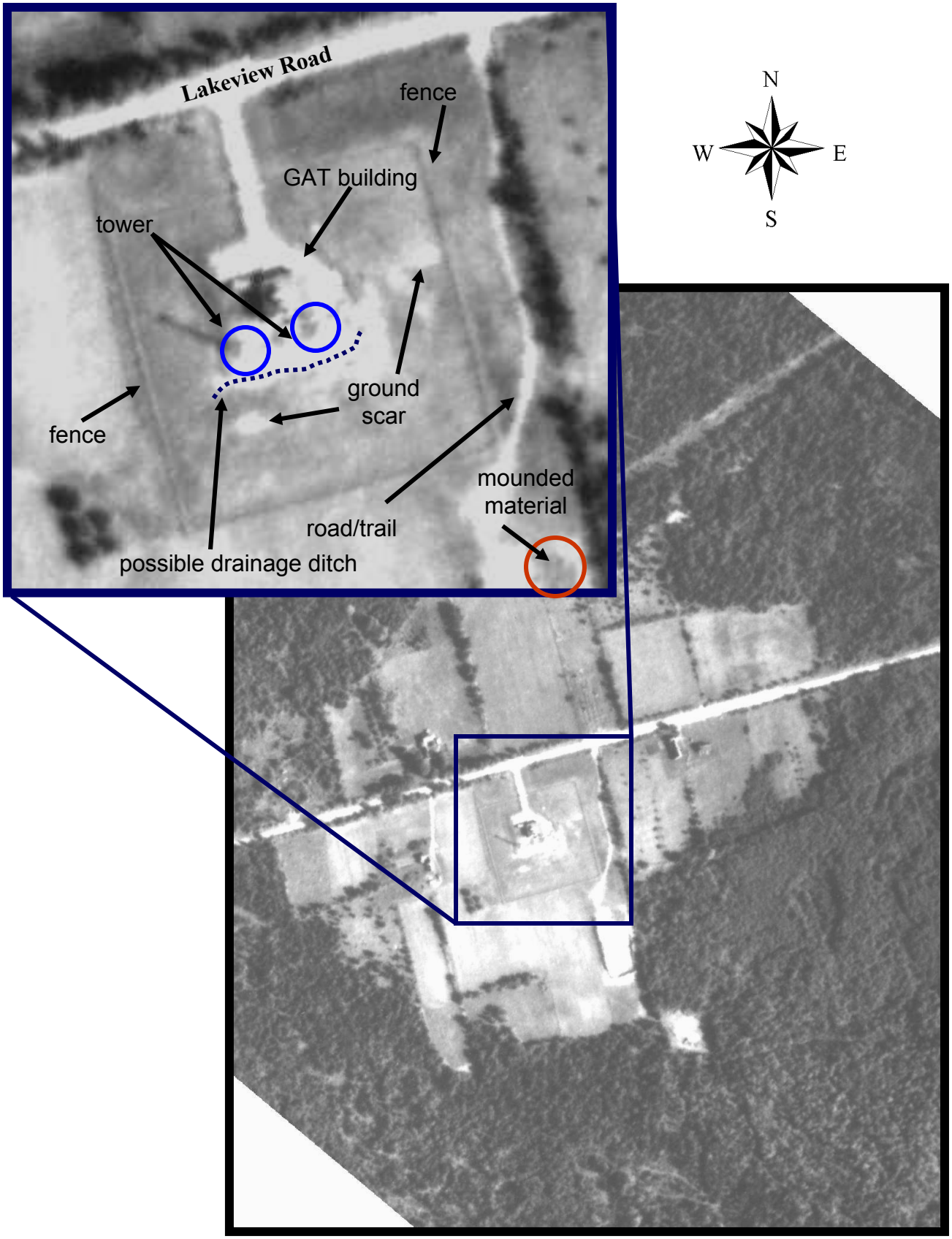
Pre-development: 1939 and 1956



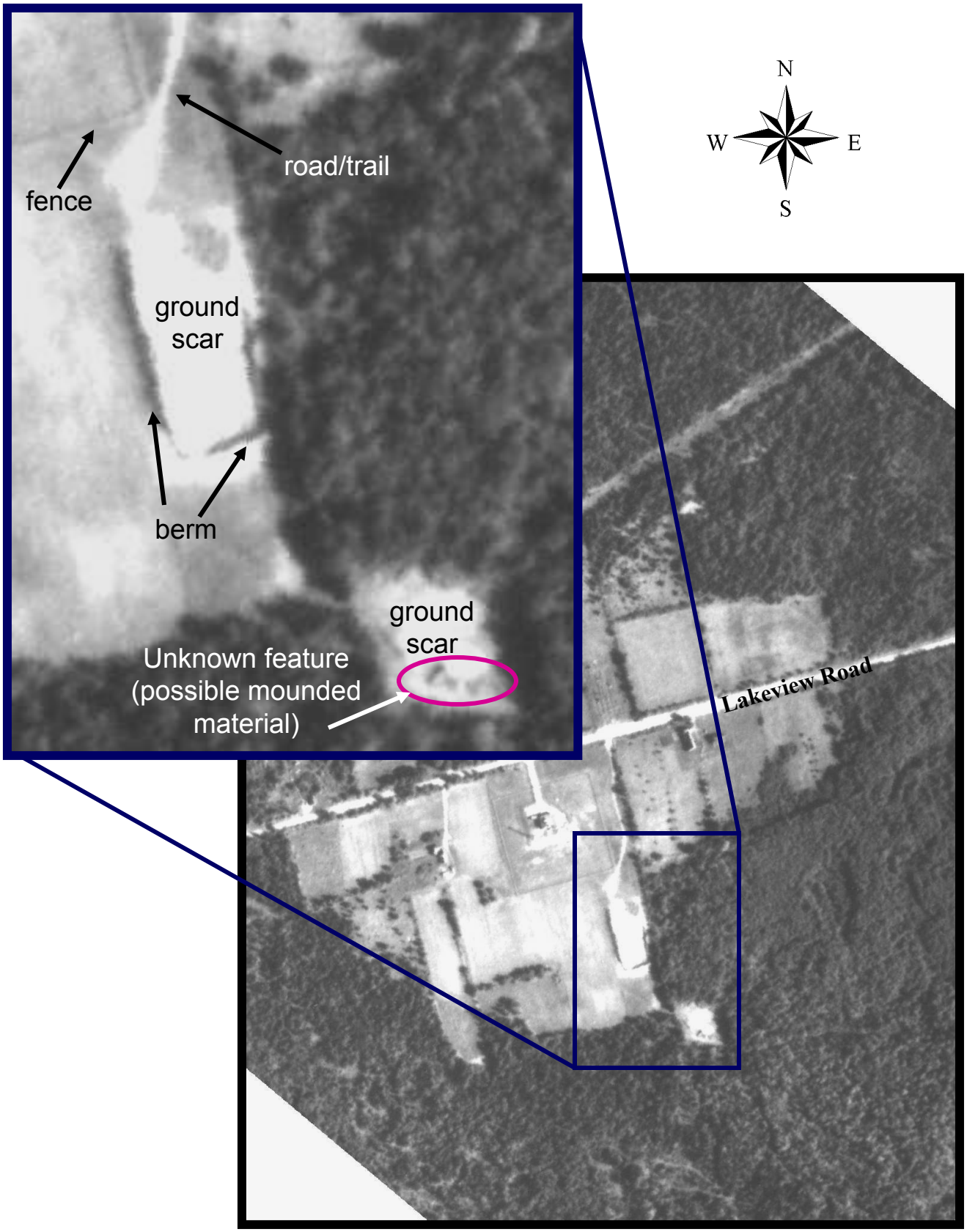
GAT 1962



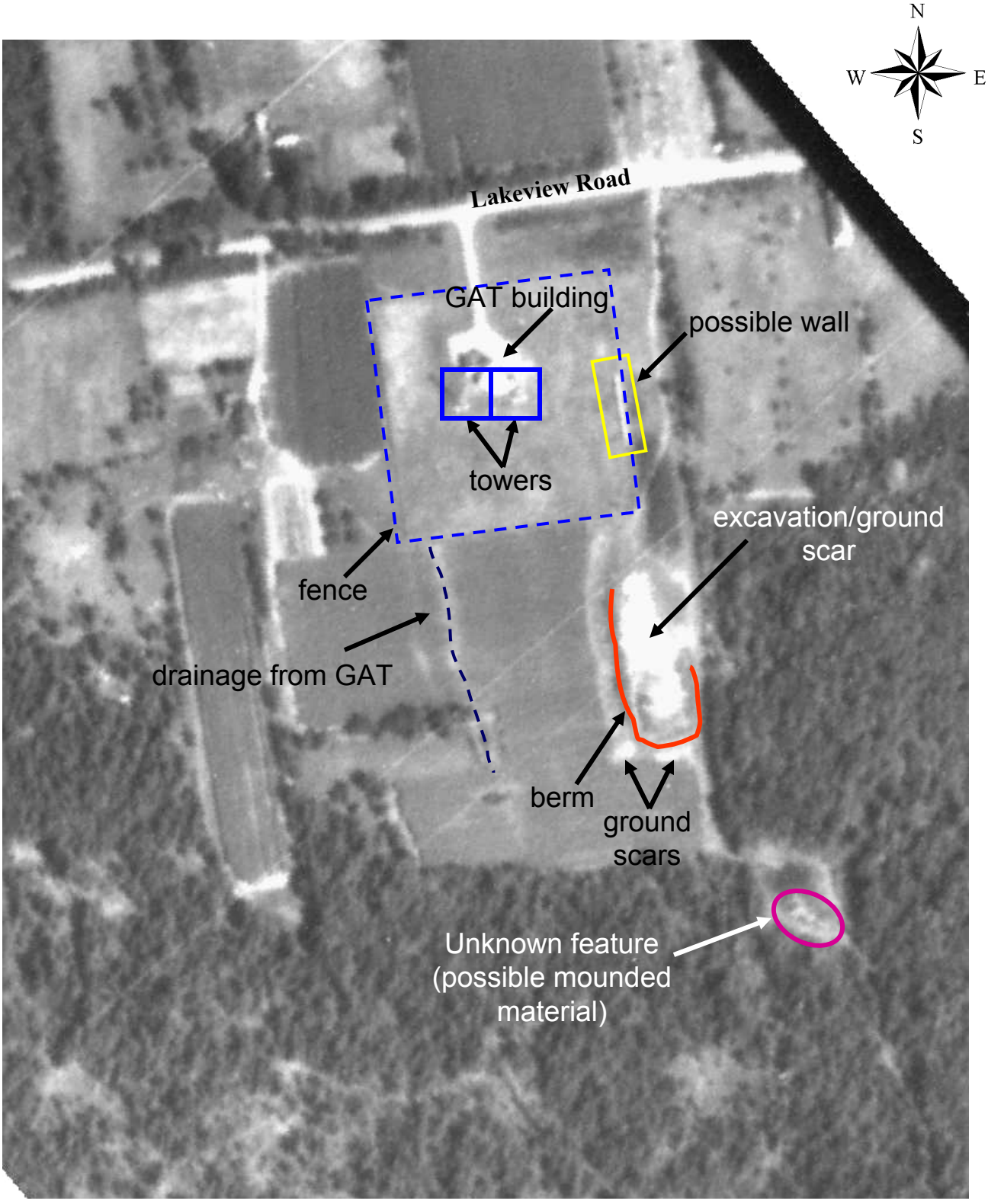
GAT 1962


Lakeview Road
fence
GAT building
tower
ground scar
fence
road/trail
mounded material
possible drainage ditch
N
W
E
S

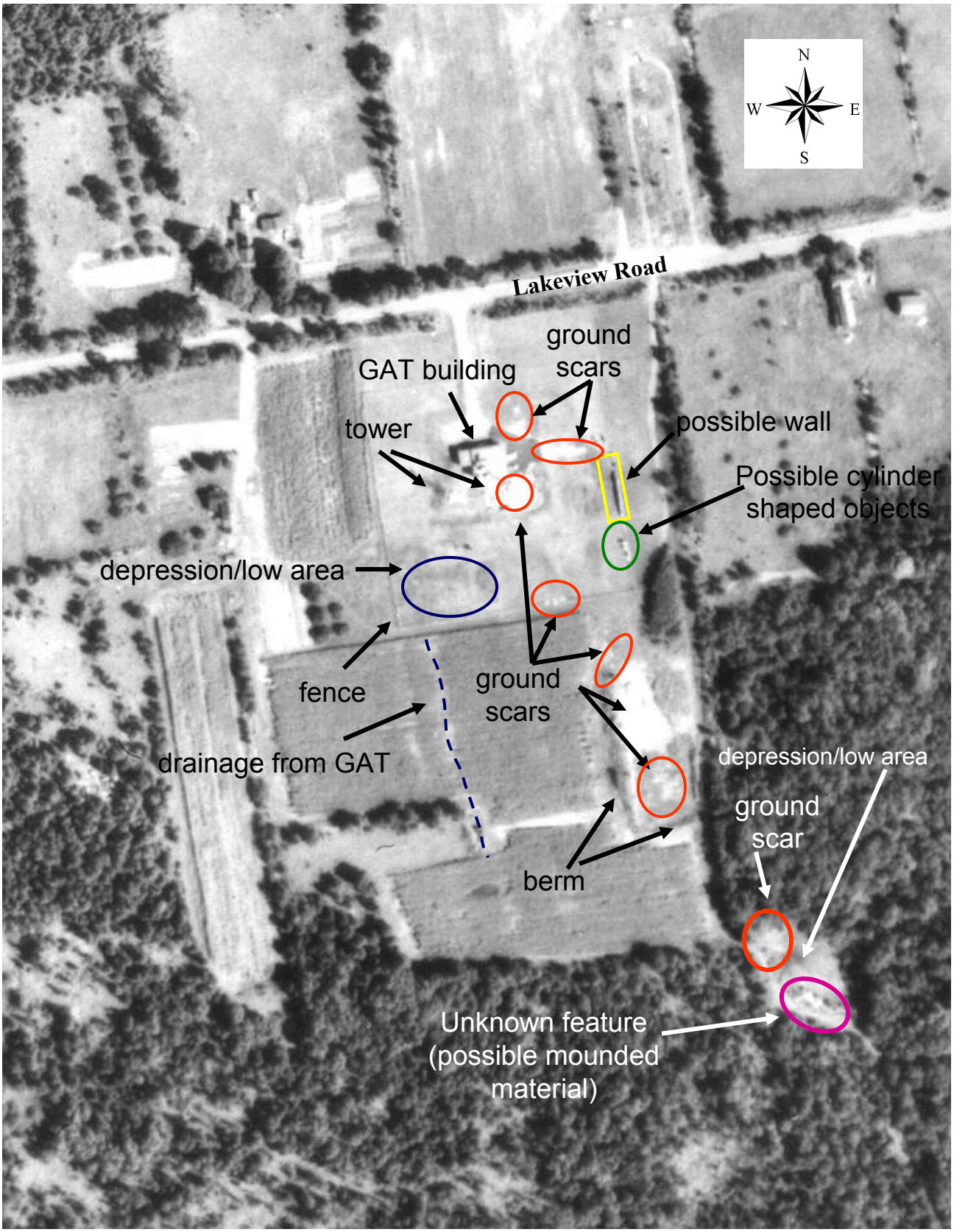
GAT 1962


N
W
E
S
fence
road/trail
ground scar
berm
ground scar
Unknown feature (possible mounded material)
Lakeview Road

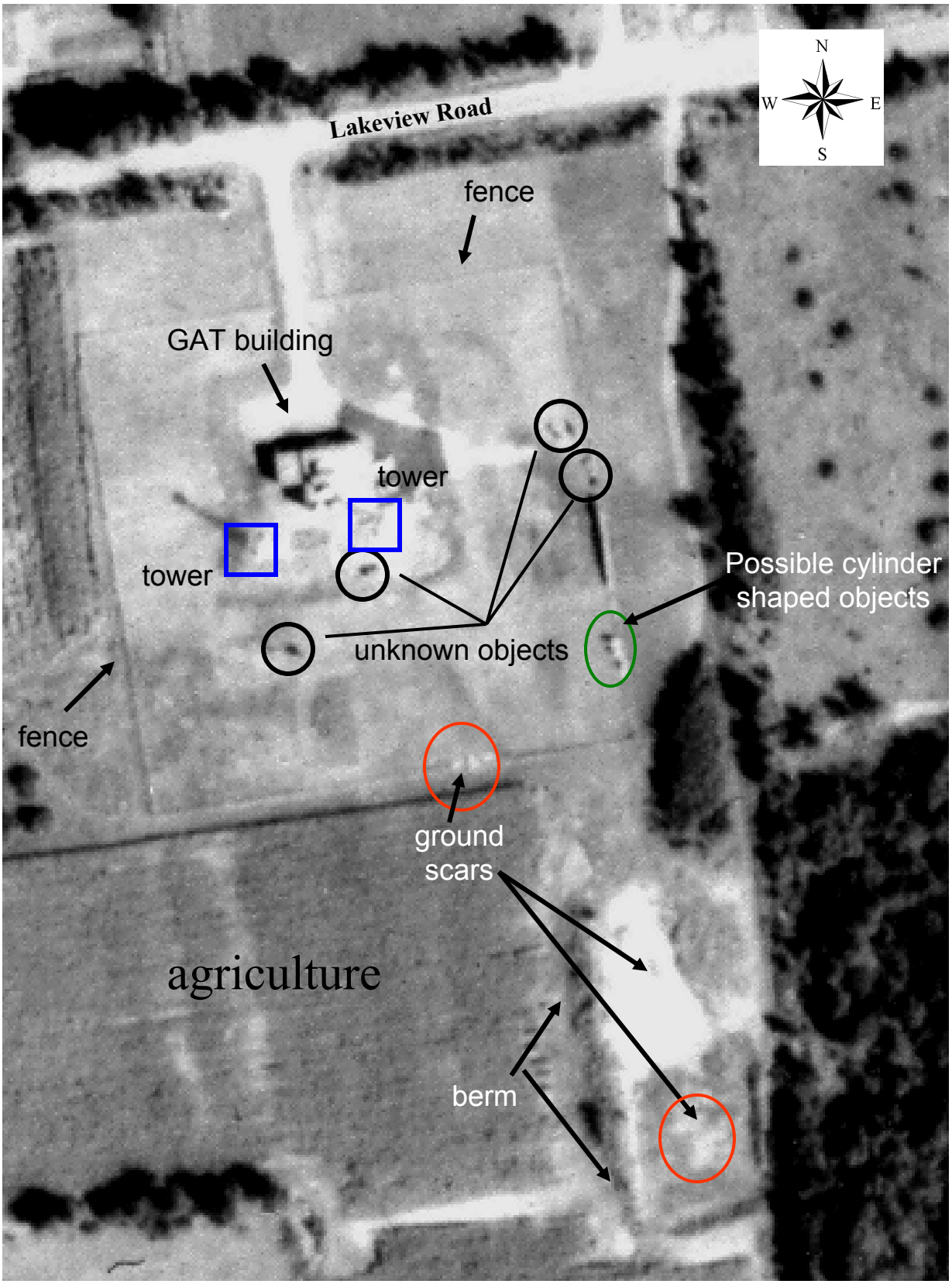
GAT 1967


N
W
E
S
Lakeview Road
GAT building
possible wall
towers
excavation/ground scar
fence
drainage from GAT
berm
ground scars
Unknown feature (possible mounded material)

GAT 1969


N
W
E
S
Lakeview Road
ground scars
GAT building
tower
possible wall
Possible cylinder shaped objects
depression/low area
fence
ground scars
drainage from GAT
depression/low area
ground scar
berm
Unknown feature (possible mounded material)

GAT 1969

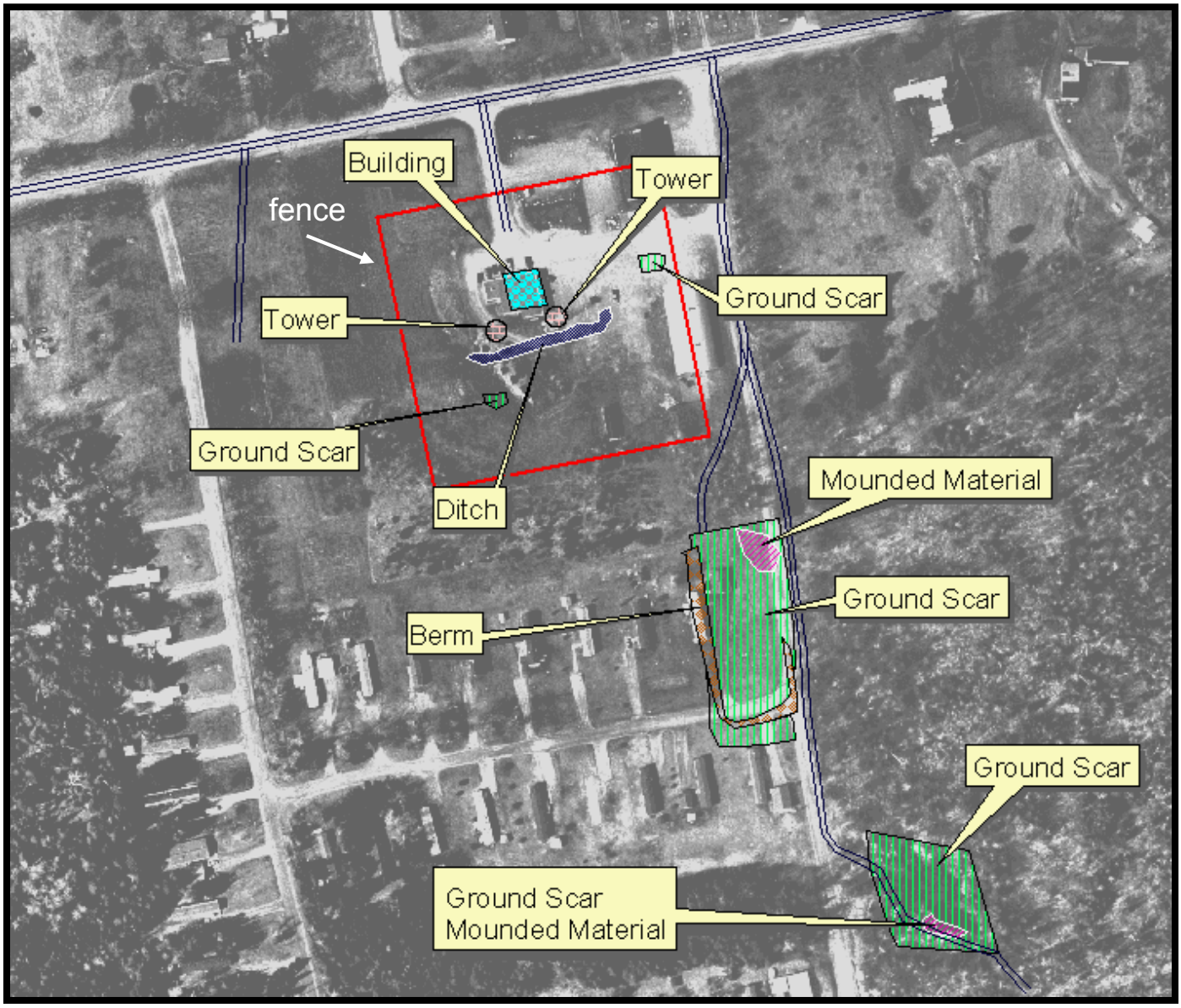

N
W
E
S
Lakeview Road
fence
GAT building
tower
tower
Possible cylinder shaped objects
unknown objects
fence
ground scars
agriculture
berm

GAT Area with 1956 features on year 2000 photo

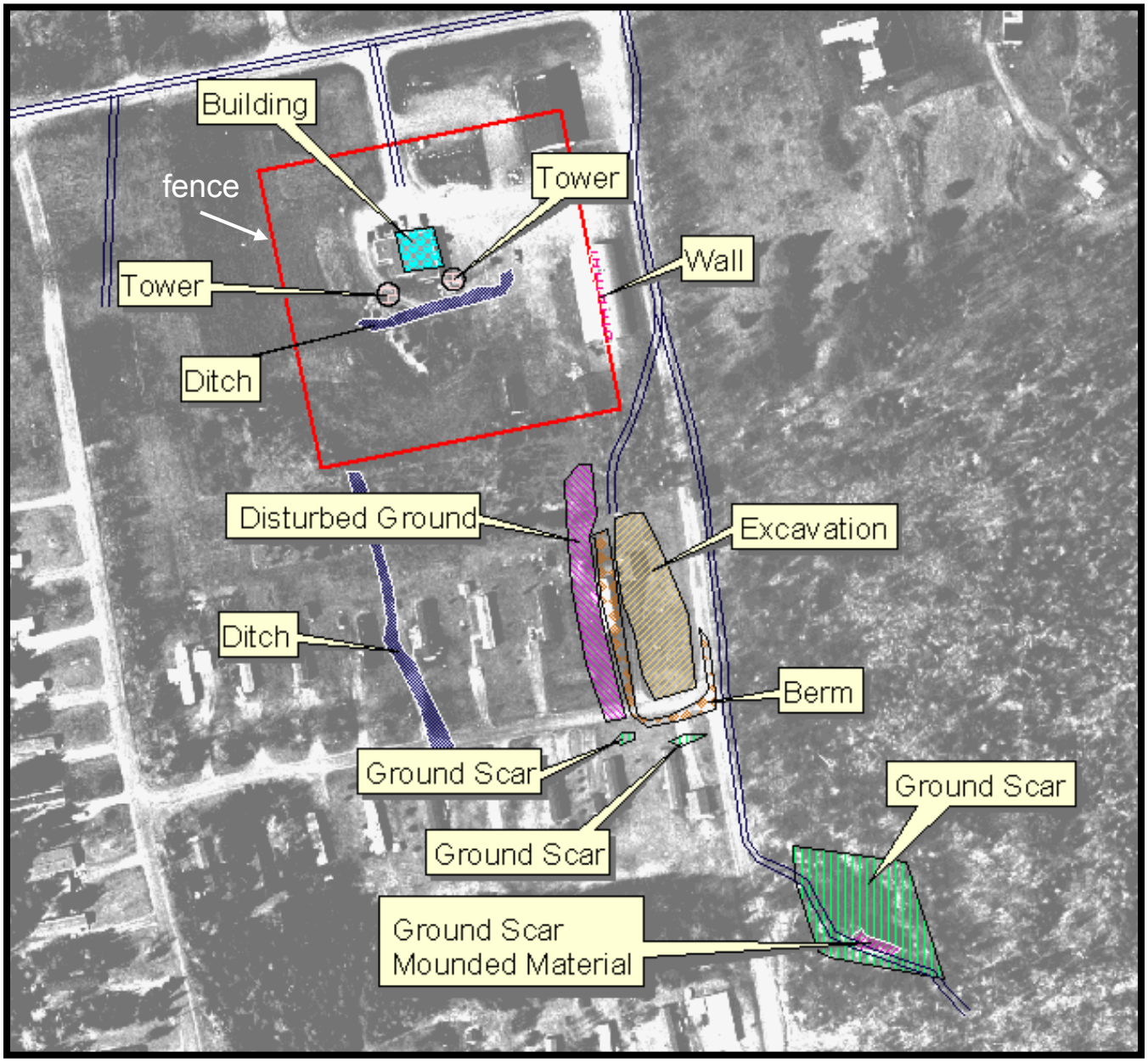




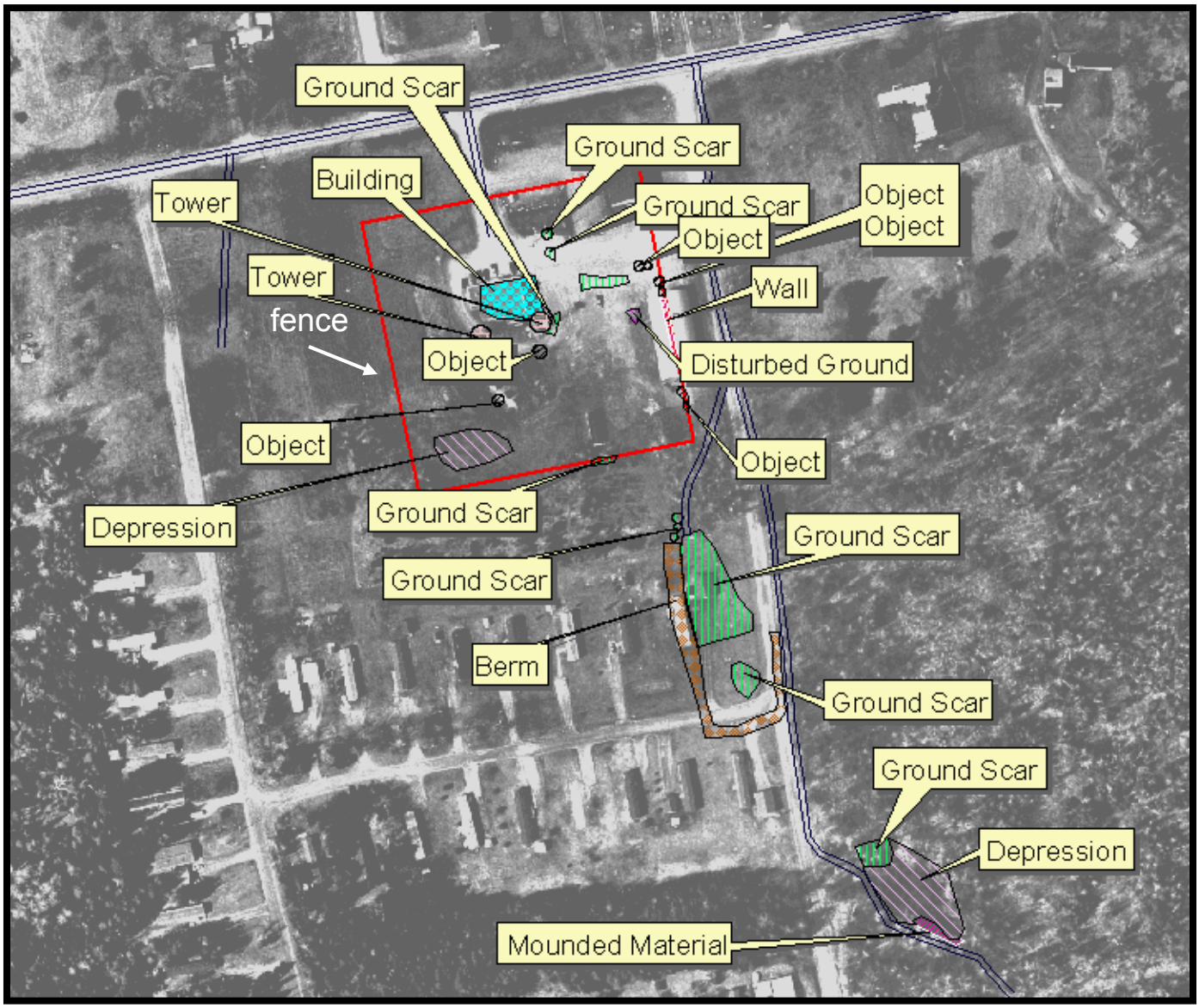
GAT Area with 1962 features on year 2000 photo



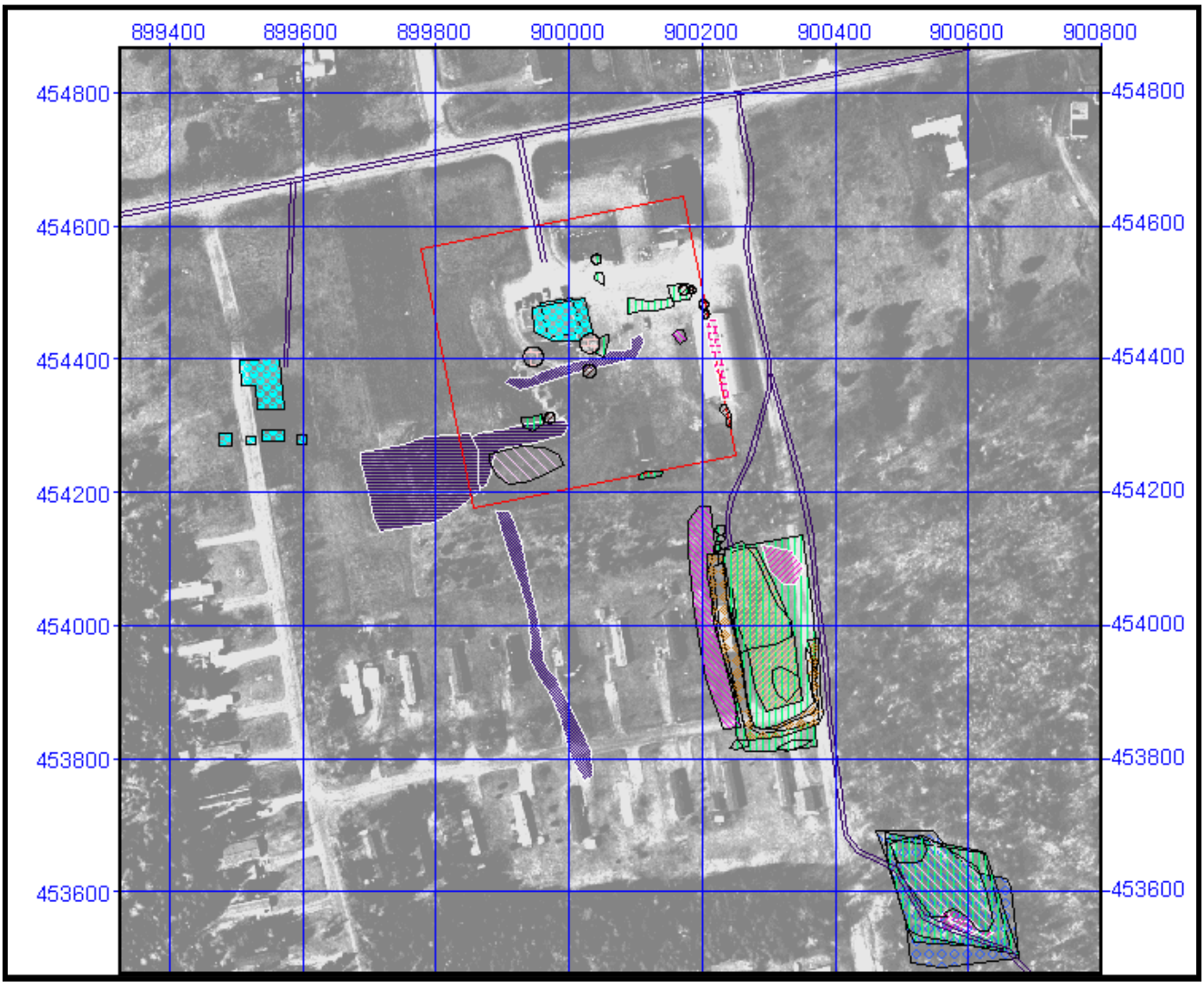
GAT Area with 1967 features on year 2000 photo



GAT Area with 1969 features on year 2000 photo



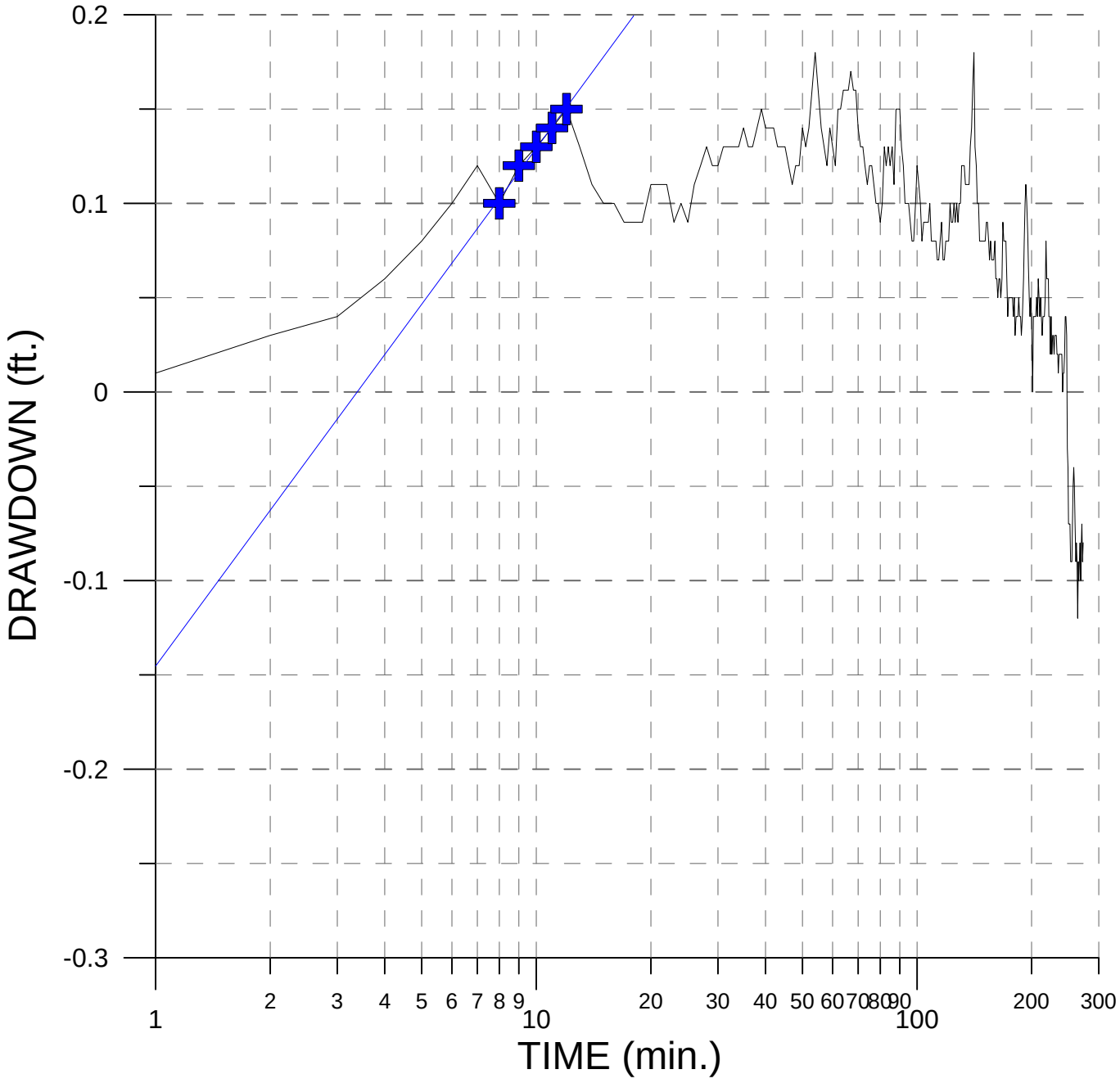
GAT Area with 1956-1969 features on year 2000 photo with Maine State Plane East Grid—200 foot grid.



APPENDIX 2

DRAWDOWN GRAPHS FROM PUMP TESTS AND WELL DEVELOPMENT

GB-MW-01 Port 2 Response Drawdown to GB-MW-06 Pump Test 11/20/2008

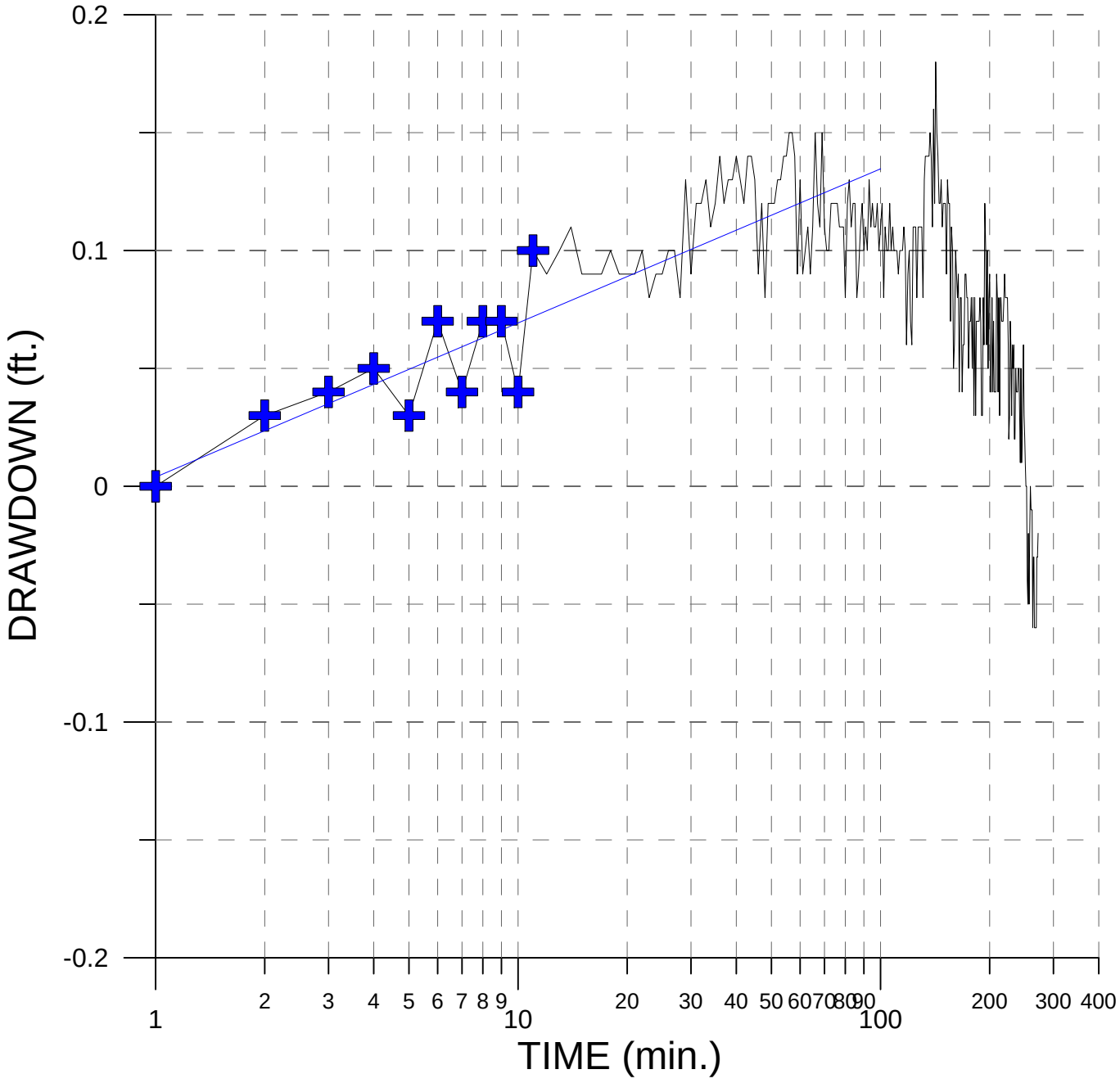


Slope, delS = 0.28 change in drawdown per log cycle
MW-6 Pumping rate, Q = 4.85 gpm (from pump test data)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 4.85 / 0.28 = 4573 gpd/ft
T = 611 sfpd (1 cfpd = 0.1337 gpd/ft)

The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/transmissivitydrawdowngraphs/MW01port1FORMW06pumptest112008

GB-MW-01 Port 3 Response Drawdown to GB-MW-06 Pump Test 11/20/2008

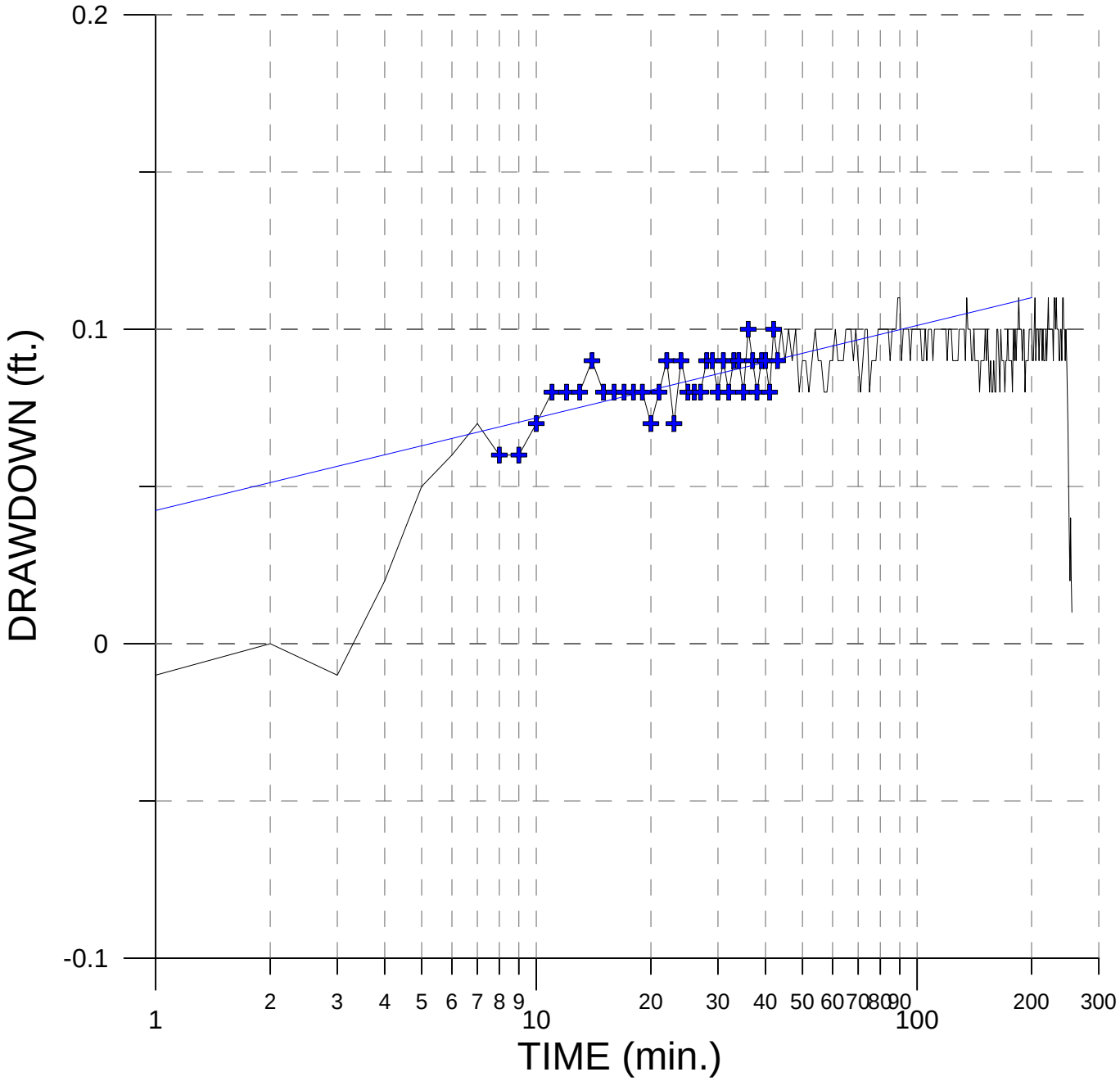


Slope, delS = 0.07 change in drawdown per log cycle
MW-6 Pumping rate, Q = 4.85 gpm (from pump test data)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 4.85 / 0.07 = 18,281 gpd/ft
T = 2446 sfpd (1 cfpd = 0.1337 gpd/ft)

The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/transmissivitydrawdowngraphs/MW01port3FORMW06pumptest112008

GB-MW-02 Port 1 Response Drawdown to GB-MW-04D Pump Test 11/21/2008

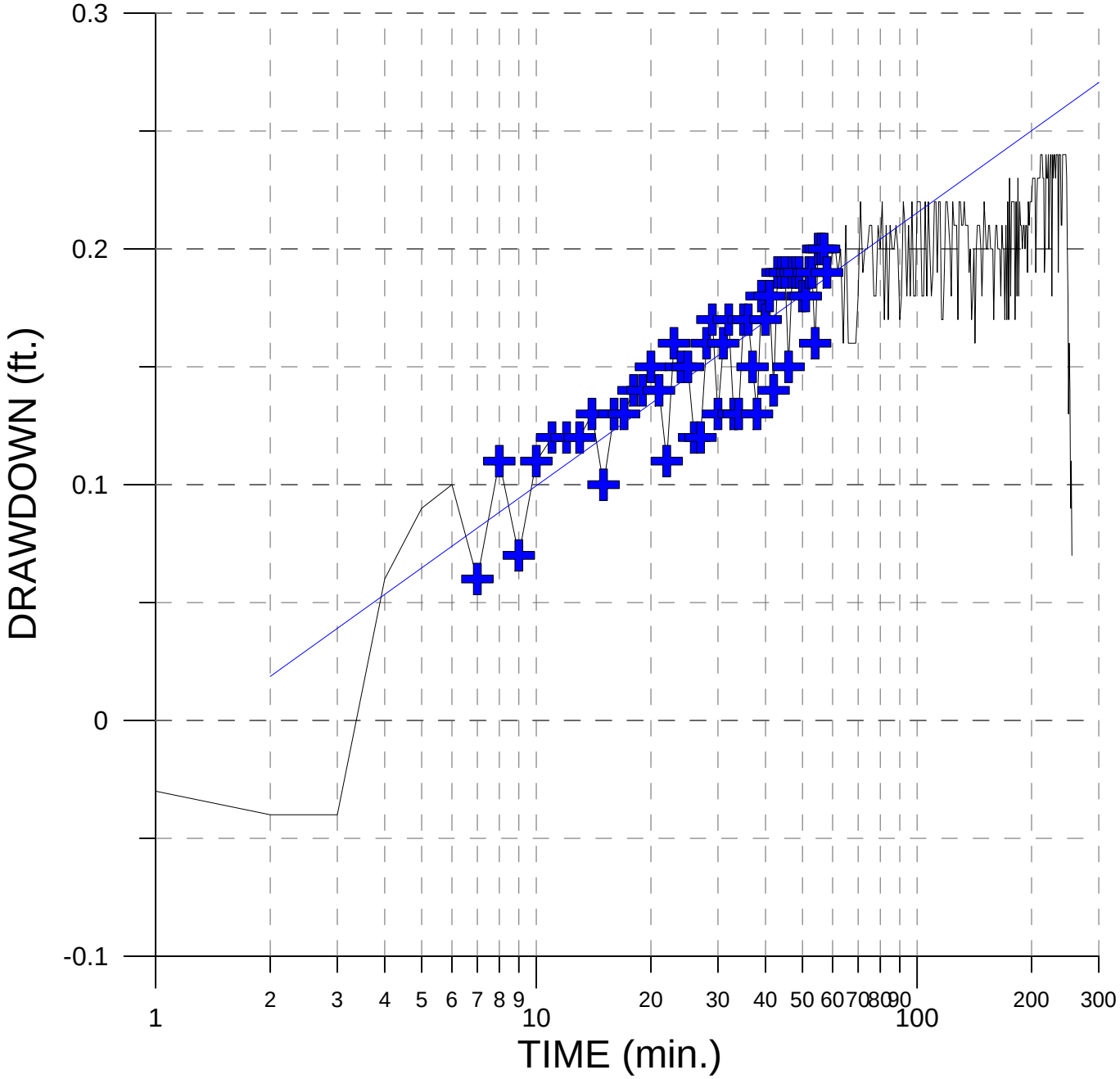


Slope, delS = 0.05 change in drawdown per log cycle
MW-4D Pumping rate, Q = 1.7 gpm (from pump test data)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 1.7 / 0.05 = 8976 gpd/ft
T = 1200 sfpd (1 cfpd = 0.1337 gpd/ft)

The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/transmissivitydrawdowngraphs/MW02port1FORMW04pumptest112108

GB-MW-02 Port 2 Response Drawdown to GB-MW-04D Pump Test 11/21/2008

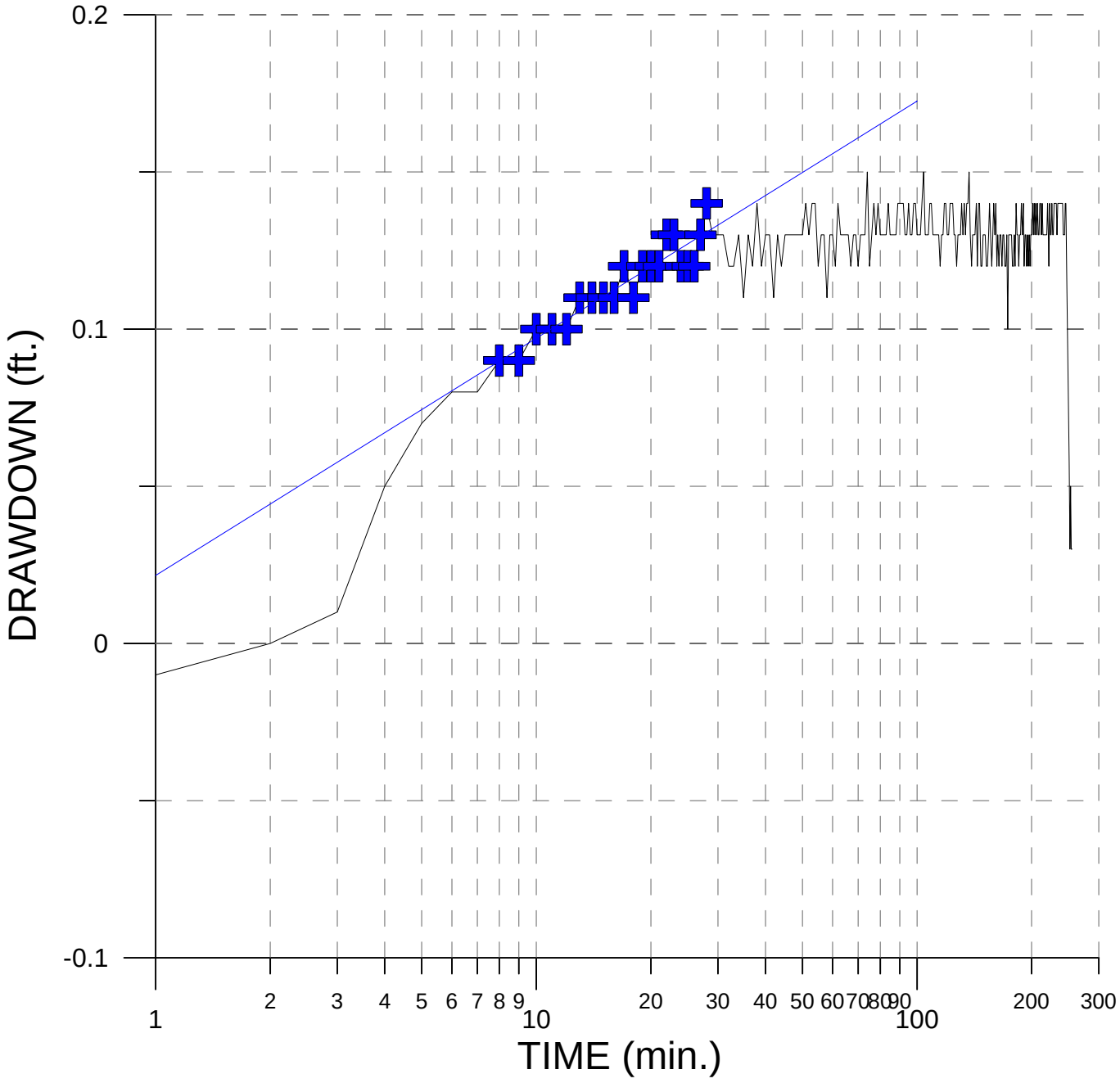


Slope, delS = 0.12 change in drawdown per log cycle
MW-4D Pumping rate, Q = 1.7 gpm (from pump test data)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 1.7 / 0.12 = 3740 gpd/ft
T = 500 sfpd (1 cfpd = 0.1337 gpd/ft)

The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/transmissivitydrawdowngraphs/MW02port2FORMW04Dpumptest112108

GB-MW-02 Port 3 Response Drawdown to GB-MW-04D Pump Test 11/21/2008

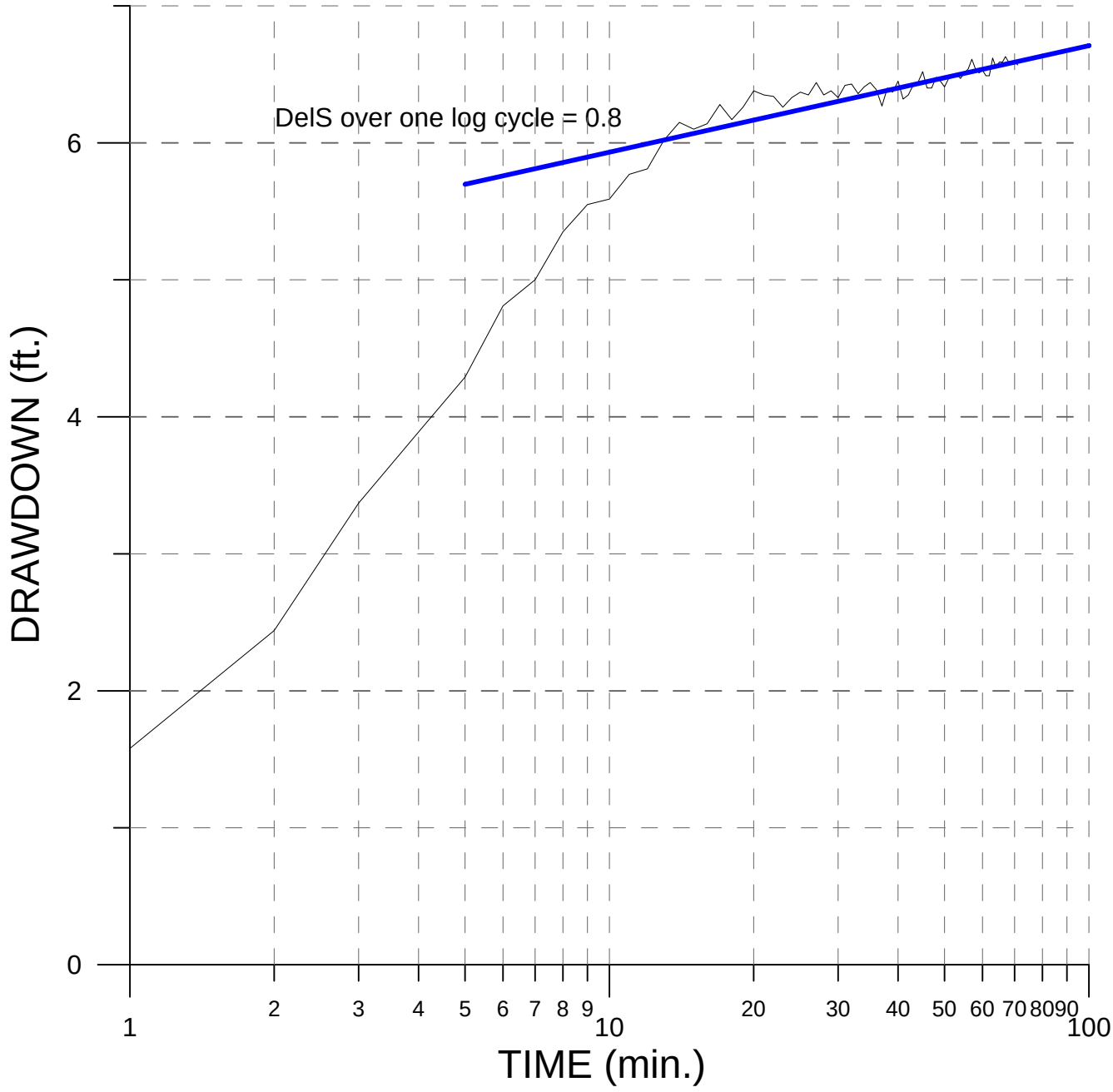


Slope, delS = 0.8 change in drawdown per log cycle
MW-4D Pumping rate, Q = 1.7 gpm (from pump test data)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 1.7 / 0.8 = 561 gpd/ft
T = 75 sfpd (1 cfpd = 0.1337 gpd/ft)

The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/transmissivitydrawdowngraphs/MW02port3FORMW04Dpumptest112108

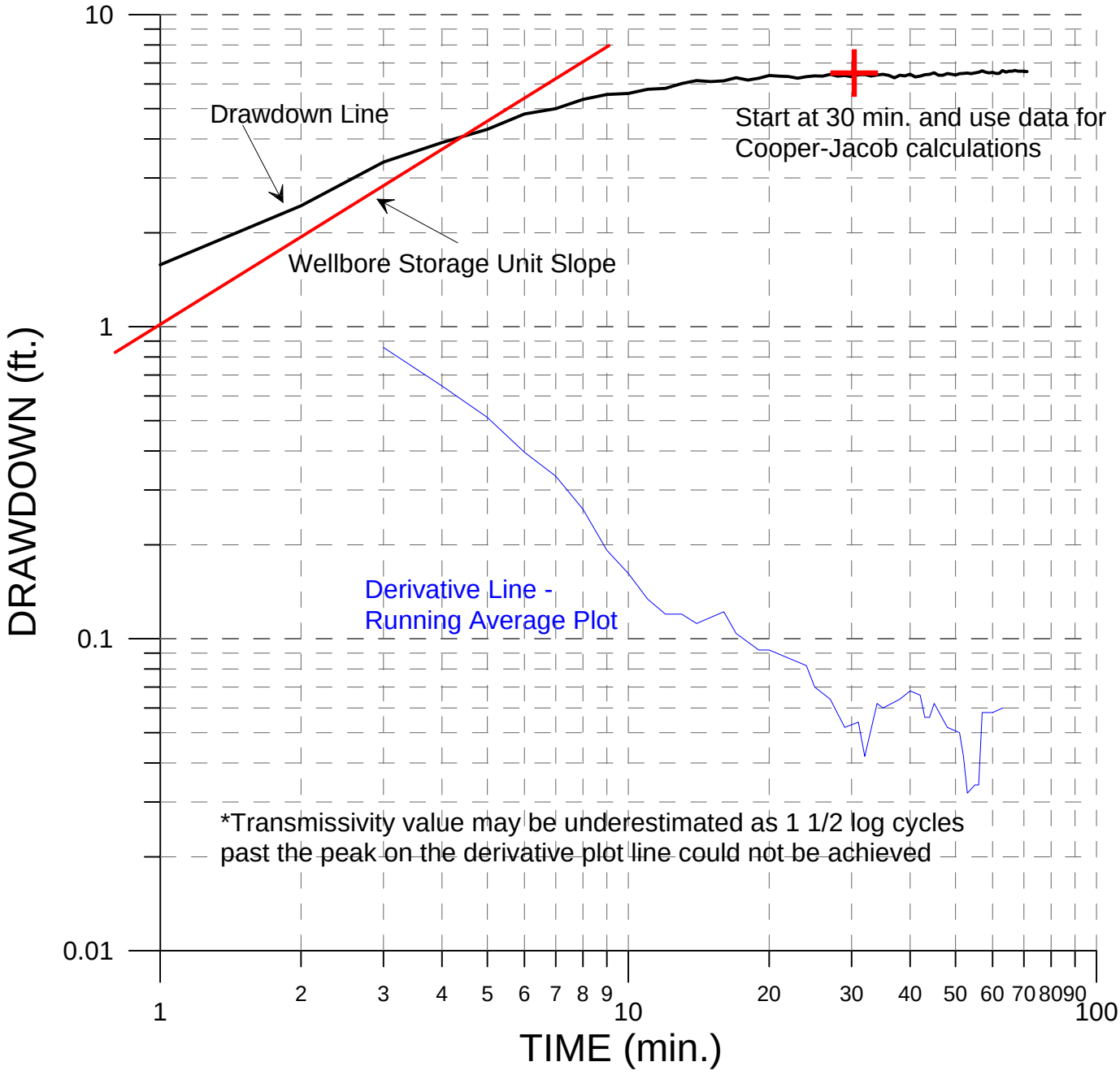
GB-MW-03 Open Hole Well Development
First Stage
8/24/2008



Slope, delS = 0.8 change in drawdown per log cycle
Pumping rate, Q = 2.5 gpm (from well development logs)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 2.5 / 0.8 = 825 gpd/ft
T = 110.30 sfpd * (1 cfpd = 0.1337 gpd/ft)
*** Value may be underestimated - see derivative plot graph**

The JCO
Data source: August 2008 Solinst Data Logger Data

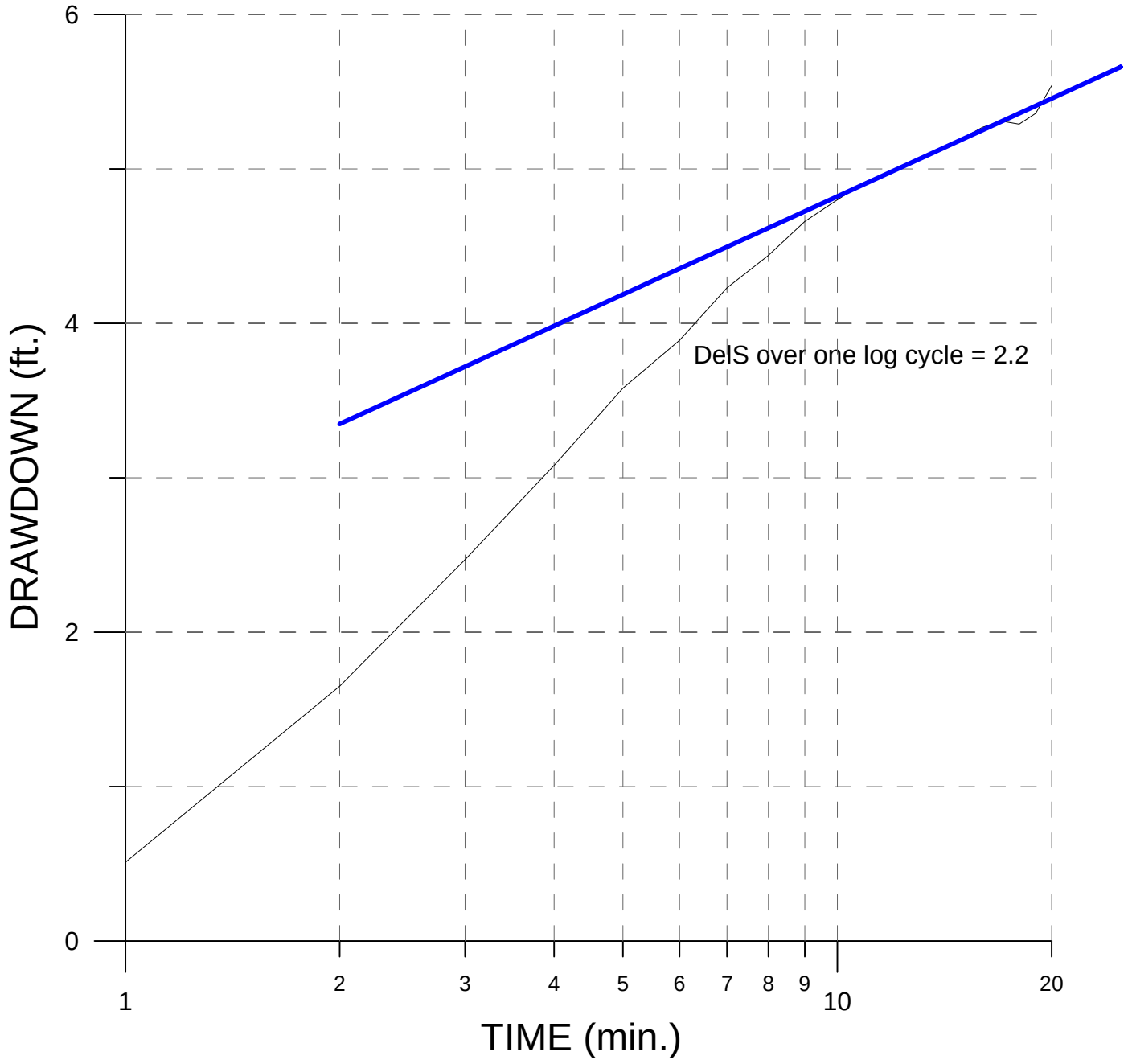
GB-MW-03 Open Hole Well Development - First Stage Derivative Plot
8/24/2008



The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/derivativedrawdowngraphs/GB-MW-03DWelldevelopment Firststage derivativetplot

GB-MW-03 Open Hole Well Development @ 2.5 gpm.
Second Stage
8/24/2008

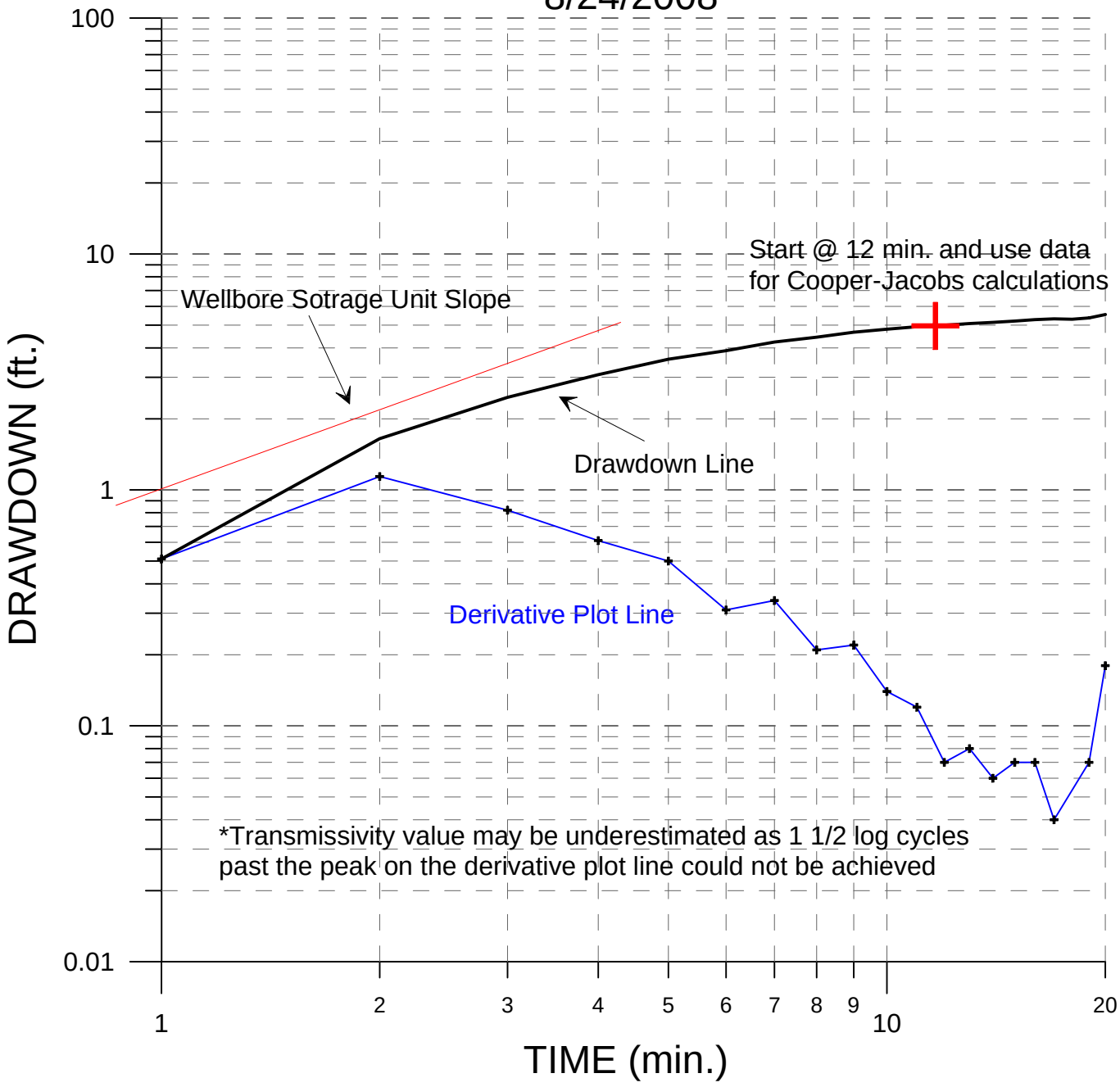


Slope, delS = 2.2 change in drawdown per log cycle
Pumping rate, Q = 2.5 gpm (from well development logs)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 2.2 / 2.5 = 300 gpd/ft
T = 40.11 sfpd* (1 cfpd = 0.1337 gpd/ft)
*** Value may be underestimated - see derivative plot graph**

The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/partialpenetrationdrawdowngraphs/GB-MW-03Openhole welldevelopment0824082ndstage

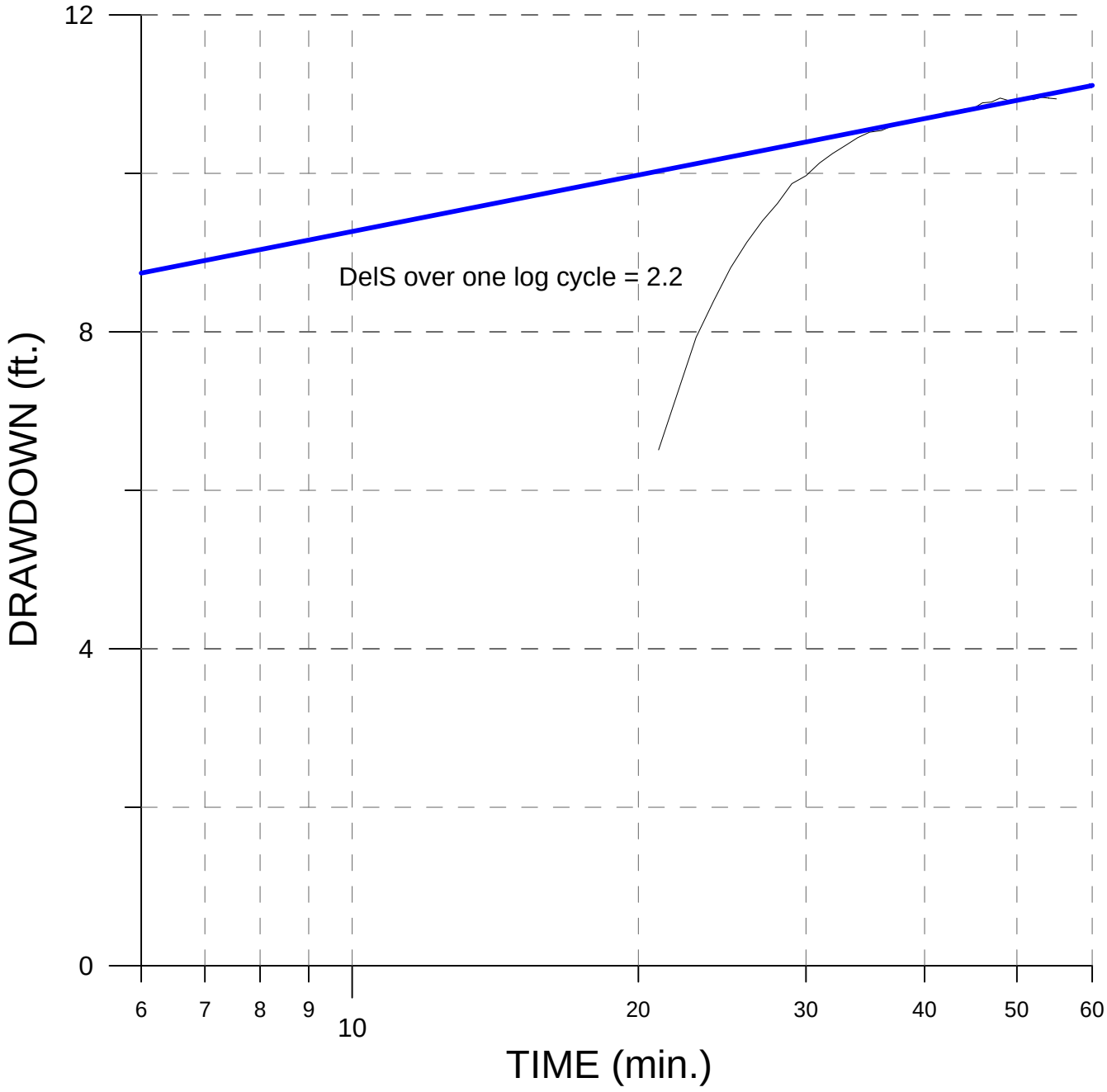
GB-MW-03 Open Hole Well Development @ 2.5 gpm
Second Stage
Derivative Plot
8/24/2008



The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/derivativedrawdowngraphs/GB-MW-03DWelldevelopment Secondstage derivativetplot

GB-MW-03 Open Hole Well Development @ 4.05 gpm
Second Stage
8/24/2008

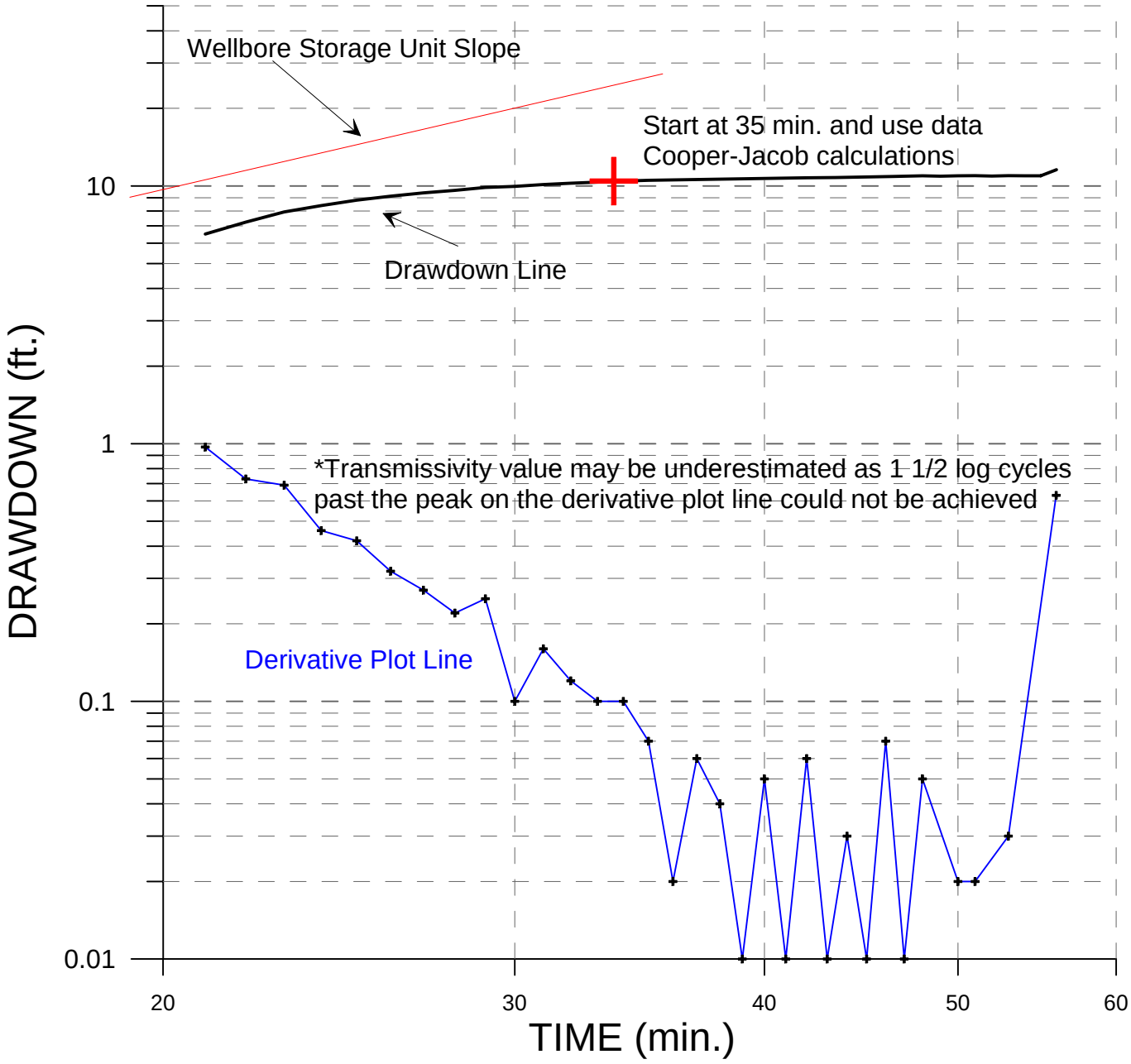


Slope, delS = 2.2 change in drawdown per log cycle
Pumping rate, Q = 4.05 gpm (from well development logs)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 2.2 / 4.05 = 143.41 gpd/ft
T = 19.17 sfpd * (1 cfpd = 0.1337 gpd/ft)
*** value may be underestimated - see derivative plot graph**

The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/partialpenetrationdrawdowngraphs/GB-MW-03Openhole welldevelopment0824082ndstage

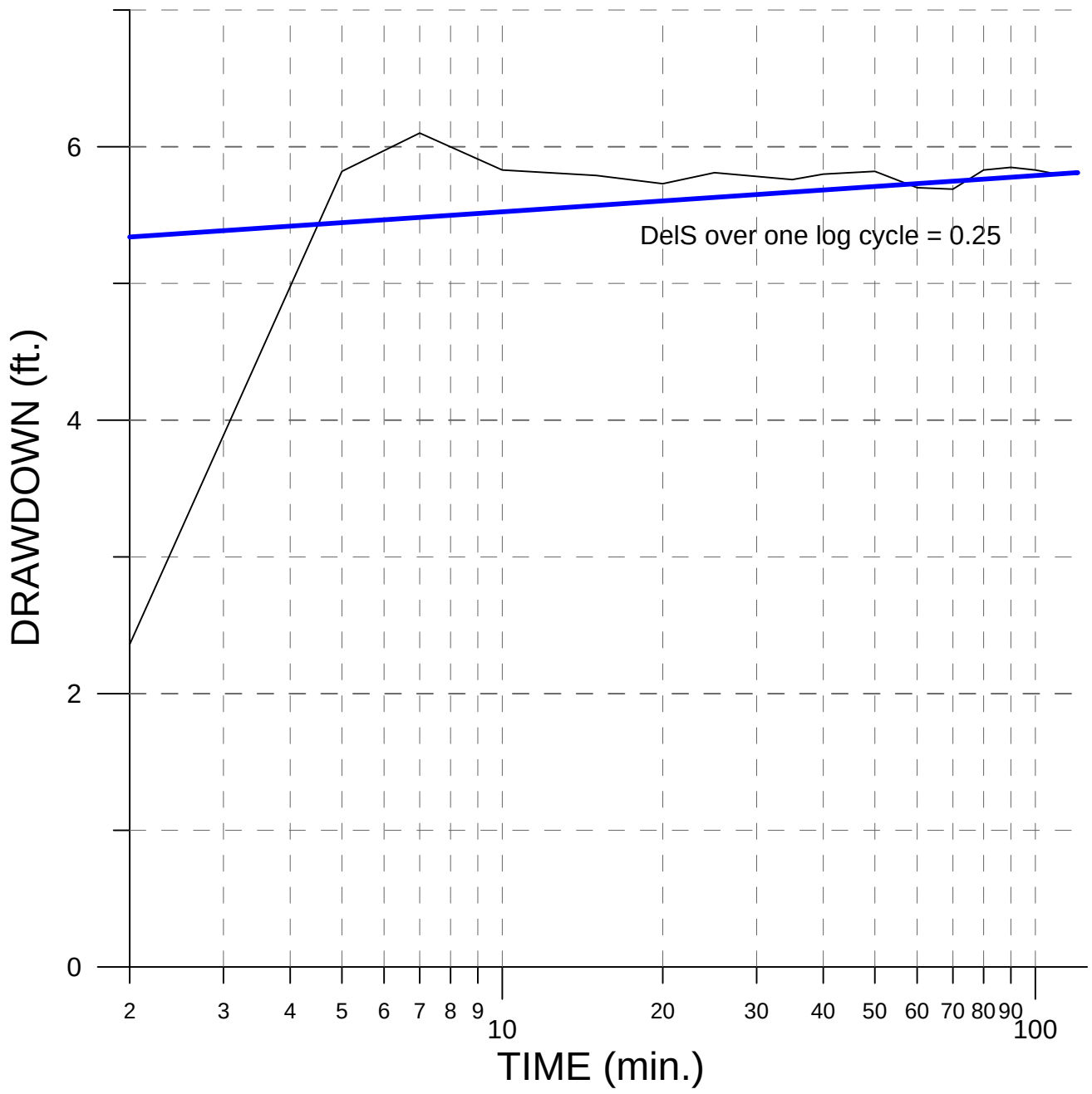
GB-MW-03 Open Hole Well Development @ 4.05 gpm
Second Stage
Derivative Plot
8/24/2008



The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/derivativedrawdowngraphs/GB-MW-03DWelldevelopment Secondstage derivativetplot

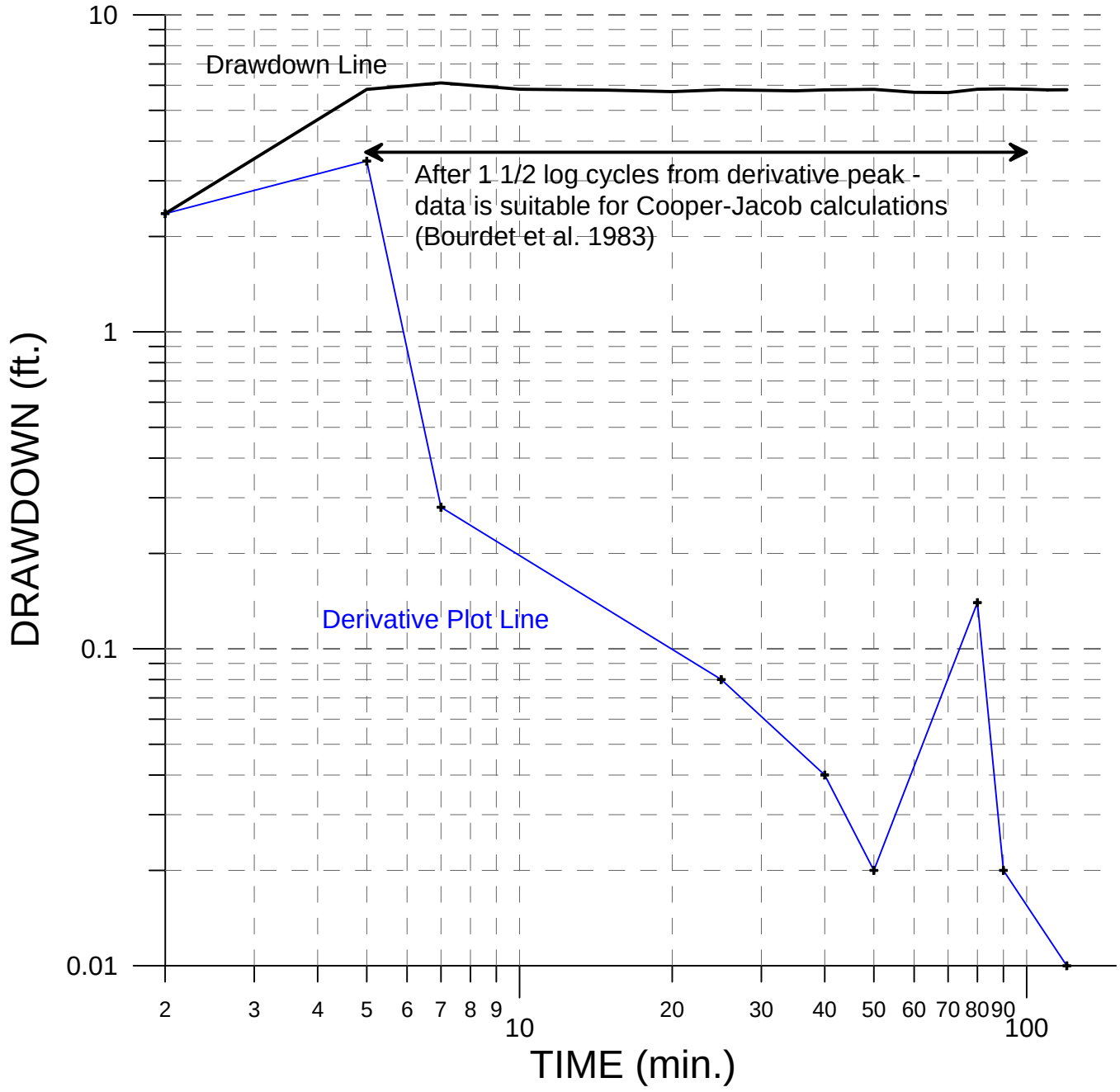
GB-MW-03S Well Pumping
9/17/08



Slope, delS = 0.25 change in drawdown per log cycle
Pumping rate, Q = 2.6 gpm (from well development logs)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 2.6 / 0.25 = 2,745.6 gpd/ft
T = 367.1 sfpd (1 cfpd = 0.1337 gpd/ft)

The JCO
Data source: August 2008 Solinst Data Logger Data

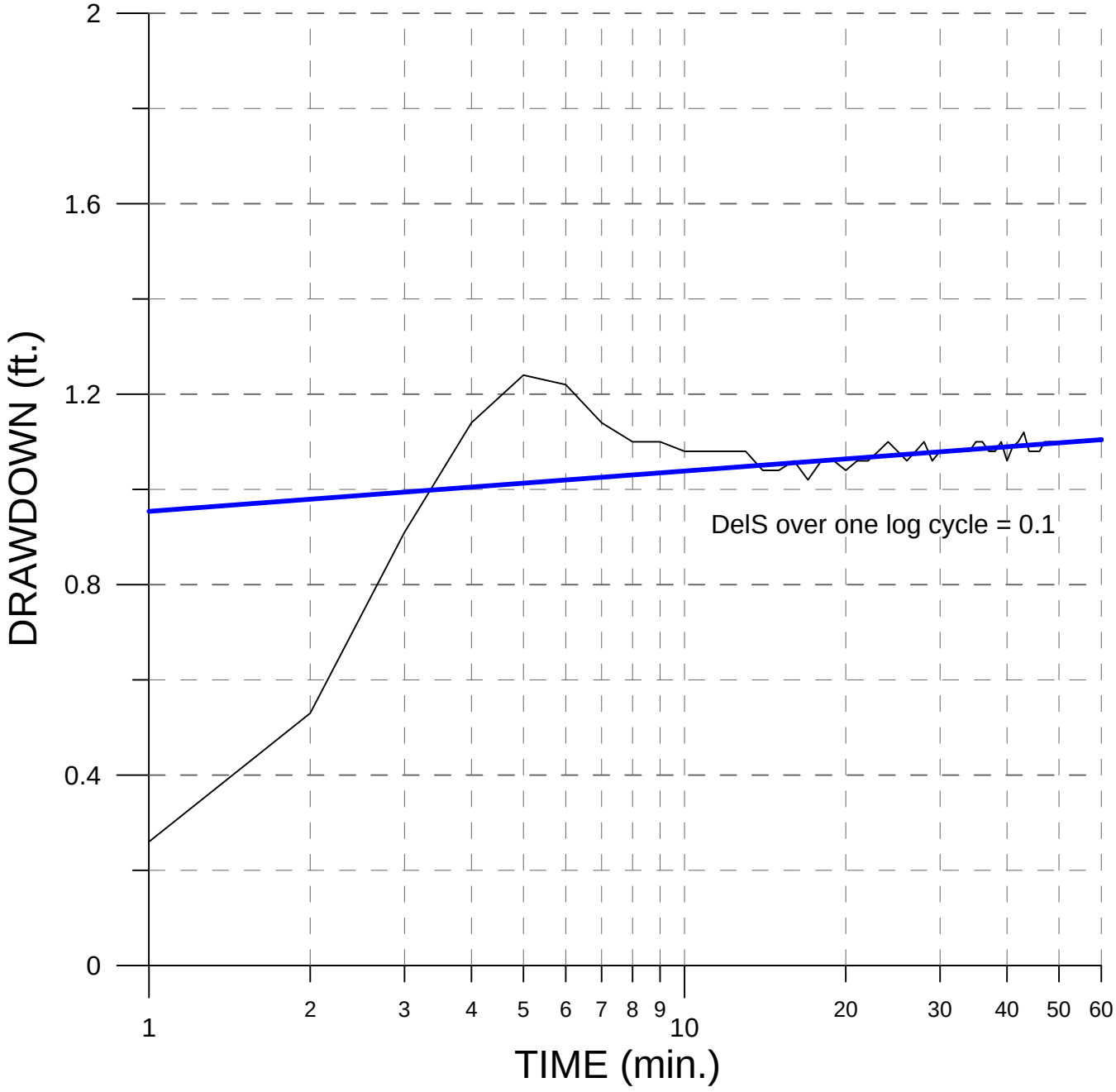
GB-MW-03S Well Pump Derivative Plot
9/17/2008



The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/derivativedrawdowngraphs/GB-MW-03Swellpumpderivativetplot

GB-MW-03 Packer Test @ 49 FBTOC
8/29/08

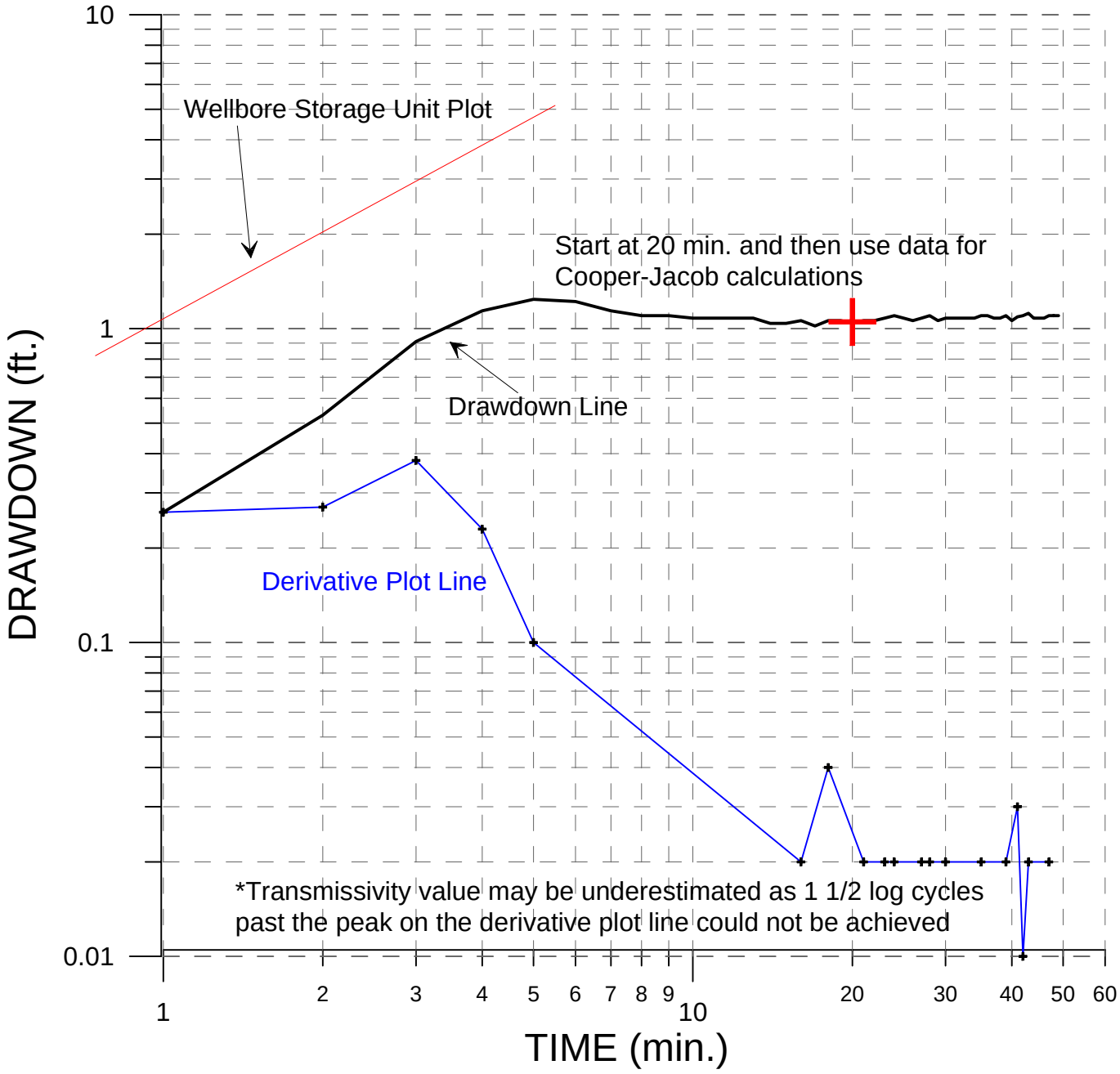


Slope, delS = 0.1 change in drawdown per log cycle
Pumping rate, Q = 0.53 gpm (from well development logs)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 0.53 / 0.1 = 13,992 gpd/ft
T = 1,870.7 sfpd* (1 cfpd = 0.1337 gpd/ft)
*** Value may be underestimated - see derivative plot graph**

The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/partialpenetrationdrawdowngraphs/GB-MW-03 packer tests 49btoc

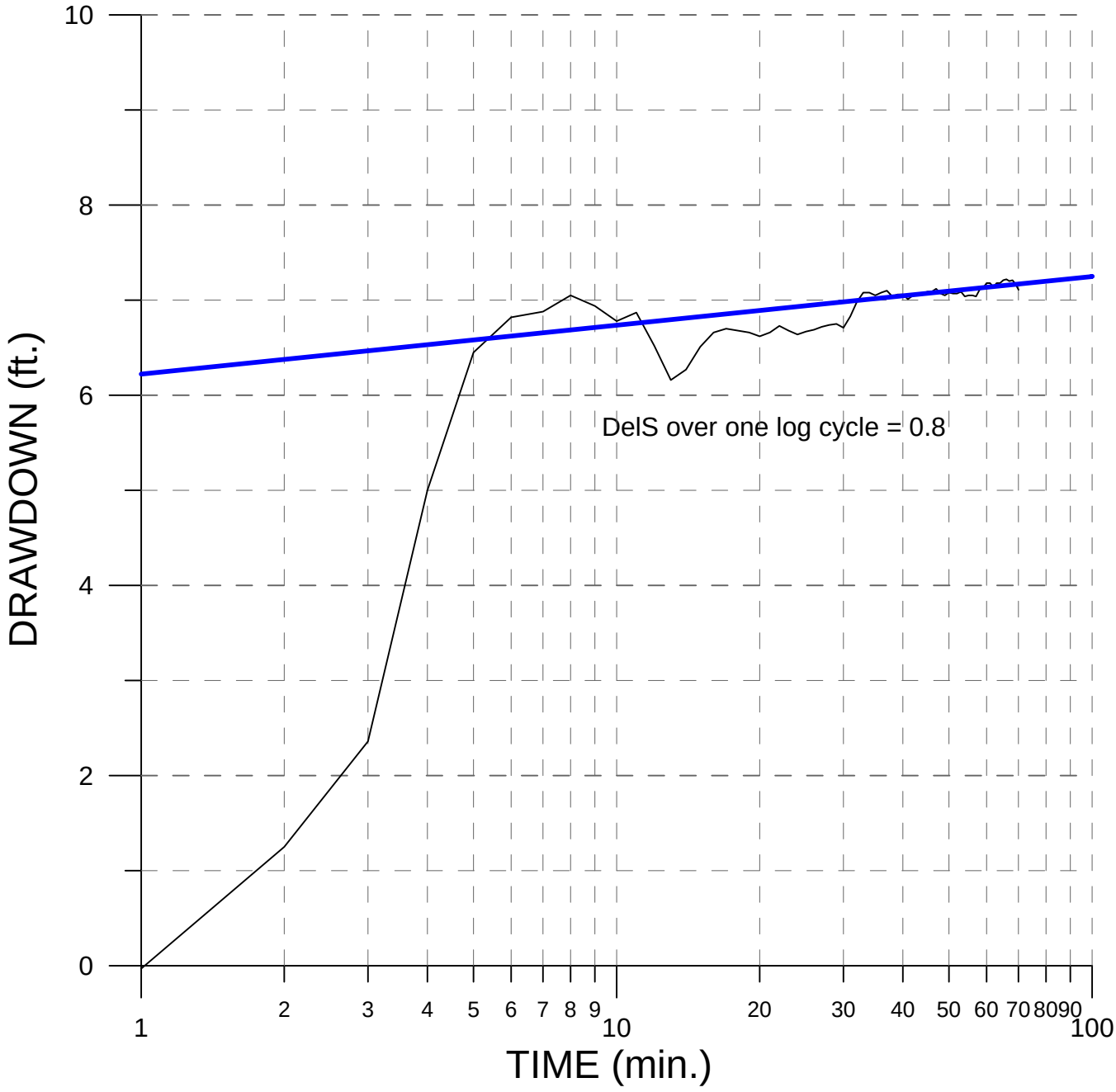
GB-MW-03 Packer Test @ 49 fbtoc - Derivative Plot
8/29/2008



The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/derivativedrawdowngraphs/GB-MW-03DPackerTest49derivativetplot

GB-MW-03 Packer Test @ 91.5 FBTOC
8/29/08

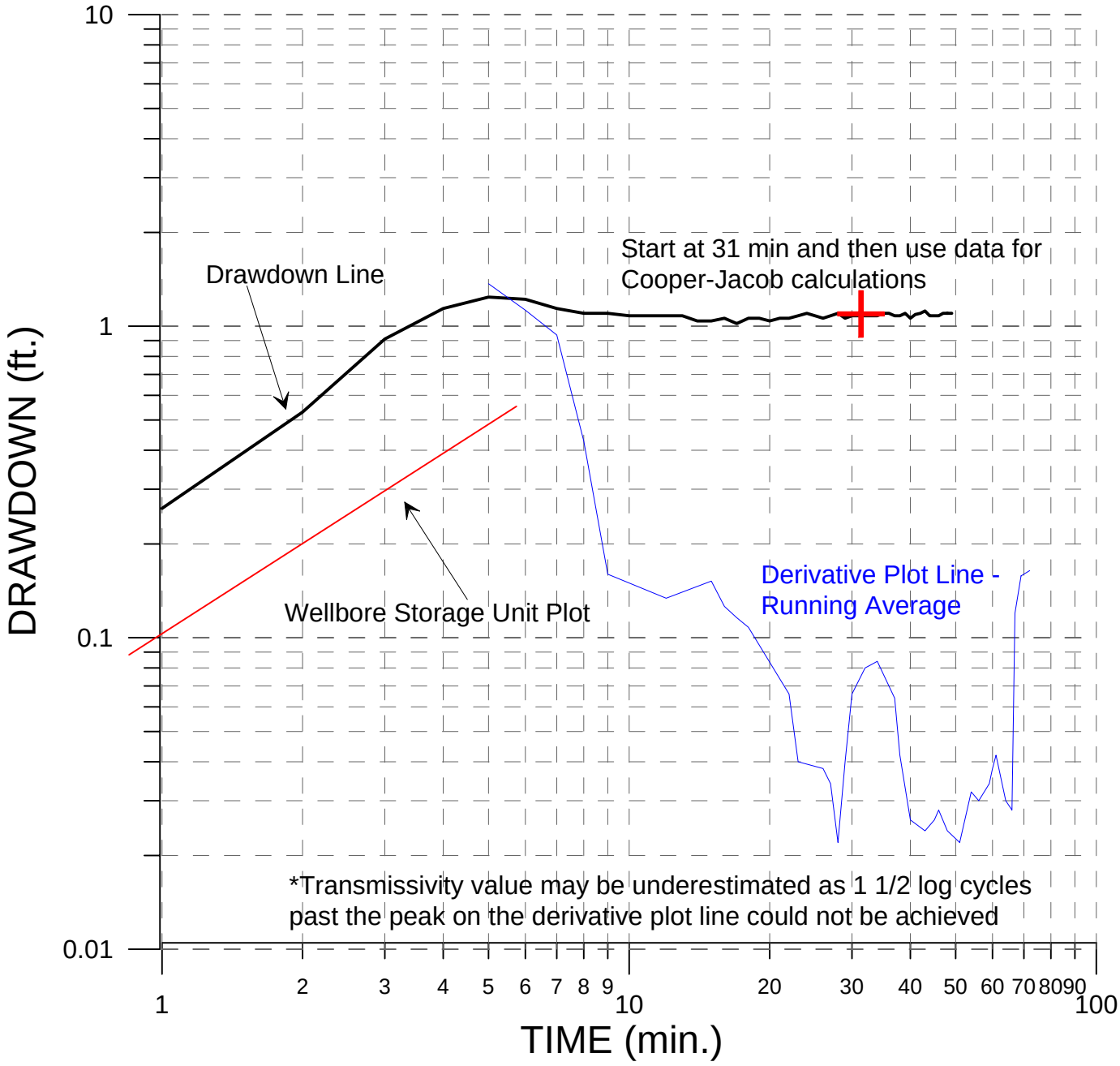


Slope, delS = 1 change in drawdown per log cycle
Pumping rate, Q = 0.50 gpm (from well development logs)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 0.50 / 1 = 132 gpd/ft
T = 17.6 sfpd * (1 cfpd = 0.1337 gpd/ft)
*** Value may be underestimated - see derivative plot graph**

The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/partialpenetrationdrawdowngraphs/GB-MW-03 packer tests 92fbtoc

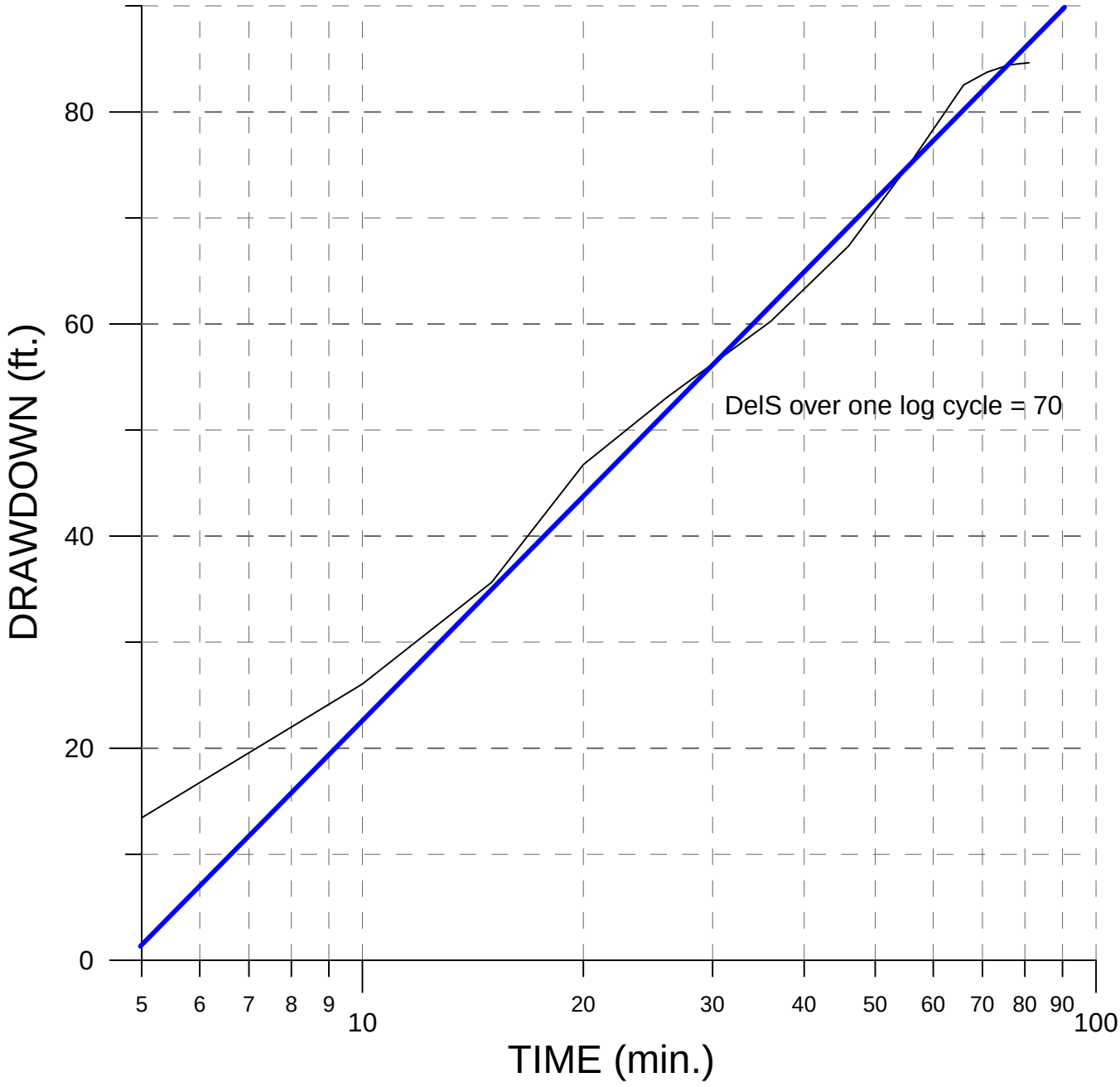
GB-MW-03 Packer Test @ 91.5 fbtoc - Derivative Plot
8/29/2008



The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/derivativedrawdowngraphs/GB-MW-03DPackerTest92derivativetplot

GB-MW-03 Packer Test @ 141.5 FBTOC
8/29/08

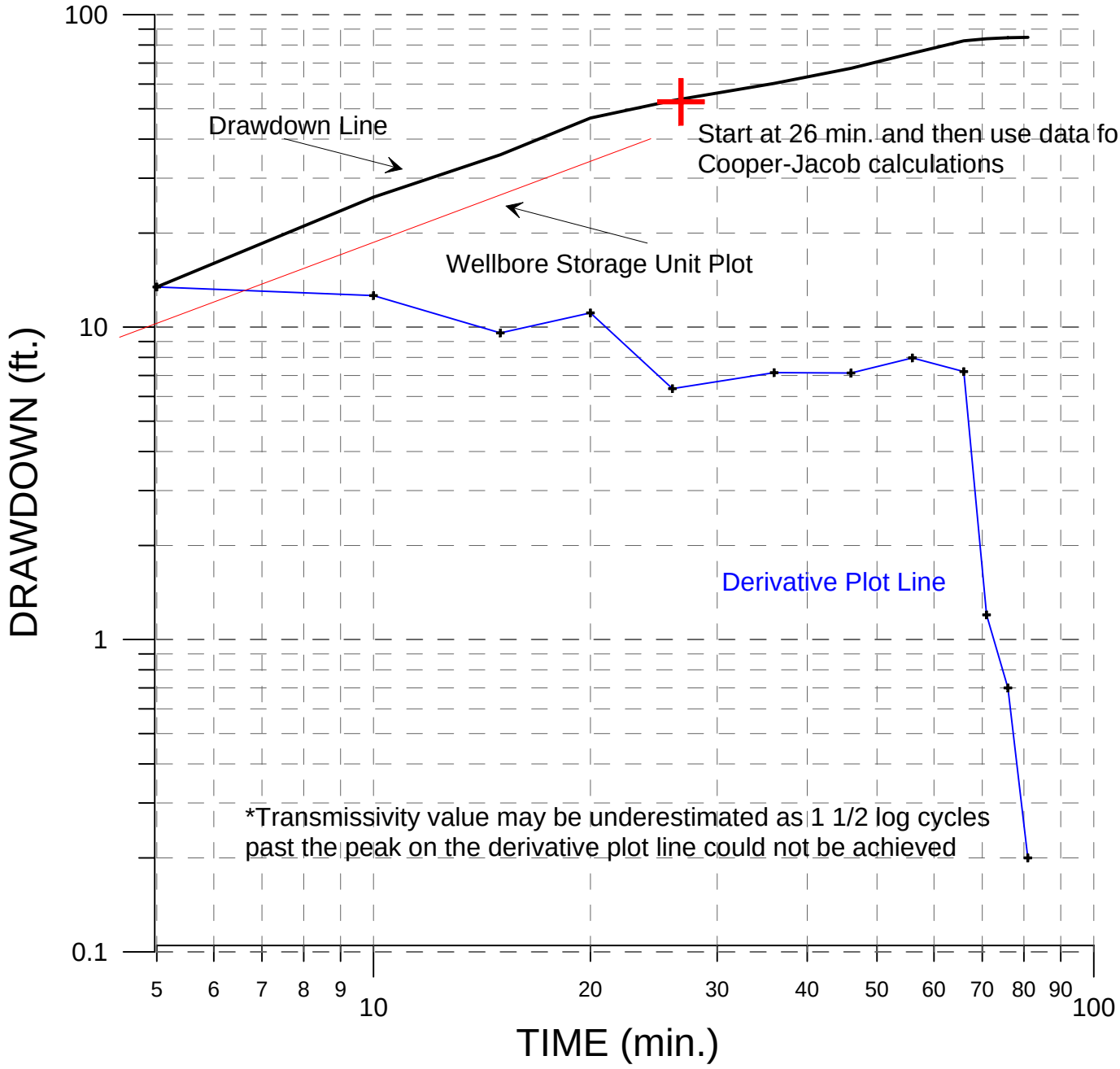


Slope, delS = 70 change in drawdown per log cycle
Pumping rate, Q = 0.45 gpm (from well development logs)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 0.45 / 70 = 1.70 gpd/ft
T = 0.23 sfpd* (1 cfpd = 0.1337 gpd/ft)
*** Value may be underestimated - see derivative plot graph**

The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/partialpenetrationdrawdowngraphs/GB-MW-03 packer tests 142fbtoc

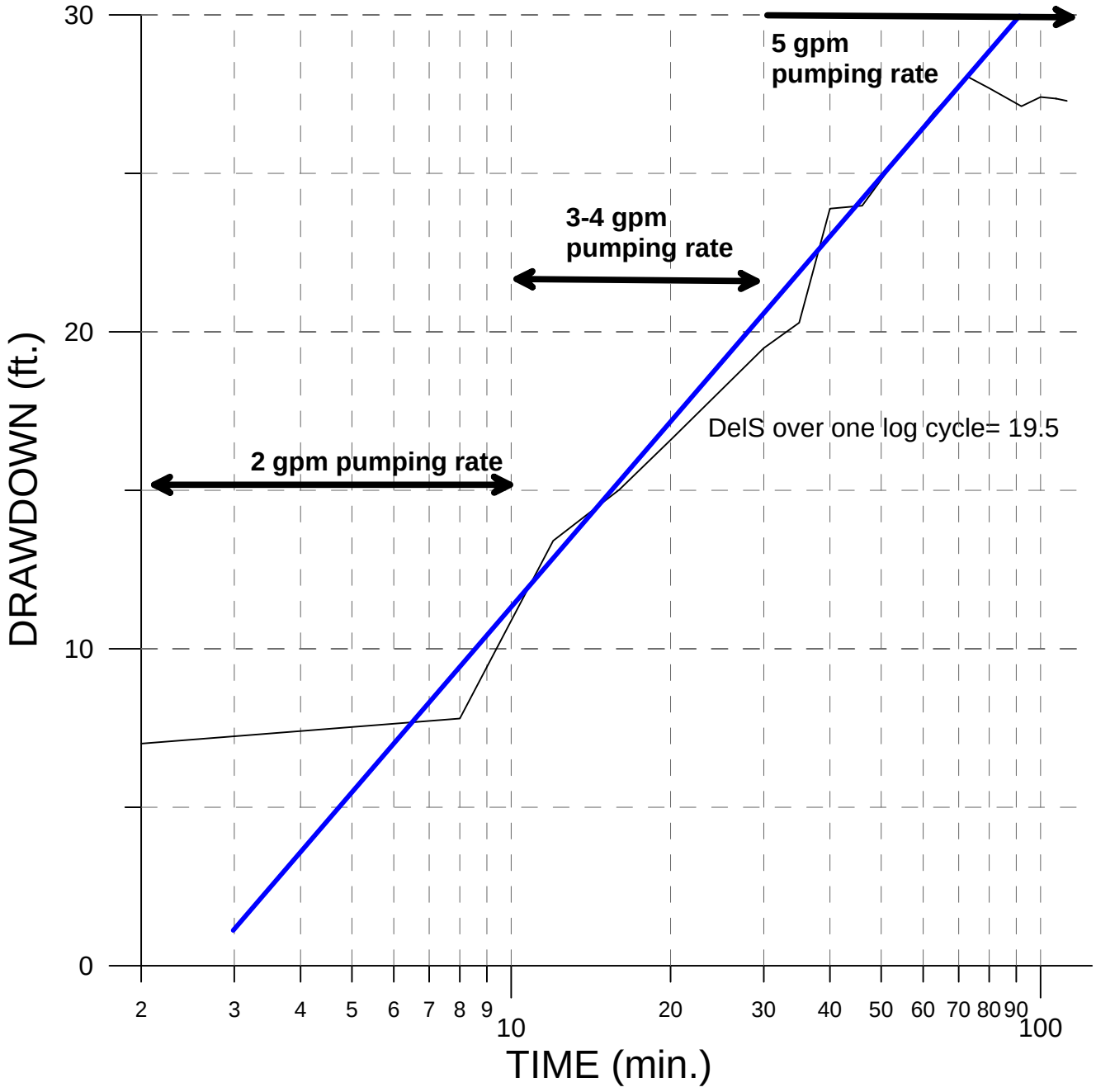
GB-MW-03 Packer Test @ 141.5 fbtoc - Derivative Plot
8/29/2008



The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/derivativedrawdowngraphs/GB-MW-03DPackerTest142derivativetplot

GB-MW-03D Pumping
9/17/08

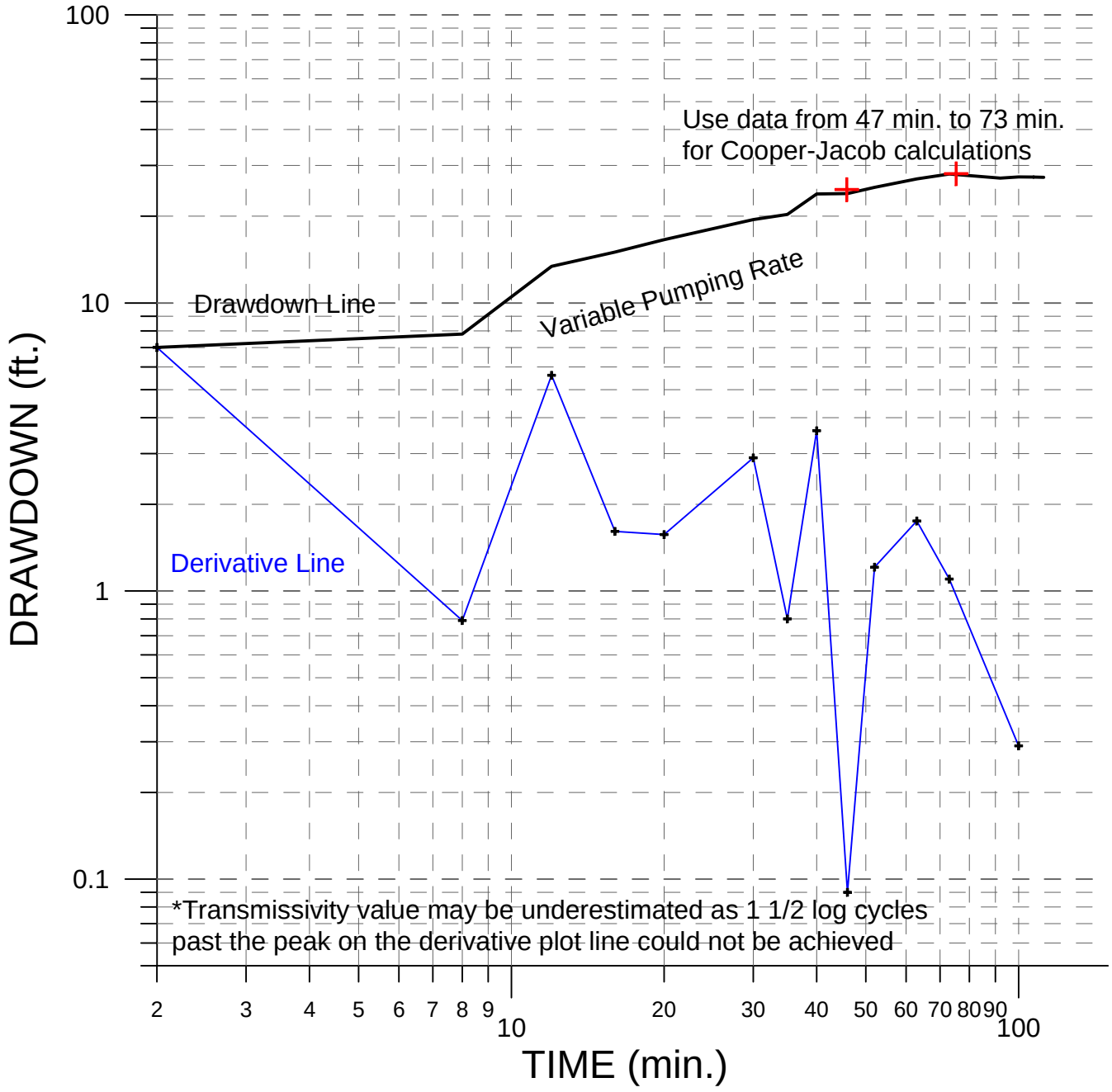


Slope, delS = 19.5 change in drawdown per log cycle
Pumping rate, Q = 5.125 gpm (from well development logs)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 5.125 / 19.5 = 69.4 gpd/ft
T = 9.28 sfpd* (1 cfpd = 0.1337 gpd/ft)
*** Value may be underestimated - see derivative plot graph**

The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/partialpenetrationdrawdowngraphs/GB-MW-03DPumping

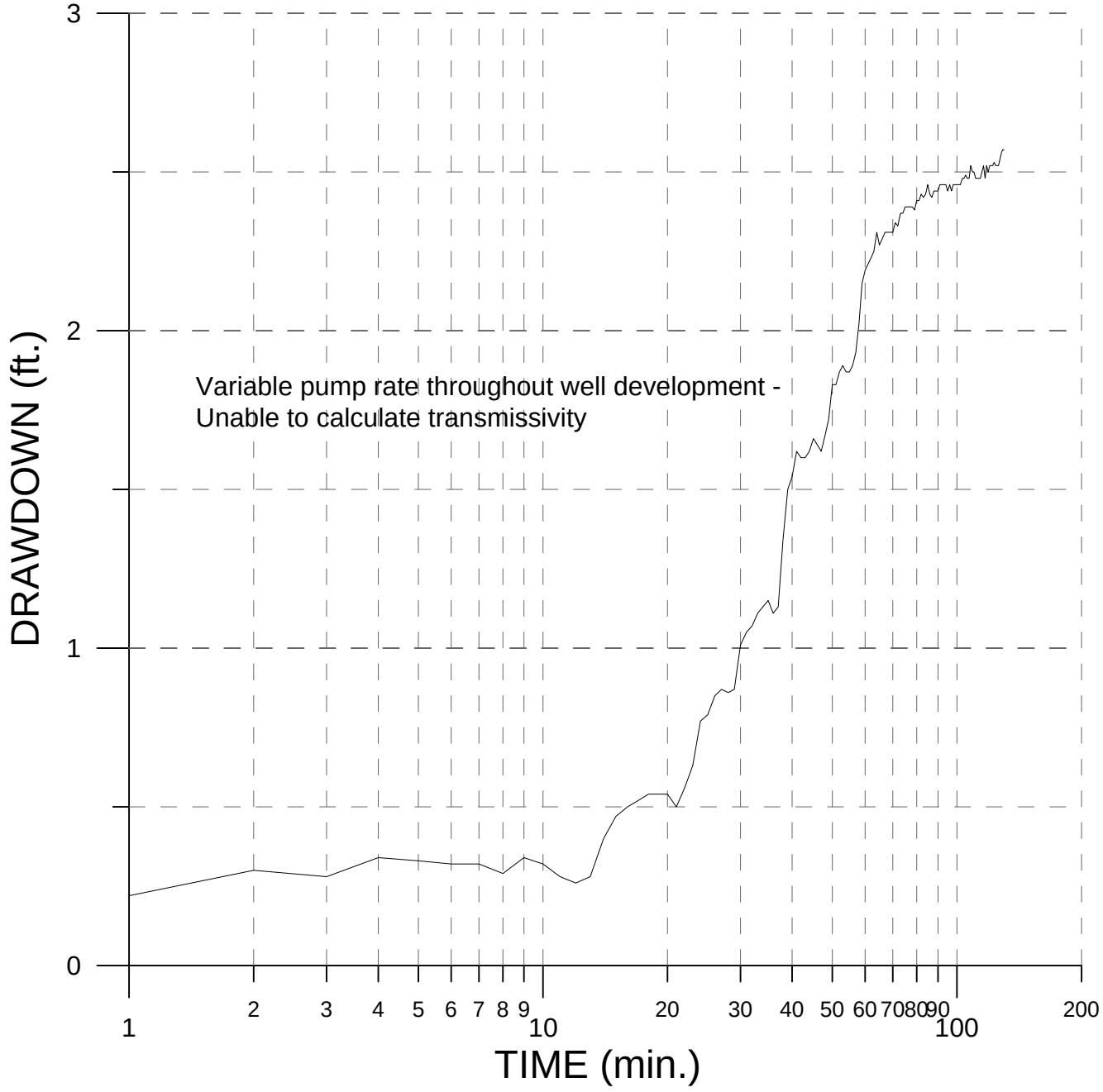
GB-MW-03D Well Pump Derivative Plot
9/17/2008



The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/derivativedrawdowngraphs/GB-MW-03Swellpumpderivativetplot

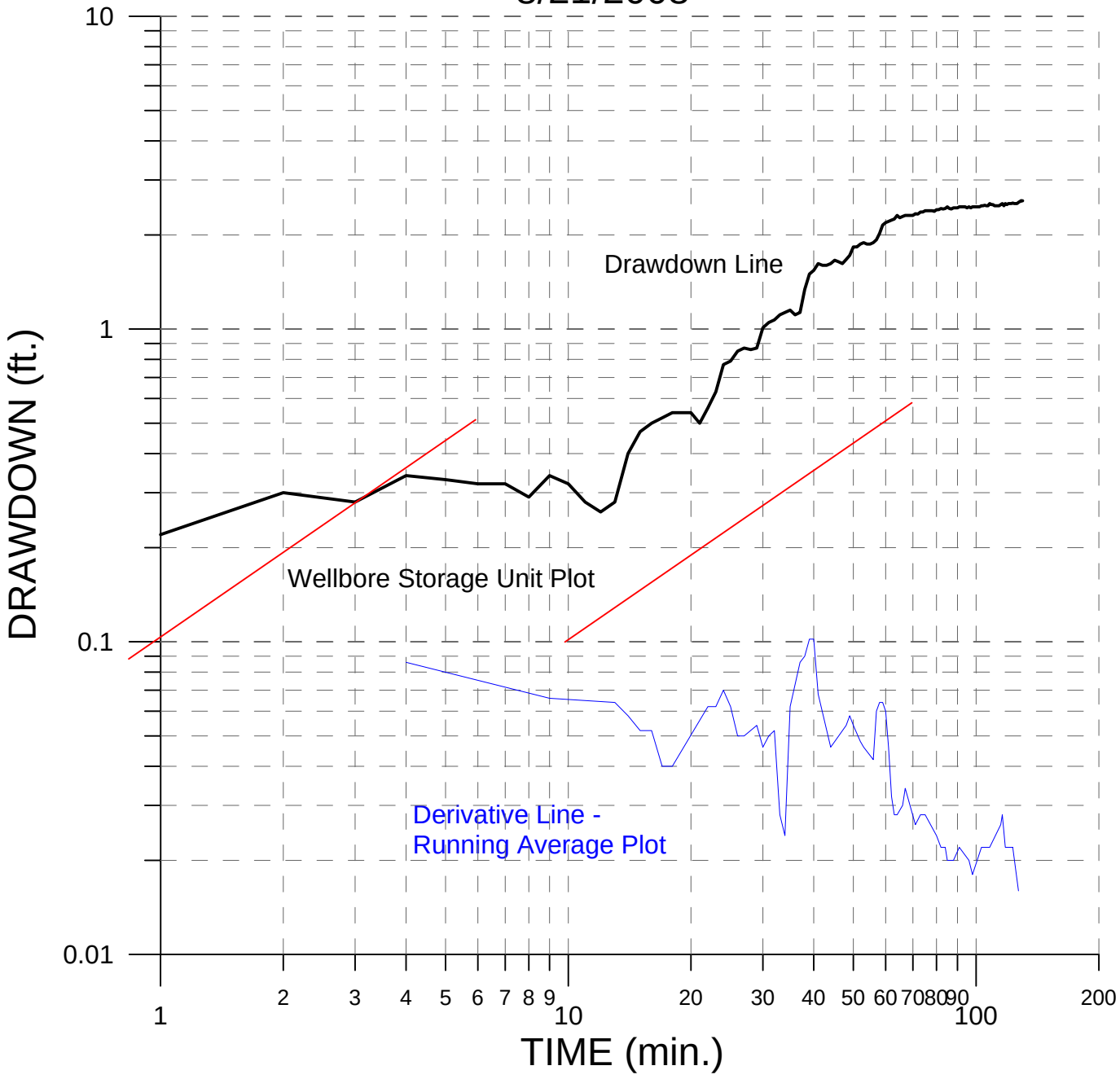
GB-MW-04 Open Hole Well Development
8/21/2008



The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/partialpenetrationdrawdowngraphs/GB-MW-04welldevelopment082108

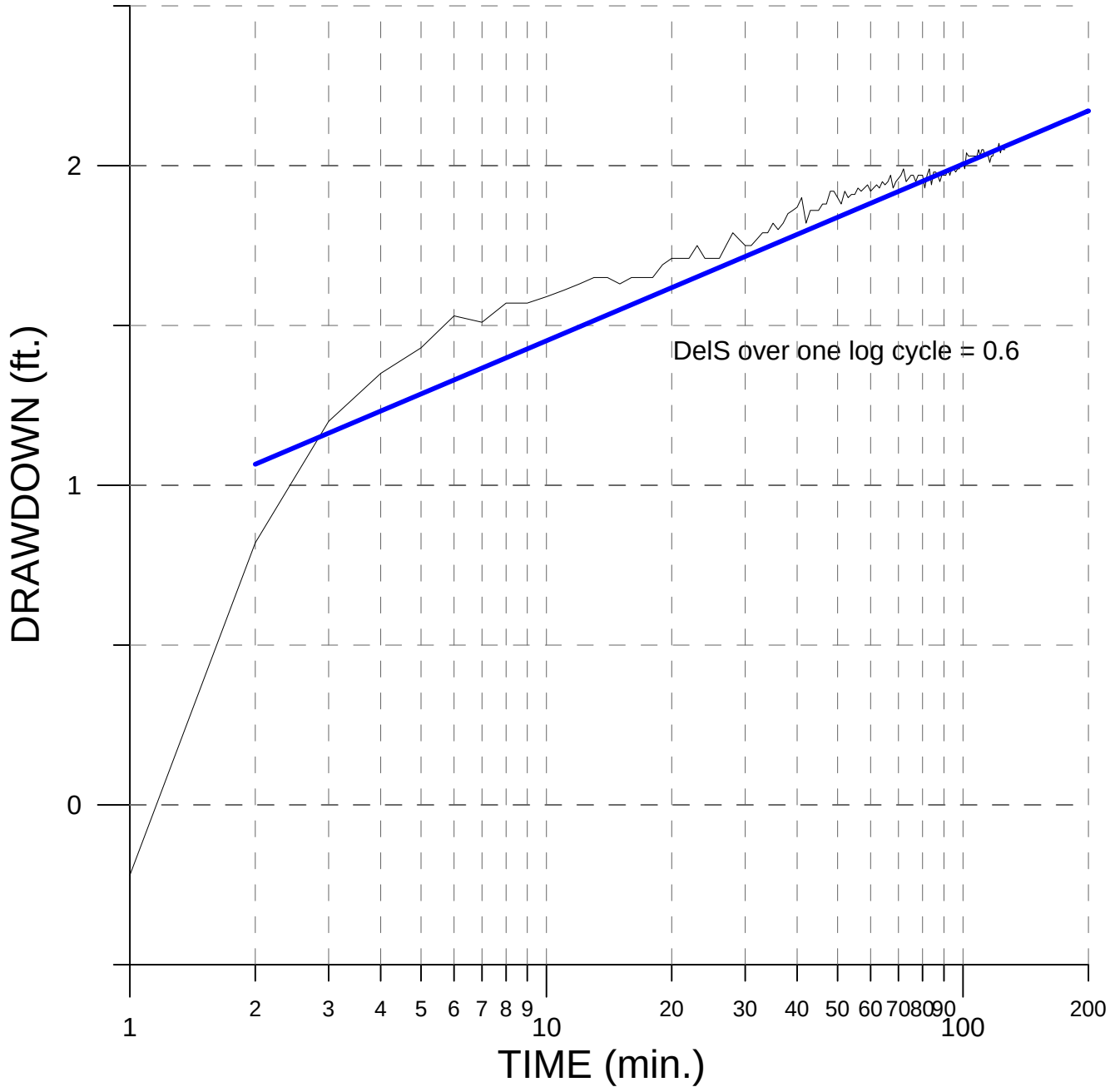
GB-MW-04 Well Open Hole Development
Derivative Plot
8/21/2008



The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/derivativedrawdowngraphs/GB-MW-04Welldevelopment derivativetplot

GB-MW-04 Open Hole Well Development
8/22/2008

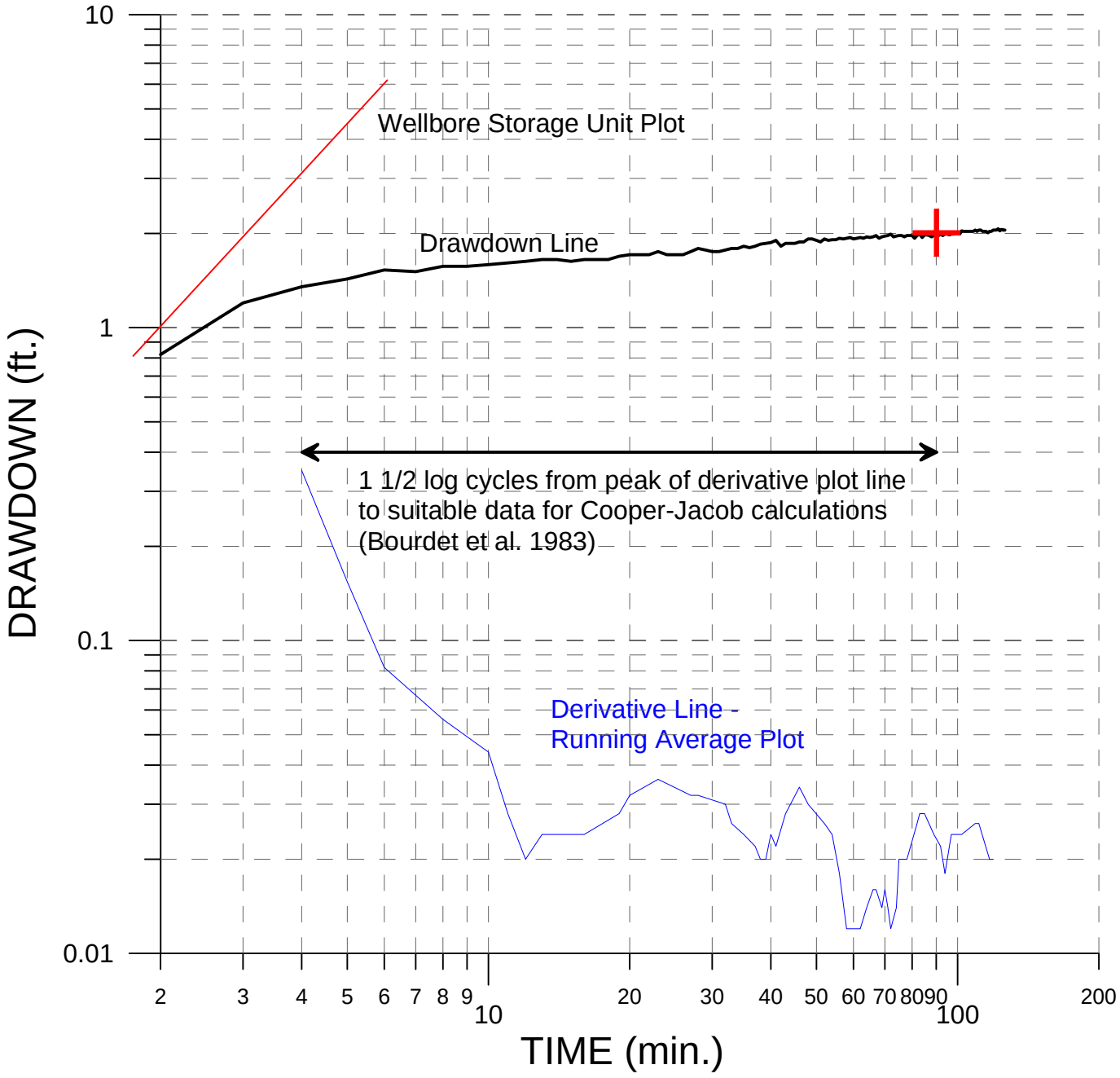


Slope, delS = 0.6 change in drawdown per log cycle
Pumping rate, Q = 5.2 gpm (from well development logs)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 5.2 / 0.6 = 2,288 gpd/ft
T = 305.90 sfpd (1 cfpd = 0.1337 gpd/ft)

The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/partialpenetrationdrawdowngraphs/GB-MW-04welldevelopment082208

GB-MW-04 Well Development Derivative Plot
8/22/2008



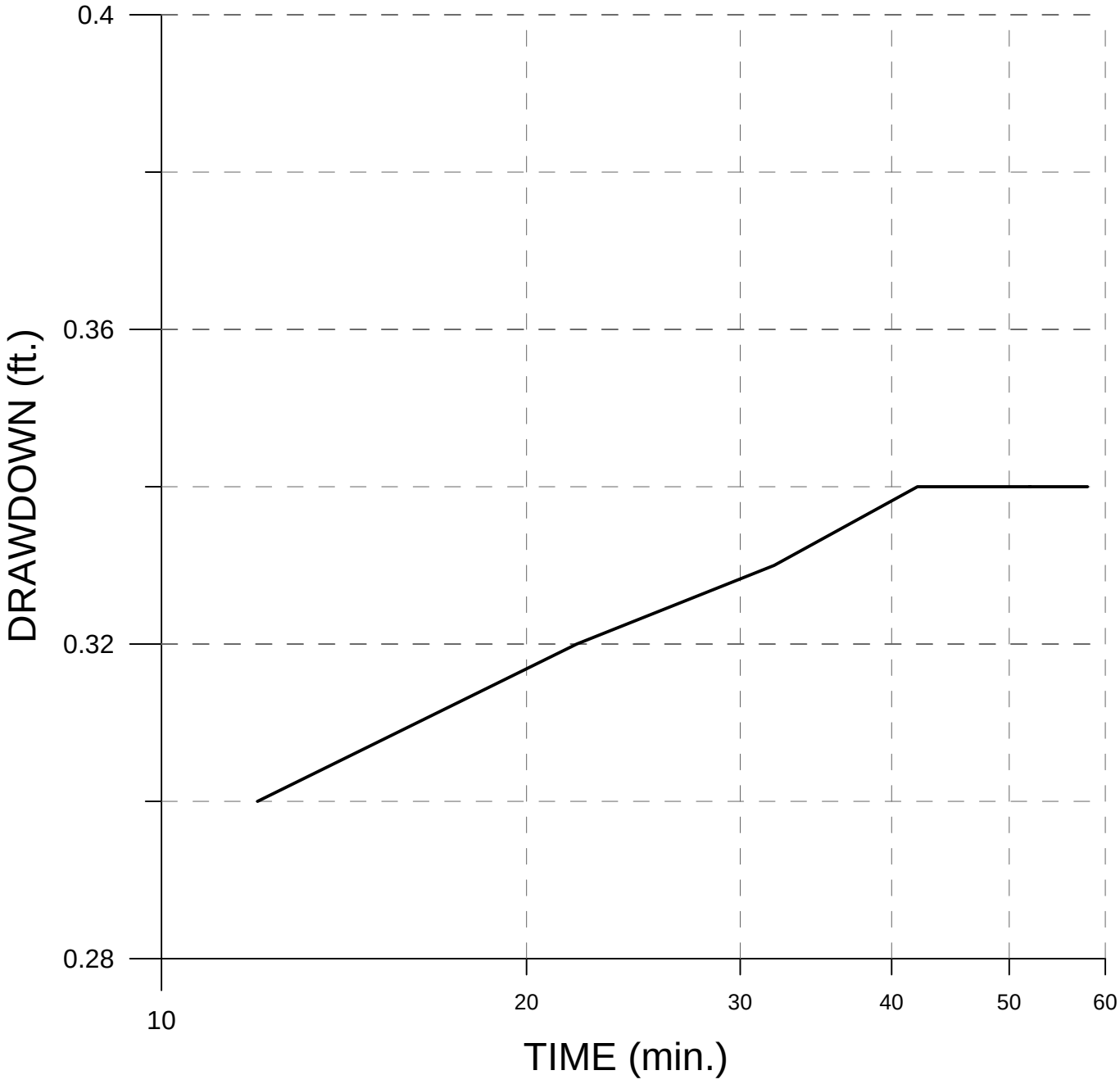
The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/derivativedrawdowngraphs/GB-MW-04Welldevelopment derivativetplot082208

GB-MW-04 Packer Test @ 46.5 FBTOC

Pump Outside 2" Packer Unit

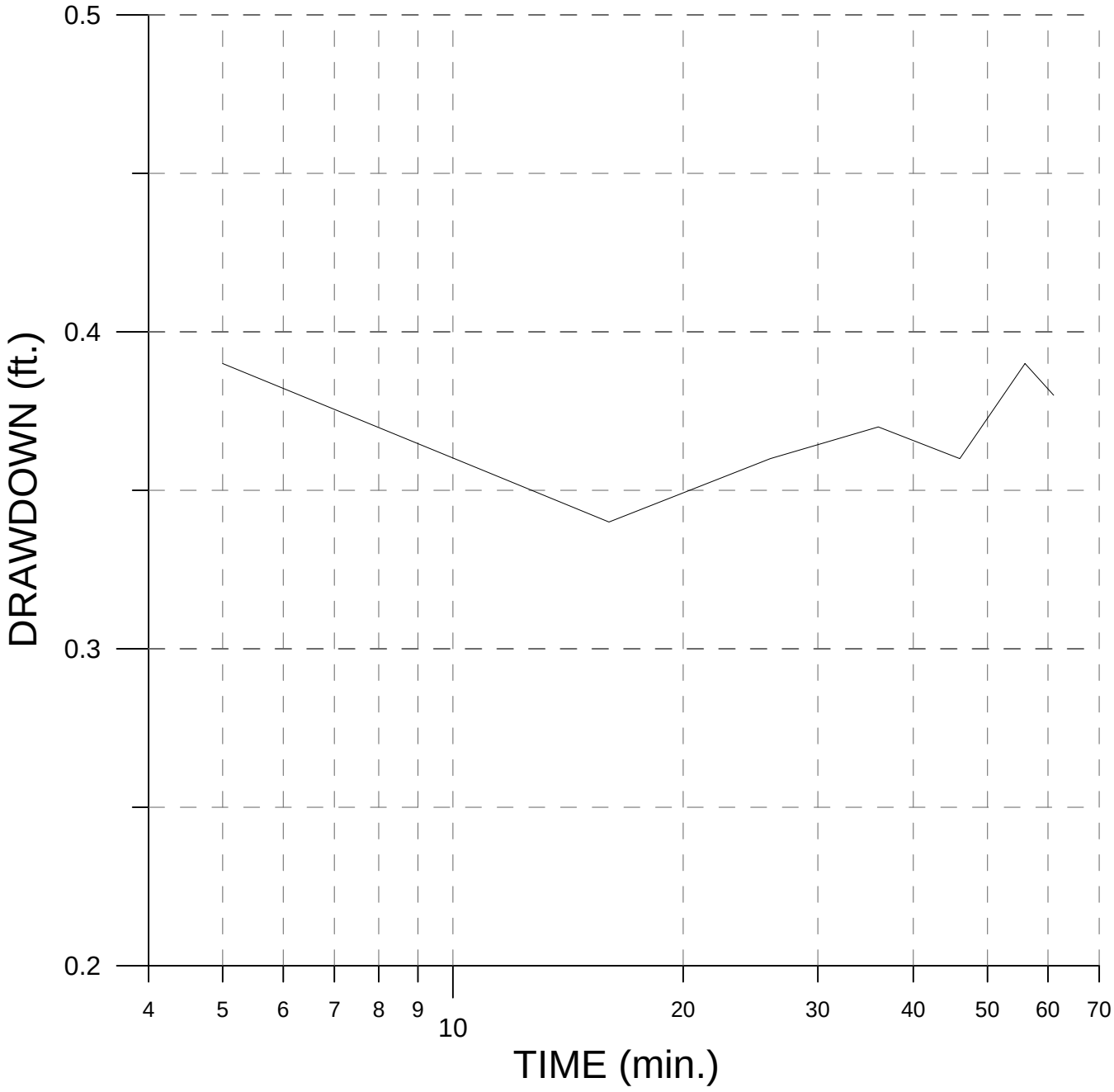
8/28/08



Insufficient Data - Unable to Calculate Transmissivity & Hydraulic Conductivity

The JCO
Data source: August 2008 Solinst Data Logger Data

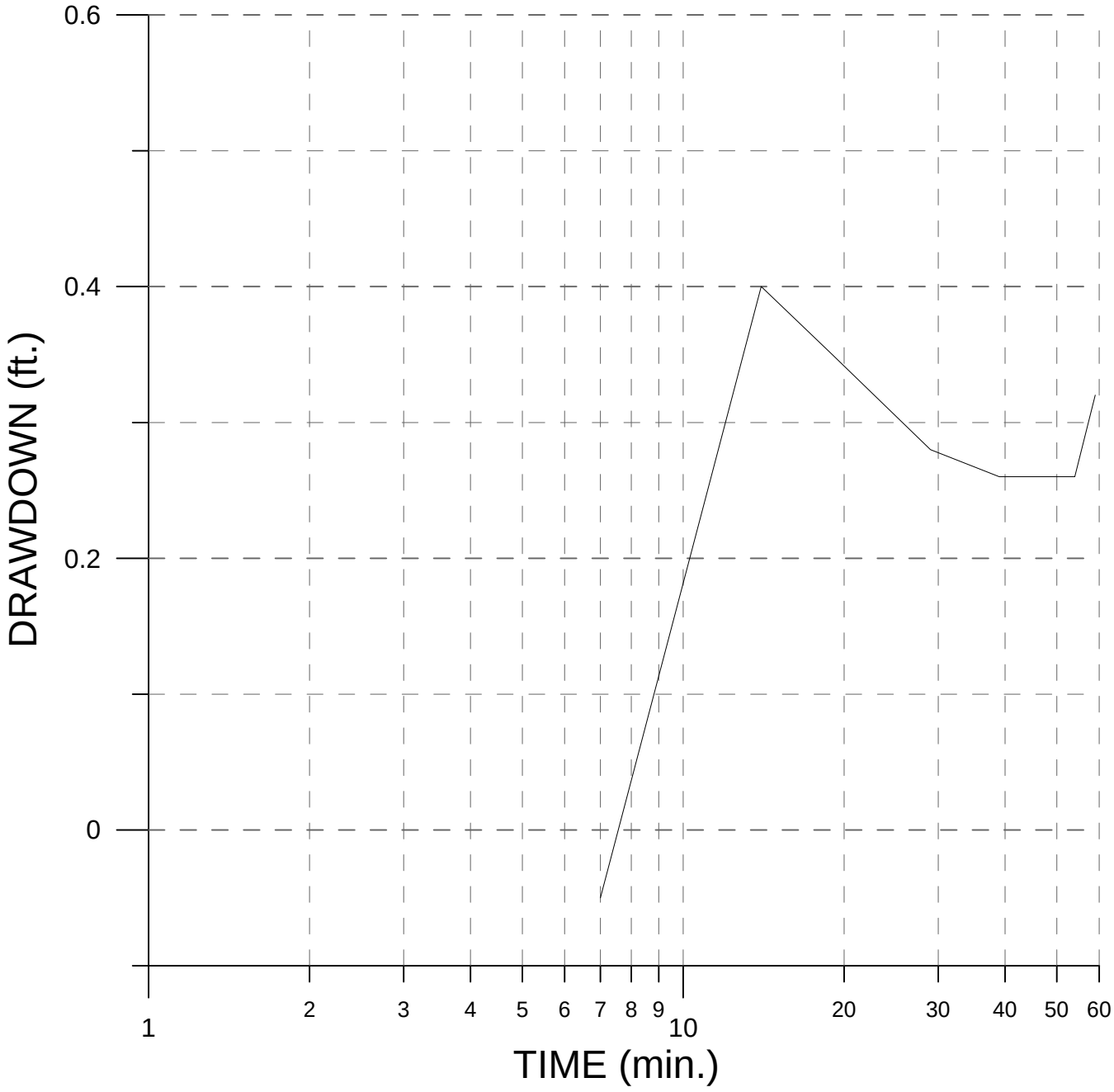
GB-MW-04 Packer Test @ 55.5 FBTOC
8/28/08



Insufficient Data - Unable to Calculate Transmissivity & Hydraulic Conductivity

The JCO
Data source: August 2008 Solinst Data Logger Data
1-2128-9/RIFSfielddata/partialpenetrationdrawdowngraphs/GB-MW-04 packer tests 56fbtoc

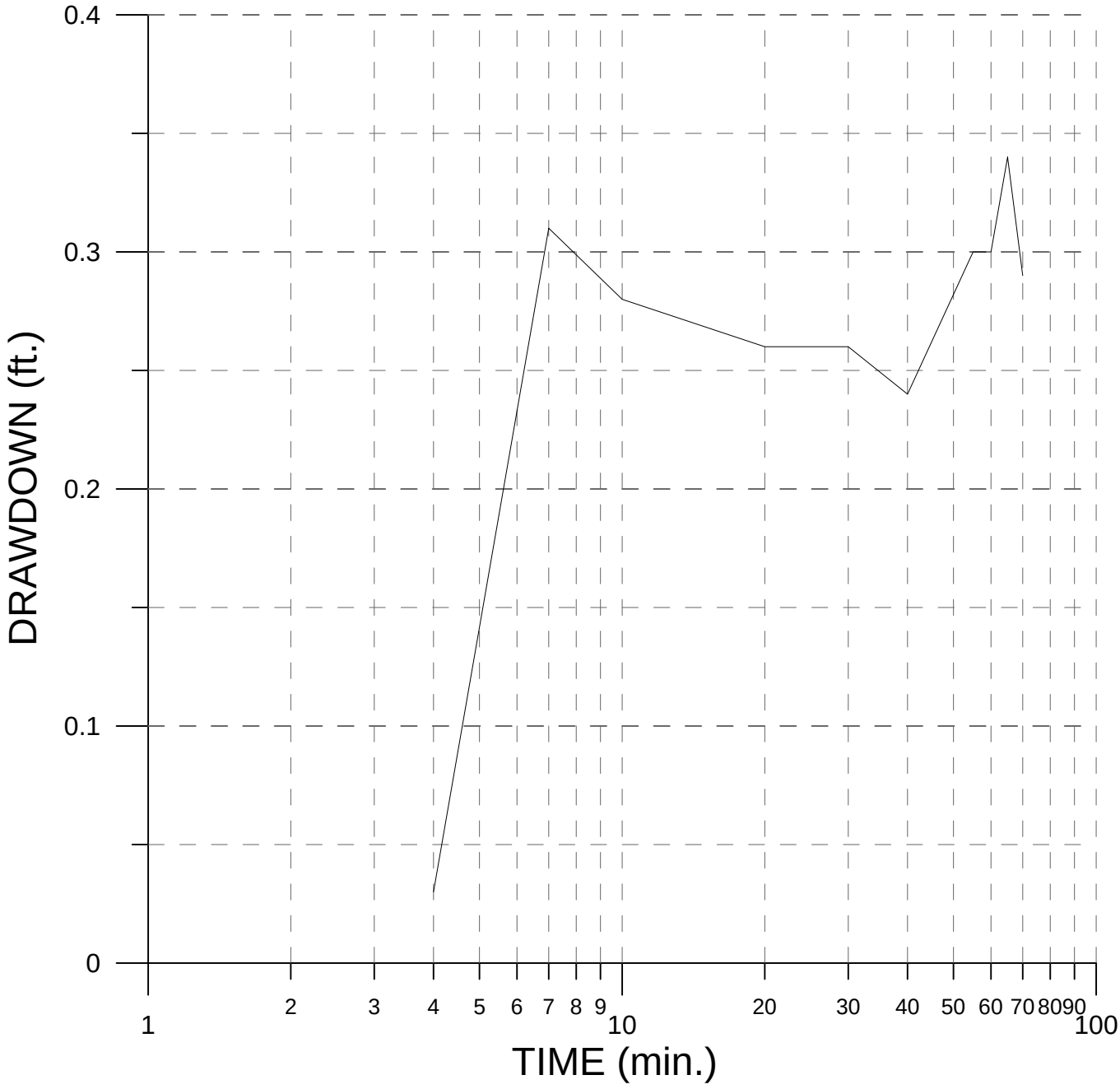
GB-MW-04 Packer Test @ 69.5 FBTOC
8/28/08



Insufficient Data - Unable to Calculate Transmissivity & Hydraulic Conductivity

The JCO
Data source: August 2008 Solinst Data Logger Data
1-2128-9/RIFSfielddata/partialpenetrationdrawdowngraphs/GB-MW-04 packer tests 70fbtoc

GB-MW-04 Packer Test @ 93.5 FBTOC
8/28/08

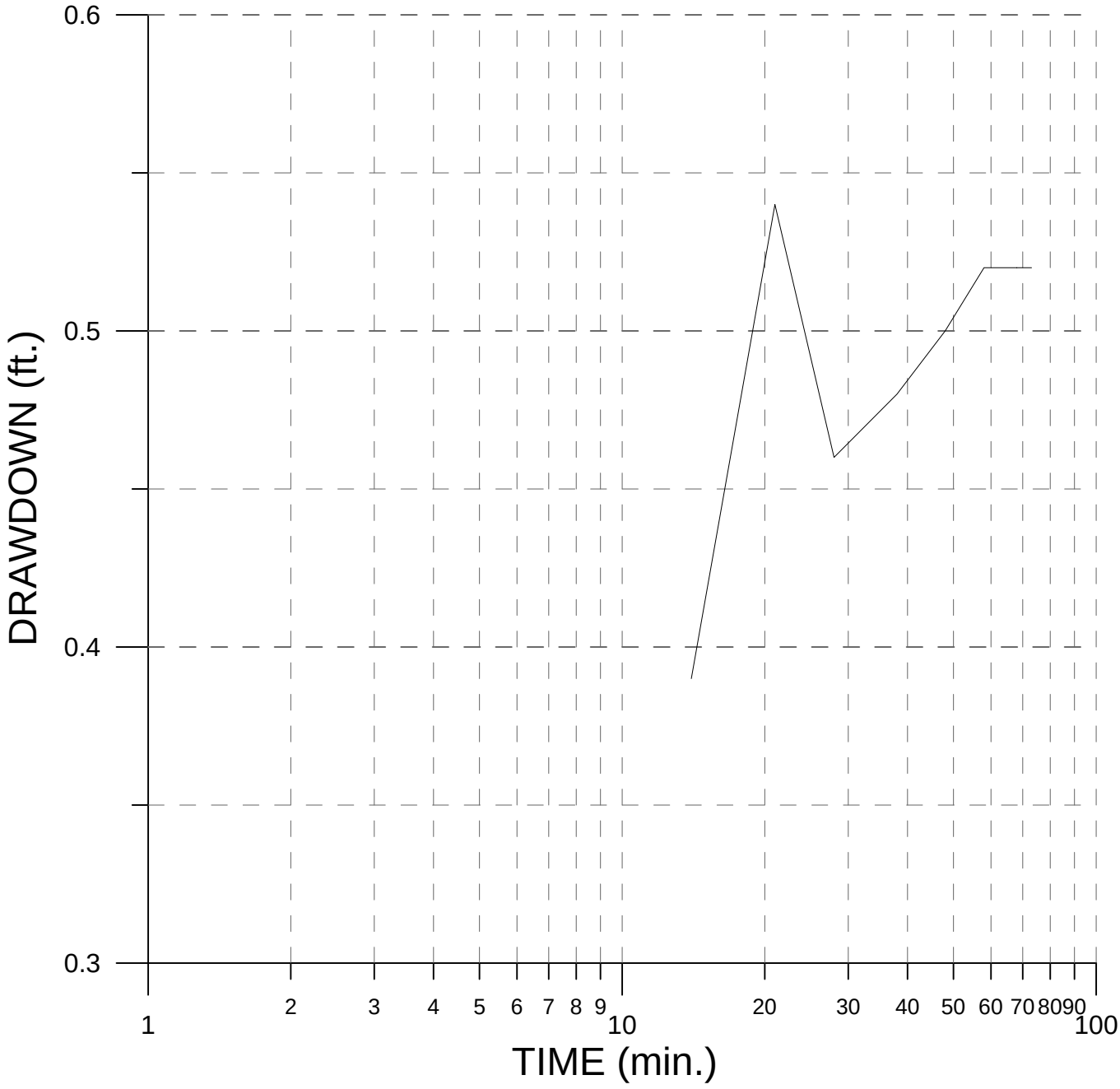


Insufficient Data - Unable to Calculate Transmissivity & Hydraulic Conductivity

The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/partialpenetrationdrawdowngraphs/GB-MW-04 packer tests 94fbtoc

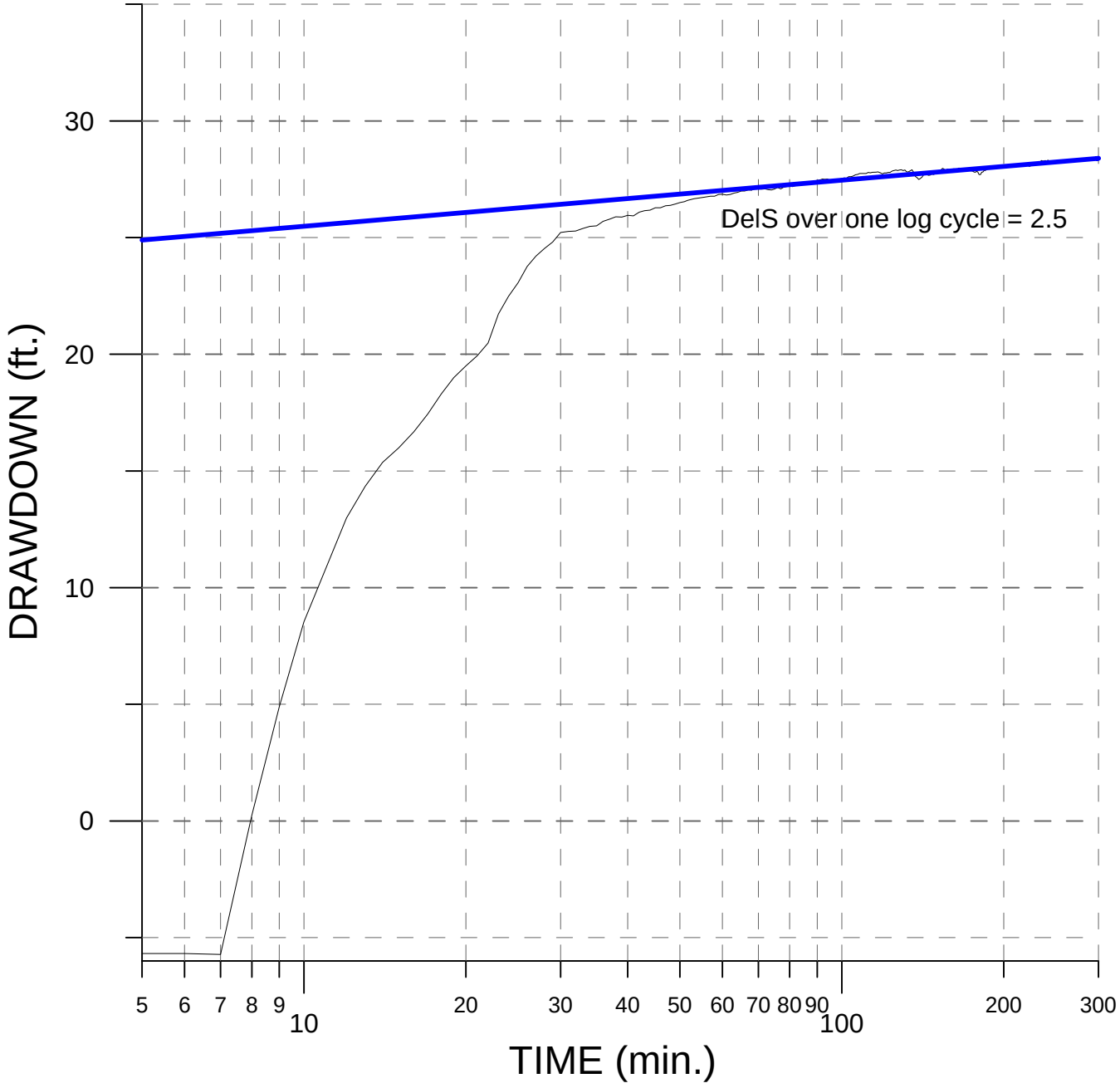
GB-MW-04 Packer Test @ 108.5 FBTOC
8/28/08



Insufficient Data - Unable to Calculate Transmissivity & Hydraulic Conductivity

The JCO
Data source: August 2008 Solinst Data Logger Data

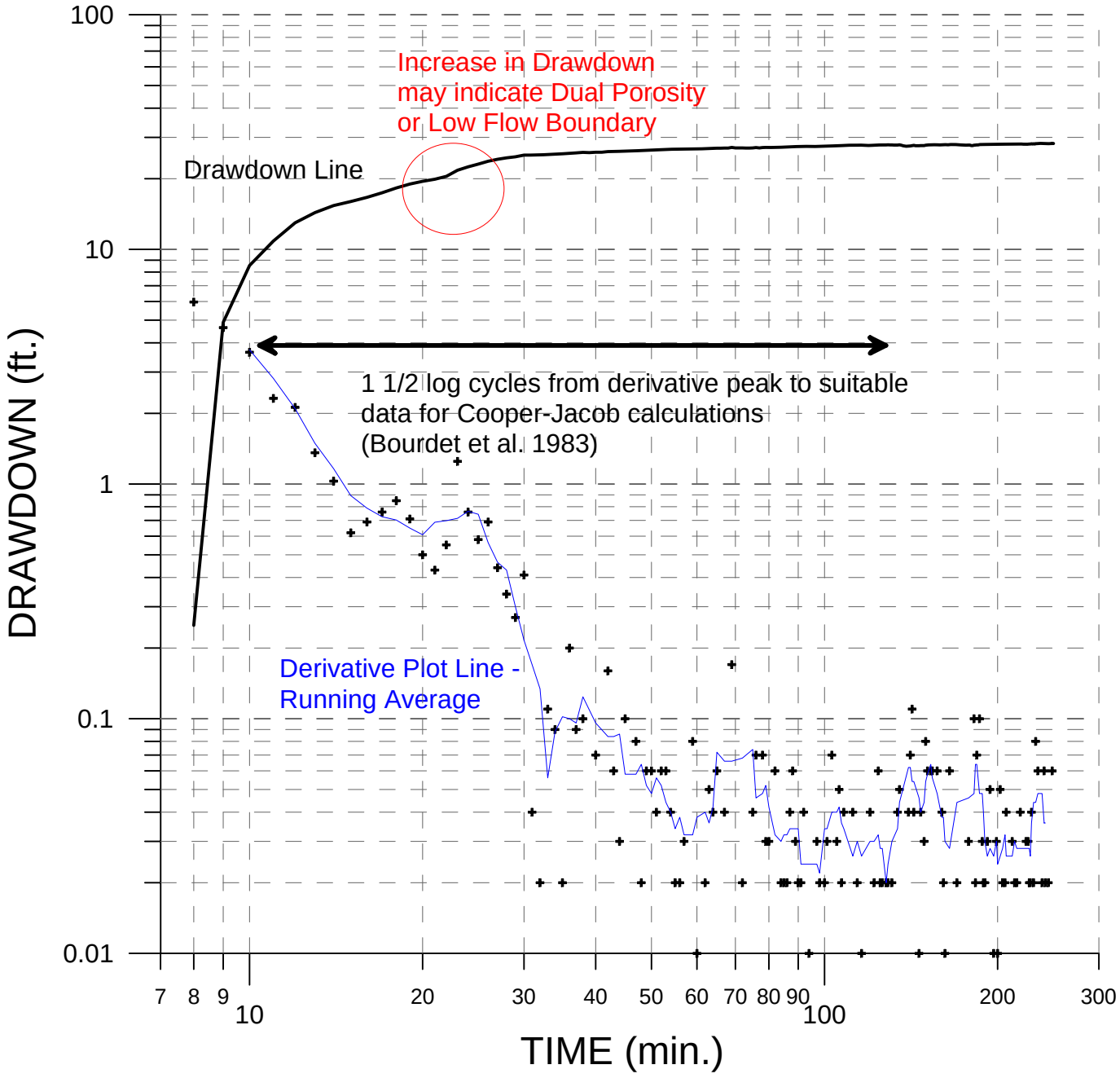
GB-MW-04D Pump Test - Transmissivity & Hydraulic Conductivity 11/21/2008



Slope, delS = 2.5 change in drawdown per log cycle
Average Pumping rate, Q = 1.71 gpm (from well development logs)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 1.71 / 2.5 = 180.58 gpd/ft
T = 24.1 sfpd (1 cfpd = 0.1337 gpd/ft)

The JCO
Data source: August 2008 Solinst Data Logger Data
1-2128-9/RIFSfielddata/partialpenetrationdrawdowngraphs/GB-MW-04pumptest112108

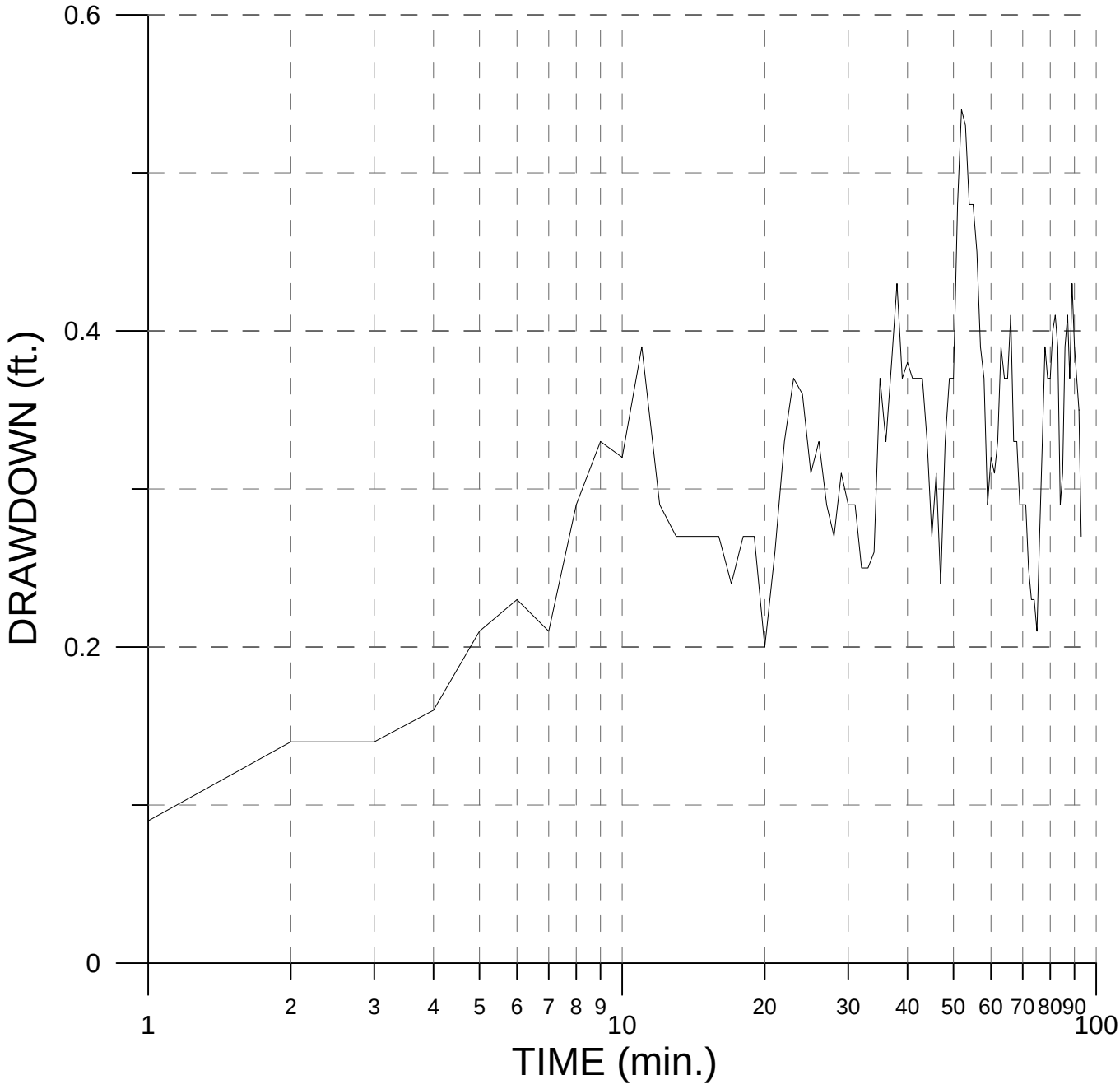
GB-MW-04D Pump Test Derivative Plot
11/21/2008



The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/derivativedrawdowngraphs/GB-MW-04Pumptestplot

GB-MW-05 Open Hole Well Development
8/25/2008



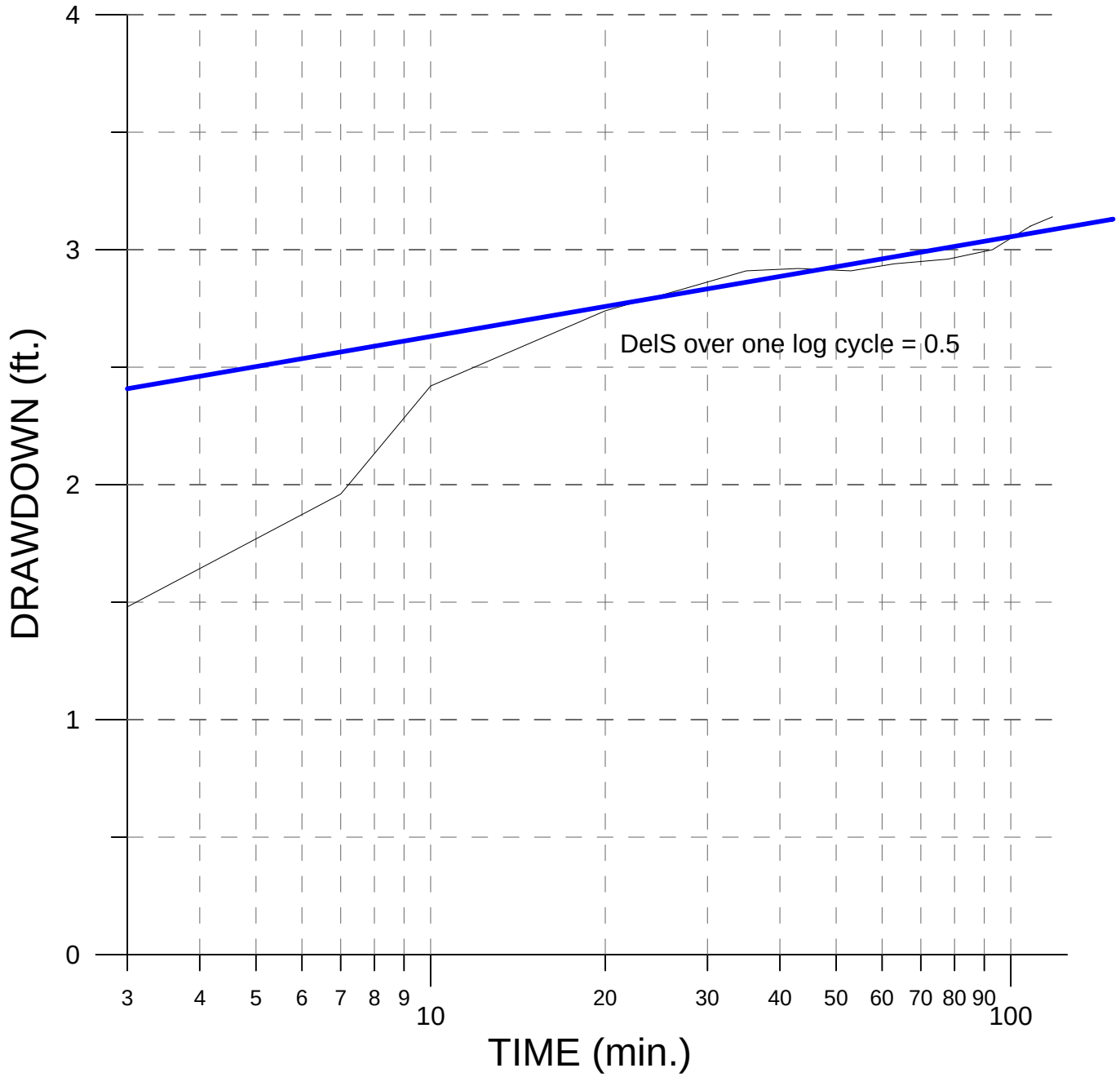
Variable pumping rate throughout well development (4.0 - 5.0 gpm) -

Unable to calculate transmissivity & hydraulic conductivity

The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/partialpenetrationdrawdowngraphs/GB-MW-05welldevelopment082508

GB-MW-05S Well Pumping
9/18/2008

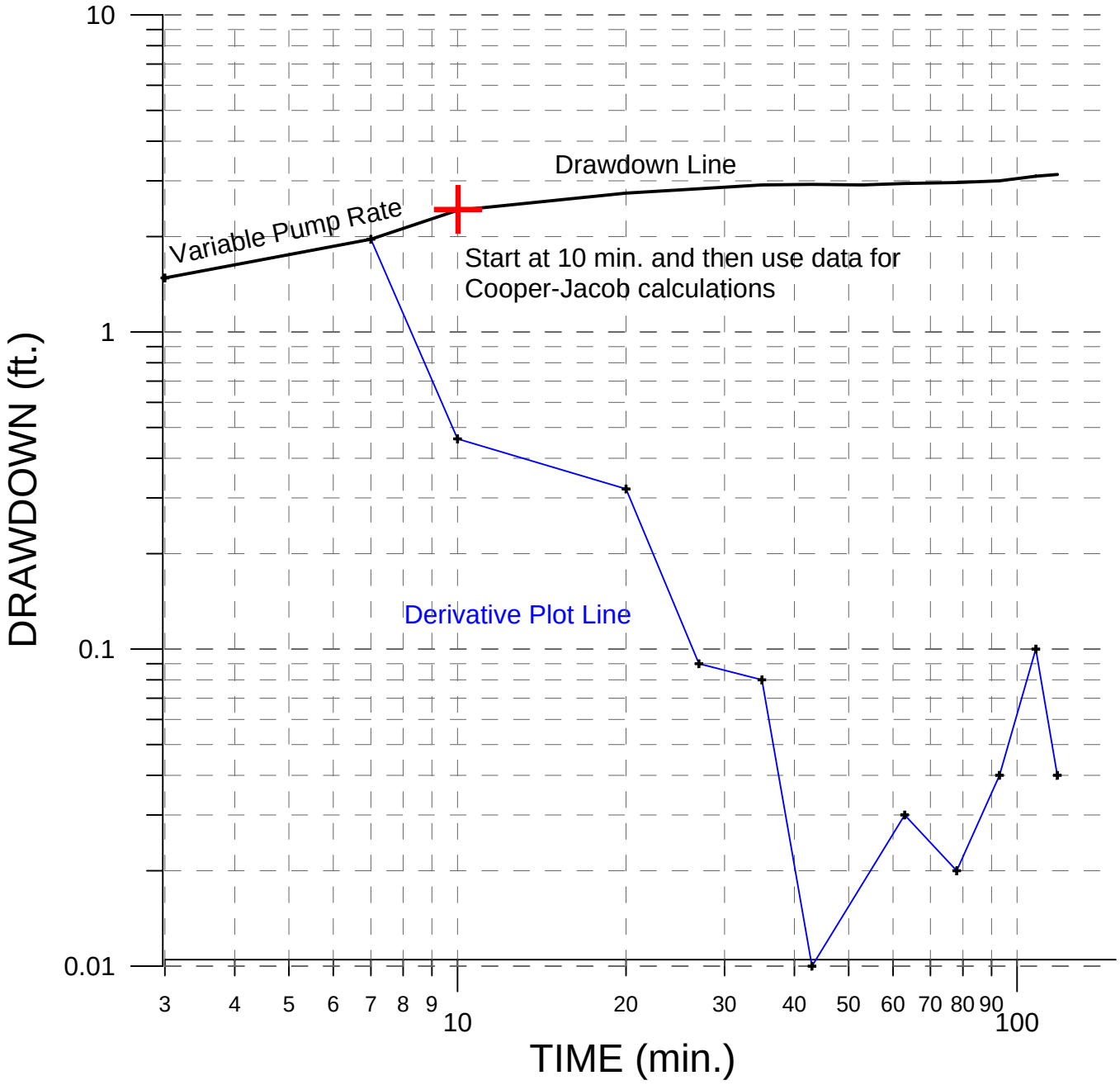


Slope, delS = 0.5 change in drawdown per log cycle
Pumping rate, Q = 4.66 gpm (from well development logs)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 4.66 / 0.5 = 2,460.5 gpd/ft
T = 329 sfpd (1 cfpd = 0.1337 gpd/ft)

The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/partialpenetrationdrawdowngraphs/GB-MW-05SPumping091808

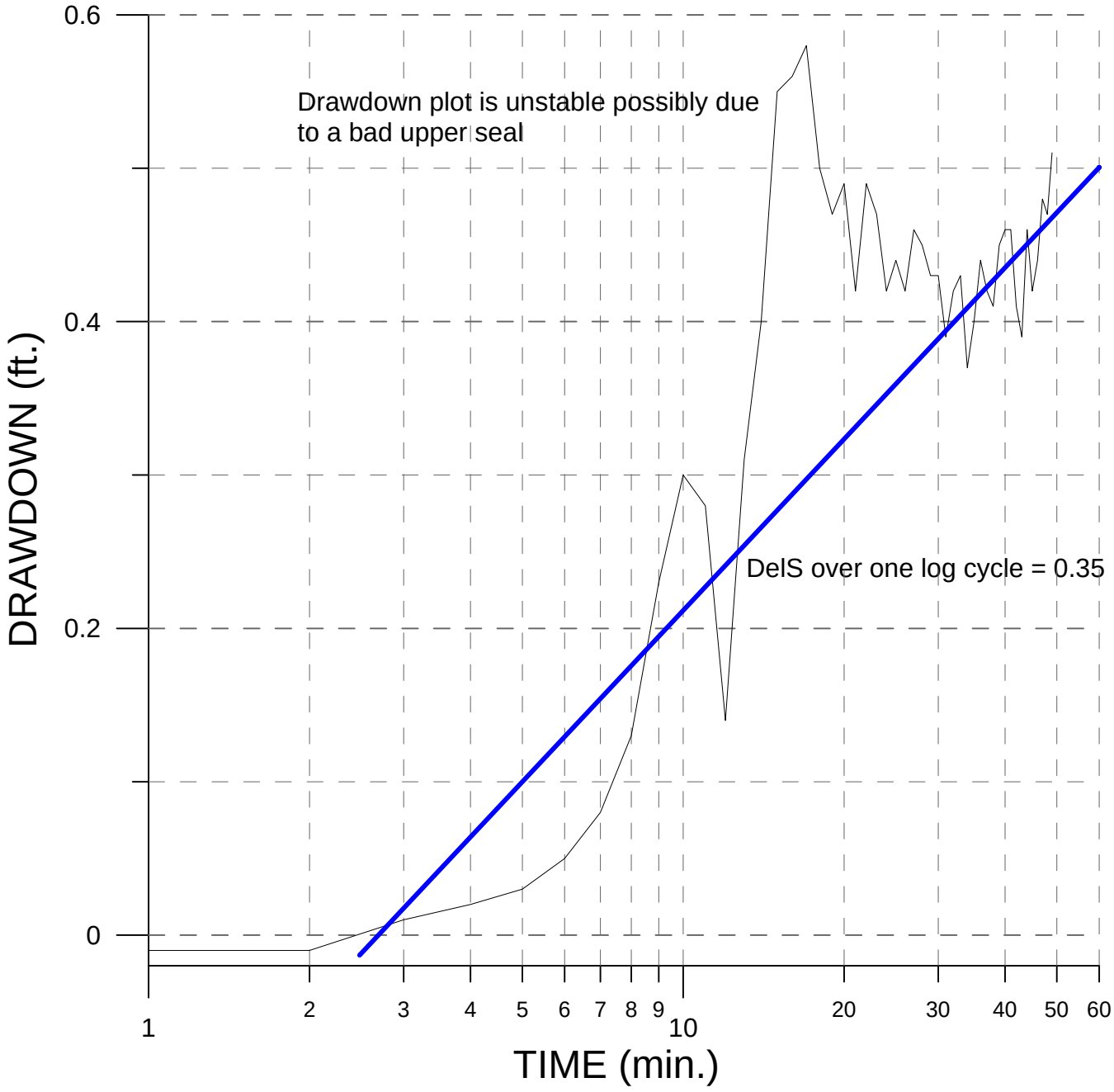
GB-MW-05S Well Pumping - Derivative Plot
9/18/2008



The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/derivativedrawdowngraphs/GB-MW-05SWell Pumping derivativetplot091808

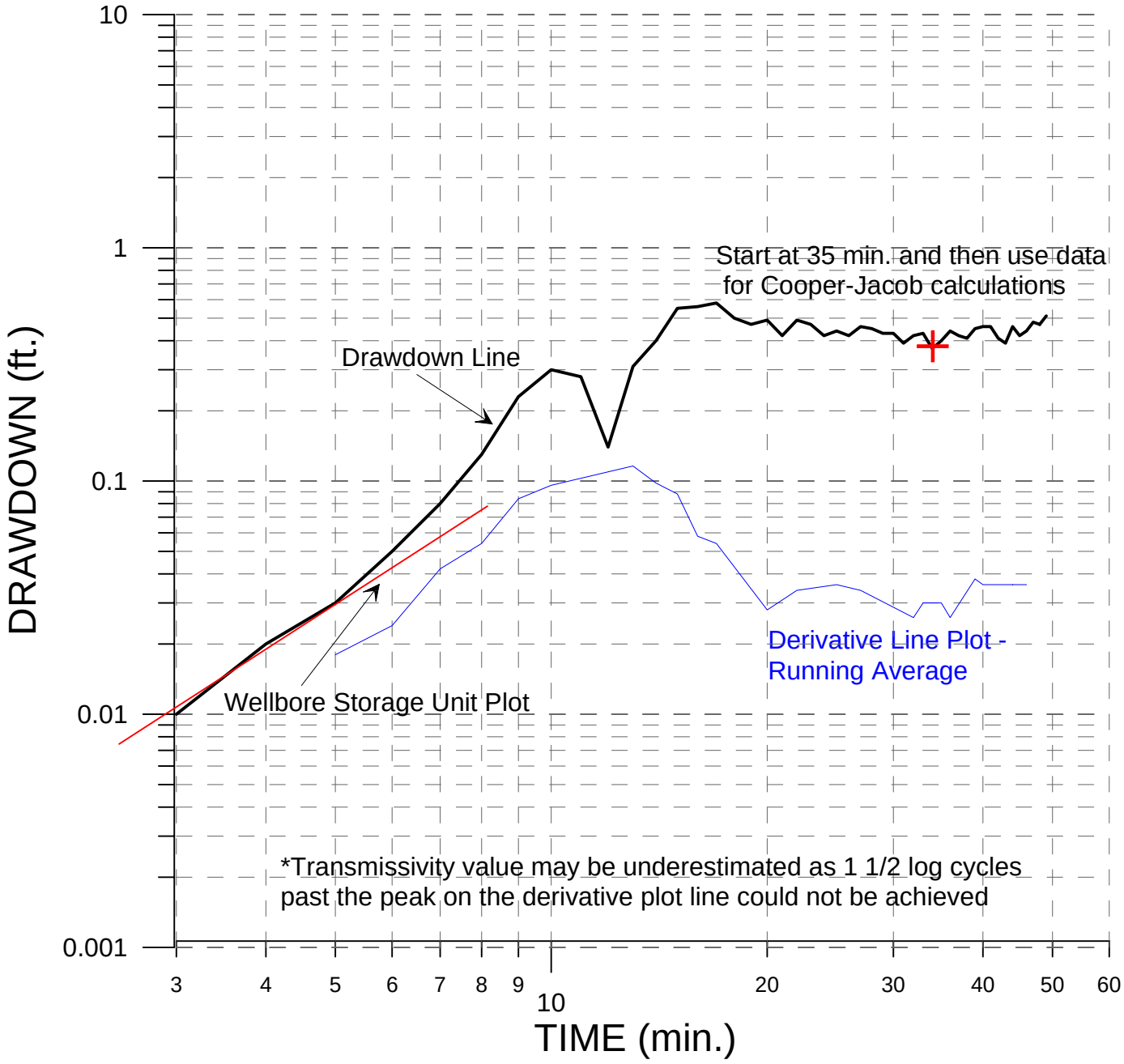
GB-MW-05 Packer Test @ 47.3 FBTOC
8/29/08



Slope, delS = 0.35 change in drawdown per log cycle
Pumping rate, Q = 0.475 gpm (from well development logs)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 0.475 / 0.35 = 358.3 gpd/ft
T = 47.90 sfpd (1 cfpd = 0.1337 gpd/ft)

The JCO
Data source: August 2008 Solinst Data Logger Data

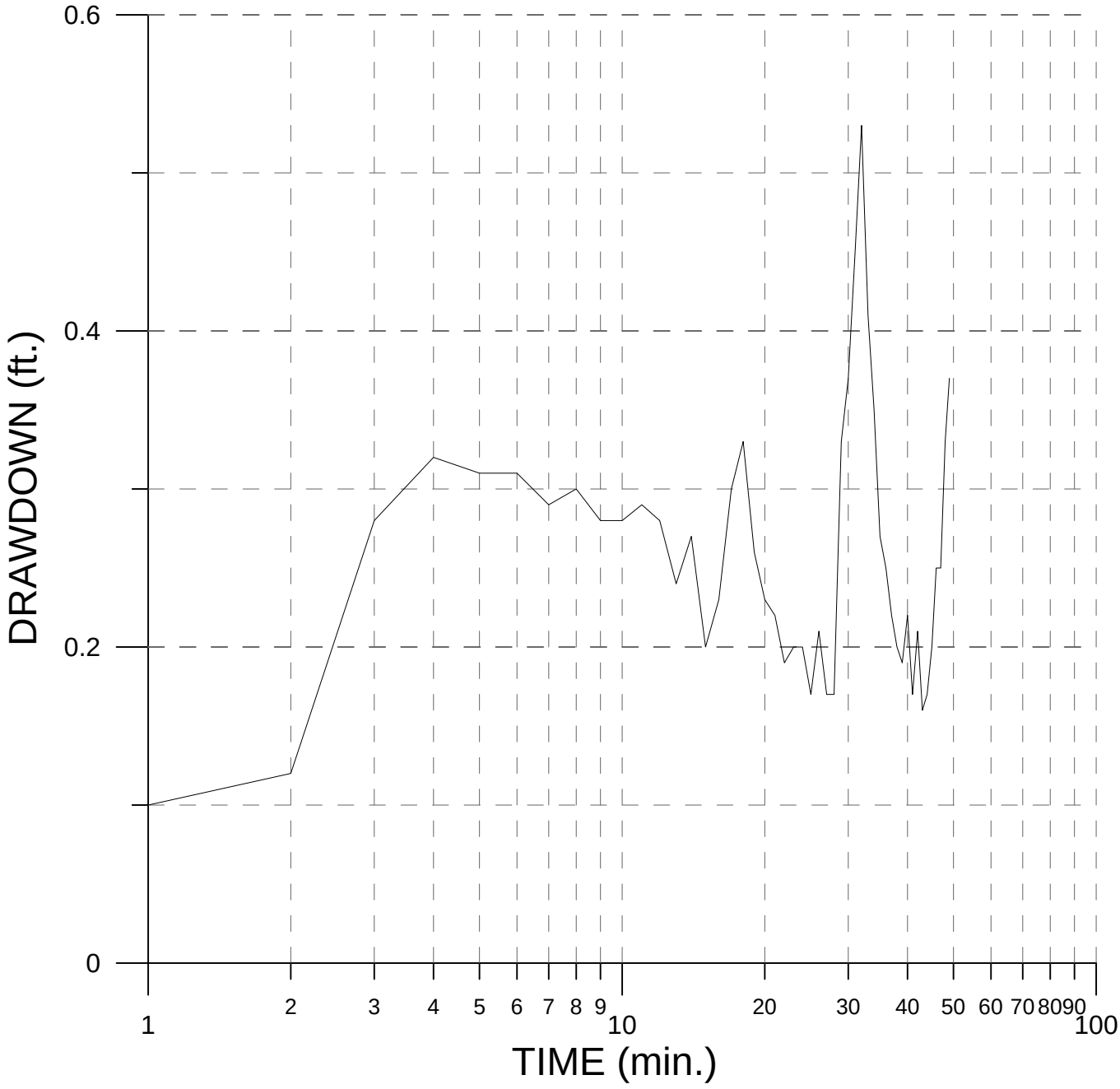
GB-MW-05 Packer Test @ 47.3 fbtoc - Derivative Plot
8/29/2008



The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/derivativedrawdowngraphs/GB-MW-05PackerTest47derivativetplot

GB-MW-05 Packer Test @ 111.5 FBTOC
8/29/08

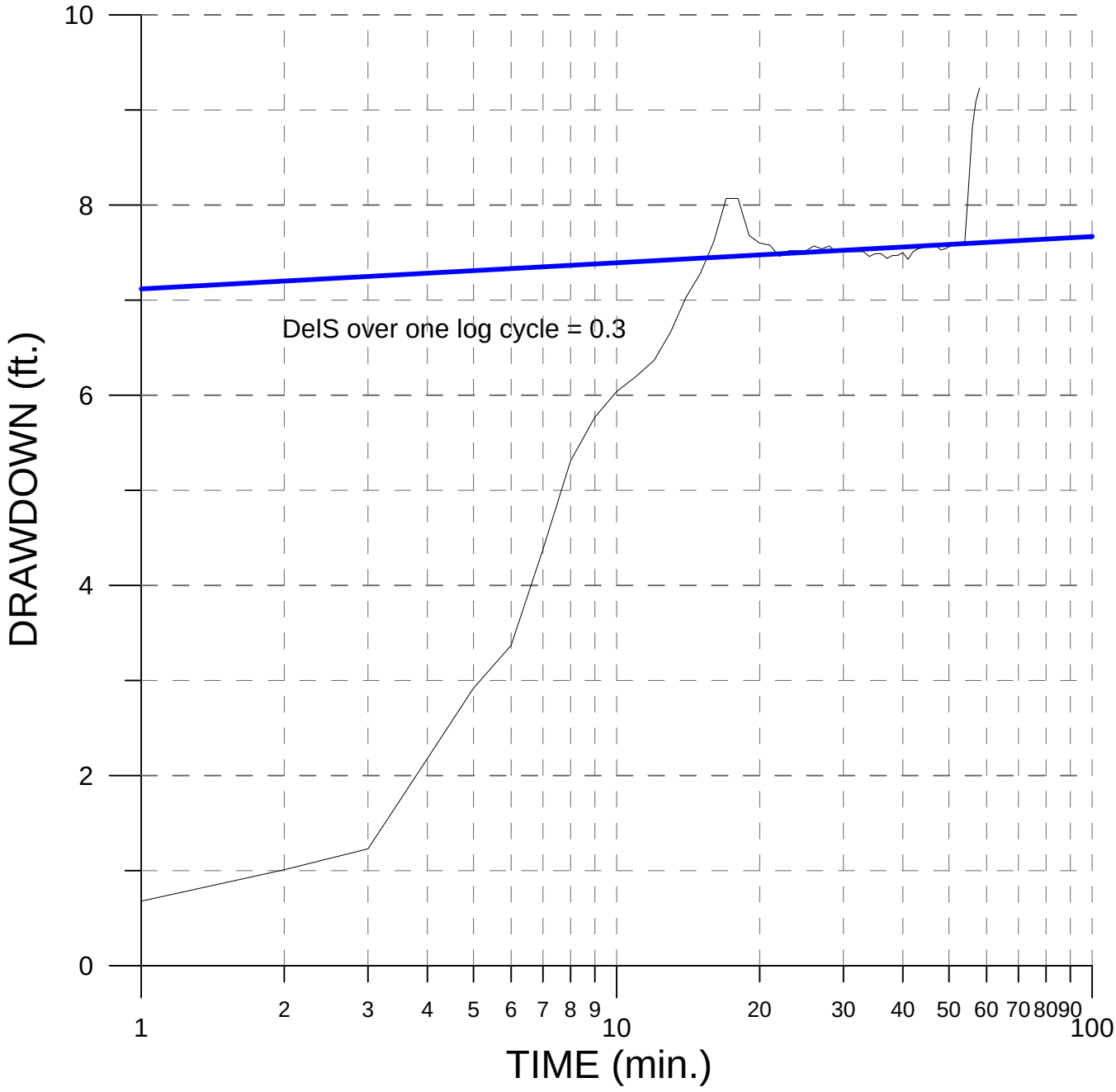


Unstable drawdown plot line -

Unable to calculate transmissivity and hydraulic conductivity

The JCO
Data source: August 2008 Solinst Data Logger Data
1-2128-9/RIFSfielddata/partialpenetrationdrawdowngraphs/GB-MW-05 packer tests 112fbtoc

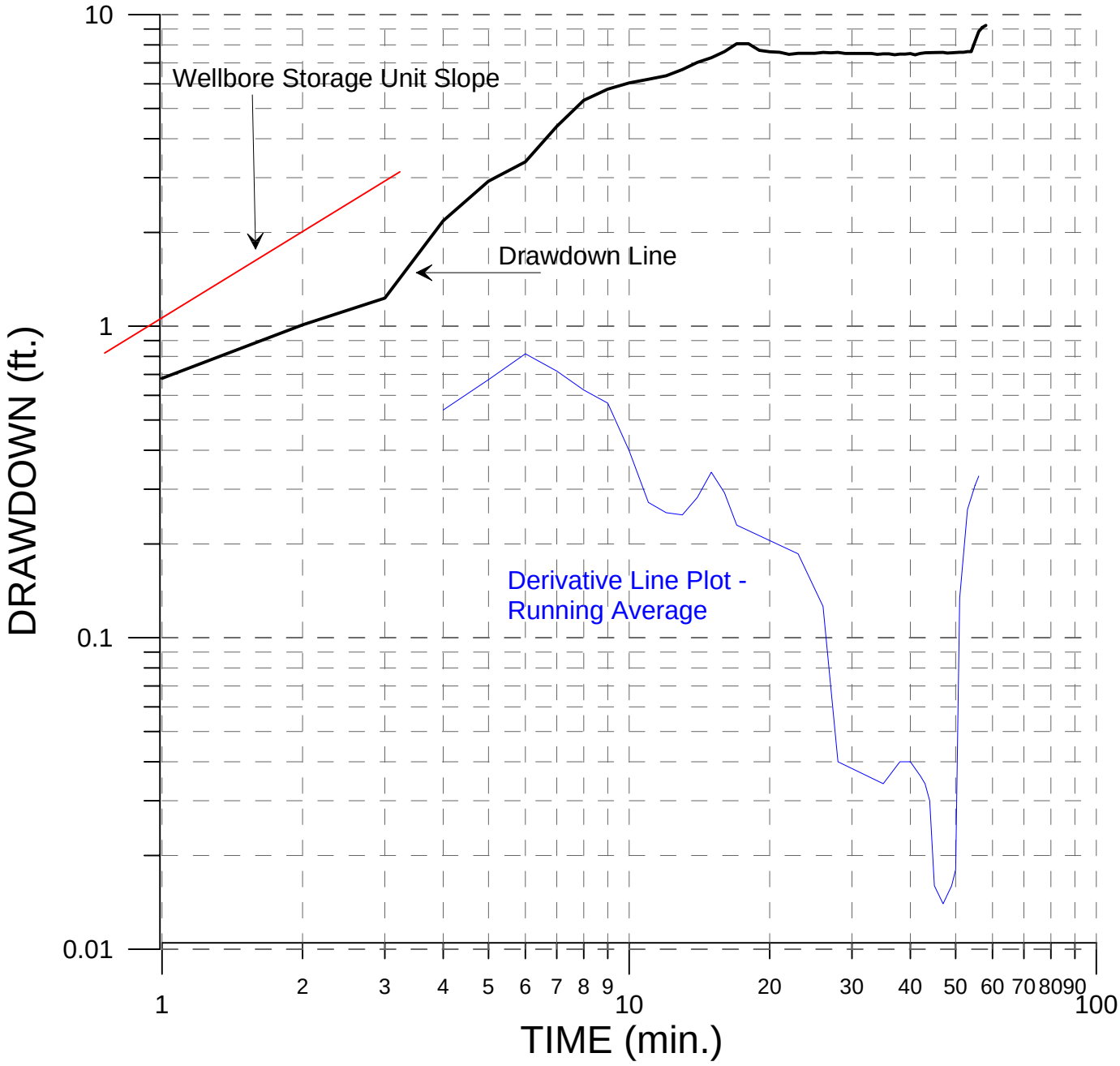
GB-MW-05 Packer Test @ 140.7 FBTOC
8/29/08



Slope, delS = 0.3 change in drawdown per log cycle
Pumping rate, Q = 0.64 gpm (from well development logs)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 0.64 / 0.3 = 563.2 gpd/ft
T = 75.3 sfpd (1 cfpd = 0.1337 gpd/ft)

The JCO
Data source: August 2008 Solinst Data Logger Data

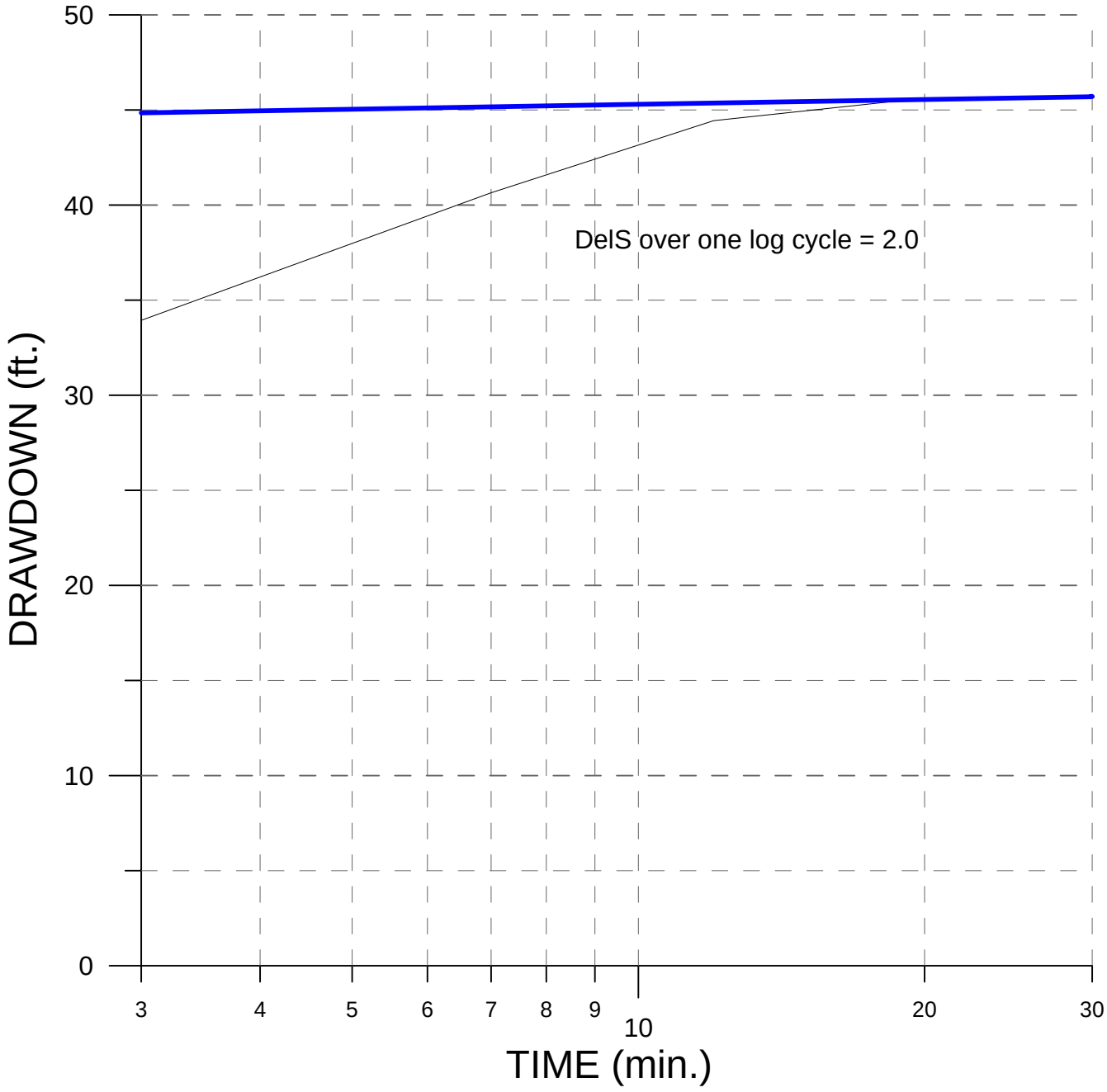
GB-MW-05 Packer Test @ 140.7 fbtoc - Derivative Plot
8/29/2008



The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/derivativedrawdowngraphs/GB-MW-05PackerTest141derivativetplot

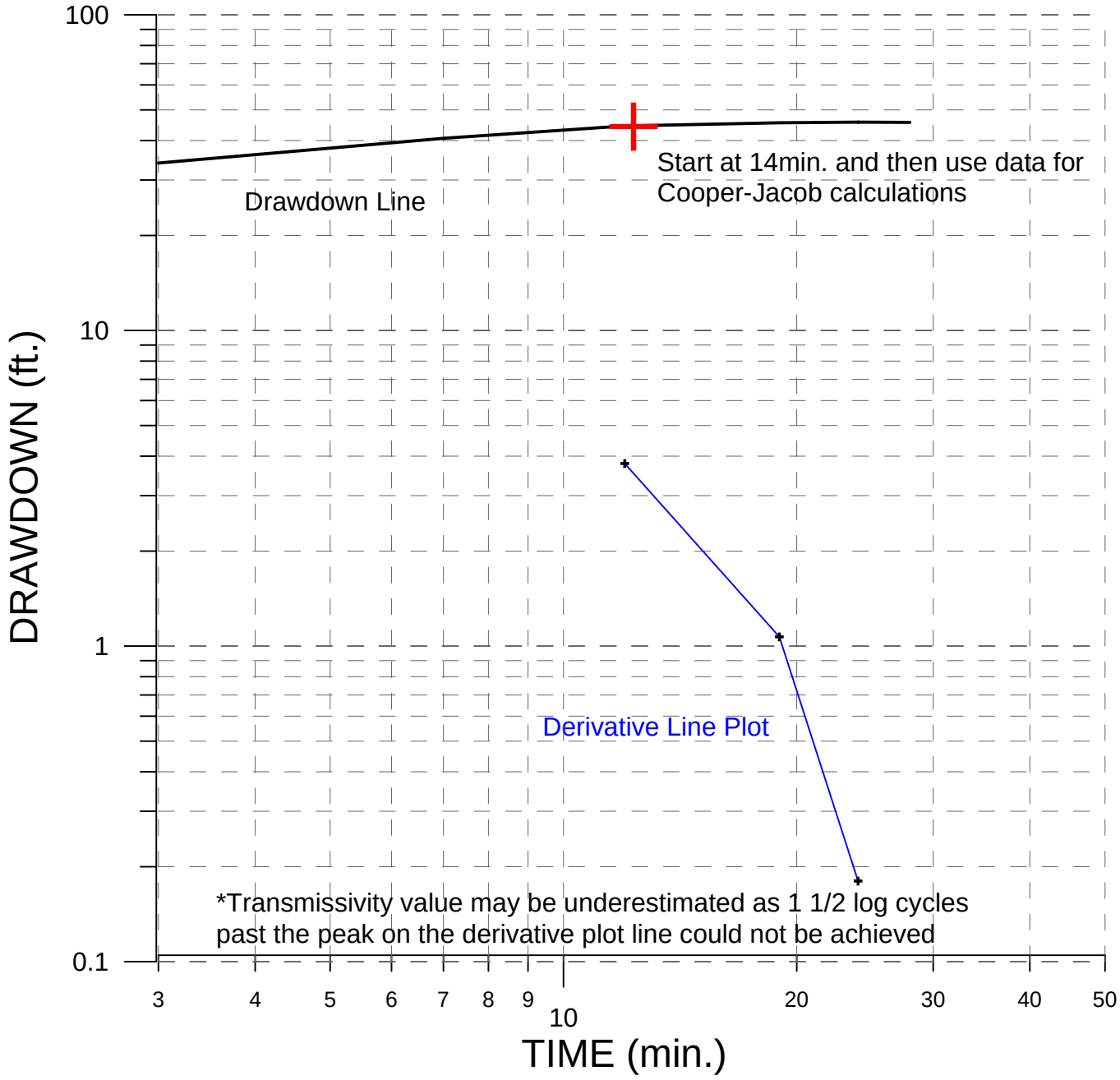
GB-MW-05D Well Pumping
9/18/2008



Slope, delS = 2.0 change in drawdown per log cycle
Pumping rate, Q = 3.83 gpm (from well development logs)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 3.83 / 2.0 = 505.56 gpd/ft
T = 67.6 sfpd (1 cfpd = 0.1337 gpd/ft) * value may be underestimated

The JCO
Data source: August 2008 Solinst Data Logger Data

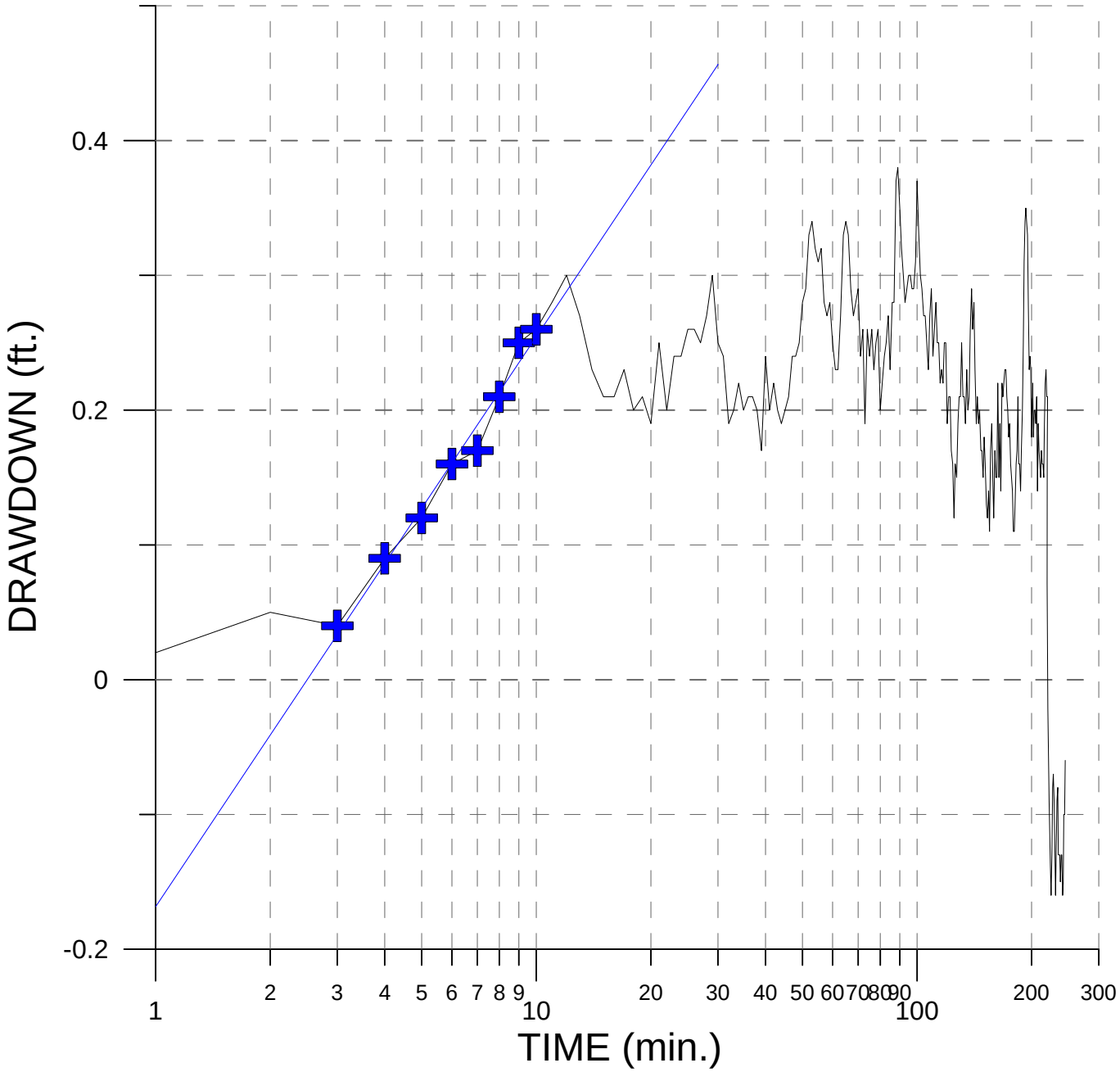
GB-MW-05D Well Pumping - Derivative Plot
9/18/2008



The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/derivativedrawdowngraphs/GB-MW-05DWell Pumping derivativetplot091808

GB-MW-05D Response Drawdown Graph for GB-MW-06 Pump Test 11/20/2008

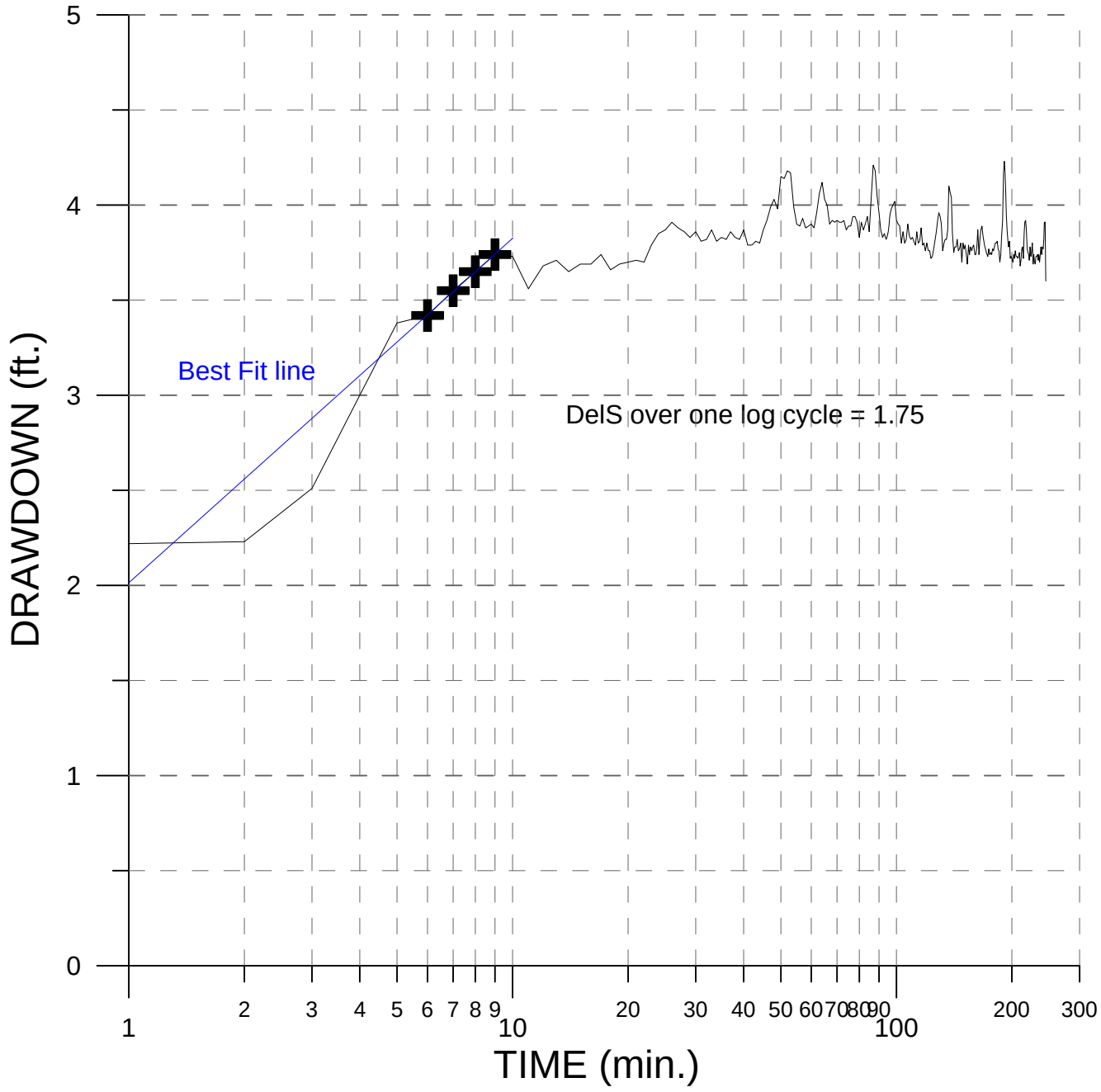


Slope, delS = 0.4 change in drawdown per log cycle
MW-6 Pumping rate, Q = 4.85 gpm (from pump test data)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 4.85 / 0.4 = 3201 gpd/ft
T = 428 sfpd (1 cfpd = 0.1337 gpd/ft)

The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/transmissivitydrawdowngraphs/MW05FORMW06pumptest112008

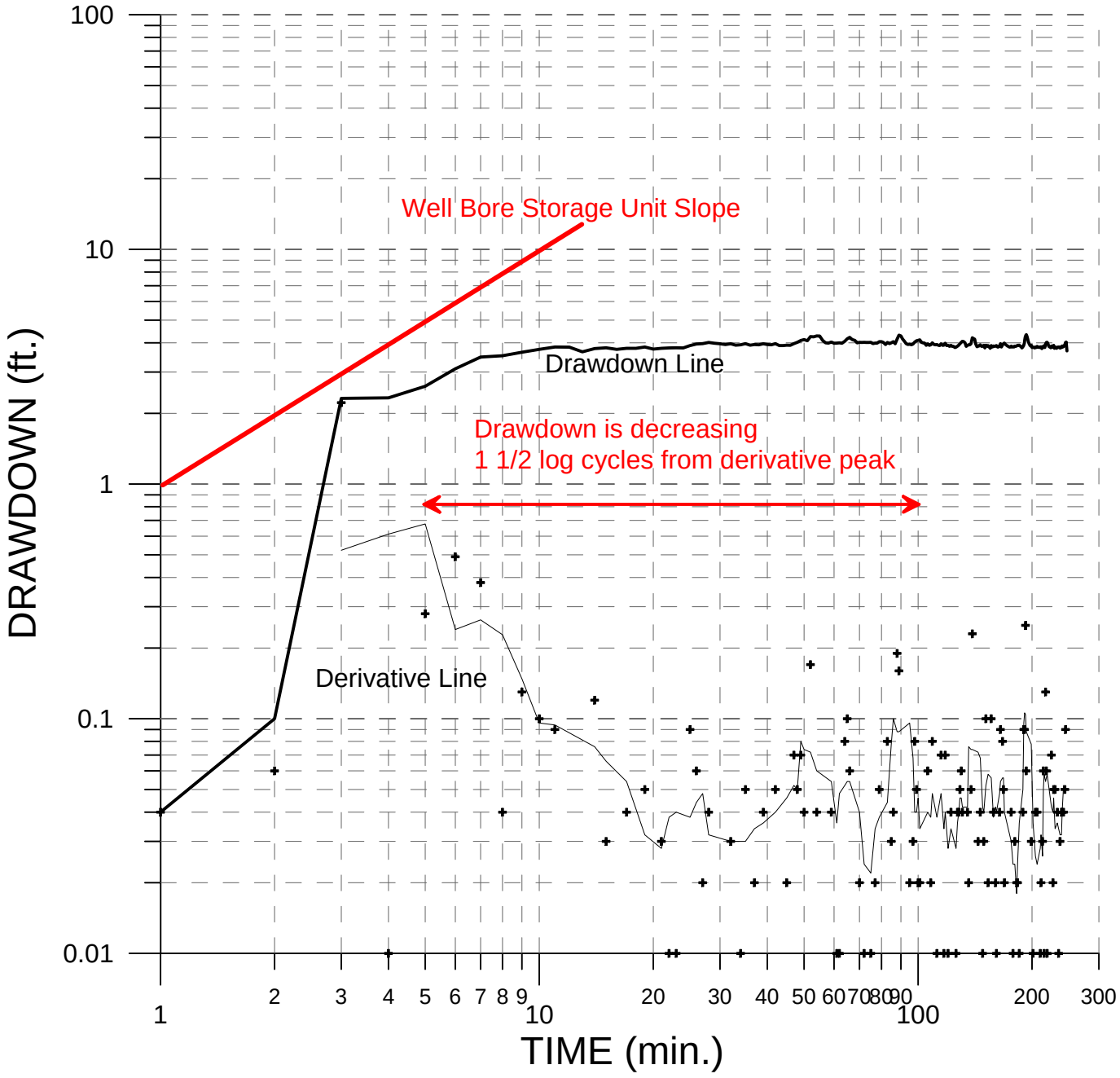
GB-MW-06 Pump Test - Transmissivity
11/20/2008



Slope, delS = 1.75 change in drawdown per log cycle
Average Pumping rate, Q = 4.85 gpm (from well development logs)
Transmissivity, T = 264 * Q / delS (from Driscoll, 1987, Eq.9.7)
T = 264 * 4.85 / 1.75 = 732 gpd/ft
T = 98 sfpd (1 cfpd = 0.1337 gpd/ft)

The JCO
Data source: August 2008 Solinst Data Logger Data

GB-MW-06 Pump Test Derivative Plot
11/20/2008



The JCO
Data source: August 2008 Solinst Data Logger Data

1-2128-9/RIFSfielddata/derivativedrawdowngraphs/GB-MW-06Pumptesderivativetplot

APPENDIX 3

HISTORICAL LABORATORY ANALYTICAL RESULTS

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW01-125-GW	11/18/2008	Chloride	919	D	300	MG/L	SM4500CLE	80	124.5
GBMW01-52-GW	11/18/2008	Chloride	812	D	300	MG/L	SM4500CLE	80	51.5
GBMW01-72-GW	11/18/2008	Chloride	510	D	300	MG/L	SM4500CLE	80	71.5
GBMW02 Port1-55-GW	11/18/2008	Chloride	1020	D	300	MG/L	SM4500CLE	80	54.5
GBMW02-132-GW	11/18/2008	Chloride	916	D	300	MG/L	SM4500CLE	80	132.5
GBMW02-198-GW	11/18/2008	Chloride	1210	D	300	MG/L	SM4500CLE	80	198
GBMW02-98-D	11/18/2008	Chloride	1080	D	300	MG/L	SM4500CLE	80	97.5
GBMW02-98-GW	11/18/2008	Chloride	1100	D	300	MG/L	SM4500CLE	80	97.5
GBMW03-45-GW	11/19/2008	Chloride	660	D	300	MG/L	SM4500CLE	80	45
GBMW03-86-GW	11/19/2008	Chloride	2990	D	300	MG/L	SM4500CLE	80	86
GBMW04-110-GW	11/18/2008	Chloride	763	D	300	MG/L	SM4500CLE	80	110.5
GBMW04-47-GW	11/19/2008	Chloride	197	D	30	MG/L	SM4500CLE	8	47
GBMW05-145-D	11/18/2008	Chloride	151	D	30	MG/L	SM4500CLE	8	145.5
GBMW05-145-GW	11/18/2008	Chloride	152	D	30	MG/L	SM4500CLE	8	145.5
GBMW05-47-GW	11/18/2008	Chloride	184	D	30	MG/L	SM4500CLE	8	47
GBMW06-113-GW	11/18/2008	Chloride	132	D	30	MG/L	SM4500CLE	8	113.5
GBOB11-11-GW	11/19/2008	Chloride	36.6		3	MG/L	SM4500CLE	0.8	10.8
GBOB17-25-GW	11/19/2008	Chloride	603	D	300	MG/L	SM4500CLE	80	25
GBOB20-26-GW	11/19/2008	Chloride	403	D	30	MG/L	SM4500CLE	8	26
Carbon-Disch	9/17/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	0
Carbon-Disch	9/17/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	0
Carbon-Disch	9/17/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	0
Carbon-Disch	9/17/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	0
Carbon-Disch	9/17/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	0
Carbon-Disch	9/17/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Benzene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	0
Carbon-Disch	9/17/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	0
Carbon-Disch	9/17/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	0
Carbon-Disch	9/17/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Fluorobenzene	5			UG/L	E524.2		0
Carbon-Disch	9/17/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	0
Carbon-Disch	9/17/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	0
Carbon-Disch	9/17/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	0
Carbon-Disch	9/17/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	0
Carbon-Disch	9/17/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	0
Carbon-Disch	9/17/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	0
Carbon-Disch	9/17/2008	Styrene		U	0.5	UG/L	E524.2	0.2	0
Carbon-Disch	9/17/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Toluene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Trichloroethene		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	0
Carbon-Disch	9/17/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	0
Carbon-Disch	9/17/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	0
GBMW01-125-GW	11/18/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	124.5
GBMW01-125-GW	11/18/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	124.5
GBMW01-125-GW	11/18/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	124.5
GBMW01-125-GW	11/18/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	124.5
GBMW01-125-GW	11/18/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	124.5

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW01-125-GW	11/18/2008	1,3-Dichloropropane	0.8		0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	124.5
GBMW01-125-GW	11/18/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Benzene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	124.5
GBMW01-125-GW	11/18/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	124.5
GBMW01-125-GW	11/18/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	124.5
GBMW01-125-GW	11/18/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Fluorobenzene	5			UG/L	E524.2		124.5
GBMW01-125-GW	11/18/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	124.5
GBMW01-125-GW	11/18/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	124.5
GBMW01-125-GW	11/18/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	124.5
GBMW01-125-GW	11/18/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	124.5
GBMW01-125-GW	11/18/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	124.5
GBMW01-125-GW	11/18/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	124.5
GBMW01-125-GW	11/18/2008	Styrene		U	0.5	UG/L	E524.2	0.2	124.5
GBMW01-125-GW	11/18/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Toluene	46.2	D	5	UG/L	E524.2	1	124.5
GBMW01-125-GW	11/18/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Trichloroethene	14.7		0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	124.5
GBMW01-125-GW	11/18/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	124.5
GBMW01-125-GW	11/18/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	124.5
GBMW01-52-GW	11/18/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	51.5
GBMW01-52-GW	11/18/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	51.5
GBMW01-52-GW	11/18/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	51.5
GBMW01-52-GW	11/18/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	51.5
GBMW01-52-GW	11/18/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	51.5
GBMW01-52-GW	11/18/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Benzene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	51.5
GBMW01-52-GW	11/18/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	51.5
GBMW01-52-GW	11/18/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	51.5
GBMW01-52-GW	11/18/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Fluorobenzene	5			UG/L	E524.2		51.5
GBMW01-52-GW	11/18/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	51.5
GBMW01-52-GW	11/18/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	51.5
GBMW01-52-GW	11/18/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	51.5
GBMW01-52-GW	11/18/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	51.5
GBMW01-52-GW	11/18/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	51.5
GBMW01-52-GW	11/18/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	51.5
GBMW01-52-GW	11/18/2008	Styrene		U	0.5	UG/L	E524.2	0.2	51.5
GBMW01-52-GW	11/18/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Toluene	2.8		0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	51.5

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW01-52-GW	11/18/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Trichloroethene	48.9	D	5	UG/L	E524.2	1.3	51.5
GBMW01-52-GW	11/18/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	51.5
GBMW01-52-GW	11/18/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	51.5
GBMW01-52-GW	11/18/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	51.5
GBMW01-72-GW	11/18/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	71.5
GBMW01-72-GW	11/18/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	71.5
GBMW01-72-GW	11/18/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	71.5
GBMW01-72-GW	11/18/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	71.5
GBMW01-72-GW	11/18/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	71.5
GBMW01-72-GW	11/18/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Benzene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	71.5
GBMW01-72-GW	11/18/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	71.5
GBMW01-72-GW	11/18/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	71.5
GBMW01-72-GW	11/18/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Fluorobenzene	5			UG/L	E524.2		71.5
GBMW01-72-GW	11/18/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	71.5
GBMW01-72-GW	11/18/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	71.5
GBMW01-72-GW	11/18/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	71.5
GBMW01-72-GW	11/18/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	71.5
GBMW01-72-GW	11/18/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	71.5
GBMW01-72-GW	11/18/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	71.5
GBMW01-72-GW	11/18/2008	Styrene		U	0.5	UG/L	E524.2	0.2	71.5
GBMW01-72-GW	11/18/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Toluene	2.2		0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Trichloroethene	52.2	D	5	UG/L	E524.2	1.3	71.5
GBMW01-72-GW	11/18/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	71.5
GBMW01-72-GW	11/18/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	71.5
GBMW01-72-GW	11/18/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	71.5
GBMW02 Port1-55-GW	11/18/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	54.5
GBMW02 Port1-55-GW	11/18/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	54.5
GBMW02 Port1-55-GW	11/18/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	54.5
GBMW02 Port1-55-GW	11/18/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	54.5
GBMW02 Port1-55-GW	11/18/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	54.5
GBMW02 Port1-55-GW	11/18/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Benzene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	54.5
GBMW02 Port1-55-GW	11/18/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	54.5

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW02 Port1-55-GW	11/18/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	54.5
GBMW02 Port1-55-GW	11/18/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Fluorobenzene	5			UG/L	E524.2		54.5
GBMW02 Port1-55-GW	11/18/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	54.5
GBMW02 Port1-55-GW	11/18/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	54.5
GBMW02 Port1-55-GW	11/18/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	54.5
GBMW02 Port1-55-GW	11/18/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	54.5
GBMW02 Port1-55-GW	11/18/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	54.5
GBMW02 Port1-55-GW	11/18/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	54.5
GBMW02 Port1-55-GW	11/18/2008	Styrene		U	0.5	UG/L	E524.2	0.2	54.5
GBMW02 Port1-55-GW	11/18/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Toluene	0.6		0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Trichloroethene	2.9		0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	54.5
GBMW02 Port1-55-GW	11/18/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	54.5
GBMW02 Port1-55-GW	11/18/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	54.5
GBMW02-132-GW	11/18/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	132.5
GBMW02-132-GW	11/18/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	132.5
GBMW02-132-GW	11/18/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	132.5
GBMW02-132-GW	11/18/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	132.5
GBMW02-132-GW	11/18/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	132.5
GBMW02-132-GW	11/18/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Benzene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	132.5
GBMW02-132-GW	11/18/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	132.5
GBMW02-132-GW	11/18/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	132.5
GBMW02-132-GW	11/18/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Fluorobenzene	5			UG/L	E524.2		132.5
GBMW02-132-GW	11/18/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	132.5
GBMW02-132-GW	11/18/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	132.5
GBMW02-132-GW	11/18/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	132.5
GBMW02-132-GW	11/18/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	132.5
GBMW02-132-GW	11/18/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	132.5
GBMW02-132-GW	11/18/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	132.5
GBMW02-132-GW	11/18/2008	Styrene		U	0.5	UG/L	E524.2	0.2	132.5
GBMW02-132-GW	11/18/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Toluene	4.9		0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Trichloroethene	14.4		0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	132.5
GBMW02-132-GW	11/18/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	132.5
GBMW02-132-GW	11/18/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	132.5
GBMW02-198-GW	11/18/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	198
GBMW02-198-GW	11/18/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	198

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW02-198-GW	11/18/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	198
GBMW02-198-GW	11/18/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	198
GBMW02-198-GW	11/18/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	198
GBMW02-198-GW	11/18/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Benzene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	198
GBMW02-198-GW	11/18/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	198
GBMW02-198-GW	11/18/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	198
GBMW02-198-GW	11/18/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Fluorobenzene	5			UG/L	E524.2		198
GBMW02-198-GW	11/18/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	198
GBMW02-198-GW	11/18/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	198
GBMW02-198-GW	11/18/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	198
GBMW02-198-GW	11/18/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	198
GBMW02-198-GW	11/18/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	198
GBMW02-198-GW	11/18/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	198
GBMW02-198-GW	11/18/2008	Styrene		U	0.5	UG/L	E524.2	0.2	198
GBMW02-198-GW	11/18/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Toluene	22.6		0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Trichloroethene	16.5		0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	198
GBMW02-198-GW	11/18/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	198
GBMW02-198-GW	11/18/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	198
GBMW02-98-D	11/18/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-D	11/18/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-D	11/18/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-D	11/18/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	97.5
GBMW02-98-D	11/18/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-D	11/18/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Benzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-D	11/18/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-D	11/18/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-D	11/18/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Fluorobenzene	5			UG/L	E524.2		97.5
GBMW02-98-D	11/18/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	97.5

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW02-98-D	11/18/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-D	11/18/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-D	11/18/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-D	11/18/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-D	11/18/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-D	11/18/2008	Styrene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-D	11/18/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Toluene	0.6		0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Trichloroethene	25.7		0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	97.5
GBMW02-98-D	11/18/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-D	11/18/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-GW	11/18/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-GW	11/18/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-GW	11/18/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-GW	11/18/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	97.5
GBMW02-98-GW	11/18/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-GW	11/18/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Benzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-GW	11/18/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-GW	11/18/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-GW	11/18/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Fluorobenzene	5			UG/L	E524.2		97.5
GBMW02-98-GW	11/18/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-GW	11/18/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-GW	11/18/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-GW	11/18/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-GW	11/18/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-GW	11/18/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-GW	11/18/2008	Styrene		U	0.5	UG/L	E524.2	0.2	97.5
GBMW02-98-GW	11/18/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Toluene	0.7		0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Trichloroethene	24.9		0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	97.5
GBMW02-98-GW	11/18/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	97.5
GBMW02-98-GW	11/18/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	97.5
GBMW03-142-GW	8/29/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	141.8
GBMW03-142-GW	8/29/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	141.8
GBMW03-142-GW	8/29/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	141.8
GBMW03-142-GW	8/29/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	141.8
GBMW03-142-GW	8/29/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	141.8

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW03-142-GW	8/29/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	141.8
GBMW03-142-GW	8/29/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Benzene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	141.8
GBMW03-142-GW	8/29/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	141.8
GBMW03-142-GW	8/29/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	141.8
GBMW03-142-GW	8/29/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Fluorobenzene	5			UG/L	E524.2		141.8
GBMW03-142-GW	8/29/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	141.8
GBMW03-142-GW	8/29/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	141.8
GBMW03-142-GW	8/29/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	141.8
GBMW03-142-GW	8/29/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	141.8
GBMW03-142-GW	8/29/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	141.8
GBMW03-142-GW	8/29/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	141.8
GBMW03-142-GW	8/29/2008	Styrene		U	0.5	UG/L	E524.2	0.2	141.8
GBMW03-142-GW	8/29/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Toluene	0.6		0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Trichloroethene	2.8		0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	141.8
GBMW03-142-GW	8/29/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	141.8
GBMW03-142-GW	8/29/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	141.8
GBMW03-45-GW	11/19/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	45
GBMW03-45-GW	11/19/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	45
GBMW03-45-GW	11/19/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	45
GBMW03-45-GW	11/19/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	45
GBMW03-45-GW	11/19/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	45
GBMW03-45-GW	11/19/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Benzene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	45
GBMW03-45-GW	11/19/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	45
GBMW03-45-GW	11/19/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	45
GBMW03-45-GW	11/19/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Fluorobenzene	5			UG/L	E524.2		45
GBMW03-45-GW	11/19/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	45
GBMW03-45-GW	11/19/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	45
GBMW03-45-GW	11/19/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	45
GBMW03-45-GW	11/19/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	45
GBMW03-45-GW	11/19/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	45
GBMW03-45-GW	11/19/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	45
GBMW03-45-GW	11/19/2008	Styrene		U	0.5	UG/L	E524.2	0.2	45
GBMW03-45-GW	11/19/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Toluene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Trichloroethene	1		0.5	UG/L	E524.2	0.1	45

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW03-45-GW	11/19/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	45
GBMW03-45-GW	11/19/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	45
GBMW03-45-GW	11/19/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	45
GBMW03-49-GW	8/29/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	49
GBMW03-49-GW	8/29/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	49
GBMW03-49-GW	8/29/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	49
GBMW03-49-GW	8/29/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	49
GBMW03-49-GW	8/29/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	49
GBMW03-49-GW	8/29/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Benzene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	49
GBMW03-49-GW	8/29/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	49
GBMW03-49-GW	8/29/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	49
GBMW03-49-GW	8/29/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Fluorobenzene	5			UG/L	E524.2		49
GBMW03-49-GW	8/29/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	49
GBMW03-49-GW	8/29/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	49
GBMW03-49-GW	8/29/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	49
GBMW03-49-GW	8/29/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	49
GBMW03-49-GW	8/29/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	49
GBMW03-49-GW	8/29/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	49
GBMW03-49-GW	8/29/2008	Styrene		U	0.5	UG/L	E524.2	0.2	49
GBMW03-49-GW	8/29/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Toluene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Trichloroethene	1.9		0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	49
GBMW03-49-GW	8/29/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	49
GBMW03-49-GW	8/29/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	49
GBMW03-58-GW	8/29/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	58.5
GBMW03-58-GW	8/29/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	58.5
GBMW03-58-GW	8/29/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	58.5
GBMW03-58-GW	8/29/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	58.5
GBMW03-58-GW	8/29/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	58.5
GBMW03-58-GW	8/29/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Benzene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	58.5
GBMW03-58-GW	8/29/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	58.5
GBMW03-58-GW	8/29/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	58.5

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW03-58-GW	8/29/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	58.5
GBMW03-58-GW	8/29/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Fluorobenzene	5			UG/L	E524.2		58.5
GBMW03-58-GW	8/29/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	58.5
GBMW03-58-GW	8/29/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	58.5
GBMW03-58-GW	8/29/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	58.5
GBMW03-58-GW	8/29/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	58.5
GBMW03-58-GW	8/29/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	58.5
GBMW03-58-GW	8/29/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	58.5
GBMW03-58-GW	8/29/2008	Styrene		U	0.5	UG/L	E524.2	0.2	58.5
GBMW03-58-GW	8/29/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Toluene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Trichloroethene	1.4		0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	58.5
GBMW03-58-GW	8/29/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	58.5
GBMW03-58-GW	8/29/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	58.5
GBMW03-86-GW	11/19/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	86
GBMW03-86-GW	11/19/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	86
GBMW03-86-GW	11/19/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	86
GBMW03-86-GW	11/19/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	86
GBMW03-86-GW	11/19/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	86
GBMW03-86-GW	11/19/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Benzene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	86
GBMW03-86-GW	11/19/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	86
GBMW03-86-GW	11/19/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	86
GBMW03-86-GW	11/19/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Fluorobenzene	5			UG/L	E524.2		86
GBMW03-86-GW	11/19/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	86
GBMW03-86-GW	11/19/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	86
GBMW03-86-GW	11/19/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	86
GBMW03-86-GW	11/19/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	86
GBMW03-86-GW	11/19/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	86
GBMW03-86-GW	11/19/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	86
GBMW03-86-GW	11/19/2008	Styrene		U	0.5	UG/L	E524.2	0.2	86
GBMW03-86-GW	11/19/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Toluene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Trichloroethene	4.7		0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	86
GBMW03-86-GW	11/19/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	86
GBMW03-86-GW	11/19/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	86
GBMW03-91-GW	8/29/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	91.5
GBMW03-91-GW	8/29/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	91.5
GBMW03-91-GW	8/29/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	91.5

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW03-91-GW	8/29/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	91.5
GBMW03-91-GW	8/29/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	91.5
GBMW03-91-GW	8/29/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Benzene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	91.5
GBMW03-91-GW	8/29/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	91.5
GBMW03-91-GW	8/29/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	91.5
GBMW03-91-GW	8/29/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Fluorobenzene	5			UG/L	E524.2		91.5
GBMW03-91-GW	8/29/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	91.5
GBMW03-91-GW	8/29/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	91.5
GBMW03-91-GW	8/29/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	91.5
GBMW03-91-GW	8/29/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	91.5
GBMW03-91-GW	8/29/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	91.5
GBMW03-91-GW	8/29/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	91.5
GBMW03-91-GW	8/29/2008	Styrene		U	0.5	UG/L	E524.2	0.2	91.5
GBMW03-91-GW	8/29/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Toluene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Trichloroethene	5.1		0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	91.5
GBMW03-91-GW	8/29/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	91.5
GBMW03-91-GW	8/29/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	91.5
GBMW04-108-D	8/28/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-D	8/28/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-D	8/28/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-D	8/28/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	108.5
GBMW04-108-D	8/28/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-D	8/28/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Benzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-D	8/28/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-D	8/28/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-D	8/28/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Fluorobenzene	5			UG/L	E524.2		108.5
GBMW04-108-D	8/28/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-D	8/28/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-D	8/28/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	108.5

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW04-108-D	8/28/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-D	8/28/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-D	8/28/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-D	8/28/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-D	8/28/2008	Styrene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-D	8/28/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Toluene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Trichloroethene	7.1		0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	108.5
GBMW04-108-D	8/28/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-D	8/28/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-GW	8/28/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-GW	8/28/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-GW	8/28/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-GW	8/28/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	108.5
GBMW04-108-GW	8/28/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-GW	8/28/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Benzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-GW	8/28/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-GW	8/28/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-GW	8/28/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Fluorobenzene	5			UG/L	E524.2		108.5
GBMW04-108-GW	8/28/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-GW	8/28/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-GW	8/28/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-GW	8/28/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-GW	8/28/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-GW	8/28/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-GW	8/28/2008	Styrene		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-108-GW	8/28/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Toluene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Trichloroethene	7.3		0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	108.5
GBMW04-108-GW	8/28/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	108.5
GBMW04-108-GW	8/28/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	108.5
GBMW04-110-GW	11/18/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	110.5
GBMW04-110-GW	11/18/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	110.5
GBMW04-110-GW	11/18/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	110.5
GBMW04-110-GW	11/18/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	110.5
GBMW04-110-GW	11/18/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	110.5

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW04-110-GW	11/18/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	110.5
GBMW04-110-GW	11/18/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Benzene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	110.5
GBMW04-110-GW	11/18/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	110.5
GBMW04-110-GW	11/18/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	110.5
GBMW04-110-GW	11/18/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Fluorobenzene	5			UG/L	E524.2		110.5
GBMW04-110-GW	11/18/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	110.5
GBMW04-110-GW	11/18/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	110.5
GBMW04-110-GW	11/18/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	110.5
GBMW04-110-GW	11/18/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	110.5
GBMW04-110-GW	11/18/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	110.5
GBMW04-110-GW	11/18/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	110.5
GBMW04-110-GW	11/18/2008	Styrene		U	0.5	UG/L	E524.2	0.2	110.5
GBMW04-110-GW	11/18/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Toluene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Trichloroethene	7.8		0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	110.5
GBMW04-110-GW	11/18/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	110.5
GBMW04-110-GW	11/18/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	110.5
GBMW04-46-GW	8/28/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	46
GBMW04-46-GW	8/28/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	46
GBMW04-46-GW	8/28/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	46
GBMW04-46-GW	8/28/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	46
GBMW04-46-GW	8/28/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	46
GBMW04-46-GW	8/28/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Benzene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	46
GBMW04-46-GW	8/28/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	46
GBMW04-46-GW	8/28/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	46
GBMW04-46-GW	8/28/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Fluorobenzene	5			UG/L	E524.2		46
GBMW04-46-GW	8/28/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	46
GBMW04-46-GW	8/28/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	46
GBMW04-46-GW	8/28/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	46
GBMW04-46-GW	8/28/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	46
GBMW04-46-GW	8/28/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	46
GBMW04-46-GW	8/28/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	46
GBMW04-46-GW	8/28/2008	Styrene		U	0.5	UG/L	E524.2	0.2	46
GBMW04-46-GW	8/28/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Toluene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Trichloroethene	0.6		0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	46

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW04-46-GW	8/28/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	46
GBMW04-46-GW	8/28/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	46
GBMW04-47-GW	11/19/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	47
GBMW04-47-GW	11/19/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	47
GBMW04-47-GW	11/19/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	47
GBMW04-47-GW	11/19/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	47
GBMW04-47-GW	11/19/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	47
GBMW04-47-GW	11/19/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Benzene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	47
GBMW04-47-GW	11/19/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	47
GBMW04-47-GW	11/19/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	47
GBMW04-47-GW	11/19/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Fluorobenzene	5			UG/L	E524.2		47
GBMW04-47-GW	11/19/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	47
GBMW04-47-GW	11/19/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	47
GBMW04-47-GW	11/19/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	47
GBMW04-47-GW	11/19/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	47
GBMW04-47-GW	11/19/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	47
GBMW04-47-GW	11/19/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	47
GBMW04-47-GW	11/19/2008	Styrene		U	0.5	UG/L	E524.2	0.2	47
GBMW04-47-GW	11/19/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Toluene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Trichloroethene	0.7		0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	47
GBMW04-47-GW	11/19/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	47
GBMW04-47-GW	11/19/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	47
GBMW04-55-GW	8/28/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	55.5
GBMW04-55-GW	8/28/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	55.5
GBMW04-55-GW	8/28/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	55.5
GBMW04-55-GW	8/28/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	55.5
GBMW04-55-GW	8/28/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	55.5
GBMW04-55-GW	8/28/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Benzene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	55.5
GBMW04-55-GW	8/28/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	55.5
GBMW04-55-GW	8/28/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	55.5

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW04-55-GW	8/28/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	55.5
GBMW04-55-GW	8/28/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Fluorobenzene	5			UG/L	E524.2		55.5
GBMW04-55-GW	8/28/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	55.5
GBMW04-55-GW	8/28/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	55.5
GBMW04-55-GW	8/28/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	55.5
GBMW04-55-GW	8/28/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	55.5
GBMW04-55-GW	8/28/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	55.5
GBMW04-55-GW	8/28/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	55.5
GBMW04-55-GW	8/28/2008	Styrene		U	0.5	UG/L	E524.2	0.2	55.5
GBMW04-55-GW	8/28/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Toluene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Trichloroethene		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	55.5
GBMW04-55-GW	8/28/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	55.5
GBMW04-55-GW	8/28/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	55.5
GBMW04-70-GW	8/28/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	69.5
GBMW04-70-GW	8/28/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	69.5
GBMW04-70-GW	8/28/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	69.5
GBMW04-70-GW	8/28/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	69.5
GBMW04-70-GW	8/28/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	69.5
GBMW04-70-GW	8/28/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Benzene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	69.5
GBMW04-70-GW	8/28/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	69.5
GBMW04-70-GW	8/28/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	69.5
GBMW04-70-GW	8/28/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Fluorobenzene	5			UG/L	E524.2		69.5
GBMW04-70-GW	8/28/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	69.5
GBMW04-70-GW	8/28/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	69.5
GBMW04-70-GW	8/28/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	69.5
GBMW04-70-GW	8/28/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	69.5
GBMW04-70-GW	8/28/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	69.5
GBMW04-70-GW	8/28/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	69.5
GBMW04-70-GW	8/28/2008	Styrene		U	0.5	UG/L	E524.2	0.2	69.5
GBMW04-70-GW	8/28/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Toluene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Trichloroethene	1.2		0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	69.5
GBMW04-70-GW	8/28/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	69.5
GBMW04-70-GW	8/28/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	69.5
GBMW04-93-GW	8/28/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	93.5
GBMW04-93-GW	8/28/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	93.5
GBMW04-93-GW	8/28/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	93.5
GBMW04-93-GW	8/28/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	93.5

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW04-93-GW	8/28/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	93.5
GBMW04-93-GW	8/28/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	93.5
GBMW04-93-GW	8/28/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Benzene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	93.5
GBMW04-93-GW	8/28/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	93.5
GBMW04-93-GW	8/28/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	93.5
GBMW04-93-GW	8/28/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Fluorobenzene	5			UG/L	E524.2		93.5
GBMW04-93-GW	8/28/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	93.5
GBMW04-93-GW	8/28/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	93.5
GBMW04-93-GW	8/28/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	93.5
GBMW04-93-GW	8/28/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	93.5
GBMW04-93-GW	8/28/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	93.5
GBMW04-93-GW	8/28/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	93.5
GBMW04-93-GW	8/28/2008	Styrene		U	0.5	UG/L	E524.2	0.2	93.5
GBMW04-93-GW	8/28/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Toluene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Trichloroethene	5.5		0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	93.5
GBMW04-93-GW	8/28/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	93.5
GBMW04-93-GW	8/28/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	93.5
GBMW05-112-GW	8/29/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	112
GBMW05-112-GW	8/29/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	112
GBMW05-112-GW	8/29/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	112
GBMW05-112-GW	8/29/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	112
GBMW05-112-GW	8/29/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	112
GBMW05-112-GW	8/29/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Benzene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	112
GBMW05-112-GW	8/29/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	112
GBMW05-112-GW	8/29/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	112
GBMW05-112-GW	8/29/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Fluorobenzene	5			UG/L	E524.2		112
GBMW05-112-GW	8/29/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	112
GBMW05-112-GW	8/29/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	112
GBMW05-112-GW	8/29/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	112
GBMW05-112-GW	8/29/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	112

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW05-112-GW	8/29/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	112
GBMW05-112-GW	8/29/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	112
GBMW05-112-GW	8/29/2008	Styrene		U	0.5	UG/L	E524.2	0.2	112
GBMW05-112-GW	8/29/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Toluene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Trichloroethene	1.3		0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	112
GBMW05-112-GW	8/29/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	112
GBMW05-112-GW	8/29/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	112
GBMW05-141-D	8/29/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-D	8/29/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-D	8/29/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-D	8/29/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	140.7
GBMW05-141-D	8/29/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-D	8/29/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Benzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-D	8/29/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-D	8/29/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-D	8/29/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Fluorobenzene	5			UG/L	E524.2		140.7
GBMW05-141-D	8/29/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-D	8/29/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-D	8/29/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-D	8/29/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-D	8/29/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-D	8/29/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-D	8/29/2008	Styrene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-D	8/29/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Toluene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Trichloroethene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	140.7
GBMW05-141-D	8/29/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-D	8/29/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-GW	8/29/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-GW	8/29/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-GW	8/29/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-GW	8/29/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	140.7
GBMW05-141-GW	8/29/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-GW	8/29/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	140.7

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW05-141-GW	8/29/2008	Benzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-GW	8/29/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-GW	8/29/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-GW	8/29/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Fluorobenzene	5			UG/L	E524.2		140.7
GBMW05-141-GW	8/29/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-GW	8/29/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-GW	8/29/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-GW	8/29/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-GW	8/29/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-GW	8/29/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-GW	8/29/2008	Styrene		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-141-GW	8/29/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Toluene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Trichloroethene		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	140.7
GBMW05-141-GW	8/29/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	140.7
GBMW05-141-GW	8/29/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	140.7
GBMW05-145-D	11/18/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-D	11/18/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-D	11/18/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-D	11/18/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	145.5
GBMW05-145-D	11/18/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-D	11/18/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Benzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-D	11/18/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-D	11/18/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-D	11/18/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Fluorobenzene	5			UG/L	E524.2		145.5
GBMW05-145-D	11/18/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-D	11/18/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-D	11/18/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-D	11/18/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-D	11/18/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-D	11/18/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-D	11/18/2008	Styrene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-D	11/18/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Toluene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Trichloroethene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	145.5
GBMW05-145-D	11/18/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-D	11/18/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	145.5

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW05-145-GW	11/18/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-GW	11/18/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-GW	11/18/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-GW	11/18/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	145.5
GBMW05-145-GW	11/18/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-GW	11/18/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Benzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-GW	11/18/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-GW	11/18/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-GW	11/18/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Fluorobenzene	5			UG/L	E524.2		145.5
GBMW05-145-GW	11/18/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-GW	11/18/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-GW	11/18/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-GW	11/18/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-GW	11/18/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-GW	11/18/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-GW	11/18/2008	Styrene		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-145-GW	11/18/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Toluene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Trichloroethene		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	145.5
GBMW05-145-GW	11/18/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	145.5
GBMW05-145-GW	11/18/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	145.5
GBMW05-47-GW	8/29/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	8/29/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	8/29/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	8/29/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	47
GBMW05-47-GW	8/29/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	8/29/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Benzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	8/29/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	8/29/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	8/29/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	47

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW05-47-GW	8/29/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Fluorobenzene	5			UG/L	E524.2		47
GBMW05-47-GW	8/29/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	8/29/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	8/29/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	8/29/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	8/29/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	8/29/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	8/29/2008	Styrene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	8/29/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Toluene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Trichloroethene	1.6		0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	47
GBMW05-47-GW	8/29/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	8/29/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	11/18/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	11/18/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	11/18/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	11/18/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	47
GBMW05-47-GW	11/18/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	11/18/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Benzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	11/18/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	11/18/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	11/18/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Fluorobenzene	5			UG/L	E524.2		47
GBMW05-47-GW	11/18/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	11/18/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	11/18/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	11/18/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	11/18/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	11/18/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	11/18/2008	Styrene		U	0.5	UG/L	E524.2	0.2	47
GBMW05-47-GW	11/18/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Toluene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Trichloroethene	1		0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	47
GBMW05-47-GW	11/18/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	47
GBMW05-47-GW	11/18/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	47
GBMW06-113-GW	11/18/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	113.5
GBMW06-113-GW	11/18/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	113.5
GBMW06-113-GW	11/18/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	113.5
GBMW06-113-GW	11/18/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	113.5
GBMW06-113-GW	11/18/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	113.5

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW06-113-GW	11/18/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	113.5
GBMW06-113-GW	11/18/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Benzene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	113.5
GBMW06-113-GW	11/18/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	113.5
GBMW06-113-GW	11/18/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	113.5
GBMW06-113-GW	11/18/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Fluorobenzene	5			UG/L	E524.2		113.5
GBMW06-113-GW	11/18/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	113.5
GBMW06-113-GW	11/18/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	113.5
GBMW06-113-GW	11/18/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	113.5
GBMW06-113-GW	11/18/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	113.5
GBMW06-113-GW	11/18/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	113.5
GBMW06-113-GW	11/18/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	113.5
GBMW06-113-GW	11/18/2008	Styrene		U	0.5	UG/L	E524.2	0.2	113.5
GBMW06-113-GW	11/18/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Toluene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Trichloroethene	0.5		0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	113.5
GBMW06-113-GW	11/18/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	113.5
GBMW06-113-GW	11/18/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	113.5
GBMW06-116-IDW	11/20/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	
GBMW06-116-IDW	11/20/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	
GBMW06-116-IDW	11/20/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	
GBMW06-116-IDW	11/20/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	
GBMW06-116-IDW	11/20/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	
GBMW06-116-IDW	11/20/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Benzene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	
GBMW06-116-IDW	11/20/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	
GBMW06-116-IDW	11/20/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	
GBMW06-116-IDW	11/20/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Fluorobenzene	5			UG/L	E524.2		
GBMW06-116-IDW	11/20/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	
GBMW06-116-IDW	11/20/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	
GBMW06-116-IDW	11/20/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	
GBMW06-116-IDW	11/20/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	
GBMW06-116-IDW	11/20/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	
GBMW06-116-IDW	11/20/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBMW06-116-IDW	11/20/2008	Styrene		U	0.5	UG/L	E524.2	0.2	
GBMW06-116-IDW	11/20/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Toluene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Trichloroethene		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	
GBMW06-116-IDW	11/20/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	
GBMW06-116-IDW	11/20/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	
GBOB11-11-GW	11/19/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	10.8
GBOB11-11-GW	11/19/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	10.8
GBOB11-11-GW	11/19/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	10.8
GBOB11-11-GW	11/19/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	10.8
GBOB11-11-GW	11/19/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	10.8
GBOB11-11-GW	11/19/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Benzene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	10.8
GBOB11-11-GW	11/19/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	10.8
GBOB11-11-GW	11/19/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	10.8
GBOB11-11-GW	11/19/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Fluorobenzene	5			UG/L	E524.2		10.8
GBOB11-11-GW	11/19/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	10.8
GBOB11-11-GW	11/19/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	10.8
GBOB11-11-GW	11/19/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	10.8
GBOB11-11-GW	11/19/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	10.8
GBOB11-11-GW	11/19/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	10.8
GBOB11-11-GW	11/19/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	10.8
GBOB11-11-GW	11/19/2008	Styrene		U	0.5	UG/L	E524.2	0.2	10.8
GBOB11-11-GW	11/19/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Toluene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Trichloroethene		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	10.8
GBOB11-11-GW	11/19/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	10.8
GBOB11-11-GW	11/19/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	10.8
GBOB17-25-GW	11/19/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	25
GBOB17-25-GW	11/19/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	25
GBOB17-25-GW	11/19/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	25
GBOB17-25-GW	11/19/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	25
GBOB17-25-GW	11/19/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	25
GBOB17-25-GW	11/19/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Benzene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	25

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBOB17-25-GW	11/19/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	25
GBOB17-25-GW	11/19/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	25
GBOB17-25-GW	11/19/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Fluorobenzene	5			UG/L	E524.2		25
GBOB17-25-GW	11/19/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	25
GBOB17-25-GW	11/19/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	25
GBOB17-25-GW	11/19/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	25
GBOB17-25-GW	11/19/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	25
GBOB17-25-GW	11/19/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	25
GBOB17-25-GW	11/19/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	25
GBOB17-25-GW	11/19/2008	Styrene		U	0.5	UG/L	E524.2	0.2	25
GBOB17-25-GW	11/19/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Toluene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Trichloroethene	1.4		0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	25
GBOB17-25-GW	11/19/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	25
GBOB17-25-GW	11/19/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	25
GBOB19-26-GW	11/19/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	26.5
GBOB19-26-GW	11/19/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	26.5
GBOB19-26-GW	11/19/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	26.5
GBOB19-26-GW	11/19/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	26.5
GBOB19-26-GW	11/19/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	26.5
GBOB19-26-GW	11/19/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Benzene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	26.5
GBOB19-26-GW	11/19/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	26.5
GBOB19-26-GW	11/19/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	26.5
GBOB19-26-GW	11/19/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Fluorobenzene	5			UG/L	E524.2		26.5
GBOB19-26-GW	11/19/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	26.5
GBOB19-26-GW	11/19/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	26.5
GBOB19-26-GW	11/19/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	26.5
GBOB19-26-GW	11/19/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	26.5
GBOB19-26-GW	11/19/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	26.5
GBOB19-26-GW	11/19/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	26.5
GBOB19-26-GW	11/19/2008	Styrene		U	0.5	UG/L	E524.2	0.2	26.5
GBOB19-26-GW	11/19/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Toluene	1.2		0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Trichloroethene	1		0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	26.5
GBOB19-26-GW	11/19/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	26.5
GBOB19-26-GW	11/19/2008	Xylene P,M	0.8		0.5	UG/L	E524.2	0.2	26.5
GBOB20-26-GW	11/19/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	26

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBOB20-26-GW	11/19/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	26
GBOB20-26-GW	11/19/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	26
GBOB20-26-GW	11/19/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	26
GBOB20-26-GW	11/19/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	26
GBOB20-26-GW	11/19/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	26
GBOB20-26-GW	11/19/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Benzene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	26
GBOB20-26-GW	11/19/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	26
GBOB20-26-GW	11/19/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	26
GBOB20-26-GW	11/19/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Fluorobenzene	5			UG/L	E524.2		26
GBOB20-26-GW	11/19/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	26
GBOB20-26-GW	11/19/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	26
GBOB20-26-GW	11/19/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	26
GBOB20-26-GW	11/19/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	26
GBOB20-26-GW	11/19/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	26
GBOB20-26-GW	11/19/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	26
GBOB20-26-GW	11/19/2008	Styrene		U	0.5	UG/L	E524.2	0.2	26
GBOB20-26-GW	11/19/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Toluene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Trichloroethene		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	26
GBOB20-26-GW	11/19/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	26
GBOB20-26-GW	11/19/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	26
GB-OB-5A-9-GW	11/19/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	9
GB-OB-5A-9-GW	11/19/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	9
GB-OB-5A-9-GW	11/19/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	9
GB-OB-5A-9-GW	11/19/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	9
GB-OB-5A-9-GW	11/19/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	9
GB-OB-5A-9-GW	11/19/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Benzene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	9
GB-OB-5A-9-GW	11/19/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	9
GB-OB-5A-9-GW	11/19/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	9
GB-OB-5A-9-GW	11/19/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	9

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GB-OB-5A-9-GW	11/19/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Fluorobenzene	5			UG/L	E524.2		9
GB-OB-5A-9-GW	11/19/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	9
GB-OB-5A-9-GW	11/19/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	9
GB-OB-5A-9-GW	11/19/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	9
GB-OB-5A-9-GW	11/19/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	9
GB-OB-5A-9-GW	11/19/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	9
GB-OB-5A-9-GW	11/19/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	9
GB-OB-5A-9-GW	11/19/2008	Styrene		U	0.5	UG/L	E524.2	0.2	9
GB-OB-5A-9-GW	11/19/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Toluene	2.6		0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Trichloroethene		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	9
GB-OB-5A-9-GW	11/19/2008	Xylene O	0.5		0.5	UG/L	E524.2	0.1	9
GB-OB-5A-9-GW	11/19/2008	Xylene P,M	1.3		0.5	UG/L	E524.2	0.2	9
GBOB8-25-GW	11/19/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	9
GBOB8-25-GW	11/19/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	9
GBOB8-25-GW	11/19/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	9
GBOB8-25-GW	11/19/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	9
GBOB8-25-GW	11/19/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	9
GBOB8-25-GW	11/19/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Benzene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	9
GBOB8-25-GW	11/19/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	9
GBOB8-25-GW	11/19/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	9
GBOB8-25-GW	11/19/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Fluorobenzene	5			UG/L	E524.2		9
GBOB8-25-GW	11/19/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	9
GBOB8-25-GW	11/19/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	9
GBOB8-25-GW	11/19/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	9
GBOB8-25-GW	11/19/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	9
GBOB8-25-GW	11/19/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	9
GBOB8-25-GW	11/19/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	9
GBOB8-25-GW	11/19/2008	Styrene		U	0.5	UG/L	E524.2	0.2	9
GBOB8-25-GW	11/19/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Toluene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Trichloroethene	0.6		0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	9
GBOB8-25-GW	11/19/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	9
GBOB8-25-GW	11/19/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	9
GBPW02-X-GW	9/17/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	
GBPW02-X-GW	9/17/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	
GBPW02-X-GW	9/17/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	
GBPW02-X-GW	9/17/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	
GBPW02-X-GW	9/17/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBPW02-X-GW	9/17/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	
GBPW02-X-GW	9/17/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Benzene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	
GBPW02-X-GW	9/17/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	
GBPW02-X-GW	9/17/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	
GBPW02-X-GW	9/17/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Fluorobenzene	5			UG/L	E524.2		
GBPW02-X-GW	9/17/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	
GBPW02-X-GW	9/17/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	
GBPW02-X-GW	9/17/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	
GBPW02-X-GW	9/17/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	
GBPW02-X-GW	9/17/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	
GBPW02-X-GW	9/17/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	
GBPW02-X-GW	9/17/2008	Styrene		U	0.5	UG/L	E524.2	0.2	
GBPW02-X-GW	9/17/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Toluene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Trichloroethene		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	
GBPW02-X-GW	9/17/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	
GBPW02-X-GW	9/17/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	
GBPW03-70-GW	9/17/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	
GBPW03-70-GW	9/17/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	
GBPW03-70-GW	9/17/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	
GBPW03-70-GW	9/17/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	
GBPW03-70-GW	9/17/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	
GBPW03-70-GW	9/17/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Benzene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	
GBPW03-70-GW	9/17/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	
GBPW03-70-GW	9/17/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	
GBPW03-70-GW	9/17/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Fluorobenzene	5			UG/L	E524.2		
GBPW03-70-GW	9/17/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	
GBPW03-70-GW	9/17/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	
GBPW03-70-GW	9/17/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	
GBPW03-70-GW	9/17/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	
GBPW03-70-GW	9/17/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	
GBPW03-70-GW	9/17/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	
GBPW03-70-GW	9/17/2008	Styrene		U	0.5	UG/L	E524.2	0.2	
GBPW03-70-GW	9/17/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	

Autumn 2008 RI/FS Groundwater VOC and Chloride Data
U = not detected, J = estimated value, D = sample diluted prior to analysis

SAMPLE_POINT_ID	SAMPLE_DATE	PARAMETER_NAME	CONCENTRATION	LAB_QUALIFIERS	REPORTING_LIMIT	PARAMETER_UNITS	TEST	MDL	SAMPLE_DEPTH (fbtoc)
GBPW03-70-GW	9/17/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Toluene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Trichloroethene		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	
GBPW03-70-GW	9/17/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	
GBPW03-70-GW	9/17/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	
Injection Water	9/17/2008	1,1,1,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	1,1,1-Trichloroethane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	1,1,2,2-Tetrachloroethane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	1,1,2-Trichloroethane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	1,1-Dichloroethane		U	0.5	UG/L	E524.2	0.2	
Injection Water	9/17/2008	1,1-Dichloroethene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	1,1-Dichloropropene		U	0.5	UG/L	E524.2	0.2	
Injection Water	9/17/2008	1,2,3-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	1,2,3-Trichloropropane		U	0.5	UG/L	E524.2	0.2	
Injection Water	9/17/2008	1,2,4-Trichlorobenzene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	1,2,4-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	1,2-Dibromo-3-Chloropropane		U	2	UG/L	E524.2	0.4	
Injection Water	9/17/2008	1,2-Dibromoethane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	1,2-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	1,2-Dichloroethane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	1,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	1,3,5-Trimethylbenzene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	1,3-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	1,3-Dichloropropane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	1,4-Dichlorobenzene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	2,2-Dichloropropane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	2-Chlorotoluene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	4-Chlorotoluene		U	0.5	UG/L	E524.2	0.2	
Injection Water	9/17/2008	4-Isopropyltoluene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Benzene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Bromobenzene		U	0.5	UG/L	E524.2	0.2	
Injection Water	9/17/2008	Bromochloromethane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Bromodichloromethane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Bromoform		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Bromomethane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Carbon Tetrachloride		U	0.5	UG/L	E524.2	0.2	
Injection Water	9/17/2008	Chlorobenzene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Chloroethane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Chloroform		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Chloromethane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	cis-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.2	
Injection Water	9/17/2008	cis-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Dibromochloromethane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Dibromomethane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Dichlorodifluoromethane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Ethylbenzene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Fluorobenzene	5			UG/L	E524.2		
Injection Water	9/17/2008	Hexachlorobutadiene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Isopropylbenzene		U	0.5	UG/L	E524.2	0.2	
Injection Water	9/17/2008	Methyl tert-Butyl Ether		U	0.5	UG/L	E524.2	0.2	
Injection Water	9/17/2008	Methylene Chloride		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Naphthalene		U	0.5	UG/L	E524.2	0.2	
Injection Water	9/17/2008	n-Butylbenzene		U	0.5	UG/L	E524.2	0.2	
Injection Water	9/17/2008	n-Propylbenzene		U	0.5	UG/L	E524.2	0.2	
Injection Water	9/17/2008	sec-Butylbenzene		U	0.5	UG/L	E524.2	0.2	
Injection Water	9/17/2008	Styrene		U	0.5	UG/L	E524.2	0.2	
Injection Water	9/17/2008	tert-Butylbenzene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Tetrachloroethene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Toluene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	trans-1,2-Dichloroethene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	trans-1,3-Dichloropropene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Trichloroethene		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Trichlorofluoromethane		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Vinyl Chloride		U	0.1	UG/L	E524.2	0.03	
Injection Water	9/17/2008	Xylene O		U	0.5	UG/L	E524.2	0.1	
Injection Water	9/17/2008	Xylene P,M		U	0.5	UG/L	E524.2	0.2	

Quality Assurance Data Comparison
Overburden Soil Samples
Former GAT Facility,
Glenburn, Maine
2008

Method:	A Primary Lab SEI D6520,8260B			B QA Lab ESS 5035/8260B			C Maine DEP HETL 5035/8260B			RPD A&B	RPD A&C	RPD B&C
Sample Identification	**OB1-15-S**			**OB01-15-S-QA**			**OB1-15-S**					
Sample Location :	**OB1**			**OB1**			**OB1**					
Depth (feet)	**15**			**15**			**15**					
Laboratory ID:	OB1 15.00			0804259-01			D017933040					
Matrix :	Soil			Soil			Soil					
Units :	µg/L			µg/L			µg/L					
Date Sampled :	4/11/08			4/11/08			4/11/08					
Date Analyzed :	4/11/08-4/20-08			4/22/08			4/24/08					
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		97	U		63.3	U		100	U			
Benzene		NA			63.3	U		100	U			
Chloroform		97	U		63.3	U		100	U			
cis-1,2-Dichloroethene		97	U		63.3	U		100	U			
Ethylbenzene		97	U		63.3	U		100	U			
Methyl-tert-butyl ether		97	R		63.3	U		100	U			
Tetrachloroethene		97	U		63.3	U		100	U			
Toluene		97	U		63.3	U		100	U			
trans-1,2-Dichloroethene		97	U		63.3	U		100	U			
Trichloroethene		97	U		63.3	U		100	U			
Vinyl Chloride		29	UJ		63.3	U		100	U			
o-Xylene		97	U		63.3	U		100	U			
m,p-Xylene		97	U		127	U		200	U			
Sample Identification	**OB2-8**						**OB2-8-S**					
Sample Location :	**OB2**						**OB2**					
Depth (feet)	**8**						**8**					
Laboratory ID:	OB2 8.00						D017399036					
Matrix :	Soil						Soil					
Units :	µg/kg						µg/kg					
Date Sampled :	4/14/08						4/14/08					
Date Analyzed :	4/11/08-4/20/08						4/24/08					
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		55	U		NA			100	U			
Benzene		NA			NA			100	U			
Chloroform		55	U		NA			100	U			
cis-1,2-Dichloroethene		55	U		NA			100	U			
Ethylbenzene		55	U		NA			100	U			
Methyl-tert-butyl ether		55	R		NA			100	U			
Tetrachloroethene		55	U		NA			100	U			
Toluene		55	U		NA			100	U			
trans-1,2-Dichloroethene		55	U		NA			100	U			
Trichloroethene		55	U		NA			100	U			
Vinyl Chloride		16	UJ		NA			100	U			
o-Xylene		55	U		NA			100	U			
m,p-Xylene		55	U		NA			200	U			
Sample Identification	**OB2-13-S**			**OB2-13-S-QA**								
Sample Location :	**OB2**			**OB2**								
Depth (feet)	**13**			**13**								
Laboratory ID:	OB2 13.00			0804272-02								
Matrix :	Soil			Soil								
Date Sampled :	4/14/08			4/14/08								
Date Analyzed :	4/11/08-4/20/08			4/22/08								
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		52	U		57.3	U		NA				
Benzene		NA			57.3	U		NA				
Chloroform		52	U		57.3	U		NA				
cis-1,2-Dichloroethene		52	U		57.3	U		NA				
Ethylbenzene		52	U		57.3	U		NA				
Methyl-tert-butyl ether		52	R		57.3	U		NA				
Tetrachloroethene		52	U		57.3	U		NA				
Toluene		52	U		57.3	U		NA				
trans-1,2-Dichloroethene		52	U		57.3	U		NA				
Trichloroethene		52	U		57.3	U		NA				
Vinyl Chloride		15	UJ		57.3	U		NA				
o-Xylene		52	U		57.3	U		NA				
m,p-Xylene		52	U		115.0	U		NA				
Sample Identification	**OB3-13**						**OB3-13-S**					
Sample Location :	**OB3**						**OB3**					
Depth (feet)	**13**						**13**					
Laboratory ID:	OB3 13.00						D017399034					
Matrix :	Soil						Soil					
Date Sampled :	4/14.08						4/14/08					
Date Analyzed :	4/11/08-4/20/08						4/24/08					
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		53	U		NA			100	U			
Benzene		NA			NA			100	U			
Chloroform		53	U		NA			100	U			
cis-1,2-Dichloroethene		53	U		NA			100	U			
Ethylbenzene		53	U		NA			100	U			
Methyl-tert-butyl ether		53	R		NA			100	U			
Tetrachloroethene		53	U		NA			100	U			
Toluene		53	U		NA			100	U			
trans-1,2-Dichloroethene		53	U		NA			100	U			
Trichloroethene		53	U		NA			100	U			
Vinyl Chloride		16	UJ		NA			100	U			
o-Xylene		53	U		NA			100	U			
m,p-Xylene		53	U		NA			200	U			
Sample Identification:	**OB3-15-S**			**OB3-15-S-QA**			**OB3-15-S**					
Sample Location :	**OB3**			**OB3**								
Depth (feet)	**15**			**15**								
Laboratory ID:	OB3 15.00			0804272-01								
Matrix :	Soil			Soil								
Date Sampled :	4/14/08			4/14/08								
Date Analyzed :	4/11/08-4/20/08			4/22/08								
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		54	U		62.0	U		NA				
Benzene		NA			62.0	U		NA				
Chloroform		54	U		62.0	U		NA				
cis-1,2-Dichloroethene		54	U		62.0	U		NA				
Ethylbenzene		54	U		62.0	U		NA				
Methyl-tert-butyl ether		54	R		62.0	U		NA				
Tetrachloroethene		54	U		62.0	U		NA				
Toluene		54	U		62.0	U		NA				
trans-1,2-Dichloroethene		54	U		62.0	U		NA				
Trichloroethene		54	U		62.0	U		NA				
Vinyl Chloride		16	UJ		62.0	U		NA				
o-Xylene		54	U		62.0	U		NA				
m,p-Xylene		54	U		124.0	U		NA				

Flags:
NA - Not Analyzed
J - Estimated, value is < MQL but > MDL
U - Below laboratory reporting limit
UJ - Reporting limit estimated based on low spike recovery or blank contamination.
J+ - Result may be biased high due to rinsate blank contamination
HETL - Maine Health and Environmental Testing Laboratory
SEI - Stone Environmental Inc.
µg/kg - micrograms per kilogram
µg/L - micrograms per Liter
Q - Qualifier
D - Data Discrepancy
RPD - Relative Percent Difference

Quality Assurance Data Comparison
Overburden Soil Samples
Former GAT Facility
Glenburn, Maine
2008

Method:	A Primary Lab SEI D6520,8260B			B QA Lab ESS 5035/8260B			C Maine DEP HETL 5035/8260B			RPD A&B	RPD A&C	RPD B&C
Sample Identification	OB4-7						OB4-7-S					
Sample Location :	OB4						OB4					
Depth (feet)	7						7					
Laboratory ID:	OB4 7.00						D017399022					
Matrix :	Soil						Soil					
Units :												
Date Sampled :	4/15/08						4/15/08					
Date Analyzed :	4/11/08-4/20/08						4/24/08					
	Units			Units			Units					
VOCs	µg/kg	Result	Q	µg/kg	Result	Q	µg/kg	Result	Q	%	%	%
1,2-Dichloroethane		52	U		NA			100	U			
Benzene		NA			NA			100	U			
Chloroform		52	U		NA			100	U			
cis-1,2-Dichloroethene		52	U		NA			100	U			
Ethylbenzene		52	U		NA			100	U			
Methyl-tert-butyl ether		52	R		NA			100	U			
Tetrachloroethene		52	U		NA			100	U			
Toluene		52	U		NA			100	U			
trans-1,2-Dichloroethene		52	U		NA			100	U			
Trichloroethene		52	U		NA			100	U			
Vinyl Chloride		15	UJ		NA			100	U			
o-Xylene		52	U		NA			100	U			
m,p-Xylene		52	U		NA			200	U			
Sample Identification	OB4-19-S			OB4-19-S-QA								
Sample Location :	OB4			OB4								
Depth (feet)	19			19								
Laboratory ID:	0B4 19.00			0804307-01								
Matrix :	Soil			Soil								
Date Sampled :	4/15/2008-4/16			4/16/08								
Date Analyzed :	4/11/08-4/20/08			4/22/08								
	Units			Units			Units					
VOCs	µg/kg	Result	Q	µg/kg	Result	Q	µg/kg	Result	Q	%	%	%
1,2-Dichloroethane		32	U		53.5	U		NA				
Benzene		NA			53.5	U		NA				
Chloroform		32	U		53.5	U		NA				
cis-1,2-Dichloroethene		32	U		53.5	U		NA				
Ethylbenzene		32	U		53.5	U		NA				
Methyl-tert-butyl ether		32	R		53.5	U		NA				
Tetrachloroethene		32	U		53.5	U		NA				
Toluene		32	U		53.5	U		NA				
trans-1,2-Dichloroethene		32	U		53.5	U		NA				
Trichloroethene		32	U		16	J		NA				
Vinyl Chloride		9.4	UJ		53.5	U		NA				
o-Xylene		32	U		53.5	U		NA				
m,p-Xylene		32	U		107	U		NA				
Sample Identification	OB5-5						OB5-5-S					
Sample Location :	OB5-5						OB5					
Depth (feet)	5						5					
Laboratory ID:	OB5 5.00						D017399044					
Matrix :							Soil					
Units :	µg/kg						µg/kg					
Date Sampled :	4/11/2008-4/12/08						4/12/08					
Date Analyzed :	4/11/08-4/20/08						4/24/08					
	Units			Units			Units					
VOCs	µg/kg	Result	Q	µg/kg	Result	Q	µg/kg	Result	Q	%	%	%
1,2-Dichloroethane		96	U		NA			100	U			
Benzene		NA	U		NA			100	U			
Chloroform		96	U		NA			100	U			
cis-1,2-Dichloroethene		96	U		NA			100	U			
Ethylbenzene		96	U		NA			100	U			
Methyl-tert-butyl ether		96	R		NA			100	U			
Tetrachloroethene		96	U		NA			100	U			
Toluene		96	U		NA			100	U			
trans-1,2-Dichloroethene		96	U		NA			100	U			
Trichloroethene		96	U		NA			100	U			
Vinyl Chloride		28	UJ		NA			100	U			
o-Xylene		96	U		NA			100	U			
m,p-Xylene		96	U		NA			200	U			
Sample Identification	OB5-9-S			OB5-9-S-QA								
Sample Location :	OB5			OB5								
Depth (feet)	9			9								
Laboratory ID:	OB5 9.00			0804259-03								
Matrix :	Soil			Soil								
Date Sampled :	4/11/08			4/12/08								
Date Analyzed :	4/11/08-4/20/08			04/22/08								
	Units			Units			Units					
VOCs	µg/kg	Result	Q	µg/kg	Result	Q	µg/kg	Result	Q	%	%	%
1,2-Dichloroethane		94	U		60.4	U		NA				
Benzene		NA			60.4	U		NA				
Chloroform		94	U		60.4	U		NA				
cis-1,2-Dichloroethene		94	U		60.4	U		NA				
Ethylbenzene		94	U		60.4	U		NA				
Methyl-tert-butyl ether		94	R		60.4	U		NA				
Tetrachloroethene		94	U		60.4	U		NA				
Toluene		94	U		16.9	J		NA				
trans-1,2-Dichloroethene		94	U		60.4	U		NA				
Trichloroethene		94	U		60.4	U		NA				
Vinyl Chloride		28	UJ		60.4	U		NA				
o-Xylene		94	U		60.4	U		NA				
m,p-Xylene		94	U		121.0	U		NA				
Sample Identification	OB5-18						OB5-18S					
Sample Location :	OB5-18						OB5					
Depth (feet)	18						18					
Laboratory ID:	OB5 18.00						D017399046					
Matrix :	Soil						Soil					
Date Sampled :	4/11/08-4/12/08						4/12/08					
Date Analyzed :	4/11/08-4/20/08						4/24/08					
	Units			Units			Units					
VOCs	µg/kg	Result	Q	µg/kg	Result	Q	µg/kg	Result	Q	%	%	%
1,2-Dichloroethane		50	U		NA			100	U			
Benzene		NA	U		NA			100	U			
Chloroform		50	U		NA			100	U			
cis-1,2-Dichloroethene		50	U		NA			100	U			
Ethylbenzene		50	U		NA			100	U			
Methyl-tert-butyl ether		50	R		NA			100	U			
Tetrachloroethene		50	U		NA			100	U			
Toluene		50	U		NA			100	U			
trans-1,2-Dichloroethene		50	U		NA			100	U			
Trichloroethene		50	U		NA			100	U			
Vinyl Chloride		15	UJ		NA			100	U			
o-Xylene		50	U		NA			100	U			
m,p-Xylene		50	U		NA			200	U			
Sample Identification:	OB6-4-S			OB6-4-S-QA								
Sample Location :	OB6			OB6								
Depth (feet)	4			4								
Laboratory ID:	OB6 4.00			804259-05								
Matrix :	Soil			Soil								
Date Sampled :	4/13/08			4/13/08								
Date Analyzed :	4/11/08-4/20/08			4/22/08								
	Units			Units			Units					
VOCs	µg/kg	Result	Q	µg/kg	Result	Q	µg/kg	Result	Q	%	%	%
1,2-Dichloroethane		54	U		60.7	U		NA				
Benzene		NA			60.7	U		NA				
Chloroform		54	U		60.7	U		NA				
cis-1,2-Dichloroethene		54	U		60.7	U		NA				
Ethylbenzene		54	U		60.7	U		NA				
Methyl-tert-butyl ether		54	R		60.7	U		NA				
Tetrachloroethene		54	U		60.7	U		NA				
Toluene		54	U		21.9	J		NA				
trans-1,2-Dichloroethene		54	U		60.7	U		NA				
Trichloroethene		54	U		60.7	U		NA				
Vinyl Chloride		16	UJ		8.6	U		NA				
o-Xylene		54	U		60.7	U		NA				
m,p-Xylene		54	U		121.0	U		NA				

Flags:
NA - Not Analyzed
J - Estimated, value is < MQL but > MDL
U - Below laboratory reporting limi
UJ - Reporting limit estimated based on low spike recovery or blank contamination
J+ - Result may be biased high due to rinsate blank contamination
HETL - Maine Health and Environmental Testing Laboratory
SEI - Stone Environmental Inc.
µg/kg - micrograms per kilogram
µg/L - micrograms per Liter
Q - Qualifier
D - Data Discrepancy
RPD - Relative Percent Difference

Quality Assurance Data Comparison
Overburden Soil Samples
Former GAT Facility
Glenburn, Maine
2008

Method:	A Primary Lab SEI D6520,8260B			B QA Lab ESS 5035/8260B			C Maine DEP HETL 5035/8260B			RPD A&B	RPD A&C	RPD B&C
Sample Identification	**OB7-7-S**			**OB7-7-S-QA**								
Sample Location :	**OB7**			**OB7**								
Depth (feet)	**7**			**7**								
Laboratory ID:	OB7 7.00			0804259-04								
Matrix :	Soil			Soil								
Units :												
Date Sampled :	4/13/08			4/13/08								
Date Analyzed :	4/11/08-4/20/08			4/22/08								
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		55	U		67.6	U		NA				
Benzene		NA			67.6	U		NA				
Chloroform		55	U		67.6	U		NA				
cis-1,2-Dichloroethene		55	U		67.6	U		NA				
Ethylbenzene		55	U		67.6	U		NA				
Methyl-tert-butyl ether		55	R		67.6	U		NA				
Tetrachloroethene		55	U		67.6	U		NA				
Toluene		55	U		67.6	U		NA				
trans-1,2-Dichloroethene		55	U		67.6	U		NA				
Trichloroethene		55	U		67.6	U		NA				
Vinyl Chloride		16	UJ		67.6	U		NA				
o-Xylene		55	U		67.6	U		NA				
m,p-Xylene		55	U		135	U		NA				
Sample Identification	**OB7-9**						**OB7-9-S**					
Sample Location :	**OB7**						**OB7**					
Depth (feet)	**9**						**9**					
Laboratory ID:	OB7 9.00						D017399048					
Matrix :	Soil						Soil					
Date Sampled :	4/13/08						4/13/08					
Date Analyzed :	4/11/08-4/20/08						4/24/08					
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		53	U		NA			100	U			
Benzene		NA			NA			100	U			
Chloroform		53	U		NA			100	U			
cis-1,2-Dichloroethene		53	U		NA			100	U			
Ethylbenzene		53	U		NA			100	U			
Methyl-tert-butyl ether		53	R		NA			100	U			
Tetrachloroethene		53	U		NA			100	U			
Toluene		53	U		NA			100	U			
trans-1,2-Dichloroethene		53	U		NA			100	U			
Trichloroethene		53	U		NA			100	U			
Vinyl Chloride		16	UJ		NA			100	U			
o-Xylene		53	U		NA			100	U			
m,p-Xylene		53	U		NA			200	U			
Sample Identification	**OB8-7**						**OB8-7-S**					
Sample Location :	**OB8-7**						**OB8**					
Depth (feet)	**7**						**7**					
Laboratory ID:	OB8 7.00						D017399038					
Matrix :	Soil						Soil					
Date Sampled :	4/15/08						4/15/08					
Date Analyzed :	4/11/08-4/20/08						4/24/08					
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		53	U		NA			100	U			
Benzene		NA			NA			100	U			
Chloroform		53	U		NA			100	U			
cis-1,2-Dichloroethene		53	U		NA			100	U			
Ethylbenzene		53	U		NA			100	U			
Methyl-tert-butyl ether		53	R		NA			100	U			
Tetrachloroethene		53	U		NA			100	U			
Toluene		53	U		NA			100	U			
trans-1,2-Dichloroethene		53	U		NA			100	U			
Trichloroethene		53	U		NA			100	U			
Vinyl Chloride		16	UJ		NA			100	U			
o-Xylene		53	U		NA			100	U			
m,p-Xylene		53	U		NA			200	U			
Sample Identification	**OB8-9-S**			**OB8-9-S-QA**								
Sample Location :	**OB8**			**OB8**								
Depth (feet)	**9**			**9**								
Laboratory ID:	OB8 9.00			0804272-03								
Matrix :	Soil			Soil								
Date Sampled :	4/15/08			4/15/08								
Date Analyzed :	4/11/08-4/20/08			4/22/08								
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		52	U		65.7	U		NA				
Benzene		NA			65.7	U		NA				
Chloroform		52	U		65.7	U		NA				
cis-1,2-Dichloroethene		52	U		65.7	U		NA				
Ethylbenzene		52	U		65.7	U		NA				
Methyl-tert-butyl ether		52	R		65.7	U		NA				
Tetrachloroethene		52	U		65.7	U		NA				
Toluene		52	U		65.7	U		NA				
trans-1,2-Dichloroethene		52	U		65.7	U		NA				
Trichloroethene		52	U		65.7	U		NA				
Vinyl Chloride		15	UJ		65.7	U		NA				
o-Xylene		52	U		65.7	U		NA				
m,p-Xylene		52	U		131.0	U		NA				
Sample Identification:	**OB8-22-S**			**OB8-22-S-QA**			**OB8-22-S**					
Sample Location :	**OB8**			**OB8**			**OB8**					
Depth (feet)	**22**			**22**			**22**					
Laboratory ID:	OB8 22.00			0804272-04			D017933020					
Matrix :	Soil			Soil			Soil					
Date Sampled :	4/15/08			4/15/08			4/15/08					
Date Analyzed :	4/11/08-4/20/08			4/22/08			04/23/08					
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		55	U		63.0	U		100	U			
Benzene		NA			63.0	U		100	U			
Chloroform		55	U		63.0	U		100	U			
cis-1,2-Dichloroethene		55	U		63.0	U		100	U			
Ethylbenzene		55	U		63.0	U		100	U			
Methyl-tert-butyl ether		55	R		63.0	U		100	U			
Tetrachloroethene		55	U		63.0	U		100	U			
Toluene		55	U		63.0	U		100	U			
trans-1,2-Dichloroethene		55	U		63.0	U		100	U			
Trichloroethene		55	U		63.0	U		100	U			
Vinyl Chloride		16	UJ		63.0	U		100	U			
o-Xylene		55	U		63.0	U		100	U			
m,p-Xylene		55	U		126.0	U		200	U			

Flags:
NA - Not Analyzed
J - Estimated, value is < MQL but > MDL
U - Below laboratory reporting limit
UJ - Reporting limit estimated based on low spike recovery or blank contamination.
J+ - Result may be biased high due to rinsate blank contamination
HETL - Maine Health and Environmental Testing Laboratory
SEI - Stone Environmental Inc.
µg/kg - micrograms per kilogram
µg/L - micrograms per Liter
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Quality Assurance Data Comparison
Overburden Soil Samples
Former GAT Facility
Glenburn, Maine
2008

Method:	A Primary Lab SEI D6520,8260B			B QA Lab ESS 5035/8260B			C Maine DEP HETL 5035/8260B			RPD A&B	RPD A&C	RPD B&C
Sample Identification	**OB9-3**						**OB9-3-S**					
Sample Location :	**OB9-3**						**OB9**					
Depth (feet)	**3**						**3**					
Laboratory ID:	OB9 3.00						D017399024					
Matrix :	Soil						Soil					
Date Sampled :	4/16/08						4/16/08					
Date Analyzed :	4/11/08-4/20/08						4/23/08					
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		54	U		NA			100	U			
Benzene		NA			NA			100	U			
Chloroform		54	U		NA			100	U			
cis-1,2-Dichloroethene		54	U		NA			100	U			
Ethylbenzene		54	U		NA			100	U			
Methyl-tert-butyl ether		54	R		NA			100	U			
Tetrachloroethene		54	U		NA			100	U			
Toluene		54	U		NA			100	U			
trans-1,2-Dichloroethene		54	U		NA			100	U			
Trichloroethene		54	U		NA			100	U			
Vinyl Chloride		16	UJ		NA			100	U			
o-Xylene		54	U		NA			100	U			
m,p-Xylene		54	U		NA			200	U			
Sample Identification	**OB10-1**						**OB10-1-S**					
Sample Location :	**OB10-1**						**OB10**					
Depth (feet)	**1**						**1**					
Laboratory ID:	OB10 1.00						D017399030					
Matrix :	Soil						Soil					
Date Sampled :	4/13/08						4/13/08					
Date Analyzed :	4/11/08-4/20/08						4/24/08					
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		52	U		NA			100	U			
Benzene		NA			NA			100	U			
Chloroform		52	U		NA			100	U			
cis-1,2-Dichloroethene		52	U		NA			100	U			
Ethylbenzene		52	U		NA			100	U			
Methyl-tert-butyl ether		52	R		NA			100	U			
Tetrachloroethene		52	U		NA			100	U			
Toluene		52	U		NA			100	U			
trans-1,2-Dichloroethene		52	U		NA			100	U			
Trichloroethene		52	U		NA			100	U			
Vinyl Chloride		15	UJ		NA			100	U			
o-Xylene		52	U		NA			100	U			
m,p-Xylene		52	U		NA			200	U			
Sample Identification	**OB10-13**						**OB10-13-S**					
Sample Location :	**OB10**						**OB10**					
Depth (feet)	**13**						**13**					
Laboratory ID:	OB10 13.00						D017399032					
Date Sampled :	4/13/08						4/13/08					
Date Analyzed :	4/11/08-4/20/08						04/24/08					
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		49	U		NA			100	U			
Benzene		NA			NA			100	U			
Chloroform		49	U		NA			100	U			
cis-1,2-Dichloroethene		49	U		NA			100	U			
Ethylbenzene		49	U		NA			100	U			
Methyl-tert-butyl ether		49	R		NA			100	U			
Tetrachloroethene		49	U		NA			100	U			
Toluene		49	U		NA			100	U			
trans-1,2-Dichloroethene		49	U		NA			100	U			
Trichloroethene		49	U		NA			100	U			
Vinyl Chloride		14	UJ		NA			100	U			
o-Xylene		49	U		NA			100	U			
m,p-Xylene		49	U		NA			200	U			

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Quality Assurance Data Comparison
Overburden Soil Samples
Former GAT Facility
Glenburn, Maine
2008

Method:	A Primary Lab SEI D6520,8260B			B QA Lab ESS 5035/8260B			C Maine DEP HETL 5035/8260B			RPD A&B	RPD A&C	RPD B&C
Sample Identification	OB11-5-S			OB11-5-S-QA			OB11-5-S					
Sample Location :	OB11			OB11			OB11					
Depth (feet)	5			5			5					
Laboratory ID:	OB11 5.00			0804321-04			D017933014					
Matrix :	Soil			Soil			Soil					
Date Sampled :	4/18/08			4/19/08			4/18/08					
Date Analyzed :	4/11/08-4/20/08			4/22/08			4/23/08					
	Units			Units			Units					
VOCs	µg/kg	Result	Q	µg/kg	Result	Q	µg/kg	Result	Q	%	%	%
1,2-Dichloroethane		50	U		67.5	U		100	U			
Benzene		NA			67.5	U		100	U			
Chloroform		50	U		67.5	U		100	U			
cis-1,2-Dichloroethene		50	U		67.5	U		100	U			
Ethylbenzene		50	U		67.5	U		100	U			
Methyl-tert-butyl ether		50	R		67.5	U		100	U			
Tetrachloroethene		50	U		67.5	U		100	U			
Toluene		50	U		67.5	U		100	U			
trans-1,2-Dichloroethene		50	U		67.5	U		100	U			
Trichloroethene		50	U		67.5	U		100	U			
Vinyl Chloride		15	UJ		67.5	U		100	U			
o-Xylene		50	U		67.5	U		100	U			
m,p-Xylene		50	U		135	U		200	U			
Sample Identification	OB12-3			OB12-3								
Sample Location :	OB12			OB12								
Depth (feet)	3			3								
Laboratory ID:	OB12 3.00			0804321-05								
Matrix :	Soil			Soil								
Date Sampled :	4/19/08			4/19/08								
Date Analyzed :	4/11/08-4/20/08			4/22/08								
	Units			Units			Units					
VOCs	µg/kg	Result	Q	µg/kg	Result	Q	µg/kg	Result	Q	%	%	%
1,2-Dichloroethane		56	U		57.3	U		NA				
Benzene		NA			57.3	U		NA				
Chloroform		56	U		57.3	U		NA				
cis-1,2-Dichloroethene		56	U		57.3	U		NA				
Ethylbenzene		56	U		57.3	U		NA				
Methyl-tert-butyl ether		56	R		57.3	U		NA				
Tetrachloroethene		56	U		57.3	U		NA				
Toluene		56	U		57.3	U		NA				
trans-1,2-Dichloroethene		56	U		57.3	U		NA				
Trichloroethene		56	U		57.3	U		NA				
Vinyl Chloride		17	UJ		57.3	U		NA				
o-Xylene		56	U		57.3	U		NA				
m,p-Xylene		56	U		115	U		NA				
Sample Identification	OB12-5						OB12-5-S					
Sample Location :	OB12						OB12					
Depth (feet)	5						5					
Laboratory ID:	OB12 5.00						D017399050					
Matrix :	Soil						Soil					
Date Sampled :	4/19/08						4/19/08					
Date Analyzed :	4/11/08-4/20/08						4/22/08					
	Units			Units			Units					
VOCs	µg/kg	Result	Q	µg/kg	Result	Q	µg/kg	Result	Q	%	%	%
1,2-Dichloroethane		53	U		NA			100	U			
Benzene		NA			NA			100	U			
Chloroform		53	U		NA			100	U			
cis-1,2-Dichloroethene		53	U		NA			100	U			
Ethylbenzene		53	U		NA			100	U			
Methyl-tert-butyl ether		53	R		NA			100	U			
Tetrachloroethene		53	U		NA			100	U			
Toluene		53	U		NA			100	U			
trans-1,2-Dichloroethene		53	U		NA			100	U			
Trichloroethene		53	U		NA			100	U			
Vinyl Chloride		16	UJ		NA			100	U			
o-Xylene		53	U		NA			100	U			
m,p-Xylene		53	U		NA			200	U			
Sample Identification	OB12-9-S			OB12-9-S-QA								
Sample Location :	OB12			OB12								
Depth (feet)	9			9								
Laboratory ID:	OB12 9.00			0804321-02								
Matrix :	Soil			Soil								
Date Sampled :	4/19/08			4/19/08								
Date Analyzed :	4/11/08--4/20/08			4/22/08								
	Units			Units			Units					
VOCs	µg/kg	Result	Q	µg/kg	Result	Q	µg/kg	Result	Q	%	%	%
1,2-Dichloroethane		54	U		50.8	U		NA				
Benzene		NA			50.8	U		NA				
Chloroform		54	U		50.8	U		NA				
cis-1,2-Dichloroethene		54	U		50.8	U		NA				
Ethylbenzene		54	U		50.8	U		NA				
Methyl-tert-butyl ether		54	R		50.8	U		NA				
Tetrachloroethene		54	U		50.8	U		NA				
Toluene		54	U		50.8	U		NA				
trans-1,2-Dichloroethene		54	U		50.8	U		NA				
Trichloroethene		54	U		50.8	U		NA				
Vinyl Chloride		16	UJ		50.8	U		NA				
o-Xylene		54	U		50.8	U		NA				
m,p-Xylene		54	U		102.0	U		NA				
Sample Identification	OB12-15						OB12-15-S					
Sample Location :	OB12-15						OB12					
Depth (feet)	15						15					
Laboratory ID:	OB12 15.00						D017399052					
Matrix :	Soil						Soil					
Date Sampled :	4/19/08						4/19/08					
Date Analyzed :	4/11/08-4/20/08						4/22/08					
	Units			Units			Units					
VOCs	µg/kg	Result	Q	µg/kg	Result	Q	µg/kg	Result	Q	%	%	%
1,2-Dichloroethane		56	U		NA			100	U			
Benzene		NA			NA			100	U			
Chloroform		56	U		NA			100	U			
cis-1,2-Dichloroethene		56	U		NA			100	U			
Ethylbenzene		56	U		NA			100	U			
Methyl-tert-butyl ether		56	R		NA			100	U			
Tetrachloroethene		56	U		NA			100	U			
Toluene		56	U		NA			100	U			
trans-1,2-Dichloroethene		56	U		NA			100	U			
Trichloroethene		56	U		NA			100	U			
Vinyl Chloride		16	UJ		NA			100	U			
o-Xylene		56	U		NA			100	U			
m,p-Xylene		56	U		NA			200	U			
Sample Identification:	OB14-1-S			OB14-1-S-QA								
Sample Location :	OB14			OB14								
Depth (feet)	1			1								
Laboratory ID:	OB14 1.00			0804307-02								
Matrix :	Soil			Soil								
Date Sampled :	4/16/08			4/16/08								
Date Analyzed :	4/11/08-4/20/08			4/22/08								
	Units			Units			Units					
VOCs	µg/kg	Result	Q	µg/kg	Result	Q	µg/kg	Result	Q	%	%	%
1,2-Dichloroethane		51	U		63.0	U		NA				
Benzene		NA			63.0	U		NA				
Chloroform		51	U		63.0	U		NA				
cis-1,2-Dichloroethene		51	U		63.0	U		NA				
Ethylbenzene		51	U		63.0	U		NA				
Methyl-tert-butyl ether		51	R		63.0	U		NA				
Tetrachloroethene		51	U		63.0	U		NA				
Toluene		51	U		63.0	U		NA				
trans-1,2-Dichloroethene		51	U		63.0	U		NA				
Trichloroethene		51	U		63.0	U		NA				
Vinyl Chloride		15	UJ		63.0	U		NA				
o-Xylene		51	U		63.0	U		NA				
m,p-Xylene		51	U		126.0	U		NA				

Flags:
NA - Not Analyzed
J - Estimated, value is < MQL but > MDL
U - Below laboratory reporting limit
UJ - Reporting limit estimated based on low spike recovery or blank contamination.
J+ - Result may be biased high due to rinsate blank contamination
HETL - Maine Health and Environmental Testing Laboratory
SEI - Stone Environmental Inc.
µg/kg - micrograms per kilogram
µg/L - micrograms per Liter
Q - Qualifier
D - Data Discrepancy
RPD - Relative Percent Difference

Quality Assurance Data Comparison
Overburden Soil Samples
Former GAT Facility
Glenburne, Maine
2008

Method:	A Primary Lab SEI D6520,8260B			B QA Lab ESS 5035/8260B			C Maine DEP HETL 5035/8260B			RPD A&B	RPD A&C	RPD B&C
Sample Identification	**OB16-3**						**OB16-3-S**					
Sample Location :	**OB16-3**						**OB16**					
Depth (feet)	**3**						**3**					
Laboratory ID:	OB16 3.00						D017933026					
Matrix :	Soil						Soil					
Units :												
Date Sampled :	4/16/08						4/16/08					
Date Analyzed :	4/11/08-4/20/08						4/24/08					
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		47	U		NA			100	U			
Benzene		NA			NA			100	U			
Chloroform		47	U		NA			100	U			
cis-1,2-Dichloroethene		47	U		NA			100	U			
Ethylbenzene		47	U		NA			100	U			
Methyl-tert-butyl ether		47	R		NA			100	U			
Tetrachloroethene		47	U		NA			100	U			
Toluene		47	U		NA			100	U			
trans-1,2-Dichloroethene		47	U		NA			100	U			
Trichloroethene		47	U		NA			100	U			
Vinyl Chloride		14	UJ		NA			100	U			
o-Xylene		47	U		NA			100	U			
m,p-Xylene		47	U		NA			200	U			
Sample Identification	**OB16-9-S**			**OB16-9-S-QA**			**OB16-9-S**					
Sample Location :	**OB16-9-S**			**OB16**			**OB16**					
Depth (feet)	**9**			**9**			**9**					
Laboratory ID:	OB16 9.00			0804307-03			D017933028					
Matrix :	Soil			Soil			Soil					
Date Sampled :	4/16/08			4/16/08			4/16/08					
Date Analyzed :	4/11/08-4/20/08			4/22/08			4/24/08					
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		47	U		60.4	U		100	U			
Benzene		NA	U		60.4	U		100	U			
Chloroform		47	U		60.4	U		100	U			
cis-1,2-Dichloroethene		47	U		60.4	U		100	U			
Ethylbenzene		47	U		60.4	U		100	U			
Methyl-tert-butyl ether		47	R		60.4	U		100	U			
Tetrachloroethene		47	U		60.4	U		100	U			
Toluene		47	U		60.4	U		100	U			
trans-1,2-Dichloroethene		47	U		60.4	U		100	U			
Trichloroethene		47	U		60.4	U		100	U			
Vinyl Chloride		14	UJ		60.4	U		100	U			
o-Xylene		47	U		60.4	U		100	U			
m,p-Xylene		47	U		121	U		200	U			
Sample Identification	**OB16-23-S**			**OB16-23-S-QA**								
Sample Location :	**OB16**			**OB16**								
Depth (feet)	**23**			**23**								
Laboratory ID:	OB16 23.00			0804307-04								
Matrix :	Soil			Soil								
Date Sampled :	4/16/08			4/16/08								
Date Analyzed :	4/11/08-4/20/08			4/22/08								
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		53	U		70.9	U		NA				
Benzene		NA			70.9	U		NA				
Chloroform		53	U		70.9	U		NA				
cis-1,2-Dichloroethene		53	U		70.9	U		NA				
Ethylbenzene		53	U		70.9	U		NA				
Methyl-tert-butyl ether		53	R		70.9	U		NA				
Tetrachloroethene		53	U		70.9	U		NA				
Toluene		53	U		70.9	U		NA				
trans-1,2-Dichloroethene		53	U		70.9	U		NA				
Trichloroethene		53	U		70.9	U		NA				
Vinyl Chloride		16	UJ		70.9	U		NA				
o-Xylene		53	U		70.9	U		NA				
m,p-Xylene		53	U		142.0	U		NA				
Sample Identification:	**OB17-3**						**OB17-3-S**					
Sample Location :	**OB17**						**OB17**					
Depth (feet)	**3**						**3**					
Laboratory ID:	OB17 3.00						D017399010					
Matrix :	Soil						Soil					
Date Sampled :	4/17/08						4/17/08					
Date Analyzed :	4/11/08-4/20/08						04/23/08					
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		23	U		NA			100	U			
Benzene		NA			NA			100	U			
Chloroform		23	U		NA			100	U			
cis-1,2-Dichloroethene		23	U		NA			100	U			
Ethylbenzene		23	U		NA			100	U			
Methyl-tert-butyl ether		23	R		NA			100	U			
Tetrachloroethene		23	U		NA			100	U			
Toluene		23	U		NA			100	U			
trans-1,2-Dichloroethene		23	U		NA			100	U			
Trichloroethene		23	U		NA			100	U			
Vinyl Chloride		6.8	UJ		NA			100	U			
o-Xylene		23	U		NA			100	U			
m,p-Xylene		23	U		NA			200	U			
Sample Identification:	**OB17-17**						**OB17-17-S**					
Sample Location :	**OB17**						**OB17**					
Depth (feet)	**17**						**17**					
Laboratory ID:	OB17 17.00						D017399012					
Matrix :	Soil						Soil					
Date Sampled :	4/17/08						4/17/08					
Date Analyzed :	4/11/08-4/20/08						04/23/08					
	Units						Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		48	U		NA			100	U			
Benzene		NA			NA			100	U			
Chloroform		48	U		NA			100	U			
cis-1,2-Dichloroethene		48	U		NA			100	U			
Ethylbenzene		48	U		NA			100	U			
Methyl-tert-butyl ether		48	R		NA			100	U			
Tetrachloroethene		48	U		NA			100	U			
Toluene		48	U		NA			100	U			
trans-1,2-Dichloroethene		48	U		NA			100	U			
Trichloroethene		48	U		NA			100	U			
Vinyl Chloride		14	UJ		NA			100	U			
o-Xylene		48	U		NA			100	U			
m,p-Xylene		48	U		NA			200	U			
Sample Identification:	**OB17-23-S**			**OB17-23-S-QA**								
Sample Location :	**OB17**			**OB17-23-S-QA**								
Depth (feet)	**23**			**23**								
Laboratory ID:	OB17 23.00			0804307-05								
Matrix :	Soil			Soil								
Date Sampled :	4/17/08			4/17/08								
Date Analyzed :	4/11/08-4/20/08			4/22/08								
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		50	U		64.6	U		NA				
Benzene		NA			64.6	U		NA				
Chloroform		50	U		64.6	U		NA				
cis-1,2-Dichloroethene		50	U		64.6	U		NA				
Ethylbenzene		50	U		64.6	U		NA				
Methyl-tert-butyl ether		50	R		64.6	U		NA				
Tetrachloroethene		50	U		64.6	U		NA				
Toluene		50	U		64.6	U		NA				
trans-1,2-Dichloroethene		50	U		64.6	U		NA				
Trichloroethene		50	U		64.6	U		NA				
Vinyl Chloride		16	UJ		64.6	U		NA				
o-Xylene		50	U		64.6	U		NA				
m,p-Xylene		50	U		129	U		NA				

Flags:
NA - Not Analyzed
J - Estimated, value is < MQL but > MDL
U - Below laboratory reporting limit
UJ - Reporting limit estimated based on low spike recovery or blank contamination.
J+ - Result may be biased high due to rinsate blank contamination
HETL - Maine Health and Environmental Testing Laboratory
SEI - Stone Environmental Inc.
µg/kg - micrograms per kilogram
µg/L - micrograms per Liter
Q - Qualifier
D - Data Discrepancy
RPD - Relative Percent Difference

Quality Assurance Data Comparison
Overburden Soil Samples
Former GAT Facility
Glenburn, Maine
2008

Method:	A Primary Lab SEI D6520,8260B			B QA Lab ESS 5035/8260B			C Maine DEP HETL 5035/8260B			RPD A&B	RPD A&C	RPD B&C
Sample Identification	**OB18-3-S**			**OB18-3-S-QA**								
Sample Location :	**OB18**			**OB18**								
Depth (feet)	**3**			**3**								
Laboratory ID:	OB18 3.00			0804321-03								
Matrix :	Soil			Soil								
Date Sampled :	4/19/08			4/19/08								
Date Analyzed :	4/11/08-4/20/08			4/22/08								
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		56	U		46.7	U		NA				
Benzene		NA			46.7	U		NA				
Chloroform		56	U		46.7	U		NA				
cis-1,2-Dichloroethene		56	U		46.7	U		NA				
Ethylbenzene		56	U		46.7	U		NA				
Methyl-tert-butyl ether		56	R		46.7	U		NA				
Tetrachloroethene		56	U		46.7	U		NA				
Toluene		56	U		46.7	U		NA				
trans-1,2-Dichloroethene		56	U		46.7	U		NA				
Trichloroethene		56	U		46.7	U		NA				
Vinyl Chloride		16	UJ		46.7	U		NA				
o-Xylene		56	U		46.7	U		NA				
m,p-Xylene		56	U		93.3	U		NA				
Sample Identification	**OB18-5**						**OB18-5-S**					
Sample Location :	**OB18**						**OB18**					
Depth (feet)	**5**						**5**					
Laboratory ID:	OB18 5.00						D017399016					
Matrix :	Soil						Soil					
Date Sampled :	4/19/08						4/18/08					
Date Analyzed :	4/11/08-4/20/08						4/23/08					
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		45	U		NA			100	U			
Benzene		NA			NA			100	U			
Chloroform		45	U		NA			100	U			
cis-1,2-Dichloroethene		45	U		NA			100	U			
Ethylbenzene		45	U		NA			100	U			
Methyl-tert-butyl ether		45	R		NA			100	U			
Tetrachloroethene		45	U		NA			100	U			
Toluene		45	U		NA			100	U			
trans-1,2-Dichloroethene		45	U		NA			100	U			
Trichloroethene		45	U		NA			100	U			
Vinyl Chloride		15	UJ		NA			100	U			
o-Xylene		45	U		NA			100	U			
m,p-Xylene		45	U		NA			200	U			
Sample Identification	**OB18-7-S**			**OB18-7-S-QA**			**OB18-7-S**					
Sample Location :	**OB18**			**OB18**								
Depth (feet)	**7**			**7**								
Laboratory ID:	OB18 7.00			0804321-06								
Matrix :	Soil			Soil								
Date Sampled :	4/19/08			4/19/08								
Date Analyzed :	4/11/08-4/20/08			4/22/08								
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		55	U		59.2	U		NA				
Benzene		NA			59.2	U		NA				
Chloroform		55	U		59.2	U		NA				
cis-1,2-Dichloroethene		55	U		59.2	U		NA				
Ethylbenzene		55	U		59.2	U		NA				
Methyl-tert-butyl ether		55	R		59.2	U		NA				
Tetrachloroethene		55	U		59.2	U		NA				
Toluene		55	U		59.2	U		NA				
trans-1,2-Dichloroethene		55	U		59.2	U		NA				
Trichloroethene		55	U		59.2	U		NA				
Vinyl Chloride		16	UJ		59.2	U		NA				
o-Xylene		55	U		59.2	U		NA				
m,p-Xylene		55	U		118.0	U		NA				
Sample Identification	**OB18-15**						**OB18-15-S**					
Sample Location :	**OB18**						**OB18**					
Depth (feet)	**15**						**15**					
Laboratory ID:	OB18 15.00						D017399018					
Matrix :	Soil						Soil					
Date Sampled :	4/19/08						4/18/08					
Date Analyzed :	4/11/08-4/20/08						4/23/08					
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		50	U		NA			100	U			
Benzene		NA			NA			100	U			
Chloroform		50	U		NA			100	U			
cis-1,2-Dichloroethene		50	U		NA			100	U			
Ethylbenzene		50	U		NA			100	U			
Methyl-tert-butyl ether		50	R		NA			100	U			
Tetrachloroethene		50	U		NA			100	U			
Toluene		50	U		NA			100	U			
trans-1,2-Dichloroethene		50	U		NA			100	U			
Trichloroethene		50	U		NA			100	U			
Vinyl Chloride		15	UJ		NA			100	U			
o-Xylene		50	U		NA			100	U			
m,p-Xylene		50	U		NA			200	U			
Sample Identification:	**OB18-21-S**			**OB18-21-S-QA**								
Sample Location :	**OB18**			**OB18**								
Depth (feet)	**21**			**21**								
Laboratory ID:	OB18 21.00			0804321-01								
Matrix :	Soil			Soil								
Date Sampled :	4/19/08			4/19/08								
Date Analyzed :	4/11/08-4/20/08			4/22/08								
	Units			Units			Units					
VOCs	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	µg/kg	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		44	U		56.9	U		NA				
Benzene		NA			56.9	U		NA				
Chloroform		44	U		56.9	U		NA				
cis-1,2-Dichloroethene		44	U		56.9	U		NA				
Ethylbenzene		44	U		56.9	U		NA				
Methyl-tert-butyl ether		44	R		56.9	U		NA				
Tetrachloroethene		44	U		56.9	U		NA				
Toluene		44	U		56.9	U		NA				
trans-1,2-Dichloroethene		44	U		56.9	U		NA				
Trichloroethene		44	U		56.9	U		NA				
Vinyl Chloride		13	UJ		56.9	U		NA				
o-Xylene		44	U		56.9	U		NA				
m,p-Xylene		44	U		114.0	U		NA				

Flags:
NA - Not Analyzed
J - Estimated, value is < MQL but > MDL
U - Below laboratory reporting limit
UJ - Reporting limit estimated based on low spike recovery or blank contamination.
J+ - Result may be biased high due to rinsate blank contamination
HETL - Maine Health and Environmental Testing Laboratory
SEI - Stone Environmental Inc.
µg/kg - micrograms per kilogram
µg/L - micrograms per Liter
Q - Qualifier
D - Data Discrepancy
RPD - Relative Percent Difference

Quality Assurance Data Comparison
Overburden Groundwater Samples
Former GAT Facility
Glenburne, Maine
2008

Method:	A Primary Lab SEI D6520,8260B			B QA Lab ESS 5030/524.2			C Maine DEP HETL 1			RPD A&B	RPD A&C	RPD B&C
Sample Identification	**OB1A-19**			**OB1A-19-GW-QA**			**OB1A-19-GW**					
Sample Location :	**OB1A Water**			**OB1A**			**OB1A**					
Depth (feet)	**19**			**19**			**19**					
Laboratory ID:	OB1A 19.00			0804322-05			D017399004					
Matrix :	Water			Water			Water					
Date Sampled :	4/11/08-4/12/08			4/19/08			4/19/08					
Date Analyzed :	4/11/08-4/20/08			4/25/08			4/22/08					
	Units			Units			Units					
VOCs	µg/L	**Result**	**Q**	µg/L	**Result**	**Q**	µg/L	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		2	U		1.0	U		1	U			
Benzene		NA			1.0	U		1	U			
Chloroform		2	U		1.0	U		1	U			
cis-1,2-Dichloroethene		2	U		1.0	U		1	U			
Ethylbenzene		2	U		1.0	U		1	U			
Methyl-tert-butyl ether		2	R		1.0	U		1	U			
Tetrachloroethene		2	U		1.0	U		1	U			
Toluene		2	U		1.0	U		1	U			
trans-1,2-Dichloroethene		2	U		1.0	U		1	U			
Trichloroethene		2	U		1.0	U		1	U			
Vinyl Chloride		2	UJ		1.0	U		1	U			
o-Xylene		2	U		1.0	U		1	U			
m,p-Xylene		2	U		2.0	U		2	U			
Sample Identification:	**OB8-24**			**OB8-24-GW-QA**			**OB8-24-GW**					
Sample Location :	**OB8 Water**			**OB8**			**OB8**					
Depth (feet)	**24**			**24**			**24**					
Laboratory ID:	OB8 24.00			0804322-04			D017933003					
Matrix :	Water			Water			Water					
Date Sampled :	4/19/08			4/19/08			4/19/08					
Date Analyzed :	4/11/08-4/20/08			04/25/08			04/22/08					
	Units			Units			Units					
VOCs	µg/L	**Result**	**Q**	µg/L	**Result**	**Q**	µg/L	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		2	U		1.0	U		1	U			
Benzene		NA			1.0	U		1	U			
Chloroform		2	U		1.0	U		1	U			
cis-1,2-Dichloroethene		2	U		1.0	U		1	U			
Ethylbenzene		2	U		1.0	U		1	U			
Methyl-tert-butyl ether		2	R		1.0	U		1	U			
Tetrachloroethene		2	U		0.9	J		1	U			
Toluene		2	U		0.4	J		1	U			
trans-1,2-Dichloroethene		2	U		1.0	U		1	U			
Trichloroethene		2	U		1.0	U		1	U			
Vinyl Chloride		2	U		1.0	U		1	U			
o-Xylene		2	U		1.0	U		1	U			
m,p-Xylene		2	U		2.0	U		2	U			
Sample Identification	**OB11-12**			**OB11-12-GW-QA**			**OB11-12-GW**					
Sample Location :	**OB11 Water**			**OB11**			**OB11**					
Depth (feet)	**12**			**12**			**12**					
Laboratory ID:	OB11 12.00			0804322-06			D017399005					
Matrix :	Water			Water			Water					
Date Sampled :	4/18/08			4/18/08			4/19/08					
Date Analyzed :	4/11/08-4/20/08			4/25/08			4/22/08					
	Units			Units			Units					
VOCs	µg/L	**Result**	**Q**	µg/L	**Result**	**Q**	µg/L	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		2	U		1.0	U		1	U			
Benzene		NA			1.0	U		1	U			
Chloroform		2	U		1.0	U		1	U			
cis-1,2-Dichloroethene		2	U		1.0	U		1	U			
Ethylbenzene		2	U		1.0	U		1	U			
Methyl-tert-butyl ether		2	R		1.0	U		1	U			
Tetrachloroethene		2	U		1.0	U		1	U			
Toluene		2	U		0.2	J		1	U			
trans-1,2-Dichloroethene		2	U		1.0	U		1	U			
Trichloroethene		2	U		1.0	U		1	U			
Vinyl Chloride		2	U		1.0	U		1	U			
o-Xylene		2	U		1.0	U		1	U			
m,p-Xylene		2	U		2.0	U		2	U			
Sample Identification	**OB16-25-GW**			**OB16-25-GW**			**OB16-25-GW**					
Sample Location :	**OB16 Water**			**OB16**			**OB16**					
Depth (feet)	**25**			**25**			**25**					
Laboratory ID:	OB16 25.00			0804322-02			D017933001					
Matrix :	Water			Water			Water					
Date Sampled :	4/17/08			4/18/08			4/18/08					
Date Analyzed :	4/11/08-4/20/08			4/25/08			4/22/08					
	Units			Units			Units					
VOCs	µg/L	**Result**	**Q**	µg/L	**Result**	**Q**	µg/L	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		2	U		1.0	U		1	U			
Benzene		NA			1.0	U		1	U			
Chloroform		2	U		1.0	U		1	U			
cis-1,2-Dichloroethene		2	U		1.0	U		1	U			
Ethylbenzene		2	U		1.0	U		1	U			
Methyl-tert-butyl ether		2	R		1.0	U		1	U			
Tetrachloroethene		2	U		1.0	U		1	U			
Toluene		2	U		0.1	J		1	U			
trans-1,2-Dichloroethene		2	U		1.0	U		1	U			
Trichloroethene		2	U		1.0	U		1	U			
Vinyl Chloride		2	U		1.0	U		1	U			
o-Xylene		2	U		1.0	U		1	U			
m,p-Xylene		2	U		2.0	U		2	U			
Sample Identification:	**OB17-25-GW**			**OB17-25-GW-QA**			**OB17-25-GW**					
Sample Location :	**OB17 Water**			**OB17**			**OB17**					
Depth (feet)	**25**			**25**			**25**					
Laboratory ID:	OB17 25.00			0804322-03			D017933002					
Matrix :	Water			Water			Water					
Date Sampled :	4/17/08			4/17/08			4/19/08					
Date Analyzed :	4/11/08-4/20/08			04/25/08			04/22/08					
	Units			Units			Units					
VOCs	µg/L	**Result**	**Q**	µg/L	**Result**	**Q**	µg/L	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		2	U		1.0	U		1	U			
Benzene		NA			0.3	J		1	U			
Chloroform		2	U		1.0	U		1	U			
cis-1,2-Dichloroethene		2	U		1.0	U		1	U			
Ethylbenzene		2	U		1.0	U		1	U			
Methyl-tert-butyl ether		2	R		1.0	U		1	U			
Tetrachloroethene		2	U		1.0	U		1	U			
Toluene		2	U		0.4	J		1	U			
trans-1,2-Dichloroethene		2	U		1.0	U		1	U			
Trichloroethene		0.7	J		1.0	J		1.4		**35**	**67**	**33**
Vinyl Chloride		2	U		1.0	U		1	U			
o-Xylene		2	U		1.0	U		1	U			
m,p-Xylene		2	U		2.0	U		2	U			
Sample Identification	**OB19-24**			**OB19-24-GW-QA**			**OB19-24-GW**					
Sample Location :	**OB19 Water**			**OB19**			**OB19**					
Depth (feet)	**24**			**24**			**24**					
Laboratory ID:	OB19 24.00			0804322-07			D017399007					
Matrix :	Water			Water			Water					
Date Sampled :	4/20/08			4/20/08			4/20/08					
Date Analyzed :	4/11/08-4/20/08			4/25/08			4/22/08					
	Units			Units			Units					
VOCs	µg/L	**Result**	**Q**	µg/L	**Result**	**Q**	µg/L	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		2	U		1.0	U		1	U			
Benzene		NA			1.0	U		1	U			
Chloroform		2	U		1.0	U		1	U			
cis-1,2-Dichloroethene		2	U		1.0	U		1	U			
Ethylbenzene		2	U		1.0	U		1	U			
Methyl-tert-butyl ether		2	R		1.0	U		1	U			
Tetrachloroethene		2	U		1.0	U		1	U			
Toluene		2	U		0.2	J		1	U			
trans-1,2-Dichloroethene		2	U		1.0	U		1	U			
Trichloroethene		0.91	J		1.4			1.7		**35**	**60**	**19**
Vinyl Chloride		2	U		1.0	U		1	U			
o-Xylene		2	U		1.0	U		1	U			
m,p-Xylene		2	U		2.0	U		2	U			
Sample Identification	**OB20-24**			**OB20-24-GW-QA**			**OB20-24-GW**					
Sample Location :	**OB20 Water**			**OB20**			**OB20**					
Depth (feet)	**24**			**24**			**24**					
Laboratory ID:	OB20 24.00			0804322-08			D017399008					
Matrix :	Water			Water			Water					
Date Sampled :	4/20/08			4/20/08			4/20/08					
Date Analyzed :	4/11/08-4/20/08			4/25/08			4/22/08					
	Units			Units			Units					
VOCs	µg/L	**Result**	**Q**	µg/L	**Result**	**Q**	µg/L	**Result**	**Q**	**%**	**%**	**%**
1,2-Dichloroethane		2	U		1.0	U		1	U			
Benzene		NA			1.0	U		1	U			
Chloroform		2	U		1.0	U		1	U			
cis-1,2-Dichloroethene		2	U		1.0	U		1	U			
Ethylbenzene		2	U		1.0	U		1	U			
Methyl-tert-butyl ether		2	R		1.0	U		1	U			
Tetrachloroethene		2	U		1.0	U		1	U			
Toluene		2	U		0.1	J		1	U			
trans-1,2-Dichloroethene		2	U		1.0	U		1	U			
Trichloroethene		2	U		0.3	J		1	U			
Vinyl Chloride		2	U		1.0	U		1	U			
o-Xylene		2	U		1.0	U		1	U			
m,p-Xylene		2	U		2.0	U		2	U			

Flags:
NA - Not Analyzed
J - Estimated, value is < MQL but > MDL
U - Below laboratory reporting limit
UJ - Reporting limit estimated based on low spike recovery or blank contamination.
J+ - Result may be biased high due to rinsate blank contamination
HETL - Maine Health and Environmental Testing Laboratory
SEI - Stone Environmental Inc.
µg/kg - micrograms per kilogram
µg/L - micrograms per Liter
Q - Qualifier
D - Data Discrepancy
RPD - Relative Percent Difference

Summary of Available TCE data for Soils
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Location	Northing (m)	Easting (m)	Sample name	Start Depth (fbgs)	End Depth (fbgs)	Sample Date	Soils TCE (ug/kg)	Q	Soils Acetone (ug/kg)	Q	Soils 2-Butaneone (ug/kg)	Q
GBTP01-1	454430.1	900062.7	GBTP01-1-2	2		Jun-06	3.9	U	**140**		**25**	
GBTP01-1	454430.1	900062.7	GBTP01-1-6	6		Jun-06	4.8	U	**100**		**11**	
GBTP01-1	454430.1	900062.7	GBTP01-1-10	10		Jun-06	50	U	400	U	200	U
GBTP01-2	454424.8	900068.8	GBTP01-2-2	2		Jun-06	4.6	U	**110**		4.6	U
GBTP01-2	454424.8	900068.8	GBTP01-2-6	6		Jun-06	3.9	U	41	U	3.9	U
GBTP01-2	454424.8	900068.8	GBTP01-2-10	10		Jun-06	47	U	380	U	190	U
		900068.8	GBTP01-2-10 DUP	10		Jun-06	NA	NA	330	U	160	U
GBTP02-1	454436	900064	GBTP02-1-2	2		Jun-06	5.2	U	84	U	5.2	U
GBTP02-1	454436	900064	GBTP02-1-6	6		Jun-06	4.4	U	**56**		4.4	U
GBTP02-1	454436	900064	GBTP02-1-10	10		Jun-06	4.8	U	**32**		4.8	U
GBTP02-2	454430.9	900069.9	GBTP02-2-2	2		Jun-06	4.6	U	**88**		**8.5**	
GBTP02-2	454430.9	900069.9	GBTP02-2-6	6		Jun-06	5.5	U	**130**		**16**	
GBTP03-1	454259.5	899945.5	GBTP03-1-6	6		Jun-06	4.6	U	**66**		4.6	U
GBTP03-1	454259.5	899945.5	GBTP03-1-15.5	15.5		Jun-06	4.1	U	**11**		4.1	U
GBTP03-2	454262.8	899991.1	GBTP03-2-6	6		Jun-06	4.9	U	**18**		4.9	U
GBTP03-2	454262.8	899991.1	GBTP03-2-17	17		Jun-06	4.5	U	**16**		4.5	U
GBTP04-1	454258	899967	GBTP04-1-6	6		Jun-06	5.2	U	**89**		5.2	U
GBTP04-1	454258	899967	GBTP04-1-17.5	17.5		Jun-06	5.1	U	**63**		5.1	U
GBTP04-2	454253.4	899966.9	GBTP04-2-6	6		Jun-06	4.2	U	**98**		4.2	U
		899966.9	GBTP04-2-6 DUP	6		Jun-06	NA	NA	**94**		5.2	U
GBTP04-2	454253.4	899966.9	GBTP04-2-17.5	17.5		Jun-06	4.3	U	**26**		4.3	U
Cesspool	454308.9	899884.6	CESSPOOL			Jun-06	4.9	U	**20**		4.9	U
GB-SB01	454457.0389	899974.8	GB-SB-01A	0.5	2	Mar-04	7	U	**40**			
GB-SB01	454457.0389	899974.8	GB-SB-01B	3	3.5	Mar-04	4.6	U	**69**			
GB-SB02	454433.4	899975.4	GB-SB-02A	0.5	2	Mar-04	4.3	U	**57**			
GB-SB02	454433.4	899975.4	GB-SB-02B	3	3.5	Mar-04	6.4	U	**53**			
GB-SB03	454463.2704	899985.09	GB-SB-03A	0.5	2	Mar-04	5	U	**100**			
GB-SB03	454463.2704	899985.09	GB-SB-03B	3	3.5	Mar-04	6.4	U	**110**			
GB-SB04	454450.4011	899984.28	GB-SB-04A	0.5	2	Mar-04	5.8	U	**86**			
GB-SB04	454450.4011	899984.28	GB-SB-04B	3	3.5	Mar-04	**1.1**	J	**60**			

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Location	Northing (m)	Easting (m)	Sample name	Soils Ethylbenzene (ug/kg)	Q	Soils m&p-Xylenes (ug/kg)	Q	Soils o-Xylenes (ug/kg)	Q	Soils n-Propylbenzene (ug/kg)	Q	Soils 1,3,5 Trimethylbenzene (ug/kg)	Q
GBTP01-1	454430.1	900062.7	GBTP01-1-2	3.9	U	7.8	U	3.9	U	3.9	U	3.9	U
GBTP01-1	454430.1	900062.7	GBTP01-1-6	4.8	U	9.6	U	4.8	U	4.8	U	4.8	U
GBTP01-1	454430.1	900062.7	GBTP01-1-10	**340**		**1,700**		**470**		**420**		**2,600**	
GBTP01-2	454424.8	900068.8	GBTP01-2-2	4.6	U	9.2	U	4.6	U	4.6	U	4.6	U
GBTP01-2	454424.8	900068.8	GBTP01-2-6	3.9	U	7.7	U	3.9	U	3.9	U	3.9	U
GBTP01-2	454424.8	900068.8	GBTP01-2-10	**150**	J	**280**	J	47	U	**330**	J	**1,300**	J
		900068.8	GBTP01-2-10 DUP	**44**	J	**750**	J	41	U	**810**	J	**2,900**	J
GBTP02-1	454436	900064	GBTP02-1-2	5.2	U	10	U	5.2	U	5.2	U	5.2	U
GBTP02-1	454436	900064	GBTP02-1-6	4.4	U	8.8	U	4.4	U	4.4	U	4.4	U
GBTP02-1	454436	900064	GBTP02-1-10	4.8	U	9.7	U	4.8	U	4.8	U	4.8	U
GBTP02-2	454430.9	900069.9	GBTP02-2-2	4.6	U	9.2	U	4.6	U	4.6	U	4.6	U
GBTP02-2	454430.9	900069.9	GBTP02-2-6	5.5	U	11	U	5.5	U	5.5	U	5.5	U
GBTP03-1	454259.5	899945.5	GBTP03-1-6	4.6	U	9.2	U	4.6	U	4.6	U	4.6	U
GBTP03-1	454259.5	899945.5	GBTP03-1-15.5	4.1	U	8.1	U	4.1	U	4.1	U	4.1	U
GBTP03-2	454262.8	899991.1	GBTP03-2-6	4.9	U	9.9	U	4.9	U	4.9	U	4.9	U
GBTP03-2	454262.8	899991.1	GBTP03-2-17	4.5	U	9.1	U	4.5	U	4.5	U	4.5	U
GBTP04-1	454258	899967	GBTP04-1-6	5.2	U	10	U	5.2	U	5.2	U	5.2	U
GBTP04-1	454258	899967	GBTP04-1-17.5	5.1	U	10	U	5.1	U	5.1	U	5.1	U
GBTP04-2	454253.4	899966.9	GBTP04-2-6	4.2	U	8.5	U	4.2	U	4.2	U	4.2	U
		899966.9	GBTP04-2-6 DUP	5.2	U	10	U	5.2	U	5.2	U	5.2	U
GBTP04-2	454253.4	899966.9	GBTP04-2-17.5	4.3	U	8.5	U	4.3	U	4.3	U	4.3	U
Cesspool	454308.9	899884.6	CESSPOOL	4.9	U	9.8	U	4.9	U	4.9	U	4.9	U
GB-SB01	454457.0389	899974.8	GB-SB-01A										
GB-SB01	454457.0389	899974.8	GB-SB-01B										
GB-SB02	454433.4	899975.4	GB-SB-02A										
GB-SB02	454433.4	899975.4	GB-SB-02B										
GB-SB03	454463.2704	899985.09	GB-SB-03A										
GB-SB03	454463.2704	899985.09	GB-SB-03B										
GB-SB04	454450.4011	899984.28	GB-SB-04A										
GB-SB04	454450.4011	899984.28	GB-SB-04B										

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Location	Northing (m)	Easting (m)	Sample name	Soils 1,2,4 Trimethylbenzene (ug/kg)	Q	sec-Butylbenzene (ug/kg)	Q	Soils 1,3-Dichlorobenzene (ug/kg)	Q	Soils p-Isopropyltoluene (ug/kg)	Q
GBTP01-1	454430.1	900062.7	GBTP01-1-2	3.9	U	3.9	U	3.9	U	3.9	U
GBTP01-1	454430.1	900062.7	GBTP01-1-6	4.8	U	4.8	U	4.8	U	4.8	U
GBTP01-1	454430.1	900062.7	GBTP01-1-10	**4,600**		**450**		200	U	610	
GBTP01-2	454424.8	900068.8	GBTP01-2-2	4.6	U	4.6	U	4.6	U	4.6	U
GBTP01-2	454424.8	900068.8	GBTP01-2-6	3.9	U	3.9	U	3.9	U	3.9	U
GBTP01-2	454424.8	900068.8	GBTP01-2-10	**890**	J	94	U	190	U	190	U
		900068.8	GBTP01-2-10 DUP	**2,000**	J	82	U	160	U	160	U
GBTP02-1	454436	900064	GBTP02-1-2	5.2	U	5.2	U	5.2	U	5.2	U
GBTP02-1	454436	900064	GBTP02-1-6	4.4	U	4.4	U	4.4	U	4.4	U
GBTP02-1	454436	900064	GBTP02-1-10	4.8	U	4.8	U	4.8	U	4.8	U
GBTP02-2	454430.9	900069.9	GBTP02-2-2	4.6	U	4.6	U	4.6	U	4.6	U
GBTP02-2	454430.9	900069.9	GBTP02-2-6	5.5	U	5.5	U	5.5	U	5.5	U
GBTP03-1	454259.5	899945.5	GBTP03-1-6	4.6	U	4.6	U	4.6	U	4.6	U
GBTP03-1	454259.5	899945.5	GBTP03-1-15.5	4.1	U	4.1	U	4.1	U	4.1	U
GBTP03-2	454262.8	899991.1	GBTP03-2-6	4.9	U	4.9	U	4.9	U	4.9	U
GBTP03-2	454262.8	899991.1	GBTP03-2-17	4.5	U	4.5	U	4.5	U	4.5	U
GBTP04-1	454258	899967	GBTP04-1-6	5.2	U	5.2	U	5.2	U	5.2	U
GBTP04-1	454258	899967	GBTP04-1-17.5	5.1	U	5.1	U	5.1	U	5.1	U
GBTP04-2	454253.4	899966.9	GBTP04-2-6	4.2	U	4.2	U	4.2	U	4.2	U
		899966.9	GBTP04-2-6 DUP	5.2	U	5.2	U	5.2	U	5.2	U
GBTP04-2	454253.4	899966.9	GBTP04-2-17.5	4.3	U	4.3	U	4.3	U	4.3	U
Cesspool	454308.9	899884.6	CESSPOOL	4.9	U	4.9	U	**8.3**		**5.6**	
GB-SB01	454457.0389	899974.8	GB-SB-01A								
GB-SB01	454457.0389	899974.8	GB-SB-01B								
GB-SB02	454433.4	899975.4	GB-SB-02A								
GB-SB02	454433.4	899975.4	GB-SB-02B								
GB-SB03	454463.2704	899985.09	GB-SB-03A								
GB-SB03	454463.2704	899985.09	GB-SB-03B								
GB-SB04	454450.4011	899984.28	GB-SB-04A								
GB-SB04	454450.4011	899984.28	GB-SB-04B								

Summary of Available TCE data for Soils
Former USAF GAT Site, Glenburn, Me.

Bold = positive detection. Blank = data not available. Q = Qualifier
U = Not detected above Practical Quantitation Limit (PQL).
J = Estimated value.

Location	Northing (m)	Easting (m)	Sample name	Soils 1,4 Dichlorobenzene (ug/kg)	Q	Soils Napthalene (ug/kg)	Q
GBTP01-1	454430.1	900062.7	GBTP01-1-2	3.9	U	3.9	U
GBTP01-1	454430.1	900062.7	GBTP01-1-6	4.8	U	4.8	U
GBTP01-1	454430.1	900062.7	GBTP01-1-10	200	U	**2,400**	
GBTP01-2	454424.8	900068.8	GBTP01-2-2	4.6	U	4.6	U
GBTP01-2	454424.8	900068.8	GBTP01-2-6	3.9	U	3.9	U
GBTP01-2	454424.8	900068.8	GBTP01-2-10	190	U	**1,300**	J
		900068.8	GBTP01-2-10 DUP	160	U	**2,600**	J
GBTP02-1	454436	900064	GBTP02-1-2	5.2	U	5.2	U
GBTP02-1	454436	900064	GBTP02-1-6	4.4	U	4.4	U
GBTP02-1	454436	900064	GBTP02-1-10	4.8	U	4.8	U
GBTP02-2	454430.9	900069.9	GBTP02-2-2	4.6	U	4.6	U
GBTP02-2	454430.9	900069.9	GBTP02-2-6	5.5	U	5.5	U
GBTP03-1	454259.5	899945.5	GBTP03-1-6	4.6	U	4.6	U
GBTP03-1	454259.5	899945.5	GBTP03-1-15.5	4.1	U	4.1	U
GBTP03-2	454262.8	899991.1	GBTP03-2-6	4.9	U	4.9	U
GBTP03-2	454262.8	899991.1	GBTP03-2-17	4.5	U	4.5	U
GBTP04-1	454258	899967	GBTP04-1-6	5.2	U	5.2	U
GBTP04-1	454258	899967	GBTP04-1-17.5	5.1	U	5.1	U
GBTP04-2	454253.4	899966.9	GBTP04-2-6	4.2	U	4.2	U
		899966.9	GBTP04-2-6 DUP	5.2	U	5.2	U
GBTP04-2	454253.4	899966.9	GBTP04-2-17.5	4.3	U	4.3	U
Cesspool	454308.9	899884.6	CESSPOOL	**7.9**		4.9	U
GB-SB01	454457.0389	899974.8	GB-SB-01A				
GB-SB01	454457.0389	899974.8	GB-SB-01B				
GB-SB02	454433.4	899975.4	GB-SB-02A				
GB-SB02	454433.4	899975.4	GB-SB-02B				
GB-SB03	454463.2704	899985.09	GB-SB-03A				
GB-SB03	454463.2704	899985.09	GB-SB-03B				
GB-SB04	454450.4011	899984.28	GB-SB-04A				
GB-SB04	454450.4011	899984.28	GB-SB-04B				

Glenburn Water VOC Detections (except TCE)

TOLUENE DETECTIONS (ppb)

Well Identity		Sample Date			
Well ID/Sample Point	**Sample Point**	**June 26 2006**	**May 23 2007**	**October 16 2007**	**April 14 2008**
GB-SW-02	NA		**3.2 J+**	<0.5	**7.1**
GB-DW-79	NA		**0.5**	<0.5	<0.5
GB-SW-04	NA		<0.5	**1.2**	**0.6**
CESSPOOL WATER	NA	**9.7**			

NAPHTHALENE DETECTIONS (ppb)

Well Identity	Sample Date			
Well ID/Sample Point	**June 26 2006**	**May 23 2007**	**October 16 2007**	**April 14 2008**
Wells Sampled				
GB-DW-76		<0.5	<0.5	<0.5
GB-DW-61		<0.5	<0.5	<0.5
GB-DW-28		<0.5	<0.5	<0.5
GB-DW-05		<0.5	<0.5	<0.5
GB-DW-11		<0.5	<0.5	<0.5
CESSPOOL WATER	**3.2**			

MTBE DETECTIONS (ppb)

Well Identity	Sample Date		
Well ID/Sample Point	**May 23 2007**	**October 16 2007**	**April 14 2008**
Wells Sampled			
GB-DW-76	0.6	4.1	<0.5
GB-DW-61	<0.5	14.7	1.2
GB-DW-28	<0.5	**0.6**	<0.5
GB-DW-05	<0.5	<0.5	**0.7**
GB-DW-11	<0.5	<0.5	**1.8**

1,3 DICHLOROBENZENE DETECTIONS (ppb)

Well Identity			
Well ID/Sample Point	**May 23 2007**	**October 16 2007**	**April 14 2008**
Wells Sampled			
GB-SW-02	**0.8**	<0.5	<0.5
GB-SW-04	**2.2**	<0.5	<0.5

1,4 DICHLOROBENZENE DETECTIONS (ppb)

Well ID/Sample Point	June 26 2006	May 23 2007	October 16 2007	April 14 2008
Wells Sampled				
GBTP03-2-17	<1.0			
GBTP04-2-17.5	<1.0			
CESSPOOL WATER	**18.0**			

P-ISOPROPYLTOLUENE DETECTIONS (ppb)

Well Identity	Sample Date			
Well ID/Sample Point	**June 26 2006**	**May 23 2007**	**October 16 2007**	**April 14 2008**
Wells Sampled				
Cesspool Water	**2.4**			

1,3,5 TRIMETHYLBENZENE DETECTIONS (ppb)

Well Identity	Sample Date			
Well ID/Sample Point	**June 26 2006**	**May 23 2007**	**October 16 2007**	**April 14 2008**
Wells Sampled				
Cesspool Water	**3.5**			

cis-1,2 DICHLOROETHENE DETECTIONS (ppb)

Well Identity	Sample Date		
Well ID/Sample Point	**May 23 2007**	**October 16 2007**	**April 14 2008**
Wells Sampled			
GB-SW-04	**0.6**	<0.5	<0.5

TOTAL XYLENES DETECTIONS (ppb)

Well Identity	Sample Date			
Well ID/Sample Point	**June 26 2006**	**May 23 2007**	**October 16 2007**	**April 14 2008**
Wells Sampled				
Cesspool Water	**6.9**			

TRICHLOROTRIFLUOROETHANE DETECTIONS (ppb)

Well Identity	Sample Date			
Well ID/Sample Point	**June 26 2006**	**May 23 2007**	**October 16 2007**	**April 14 2008**
Wells Sampled				
Cesspool Water	**5.2**			

2005 Packer Testing Data

Well Name	Local Well Name	2000 Packer Interval (ft below casing top)*	TCE (µg/L)	2005 Packer Interval (ft below casing top)†	TCE (µg/L)	Temp (°C)	DO (mg/L)	ORP (mV)††	Specific Conductance (µS/cm)
				40-50	31	11.57	8.8	84.3	7,356
				53-68	51	11.12	9.87	118.4	3,503
				60-75	60	10.79	10.43	152.6	3,218
		27.5-105.5	46	79-94	39	20.33	6.66	219	2,077
GB-MW-01	**UMO-1**	105.5-201.5	38	115-130	19	16.87	3.45	264.2	1,545
				40-65	9	10.81	9.11	99.8	2,261
				67-77	13	11.15	8.74	163	2,565
		30.25-116.25	25	86-96	21	10.22	9.49	213	2,880
		120.25-130.25	20	128-138	14	10.27	9.07	167.8	2,665
GB-MW-02	**UMO-2**	186.25-196.25	17	178-202	8.7	10.18	8.78	209.12	2,338
GB-DW-93	**Former Newman Well**	20-88.5 (ground surface)	1						
	Former	19.4-57.4	2.2						
GB-DW-01	**Ellis Well**	57.4-67.4	2.8						

TCE in Water Supply Wells in Glenburn, Maine

Well ID	Address Information		Sample Point	Nov 15 1993	Aug 15 1994	July 15 1995	Sept 13 1995	Feb 25 2002	March 2002	Aug 14 2002	Sept 2002	Oct 10 2002	Nov 10 2002	Nov 22 2002	Dec 04 2002	Feb 12 2003	Apr 02 2003	May 2003	June 2003	July 23 2003	Nov 12 2003	Dec 10 2003	Mar 24 2004	Jul 28 2004	Aug 04 2004	Spring 2005	Oct ?? 2005	Summer 2006	May 23 2007	October 16 2007	April 11-17 2008	Oct 2-7 2008	Dec 10-13 2009	June 28-30, 2010
GB-DW-02	110	Lakeview Ave	kitchen tap																<0.5										<0.5		<0.5	<0.5		
GB-DW-04																															<0.5	<0.5		
GB-DW-05																															<0.5	<0.5		
GB-DW-06																																<0.5		
GB-DW-07																															<0.5	<0.5		
GB-DW-08																															<0.5	<0.5		
GB-DW-09																															<0.5	<0.5		
GB-DW-10																															<0.5	<0.5		
GB-DW-11																															<0.5	<0.5		
GB-DW-12		Kings Ct							<0.5													<0.5											
GB-DW-17																													<0.5	<0.5				
GB-DW-18	62	Lakeview Ave							<0.5									<0.5																
GB-DW-19	71	Lakeview Ave							<0.5										<0.5										<0.5	<0.5	<0.5	<0.5		
GB-DW-21																														<0.5				
GB-DW-22	97	Lakeview Ave	Before Filters						**3.2**	**2.2**	**1.4**		**1.8**					**2.9**			**2.2**		**2.6**		**2.0**	**4.2**			**5.1**	**3.0**	**3.9**	**3.3**	**4**	**2.8**
GB-DW-23	97	Lakeview Ave																									**2.2**						
GB-DW-24	100	Lakeview Ave							<0.5										<0.5									<0.5	<0.5	<0.5	<0.5	<0.5		
GB-DW-25	113	Lakeview Ave							<0.5																									
GB-DW-26	120	Lakeview Ave																	<0.5										<0.5	<0.5	<0.5	<0.5		
GB-DW-27	123	Lakeview Ave							<0.5									<0.5										<0.5	<0.5	<0.5	<0.5	<0.5		
GB-DW-28	159	Lakeview Ave						< 1.0											<0.5									<0.5	<0.5					
GB-DW-29	171	Lakeview Ave	kitchen tap											<0.5					<0.5															
GB-DW-30																			<0.5															
GB-DW-31	178	Lakeview Ave							<0.5										<0.5									<0.5		<0.5	<0.5			
GB-DW-32	181	Lakeview Ave	kitchen tap																<0.5															
GB-DW-33	184	Lakeview Ave	kitchen tap																<0.5															
GB-DW-34	190	Lakeview Ave	kitchen tap															<0.5																
GB-DW-35	?195	Lakeview Ave	kitchen tap																<0.5															
GB-DW-37	197	Lakeview Ave							<0.5										<0.5															
GB-DW-38																			<0.5															
GB-DW-48	244	Lakeview Ave							<0.5									<0.5																
GB-DW-52																												<0.5	<0.5	<0.5	<0.5			
GB-DW-53																												<0.5	<0.5	<0.5	<0.5			
GB-DW-54	30	Midway Ln.							**1.1**	<1.0	<1.0	<1.0			<1.0	0.5 J	0.64 J	**1.3**			**1.5**		<0.5	<0.5		**4.2**		**1.9**	**1.2**	<0.5	**1.4**	<0.5	**0.9**	
GB-DW-55	40	Midway Ln.	hose																		**2.3**		**1.1**	**1.7**		**1.3**		**1.9**	<0.5	**1.3**	**1.6**	**0.6**	**1.2**	**0.62**
GB-DW-56																												**2.1**	<0.5	<0.5	<0.5	<0.5	
GB-DW-57																													<0.5	<0.5	<0.5		
GB-DW-60	1005	Sunset Ave							<0.5																			<0.5	<0.5	<0.5	<0.5		

Notes:
All Analytical Results Reported in ug/L

Compiled by The Johnson Co., Montpelier, VT from data provided by USACE and MEDEP, various dates
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TCE in Water Supply Wells in Glenburn, Maine

Well ID	Address Information		Sample Point	Nov 15 1993	Aug 15 1994	July 15 1995	Sept 13 1995	Feb 25 2002	March 2002	Aug 14 2002	Sept 2002	Oct 10 2002	Nov 10 2002	Nov 22 2002	Dec 04 2002	Feb 12 2003	Apr 02 2003	May 2003	June 2003	July 23 2003	Nov 12 2003	Dec 10 2003	Mar 24 2004	Jul 28 2004	Aug 04 2004	Spring 2005	Oct ?? 2005	Summer 2006	May 23 2007	October 16 2007	April 11-17 2008	Oct 2-7 2008	Dec 10-13 2009	June 28-30, 2010
GB-DW-61	1013	Sunset Ave							<0.5										<0.5										<0.5	<0.5	<0.5		
GB-DW-62	1019	Sunset Ave							<0.5									<0.5															
GB-DW-63	1025	Sunset Ave							<0.5									<0.5															
GB-DW-64	1026	Sunset Ave							<0.5									<0.5															
GB-DW-66	1035	Sunset Ave							<0.5										<1.0	<0.5													
GB-DW-68	1051	Sunset Ave							<0.5										<0.5														
GB-DW-69	1052	Sunset Ave							<0.5										<0.5														
GB-DW-70	1057	Sunset Ave							<0.5									<0.5															
GB-DW-71	1061	Sunset Ave							<0.5									<0.5															
GB-DW-72	1064	Sunset Ave	Hose Bib																														
GB-DW-73	1071	Sunset Ave							<0.5									<0.5															
GB-DW-75	1076	Sunset Ave							<0.5										<0.5														
GB-DW-76																												<0.5	<0.5	<0.5	<0.5		
GB-DW-77																												<0.5					
GB-DW-78																												<0.5		<0.5	<0.5		
GB-DW-79																												<0.5	<0.5	<0.5	<0.5		
GB-DW-80																												<0.5	<0.5	<0.5	<0.5		
GB-DW-81																												<0.5	<0.5	<0.5	<0.5		
GB-DW-82																												<0.5	<0.5				
GB-DW-83																												<0.5					
GB-DW-84																												<0.5	<0.5				
GB-DW-85																												<0.5	<0.5	<0.5	<0.5		
GB-DW-86																												<0.5					
GB-DW-87																												<0.5	<0.5	<0.5	<0.5		
GB-DW-88																													<0.5				
GB-DW-89																													<0.5				
GB-DW-90																													<0.5				
GB-DW-91																													<0.5				
GB-DW-92																													<0.5				
GB-DW-94																															<0.5		
GB-MW-01	144	Lakeview Ave																								**60**							**53**
GB-MW-02	144	Lakeview Ave																								**21**							**22**
GB-PW-01	144	Lakeview Ave																			<0.5						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
GB-PW-02	21	Cressy Ave								<1.0	**1.0**	**1.1**			<1.0	0.6 J	<1.0	<0.5			<0.5		**0.8**	**0.7**		**0.8**		<0.5	<0.5	**1.0**	<0.5	<0.5	**0.1 J**	
GB-PW-03	21	Cressy Ave		**3.7**	**2.5**	**1.5**	**0.7**			<1.0	<1.0	<1.0			<1.0	<1.0	<1.0	**<0.5**			<0.5		<0.5			0.4 J		<0.5	<0.5	**2.2**	<0.5	<0.5	<0.5	
GB-SW-01																													**1.4**	<0.5	**0.9**	**1.2**	**1.1**	**0.78**
GB-SW-02																													<0.5	<0.5	<0.5	<0.5		
GB-SW-03																															<0.5		
GB-SW-04																													**2.6**	<0.5	**3.6**	**3.5**	**3.5**	**0.78**
GBTP03-2-17																												**1.3**					
GBTP04-2-17.5																												**1.3**					
CESSPOOL WATER																												<1.0					
GB-DW-15	43	Lakeview Ave							<0.5																								
GB-DW-20	74	Lakeview Ave																															
GAGNON-K-TAP																		<0.5															
GB-DW-51	7	Midway Ln.							<0.5																				<0.5	<0.5	<0.5			
GB-DW-52	20	Midway Ln.																											<0.5	<0.5	<0.5			
LANE-K-TAP	?	Midway Ln.	kitchen tap															<0.5															

Notes:
All Analytical Results Reported in ug/L

Compiled by The Johnson Co., Montpelier, VT from data provided by USACE and MEDEP, various dates
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Samples collected August 25, 2009

Table of Compounds Detected in Total VOC Method 8260B				
CHEMICAL	**Residential/ Groundwater Guideline (mg/kg)**	**GB-MW03 Solids (mg/kg dry weight)**	**GB-MW04 Solids (mg/kg dry weight)**	**GB-MW05 Solids (mg/kg dry weight)**
Benzene	5 / 0.03			0.055 J
Ethylbenzene	1670 / 13			0.0592 J
1,2,4 trimethylbenzene	540 / 5			0.111
Toluene	2390 / 12	0.0181		0.155
Xylenes (total)	10000 / 160			0.3029 (sum of O, P and M)
"J" indicates value is estimated. Blank cells indicate compound was not detected in that sample.				

the composite sample of all three wells which was tested for waste characteristics the results were as follows:

pH	8.53
Flashpoint	greater than 200 degrees F
Reactive cyanide	none detected (method reporting limit, MRL = 2 ppm)
Reactive sulfide	none detected (MRL = 2 ppm)
Total PCBs	none detected (MRL = 58.5 ppb)
TCLP SVOC	none detected (MRL = 0.05-0.5 ppm)
TCLP VOC	none detected (MRL 0.1 ppm, 2.5 ppm for 2-butanone)
TCLP herbicides	none detected (Detection Limit = 2 ppb)
TCLP pesticides	none detected (MRL = 0.0005-0.013 ppm)
TCLP 8 RCRA metals	none detected (MRL = 0.0005-0.05 ppm) except:

0.151 ppm barium. (< 100 ppm RCRA regulatory hazardous waste level and RAG of 10,000 mg/Kg.

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB01	1	OB1-1-S	1,2-Dichloroethane				U	81
OB01	1	OB1-1-S	Chloroform				U	81
OB01	1	OB1-1-S	cis-1,2-Dichloroethene				U	81
OB01	1	OB1-1-S	Ethylbenzene				U	81
OB01	1	OB1-1-S	m,p-Xylenes				U	81
OB01	1	OB1-1-S	o-Xylene				U	81
OB01	1	OB1-1-S	tert-Butyl-methyl ether				R	81
OB01	1	OB1-1-S	Tetrachloroethene				U	81
OB01	1	OB1-1-S	Toluene				U	81
OB01	1	OB1-1-S	trans-1,2-Dichloroethene				U	81
OB01	1	OB1-1-S	Trichloroethene				U	81
OB01	1	OB1-1-S	Vinyl Chloride				UJ	24
OB01	3	OB1-3-S	1,2-Dichloroethane				U	103
OB01	3	OB1-3-S	Chloroform				U	103
OB01	3	OB1-3-S	cis-1,2-Dichloroethene				U	103
OB01	3	OB1-3-S	Ethylbenzene				U	103
OB01	3	OB1-3-S	m,p-Xylenes				U	103
OB01	3	OB1-3-S	o-Xylene				U	103
OB01	3	OB1-3-S	tert-Butyl-methyl ether				R	103
OB01	3	OB1-3-S	Tetrachloroethene				U	103
OB01	3	OB1-3-S	Toluene				U	103
OB01	3	OB1-3-S	trans-1,2-Dichloroethene				U	103
OB01	3	OB1-3-S	Trichloroethene				U	103
OB01	3	OB1-3-S	Vinyl Chloride				UJ	30
OB01	5	OB1-5-S	1,2-Dichloroethane				U	108
OB01	5	OB1-5-S	Chloroform				U	108
OB01	5	OB1-5-S	cis-1,2-Dichloroethene				U	108
OB01	5	OB1-5-S	Ethylbenzene				U	108
OB01	5	OB1-5-S	m,p-Xylenes				U	108
OB01	5	OB1-5-S	o-Xylene				U	108
OB01	5	OB1-5-S	tert-Butyl-methyl ether				R	108
OB01	5	OB1-5-S	Tetrachloroethene				U	108
OB01	5	OB1-5-S	Toluene				U	108
OB01	5	OB1-5-S	trans-1,2-Dichloroethene				U	108
OB01	5	OB1-5-S	Trichloroethene				U	108
OB01	5	OB1-5-S	Vinyl Chloride				UJ	32
OB01	6	OB1-6-S	1,2-Dichloroethane				U	96
OB01	6	OB1-6-S	Chloroform				U	96
OB01	6	OB1-6-S	cis-1,2-Dichloroethene				U	96
OB01	6	OB1-6-S	Ethylbenzene				U	96
OB01	6	OB1-6-S	m,p-Xylenes				U	96
OB01	6	OB1-6-S	o-Xylene				U	96
OB01	6	OB1-6-S	tert-Butyl-methyl ether				R	96
OB01	6	OB1-6-S	Tetrachloroethene				U	96
OB01	6	OB1-6-S	Toluene				U	96
OB01	6	OB1-6-S	trans-1,2-Dichloroethene				U	96

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB01	6	OB1-6-S	Trichloroethene				U	96
OB01	6	OB1-6-S	Vinyl Chloride				UJ	28
OB01	9	OB1-9-S	1,2-Dichloroethane				U	107
OB01	9	OB1-9-S	Chloroform				U	107
OB01	9	OB1-9-S	cis-1,2-Dichloroethene				U	107
OB01	9	OB1-9-S	Ethylbenzene				U	107
OB01	9	OB1-9-S	m,p-Xylenes				U	107
OB01	9	OB1-9-S	o-Xylene				U	107
OB01	9	OB1-9-S	tert-Butyl-methyl ether				R	107
OB01	9	OB1-9-S	Tetrachloroethene				U	107
OB01	9	OB1-9-S	Toluene				U	107
OB01	9	OB1-9-S	trans-1,2-Dichloroethene				U	107
OB01	9	OB1-9-S	Trichloroethene				U	107
OB01	9	OB1-9-S	Vinyl Chloride				UJ	32
OB01	11	OB1-11-S	1,2-Dichloroethane				U	106
OB01	11	OB1-11-S	Chloroform				U	106
OB01	11	OB1-11-S	cis-1,2-Dichloroethene				U	106
OB01	11	OB1-11-S	Ethylbenzene				U	106
OB01	11	OB1-11-S	m,p-Xylenes				U	106
OB01	11	OB1-11-S	o-Xylene				U	106
OB01	11	OB1-11-S	tert-Butyl-methyl ether				R	106
OB01	11	OB1-11-S	Tetrachloroethene				U	106
OB01	11	OB1-11-S	Toluene				U	106
OB01	11	OB1-11-S	trans-1,2-Dichloroethene				U	106
OB01	11	OB1-11-S	Trichloroethene				U	106
OB01	11	OB1-11-S	Vinyl Chloride				UJ	31
OB01	13	OB1-13-S	1,2-Dichloroethane				U	98
OB01	13	OB1-13-S	Chloroform				U	98
OB01	13	OB1-13-S	cis-1,2-Dichloroethene				U	98
OB01	13	OB1-13-S	Ethylbenzene				U	98
OB01	13	OB1-13-S	m,p-Xylenes				U	98
OB01	13	OB1-13-S	o-Xylene				U	98
OB01	13	OB1-13-S	tert-Butyl-methyl ether				R	98
OB01	13	OB1-13-S	Tetrachloroethene				U	98
OB01	13	OB1-13-S	Toluene				U	98
OB01	13	OB1-13-S	trans-1,2-Dichloroethene				U	98
OB01	13	OB1-13-S	Trichloroethene				U	98
OB01	13	OB1-13-S	Vinyl Chloride				UJ	29
OB01	15	OB1-15-S	1,2-Dichloroethane	*	*		U	97
OB01	15	OB1-15-S	Chloroform	*	*		U	97
OB01	15	OB1-15-S	cis-1,2-Dichloroethene	*	*		U	97
OB01	15	OB1-15-S	Ethylbenzene	*	*		U	97
OB01	15	OB1-15-S	m,p-Xylenes	*	*		U	97
OB01	15	OB1-15-S	o-Xylene	*	*		U	97
OB01	15	OB1-15-S	tert-Butyl-methyl ether	*	*		R	97
OB01	15	OB1-15-S	Tetrachloroethene	*	*		U	97

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB01	15	OB1-15-S	Toluene	*	*		U	97
OB01	15	OB1-15-S	trans-1,2-Dichloroethene	*	*		U	97
OB01	15	OB1-15-S	Trichloroethene	*	*		U	97
OB01	15	OB1-15-S	Vinyl Chloride	*	*		UJ	29
OB01	17	OB1-17-S	1,2-Dichloroethane				U	82
OB01	17	OB1-17-S	Chloroform				U	82
OB01	17	OB1-17-S	cis-1,2-Dichloroethene				U	82
OB01	17	OB1-17-S	Ethylbenzene				U	82
OB01	17	OB1-17-S	m,p-Xylenes				U	82
OB01	17	OB1-17-S	o-Xylene				U	82
OB01	17	OB1-17-S	tert-Butyl-methyl ether				R	82
OB01	17	OB1-17-S	Tetrachloroethene				U	82
OB01	17	OB1-17-S	Toluene				U	82
OB01	17	OB1-17-S	trans-1,2-Dichloroethene				U	82
OB01	17	OB1-17-S	Trichloroethene				U	82
OB01	17	OB1-17-S	Vinyl Chloride				UJ	24
OB01	19	OB1-19-S	1,2-Dichloroethane				U	94
OB01	19	OB1-19-S	Chloroform				U	94
OB01	19	OB1-19-S	cis-1,2-Dichloroethene				U	94
OB01	19	OB1-19-S	Ethylbenzene				U	94
OB01	19	OB1-19-S	m,p-Xylenes				U	94
OB01	19	OB1-19-S	o-Xylene				U	94
OB01	19	OB1-19-S	tert-Butyl-methyl ether				R	94
OB01	19	OB1-19-S	Tetrachloroethene				U	94
OB01	19	OB1-19-S	Toluene				U	94
OB01	19	OB1-19-S	trans-1,2-Dichloroethene				U	94
OB01	19	OB1-19-S	Trichloroethene				U	94
OB01	19	OB1-19-S	Vinyl Chloride				UJ	28
OB01	21	OB1-21-S	1,2-Dichloroethane				U	101
OB01	21	OB1-21-S	Chloroform				U	101
OB01	21	OB1-21-S	cis-1,2-Dichloroethene				U	101
OB01	21	OB1-21-S	Ethylbenzene				U	101
OB01	21	OB1-21-S	m,p-Xylenes				U	101
OB01	21	OB1-21-S	o-Xylene				U	101
OB01	21	OB1-21-S	tert-Butyl-methyl ether				R	101
OB01	21	OB1-21-S	Tetrachloroethene				U	101
OB01	21	OB1-21-S	Toluene				U	101
OB01	21	OB1-21-S	trans-1,2-Dichloroethene				U	101
OB01	21	OB1-21-S	Trichloroethene				U	101
OB01	21	OB1-21-S	Vinyl Chloride				UJ	30
OB01	23	OB1-23-S	1,2-Dichloroethane				U	103
OB01	23	OB1-23-S	Chloroform				U	103
OB01	23	OB1-23-S	cis-1,2-Dichloroethene				U	103
OB01	23	OB1-23-S	Ethylbenzene				U	103
OB01	23	OB1-23-S	m,p-Xylenes				U	103
OB01	23	OB1-23-S	o-Xylene				U	103

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB01	23	OB1-23-S	tert-Butyl-methyl ether				R	103
OB01	23	OB1-23-S	Tetrachloroethene				U	103
OB01	23	OB1-23-S	Toluene				U	103
OB01	23	OB1-23-S	trans-1,2-Dichloroethene				U	103
OB01	23	OB1-23-S	Trichloroethene				U	103
OB01	23	OB1-23-S	Vinyl Chloride				UJ	30
OB01	25	OB1-25-S	1,2-Dichloroethane				U	79
OB01	25	OB1-25-S	Chloroform				U	79
OB01	25	OB1-25-S	cis-1,2-Dichloroethene				U	79
OB01	25	OB1-25-S	Ethylbenzene				U	79
OB01	25	OB1-25-S	m,p-Xylenes				U	79
OB01	25	OB1-25-S	o-Xylene				U	79
OB01	25	OB1-25-S	tert-Butyl-methyl ether				R	79
OB01	25	OB1-25-S	Tetrachloroethene				U	79
OB01	25	OB1-25-S	Toluene				U	79
OB01	25	OB1-25-S	trans-1,2-Dichloroethene				U	79
OB01	25	OB1-25-S	Trichloroethene				U	79
OB01	25	OB1-25-S	Vinyl Chloride				UJ	23
OB01	28	OB1-28-S	1,2-Dichloroethane				U	87
OB01	28	OB1-28-S	Chloroform				U	87
OB01	28	OB1-28-S	cis-1,2-Dichloroethene				U	87
OB01	28	OB1-28-S	Ethylbenzene				U	87
OB01	28	OB1-28-S	m,p-Xylenes				U	87
OB01	28	OB1-28-S	o-Xylene				U	87
OB01	28	OB1-28-S	tert-Butyl-methyl ether				R	87
OB01	28	OB1-28-S	Tetrachloroethene				U	87
OB01	28	OB1-28-S	Toluene				U	87
OB01	28	OB1-28-S	trans-1,2-Dichloroethene				U	87
OB01	28	OB1-28-S	Trichloroethene				U	87
OB01	28	OB1-28-S	Vinyl Chloride				UJ	26
OB01	28.5	OB1-28.5-S	1,2-Dichloroethane				U	96
OB01	28.5	OB1-28.5-S	Chloroform				U	96
OB01	28.5	OB1-28.5-S	cis-1,2-Dichloroethene				U	96
OB01	28.5	OB1-28.5-S	Ethylbenzene				U	96
OB01	28.5	OB1-28.5-S	m,p-Xylenes				U	96
OB01	28.5	OB1-28.5-S	o-Xylene				U	96
OB01	28.5	OB1-28.5-S	tert-Butyl-methyl ether				R	96
OB01	28.5	OB1-28.5-S	Tetrachloroethene				U	96
OB01	28.5	OB1-28.5-S	Toluene				U	96
OB01	28.5	OB1-28.5-S	trans-1,2-Dichloroethene				U	96
OB01	28.5	OB1-28.5-S	Trichloroethene				U	96
OB01	28.5	OB1-28.5-S	Vinyl Chloride				UJ	28
OB02	1	OB2-1-S	1,2-Dichloroethane				U	51
OB02	1	OB2-1-S	Chloroform				U	51
OB02	1	OB2-1-S	cis-1,2-Dichloroethene				U	51
OB02	1	OB2-1-S	Ethylbenzene				U	51

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB02	1	OB2-1-S	m,p-Xylenes				U	51
OB02	1	OB2-1-S	o-Xylene				U	51
OB02	1	OB2-1-S	tert-Butyl-methyl ether				R	51
OB02	1	OB2-1-S	Tetrachloroethene				U	51
OB02	1	OB2-1-S	Toluene				U	51
OB02	1	OB2-1-S	trans-1,2-Dichloroethene				U	51
OB02	1	OB2-1-S	Trichloroethene				U	51
OB02	1	OB2-1-S	Vinyl Chloride				UJ	15
OB02	3	OB2-3-S	1,2-Dichloroethane				U	50
OB02	3	OB2-3-S	Chloroform				U	50
OB02	3	OB2-3-S	cis-1,2-Dichloroethene				U	50
OB02	3	OB2-3-S	Ethylbenzene				U	50
OB02	3	OB2-3-S	m,p-Xylenes				U	50
OB02	3	OB2-3-S	o-Xylene				U	50
OB02	3	OB2-3-S	tert-Butyl-methyl ether				R	50
OB02	3	OB2-3-S	Tetrachloroethene				U	50
OB02	3	OB2-3-S	Toluene				U	50
OB02	3	OB2-3-S	trans-1,2-Dichloroethene				U	50
OB02	3	OB2-3-S	Trichloroethene				U	50
OB02	3	OB2-3-S	Vinyl Chloride				UJ	15
OB02	5	OB2-5-S	1,2-Dichloroethane				U	51
OB02	5	OB2-5-S	Chloroform				U	51
OB02	5	OB2-5-S	cis-1,2-Dichloroethene				U	51
OB02	5	OB2-5-S	Ethylbenzene				U	51
OB02	5	OB2-5-S	m,p-Xylenes				U	51
OB02	5	OB2-5-S	o-Xylene				U	51
OB02	5	OB2-5-S	tert-Butyl-methyl ether				R	51
OB02	5	OB2-5-S	Tetrachloroethene				U	51
OB02	5	OB2-5-S	Toluene				U	51
OB02	5	OB2-5-S	trans-1,2-Dichloroethene				U	51
OB02	5	OB2-5-S	Trichloroethene				U	51
OB02	5	OB2-5-S	Vinyl Chloride				UJ	15
OB02	8	OB2-8-S	1,2-Dichloroethane		*		U	55
OB02	8	OB2-8-S	Chloroform		*		U	55
OB02	8	OB2-8-S	cis-1,2-Dichloroethene		*		U	55
OB02	8	OB2-8-S	Ethylbenzene		*		U	55
OB02	8	OB2-8-S	m,p-Xylenes		*		U	55
OB02	8	OB2-8-S	o-Xylene		*		U	55
OB02	8	OB2-8-S	tert-Butyl-methyl ether		*		R	55
OB02	8	OB2-8-S	Tetrachloroethene		*		U	55
OB02	8	OB2-8-S	Toluene		*		U	55
OB02	8	OB2-8-S	trans-1,2-Dichloroethene		*		U	55
OB02	8	OB2-8-S	Trichloroethene		*		U	55
OB02	8	OB2-8-S	Vinyl Chloride		*		UJ	16
OB02	11	OB2-11-S	1,2-Dichloroethane				U	53
OB02	11	OB2-11-S	Chloroform				U	53

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB02	11	OB2-11-S	cis-1,2-Dichloroethene				U	53
OB02	11	OB2-11-S	Ethylbenzene				U	53
OB02	11	OB2-11-S	m,p-Xylenes				U	53
OB02	11	OB2-11-S	o-Xylene				U	53
OB02	11	OB2-11-S	tert-Butyl-methyl ether				R	53
OB02	11	OB2-11-S	Tetrachloroethene				U	53
OB02	11	OB2-11-S	Toluene				U	53
OB02	11	OB2-11-S	trans-1,2-Dichloroethene				U	53
OB02	11	OB2-11-S	Trichloroethene				U	53
OB02	11	OB2-11-S	Vinyl Chloride				UJ	16
OB02	13	OB2-13-S	1,2-Dichloroethane	*			U	52
OB02	13	OB2-13-S	Chloroform	*			U	52
OB02	13	OB2-13-S	cis-1,2-Dichloroethene	*			U	52
OB02	13	OB2-13-S	Ethylbenzene	*			U	52
OB02	13	OB2-13-S	m,p-Xylenes	*			U	52
OB02	13	OB2-13-S	o-Xylene	*			U	52
OB02	13	OB2-13-S	tert-Butyl-methyl ether	*			R	52
OB02	13	OB2-13-S	Tetrachloroethene	*			U	52
OB02	13	OB2-13-S	Toluene	*			U	52
OB02	13	OB2-13-S	trans-1,2-Dichloroethene	*			U	52
OB02	13	OB2-13-S	Trichloroethene	*			U	52
OB02	13	OB2-13-S	Vinyl Chloride	*			UJ	15
OB03	1	OB3-1-S	1,2-Dichloroethane				U	51
OB03	1	OB3-1-S	Chloroform				U	51
OB03	1	OB3-1-S	cis-1,2-Dichloroethene				U	51
OB03	1	OB3-1-S	Ethylbenzene				U	51
OB03	1	OB3-1-S	m,p-Xylenes				U	51
OB03	1	OB3-1-S	o-Xylene				U	51
OB03	1	OB3-1-S	tert-Butyl-methyl ether				R	51
OB03	1	OB3-1-S	Tetrachloroethene				U	51
OB03	1	OB3-1-S	Toluene				U	51
OB03	1	OB3-1-S	trans-1,2-Dichloroethene				U	51
OB03	1	OB3-1-S	Trichloroethene				U	51
OB03	1	OB3-1-S	Vinyl Chloride				UJ	15
OB03	3	OB3-3-S	1,2-Dichloroethane				U	53
OB03	3	OB3-3-S	Chloroform				U	53
OB03	3	OB3-3-S	cis-1,2-Dichloroethene				U	53
OB03	3	OB3-3-S	Ethylbenzene				U	53
OB03	3	OB3-3-S	m,p-Xylenes				U	53
OB03	3	OB3-3-S	o-Xylene				U	53
OB03	3	OB3-3-S	tert-Butyl-methyl ether				R	53
OB03	3	OB3-3-S	Tetrachloroethene				U	53
OB03	3	OB3-3-S	Toluene				U	53
OB03	3	OB3-3-S	trans-1,2-Dichloroethene				U	53
OB03	3	OB3-3-S	Trichloroethene				U	53
OB03	3	OB3-3-S	Vinyl Chloride				UJ	16

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB03	5	OB3-5-S	1,2-Dichloroethane				U	52
OB03	5	OB3-5-S	Chloroform				U	52
OB03	5	OB3-5-S	cis-1,2-Dichloroethene				U	52
OB03	5	OB3-5-S	Ethylbenzene				U	52
OB03	5	OB3-5-S	m,p-Xylenes				U	52
OB03	5	OB3-5-S	o-Xylene				U	52
OB03	5	OB3-5-S	tert-Butyl-methyl ether				R	52
OB03	5	OB3-5-S	Tetrachloroethene				U	52
OB03	5	OB3-5-S	Toluene				U	52
OB03	5	OB3-5-S	trans-1,2-Dichloroethene				U	52
OB03	5	OB3-5-S	Trichloroethene				U	52
OB03	5	OB3-5-S	Vinyl Chloride				UJ	15
OB03	7	OB3-7-S	1,2-Dichloroethane				U	47
OB03	7	OB3-7-S	Chloroform				U	47
OB03	7	OB3-7-S	cis-1,2-Dichloroethene				U	47
OB03	7	OB3-7-S	Ethylbenzene				U	47
OB03	7	OB3-7-S	m,p-Xylenes				U	47
OB03	7	OB3-7-S	o-Xylene				U	47
OB03	7	OB3-7-S	tert-Butyl-methyl ether				R	47
OB03	7	OB3-7-S	Tetrachloroethene				U	47
OB03	7	OB3-7-S	Toluene				U	47
OB03	7	OB3-7-S	trans-1,2-Dichloroethene				U	47
OB03	7	OB3-7-S	Trichloroethene				U	47
OB03	7	OB3-7-S	Vinyl Chloride				UJ	14
OB03	8	OB3-8-S	1,2-Dichloroethane				U	53
OB03	8	OB3-8-S	Chloroform				U	53
OB03	8	OB3-8-S	cis-1,2-Dichloroethene				U	53
OB03	8	OB3-8-S	Ethylbenzene				U	53
OB03	8	OB3-8-S	m,p-Xylenes				U	53
OB03	8	OB3-8-S	o-Xylene				U	53
OB03	8	OB3-8-S	tert-Butyl-methyl ether				R	53
OB03	8	OB3-8-S	Tetrachloroethene				U	53
OB03	8	OB3-8-S	Toluene				U	53
OB03	8	OB3-8-S	trans-1,2-Dichloroethene				U	53
OB03	8	OB3-8-S	Trichloroethene				U	53
OB03	8	OB3-8-S	Vinyl Chloride				UJ	16
OB03	10	OB3-10-S	1,2-Dichloroethane				U	52
OB03	10	OB3-10-S	Chloroform				U	52
OB03	10	OB3-10-S	cis-1,2-Dichloroethene				U	52
OB03	10	OB3-10-S	Ethylbenzene				U	52
OB03	10	OB3-10-S	m,p-Xylenes				U	52
OB03	10	OB3-10-S	o-Xylene				U	52
OB03	10	OB3-10-S	tert-Butyl-methyl ether				R	52
OB03	10	OB3-10-S	Tetrachloroethene				U	52
OB03	10	OB3-10-S	Toluene				U	52
OB03	10	OB3-10-S	trans-1,2-Dichloroethene				U	52

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB03	10	OB3-10-S	Trichloroethene				U	52
OB03	10	OB3-10-S	Vinyl Chloride				UJ	15
OB03	13	OB3-13-S	1,2-Dichloroethane		*		U	53
OB03	13	OB3-13-S	Chloroform		*		U	53
OB03	13	OB3-13-S	cis-1,2-Dichloroethene		*		U	53
OB03	13	OB3-13-S	Ethylbenzene		*		U	53
OB03	13	OB3-13-S	m,p-Xylenes		*		U	53
OB03	13	OB3-13-S	o-Xylene		*		U	53
OB03	13	OB3-13-S	tert-Butyl-methyl ether		*		R	53
OB03	13	OB3-13-S	Tetrachloroethene		*		U	53
OB03	13	OB3-13-S	Toluene		*		U	53
OB03	13	OB3-13-S	trans-1,2-Dichloroethene		*		U	53
OB03	13	OB3-13-S	Trichloroethene		*		U	53
OB03	13	OB3-13-S	Vinyl Chloride		*		UJ	16
OB03	15	OB3-15-S	1,2-Dichloroethane	*	*		U	54
OB03	15	OB3-15-S	Chloroform	*	*		U	54
OB03	15	OB3-15-S	cis-1,2-Dichloroethene	*	*		U	54
OB03	15	OB3-15-S	Ethylbenzene	*	*		U	54
OB03	15	OB3-15-S	m,p-Xylenes	*	*		U	54
OB03	15	OB3-15-S	o-Xylene	*	*		U	54
OB03	15	OB3-15-S	tert-Butyl-methyl ether	*	*		R	54
OB03	15	OB3-15-S	Tetrachloroethene	*	*		U	54
OB03	15	OB3-15-S	Toluene	*	*		U	54
OB03	15	OB3-15-S	trans-1,2-Dichloroethene	*	*		U	54
OB03	15	OB3-15-S	Trichloroethene	*	*		U	54
OB03	15	OB3-15-S	Vinyl Chloride	*	*		UJ	16
OB04	1	OB4-1-S	1,2-Dichloroethane				U	51
OB04	1	OB4-1-S	Chloroform				U	51
OB04	1	OB4-1-S	cis-1,2-Dichloroethene				U	51
OB04	1	OB4-1-S	Ethylbenzene				U	51
OB04	1	OB4-1-S	m,p-Xylenes				U	51
OB04	1	OB4-1-S	o-Xylene				U	51
OB04	1	OB4-1-S	tert-Butyl-methyl ether				R	51
OB04	1	OB4-1-S	Tetrachloroethene				U	51
OB04	1	OB4-1-S	Toluene				U	51
OB04	1	OB4-1-S	trans-1,2-Dichloroethene				U	51
OB04	1	OB4-1-S	Trichloroethene				U	51
OB04	1	OB4-1-S	Vinyl Chloride				UJ	15
OB04	3	OB4-3-S	1,2-Dichloroethane				U	55
OB04	3	OB4-3-S	Chloroform				U	55
OB04	3	OB4-3-S	cis-1,2-Dichloroethene				U	55
OB04	3	OB4-3-S	Ethylbenzene				U	55
OB04	3	OB4-3-S	m,p-Xylenes				U	55
OB04	3	OB4-3-S	o-Xylene				U	55
OB04	3	OB4-3-S	tert-Butyl-methyl ether				R	55
OB04	3	OB4-3-S	Tetrachloroethene				U	55

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB04	3	OB4-3-S	Toluene				U	55
OB04	3	OB4-3-S	trans-1,2-Dichloroethene				U	55
OB04	3	OB4-3-S	Trichloroethene				U	55
OB04	3	OB4-3-S	Vinyl Chloride				UJ	16
OB04	5	OB4-5-S	1,2-Dichloroethane				U	53
OB04	5	OB4-5-S	Chloroform				U	53
OB04	5	OB4-5-S	cis-1,2-Dichloroethene				U	53
OB04	5	OB4-5-S	Ethylbenzene				U	53
OB04	5	OB4-5-S	m,p-Xylenes				U	53
OB04	5	OB4-5-S	o-Xylene				U	53
OB04	5	OB4-5-S	tert-Butyl-methyl ether				R	53
OB04	5	OB4-5-S	Tetrachloroethene				U	53
OB04	5	OB4-5-S	Toluene				U	53
OB04	5	OB4-5-S	trans-1,2-Dichloroethene				U	53
OB04	5	OB4-5-S	Trichloroethene				U	53
OB04	5	OB4-5-S	Vinyl Chloride				UJ	16
OB04	7	OB4-7-S	1,2-Dichloroethane		*		U	52
OB04	7	OB4-7-S	Chloroform		*		U	52
OB04	7	OB4-7-S	cis-1,2-Dichloroethene		*		U	52
OB04	7	OB4-7-S	Ethylbenzene		*		U	52
OB04	7	OB4-7-S	m,p-Xylenes		*		U	52
OB04	7	OB4-7-S	o-Xylene		*		U	52
OB04	7	OB4-7-S	tert-Butyl-methyl ether		*		R	52
OB04	7	OB4-7-S	Tetrachloroethene		*		U	52
OB04	7	OB4-7-S	Toluene		*		U	52
OB04	7	OB4-7-S	trans-1,2-Dichloroethene		*		U	52
OB04	7	OB4-7-S	Trichloroethene		*		U	52
OB04	7	OB4-7-S	Vinyl Chloride		*		UJ	15
OB04	9	OB4-9-S	1,2-Dichloroethane				U	54
OB04	9	OB4-9-S	Chloroform				U	54
OB04	9	OB4-9-S	cis-1,2-Dichloroethene				U	54
OB04	9	OB4-9-S	Ethylbenzene				U	54
OB04	9	OB4-9-S	m,p-Xylenes				U	54
OB04	9	OB4-9-S	o-Xylene				U	54
OB04	9	OB4-9-S	tert-Butyl-methyl ether				R	54
OB04	9	OB4-9-S	Tetrachloroethene				U	54
OB04	9	OB4-9-S	Toluene				U	54
OB04	9	OB4-9-S	trans-1,2-Dichloroethene				U	54
OB04	9	OB4-9-S	Trichloroethene				U	54
OB04	9	OB4-9-S	Vinyl Chloride				UJ	16
OB04	11	OB4-11-S	1,2-Dichloroethane				U	54
OB04	11	OB4-11-S	Chloroform				U	54
OB04	11	OB4-11-S	cis-1,2-Dichloroethene				U	54
OB04	11	OB4-11-S	Ethylbenzene				U	54
OB04	11	OB4-11-S	m,p-Xylenes				U	54
OB04	11	OB4-11-S	o-Xylene				U	54

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB04	11	OB4-11-S	tert-Butyl-methyl ether				R	54
OB04	11	OB4-11-S	Tetrachloroethene				U	54
OB04	11	OB4-11-S	Toluene				U	54
OB04	11	OB4-11-S	trans-1,2-Dichloroethene				U	54
OB04	11	OB4-11-S	Trichloroethene				U	54
OB04	11	OB4-11-S	Vinyl Chloride				UJ	16
OB04	13	OB4-13-S	1,2-Dichloroethane				U	52
OB04	13	OB4-13-S	Chloroform				U	52
OB04	13	OB4-13-S	cis-1,2-Dichloroethene				U	52
OB04	13	OB4-13-S	Ethylbenzene				U	52
OB04	13	OB4-13-S	m,p-Xylenes				U	52
OB04	13	OB4-13-S	o-Xylene				U	52
OB04	13	OB4-13-S	tert-Butyl-methyl ether				R	52
OB04	13	OB4-13-S	Tetrachloroethene				U	52
OB04	13	OB4-13-S	Toluene				U	52
OB04	13	OB4-13-S	trans-1,2-Dichloroethene				U	52
OB04	13	OB4-13-S	Trichloroethene				U	52
OB04	13	OB4-13-S	Vinyl Chloride				UJ	15
OB04	15	OB4-15-S	1,2-Dichloroethane				U	52
OB04	15	OB4-15-S	Chloroform				U	52
OB04	15	OB4-15-S	cis-1,2-Dichloroethene				U	52
OB04	15	OB4-15-S	Ethylbenzene				U	52
OB04	15	OB4-15-S	m,p-Xylenes				U	52
OB04	15	OB4-15-S	o-Xylene				U	52
OB04	15	OB4-15-S	tert-Butyl-methyl ether				R	52
OB04	15	OB4-15-S	Tetrachloroethene				U	52
OB04	15	OB4-15-S	Toluene				U	52
OB04	15	OB4-15-S	trans-1,2-Dichloroethene				U	52
OB04	15	OB4-15-S	Trichloroethene				U	52
OB04	15	OB4-15-S	Vinyl Chloride				UJ	15
OB04	17	OB4-17-S	1,2-Dichloroethane				U	50
OB04	17	OB4-17-S	Chloroform				U	50
OB04	17	OB4-17-S	cis-1,2-Dichloroethene				U	50
OB04	17	OB4-17-S	Ethylbenzene				U	50
OB04	17	OB4-17-S	m,p-Xylenes				U	50
OB04	17	OB4-17-S	o-Xylene				U	50
OB04	17	OB4-17-S	tert-Butyl-methyl ether				R	50
OB04	17	OB4-17-S	Tetrachloroethene				U	50
OB04	17	OB4-17-S	Toluene				U	50
OB04	17	OB4-17-S	trans-1,2-Dichloroethene				U	50
OB04	17	OB4-17-S	Trichloroethene				U	50
OB04	17	OB4-17-S	Vinyl Chloride				UJ	15
OB04	19	OB4-19-S	1,2-Dichloroethane	*			U	32
OB04	19	OB4-19-S	Chloroform	*			U	32
OB04	19	OB4-19-S	cis-1,2-Dichloroethene	*			U	32
OB04	19	OB4-19-S	Ethylbenzene	*			U	32

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB04	19	OB4-19-S	m,p-Xylenes	*			U	32
OB04	19	OB4-19-S	o-Xylene	*			U	32
OB04	19	OB4-19-S	tert-Butyl-methyl ether	*			R	32
OB04	19	OB4-19-S	Tetrachloroethene	*			U	32
OB04	19	OB4-19-S	Toluene	*			U	32
OB04	19	OB4-19-S	trans-1,2-Dichloroethene	*			U	32
OB04	19	OB4-19-S	Trichloroethene	16J			U	32
OB04	19	OB4-19-S	Vinyl Chloride	*			UJ	9
OB05	1	OB5-1-S	1,2-Dichloroethane				U	88
OB05	1	OB5-1-S	Chloroform				U	88
OB05	1	OB5-1-S	cis-1,2-Dichloroethene				U	88
OB05	1	OB5-1-S	Ethylbenzene				U	88
OB05	1	OB5-1-S	m,p-Xylenes				U	88
OB05	1	OB5-1-S	o-Xylene				U	88
OB05	1	OB5-1-S	tert-Butyl-methyl ether				R	88
OB05	1	OB5-1-S	Tetrachloroethene				U	88
OB05	1	OB5-1-S	Toluene				U	88
OB05	1	OB5-1-S	trans-1,2-Dichloroethene				U	88
OB05	1	OB5-1-S	Trichloroethene				U	88
OB05	1	OB5-1-S	Vinyl Chloride				UJ	26
OB05	3	OB5-3-S	1,2-Dichloroethane				U	108
OB05	3	OB5-3-S	Chloroform				U	108
OB05	3	OB5-3-S	cis-1,2-Dichloroethene				U	108
OB05	3	OB5-3-S	Ethylbenzene				U	108
OB05	3	OB5-3-S	m,p-Xylenes				U	108
OB05	3	OB5-3-S	o-Xylene				U	108
OB05	3	OB5-3-S	tert-Butyl-methyl ether				R	108
OB05	3	OB5-3-S	Tetrachloroethene				U	108
OB05	3	OB5-3-S	Toluene				U	108
OB05	3	OB5-3-S	trans-1,2-Dichloroethene				U	108
OB05	3	OB5-3-S	Trichloroethene				U	108
OB05	3	OB5-3-S	Vinyl Chloride				UJ	32
OB05	5	OB5-5-S	1,2-Dichloroethane		*		U	96
OB05	5	OB5-5-S	Chloroform		*		U	96
OB05	5	OB5-5-S	cis-1,2-Dichloroethene		*		U	96
OB05	5	OB5-5-S	Ethylbenzene		*		U	96
OB05	5	OB5-5-S	m,p-Xylenes		*		U	96
OB05	5	OB5-5-S	o-Xylene		*		U	96
OB05	5	OB5-5-S	tert-Butyl-methyl ether		*		R	96
OB05	5	OB5-5-S	Tetrachloroethene		*		U	96
OB05	5	OB5-5-S	Toluene		*		U	96
OB05	5	OB5-5-S	trans-1,2-Dichloroethene		*		U	96
OB05	5	OB5-5-S	Trichloroethene		*		U	96
OB05	5	OB5-5-S	Vinyl Chloride		*		UJ	28
OB05	7	OB5-7-S	1,2-Dichloroethane				U	94
OB05	7	OB5-7-S	Chloroform				U	94

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB05	7	OB5-7-S	cis-1,2-Dichloroethene				U	94
OB05	7	OB5-7-S	Ethylbenzene				U	94
OB05	7	OB5-7-S	m,p-Xylenes				U	94
OB05	7	OB5-7-S	o-Xylene				U	94
OB05	7	OB5-7-S	tert-Butyl-methyl ether				R	94
OB05	7	OB5-7-S	Tetrachloroethene				U	94
OB05	7	OB5-7-S	Toluene				U	94
OB05	7	OB5-7-S	trans-1,2-Dichloroethene				U	94
OB05	7	OB5-7-S	Trichloroethene				U	94
OB05	7	OB5-7-S	Vinyl Chloride				UJ	28
OB05	9	OB5-9-S	1,2-Dichloroethane	*			U	94
OB05	9	OB5-9-S	Chloroform	*			U	94
OB05	9	OB5-9-S	cis-1,2-Dichloroethene	*			U	94
OB05	9	OB5-9-S	Ethylbenzene	*			U	94
OB05	9	OB5-9-S	m,p-Xylenes	*			U	94
OB05	9	OB5-9-S	o-Xylene	*			U	94
OB05	9	OB5-9-S	tert-Butyl-methyl ether	*			R	94
OB05	9	OB5-9-S	Tetrachloroethene	*			U	94
OB05	9	OB5-9-S	Toluene	16.9 J			U	94
OB05	9	OB5-9-S	trans-1,2-Dichloroethene	*			U	94
OB05	9	OB5-9-S	Trichloroethene	*			U	94
OB05	9	OB5-9-S	Vinyl Chloride	*			UJ	28
OB05	11	OB5-11-S	1,2-Dichloroethane				U	50
OB05	11	OB5-11-S	Chloroform				U	50
OB05	11	OB5-11-S	cis-1,2-Dichloroethene				U	50
OB05	11	OB5-11-S	Ethylbenzene				U	50
OB05	11	OB5-11-S	m,p-Xylenes				U	50
OB05	11	OB5-11-S	o-Xylene				U	50
OB05	11	OB5-11-S	tert-Butyl-methyl ether				R	50
OB05	11	OB5-11-S	Tetrachloroethene				U	50
OB05	11	OB5-11-S	Toluene				U	50
OB05	11	OB5-11-S	trans-1,2-Dichloroethene				U	50
OB05	11	OB5-11-S	Trichloroethene				U	50
OB05	11	OB5-11-S	Vinyl Chloride				UJ	15
OB05	12	OB5-12-S	1,2-Dichloroethane				U	50
OB05	12	OB5-12-S	Chloroform				U	50
OB05	12	OB5-12-S	cis-1,2-Dichloroethene				U	50
OB05	12	OB5-12-S	Ethylbenzene				U	50
OB05	12	OB5-12-S	m,p-Xylenes				U	50
OB05	12	OB5-12-S	o-Xylene				U	50
OB05	12	OB5-12-S	tert-Butyl-methyl ether				R	50
OB05	12	OB5-12-S	Tetrachloroethene				U	50
OB05	12	OB5-12-S	Toluene				U	50
OB05	12	OB5-12-S	trans-1,2-Dichloroethene				U	50
OB05	12	OB5-12-S	Trichloroethene				U	50
OB05	12	OB5-12-S	Vinyl Chloride				UJ	15

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB05	14	OB5-14-S	1,2-Dichloroethane				U	53
OB05	14	OB5-14-S	Chloroform				U	53
OB05	14	OB5-14-S	cis-1,2-Dichloroethene				U	53
OB05	14	OB5-14-S	Ethylbenzene				U	53
OB05	14	OB5-14-S	m,p-Xylenes				U	53
OB05	14	OB5-14-S	o-Xylene				U	53
OB05	14	OB5-14-S	tert-Butyl-methyl ether				R	53
OB05	14	OB5-14-S	Tetrachloroethene				U	53
OB05	14	OB5-14-S	Toluene				U	53
OB05	14	OB5-14-S	trans-1,2-Dichloroethene				U	53
OB05	14	OB5-14-S	Trichloroethene				U	53
OB05	14	OB5-14-S	Vinyl Chloride				UJ	16
OB05	16	OB5-16-S	1,2-Dichloroethane				U	54
OB05	16	OB5-16-S	Chloroform				U	54
OB05	16	OB5-16-S	cis-1,2-Dichloroethene				U	54
OB05	16	OB5-16-S	Ethylbenzene				U	54
OB05	16	OB5-16-S	m,p-Xylenes				U	54
OB05	16	OB5-16-S	o-Xylene				U	54
OB05	16	OB5-16-S	tert-Butyl-methyl ether				R	54
OB05	16	OB5-16-S	Tetrachloroethene				U	54
OB05	16	OB5-16-S	Toluene				U	54
OB05	16	OB5-16-S	trans-1,2-Dichloroethene				U	54
OB05	16	OB5-16-S	Trichloroethene				U	54
OB05	16	OB5-16-S	Vinyl Chloride				UJ	16
OB05	18	OB5-18-S	1,2-Dichloroethane		*		U	50
OB05	18	OB5-18-S	Chloroform		*		U	50
OB05	18	OB5-18-S	cis-1,2-Dichloroethene		*		U	50
OB05	18	OB5-18-S	Ethylbenzene		*		U	50
OB05	18	OB5-18-S	m,p-Xylenes		*		U	50
OB05	18	OB5-18-S	o-Xylene		*		U	50
OB05	18	OB5-18-S	tert-Butyl-methyl ether		*		R	50
OB05	18	OB5-18-S	Tetrachloroethene		*		U	50
OB05	18	OB5-18-S	Toluene		*		U	50
OB05	18	OB5-18-S	trans-1,2-Dichloroethene		*		U	50
OB05	18	OB5-18-S	Trichloroethene		*		U	50
OB05	18	OB5-18-S	Vinyl Chloride		*		UJ	15
OB05	19	OB5-19-S	1,2-Dichloroethane				U	52
OB05	19	OB5-19-S	Chloroform				U	52
OB05	19	OB5-19-S	cis-1,2-Dichloroethene				U	52
OB05	19	OB5-19-S	Ethylbenzene				U	52
OB05	19	OB5-19-S	m,p-Xylenes				U	52
OB05	19	OB5-19-S	o-Xylene				U	52
OB05	19	OB5-19-S	tert-Butyl-methyl ether				R	52
OB05	19	OB5-19-S	Tetrachloroethene				U	52
OB05	19	OB5-19-S	Toluene				U	52
OB05	19	OB5-19-S	trans-1,2-Dichloroethene				U	52

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB05	19	OB5-19-S	Trichloroethene				U	52
OB05	19	OB5-19-S	Vinyl Chloride				UJ	15
OB05	21	OB5-21-S	1,2-Dichloroethane				U	53
OB05	21	OB5-21-S	Chloroform				U	53
OB05	21	OB5-21-S	cis-1,2-Dichloroethene				U	53
OB05	21	OB5-21-S	Ethylbenzene				U	53
OB05	21	OB5-21-S	m,p-Xylenes				U	53
OB05	21	OB5-21-S	o-Xylene				U	53
OB05	21	OB5-21-S	tert-Butyl-methyl ether				R	53
OB05	21	OB5-21-S	Tetrachloroethene				U	53
OB05	21	OB5-21-S	Toluene				U	53
OB05	21	OB5-21-S	trans-1,2-Dichloroethene				U	53
OB05	21	OB5-21-S	Trichloroethene				U	53
OB05	21	OB5-21-S	Vinyl Chloride				UJ	15
OB06	1	OB6-1-S	1,2-Dichloroethane				U	47
OB06	1	OB6-1-S	Chloroform				U	47
OB06	1	OB6-1-S	cis-1,2-Dichloroethene				U	47
OB06	1	OB6-1-S	Ethylbenzene				U	47
OB06	1	OB6-1-S	m,p-Xylenes				U	47
OB06	1	OB6-1-S	o-Xylene				U	47
OB06	1	OB6-1-S	tert-Butyl-methyl ether				R	47
OB06	1	OB6-1-S	Tetrachloroethene				U	47
OB06	1	OB6-1-S	Toluene				U	47
OB06	1	OB6-1-S	trans-1,2-Dichloroethene				U	47
OB06	1	OB6-1-S	Trichloroethene				U	47
OB06	1	OB6-1-S	Vinyl Chloride				UJ	14
OB06	3	OB6-3-S	1,2-Dichloroethane				U	49
OB06	3	OB6-3-S	Chloroform				U	49
OB06	3	OB6-3-S	cis-1,2-Dichloroethene				U	49
OB06	3	OB6-3-S	Ethylbenzene				U	49
OB06	3	OB6-3-S	m,p-Xylenes				U	49
OB06	3	OB6-3-S	o-Xylene				U	49
OB06	3	OB6-3-S	tert-Butyl-methyl ether				R	49
OB06	3	OB6-3-S	Tetrachloroethene				U	49
OB06	3	OB6-3-S	Toluene				U	49
OB06	3	OB6-3-S	trans-1,2-Dichloroethene				U	49
OB06	3	OB6-3-S	Trichloroethene				U	49
OB06	3	OB6-3-S	Vinyl Chloride				UJ	15
OB06	4	OB6-4-S	1,2-Dichloroethane	*			U	43
OB06	4	OB6-4-S	Chloroform	*			U	43
OB06	4	OB6-4-S	cis-1,2-Dichloroethene	*			U	43
OB06	4	OB6-4-S	Ethylbenzene	*			U	43
OB06	4	OB6-4-S	m,p-Xylenes	*			U	43
OB06	4	OB6-4-S	o-Xylene	*			U	43
OB06	4	OB6-4-S	tert-Butyl-methyl ether	*			R	43
OB06	4	OB6-4-S	Tetrachloroethene	*			U	43

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB06	4	OB6-4-S	Toluene	21.9 J			U	43
OB06	4	OB6-4-S	trans-1,2-Dichloroethene	*			U	43
OB06	4	OB6-4-S	Trichloroethene	*			U	43
OB06	4	OB6-4-S	Vinyl Chloride	*			UJ	13
OB06	7	OB6-7-S	1,2-Dichloroethane				U	54
OB06	7	OB6-7-S	Chloroform				U	54
OB06	7	OB6-7-S	cis-1,2-Dichloroethene				U	54
OB06	7	OB6-7-S	Ethylbenzene				U	54
OB06	7	OB6-7-S	m,p-Xylenes				U	54
OB06	7	OB6-7-S	o-Xylene				U	54
OB06	7	OB6-7-S	tert-Butyl-methyl ether				R	54
OB06	7	OB6-7-S	Tetrachloroethene				U	54
OB06	7	OB6-7-S	Toluene				U	54
OB06	7	OB6-7-S	trans-1,2-Dichloroethene				U	54
OB06	7	OB6-7-S	Trichloroethene				U	54
OB06	7	OB6-7-S	Vinyl Chloride				UJ	16
OB07	1	OB7-1-S	1,2-Dichloroethane				U	51
OB07	1	OB7-1-S	Chloroform				U	51
OB07	1	OB7-1-S	cis-1,2-Dichloroethene				U	51
OB07	1	OB7-1-S	Ethylbenzene				U	51
OB07	1	OB7-1-S	m,p-Xylenes				U	51
OB07	1	OB7-1-S	o-Xylene				U	51
OB07	1	OB7-1-S	tert-Butyl-methyl ether				R	51
OB07	1	OB7-1-S	Tetrachloroethene				U	51
OB07	1	OB7-1-S	Toluene				U	51
OB07	1	OB7-1-S	trans-1,2-Dichloroethene				U	51
OB07	1	OB7-1-S	Trichloroethene				U	51
OB07	1	OB7-1-S	Vinyl Chloride				UJ	15
OB07	3	OB7-3-S	1,2-Dichloroethane				U	51
OB07	3	OB7-3-S	Chloroform				U	51
OB07	3	OB7-3-S	cis-1,2-Dichloroethene				U	51
OB07	3	OB7-3-S	Ethylbenzene				U	51
OB07	3	OB7-3-S	m,p-Xylenes				U	51
OB07	3	OB7-3-S	o-Xylene				U	51
OB07	3	OB7-3-S	tert-Butyl-methyl ether				R	51
OB07	3	OB7-3-S	Tetrachloroethene				U	51
OB07	3	OB7-3-S	Toluene				U	51
OB07	3	OB7-3-S	trans-1,2-Dichloroethene				U	51
OB07	3	OB7-3-S	Trichloroethene				U	51
OB07	3	OB7-3-S	Vinyl Chloride				UJ	15
OB07	5	OB7-5-S	1,2-Dichloroethane				U	52
OB07	5	OB7-5-S	Chloroform				U	52
OB07	5	OB7-5-S	cis-1,2-Dichloroethene				U	52
OB07	5	OB7-5-S	Ethylbenzene				U	52
OB07	5	OB7-5-S	m,p-Xylenes				U	52
OB07	5	OB7-5-S	o-Xylene				U	52

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB07	5	OB7-5-S	tert-Butyl-methyl ether				R	52
OB07	5	OB7-5-S	Tetrachloroethene				U	52
OB07	5	OB7-5-S	Toluene				U	52
OB07	5	OB7-5-S	trans-1,2-Dichloroethene				U	52
OB07	5	OB7-5-S	Trichloroethene				U	52
OB07	5	OB7-5-S	Vinyl Chloride				UJ	15
OB07	7	OB7-7-S	1,2-Dichloroethane	*			U	55
OB07	7	OB7-7-S	Chloroform	*			U	55
OB07	7	OB7-7-S	cis-1,2-Dichloroethene	*			U	55
OB07	7	OB7-7-S	Ethylbenzene	*			U	55
OB07	7	OB7-7-S	m,p-Xylenes	*			U	55
OB07	7	OB7-7-S	o-Xylene	*			U	55
OB07	7	OB7-7-S	tert-Butyl-methyl ether	*			R	55
OB07	7	OB7-7-S	Tetrachloroethene	*			U	55
OB07	7	OB7-7-S	Toluene	*			U	55
OB07	7	OB7-7-S	trans-1,2-Dichloroethene	*			U	55
OB07	7	OB7-7-S	Trichloroethene	*			U	55
OB07	7	OB7-7-S	Vinyl Chloride	*			UJ	16
OB07	9	OB7-9-S	1,2-Dichloroethane		*		U	53
OB07	9	OB7-9-S	Chloroform		*		U	53
OB07	9	OB7-9-S	cis-1,2-Dichloroethene		*		U	53
OB07	9	OB7-9-S	Ethylbenzene		*		U	53
OB07	9	OB7-9-S	m,p-Xylenes		*		U	53
OB07	9	OB7-9-S	o-Xylene		*		U	53
OB07	9	OB7-9-S	tert-Butyl-methyl ether		*		R	53
OB07	9	OB7-9-S	Tetrachloroethene		*		U	53
OB07	9	OB7-9-S	Toluene		*		U	53
OB07	9	OB7-9-S	trans-1,2-Dichloroethene		*		U	53
OB07	9	OB7-9-S	Trichloroethene		*		U	53
OB07	9	OB7-9-S	Vinyl Chloride		*		UJ	16
OB07	11	OB7-11-S	1,2-Dichloroethane				U	53
OB07	11	OB7-11-S	Chloroform				U	53
OB07	11	OB7-11-S	cis-1,2-Dichloroethene				U	53
OB07	11	OB7-11-S	Ethylbenzene				U	53
OB07	11	OB7-11-S	m,p-Xylenes				U	53
OB07	11	OB7-11-S	o-Xylene				U	53
OB07	11	OB7-11-S	tert-Butyl-methyl ether				R	53
OB07	11	OB7-11-S	Tetrachloroethene				U	53
OB07	11	OB7-11-S	Toluene				U	53
OB07	11	OB7-11-S	trans-1,2-Dichloroethene				U	53
OB07	11	OB7-11-S	Trichloroethene				U	53
OB07	11	OB7-11-S	Vinyl Chloride				UJ	16
OB08	1	OB8-1-S	1,2-Dichloroethane				U	54
OB08	1	OB8-1-S	Chloroform				U	54
OB08	1	OB8-1-S	cis-1,2-Dichloroethene				U	54
OB08	1	OB8-1-S	Ethylbenzene				U	54

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB08	1	OB8-1-S	m,p-Xylenes				U	54
OB08	1	OB8-1-S	o-Xylene				U	54
OB08	1	OB8-1-S	tert-Butyl-methyl ether				R	54
OB08	1	OB8-1-S	Tetrachloroethene				U	54
OB08	1	OB8-1-S	Toluene				U	54
OB08	1	OB8-1-S	trans-1,2-Dichloroethene				U	54
OB08	1	OB8-1-S	Trichloroethene				U	54
OB08	1	OB8-1-S	Vinyl Chloride				UJ	16
OB08	3	OB8-3-S	1,2-Dichloroethane				U	55
OB08	3	OB8-3-S	Chloroform				U	55
OB08	3	OB8-3-S	cis-1,2-Dichloroethene				U	55
OB08	3	OB8-3-S	Ethylbenzene				U	55
OB08	3	OB8-3-S	m,p-Xylenes				U	55
OB08	3	OB8-3-S	o-Xylene				U	55
OB08	3	OB8-3-S	tert-Butyl-methyl ether				R	55
OB08	3	OB8-3-S	Tetrachloroethene				U	55
OB08	3	OB8-3-S	Toluene				U	55
OB08	3	OB8-3-S	trans-1,2-Dichloroethene				U	55
OB08	3	OB8-3-S	Trichloroethene				U	55
OB08	3	OB8-3-S	Vinyl Chloride				UJ	16
OB08	4	OB8-4-S	1,2-Dichloroethane				U	55
OB08	4	OB8-4-S	Chloroform				U	55
OB08	4	OB8-4-S	cis-1,2-Dichloroethene				U	55
OB08	4	OB8-4-S	Ethylbenzene				U	55
OB08	4	OB8-4-S	m,p-Xylenes				U	55
OB08	4	OB8-4-S	o-Xylene				U	55
OB08	4	OB8-4-S	tert-Butyl-methyl ether				R	55
OB08	4	OB8-4-S	Tetrachloroethene				U	55
OB08	4	OB8-4-S	Toluene				U	55
OB08	4	OB8-4-S	trans-1,2-Dichloroethene				U	55
OB08	4	OB8-4-S	Trichloroethene				U	55
OB08	4	OB8-4-S	Vinyl Chloride				UJ	16
OB08	7	OB8-7-S	1,2-Dichloroethane		*		U	53
OB08	7	OB8-7-S	Chloroform		*		U	53
OB08	7	OB8-7-S	cis-1,2-Dichloroethene		*		U	53
OB08	7	OB8-7-S	Ethylbenzene		*		U	53
OB08	7	OB8-7-S	m,p-Xylenes		*		U	53
OB08	7	OB8-7-S	o-Xylene		*		U	53
OB08	7	OB8-7-S	tert-Butyl-methyl ether		*		R	53
OB08	7	OB8-7-S	Tetrachloroethene		*		U	53
OB08	7	OB8-7-S	Toluene		*		U	53
OB08	7	OB8-7-S	trans-1,2-Dichloroethene		*		U	53
OB08	7	OB8-7-S	Trichloroethene		*		U	53
OB08	7	OB8-7-S	Vinyl Chloride		*		UJ	16
OB08	9	OB8-9-S	1,2-Dichloroethane	*			U	52
OB08	9	OB8-9-S	Chloroform	*			U	52

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB08	9	OB8-9-S	cis-1,2-Dichloroethene	*			U	52
OB08	9	OB8-9-S	Ethylbenzene	*			U	52
OB08	9	OB8-9-S	m,p-Xylenes	*			U	52
OB08	9	OB8-9-S	o-Xylene	*			U	52
OB08	9	OB8-9-S	tert-Butyl-methyl ether	*			R	52
OB08	9	OB8-9-S	Tetrachloroethene	*			U	52
OB08	9	OB8-9-S	Toluene	*			U	52
OB08	9	OB8-9-S	trans-1,2-Dichloroethene	*			U	52
OB08	9	OB8-9-S	Trichloroethene	*			U	52
OB08	9	OB8-9-S	Vinyl Chloride	*			UJ	15
OB08	11	OB8-11-S	1,2-Dichloroethane				U	51
OB08	11	OB8-11-S	Chloroform				U	51
OB08	11	OB8-11-S	cis-1,2-Dichloroethene				U	51
OB08	11	OB8-11-S	Ethylbenzene				U	51
OB08	11	OB8-11-S	m,p-Xylenes				U	51
OB08	11	OB8-11-S	o-Xylene				U	51
OB08	11	OB8-11-S	tert-Butyl-methyl ether				R	51
OB08	11	OB8-11-S	Tetrachloroethene				U	51
OB08	11	OB8-11-S	Toluene				U	51
OB08	11	OB8-11-S	trans-1,2-Dichloroethene				U	51
OB08	11	OB8-11-S	Trichloroethene				U	51
OB08	11	OB8-11-S	Vinyl Chloride				UJ	15
OB08	13	OB8-13-S	1,2-Dichloroethane				U	52
OB08	13	OB8-13-S	Chloroform				U	52
OB08	13	OB8-13-S	cis-1,2-Dichloroethene				U	52
OB08	13	OB8-13-S	Ethylbenzene				U	52
OB08	13	OB8-13-S	m,p-Xylenes				U	52
OB08	13	OB8-13-S	o-Xylene				U	52
OB08	13	OB8-13-S	tert-Butyl-methyl ether				R	52
OB08	13	OB8-13-S	Tetrachloroethene				U	52
OB08	13	OB8-13-S	Toluene				U	52
OB08	13	OB8-13-S	trans-1,2-Dichloroethene				U	52
OB08	13	OB8-13-S	Trichloroethene				U	52
OB08	13	OB8-13-S	Vinyl Chloride				UJ	15
OB08	15	OB8-15-S	1,2-Dichloroethane				U	51
OB08	15	OB8-15-S	Chloroform				U	51
OB08	15	OB8-15-S	cis-1,2-Dichloroethene				U	51
OB08	15	OB8-15-S	Ethylbenzene				U	51
OB08	15	OB8-15-S	m,p-Xylenes				U	51
OB08	15	OB8-15-S	o-Xylene				U	51
OB08	15	OB8-15-S	tert-Butyl-methyl ether				R	51
OB08	15	OB8-15-S	Tetrachloroethene				U	51
OB08	15	OB8-15-S	Toluene				U	51
OB08	15	OB8-15-S	trans-1,2-Dichloroethene				U	51
OB08	15	OB8-15-S	Trichloroethene				U	51
OB08	15	OB8-15-S	Vinyl Chloride				UJ	15

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB08	17	OB8-17-S	1,2-Dichloroethane				U	50
OB08	17	OB8-17-S	Chloroform				U	50
OB08	17	OB8-17-S	cis-1,2-Dichloroethene				U	50
OB08	17	OB8-17-S	Ethylbenzene				U	50
OB08	17	OB8-17-S	m,p-Xylenes				U	50
OB08	17	OB8-17-S	o-Xylene				U	50
OB08	17	OB8-17-S	tert-Butyl-methyl ether				R	50
OB08	17	OB8-17-S	Tetrachloroethene				U	50
OB08	17	OB8-17-S	Toluene				U	50
OB08	17	OB8-17-S	trans-1,2-Dichloroethene				U	50
OB08	17	OB8-17-S	Trichloroethene				U	50
OB08	17	OB8-17-S	Vinyl Chloride				UJ	15
OB08	19	OB8-19-S	1,2-Dichloroethane				U	54
OB08	19	OB8-19-S	Chloroform				U	54
OB08	19	OB8-19-S	cis-1,2-Dichloroethene				U	54
OB08	19	OB8-19-S	Ethylbenzene				U	54
OB08	19	OB8-19-S	m,p-Xylenes				U	54
OB08	19	OB8-19-S	o-Xylene				U	54
OB08	19	OB8-19-S	tert-Butyl-methyl ether				R	54
OB08	19	OB8-19-S	Tetrachloroethene				U	54
OB08	19	OB8-19-S	Toluene				U	54
OB08	19	OB8-19-S	trans-1,2-Dichloroethene				U	54
OB08	19	OB8-19-S	Trichloroethene				U	54
OB08	19	OB8-19-S	Vinyl Chloride				UJ	16
OB08	22	OB8-22-S	1,2-Dichloroethane	*	*		U	55
OB08	22	OB8-22-S	Chloroform	*	*		U	55
OB08	22	OB8-22-S	cis-1,2-Dichloroethene	*	*		U	55
OB08	22	OB8-22-S	Ethylbenzene	*	*		U	55
OB08	22	OB8-22-S	m,p-Xylenes	*	*		U	55
OB08	22	OB8-22-S	o-Xylene	*	*		U	55
OB08	22	OB8-22-S	tert-Butyl-methyl ether	*	*		R	55
OB08	22	OB8-22-S	Tetrachloroethene	*	*		U	55
OB08	22	OB8-22-S	Toluene	*	*		U	55
OB08	22	OB8-22-S	trans-1,2-Dichloroethene	*	*		U	55
OB08	22	OB8-22-S	Trichloroethene	*	*		U	55
OB08	22	OB8-22-S	Vinyl Chloride	*	*		UJ	16
OB09	1	OB9-1-S	1,2-Dichloroethane				U	69
OB09	1	OB9-1-S	Chloroform				U	69
OB09	1	OB9-1-S	cis-1,2-Dichloroethene				U	69
OB09	1	OB9-1-S	Ethylbenzene				U	69
OB09	1	OB9-1-S	m,p-Xylenes				U	69
OB09	1	OB9-1-S	o-Xylene				U	69
OB09	1	OB9-1-S	tert-Butyl-methyl ether				R	69
OB09	1	OB9-1-S	Tetrachloroethene				U	69
OB09	1	OB9-1-S	Toluene				U	69
OB09	1	OB9-1-S	trans-1,2-Dichloroethene				U	69

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB09	1	OB9-1-S	Trichloroethene				U	69
OB09	1	OB9-1-S	Vinyl Chloride				UJ	20
OB09	3	OB9-3-S	1,2-Dichloroethane		*		U	54
OB09	3	OB9-3-S	Chloroform		*		U	54
OB09	3	OB9-3-S	cis-1,2-Dichloroethene		*		U	54
OB09	3	OB9-3-S	Ethylbenzene		*		U	54
OB09	3	OB9-3-S	m,p-Xylenes		*		U	54
OB09	3	OB9-3-S	o-Xylene		*		U	54
OB09	3	OB9-3-S	tert-Butyl-methyl ether		*		R	54
OB09	3	OB9-3-S	Tetrachloroethene		*		U	54
OB09	3	OB9-3-S	Toluene		*		U	54
OB09	3	OB9-3-S	trans-1,2-Dichloroethene		*		U	54
OB09	3	OB9-3-S	Trichloroethene		*		U	54
OB09	3	OB9-3-S	Vinyl Chloride		*		UJ	16
OB09	5	OB9-5-S	1,2-Dichloroethane				U	49
OB09	5	OB9-5-S	Chloroform				U	49
OB09	5	OB9-5-S	cis-1,2-Dichloroethene				U	49
OB09	5	OB9-5-S	Ethylbenzene				U	49
OB09	5	OB9-5-S	m,p-Xylenes				U	49
OB09	5	OB9-5-S	o-Xylene				U	49
OB09	5	OB9-5-S	tert-Butyl-methyl ether				R	49
OB09	5	OB9-5-S	Tetrachloroethene				U	49
OB09	5	OB9-5-S	Toluene				U	49
OB09	5	OB9-5-S	trans-1,2-Dichloroethene				U	49
OB09	5	OB9-5-S	Trichloroethene				U	49
OB09	5	OB9-5-S	Vinyl Chloride				UJ	14
OB09	7	OB9-7-S	1,2-Dichloroethane				U	47
OB09	7	OB9-7-S	Chloroform				U	47
OB09	7	OB9-7-S	cis-1,2-Dichloroethene				U	47
OB09	7	OB9-7-S	Ethylbenzene				U	47
OB09	7	OB9-7-S	m,p-Xylenes				U	47
OB09	7	OB9-7-S	o-Xylene				U	47
OB09	7	OB9-7-S	tert-Butyl-methyl ether				R	47
OB09	7	OB9-7-S	Tetrachloroethene				U	47
OB09	7	OB9-7-S	Toluene				U	47
OB09	7	OB9-7-S	trans-1,2-Dichloroethene				U	47
OB09	7	OB9-7-S	Trichloroethene				U	47
OB09	7	OB9-7-S	Vinyl Chloride				UJ	14
OB09	9	OB9-9-S	1,2-Dichloroethane				U	52
OB09	9	OB9-9-S	Chloroform				U	52
OB09	9	OB9-9-S	cis-1,2-Dichloroethene				U	52
OB09	9	OB9-9-S	Ethylbenzene				U	52
OB09	9	OB9-9-S	m,p-Xylenes				U	52
OB09	9	OB9-9-S	o-Xylene				U	52
OB09	9	OB9-9-S	tert-Butyl-methyl ether				R	52
OB09	9	OB9-9-S	Tetrachloroethene				U	52

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB09	9	OB9-9-S	Toluene				U	52
OB09	9	OB9-9-S	trans-1,2-Dichloroethene				U	52
OB09	9	OB9-9-S	Trichloroethene				U	52
OB09	9	OB9-9-S	Vinyl Chloride				UJ	15
OB09	10	OB9-10-S	1,2-Dichloroethane				U	48
OB09	10	OB9-10-S	Chloroform				U	48
OB09	10	OB9-10-S	cis-1,2-Dichloroethene				U	48
OB09	10	OB9-10-S	Ethylbenzene				U	48
OB09	10	OB9-10-S	m,p-Xylenes				U	48
OB09	10	OB9-10-S	o-Xylene				U	48
OB09	10	OB9-10-S	tert-Butyl-methyl ether				R	48
OB09	10	OB9-10-S	Tetrachloroethene				U	48
OB09	10	OB9-10-S	Toluene				U	48
OB09	10	OB9-10-S	trans-1,2-Dichloroethene				U	48
OB09	10	OB9-10-S	Trichloroethene				U	48
OB09	10	OB9-10-S	Vinyl Chloride				UJ	14
OB09	13	OB9-13-S	1,2-Dichloroethane				U	50
OB09	13	OB9-13-S	Chloroform				U	50
OB09	13	OB9-13-S	cis-1,2-Dichloroethene				U	50
OB09	13	OB9-13-S	Ethylbenzene				U	50
OB09	13	OB9-13-S	m,p-Xylenes				U	50
OB09	13	OB9-13-S	o-Xylene				U	50
OB09	13	OB9-13-S	tert-Butyl-methyl ether				R	50
OB09	13	OB9-13-S	Tetrachloroethene				U	50
OB09	13	OB9-13-S	Toluene				U	50
OB09	13	OB9-13-S	trans-1,2-Dichloroethene				U	50
OB09	13	OB9-13-S	Trichloroethene				U	50
OB09	13	OB9-13-S	Vinyl Chloride				UJ	15
OB10	1	OB10-1-S	1,2-Dichloroethane		*		U	52
OB10	1	OB10-1-S	Chloroform		*		U	52
OB10	1	OB10-1-S	cis-1,2-Dichloroethene		*		U	52
OB10	1	OB10-1-S	Ethylbenzene		*		U	52
OB10	1	OB10-1-S	m,p-Xylenes		*		U	52
OB10	1	OB10-1-S	o-Xylene		*		U	52
OB10	1	OB10-1-S	tert-Butyl-methyl ether		*		R	52
OB10	1	OB10-1-S	Tetrachloroethene		*		U	52
OB10	1	OB10-1-S	Toluene		*		U	52
OB10	1	OB10-1-S	trans-1,2-Dichloroethene		*		U	52
OB10	1	OB10-1-S	Trichloroethene		*		U	52
OB10	1	OB10-1-S	Vinyl Chloride		*		UJ	15
OB10	3	OB10-3-S	1,2-Dichloroethane				U	48
OB10	3	OB10-3-S	Chloroform				U	48
OB10	3	OB10-3-S	cis-1,2-Dichloroethene				U	48
OB10	3	OB10-3-S	Ethylbenzene				U	48
OB10	3	OB10-3-S	m,p-Xylenes				U	48
OB10	3	OB10-3-S	o-Xylene				U	48

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB10	3	OB10-3-S	tert-Butyl-methyl ether				R	48
OB10	3	OB10-3-S	Tetrachloroethene				U	48
OB10	3	OB10-3-S	Toluene				U	48
OB10	3	OB10-3-S	trans-1,2-Dichloroethene				U	48
OB10	3	OB10-3-S	Trichloroethene				U	48
OB10	3	OB10-3-S	Vinyl Chloride				UJ	14
OB10	5	OB10-5-S	1,2-Dichloroethane				U	52
OB10	5	OB10-5-S	Chloroform				U	52
OB10	5	OB10-5-S	cis-1,2-Dichloroethene				U	52
OB10	5	OB10-5-S	Ethylbenzene				U	52
OB10	5	OB10-5-S	m,p-Xylenes				U	52
OB10	5	OB10-5-S	o-Xylene				U	52
OB10	5	OB10-5-S	tert-Butyl-methyl ether				R	52
OB10	5	OB10-5-S	Tetrachloroethene				U	52
OB10	5	OB10-5-S	Toluene				U	52
OB10	5	OB10-5-S	trans-1,2-Dichloroethene				U	52
OB10	5	OB10-5-S	Trichloroethene				U	52
OB10	5	OB10-5-S	Vinyl Chloride				UJ	15
OB10	7	OB10-7-S	1,2-Dichloroethane				U	52
OB10	7	OB10-7-S	Chloroform				U	52
OB10	7	OB10-7-S	cis-1,2-Dichloroethene				U	52
OB10	7	OB10-7-S	Ethylbenzene				U	52
OB10	7	OB10-7-S	m,p-Xylenes				U	52
OB10	7	OB10-7-S	o-Xylene				U	52
OB10	7	OB10-7-S	tert-Butyl-methyl ether				R	52
OB10	7	OB10-7-S	Tetrachloroethene				U	52
OB10	7	OB10-7-S	Toluene				U	52
OB10	7	OB10-7-S	trans-1,2-Dichloroethene				U	52
OB10	7	OB10-7-S	Trichloroethene				U	52
OB10	7	OB10-7-S	Vinyl Chloride				UJ	15
OB10	9	OB10-9-S	1,2-Dichloroethane				U	47
OB10	9	OB10-9-S	Chloroform				U	47
OB10	9	OB10-9-S	cis-1,2-Dichloroethene				U	47
OB10	9	OB10-9-S	Ethylbenzene				U	47
OB10	9	OB10-9-S	m,p-Xylenes				U	47
OB10	9	OB10-9-S	o-Xylene				U	47
OB10	9	OB10-9-S	tert-Butyl-methyl ether				R	47
OB10	9	OB10-9-S	Tetrachloroethene				U	47
OB10	9	OB10-9-S	Toluene				U	47
OB10	9	OB10-9-S	trans-1,2-Dichloroethene				U	47
OB10	9	OB10-9-S	Trichloroethene				U	47
OB10	9	OB10-9-S	Vinyl Chloride				UJ	14
OB10	11	OB10-11-S	1,2-Dichloroethane				U	54
OB10	11	OB10-11-S	Chloroform				U	54
OB10	11	OB10-11-S	cis-1,2-Dichloroethene				U	54
OB10	11	OB10-11-S	Ethylbenzene				U	54

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB10	11	OB10-11-S	m,p-Xylenes				U	54
OB10	11	OB10-11-S	o-Xylene				U	54
OB10	11	OB10-11-S	tert-Butyl-methyl ether				R	54
OB10	11	OB10-11-S	Tetrachloroethene				U	54
OB10	11	OB10-11-S	Toluene				U	54
OB10	11	OB10-11-S	trans-1,2-Dichloroethene				U	54
OB10	11	OB10-11-S	Trichloroethene				U	54
OB10	11	OB10-11-S	Vinyl Chloride				UJ	16
OB10	13	OB10-13-S	1,2-Dichloroethane		*		U	49
OB10	13	OB10-13-S	Chloroform		*		U	49
OB10	13	OB10-13-S	cis-1,2-Dichloroethene		*		U	49
OB10	13	OB10-13-S	Ethylbenzene		*		U	49
OB10	13	OB10-13-S	m,p-Xylenes		*		U	49
OB10	13	OB10-13-S	o-Xylene		*		U	49
OB10	13	OB10-13-S	tert-Butyl-methyl ether		*		R	49
OB10	13	OB10-13-S	Tetrachloroethene		*		U	49
OB10	13	OB10-13-S	Toluene		*		U	49
OB10	13	OB10-13-S	trans-1,2-Dichloroethene		*		U	49
OB10	13	OB10-13-S	Trichloroethene		*		U	49
OB10	13	OB10-13-S	Vinyl Chloride		*		UJ	14
OB10	16	OB10-16-S	1,2-Dichloroethane				U	52
OB10	16	OB10-16-S	Chloroform				U	52
OB10	16	OB10-16-S	cis-1,2-Dichloroethene				U	52
OB10	16	OB10-16-S	Ethylbenzene				U	52
OB10	16	OB10-16-S	m,p-Xylenes				U	52
OB10	16	OB10-16-S	o-Xylene				U	52
OB10	16	OB10-16-S	tert-Butyl-methyl ether				R	52
OB10	16	OB10-16-S	Tetrachloroethene				U	52
OB10	16	OB10-16-S	Toluene				U	52
OB10	16	OB10-16-S	trans-1,2-Dichloroethene				U	52
OB10	16	OB10-16-S	Trichloroethene				U	52
OB10	16	OB10-16-S	Vinyl Chloride				UJ	15
OB11	1	OB11-1-S	1,2-Dichloroethane				U	56
OB11	1	OB11-1-S	Chloroform				U	56
OB11	1	OB11-1-S	cis-1,2-Dichloroethene				U	56
OB11	1	OB11-1-S	Ethylbenzene				U	56
OB11	1	OB11-1-S	m,p-Xylenes				U	56
OB11	1	OB11-1-S	o-Xylene				U	56
OB11	1	OB11-1-S	tert-Butyl-methyl ether				R	56
OB11	1	OB11-1-S	Tetrachloroethene				U	56
OB11	1	OB11-1-S	Toluene				U	56
OB11	1	OB11-1-S	trans-1,2-Dichloroethene				U	56
OB11	1	OB11-1-S	Trichloroethene				U	56
OB11	1	OB11-1-S	Vinyl Chloride				UJ	16
OB11	3	OB11-3-S	1,2-Dichloroethane				U	49
OB11	3	OB11-3-S	Chloroform				U	49

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB11	3	OB11-3-S	cis-1,2-Dichloroethene				U	49
OB11	3	OB11-3-S	Ethylbenzene				U	49
OB11	3	OB11-3-S	m,p-Xylenes				U	49
OB11	3	OB11-3-S	o-Xylene				U	49
OB11	3	OB11-3-S	tert-Butyl-methyl ether				R	49
OB11	3	OB11-3-S	Tetrachloroethene				U	49
OB11	3	OB11-3-S	Toluene				U	49
OB11	3	OB11-3-S	trans-1,2-Dichloroethene				U	49
OB11	3	OB11-3-S	Trichloroethene				U	49
OB11	3	OB11-3-S	Vinyl Chloride				UJ	14
OB11	5	OB11-5-S	1,2-Dichloroethane	*	*		U	50
OB11	5	OB11-5-S	Chloroform	*	*		U	50
OB11	5	OB11-5-S	cis-1,2-Dichloroethene	*	*		U	50
OB11	5	OB11-5-S	Ethylbenzene	*	*		U	50
OB11	5	OB11-5-S	m,p-Xylenes	*	*		U	50
OB11	5	OB11-5-S	o-Xylene	*	*		U	50
OB11	5	OB11-5-S	tert-Butyl-methyl ether	*	*		R	50
OB11	5	OB11-5-S	Tetrachloroethene	*	*		U	50
OB11	5	OB11-5-S	Toluene	*	*		U	50
OB11	5	OB11-5-S	trans-1,2-Dichloroethene	*	*		U	50
OB11	5	OB11-5-S	Trichloroethene	*	*		U	50
OB11	5	OB11-5-S	Vinyl Chloride	*	*		UJ	15
OB11	7	OB11-7-S	1,2-Dichloroethane				U	47
OB11	7	OB11-7-S	Chloroform				U	47
OB11	7	OB11-7-S	cis-1,2-Dichloroethene				U	47
OB11	7	OB11-7-S	Ethylbenzene				U	47
OB11	7	OB11-7-S	m,p-Xylenes				U	47
OB11	7	OB11-7-S	o-Xylene				U	47
OB11	7	OB11-7-S	tert-Butyl-methyl ether				R	47
OB11	7	OB11-7-S	Tetrachloroethene				U	47
OB11	7	OB11-7-S	Toluene				U	47
OB11	7	OB11-7-S	trans-1,2-Dichloroethene				U	47
OB11	7	OB11-7-S	Trichloroethene				U	47
OB11	7	OB11-7-S	Vinyl Chloride				UJ	14
OB11	9	OB11-9-S	1,2-Dichloroethane				U	56
OB11	9	OB11-9-S	Chloroform				U	56
OB11	9	OB11-9-S	cis-1,2-Dichloroethene				U	56
OB11	9	OB11-9-S	Ethylbenzene				U	56
OB11	9	OB11-9-S	m,p-Xylenes				U	56
OB11	9	OB11-9-S	o-Xylene				U	56
OB11	9	OB11-9-S	tert-Butyl-methyl ether				R	56
OB11	9	OB11-9-S	Tetrachloroethene				U	56
OB11	9	OB11-9-S	Toluene				U	56
OB11	9	OB11-9-S	trans-1,2-Dichloroethene				U	56
OB11	9	OB11-9-S	Trichloroethene				U	56
OB11	9	OB11-9-S	Vinyl Chloride				UJ	17

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB11	11	OB11-11-S	1,2-Dichloroethane				U	48
OB11	11	OB11-11-S	Chloroform				U	48
OB11	11	OB11-11-S	cis-1,2-Dichloroethene				U	48
OB11	11	OB11-11-S	Ethylbenzene				U	48
OB11	11	OB11-11-S	m,p-Xylenes				U	48
OB11	11	OB11-11-S	o-Xylene				U	48
OB11	11	OB11-11-S	tert-Butyl-methyl ether				R	48
OB11	11	OB11-11-S	Tetrachloroethene				U	48
OB11	11	OB11-11-S	Toluene				U	48
OB11	11	OB11-11-S	trans-1,2-Dichloroethene				U	48
OB11	11	OB11-11-S	Trichloroethene				U	48
OB11	11	OB11-11-S	Vinyl Chloride				UJ	14
OB12	1	OB12-1-S	1,2-Dichloroethane				U	55
OB12	1	OB12-1-S	Chloroform				U	55
OB12	1	OB12-1-S	cis-1,2-Dichloroethene				U	55
OB12	1	OB12-1-S	Ethylbenzene				U	55
OB12	1	OB12-1-S	m,p-Xylenes				U	55
OB12	1	OB12-1-S	o-Xylene				U	55
OB12	1	OB12-1-S	tert-Butyl-methyl ether				R	55
OB12	1	OB12-1-S	Tetrachloroethene				U	55
OB12	1	OB12-1-S	Toluene				U	55
OB12	1	OB12-1-S	trans-1,2-Dichloroethene				U	55
OB12	1	OB12-1-S	Trichloroethene				U	55
OB12	1	OB12-1-S	Vinyl Chloride				UJ	16
OB12	3	OB12-3-S	1,2-Dichloroethane	*			U	56
OB12	3	OB12-3-S	Chloroform	*			U	56
OB12	3	OB12-3-S	cis-1,2-Dichloroethene	*			U	56
OB12	3	OB12-3-S	Ethylbenzene	*			U	56
OB12	3	OB12-3-S	m,p-Xylenes	*			U	56
OB12	3	OB12-3-S	o-Xylene	*			U	56
OB12	3	OB12-3-S	tert-Butyl-methyl ether	*			R	56
OB12	3	OB12-3-S	Tetrachloroethene	*			U	56
OB12	3	OB12-3-S	Toluene	*			U	56
OB12	3	OB12-3-S	trans-1,2-Dichloroethene	*			U	56
OB12	3	OB12-3-S	Trichloroethene	*			U	56
OB12	3	OB12-3-S	Vinyl Chloride	*			UJ	17
OB12	5	OB12-5-S	1,2-Dichloroethane		*		U	53
OB12	5	OB12-5-S	Chloroform		*		U	53
OB12	5	OB12-5-S	cis-1,2-Dichloroethene		*		U	53
OB12	5	OB12-5-S	Ethylbenzene		*		U	53
OB12	5	OB12-5-S	m,p-Xylenes		*		U	53
OB12	5	OB12-5-S	o-Xylene		*		U	53
OB12	5	OB12-5-S	tert-Butyl-methyl ether		*		R	53
OB12	5	OB12-5-S	Tetrachloroethene		*		U	53
OB12	5	OB12-5-S	Toluene		*		U	53
OB12	5	OB12-5-S	trans-1,2-Dichloroethene		*		U	53

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB12	5	OB12-5-S	Trichloroethene		*		U	53
OB12	5	OB12-5-S	Vinyl Chloride		*		UJ	16
OB12	7	OB12-7-S	1,2-Dichloroethane				U	48
OB12	7	OB12-7-S	Chloroform				U	48
OB12	7	OB12-7-S	cis-1,2-Dichloroethene				U	48
OB12	7	OB12-7-S	Ethylbenzene				U	48
OB12	7	OB12-7-S	m,p-Xylenes				U	48
OB12	7	OB12-7-S	o-Xylene				U	48
OB12	7	OB12-7-S	tert-Butyl-methyl ether				R	48
OB12	7	OB12-7-S	Tetrachloroethene				U	48
OB12	7	OB12-7-S	Toluene				U	48
OB12	7	OB12-7-S	trans-1,2-Dichloroethene				U	48
OB12	7	OB12-7-S	Trichloroethene				U	48
OB12	7	OB12-7-S	Vinyl Chloride				UJ	14
OB12	9	OB12-9-S	1,2-Dichloroethane	*			U	54
OB12	9	OB12-9-S	Chloroform	*			U	54
OB12	9	OB12-9-S	cis-1,2-Dichloroethene	*			U	54
OB12	9	OB12-9-S	Ethylbenzene	*			U	54
OB12	9	OB12-9-S	m,p-Xylenes	*			U	54
OB12	9	OB12-9-S	o-Xylene	*			U	54
OB12	9	OB12-9-S	tert-Butyl-methyl ether	*			R	54
OB12	9	OB12-9-S	Tetrachloroethene	*			U	54
OB12	9	OB12-9-S	Toluene	*			U	54
OB12	9	OB12-9-S	trans-1,2-Dichloroethene	*			U	54
OB12	9	OB12-9-S	Trichloroethene	*			U	54
OB12	9	OB12-9-S	Vinyl Chloride	*			UJ	16
OB12	11	OB12-11-S	1,2-Dichloroethane				U	50
OB12	11	OB12-11-S	Chloroform				U	50
OB12	11	OB12-11-S	cis-1,2-Dichloroethene				U	50
OB12	11	OB12-11-S	Ethylbenzene				U	50
OB12	11	OB12-11-S	m,p-Xylenes				U	50
OB12	11	OB12-11-S	o-Xylene				U	50
OB12	11	OB12-11-S	tert-Butyl-methyl ether				R	50
OB12	11	OB12-11-S	Tetrachloroethene				U	50
OB12	11	OB12-11-S	Toluene				U	50
OB12	11	OB12-11-S	trans-1,2-Dichloroethene				U	50
OB12	11	OB12-11-S	Trichloroethene				U	50
OB12	11	OB12-11-S	Vinyl Chloride				UJ	15
OB12	13	OB12-13-S	1,2-Dichloroethane				U	58
OB12	13	OB12-13-S	Chloroform				U	58
OB12	13	OB12-13-S	cis-1,2-Dichloroethene				U	58
OB12	13	OB12-13-S	Ethylbenzene				U	58
OB12	13	OB12-13-S	m,p-Xylenes				U	58
OB12	13	OB12-13-S	o-Xylene				U	58
OB12	13	OB12-13-S	tert-Butyl-methyl ether				R	58
OB12	13	OB12-13-S	Tetrachloroethene				U	58

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB12	13	OB12-13-S	Toluene				U	58
OB12	13	OB12-13-S	trans-1,2-Dichloroethene				U	58
OB12	13	OB12-13-S	Trichloroethene				U	58
OB12	13	OB12-13-S	Vinyl Chloride				UJ	17
OB12	15	OB12-15-S	1,2-Dichloroethane		*		U	56
OB12	15	OB12-15-S	Chloroform		*		U	56
OB12	15	OB12-15-S	cis-1,2-Dichloroethene		*		U	56
OB12	15	OB12-15-S	Ethylbenzene		*		U	56
OB12	15	OB12-15-S	m,p-Xylenes		*		U	56
OB12	15	OB12-15-S	o-Xylene		*		U	56
OB12	15	OB12-15-S	tert-Butyl-methyl ether		*		R	56
OB12	15	OB12-15-S	Tetrachloroethene		*		U	56
OB12	15	OB12-15-S	Toluene		*		U	56
OB12	15	OB12-15-S	trans-1,2-Dichloroethene		*		U	56
OB12	15	OB12-15-S	Trichloroethene		*		U	56
OB12	15	OB12-15-S	Vinyl Chloride		*		UJ	16
OB13	6	OB13-6-S	1,2-Dichloroethane				U	47
OB13	6	OB13-6-S	Chloroform				U	47
OB13	6	OB13-6-S	cis-1,2-Dichloroethene				U	47
OB13	6	OB13-6-S	Ethylbenzene				U	47
OB13	6	OB13-6-S	m,p-Xylenes				U	47
OB13	6	OB13-6-S	o-Xylene				U	47
OB13	6	OB13-6-S	tert-Butyl-methyl ether				R	47
OB13	6	OB13-6-S	Tetrachloroethene				U	47
OB13	6	OB13-6-S	Toluene				U	47
OB13	6	OB13-6-S	trans-1,2-Dichloroethene				U	47
OB13	6	OB13-6-S	Trichloroethene				U	47
OB13	6	OB13-6-S	Vinyl Chloride				UJ	14
OB14	1	OB14-1-S	1,2-Dichloroethane	*			U	51
OB14	1	OB14-1-S	Chloroform	*			U	51
OB14	1	OB14-1-S	cis-1,2-Dichloroethene	*			U	51
OB14	1	OB14-1-S	Ethylbenzene	*			U	51
OB14	1	OB14-1-S	m,p-Xylenes	*			U	51
OB14	1	OB14-1-S	o-Xylene	*			U	51
OB14	1	OB14-1-S	tert-Butyl-methyl ether	*			R	51
OB14	1	OB14-1-S	Tetrachloroethene	*			U	51
OB14	1	OB14-1-S	Toluene	*			U	51
OB14	1	OB14-1-S	trans-1,2-Dichloroethene	*			U	51
OB14	1	OB14-1-S	Trichloroethene	*			U	51
OB14	1	OB14-1-S	Vinyl Chloride	*			UJ	15
OB14	2	OB14-2-S	1,2-Dichloroethane				U	71
OB14	2	OB14-2-S	Chloroform				U	71
OB14	2	OB14-2-S	cis-1,2-Dichloroethene				U	71
OB14	2	OB14-2-S	Ethylbenzene				U	71
OB14	2	OB14-2-S	m,p-Xylenes				U	71
OB14	2	OB14-2-S	o-Xylene				U	71

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB14	2	OB14-2-S	tert-Butyl-methyl ether				R	71
OB14	2	OB14-2-S	Tetrachloroethene				U	71
OB14	2	OB14-2-S	Toluene				U	71
OB14	2	OB14-2-S	trans-1,2-Dichloroethene				U	71
OB14	2	OB14-2-S	Trichloroethene				U	71
OB14	2	OB14-2-S	Vinyl Chloride				UJ	21
OB14	3	OB14-3-S	1,2-Dichloroethane				U	51
OB14	3	OB14-3-S	Chloroform				U	51
OB14	3	OB14-3-S	cis-1,2-Dichloroethene				U	51
OB14	3	OB14-3-S	Ethylbenzene				U	51
OB14	3	OB14-3-S	m,p-Xylenes				U	51
OB14	3	OB14-3-S	o-Xylene				U	51
OB14	3	OB14-3-S	tert-Butyl-methyl ether				R	51
OB14	3	OB14-3-S	Tetrachloroethene				U	51
OB14	3	OB14-3-S	Toluene				U	51
OB14	3	OB14-3-S	trans-1,2-Dichloroethene				U	51
OB14	3	OB14-3-S	Trichloroethene				U	51
OB14	3	OB14-3-S	Vinyl Chloride				UJ	15
OB15	2	OB15-2-S	1,2-Dichloroethane				U	46
OB15	2	OB15-2-S	Chloroform				U	46
OB15	2	OB15-2-S	cis-1,2-Dichloroethene				U	46
OB15	2	OB15-2-S	Ethylbenzene				U	46
OB15	2	OB15-2-S	m,p-Xylenes				U	46
OB15	2	OB15-2-S	o-Xylene				U	46
OB15	2	OB15-2-S	tert-Butyl-methyl ether				R	46
OB15	2	OB15-2-S	Tetrachloroethene				U	46
OB15	2	OB15-2-S	Toluene				U	46
OB15	2	OB15-2-S	trans-1,2-Dichloroethene				U	46
OB15	2	OB15-2-S	Trichloroethene				U	46
OB15	2	OB15-2-S	Vinyl Chloride				UJ	14
OB16	1	OB16-1-S	1,2-Dichloroethane				U	47
OB16	1	OB16-1-S	Chloroform				U	47
OB16	1	OB16-1-S	cis-1,2-Dichloroethene				U	47
OB16	1	OB16-1-S	Ethylbenzene				U	47
OB16	1	OB16-1-S	m,p-Xylenes				U	47
OB16	1	OB16-1-S	o-Xylene				U	47
OB16	1	OB16-1-S	tert-Butyl-methyl ether				R	47
OB16	1	OB16-1-S	Tetrachloroethene				U	47
OB16	1	OB16-1-S	Toluene				U	47
OB16	1	OB16-1-S	trans-1,2-Dichloroethene				U	47
OB16	1	OB16-1-S	Trichloroethene				U	47
OB16	1	OB16-1-S	Vinyl Chloride				UJ	14
OB16	3	OB16-3-S	1,2-Dichloroethane		*		U	47
OB16	3	OB16-3-S	Chloroform		*		U	47
OB16	3	OB16-3-S	cis-1,2-Dichloroethene		*		U	47
OB16	3	OB16-3-S	Ethylbenzene		*		U	47

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB16	3	OB16-3-S	m,p-Xylenes		*		U	47
OB16	3	OB16-3-S	o-Xylene		*		U	47
OB16	3	OB16-3-S	tert-Butyl-methyl ether		*		R	47
OB16	3	OB16-3-S	Tetrachloroethene		*		U	47
OB16	3	OB16-3-S	Toluene		*		U	47
OB16	3	OB16-3-S	trans-1,2-Dichloroethene		*		U	47
OB16	3	OB16-3-S	Trichloroethene		*		U	47
OB16	3	OB16-3-S	Vinyl Chloride		*		UJ	14
OB16	5	OB16-5-S	1,2-Dichloroethane				U	47
OB16	5	OB16-5-S	Chloroform				U	47
OB16	5	OB16-5-S	cis-1,2-Dichloroethene				U	47
OB16	5	OB16-5-S	Ethylbenzene				U	47
OB16	5	OB16-5-S	m,p-Xylenes				U	47
OB16	5	OB16-5-S	o-Xylene				U	47
OB16	5	OB16-5-S	tert-Butyl-methyl ether				R	47
OB16	5	OB16-5-S	Tetrachloroethene				U	47
OB16	5	OB16-5-S	Toluene				U	47
OB16	5	OB16-5-S	trans-1,2-Dichloroethene				U	47
OB16	5	OB16-5-S	Trichloroethene				U	47
OB16	5	OB16-5-S	Vinyl Chloride				UJ	14
OB16	7	OB16-7-S	1,2-Dichloroethane				U	47
OB16	7	OB16-7-S	Chloroform				U	47
OB16	7	OB16-7-S	cis-1,2-Dichloroethene				U	47
OB16	7	OB16-7-S	Ethylbenzene				U	47
OB16	7	OB16-7-S	m,p-Xylenes				U	47
OB16	7	OB16-7-S	o-Xylene				U	47
OB16	7	OB16-7-S	tert-Butyl-methyl ether				R	47
OB16	7	OB16-7-S	Tetrachloroethene				U	47
OB16	7	OB16-7-S	Toluene				U	47
OB16	7	OB16-7-S	trans-1,2-Dichloroethene				U	47
OB16	7	OB16-7-S	Trichloroethene				U	47
OB16	7	OB16-7-S	Vinyl Chloride				UJ	14
OB16	9	OB16-9-S	1,2-Dichloroethane	*	*		U	47
OB16	9	OB16-9-S	Chloroform	*	*		U	47
OB16	9	OB16-9-S	cis-1,2-Dichloroethene	*	*		U	47
OB16	9	OB16-9-S	Ethylbenzene	*	*		U	47
OB16	9	OB16-9-S	m,p-Xylenes	*	*		U	47
OB16	9	OB16-9-S	o-Xylene	*	*		U	47
OB16	9	OB16-9-S	tert-Butyl-methyl ether	*	*		R	47
OB16	9	OB16-9-S	Tetrachloroethene	*	*		U	47
OB16	9	OB16-9-S	Toluene	*	*		U	47
OB16	9	OB16-9-S	trans-1,2-Dichloroethene	*	*		U	47
OB16	9	OB16-9-S	Trichloroethene	*	*		U	47
OB16	9	OB16-9-S	Vinyl Chloride	*	*		UJ	14
OB16	11	OB16-11-S	1,2-Dichloroethane				U	46
OB16	11	OB16-11-S	Chloroform				U	46

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB16	11	OB16-11-S	cis-1,2-Dichloroethene				U	46
OB16	11	OB16-11-S	Ethylbenzene				U	46
OB16	11	OB16-11-S	m,p-Xylenes				U	46
OB16	11	OB16-11-S	o-Xylene				U	46
OB16	11	OB16-11-S	tert-Butyl-methyl ether				R	46
OB16	11	OB16-11-S	Tetrachloroethene				U	46
OB16	11	OB16-11-S	Toluene				U	46
OB16	11	OB16-11-S	trans-1,2-Dichloroethene				U	46
OB16	11	OB16-11-S	Trichloroethene				U	46
OB16	11	OB16-11-S	Vinyl Chloride				UJ	14
OB16	13	OB16-13-S	1,2-Dichloroethane				U	48
OB16	13	OB16-13-S	Chloroform				U	48
OB16	13	OB16-13-S	cis-1,2-Dichloroethene				U	48
OB16	13	OB16-13-S	Ethylbenzene				U	48
OB16	13	OB16-13-S	m,p-Xylenes				U	48
OB16	13	OB16-13-S	o-Xylene				U	48
OB16	13	OB16-13-S	tert-Butyl-methyl ether				R	48
OB16	13	OB16-13-S	Tetrachloroethene				U	48
OB16	13	OB16-13-S	Toluene				U	48
OB16	13	OB16-13-S	trans-1,2-Dichloroethene				U	48
OB16	13	OB16-13-S	Trichloroethene				U	48
OB16	13	OB16-13-S	Vinyl Chloride				UJ	14
OB16	15	OB16-15-S	1,2-Dichloroethane				U	50
OB16	15	OB16-15-S	Chloroform				U	50
OB16	15	OB16-15-S	cis-1,2-Dichloroethene				U	50
OB16	15	OB16-15-S	Ethylbenzene				U	50
OB16	15	OB16-15-S	m,p-Xylenes				U	50
OB16	15	OB16-15-S	o-Xylene				U	50
OB16	15	OB16-15-S	tert-Butyl-methyl ether				R	50
OB16	15	OB16-15-S	Tetrachloroethene				U	50
OB16	15	OB16-15-S	Toluene				U	50
OB16	15	OB16-15-S	trans-1,2-Dichloroethene				U	50
OB16	15	OB16-15-S	Trichloroethene				U	50
OB16	15	OB16-15-S	Vinyl Chloride				UJ	15
OB16	17	OB16-17-S	1,2-Dichloroethane				U	45
OB16	17	OB16-17-S	Chloroform				U	45
OB16	17	OB16-17-S	cis-1,2-Dichloroethene				U	45
OB16	17	OB16-17-S	Ethylbenzene				U	45
OB16	17	OB16-17-S	m,p-Xylenes				U	45
OB16	17	OB16-17-S	o-Xylene				U	45
OB16	17	OB16-17-S	tert-Butyl-methyl ether				R	45
OB16	17	OB16-17-S	Tetrachloroethene				U	45
OB16	17	OB16-17-S	Toluene				U	45
OB16	17	OB16-17-S	trans-1,2-Dichloroethene				U	45
OB16	17	OB16-17-S	Trichloroethene				U	45
OB16	17	OB16-17-S	Vinyl Chloride				UJ	13

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB16	19	OB16-19-S	1,2-Dichloroethane				U	51
OB16	19	OB16-19-S	Chloroform				U	51
OB16	19	OB16-19-S	cis-1,2-Dichloroethene				U	51
OB16	19	OB16-19-S	Ethylbenzene				U	51
OB16	19	OB16-19-S	m,p-Xylenes				U	51
OB16	19	OB16-19-S	o-Xylene				U	51
OB16	19	OB16-19-S	tert-Butyl-methyl ether				R	51
OB16	19	OB16-19-S	Tetrachloroethene				U	51
OB16	19	OB16-19-S	Toluene				U	51
OB16	19	OB16-19-S	trans-1,2-Dichloroethene				U	51
OB16	19	OB16-19-S	Trichloroethene				U	51
OB16	19	OB16-19-S	Vinyl Chloride				UJ	15
OB16	21	OB16-21-S	1,2-Dichloroethane				U	45
OB16	21	OB16-21-S	Chloroform				U	45
OB16	21	OB16-21-S	cis-1,2-Dichloroethene				U	45
OB16	21	OB16-21-S	Ethylbenzene				U	45
OB16	21	OB16-21-S	m,p-Xylenes				U	45
OB16	21	OB16-21-S	o-Xylene				U	45
OB16	21	OB16-21-S	tert-Butyl-methyl ether				R	45
OB16	21	OB16-21-S	Tetrachloroethene				U	45
OB16	21	OB16-21-S	Toluene				U	45
OB16	21	OB16-21-S	trans-1,2-Dichloroethene				U	45
OB16	21	OB16-21-S	Trichloroethene				U	45
OB16	21	OB16-21-S	Vinyl Chloride				UJ	13
OB16	23	OB16-23-S	1,2-Dichloroethane	*			U	53
OB16	23	OB16-23-S	Chloroform	*			U	53
OB16	23	OB16-23-S	cis-1,2-Dichloroethene	*			U	53
OB16	23	OB16-23-S	Ethylbenzene	*			U	53
OB16	23	OB16-23-S	m,p-Xylenes	*			U	53
OB16	23	OB16-23-S	o-Xylene	*			U	53
OB16	23	OB16-23-S	tert-Butyl-methyl ether	*			R	53
OB16	23	OB16-23-S	Tetrachloroethene	*			U	53
OB16	23	OB16-23-S	Toluene	*			U	53
OB16	23	OB16-23-S	trans-1,2-Dichloroethene	*			U	53
OB16	23	OB16-23-S	Trichloroethene	*			U	53
OB16	23	OB16-23-S	Vinyl Chloride	*			UJ	16
OB17	1	OB17-1-S	1,2-Dichloroethane				U	48
OB17	1	OB17-1-S	Chloroform				U	48
OB17	1	OB17-1-S	cis-1,2-Dichloroethene				U	48
OB17	1	OB17-1-S	Ethylbenzene				U	48
OB17	1	OB17-1-S	m,p-Xylenes				U	48
OB17	1	OB17-1-S	o-Xylene				U	48
OB17	1	OB17-1-S	tert-Butyl-methyl ether				R	48
OB17	1	OB17-1-S	Tetrachloroethene				U	48
OB17	1	OB17-1-S	Toluene				U	48
OB17	1	OB17-1-S	trans-1,2-Dichloroethene				U	48

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB17	1	OB17-1-S	Trichloroethene				U	48
OB17	1	OB17-1-S	Vinyl Chloride				UJ	14
OB17	3	OB17-3-S	1,2-Dichloroethane		*		U	23
OB17	3	OB17-3-S	Chloroform		*		U	23
OB17	3	OB17-3-S	cis-1,2-Dichloroethene		*		U	23
OB17	3	OB17-3-S	Ethylbenzene		*		U	23
OB17	3	OB17-3-S	m,p-Xylenes		*		U	23
OB17	3	OB17-3-S	o-Xylene		*		U	23
OB17	3	OB17-3-S	tert-Butyl-methyl ether		*		R	23
OB17	3	OB17-3-S	Tetrachloroethene		*		U	23
OB17	3	OB17-3-S	Toluene		*		U	23
OB17	3	OB17-3-S	trans-1,2-Dichloroethene		*		U	23
OB17	3	OB17-3-S	Trichloroethene		*		U	23
OB17	3	OB17-3-S	Vinyl Chloride		*		UJ	7
OB17	5	OB17-5-S	1,2-Dichloroethane				U	48
OB17	5	OB17-5-S	Chloroform				U	48
OB17	5	OB17-5-S	cis-1,2-Dichloroethene				U	48
OB17	5	OB17-5-S	Ethylbenzene				U	48
OB17	5	OB17-5-S	m,p-Xylenes				U	48
OB17	5	OB17-5-S	o-Xylene				U	48
OB17	5	OB17-5-S	tert-Butyl-methyl ether				R	48
OB17	5	OB17-5-S	Tetrachloroethene				U	48
OB17	5	OB17-5-S	Toluene				U	48
OB17	5	OB17-5-S	trans-1,2-Dichloroethene				U	48
OB17	5	OB17-5-S	Trichloroethene				U	48
OB17	5	OB17-5-S	Vinyl Chloride				UJ	14
OB17	7	OB17-7-S	1,2-Dichloroethane				U	54
OB17	7	OB17-7-S	Chloroform				U	54
OB17	7	OB17-7-S	cis-1,2-Dichloroethene				U	54
OB17	7	OB17-7-S	Ethylbenzene				U	54
OB17	7	OB17-7-S	m,p-Xylenes				U	54
OB17	7	OB17-7-S	o-Xylene				U	54
OB17	7	OB17-7-S	tert-Butyl-methyl ether				R	54
OB17	7	OB17-7-S	Tetrachloroethene				U	54
OB17	7	OB17-7-S	Toluene				U	54
OB17	7	OB17-7-S	trans-1,2-Dichloroethene				U	54
OB17	7	OB17-7-S	Trichloroethene				U	54
OB17	7	OB17-7-S	Vinyl Chloride				UJ	16
OB17	9	OB17-9-S	1,2-Dichloroethane				U	49
OB17	9	OB17-9-S	Chloroform				U	49
OB17	9	OB17-9-S	cis-1,2-Dichloroethene				U	49
OB17	9	OB17-9-S	Ethylbenzene				U	49
OB17	9	OB17-9-S	m,p-Xylenes				U	49
OB17	9	OB17-9-S	o-Xylene				U	49
OB17	9	OB17-9-S	tert-Butyl-methyl ether				R	49
OB17	9	OB17-9-S	Tetrachloroethene				U	49

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB17	9	OB17-9-S	Toluene				U	49
OB17	9	OB17-9-S	trans-1,2-Dichloroethene				U	49
OB17	9	OB17-9-S	Trichloroethene				U	49
OB17	9	OB17-9-S	Vinyl Chloride				UJ	14
OB17	11	OB17-11-S	1,2-Dichloroethane				U	50
OB17	11	OB17-11-S	Chloroform				U	50
OB17	11	OB17-11-S	cis-1,2-Dichloroethene				U	50
OB17	11	OB17-11-S	Ethylbenzene				U	50
OB17	11	OB17-11-S	m,p-Xylenes				U	50
OB17	11	OB17-11-S	o-Xylene				U	50
OB17	11	OB17-11-S	tert-Butyl-methyl ether				R	50
OB17	11	OB17-11-S	Tetrachloroethene				U	50
OB17	11	OB17-11-S	Toluene				U	50
OB17	11	OB17-11-S	trans-1,2-Dichloroethene				U	50
OB17	11	OB17-11-S	Trichloroethene				U	50
OB17	11	OB17-11-S	Vinyl Chloride				UJ	15
OB17	13	OB17-13-S	1,2-Dichloroethane				U	45
OB17	13	OB17-13-S	Chloroform				U	45
OB17	13	OB17-13-S	cis-1,2-Dichloroethene				U	45
OB17	13	OB17-13-S	Ethylbenzene				U	45
OB17	13	OB17-13-S	m,p-Xylenes				U	45
OB17	13	OB17-13-S	o-Xylene				U	45
OB17	13	OB17-13-S	tert-Butyl-methyl ether				R	45
OB17	13	OB17-13-S	Tetrachloroethene				U	45
OB17	13	OB17-13-S	Toluene				U	45
OB17	13	OB17-13-S	trans-1,2-Dichloroethene				U	45
OB17	13	OB17-13-S	Trichloroethene				U	45
OB17	13	OB17-13-S	Vinyl Chloride				UJ	13
OB17	15	OB17-15-S	1,2-Dichloroethane				U	61
OB17	15	OB17-15-S	Chloroform				U	61
OB17	15	OB17-15-S	cis-1,2-Dichloroethene				U	61
OB17	15	OB17-15-S	Ethylbenzene				U	61
OB17	15	OB17-15-S	m,p-Xylenes				U	61
OB17	15	OB17-15-S	o-Xylene				U	61
OB17	15	OB17-15-S	tert-Butyl-methyl ether				R	61
OB17	15	OB17-15-S	Tetrachloroethene				U	61
OB17	15	OB17-15-S	Toluene				U	61
OB17	15	OB17-15-S	trans-1,2-Dichloroethene				U	61
OB17	15	OB17-15-S	Trichloroethene				U	61
OB17	15	OB17-15-S	Vinyl Chloride				UJ	18
OB17	17	OB17-17-S	1,2-Dichloroethane		*		U	48
OB17	17	OB17-17-S	Chloroform		*		U	48
OB17	17	OB17-17-S	cis-1,2-Dichloroethene		*		U	48
OB17	17	OB17-17-S	Ethylbenzene		*		U	48
OB17	17	OB17-17-S	m,p-Xylenes		*		U	48
OB17	17	OB17-17-S	o-Xylene		*		U	48

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB17	17	OB17-17-S	tert-Butyl-methyl ether		*		R	48
OB17	17	OB17-17-S	Tetrachloroethene		*		U	48
OB17	17	OB17-17-S	Toluene		*		U	48
OB17	17	OB17-17-S	trans-1,2-Dichloroethene		*		U	48
OB17	17	OB17-17-S	Trichloroethene		*		U	48
OB17	17	OB17-17-S	Vinyl Chloride		*		UJ	14
OB17	19	OB17-19-S	1,2-Dichloroethane				U	49
OB17	19	OB17-19-S	Chloroform				U	49
OB17	19	OB17-19-S	cis-1,2-Dichloroethene				U	49
OB17	19	OB17-19-S	Ethylbenzene				U	49
OB17	19	OB17-19-S	m,p-Xylenes				U	49
OB17	19	OB17-19-S	o-Xylene				U	49
OB17	19	OB17-19-S	tert-Butyl-methyl ether				R	49
OB17	19	OB17-19-S	Tetrachloroethene				U	49
OB17	19	OB17-19-S	Toluene				U	49
OB17	19	OB17-19-S	trans-1,2-Dichloroethene				U	49
OB17	19	OB17-19-S	Trichloroethene				U	49
OB17	19	OB17-19-S	Vinyl Chloride				UJ	15
OB17	21	OB17-21-S	1,2-Dichloroethane				U	51
OB17	21	OB17-21-S	Chloroform				U	51
OB17	21	OB17-21-S	cis-1,2-Dichloroethene				U	51
OB17	21	OB17-21-S	Ethylbenzene				U	51
OB17	21	OB17-21-S	m,p-Xylenes				U	51
OB17	21	OB17-21-S	o-Xylene				U	51
OB17	21	OB17-21-S	tert-Butyl-methyl ether				R	51
OB17	21	OB17-21-S	Tetrachloroethene				U	51
OB17	21	OB17-21-S	Toluene				U	51
OB17	21	OB17-21-S	trans-1,2-Dichloroethene				U	51
OB17	21	OB17-21-S	Trichloroethene				U	51
OB17	21	OB17-21-S	Vinyl Chloride				UJ	15
OB17	23	OB17-23-S	1,2-Dichloroethane	*			U	50
OB17	23	OB17-23-S	Chloroform	*			U	50
OB17	23	OB17-23-S	cis-1,2-Dichloroethene	*			U	50
OB17	23	OB17-23-S	Ethylbenzene	*			U	50
OB17	23	OB17-23-S	m,p-Xylenes	*			U	50
OB17	23	OB17-23-S	o-Xylene	*			U	50
OB17	23	OB17-23-S	tert-Butyl-methyl ether	*			R	50
OB17	23	OB17-23-S	Tetrachloroethene	*			U	50
OB17	23	OB17-23-S	Toluene	*			U	50
OB17	23	OB17-23-S	trans-1,2-Dichloroethene	*			U	50
OB17	23	OB17-23-S	Trichloroethene	*			U	50
OB17	23	OB17-23-S	Vinyl Chloride				UJ	15
OB17	25	OB17-25-S	1,2-Dichloroethane				U	53
OB17	25	OB17-25-S	Chloroform				U	53
OB17	25	OB17-25-S	cis-1,2-Dichloroethene				U	53
OB17	25	OB17-25-S	Ethylbenzene				U	53

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB17	25	OB17-25-S	m,p-Xylenes				U	53
OB17	25	OB17-25-S	o-Xylene				U	53
OB17	25	OB17-25-S	tert-Butyl-methyl ether				R	53
OB17	25	OB17-25-S	Tetrachloroethene				U	53
OB17	25	OB17-25-S	Toluene				U	53
OB17	25	OB17-25-S	trans-1,2-Dichloroethene				U	53
OB17	25	OB17-25-S	Trichloroethene				U	53
OB17	25	OB17-25-S	Vinyl Chloride				UJ	16
OB18	1	OB18-1-S	1,2-Dichloroethane				U	48
OB18	1	OB18-1-S	Chloroform				U	48
OB18	1	OB18-1-S	cis-1,2-Dichloroethene				U	48
OB18	1	OB18-1-S	Ethylbenzene				U	48
OB18	1	OB18-1-S	m,p-Xylenes				U	48
OB18	1	OB18-1-S	o-Xylene				U	48
OB18	1	OB18-1-S	tert-Butyl-methyl ether				R	48
OB18	1	OB18-1-S	Tetrachloroethene				U	48
OB18	1	OB18-1-S	Toluene				U	48
OB18	1	OB18-1-S	trans-1,2-Dichloroethene				U	48
OB18	1	OB18-1-S	Trichloroethene				U	48
OB18	1	OB18-1-S	Vinyl Chloride				UJ	14
OB18	3	OB18-3-S	1,2-Dichloroethane	*			U	56
OB18	3	OB18-3-S	Chloroform	*			U	56
OB18	3	OB18-3-S	cis-1,2-Dichloroethene	*			U	56
OB18	3	OB18-3-S	Ethylbenzene	*			U	56
OB18	3	OB18-3-S	m,p-Xylenes	*			U	56
OB18	3	OB18-3-S	o-Xylene	*			U	56
OB18	3	OB18-3-S	tert-Butyl-methyl ether	*			R	56
OB18	3	OB18-3-S	Tetrachloroethene	*			U	56
OB18	3	OB18-3-S	Toluene	*			U	56
OB18	3	OB18-3-S	trans-1,2-Dichloroethene	*			U	56
OB18	3	OB18-3-S	Trichloroethene	*			U	56
OB18	3	OB18-3-S	Vinyl Chloride	*			UJ	17
OB18	5	OB18-5-S	1,2-Dichloroethane		*		U	45
OB18	5	OB18-5-S	Chloroform		*		U	45
OB18	5	OB18-5-S	cis-1,2-Dichloroethene		*		U	45
OB18	5	OB18-5-S	Ethylbenzene		*		U	45
OB18	5	OB18-5-S	m,p-Xylenes		*		U	45
OB18	5	OB18-5-S	o-Xylene		*		U	45
OB18	5	OB18-5-S	tert-Butyl-methyl ether		*		R	45
OB18	5	OB18-5-S	Tetrachloroethene		*		U	45
OB18	5	OB18-5-S	Toluene		*		U	45
OB18	5	OB18-5-S	trans-1,2-Dichloroethene		*		U	45
OB18	5	OB18-5-S	Trichloroethene		*		U	45
OB18	5	OB18-5-S	Vinyl Chloride		*		UJ	13
OB18	7	OB18-7-S	1,2-Dichloroethane	*			U	55
OB18	7	OB18-7-S	Chloroform	*			U	55

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB18	7	OB18-7-S	cis-1,2-Dichloroethene	*			U	55
OB18	7	OB18-7-S	Ethylbenzene	*			U	55
OB18	7	OB18-7-S	m,p-Xylenes	*			U	55
OB18	7	OB18-7-S	o-Xylene	*			U	55
OB18	7	OB18-7-S	tert-Butyl-methyl ether	*			R	55
OB18	7	OB18-7-S	Tetrachloroethene	*			U	55
OB18	7	OB18-7-S	Toluene	*			U	55
OB18	7	OB18-7-S	trans-1,2-Dichloroethene	*			U	55
OB18	7	OB18-7-S	Trichloroethene	*			U	55
OB18	7	OB18-7-S	Vinyl Chloride	*			UJ	16
OB18	9	OB18-9-S	1,2-Dichloroethane				U	48
OB18	9	OB18-9-S	Chloroform				U	48
OB18	9	OB18-9-S	cis-1,2-Dichloroethene				U	48
OB18	9	OB18-9-S	Ethylbenzene				U	48
OB18	9	OB18-9-S	m,p-Xylenes				U	48
OB18	9	OB18-9-S	o-Xylene				U	48
OB18	9	OB18-9-S	tert-Butyl-methyl ether				R	48
OB18	9	OB18-9-S	Tetrachloroethene				U	48
OB18	9	OB18-9-S	Toluene				U	48
OB18	9	OB18-9-S	trans-1,2-Dichloroethene				U	48
OB18	9	OB18-9-S	Trichloroethene				U	48
OB18	9	OB18-9-S	Vinyl Chloride				UJ	14
OB18	11	OB18-11-S	1,2-Dichloroethane				U	43
OB18	11	OB18-11-S	Chloroform				U	43
OB18	11	OB18-11-S	cis-1,2-Dichloroethene				U	43
OB18	11	OB18-11-S	Ethylbenzene				U	43
OB18	11	OB18-11-S	m,p-Xylenes				U	43
OB18	11	OB18-11-S	o-Xylene				U	43
OB18	11	OB18-11-S	tert-Butyl-methyl ether				R	43
OB18	11	OB18-11-S	Tetrachloroethene				U	43
OB18	11	OB18-11-S	Toluene				U	43
OB18	11	OB18-11-S	trans-1,2-Dichloroethene				U	43
OB18	11	OB18-11-S	Trichloroethene				U	43
OB18	11	OB18-11-S	Vinyl Chloride				UJ	13
OB18	13	OB18-13-S	1,2-Dichloroethane				U	53
OB18	13	OB18-13-S	Chloroform				U	53
OB18	13	OB18-13-S	cis-1,2-Dichloroethene				U	53
OB18	13	OB18-13-S	Ethylbenzene				U	53
OB18	13	OB18-13-S	m,p-Xylenes				U	53
OB18	13	OB18-13-S	o-Xylene				U	53
OB18	13	OB18-13-S	tert-Butyl-methyl ether				R	53
OB18	13	OB18-13-S	Tetrachloroethene				U	53
OB18	13	OB18-13-S	Toluene				U	53
OB18	13	OB18-13-S	trans-1,2-Dichloroethene				U	53
OB18	13	OB18-13-S	Trichloroethene				U	53
OB18	13	OB18-13-S	Vinyl Chloride				UJ	16

Table 6-2 Analytical Results for Soil Samples Collected April, 2008 in ug/Kg								
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated reporting limit (RL), J = estimated concentration of detected compound, R = data rejected. ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
Sample Location	**Sample Depth (fbgs)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Laboratory Results (Blank Cell = Non-Detect)**		
						Conc.	**Qual.**	**RL**
OB18	15	OB18-15-S	1,2-Dichloroethane		*		U	50
OB18	15	OB18-15-S	Chloroform		*		U	50
OB18	15	OB18-15-S	cis-1,2-Dichloroethene		*		U	50
OB18	15	OB18-15-S	Ethylbenzene		*		U	50
OB18	15	OB18-15-S	m,p-Xylenes		*		U	50
OB18	15	OB18-15-S	o-Xylene		*		U	50
OB18	15	OB18-15-S	tert-Butyl-methyl ether		*		R	50
OB18	15	OB18-15-S	Tetrachloroethene		*		U	50
OB18	15	OB18-15-S	Toluene		*		U	50
OB18	15	OB18-15-S	trans-1,2-Dichloroethene		*		U	50
OB18	15	OB18-15-S	Trichloroethene		*		U	50
OB18	15	OB18-15-S	Vinyl Chloride		*		UJ	15
OB18	17	OB18-17-S	1,2-Dichloroethane				U	56
OB18	17	OB18-17-S	Chloroform				U	56
OB18	17	OB18-17-S	cis-1,2-Dichloroethene				U	56
OB18	17	OB18-17-S	Ethylbenzene				U	56
OB18	17	OB18-17-S	m,p-Xylenes				U	56
OB18	17	OB18-17-S	o-Xylene				U	56
OB18	17	OB18-17-S	tert-Butyl-methyl ether				R	56
OB18	17	OB18-17-S	Tetrachloroethene				U	56
OB18	17	OB18-17-S	Toluene				U	56
OB18	17	OB18-17-S	trans-1,2-Dichloroethene				U	56
OB18	17	OB18-17-S	Trichloroethene				U	56
OB18	17	OB18-17-S	Vinyl Chloride				UJ	16
OB18	21	OB18-21-S	1,2-Dichloroethane	*			U	44
OB18	21	OB18-21-S	Chloroform	*			U	44
OB18	21	OB18-21-S	cis-1,2-Dichloroethene	*			U	44
OB18	21	OB18-21-S	Ethylbenzene	*			U	44
OB18	21	OB18-21-S	m,p-Xylenes	*			U	44
OB18	21	OB18-21-S	o-Xylene	*			U	44
OB18	21	OB18-21-S	tert-Butyl-methyl ether	*			R	44
OB18	21	OB18-21-S	Tetrachloroethene	*			U	44
OB18	21	OB18-21-S	Toluene	*			U	44
OB18	21	OB18-21-S	trans-1,2-Dichloroethene	*			U	44
OB18	21	OB18-21-S	Trichloroethene	*			U	44
OB18	21	OB18-21-S	Vinyl Chloride	*			UJ	13

Table 6-1 Analytical Results for Water Samples Collected April, 2008 in ug/L (unless otherwise shown)								
Sample Location	**Sample Depth (fbtoc)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Lab Results (Blank Cell =Non-Detect)**		
						Conc.	**Qual.**	**RL**
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
OB01A	19	OB1A-19-GW	1,2-Dichloroethane	*	*		U	2
OB01A	19	OB1A-19-GW	Chloroform	*	*		U	2
OB01A	19	OB1A-19-GW	cis-1,2-Dichloroethene	*	*		U	2
OB01A	19	OB1A-19-GW	Ethylbenzene	*	*		U	2
OB01A	19	OB1A-19-GW	m,p-Xylenes	*	*		U	2
OB01A	19	OB1A-19-GW	o-Xylene	*	*		U	2
OB01A	19	OB1A-19-GW	tert-Butyl-methyl ether	*	*		R	2
OB01A	19	OB1A-19-GW	Tetrachloroethene	*	*		U	2
OB01A	19	OB1A-19-GW	Toluene	*	*		U	2
OB01A	19	OB1A-19-GW	trans-1,2-Dichloroethene	*	*		U	2
OB01A	19	OB1A-19-GW	Trichloroethene	*	*		U	2
OB01A	19	OB1A-19-GW	Vinyl Chloride	*	*		U	2
OB01A	19	OB1A-19-GW	Chloride			250 mg/L		
OB01A	19	OB1A-19-GW	Dissolved oxygen			10.64 mg/L		
OB01A	19	OB1A-19-GW	ORP (corrected)			439 mV		
OB01A	19	OB1A-19-GW	pH			5.57 SU		
OB01A	19	OB1A-19-GW	Specific conductance			930 uS/cm		
OB01A	19	OB1A-19-GW	Temperature			9.36 d.C.		
OB01A	19	OB1A-19-GW	Turbidity			4 NTU		
OB07	10	OB7-X-GW	1,2-Dichloroethane				U	2

Table 6-1 Analytical Results for Water Samples Collected April, 2008 in ug/L (unless otherwise shown)								
Sample Location	**Sample Depth (fbtoc)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Lab Results (Blank Cell =Non-Detect)**		
						Conc.	**Qual.**	**RL**
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
OB07	10	OB7-X-GW	Chloroform				U	2
OB07	10	OB7-X-GW	cis-1,2-Dichloroethene				U	2
OB07	10	OB7-X-GW	Ethylbenzene				U	2
OB07	10	OB7-X-GW	m,p-Xylenes				U	2
OB07	10	OB7-X-GW	o-Xylene				U	2
OB07	10	OB7-X-GW	tert-Butyl-methyl ether				R	2
OB07	10	OB7-X-GW	Tetrachloroethene				U	2
OB07	10	OB7-X-GW	Toluene				U	2
OB07	10	OB7-X-GW	trans-1,2-Dichloroethene				U	2
OB07	10	OB7-X-GW	Trichloroethene				U	2
OB07	10	OB7-X-GW	Vinyl Chloride				U	2
OB08	24	OB8-24-GW	1,2-Dichloroethane	*	*		U	2
OB08	24	OB8-24-GW	Chloroform	*	*		U	2
OB08	24	OB8-24-GW	cis-1,2-Dichloroethene	*	*		U	2
OB08	24	OB8-24-GW	Ethylbenzene	*	*		U	2
OB08	24	OB8-24-GW	m,p-Xylenes	*	*		U	2
OB08	24	OB8-24-GW	o-Xylene	*	*		U	2
OB08	24	OB8-24-GW	tert-Butyl-methyl ether	*	*		R	2
OB08	24	OB8-24-GW	Tetrachloroethene	0.9 J	*		U	2
OB08	24	OB8-24-GW	Toluene	0.4 J	*		U	2

Table 6-1 Analytical Results for Water Samples Collected April, 2008 in ug/L (unless otherwise shown)								
Sample Location	**Sample Depth (fbtoc)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Lab Results (Blank Cell =Non-Detect)**		
						Conc.	**Qual.**	**RL**
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
OB08	24	OB8-24-GW	trans-1,2-Dichloroethene	*	*		U	2
OB08	24	OB8-24-GW	Trichloroethene	*	*		U	2
OB08	24	OB8-24-GW	Vinyl Chloride	*	*		U	2
OB08	24	OB8-24-GW	Chloride			80 mg/L		
OB08	24	OB8-24-GW	Dissolved oxygen			7.33 mg/L		
OB08	24	OB8-24-GW	ORP (corrected)			305 mV		
OB08	24	OB8-24-GW	pH			6 SU		
OB08	24	OB8-24-GW	Specific conductance			567 uS/cm		
OB08	24	OB8-24-GW	Temperature			10.64 d.C.		
OB08	24	OB8-24-GW	Turbidity			2.5 NTU		
OB11	12	OB11-12-GW	1,2-Dichloroethane	*	*		U	2
OB11	12	OB11-12-GW	Chloroform	*	*		U	2
OB11	12	OB11-12-GW	cis-1,2-Dichloroethene	*	*		U	2
OB11	12	OB11-12-GW	Ethylbenzene	*	*		U	2
OB11	12	OB11-12-GW	m,p-Xylenes	*	*		U	2
OB11	12	OB11-12-GW	o-Xylene	*	*		U	2
OB11	12	OB11-12-GW	tert-Butyl-methyl ether	*	*		R	2
OB11	12	OB11-12-GW	Tetrachloroethene	*	*		U	2
OB11	12	OB11-12-GW	Toluene	0.2 J	*		U	2

Table 6-1 Analytical Results for Water Samples Collected April, 2008 in ug/L (unless otherwise shown)								
Sample Location	**Sample Depth (fbtoc)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Lab Results (Blank Cell =Non-Detect)**		
						Conc.	**Qual.**	**RL**
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
OB11	12	OB11-12-GW	trans-1,2-Dichloroethene	*	*		U	2
OB11	12	OB11-12-GW	Trichloroethene	*	*		U	2
OB11	12	OB11-12-GW	Vinyl Chloride	*	*		U	2
OB11	12	OB11-12-GW	Chloride			1250 mg/L		
OB11	12	OB11-12-GW	Dissolved oxygen			9.27 mg/L		
OB11	12	OB11-12-GW	ORP (corrected)			384 mV		
OB11	12	OB11-12-GW	pH			6.05 SU		
OB11	12	OB11-12-GW	Specific conductance			198 uS/cm		
OB11	12	OB11-12-GW	Temperature			7.91 d.C.		
OB11	12	OB11-12-GW	Turbidity			32 NTU		
OB12 IDW	Not applicable	OB12-X-IDW	1,2-Dichloroethane				U	2
OB12 IDW	Not applicable	OB12-X-IDW	Chloroform				U	2
OB12 IDW	Not applicable	OB12-X-IDW	cis-1,2-Dichloroethene				U	2
OB12 IDW	Not applicable	OB12-X-IDW	Ethylbenzene				U	2
OB12 IDW	Not applicable	OB12-X-IDW	m,p-Xylenes				U	2
OB12 IDW	Not applicable	OB12-X-IDW	o-Xylene				U	2
OB12 IDW	Not applicable	OB12-X-IDW	tert-Butyl-methyl ether				R	2
OB12 IDW	Not applicable	OB12-X-IDW	Tetrachloroethene				U	2
OB12 IDW	Not applicable	OB12-X-IDW	Toluene				U	2

Table 6-1 Analytical Results for Water Samples Collected April, 2008 in ug/L (unless otherwise shown)								
Sample Location	**Sample Depth (fbtoc)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Lab Results (Blank Cell =Non-Detect)**		
						Conc.	**Qual.**	**RL**
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
OB12 IDW	Not applicable	OB12-X-IDW	trans-1,2-Dichloroethene				U	2
OB12 IDW	Not applicable	OB12-X-IDW	Trichloroethene				U	2
OB12 IDW	Not applicable	OB12-X-IDW	Vinyl Chloride				U	2
OB16	25	OB16-25-GW	1,2-Dichloroethane	*	*		U	2
OB16	25	OB16-25-GW	Chloroform	*	*		U	2
OB16	25	OB16-25-GW	cis-1,2-Dichloroethene	*	*		U	2
OB16	25	OB16-25-GW	Ethylbenzene	*	*		U	2
OB16	25	OB16-25-GW	m,p-Xylenes	*	*		U	2
OB16	25	OB16-25-GW	o-Xylene	*	*		U	2
OB16	25	OB16-25-GW	tert-Butyl-methyl ether	*	*		R	2
OB16	25	OB16-25-GW	Tetrachloroethene	*	*		U	2
OB16	25	OB16-25-GW	Toluene	0.1 J	*		U	2
OB16	25	OB16-25-GW	trans-1,2-Dichloroethene	*	*		U	2
OB16	25	OB16-25-GW	Trichloroethene	*	*		U	2
OB16	25	OB16-25-GW	Vinyl Chloride	*	*		U	2
OB16	25	OB16-25-GW	Chloride			150 mg/L		
OB16	25	OB16-25-GW	Dissolved oxygen			8.79 mg/L		
OB16	25	OB16-25-GW	ORP (corrected)			266 mV		
OB16	25	OB16-25-GW	pH			6.1 SU		

Table 6-1 Analytical Results for Water Samples Collected April, 2008 in ug/L (unless otherwise shown)								
Sample Location	**Sample Depth (fbtoc)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Lab Results (Blank Cell =Non-Detect)**		
						Conc.	**Qual.**	**RL**
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
OB16	25	OB16-25-GW	Specific conductance			668 uS/cm		
OB16	25	OB16-25-GW	Temperature			12.31 d.C.		
OB16	25	OB16-25-GW	Turbidity			3.5 NTU		
OB17	25	OB17-25-GW	1,2-Dichloroethane	*	*		U	2
OB17	25	OB17-25-GW	Chloroform	*	*		U	2
OB17	25	OB17-25-GW	cis-1,2-Dichloroethene	*	*		U	2
OB17	25	OB17-25-GW	Ethylbenzene	*	*		U	2
OB17	25	OB17-25-GW	m,p-Xylenes	*	*		U	2
OB17	25	OB17-25-GW	o-Xylene	*	*		U	2
OB17	25	OB17-25-GW	tert-Butyl-methyl ether	*	*		R	2
OB17	25	OB17-25-GW	Tetrachloroethene	*	*		U	2
OB17	25	OB17-25-GW	Toluene	0.4 J	*		U	2
OB17	25	OB17-25-GW	trans-1,2-Dichloroethene	*	*		U	2
OB17	25	OB17-25-GW	Trichloroethene	1.0 J	1.4	0.7	J	
OB17	25	OB17-25-GW	Vinyl Chloride	*	*		U	2
OB17	25	OB17-25-GW	Chloride			50 mg/L		
OB17	25	OB17-25-GW	Dissolved oxygen			5.58 mg/L		
OB17	25	OB17-25-GW	ORP (corrected)			222 mV		
OB17	25	OB17-25-GW	pH			6.6 SU		

Table 6-1 Analytical Results for Water Samples Collected April, 2008 in ug/L (unless otherwise shown)								
Sample Location	**Sample Depth (fbtoc)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Lab Results (Blank Cell =Non-Detect)**		
						Conc.	**Qual.**	**RL**
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
OB17	25	OB17-25-GW	Specific conductance			2203 uS/cm		
OB17	25	OB17-25-GW	Temperature			9.31 d.C.		
OB17	25	OB17-25-GW	Turbidity			800 NTU		
OB19	24	OB19-24-GW	1,2-Dichloroethane	*	*		U	2
OB19	24	OB19-24-GW	Chloroform	*	*		U	2
OB19	24	OB19-24-GW	cis-1,2-Dichloroethene	*	*		U	2
OB19	24	OB19-24-GW	Ethylbenzene	*	*		U	2
OB19	24	OB19-24-GW	m,p-Xylenes	*	*		U	2
OB19	24	OB19-24-GW	o-Xylene	*	*		U	2
OB19	24	OB19-24-GW	tert-Butyl-methyl ether	*	*		R	2
OB19	24	OB19-24-GW	Tetrachloroethene	*	*		U	2
OB19	24	OB19-24-GW	Toluene	0.2 J	*		U	2
OB19	24	OB19-24-GW	trans-1,2-Dichloroethene	*	*		U	2
OB19	24	OB19-24-GW	Trichloroethene	1.4	1.7	0.91	J	
OB19	24	OB19-24-GW	Vinyl Chloride	*	*		U	2
OB19	24	OB19-24-GW	Chloride			2000 mg/L		
OB19	24	OB19-24-GW	Dissolved oxygen			9.11 mg/L		
OB19	24	OB19-24-GW	ORP (corrected)			545 mV		
OB19	24	OB19-24-GW	pH			6.03 SU		

Table 6-1 Analytical Results for Water Samples Collected April, 2008 in ug/L (unless otherwise shown)								
Sample Location	**Sample Depth (fbtoc)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Lab Results (Blank Cell =Non-Detect)**		
						Conc.	**Qual.**	**RL**
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
OB19	24	OB19-24-GW	Specific conductance			2427 uS/cm		
OB19	24	OB19-24-GW	Temperature			10.73 d.C.		
OB19	24	OB19-24-GW	Turbidity			65 NTU		
OB20	24	OB20-24-GW	1,2-Dichloroethane	*	*		U	2
OB20	24	OB20-24-GW	Chloroform	*	*		U	2
OB20	24	OB20-24-GW	cis-1,2-Dichloroethene	*	*		U	2
OB20	24	OB20-24-GW	Ethylbenzene	*	*		U	2
OB20	24	OB20-24-GW	m,p-Xylenes	*	*		U	2
OB20	24	OB20-24-GW	o-Xylene	*	*		U	2
OB20	24	OB20-24-GW	tert-Butyl-methyl ether	*	*		R	2
OB20	24	OB20-24-GW	Tetrachloroethene	*	*		U	2
OB20	24	OB20-24-GW	Toluene	0.1 J	*		U	2
OB20	24	OB20-24-GW	trans-1,2-Dichloroethene	*	*		U	2
OB20	24	OB20-24-GW	Trichloroethene	0.3 J	*		U	2
OB20	24	OB20-24-GW	Vinyl Chloride	*	*		U	2
OB20	24	OB20-24-GW	Chloride			1250 mg/L		
OB20	24	OB20-24-GW	Dissolved oxygen			9.48 mg/L		
OB20	24	OB20-24-GW	ORP (corrected)			365 mV		
OB20	24	OB20-24-GW	pH			6.11 SU		

Table 6-1 Analytical Results for Water Samples Collected April, 2008 in ug/L (unless otherwise shown)								
Sample Location	**Sample Depth (fbtoc)**	**Field Lab Sample Name**	**Parameter**	**ESS Results**	**ME DEP HETL Results**	**Field Lab Results (Blank Cell =Non-Detect)**		
						Conc.	**Qual.**	**RL**
Qualifier Definitions: Blank cell = no qualification, U = compound not detected, UJ= compound not detected at estimated ESS and ME DEP HETL Quality Assurance (QA) data from USACE 2008 Chemical Quality Assurance Report (For QA data, only detections quantified, and * indicates sample was analyzed but the compound was not detected)								
OB20	24	OB20-24-GW	Specific conductance			827 uS/cm		
OB20	24	OB20-24-GW	Temperature			10.33 d.C.		
OB20	24	OB20-24-GW	Turbidity			32 NTU		

TP01-1			
PARAMETER (METHOD)	**ME Residential Guideline[1]**	**GBTP01-1-10 ft bgs**	
VOCs (8260)	**µg/kg**	**µg/kg**	**Q**
Ethylbenzene		340	
m&p-Xylenes* total xylene #	10,000,000	1700	
o-Xylene* total xylene #	10,000,000	470	
n-Propylbenzene	--	420	
1,3,5-Trimethylbenzene	--	2600	
1,2,4-Trimethylbenzene	--	4600	
sec-Butylbenzene	--	450	
p-Isopropyltoluene	--	610	
Naphthalene	245,000	2400	
SVOC (8270)	--	**µg/kg**	**Q**
2-Methylnaphthalene	--	5600	D
Acenaphthene	--	250	J
Dibenzofuran	--	250	J
Fluorene	--	700	
N-nitrosodiphenylamine	--	1100	
Phenanthrene	--	1800	
Pyrene	--	280	J+
Chrysene	--	18	J
TPH (8015M)	--	**mg/kg**	**Q**
Diesel Fuel	--	1700	
TAL Metals (6010B)	**mg/kg**	**mg/kg**	**Q**
Aluminum	--	19,400	
Antimony	--	1.7	J-
Arsenic	10	11.8	
Barium	10,000	53.6	
Beryllium	4	0.58	
Calcium	--	1020	
Chromium	--	32.5	
Cobalt	--	12.7	
Copper	650	20.2	
Iron	--	29500	
Lead	375	10.9	
Magnesium	--	6420	
Manganese	--	671	
Nickel	3,800	37.4	
Potassium	--	2510	
Sodium	--	204	B
Vanadium	--	27	
Zinc	1,500	50.7	
Hexavalent Chromium (3060A/7196A)	**mg/kg**	**mg/kg**	**Q**
Cr^{6}	950	0.33	B

TP01-2					
PARAMETER (METHOD)	**ME Residential Guideline[1]**	**GBTP01-2-10 ft bgs**		**GBTP01-2-10 ft bgs DUP**	
VOCs (8260)	**µg/kg**	**µg/kg**	**Q**	**µg/kg**	**Q**
Ethylbenzene	1,670,000	150	J	440	J
m&p-Xylenes* total xylene #	10,000,000	280	J	750	J
n-Propylbenzene	--	330	J	810	J
1,3,5-Trimethylbenzene	--	1300	J	2900	J
1,2,4-Trimethylbenzene	--	890	J	2000	J
Naphthalene	245,000	1300	J	2600	J
SVOC (8270)	--	**µg/kg**	**Q**	**µg/kg**	**Q**
2-Methylnaphthalene	--	210	J	200	J
TPH (8015M)	--	**µg/kg**	**Q**	**µg/kg**	**Q**
Diesel Fuel	--	10		9.7	
Pesticides (8081)	**µg/kg**	**µg/kg**	**Q**	**µg/kg**	**Q**
4,4'-DDE	--	21		14	
4,4'-DDD	--	9		6.9	
4,4'-DDT	50	34		21	
TAL Metals (6010B)	**mg/kg**	**mg/kg**	**Q**	**mg/kg**	**Q**
Aluminum	--	18,600		17,300	
Antimony	--	1.7	J-	0.88	J-
Arsenic	10	11.3		11.7	
Barium	10,000	42.5		44.1	
Beryllium	4	0.52		0.51	
Calcium	--	2200		2320	
Chromium	--	32.4		30.7	
Cobalt	--	11.8		12.1	
Copper	650	18.4		19.5	
Iron	--	27300		27000	
Lead	375	12.5		12.6	
Magnesium	--	7420		6100	
Manganese	--	733		822	
Nickel	3800	37.6		36.6	
Potassium	--	1950		2050	
Sodium	--	305	B	294	B
Vanadium	--	25.7		25.1	
Zinc	1500	50.9		51.4	
Hexavalent Chromium (3060A/7196A)	--	**mg/kg**	**Q**	**mg/kg**	**Q**
Cr^{6}	--	0.34	B	0.89	U

TP02-2			
PARAMETER (METHOD)	**ME Residential Guideline[1]**	**GBTP02-2-10 ft bgs**	
TAL Metals (6010B)	**mg/kg**	**mg/kg**	**Q**
Aluminum	--	17,600	
Antimony	--	1.4	J-
Arsenic	10	12	
Barium	10,000	46.6	
Beryllium	4	0.51	
Calcium	--	1460	
Chromium	--	33.8	
Cobalt	--	12.3	
Copper	650	18.9	
Iron	--	28400	
Lead	375	12.2	
Magnesium	--	6260	
Manganese	--	468	
Nickel	3,800	35.9	
Potassium	--	2330	
Sodium	--	335	B
Vanadium	--	26.5	
Zinc	1500	49.5	

TP03-1			
PARAMETER (METHOD)	**ME Residential Guideline[1]**	**GBTP03-1-6 ft bgs**	
TAL Metals (6010B)	**mg/kg**	**mg/kg**	**Q**
Aluminum	--	20,200	
Antimony	--	1.5	J-
Arsenic	10	13.3	
Barium	10,000	56.8	
Beryllium	4	0.6	
Calcium	--	431	
Chromium	--	32.7	
Cobalt	--	13.4	
Copper	650	22.3	
Iron	--	28400	
Lead	375	11.3	
Magnesium	--	6620	
Manganese	--	706	
Nickel	3,800	39.7	
Potassium	--	2240	
Sodium	--	297	B
Vanadium	--	27.5	
Zinc	1500	54.9	

TP03-2									
PARAMETER (METHOD)	**ME Residential Guideline[1]**	**GBTP03-2-6 ft bgs**		**GBTP03-2-17 ft bgs Soil**		**MEG[2]**	**MEG[2]**	**GBTP03-2-17 ft bgs Water**	
VOCs (8260)	**--**	**--**		**--**		**µg/L**	**µg/L**	**µg/L**	**Q**
Trichloroethene	--	--		--		32	32	1.3	
TAL Metals (6010B)	**mg/kg**	**mg/kg**	**Q**	**mg/kg**	**Q**	**µg/L**	**µg/L**	--	
Aluminum	--	18,900		15,800	J	1,430	1,430	--	
Antimony	--	1.5	J-	1.7	J-	3	3	--	
Arsenic	10	14.8		10.8	J	10	10	--	
Barium	10,000	55.9		58.4	J	2,000	2,000	--	
Beryllium	4	0.58		0.61		--	--	--	
Calcium	--	480		854		--	--	--	
Chromium	--	32.2		30.6		40	40	--	
Cobalt	--	14.6		15.8	J	--	--	--	
Copper	650	21.7		33.3	J	1,300	1,300	--	
Iron	--	28900		29800		--	--	--	
Lead	375	11.1		22.3	J	10	10	--	
Magnesium	--	6260		6100		--	--	--	
Manganese	--	752		893	J	500	500	--	
Nickel	3,800	38		40.3	J	140	140	--	
Potassium	--	2250		2000	J	--	--	--	
Sodium	--	378	B	884	J	20,000	20,000	--	
Vanadium	--	26.8		26.8		--	--	--	
Zinc	1500	54.8		63.5		2,000	2,000	--	

TP04-2						
PARAMETER (METHOD)	**ME Residential Guideline[1]**	**GBTP04-2-6 ft bgs**		**MEG[2]**	**GBTP04-2-17.5 ft bgs Water**	
VOCs (8260)	**µg/kg**	**µg/kg**	**Q**	**µg/L**	**µg/L**	**Q**
Trichloroethene	--	--		32	1.3	
TAL Metals (6010B)	**mg/kg**	**mg/kg**	**Q**	**µg/L**	--	
Aluminum	--	21,700		1,430	--	
Antimony	--	1.2	J-	3	--	
Arsenic	10	12.8		10	--	
Barium	10,000	60.4		2,000	--	
Beryllium	4	0.65		--	--	
Calcium	--	398	B	--	--	
Chromium	--	36.1		40	--	
Cobalt	--	13.2		--	--	
Copper	650	22.7		1,300	--	
Iron	--	26900		--	--	
Lead	375	11.3		10	--	
Magnesium	--	6630		--	--	
Manganese	--	619		500	--	
Nickel	3,800	37.9		140	--	
Potassium	--	2190		--	--	
Sodium	--	359	B	20,000	--	
Vanadium	--	29.3		--	--	
Zinc	1500	52.3		2,000	--	

Sample Location[2]				GBTP01-1-2		GBTP01-1-6		GBTP01-1-10		GBTP01-2-2		GBTP01-2-6		GBTP01-2-10		GBTP01-2-10-DUP		GBTP02-1-2		GBTP02-1-6		GBTP02-1-10		GBTP02-2-2		GBTP02-2-6		GBTP02-2-10
PARAMETER (METHOD)	ME Residential Guideline[1]	ME Trespasser Guideline[1]	ME Worker Guideline[1]																									
VOCs (8260)	µg/kg	µg/kg	µg/kg	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg
Dichlorodifluoromethane	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Chloromethane	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Vinyl chloride	40	800	100	3.9	U	4.8	U	50	U	4.6	U	3.9	U	47	U	41	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Bromomethane	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Chloroethane	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Trichlorofluoromethane		--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,1-Dichloroethene	200	3,000	300	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Acrolein	--	--	--	160	U	190	U	4000	U	180	U	150	U	3800	U	3300	U	210	U	180	U	190	U	180	U	220	U	*
Carbon disulfide	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Acetone	475,000	3,330,000	635,000	**140**		**100**		400	U	**110**		41	U	380	U	330	U	**84**		**56**		**32**		**88**		**130**		*
Iodomethane	--	--	--	7.8	U	9.6	U	400	U	9.2	U	7.7	U	380	U	330	U	10	U	8.8	U	9.7	U	9.2	U	11	U	*
Methylene chloride	13,000	275,000	28,000	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Trichlorotrifluoroethane	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
trans-1,2-Dichloroethene	135,000	940,000	180,000	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Methyl-tert-butyl-ether	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,1-Dichloroethane	645,000	4,520,000	860,000	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	42	U	4.4	U	4.8	U	4.6	U	5.5	U	*
2,2-Dichloropropane	--	--	--	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
cis-1,2-Dichloroethene	--	--	--	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
2-Butanone	--	--	--	**25**		**11**		200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	**8.5**		**16**		*
Acrylonitrile	--	--	--	31	U	39	U	810	U	37	U	31	U	750	U	660	U	5.2	U	35	U	39	U	37	U	44	U	*
Bromochloromethane	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Chloroform	--	--	--	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,1,1-Trichloroethane	260,000	1,840,000	350,000	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Vinyl acetate	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,1-Dichloropropene	--	--	--	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Carbon tetrachloride	--	--	--	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Benzene	5,000	105,000	10,000	3.9	U	4.8	U	50	U	4.6	U	3.9	U	47	U	41	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,2-Dichloroethane	--	--	--	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Propionitrile	--	--	--	31	U	39	U	1600	U	37	U	31	U	1500	U	1300	U	42	U	35	U	39	U	37	U	44	U	*
Trichloroethene	19,000	400,000	40,000	3.9	U	4.8	U	50	U	4.6	U	3.9	U	47	U	41	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,2-Dichloropropane	--	--	--	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Tetrahydrofuran	--	--	--	3.9	U	4.8	U	400	U	4.6	U	3.9	U	380	U	330	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Dibromomethane	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Bromodichloromethane	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
cis-1,3-Dichloropropene	--	--	--	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
4-Methyl-2-pentanone	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Toluene	2,390,000	10,000,000	3,190,000	3.9	U	4.8	U	200	UJ	4.6	U	3.9	U	47	U	41	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
trans-1,3-Dichloropropene	--			3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,1,2-Trichloroethane	260,000	70,000	7,000	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Tetrachloroethene	3,000	65,000	7,000	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,3-Dichloropropane	--	--	--	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
2-Hexanone	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Dibromochloromethane	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,2-Dibromoethane	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
2-Chloroethylvinylether	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Chlorobenzene	310,000	2,180,000	415,000	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,1,1,2-Tetrachloroethane	660,000	2,400,000	2,140	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Ethylbenzene	1,670,000	10,000,000	2,210,000	3.9	U	4.8	U	**340**		4.6	U	3.9	U	**150**	**J**	**440**	**J**	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
m&p-Xylenes[3]	10,000,000	10,000,000	10,000,000	7.8	U	9.6	U	**1700**		9.2	U	7.7	U	**280**	**J**	**750**	**J**	10	U	8.8	U	9.7	U	9.2	U	11	U	*
o-Xylene[3]	10,000,000	10,000,000	10,000,000	3.9	U	4.8	U	**470**		4.6	U	3.9	U	47	U	41	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Styrene	--	--	--	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Bromoform	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Isopropylbenzene	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Bromobenzene	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,1,2,2-Tetrachloroethane	--	--	--	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,2,3-Trichloropropane	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
n-Propylbenzene	--	--	--	3.9	U	4.8	U	**420**		4.6	U	3.9	U	**330**	**J**	**810**	**J**	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
2-Chlorotoluene	--	--	--	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,3,5-Trimethylbenzene	--	--	--	3.9	U	4.8	U	**2600**		4.6	U	3.9	U	**1300**	**J**	**2900**	**J**	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
4-Chlorotoluene	--	--	--	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
tert-Butylbenzene	--	--	--	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,2,4-Trimethylbenzene	--	--	--	3.9	U	4.8	U	**4600**		4.6	U	3.9	U	**890**	**J**	**2000**	**J**	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
sec-Butylbenzene	--	--	--	3.9	U	4.8	U	**450**		4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,3-Dichlorobenzene	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
p-Isopropyltoluene	--	--	--	3.9	U	4.8	U	**610**		4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,4-Dichlorobenzene	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
trans-1,4-Dichloro-2-butene	--	--	--	7.8	U	9.6	U	400	U	9.2	U	7.7	U	380	U	330	U	10	U	8.8	U	9.7	U	9.2	U	11	U	*
n-Butylbenzene	--	--	--	3.9	U	4.8	U	100	U	4.6	U	3.9	U	94	U	82	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,2-Dichlorobenzene	2,670,000	10,000,000	3,560,000	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,2-Dibromo-3-chloropropane	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,2,4-Trichlorobenzene	540,000	3,800,000	720,000	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Hexachlorobutadiene	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Naphthalene	245,000	1,710,000	325,000	3.9	U	4.8	U	**2400**		4.6	U	3.9	U	**1300**	**J**	**2600**	**J**	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
1,2,3-Trichlorobenzene	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
3-Chloropropene	--	--	--	7.8	U	9.6	U	400	U	9.2	U	7.7	U	380	U	330	U	10	U	8.8	U	9.7	U	9.2	U	11	U	*
2-Chloro-1,3-butadiene	--	--	--	3.9	U	4.8	U	200	U	4.6	U	3.9	U	190	U	160	U	5.2	U	4.4	U	4.8	U	4.6	U	5.5	U	*
Methacrylonitrile	--	--	--	7.8	U	9.6	U	400	U	9.2	U	7.7	U	380	U	330	U	10	U	8.8	U	9.7	U	9.2	U	11	U	*
Isobutyl alcohol	--	--	--	310	U	390	U	20000	U	370	U	310	U	19000	U	16000	U	420	U	350	U	390	U	370	U	440	U	*
Methylmethacrylate	--	--	--	7.8	U	9.6	U	400	U	9.2	U	7.7	U	380	U	330	U	10	U	8.8	U	9.7	U	9.2	U	11	U	*
Ethylmethacrylate	--	--	--	7.8	U	9.6	U	400	U	9.2	U	7.7	U	380	U	330	U	10	U	8.8	U	9.7	U	9.2	U	11	U	*

[1] = Table 4 - Remedial Action Guidelines for Contaminated Soils, Division of Remediation Guidance, USEPA, May 1996, updated May 20, 1997
[2] = Refer to Table 1 for test trench sample designations
[3] = Standard is based on total xylenes
-- No ME guideline value
*** = Sample listed on the COC and VOC analysis is indicated, however the lab did not receive the VOC vials in the shipment (per phone call with STL 6-30-06)**
J = Estimated value greater than the method detection limit and lower than the reporting limit
Q = Qualifier
VOCs = Volatile Organic Compounds
U = Not detected above the laboratory's reporting limit
UJ = Reporting limit is estimated based on data evaluation
J- = Result potentially biased low based on data evaluation
J+ = Result potentially biased high based on data evaluation
A bolded value indicates a compound was detected at the reported concentration.

Sample Location[2]				GBTP03-1-6		GBTP03-1-15.5		GBTP03-2-6		GBTP03-2-17		GBTP04-1-6		GBTP04-1-17.5		GBTP04-2-6		GBTP04-2-6-DUP		GBTP04-2-17.5		Cesspool soil	
PARAMETER (METHOD)	ME Residential Guideline[1]	ME Trespasser Guideline[1]	ME Worker Guideline[1]																				
VOCs (8260)	µg/kg	µg/kg	µg/kg	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q
Dichlorodifluoromethane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Chloromethane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Vinyl chloride	40	800	100	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Bromomethane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Chloroethane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Trichlorofluoromethane		--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,1-Dichloroethene	200	3,000	300	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Acrolein	--	--	--	180	U	160	U	200	U	180	U	210	U	200	U	170	U	210	U	170	U	200	U
Carbon disulfide	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Acetone	475,000	3,330,000	635,000	**66**		**11**		**18**		**16**		**89**		**63**		**98**		**94**		**26**		**20**	
Iodomethane	--	--	--	9.2	U	8.1	U	9.9	U	9.1	U	10	U	10	U	8.5	U	10	U	8.5	U	9.8	U
Methylene chloride	13,000	275,000	28,000	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Trichlorotrifluoroethane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
trans-1,2-Dichloroethene	135,000	940,000	180,000	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Methyl-tert-butyl-ether	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,1-Dichloroethane	645,000	4,520,000	860,000	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
2,2-Dichloropropane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
cis-1,2-Dichloroethene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
2-Butanone	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Acrylonitrile	--	--	--	37	U	32	U	40	U	36	U	42	U	41	U	34	U	42	U	34	U	39	U
Bromochloromethane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Chloroform	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,1,1-Trichloroethane	260,000	1,840,000	350,000	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Vinyl acetaqte	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,1-Dichloropropene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Carbon tetrachloride	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Benzene	5,000	105,000	10,000	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,2-Dichloroethane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Propionitrile	--	--	--	37	U	32	U	40	U	36	U	42	U	41	U	34	U	42	U	34	U	39	U
Trichloroethene	19,000	400,000	40,000	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,2-Dichloropropane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Tetrahydrofuran	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Dibromomethane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Bromodichloromethane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
cis-1,3-Dichloropropene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
4-Methyl-2-pentanone	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Toluene	2,390,000	10,000,000	3,190,000	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
trans-1,3-Dichloropropene	--			4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,1,2-Trichloroethane	260,000	70,000	7,000	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Tetrachloroethene	3,000	65,000	7,000	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,3-Dichloropropane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
2-Hexanone	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Dibromochloromethane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,2-Dibromoethane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
2-Chloroethylvinylether	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Chlorobenzene	310,000	2,180,000	415,000	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,1,1,2-Tetrachloroethane	660,000	2,400,000	2,140	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Ethylbenzene	1,670,000	10,000,000	2,210,000	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
m&p-Xylenes[3]	10,000,000	10,000,000	10,000,000	9.2	U	8.1	U	9.9	U	9.1	U	10	U	10	U	8.5	U	10	U	8.5	U	9.8	U
o-Xylene[3]	10,000,000	10,000,000	10,000,000	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Styrene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Bromoform	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Isopropylbenzene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Bromobenzene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,1,2,2-Tetrachloroethane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,2,3-Trichloropropane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
n-Propylbenzene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
2-Chlorotoluene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,3,5-Trimethylbenzene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
4-Chlorotoluene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
tert-Butylbenzene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,2,4-Trimethylbenzene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
sec-Butylbenzene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,3-Dichlorobenzene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	**8.3**	
p-Isopropyltoluene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	**5.6**	
1,4-Dichlorobenzene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	**7.9**	
trans-1,4-Dichloro-2-butene	--	--	--	9.2	U	8.1	U	9.9	U	9.1	U	10	U	10	U	8.5	U	10	U	8.5	U	9.8	U
n-Butylbenzene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,2 Dichlorobenzene	2,670,000	10,000,000	3,560,000	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,2-Dibromo-3-chloropropane	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,2,4-Trichlorobenzene	540,000	3,800,000	720,000	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Hexachlorobutadiene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Naphthalene	245,000	1,710,000	325,000	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
1,2,3-Trichlorobenzene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
3-Chloropropene	--	--	--	9.2	U	8.1	U	9.9	U	9.1	U	10	U	10	U	8.5	U	10	U	8.5	U	9.8	U
2-Chloro-1,3-butadiene	--	--	--	4.6	U	4.1	U	4.9	U	4.5	U	5.2	U	5.1	U	4.2	U	5.2	U	4.3	U	4.9	U
Methacrylonitrile	--	--	--	9.2	U	8.1	U	9.9	U	9.1	U	10	U	10	U	8.5	U	10	U	8.5	U	9.8	U
Isobutyl alcohol	--	--	--	370	U	320	U	400	U	360	U	420	U	410	U	340	U	420	U	340	U	390	U
Methylmethacrylate	--	--	--	9.2	U	8.1	U	9.9	U	9.1	U	10	U	10	U	8.5	U	10	U	8.5	U	9.8	U
Ethylmethacrylate	--	--	--	9.2	U	8.1	U	9.9	U	9.1	U	10	U	10	U	8.5	U	10	U	8.5	U	9.8	U

[1] = Table 4 - Remedial Action Guidelines for Contaminated Soils, Division of Remediation Guidance, MEDEP, May 1996, updated May 20, 1997.
[2] = Maximum Exposure Guidelines (MEG) for Drinking Water, Environmental and Occupational Health Program, Center for Disease Control and Prevention, August 7, 2006.
[3] = Standard is based on total xylenes
-- No ME guideline value
J = Estimated value greater than the method detection limit and lower than the reporting limit
Q = Qualifier
VOCs = Volatile Organic Compounds
U = Not detected above the laboratory's reporting limit
UJ = Reporting limit is estimated based on data evaluation
J- = Result potentially biased low based on data evaluation
J+ = Result potentially biased high based on data evaluation
A bolded value indicates a compound was detected at the reported concentration.

Sample Location[2]		GBTP03-2-17		GBTP04-2-17.5		Cesspool water	
PARAMETER (METHOD)	MEG[1]						
VOCs (8260)	µg/L	µg/L	Q	µg/L	Q	µg/L	Q
Dichlorodifluoromethane	1,400	1.0	U	1.0	U	1.0	U
Chloromethane	3	1.0	U	1.0	U	1.0	U
Vinyl chloride	0.2	1.0	U	1.0	U	1.0	U
Bromomethane	10	1.0	U	1.0	U	1.0	U
Chloroethane	--	1.0	U	1.0	U	1.0	U
Trichlorofluoromethane	2,100	1.0	U	1.0	U	1.0	U
1,1-Dichloroethene	1	1.0	U	1.0	U	1.0	U
Acrolein	--	100	U	100	U	100	U
Carbon disulfide	600	5.0	U	5.0	U	1.0	U
Acetone	6,300	5.0	U	5.0	U	2.5	U
Iodomethane	--	2.5	U	2.5	U	1.0	U
Methylene chloride	47	1.0	U	1.0	U	5.0	U
Trichlorotrifluoroethane	--	1.0	U	1.0	U	**5.2**	
trans-1,2-Dichloroethene	140	1.0	U	1.0	U	1.0	U
Methyl-tert-butyl-ether	35	1.0	U	1.0	U	1.0	U
1,1-Dichloroethane	70	1.0	U	1.0	U	20	U
2,2-Dichloropropane	--	1.0	U	1.0	U	1.0	U
cis-1,2-Dichloroethene	70	1.0	U	1.0	U	1.0	U
2-Butanone	--	5.0	U	5.0	U	5.0	U
Acrylonitrile	0.6	20	U	20	U	20	U
Bromochloromethane	10	1.0	U	1.0	U	1.0	U
Chloroform	70	1.0	U	1.0	U	5.0	U
1,1,1-Trichloroethane	200	1.0	U	1.0	U	1.0	U
Vinyl acetate	--	5.0	U	5.0	U	1.0	U
1,1-Dichloropropene	--	1.0	U	1.0	U	1.0	U
Carbon tetrachloride	3	1.0	U	1.0	U	1.0	U
Benzene	6	1.0	U	1.0	U	1.0	U
1,2-Dichloroethane	4	1.0	U	1.0	U	1.0	U
Propionitrile	--	20	U	20	U	20	U
Trichloroethene	32	**1.3**		**1.3**		1.0	U
1,2-Dichloropropane	5	1.0	U	1.0	U	1.0	U
Tetrahydrofuran	70	5.0	U	5.0	U	5.0	U
Dibromomethane	--	1.0	U	1.0	U	1.0	U
Bromodichloromethane	6	1.0	U	1.0	U	1.0	U
cis-1,3-Dichloropropene**1,3-Dichloropropene	4	1.0	U	1.0	U	1.0	U
4-Methyl-2-pentanone	--	5.0	U	5.0	U	5.0	U
Toluene	1,400	1.0	U	1.0	U	9.7	
trans-1,3-Dichloropropene**1,3-Dichloropropene	4	1.0	U	1.0	U	1.0	U
1,1,2-Trichloroethane	6	1.0	U	1.0	U	1.0	U
Tetrachloroethene	7	1.0	U	1.0	U	1.0	U
1,3-Dichloropropane	--	1.0	U	1.0	U	1.0	U
2-Hexanone	--	5.0	U	5.0	U	5.0	U
Dibromochloromethane	4	1.0	U	1.0	U	1.0	U
1,2-Dibromoethane	--	1.0	U	1.0	U	1.0	U
2-Chloroethylvinylether	--	2.0	U	2.0	U	2.0	U
Chlorobenzene	--	1.0	U	1.0	U	1.0	U
1,1,1,2-Tetrachloroethane	13	1.0	U	1.0	U	1.0	U
Ethylbenzene	70	1.0	U	1.0	U	1.0	U
m&p-Xylenes[3]	1,400	2.0	U	1.0	U	**4.6**	
o-Xylene[3]	1,400	1.0	U	1.0	U	**2.3**	
Styrene	140	1.0	U	1.0	U	1.0	U
Bromoform	44	1.0	U	1.0	U	1.0	U
Isopropylbenzene	--	1.0	U	1.0	U	1.0	U
Bromobenzene	--	1.0	U	1.0	U	1.0	U
1,1,2,2-Tetrachloroethane	1.8	1.0	U	1.0	U	1.0	U
1,2,3-Trichloropropane	0.05	1.0	U	1.0	U	1.0	U
n-Propylbenzene	--	1.0	U	1.0	U	1.0	U
2-Chlorotoluene	140	1.0	U	1.0	U	1.0	U
1,3,5-Trimethylbenzene	--	1.0	U	1.0	U	**3.5**	
4-Chlorotoluene	140	1.0	U	1.0	U	1.0	U
tert-Butylbenzene	--	1.0	U	1.0	U	1.0	U
1,2,4-Trimethylbenzene	--	1.0	U	1.0	U	1.0	U
sec-Butylbenzene	--	1.0	U	1.0	U	1.0	U
1,3-Dichlorobenzene	60	1.0	U	1.0	U	1.0	U
p-Isopropyltoluene	70	1.0	U	1.0	U	**2.4**	
1,4-Dichlorobenzene	21	1.0	U	1.0	U	**18**	
trans-1,4-Dichloro-2-butene	--	2.5	U	2.5	U	2.5	U
n-Butylbenzene	--	1.0	U	1.0	U	1.0	U
1,2-Dichlorobenzene	63	1.0	U	1.0	U	1.0	U
1,2-Dibromo-3-chloropropane	0.25	1.0	U	1.0	U	1.0	U
1,2,4-Trichlorobenzene	70	1.0	U	1.0	U	1.0	U
Hexachlorobutadiene	4	1.0	U	1.0	U	1.0	U
Naphthalene	14	1.0	U	1.0	U	**3.2**	
1,2,3-Trichlorobenzene	--	1.0	U	1.0	U	1.0	U
3-Chloropropene	--	2.5	U	2.5	U	2.5	U
2-Chloro-1,3-butadiene	--	1.0	U	1.0	U	1.0	U
Methacrylonitrile	--	2.5	U	2.5	U	2.5	U
Isobutyl alcohol	--	100	U	100	U	100	U
Methylmethacrylate	--	2.5	U	2.5	U	2.5	U
Ethylmethacrylate	--	2.5	U	2.5	U	2.5	U

[1] = Maximum Exposure Guidelines (MEG) for Drinking Water, Environmental and Occupational Health Program, Center for Disease Control and Prevention, August 7, 20

[2]= Refer to Table 1 for test trench sample designations

[3] = Standard is based on total xylenes

[4] = Standard based on 1,3-dichloropropene

-- No ME guideline value

J = Estimated value greater than the method detection limit and lower than the reporting limit

Q = Qualifier

VOCs = Volatile Organic Compounds

U = Not detected above the laboratory's reporting limit

UJ = Reporting limit is estimated based on data evaluation

J- = Result potentially biased low based on data evaluation

J+ = Result potentially biased high based on data evaluation

A bolded value indicates a compound was detected at the reported concentration.

Sample Location[2]				GBTP01-1-10		GBTP01-2-10		GBTP01-2-10-DUP		GBTP02-2-10	
PARAMETER (METHOD)	ME Residential Guideline[1]	ME Trespasser Guideline[1]	ME Worker Guideline[1]								
SVOC (8270)	µg/kg	µg/kg	µg/kg	µg/kg	Q	µg/kg	Q	µg/kg	Q	µg/kg	Q
Pyridine	-	-	-	380	U	370	U	370	U	370	U
N-Nitrosodimethylamine	-	-	-	380	U	370	U	370	U	370	U
Aniline	-	-	-	940	U	930	U	930	U	930	U
Phenol	-	-	-	380	U	370	U	370	U	370	U
bis(2-Chloroethyl)Ether	-	-	-	380	U	370	U	370	U	370	U
2-Chlorophenol	-	-	-	380	U	370	U	370	U	370	U
1,3-Dichlorobenzene	-	-	-	380	U	370	U	370	U	370	U
1,4-Dichlorobenzene	-	-	-	380	U	370	U	370	U	370	U
Benzyl Alcohol	-	-	-	380	U	370	U	370	U	370	U
1,2-Dichlorobenzene	-	-	-	380	U	370	U	370	U	370	U
2,2'-oxybis(1-Chloropropane)	-	-	-	380	U	370	U	370	U	370	U
2-Methylphenol	-	-	-	380	U	370	U	370	U	370	U
Hexachloroethane	-	-	-	380	U	370	U	370	U	370	U
N-Nitroso-di-n-propylamine	-	-	-	380	U	370	U	370	U	370	U
4-Methylphenol	-	-	-	380	U	370	U	370	U	370	U
Nitrobenzene	-	-	-	380	U	370	U	370	U	370	U
Isophorone	-	-	-	380	U	370	U	370	U	370	U
2-Nitrophenol	-	-	-	380	U	370	U	370	U	370	U
2,4-Dimethylphenol	-	-	-	380	U	370	U	370	U	370	U
bis(2-Chloroethoxy)methane	-	-	-	380	U	370	U	370	U	370	U
2,4-Dichlorophenol	16,000	112,000	22,000	380	U	370	U	370	U	370	U
Benzoic Acid	-			940	UJ	930	UJ	930	UJ	930	UJ
1,2,4-Trichlorobenzene	-	-	-	380	U	370	U	370	U	370	U
Naphthalene	245,000	-	-	**940**		**220**	**J**	**220**	**J**	370	U
4-Chloroaniline	-	-	-	380	U	370	U	370	U	370	U
Hexachlorobutadiene	-	-	-	380	U	370	U	370	U	370	U
4-Chloro-3-methylphenol	-	-	-	380	U	370	U	370	U	370	U
2-Methylnaphthalene	-	-	-	**5600**	**D**	**210**	**J**	**200**	**J**	370	U
Hexachlorocyclopentadiene	-	-	-	380	U	370	U	370	U	370	U
2,4,6-Trichlorophenol	-	-	-	380	U	370	U	370	U	370	U
2,4,5-Trichlorophenol	--	--	--	940	U	930	U	930	U	930	U
2-Chloronaphthalene	-	-	-	380	U	370	U	370	U	370	U
2-Nitroaniline	-	-	-	940	U	930	U	930	U	930	U
Dimethylphthalate	-	-	-	380	U	370	U	370	U	370	U
Acenaphthylene	-	-	-	380	U	370	U	370	U	370	U
2,6-Dinitrotoluene	-	-	-	380	U	370	U	370	U	370	U
3-Nitroaniline	-	-	-	940	U	930	U	930	U	930	U
Acenaphthene	-	-	-	**250**	**J**	370	U	370	U	370	U
2,4-Dinitrophenol	-	-	-	940	U	930	U	930	U	930	U
Dibenzofuran	-	-	-	**250**	**J**	370	U	370	U	370	U
4-Nitrophenol	-	-	-	940	U	930	U	930	U	930	U
2,4-Dinitrotoluene	-	-	-	380	U	370	U	370	U	370	U
Fluorene	-	-	-	**700**		370	U	370	U	370	U
Diethylphthalate	-	-	-	380	U	370	U	370	U	370	U
4-Chlorophenyl-phenylether	-	-	-	380	U	370	U	370	U	370	U
4-Nitroaniline	-	-	-	940	U	930	U	930	U	930	U
4,6-Dinitro-2-methylphenol	-	-	-	940	U	930	U	930	U	930	U
N-nitrosodiphenylamine	-	-	-	**1100**		370	U	370	U	370	U
Azobenzene	-	-	-	380	U	370	U	370	U	370	U
4-Bromophenyl-phenylether	-	-	-	380	U	370	U	370	U	370	U
Hexachlorobenzene	-	-	-	380	U	370	U	370	U	370	U
Pentachlorophenol	-	-	-	940	U	930	U	930	U	930	U
Phenanthrene	-	-	-	**1800**		370	U	370	U	370	U
Anthracene	-	-	-	380	U	370	U	370	U	370	U
Carbazole	-	-	-	380	U	370	U	370	U	370	U
Di-n-butylphthalate	-	-	-	380	U	370	U	370	U	370	U
Fluoranthene	-	-	-	380	U	370	U	370	U	370	U
Benzidine	-	-	-	940	U	930	UJ	930	UJ	930	U
Pyrene	-	-	-	**280**	**J+**	370	U	370	U	370	U
Butylbenzylphthalate	-	-	-	380	U	370	U	370	U	370	U
Benzo(a)anthracene	-	-	-	380	U	370	U	370	U	370	U
3,3'-Dichlorobenzidine	-	-	-	380	U	370	U	370	U	370	U
Chrysene	-	-	-	**18**	**J**	370	U	370	U	370	U
bis(2-Ethylhexyl)phthalate	1,220,000	4,460,000	3,970,000	380	U	370	U	370	U	370	U
Di-n-octylphthalate	-	-	-	380	U	370	U	370	U	370	U
Benzo(b)fluoranthene	-	-	-	380	U	370	U	370	U	370	U
Benzo(k)fluoranthene	-	-	-	380	U	370	U	370	U	370	U
Benzo(a)pyrene	2,000	9,000	7,000	380	U	370	U	370	U	370	U
Indeno(1,2,3-cd)pyrene	-	-	-	380	U	370	U	370	U	370	U
Dibenz(a,h)anthracene	-	-	-	380	U	370	U	370	U	370	U
Benzo(g,h,i)perylene	-	-	-	380	U	370	U	370	U	370	U

[1] = Table 4 - Remedial Action Guidelines for Contaminated Soils, Division of Remediation Guidance, MEDEP, May 1996, updated May 20, 1997.

[2]= Refer to Table 1 for test trench sample designations

-- No ME guideline value

J = Estimated value greater than the method detection limit and lower than the reporting limit

Q = Qualifier

SVOCs = Semi-Volatile Organic Compounds

U = Not detected above the laboratory's reporting limit

D = Result is from the diluted sample

UJ = Reporting limit is estimated based on data evaluation

J- = Result potentially biased low based on data evaluation

J+ = Result potentially biased high based on data evaluation

A bolded value indicates a compound was detected at the reported concentration.

Sample Location[2]				GBTP01-1-10		GBTP01-2-10		GBTP01-2-10-DUP		GBTP02-2-10	
Parameter (Method)	**ME Residential Guideline[1]**	**ME Tresspasser Guideline[1]**	**ME Worker Guideline[1]**								
TPH (8015M)	**mg/kg**	**mg/kg**	**mg/kg**	**mg/Kg**	**Q**	**mg/Kg**	**Q**	**mg/Kg**	**Q**	**mg/Kg**	**Q**
Diesel Fuel	--	--	--	**1700**		**10**		**9.7**		7.5	U
Motor Oil	--	--	--	950	U	19	U	19	U	19	U
PCBs (8082)	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**		**µg/kg**		**µg/kg**		**µg/kg**	
Aroclor-1016	100	200	400	19	U	19	U	19	U	19	U
Aroclor-1221	2,200	8,100	7,200	19	U	19	U	19	U	19	U
Aroclor-1232	2,200	8,100	7,200	19	U	19	U	19	U	19	U
Aroclor-1242	2,200	8,100	7,200	19	U	19	U	19	U	19	U
Aroclor-1248	2,200	8,100	7,200	19	U	19	U	19	U	19	U
Aroclor-1254	2,200	8,100	7,200	19	U	19	U	19	U	19	U
Aroclor-1260	2,200	8,100	7,200	19	U	19	U	19	U	19	U
Pesticides (8081)	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**		**µg/kg**		**µg/kg**		**µg/kg**	
alpha-BHC	--	--	--	1.9	U	1.9	U	1.9	U	1.9	U
beta-BHC	--	--	--	1.9	U	1.9	U	1.9	U	1.9	U
delta-BHC	--	--	--	1.9	U	1.9	U	1.9	U	1.9	U
gamma-BHC (Lindane)	--	--	--	1.9	U	1.9	U	1.9	U	1.9	U
Heptachlor	4,000	14,000	12,000	1.9	U	1.9	U	1.9	U	1.9	U
Aldrin	--	--	--	1.9	U	1.9	U	1.9	U	1.9	U
Heptachlor epoxide	--	--	--	1.9	U	1.9	U	1.9	U	1.9	U
Endosulfan I[3]	17,000	120,000	22,000	1.9	U	1.9	U	1.9	U	1.9	U
Dieldrin	300	4,000	600	3.8	U	3.7	U	3.7	U	3.7	U
4,4'-DDE[4]	50,000	180,000	160,000	3.8	U	**21**		**14**		3.7	U
Endrin	60,000	320,000	80,000	3.8	U	3.7	U	3.7	U	3.7	U
Endosulfan II[3]	17,000	120,000	22,000	3.8	U	3.7	U	3.7	U	3.7	U
4,4'-DDD[4]	50,000	180,000	160,000	3.8	U	**9.0**		**6.9**		3.7	U
Endosulfan sulfate[3]	17,000	120,000	22,000	3.8	U	3.7	U	3.7	U	3.7	U
4,4'-DDT[4]	50,000	180,000	160,000	3.8	U	**34**		**21**		3.7	U
Methoxychlor	--	--	--	19	U	19	U	19	U	19	U
Endrin ketone	--	--	--	3.8	U	3.7	U	3.7	U	3.7	U
Endrin aldehyde	--	--	--	3.8	U	3.7	U	3.7	U	3.7	U
Chlordane	9,000	50,000	20,000	19	U	19	U	19	U	19	U
Toxaphene	--	--	--	190	U	190	U	190	U	190	U
gamma-Chlordane	--	--	--	1.9	U	1.9	U	1.9	U	1.9	U
alpha-Chlordane	--	--	--	1.9	U	1.9	U	1.9	U	1.9	U
Herbicides (8151)	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**		**µg/kg**		**µg/kg**		**µg/kg**	
Dalapon	--	--	--	360	U	360	U	360	U	360	U
Dicamba	--	--	--	22	U	21	U	21	U	21	U
MCPP	--	--	--	9300	U	9200	U	9200	U	9200	U
MCPA	--	--	--	9300	U	9200	U	9200	U	9200	U
Dichlorprop	--	--	--	330	U	330	U	330	U	330	U
2,4 D				160	U	160	U	160	U	160	U
2,4,5-TP (Silvex)	10,000,000	10,000,000	10,000,000	18	U	18	U	18	U	18	U
2,4,5-T	1,900,000	10,000,000	10,000,000	20	U	20	U	20	U	20	U
Dinoseb	5,000	35,000	7,000	110	U	110	U	110	U	110	U
2,4-DB	--	--	--	180	U	180	U	180	U	180	U
Pentachlorophenol	--	--	--	19	U	19	U	19	U	19	U
3,5-Dichlorobenzoic acid	--	--	--	220	U	210	U	210	U	210	U
4-Nitrophenol	--	--	--	390	U	380	U	380	U	380	U

[1] = Table 4 - Remedial Action Guidelines for Contaminated Soils, Division of Remediation Guidance, MEDEP, May 1996, updated May 20, 1997.
[2]= Refer to Table 1 for test trench sample designations
[3]= standard for Endosulfan
[4]= standard for DDT
-- No ME guideline value
J = Estimated value greater than the method detection limit and lower than the reporting limit
U = Not detected above the laboratory's reporting limit
UJ = Reporting limit is estimated based on data evaluation
J- = Result potentially biased low based on data evaluation
J+ = Result potentially biased high based on data evaluation
Q = Qualifier
TPH = Total Petroleum Hydrocarbons
PCBs = Polychlorinated Biphenyls
A bolded value indicates an analyte was detected at the reported concentration.

Sample Location[3]				GBTP01-1-10		GBTP01-2-10		GBTP01-2-10-Dup		GBTP02-2-10		GBTP03-1-6		GBTP03-2-6		GBTP03-2-17		GBTP04-2-6		Cesspool soil		MEG[2]	Cesspool water	
Parameter (Method)	ME Residential Guideline[1]	ME Tresspasser Guideline[1]	ME Worker Guideline[1]																					
TAL Metals (6010B)	mg/Kg	mg/Kg	mg/Kg	mg/Kg	Q	mg/Kg	Q	mg/Kg	Q	mg/Kg	Q	mg/Kg	Q	mg/Kg	Q	mg/Kg	Q	mg/Kg	Q	mg/Kg	Q	µg/L	µg/L	Q
Aluminum	--	--	--	19,400		18,600		17,300		17,600		20,200		18,900		15,800	J	21,700		20,800		1,430	46,100	
Antimony	--	--	--	1.7	J-	1.7	J-	0.88	J-	1.4	J-	1.5	J-	1.5	J-	1.7	J-	1.2	J-	1.6	J-	3	7.8	UJ
Arsenic	10	30	30	11.8		11.3		11.7		12		13.3		14.8		10.8	J	12.8		10.6		10	40.6	
Barium	10,000	10,000	10,000	53.6		42.5		44.1		46.6		56.8		55.9		58.4	J	60.4		53.3		2,000	177	B
Beryllium	4	15	10	0.58		0.52		0.51		0.51		0.6		0.58		0.61		0.65		0.6		--	1.5	B
Cadmium	27	35	23	0.035	UJ	0.032	UJ	0.035	UJ	0.034	UJ	0.034	UJ	0.034	UJ	0.032	UJ	0.035	UJ	0.038	UJ	3.5	0.4	UJ
Calcium	--	--	--	1020		2200		2320		1460		431		480		854		398	B	958		--	70300	
Chromium	--	--	--	32.5		32.4		30.7		33.8		32.7		32.2		30.6		36.1		33.4		40	66.5	
Cobalt	--	--	--	12.7		11.8		12.1		12.3		13.4		14.6		15.8	J	13.2		11.7		--	30.8	B
Copper	650	600	600	20.2		18.4		19.5		18.9		22.3		21.7		33.3	J	22.7		20.3		1300	89.4	
Iron	--	--	--	29500		27300		27000		28400		28400		28900		29800		26900		27000		--	55200	
Lead	375	700	700	10.9		12.5		12.6		12.2		11.3		11.1		22.3	J	11.3		10.7		10	47.4	
Magnesium	--	--	--	6420		7420		6100		6260		6620		6260		6100		6630		6600		--	25200	
Manganese	--	--	--	671		733		822		468		706		752		893	J	619		286		500	1,620	
Nickel	3,800	10,000	10,000	37.4		37.6		36.6		35.9		39.7		38		40.3	J	37.9		38.6		140	80.4	
Potassium	--	--	--	2510		1950		2050		2330		2240		2250		2000	J	2190		2300		--	31,300	
Selenium	950	5,350	10,000	0.41	U	0.39	U	0.42	U	0.4	U	0.41	U	0.4	U	0.39	U	0.41	U	0.46	U	35	6.4	B
Silver	950	5,350	10,000	0.17	U	0.16	U	0.17	U	0.17	U	0.17	U	0.17	U	0.16	U	0.17	U	0.19	U	35	2	U
Sodium	--	--	--	204	B	305	B	294	B	335	B	297	B	378	B	884	J	359	B	134	B	20,000	50,800	
Thallium	--	--	--	0.46	UJ	0.43	UJ	0.46	UJ	0.45	UJ	0.45	UJ	0.44	UJ	0.43	UJ	0.46	UJ	0.5	UJ	0.5	5.5	B
Vanadium	--	--	--	27		25.7		25.1		26.5		27.5		26.8		26.8		29.3		26.8		--	55	
Zinc	1500	1500	1500	50.7		50.9		51.4		49.5		54.9		54.8		63.5		52.3		69.5		2000	268	
Cyanide (9012A)	mg/Kg	mg/Kg	mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		µg/L	mg/Kg	
	3,800	10,000	10,000	0.54	U	0.54	U	0.53	U	0.56	U	NA		NA		NA		NA		NA		140	NA	
Mercury (7471A)	mg/Kg	mg/Kg	mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		µg/L	µg/L	
	60	320	610	0.015	U	0.017	U	0.018	U	0.017	U	0.016	U	0.018	U	0.017	U	0.016	U	0.018	U	2	0.14	B
Hexavalent Chromium (3060A/7196A)	mg/Kg	mg/Kg	mg/Kg	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		µg/L	mg/Kg	
	950	5,350	10,000	0.33	B	0.34	B	0.89	U	1.0	U	NA		NA		NA		NA		NA		35	NA	

[1] = Table 4 - Remedial Action Guidelines for Contaminated Soils, Division of Remediation Guidance, MEDEP, May 1996, updated May 20, 1997.
[2] = Maximum Exposure Guidelines (MEG) for Drinking Water, Environmental and Occupational Health Program, Center for Disease Control and Prevention, August 7, 2006.
[3]= Refer to Table 1 for test trench sample designations
-- No ME guideline value
VOCs = Volatile Organic Compounds
U = Not detected above the laboratory's reporting limit
B = Estimated value greater than the insturment detection limit and lower than the reporting limit
UJ = Reporting limit is estimated based on data evaluation
J- = Result potentially biased low based on data evaluation
J+ = Result potentially biased high based on data evaluation
NA = Not Analyzed
Q = Qualifier
TAL = Target Analyte List
A bolded value indicates an analyte was detected at the reported concentration.
Indicates an exceedance of at least one of the Guideline concentrations

Soil samples collected March 7-9, 2004 below GAT building by USACE

l Results by USEPA Method 5035/8260B (µg/kg).

Target Analyte	GB-SB-01a-1’	GB-SB-02a-1’	GB-SB-03a-1’	GB-SB-04a-1’
Sample Interval	**(Soil Depth Interval at Approximately 0.5-2.0 ft)**			
Acetone	40	57	100	86
2-butanone	7.0 U	5.6	3.8 J	5.8 U
Carbon disulfide	7.0 U	4.3 U	5.0 U	5.8 U
Trichloroethene	7.0 U	4.3 U	5.0 U	5.8 U

Target Analyte	GB-SB-01a-3’-5’	GB-SB-02a-3’-5’	GB-SB-03a-3’-5’	GB-SB-04a-3’-5’
Sample Interval	**(Soil Depth Interval at Approximately 2.0-4.0 ft)**			
Acetone	69	53	110	60
2-butanone	9.4	6.9	5.3 J	3.0 J
Carbon disulfide	0.92 J	6.4 U	6.4 U	1.2 J
Trichloroethene	4.6 U	6.4 U	6.4 U	1.1 J

Volatile Organic Compounds (VOCs)	Sample ID GB-SB-01A -1		Sample ID GB-SB-01B - 3'-5'		Sample ID GB-SB-02A -1		Sample ID GB-SB-02B -3'-5'		Sample ID GB-SB-03A -1		Sample ID GB-SB-03B -3'-5'		Sample ID GB-SB-04A -1		Sample ID GB-SB-04B -3'-5'	
	Results µg/kg	Q	Results µg/kg	Q	Results µg/kg	Q	Results µg/kg	Q	Results µg/kg	Q	Results µg/kg	Q	Results µg/kg	Q	Results µg/kg	Q
Dichlorodifluoromethane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Chloromethane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Vinyl Chloride	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Bromomethane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Chloroethane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Trichlorofluoromethane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Acrolein	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Freon TF	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,1-Dichloroethene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Acetone	40.0		69.0		57.0		53.0		100.0		110.0		86.0		60.0	
Methyl Iodide	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Carbon Disulfide	7.0	U	0.92	J	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	1.2	U
Allyl Chloride	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Methylene Chloride	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Acrylonitrile	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Trans-1,2-Dichloroethene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,2-Dichloroethene (total)	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Methyl-t-Butyl Ether	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,1-Dichloroethane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Vinyl Acetate	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Chloroprene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Cis-1,2-Dichloroethene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
2-Butanone	7.0	U	9.4	U	5.6		6.9		3.8	J	5.3	U	5.8	U	5.8	U
Propionitrile	28.0	U	18.0	U	17.0	U	25.0	U	20.0	U	26.0	U	23.0	U	23.0	U
Methylacrylonitrile	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Bromochloromethane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	
Tetrahydrofuran	70.0	U	46	U	43.0	U	64.0	U	50.0	U	64.0	U	58.0	U	58.0	U
Chloroform	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,1,1-Trichloroethane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Carbon Tetrachloride	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Isobutyl Alcohol	350.0	U	230.0	U	210.0	U	320.0	U	250.0	U	320.0	U	290.0	U	290.0	U
Benzene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,2-Dichloroethane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Trichloroethene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	1.1	J
1,2-Dichloropropane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Methyl Methacrylate	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Dibromomethane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,4-Dioxane	350.0	U	230.0	U	210.0	U	320.0	U	250.0	U	320.0	U	290.0	U	290.0	U
Bromodichloromethane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
2-Chloroethyl Vinyl Ether	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Cis-1,3-Dichloropropene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
4-Methyl-2-pentanone	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U

Toluene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Volatile Organic Compounds (VOCs)	**Sample ID GB-SB-01-A -1**		**Sample ID GB-SB-01B - 3'-5'**		**Sample ID GB-SB-02-A -1**		**Sample ID GB-SB-02B -3'-5'**		**Sample ID GB-SB-03-A -1**		**Sample ID GB-SB-03B -3'-5'**		**Sample ID GB-SB-04-A -1**		**Sample ID GB-SB-04B -3'-5'**	
	Results µg/kg	**Q**	**Results µg/kg**	**Q**	**Results µg/kg**	**Q**	**Results µg/kg**	**Q**	**Results µg/kg**	**Q**	**Results µg/kg**	**Q**	**Results µg/kg**	**Q**	**Results µg/kg**	**Q**
Trans-1,3-Dichloropropene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Ethyl Methacrylate	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,1,2-Trichloroethane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Tetrachloroethene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
2-Hexanone	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Dibromochloromethane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,2-Dibromoethane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Chlorobenzene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,1,1,2-Tetrachloroethane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Ethylbenzene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Xylene (m,p)	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Styrene (total)	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Xylene (o)	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Styrene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Bromoform	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Isopropylbenzene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Cis-1,4-Dichloro-2-butene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,1,2,2,-Tetrachloroethane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,2,3-Trichloropropane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Trans-1,4-Dichloro-2-butene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,3-Dichlorobenzene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,4-Dichlorobenzene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,2-Dichlorobenzene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,2,-Dibromo-3-Chloropropane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,2,4-Trichlorobenzene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Hexachlorobutadiene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Naphthalene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
2,2-Dichloropropane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,1-Dichloropropene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,3-Dichloropropane	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Bromobenzene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
n-Propylbenzene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
2-Chlorotoluene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
4-Chlorotoluene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,3,5-Trimethylbenzene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Tert-Butylbenzene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,2,4-Trimethylbenzene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
Sec-Butylbenzene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
4-Isopropyltoluene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
n-Butylbenzene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U
1,2,3-Trichlorobenzene	7.0	U	4.6	U	4.3	U	6.4	U	5.0	U	6.4	U	5.8	U	5.8	U

Volatile Organic Compounds (VOCs)	Reporting Limit µg/m³	Sample ID GB-SG-45A -0.5'		Sample ID GB-SG-45B - 3'-4'		Sample ID GB-SG-44A -0.5'		Sample ID GB-SG-44B -3'-4'		Sample ID GB-SG-47A -0.5'		Sample ID GB-SG-47B -3'-4'		Sample ID GB-SG-46A -0.5'		Sample ID GB-SG-46B -3'-4'	
		Results µg/ m³	Q	Results µg/ m³	Q	Results µg/ m³	Q	Results µg/ m³	Q	Results µg/ m³	Q	Results µg/ m³	Q	Results µg/ m³	Q	Results µg/ m³	Q
Dichlorodifluoromethane	2.5	3.2		2.5	U	3.4		2.5	U	3.0		2.5	U	2.5	U	17.0	
Chloromethane	1.0	1.0	U	1.0	U	1.0	U	1.0	U	2.5		1.0	U	1.0	U	1.0	U
Vinyl Chloride	1.3	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Bromomethane	1.9	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
Chloroethane	1.3	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Trichlorofluoromethane	2.8	5.0		6.2		5.6		10.0		9.0		2.9		7.3		3.0	
Freon TF	3.8	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U
1,1-Dichloroethene	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.3		2.0	U
Methylene Chloride	1.7	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
1,1-Dichloroethane	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Cis-1,2-Dichloroethene	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.3		2.0	U	2.0	U	2.0	U
Chloroform	2.4	2.4	U	13.0		3.8		2.4	U	2.4	U	2.4	U	2.4	U	2.4	U
1,1,1-Trichloroethane	2.7	2.7	U	2.7	U	5.5		2.7	U	2.7	U	2.7	U	2.7	U	4.0	
Carbon Tetrachloride	3.1	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U
Benzene	1.6	10.0		4.8		9.3		51.0		7.0		2.9		4.5		5.8	
1,2-Dichloroethane	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Trichloroethene	2.7	130.0		9.7		100.0		18.0		42.0		150.0		2.7	U	16.0	
1,2-Dichloropropane	2.3	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
Cis-1,3-Dichloropropene	2.3	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
Toluene	1.9	12.0		14.0		11.0		57.0		35.0		4.5		9.4		4.9	
Trans-1,3-Dichloropropene	2.3	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
1,1,2-Trichloroethane	2.7	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
Tetrachloroethene	3.4	3.4	U	3.4	U	3.4	U	3.4	U	3.4	U	3.9		3.4	U	3.4	U
Chlorobenzene	2.3	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
Ethylbenzene	2.2	12.0		4.8		6.9		10.0		6.9		2.2	U	19.0		2.2	U
Xylene (m,p)	2.2	8.7		13.0		6.9		22.0		23.0		2.4		65.0		2.2	U
Styrene	2.2	5.2		7.8	U	2.3		4.7		2.1	U	2.1	U	2.1	U	2.1	U
Xylene (o)	2.1	4.7		2.1		2.8		8.7		7.4		2.2	U	39.0		2.2	U
1,1,2,2,-Tetrachloroethane	3.4	3.4	U	3.4	U	3.4	U	5.8		3.4	U	3.4	U	3.4	U	3.4	U
1,3-Dichlorobenzene	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
1,4-Dichlorobenzene	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
1,2-Dichlorobenzene	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
1,2,4-Trichlorobenzene	3.7	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
Hexachlorobutadiene	5.3	5.3	U	5.3	U	5.3	U	5.3	U	5.3	U	5.3	U	5.3	U	5.3	U
1,3,5-Trimethylbenzene	2.5	3.4		2.5	U	2.7		2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2,4-Trimethylbenzene	2.5	7.9		5.4		8.8		8.8		7.9		2.5	U	4.3		2.5	U
1,2-Dichlorotetrafluoroethane	3.5	3.5	U	3.5	U	3.5	U	3.5	U	3.5	U	3.5	U	3.5	U	3.5	U
1,2-Dibromoethane	3.8	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U	3.8	U

Table 9. Analytical Results Table for Indoor Air Sampling, March 26-27, 2006.

PARAMETER (METHOD)	Conservative Indoor Air Screening Levels	Indoor Air Sample	GB-AA-01	Q	GB-IA-01	Q	GB-IA-02	Q	GB-IA-03	Q	GB-IA-04	Q	GB-IA-05	Q	GB-IA-DUP (GB-IA-05)	Q	GB-IA-06	Q
VOLATILE ORGANIC COMPOUND (TO-15 LOW LEVEL)		Dilution Factor	1.0		10		6.2		6.2		5.0		3.3		3.3		5.0	
	µg/m³	Units	µg/m³		µg/m³		µg/m³		µg/m³		µg/m³		µg/m³		µg/m³		µg/m³	
Dichlorodifluoromethane	200		3.1		4.8		4.9		5.9		5.9		3.8		3.7		3.9	
1,2-Dichlorotetrafluoroethane	none		0.14		0.07	U	0.43	U	0.43	U	0.35	U	0.23	U	0.23	U	0.35	U
Vinyl chloride	0.11		0.051	U	**0.51**	U	**0.31**	U	**0.31**	U	**0.26**	U	**0.17**	U	**0.17**	U	**0.26**	U
1,3-Butadiene	0.087		0.044	U	**1.2**		**1.0**		**1.2**		**1.2**		**2.1**		**2.1**		**5.5**	
Bromomethane	5.0		0.078	U	0.78	U	0.47	U	0.47	U	0.39	U	0.26	U	0.26	U	0.39	U
Chloroethane	23		0.053	U	0.53	U	0.32	U	0.32	U	0.26	U	0.18	U	0.18	U	0.26	U
Bromoethene	0.61		0.087	U	**0.87**	U	0.52	U	0.52	U	0.44	U	0.29	U	0.29	U	0.44	U
Trichlorofluoromethane	700		1.7		31		28		22		22		12		11		6.2	
1,1-Dichloroethene	200		0.040	U	0.40	U	0.25	U	0.25	U	0.20	U	0.13	U	0.13	U	0.20	U
3-Chloropropene	1.0		0.063	U	0.63	U	0.38	U	0.38	U	0.31	U	0.21	U	0.21	U	0.31	U
Methyl-t-butyl ether	74		0.036	U	0.36	U	0.22	U	0.22	U	0.18	U	0.12	U	0.12	U	0.18	U
trans-1,2-Dichloroethene	70		0.040	U	0.40	U	0.25	U	0.25	U	0.20	U	0.13	U	0.13	U	0.20	U
n-Hexane	200		0.15	J+	4.9	J+	3.5	J+	3.1	J+	4.2	J+	3.0	J+	2.8	J+	0.95	J+
1,1-Dichloroethane	500		0.040	U	0.40	U	0.25	U	0.25	U	0.20	U	0.13	U	0.13	U	0.20	U
1,2-Dichloroethene (total)	none		0.040	U	0.40	U	0.25	U	0.25	U	0.20	U	0.13	U	0.13	U	0.20	U
cis-1,2-Dichloroethene	35		0.040	U	0.40	U	0.25	U	0.25	U	0.20	U	0.13	U	0.13	U	0.20	U
Chloroform	1.1		0.078		0.49	U	0.30	U	0.30	U	0.24	U	0.16	U	0.16	U	0.24	U
1,1,1-Trichloroethane	2200		0.14		0.55	U	0.34	U	0.34	U	0.27	U	0.18	U	0.18	U	0.27	U
Cyclohexane	6200		0.041		0.34	U	0.23		0.30		0.38		0.62		0.59		0.17	U
Carbon tetrachloride	1.6		0.75		0.63		0.75		0.75		0.82		0.82		0.82		0.75	
2,2,4-Trimethylpentane	none		0.047		0.47	U	0.29	U	0.29	U	0.23	U	0.15	U	0.15	U	0.23	U
Benzene	3.1		0.38		0.86		0.99		1.1		1.2		1.9		1.9		**4.2**	
1,2-Dichloroethane	0.94		0.081	U	0.81	U	0.49	U	0.49	U	0.40	U	0.27	U	0.27	U	0.40	U
n-Heptane	none		0.086		0.41	U	0.25	U	0.61		0.57		0.90		0.78		0.23	
Trichloroethene	12.2		0.054	U	0.54	U	0.33	U	0.33	U	0.27	U	0.18	U	0.18	U	0.27	U
1,2-Dichloropropane	0.4		0.092	U	**0.92**	U	**0.55**	U	**0.55**	U	**0.46**	U	0.31	U	0.31	U	**0.46**	U
Bromodichloromethane	1.4		0.067	U	0.67	U	0.42	U	0.42	U	0.34	U	0.22	U	0.22	U	0.34	U
cis-1,3-Dichloropropene	6.1		0.045	U	0.45	U	0.28	U	0.28	U	0.23	U	0.15	U	0.15	U	0.23	U
Toluene	400		0.35		12		11		10		9.8		7.5		7.5		3.1	
trans-1,3-Dichloropropene	6.1		0.045	U	0.45	U	0.28	U	0.28	U	0.23	U	0.15	U	0.15	U	0.23	U
1,1,2-Trichloroethane	1.5		0.055	U	0.55	U	0.34	U	0.34	U	0.27	U	0.18	U	0.18	U	0.27	U
Tetrachloroethene	8.1		0.068		0.68	U	0.42	U	0.42	U	0.34	U	0.22	U	0.22	U	0.34	U
Dibromochloromethane	1.0		0.085	U	0.85	U	0.53	U	0.53	U	0.43	U	0.28	U	0.28	U	0.43	U
1,2-Dibromoethane	0.11		0.077	U	**0.77**	U	**0.48**	U	**0.48**	U	**0.38**	U	**0.25**	U	**0.25**	U	**0.38**	U
Ethylbenzene	22		0.069	J+	1.5		1.3		0.61		1.1		1.2		1.1		0.65	
m-Xylene & p-Xylene	7000		0.20	J+	3.4		3.0		2.8		2.6		2.8		3.2		1.5	
o-Xylene	7000		0.091		0.78		0.69		0.78		0.69		1.0		1.0		0.61	
Xylene (total)	none		0.31		4.3		4.0		3.8		3.5		4.1		4.3		2.2	
Bromoform	22		0.10	U	1.0	U	0.64	U	0.64	U	0.52	U	0.34	U	0.34	U	0.52	U
1,1,2,2-Tetrachloroethane	0.42		0.069	U	0.69	U	0.43	U	0.43	U	0.34	U	0.23	U	0.23	U	0.34	U
4-Ethyltoluene	none		0.064	J+	0.49	U	0.64		0.74		0.54		1.2		1.1		0.79	
1,3,5-Trimethylbenzene	6.0		0.069		0.49	U	0.37		0.30	U	0.41		0.59		0.64		0.31	

Shaded cells with bolded numbers are results that exceed the site-specific screening level.
Bolded results with no shading are reporting limits that exceed the site-specific screening level because of dilution of the sample due to a high concentration of one or more other compounds(s)

Table 4-1
Indoor Air VOC Results

		RSLs for Chemical Contaminants at Superfund Sites				MEDEP IAT Chronic Commercial	MEDEP IAT Chronic Residential	US DoD Risk Based	Location	AA-01		IA-01		IA-02		IA-03		IA-04		IA-04	
		Industrial Air		Residential Air		Multi-	Multi-	Concentrations	Sample Date	11/21/2010		11/21/2010		11/21/2010		11/21/2010		11/21/2010		11/21/2010	
									Sample ID	GB-AA-1110-01		GB-IA-1110-01		GB-IA-1110-02		GB-IA-1110-03		GB-IA-1110-04		GB-IA-1110-04-B	
									QC Code	FS		FS		FS		FS		FS		FD	
Analysis	**Parameter**	(ug/m^3)	key	(ug/m^3)	key	**Contaminant[1]**	**Contaminant[1]**	**(RBCs)[2]**	**Units**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**
TO-15-SIM	1,2,4-Trimethylbenzene	31	n	7.3	n	NA	NA	7.3	ug/m3	0.0982	U	0.0982	U	0.953		0.216		0.53		0.634	
TO-15-SIM	1,3,5-Trimethylbenzene	NA		NA		NA	NA	NA	ug/m3	0.0982	U	0.0982	U	0.26		0.0982	U	0.157		0.182	
TO-15-SIM	1,3-Butadiene	0.41	c*	0.081	c*	NA	0.081	0.081	ug/m3	0.0442	U	0.049		0.075		0.06		0.049		0.06	
TO-15-SIM	Benzene	1.6	c*	0.31	c	1.57	0.31	0.31	ug/m3	0.348		0.562		0.849		0.527		0.543		0.686	
TO-15-SIM	Carbon tetrachloride	2	c	0.41	c	0.82	0.16	0.41	ug/m3	0.528		0.547		0.541		0.49		0.509		0.585	
TO-15-SIM	Chloroform	0.53	c	0.11	c	0.53	0.11	0.11	ug/m3	0.0976	U	0.0976	U	0.127		0.0976	U	0.127		0.146	
TO-15-SIM	Chloromethane	390	n	94	n	78.84	19	940	ug/m3	1.03	U	1.11		1.12		1.03	U	1.03	U	1.11	
TO-15-SIM	Dichlorodifluoromethane	880	n	210	n	175.2	42	210	ug/m3	2.2		2.43		2.66		2.3		2.46		2.82	
TO-15-SIM	Ethyl benzene	4.9	c	0.97	c	4.91	0.97	0.97	ug/m3	0.087	J-	0.2	J-	0.633	J-	0.204	J-	0.36	J-	0.408	J-
TO-15-SIM	Methyl Tertbutyl Ether	47	c	9.4	c	47.17	9.4	9.4	ug/m3	0.072	U	0.223	J-	1.06	J-	0.209	J-	0.602	J-	0.684	J-
TO-15-SIM	Methylene chloride	26	c	5.2	c	26.09	5.2	5.2	ug/m3	3.47	U	3.47	U	3.47	U	10.8		3.47	U	3.47	U
TO-15-SIM	Styrene	4400	n	1000	n	262.8	6.3	1000	ug/m3	0.0851	U	0.0851	U	0.179		0.0851	U	0.149		0.145	
TO-15-SIM	Tetrachloroethene	2.1	c	0.41	c	2.08	0.41	0.41	ug/m3	1.27		0.176		0.386		0.332		0.515		0.61	
TO-15-SIM	Toluene	22000	n	5200	n	4380	1000	5200	ug/m3	0.761		3.81		8.48		3.36		7.15		8.46	
TO-15-SIM	Trichloroethene	6.1	c	1.2	c	6.13	1.2	1.2	ug/m3	0.107	U	0.107	U	0.129		0.107	U	0.107	U	0.145	
TO-15-SIM	Trichlorofluoromethane	730	n	3100	n	NA	NA	730	ug/m3	1.16		16.7		11.3		2.85		5.47		6.32	
TO-15-SIM	Xylene, m/p	100	n	440	n	NA	NA	730	ug/m3	0.174	U	0.404		1.65		0.49		0.968		1.11	
TO-15-SIM	Xylene, o	730	n	3100	n	NA	NA	730	ug/m3	0.0868	U	0.143		0.568		0.174		0.33		0.382	
	Total, Xylene	730	n	3100	n	87.6	21	1460	ug/m3	0.2608		0.547		2.218		0.664		1.298		1.492	
TO-15	Hexane	730	n	3100	n	NA	NA	730	ug/m3	0.704	U	1	J+	1.44	J+	0.754	J+	0.814	J+	1.04	J+

Qualifier:
U = not detected, value is the detection limit
J- = estimated value, biased low
J+ = estimated value, biased high

Prepared by: BJS 01/19/2011
Checked by: MJW 01/25/2011

HI = Hazard Index
RSL = Regional Screening Level for Chemical Contaminants at Superfund Sites, USEPA Novemeber 2010.
MEDEP IAT = Maine Department of Environmental Protection Indoor Air Target
NA= Not Applicable
ug/m^3=microgram per cubic meter
QC Code= FS-Field Sample, FD-Field Duplicate
TO-15 SIM=Selective Ion Monitoring mode for volatile organic compounds in air
1-"Vapor Intrusion Evaluation Guidance"; Maine Department of Environmental Protection; January 2010.
2-DoD Vapor Intrusion Handbook; The Tri-Service Environmental Risk Assessment Workgroup; January 2009.
Key Notations
n = noncancer;
n = noncancer
* = where: n SL < 100X c SL
Shading Notes
Exceeds highlighted screening criteria in both indoor air and ambient air samples
Exceeds highlighted screening criteria in indoor air sample but is not detected in ambient air sample

Table 4-2
Soil Vapor VOC Results

Analysis	Parameter	MEDEP SGT Chronic Commercial Multi-Contaminant[1]	MEDEP SGT Chronic Residential Multi-Contaminant[1]	Sample Date / Sample ID / QC Code / Units	SG-44 11/21/2010 GB-SG-1110-44 FS Result	Qualifier	SG-44 11/21/2010 GB-SG-1110-44-03 FS Result	Qualifier	SG-45 11/21/2010 GB-SG-1110-45 FS Result	Qualifier	SG-45 11/21/2010 GB-SG-1110-45-03 FS Result	Qualifier	SG-46 11/21/2010 GB-SG-1110-46 FS Result	Qualifier	SG-46 11/21/2010 GB-SG-1110-46-B FD Result	Qualifier	SG-46 11/21/2010 GB-SG-1110-46-03 FS Result	Qualifier	SG-47 11/21/2010 GB-SG-1110-47 FS Result	Qualifier	SG-47 11/21/2010 GB-SG-1110-47-03 FS Result	Qualifier
TO-15	1,1,1-Trichloroethane	219000	52143	ug/m3	2.75		1.09	U	1.09	U	1.09	U	3.92		3.7		1.09	U	1.09	U	1.09	U
TO-15	1,2,4-Trimethylbenzene	NA	NA	ug/m3	0.982	U	0.982	U	1.23		3.34		0.982	U	0.982	U	1.64		0.982	U	0.982	U
TO-15	1,3-Butadiene	20.5	4.1	ug/m3	0.442	U	0.676		0.442	U	2.82		0.442	U	0.442	U	10.5		0.442	U	3.69	
TO-15	2-Butanone	219000	52143	ug/m3	4.42		2.87		3.05		21.5		3.33		4.11		34.7		8.79		13.4	
TO-15	Acetone	NA	NA	ug/m3	168		19.5		126		112		117		122		178	J+	128		77.6	
TO-15	Benzene	78.5	15.6	ug/m3	0.977		1.06		1.68		3.27		0.958		0.967		20.5		0.801		2.83	
TO-15	Carbon disulfide	30660	7300	ug/m3	2.87		3.16		1.96		19.3		1.7		1.5		28.3		2.08		2.99	
TO-15	Chloroform	26.5	5.3	ug/m3	0.976	U	0.976	U	0.976	U	0.976	U	0.976	U	0.976	U	1.92		0.995		1.39	
TO-15	Chloromethane	3942	939	ug/m3	0.413	U	1.02		0.413	U	0.413	U	0.413	U	0.413	U	2.26		0.413	U	0.792	
TO-15	Cyclohexane	NA	NA	ug/m3	0.688	U	0.688	U	0.688	U	0.688	U	0.688	U	0.688	U	2.23		0.688	U	0.688	U
TO-15	Dichlorodifluoromethane	8760	2086	ug/m3	4		2.52		2.61		2.74		66.8		64.9		5.15		6.62		11.2	
TO-15	Ethyl benzene	245.5	48.7	ug/m3	0.868	U	0.868	U	1.5		3.44		1.6		1.18		4.08		0.868	U	0.868	U
TO-15	Hexane	NA	NA	ug/m3	1.37		0.704	U	3.14		2.19		0.704	U	0.704	U	11		0.704	U	2.14	
TO-15	Methyl Tertbutyl Ether	2359	467.9	ug/m3	0.72	U	0.72	U	0.72	U	1.41		0.72	U	0.72	U	2.21		0.72	U	0.72	U
TO-15	Methylene chloride	1305	258.9	ug/m3	3.47	U	5.13		3.95		3.47	U	3.47	U	3.47	U	3.47	U	3.47	U	4.2	
TO-15	Styrene	13140	3129	ug/m3	0.851	U	1.49		0.851	U	0.851	U	1.06		0.851	U	16.2		0.851	U	0.851	U
TO-15	Tetrachloroethene	1040	20.6	ug/m3	1.36	U	1.36	U	1.36	U	1.36	U	2.68		1.36	U	1.36	U	1.36	U	2.06	
TO-15	Toluene	219000	52143	ug/m3	1.21	J	2.82	J	10	J	19.5	J	5.16	J	1.06	J	19.9	J	1.15	J	3.79	J
TO-15	Trichloroethene	306.5	60.8	ug/m3	37.2		2.26		20.4		6.52		7.43		6.78		1.1		108		145	
TO-15	Trichlorofluoromethane	NA	NA	ug/m3	11.3		2.32		2.76		3.53		8.61		8.62		12.5		6.54		6.65	
TO-15	Vinyl chloride	139.5	27.7	ug/m3	0.511	U	0.511	U	0.511	U	0.511	U	0.511	U	0.511	U	1.62		0.511	U	0.511	U
TO-15	Xylene, m/p	NA	NA	ug/m3	1.74	U	1.74	U	1.74	U	7.99		7.1		5.44		6.31		1.74	U	1.74	U
TO-15	Xylene, o	NA	NA	ug/m3	0.868	U	0.868	U	0.868	U	2.71		3.59		2.97		3.63		0.868	U	0.868	U
	Total, Xylene	4380	1043	ug/m3	2.608	U	2.608	U	2.608	U	10.7		10.69		8.41		9.94		2.608	U	2.608	U

Qualifier:
U = not detected, value is the detection limit
J = estimated value
J+ = estimated value, biased high

Prepared by: BJS 01/19/2011
Checked by: MJW 01/25/2011

MEDEP SGT = Maine Department of Environmental Protection Soil Gas Target
NA= Not Applicable
ug/m^3=microgram per cubic meter
QC Code= FS-Field Sample, FD-Field Duplicate
TO-15 SIM=Selective Ion Monitoring mode for volatile organic compounds in air
1-"Vapor Intrusion Evaluation Guidance"; Maine Department of Environmental Protection; January 2010. Tables B4 and B6.

Exceeds highlighted screening criteria for Maine SGT

Table 5-1
Comparison of VOCs Detected in Groundwater and Air Samples

	Compound Detected In Media Below						
All Detected	**Groundwater**	**Soil Vapor**		**Indoor Air**		**Ambient Air**	
Parameters	Detected	Detected	>RES SGT[1.]	Detected	> Res RSL/IAT/RBC [2.]	Detected	> Res RSL/IAT/RBC [2.]
1,1,1-Trichloroethane	X	X					
1,2,4-Trimethylbenzene		X		X			
1,3,5-Trimethylbenzene				X			
1,3-Butadiene		X	X	X			
2-Butanone		X					
Acetone		X					
Benzene		X		X	X	X	X
Carbon disulfide		X					
Carbon tetrachloride				X	X	X	X
Chloroform	X	X		X	X		
Chloromethane		X		X			
Cyclohexane		X					
Dichlorodifluoromethane		X		X		X	
Ethyl benzene		X		X		X	
Hexane		X		X			
Methyl Tertbutyl Ether	X	X		X			
Methylene chloride		X		X	X		
Styrene		X		X			
Tetrachloroethene		X		X	X	X	X
Toluene	X	X		X		X	
Trichloroethene	X	X	X	X			
Trichlorofluoromethane		X		X		X	
Vinyl chloride		X					
Xylene, m/p		X		X			
Xylene, o		X		X			
Total, Xylene		X		X		X	

Notes:

Prepared by: PHT 4/13/2011
Checked by: MJW 4/15/2011

1-"Vapor Intrusion Evaluation Guidance"; Maine Department of Environmental Protection; January 2010.
Concentration detected above the MEDEP Residential SGT

2-DoD Vapor Intrusion Handbook; The Tri-Service Environmental Risk Assessment Workgroup; January 2009.
USEPA 2010 Regional Screening Level for Chemical Contaminants at Superfund Sites, USEPA Novemeber 2010.
and "Vapor Intrusion Evaluation Guidance"; Maine Department of Environmental Protection; January 2010.
Concentration detected above the USEPA Residential RSL MEDEP Residentiual IAT and DoD RBC

DRAFT Groundwater Analytical Data Table
April 11-17, 2008
Former GAT Facility Study Area
Glenburn, Maine

PARAMETER (METHOD)	Well No. / [1]Maine CDC MEGs for DW	GB-DW-02-0804	Q	GB-DW-04-0804	Q	GB-DW-05-0804	Q	~~GB-DW-06-0804~~ GB-DW-10	Q	GB-DW-07-0804	Q	GB-DW-08-0804	Q	GB-DW-09-0804	Q	GB-DW-11-0804	Q	GB-DW-19-0804	Q
		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS	µg/L																		
(EPA METHOD 524.2)																			
1,1,1,2-Tetrachloroethane	13	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1,1-Trichloroethane	200	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1,2,2-Tetrachloroethane	1.8	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1,2-Trichloroethane	6	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1-Dichloroethane	70	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1-Dichloroethene	1	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1-Dichloropropene	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,2,3-Trichlorobenzene	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,2,3-Trichloropropane	0.05	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,2,4-Trichlorobenzene	70	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,2,4-Trimethylbenzene	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,2-Dibromo-3-chloropropane	0.25	2.0 U		2.0 U		2.0 U		2.0 U		2.0 U		2.0 U		2.0 U		2.0 U		2.0 U	
1,2-Dibromoethane	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,2-Dichlorobenzene	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,2-Dichloroethane	4	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,2-Dichloropropane	5	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,3,5-Trimethylbenzene	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,3-Dichlorobenzene	60	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,3-Dichloropropane	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,4-Dichlorobenzene	21	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
2,2-Dichloropropane	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
2-Chlorotoluene	140	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 UJ	
4-Chlorotoluene	140	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
4-Isopropyltoluene	70	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Benzene	6	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Bromobenzene	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Bromochloromethane	10	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Bromodichloromethane	6	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Bromoform	44	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Bromomethane	10	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Carbon Tetrachloride	3	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Chlorobenzene	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Chloroethane	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Chloroform	70	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Chloromethane	3	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
cis-1,2-Dichloroethene	70	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
cis-1,3-Dichloropropene	4	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Dibromochloromethane	4	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Dibromomethane	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Dichlorodifluoromethane	1,400	0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 UJ	
Ethylbenzene	70	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Hexachlorobutadiene	4	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Isopropylbenzene	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Methyl tert-Butyl Ether	35	0.5 U		0.5 U		**0.7**		0.5 U		0.5 U		0.5 U		0.5 U		**1.8**		0.5 U	
Methylene Chloride	47	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Naphthalene	14	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
n-Butylbenzene	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
n-Propylbenzene	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
sec-Butylbenzene	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Styrene	140	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
tert-Butylbenzene	-	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Tetrachloroethene	7	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Toluene	1,400	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
trans-1,2-Dichloroethene	140	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
trans-1,3-Dichloropropene	4	0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 UJ	
Trichloroethene[2]	2.5	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Trichlorofluoromethane	2,100	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Vinyl Chloride	0.2	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
o-Xylene	1,400	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
p,m-Xylene	1,400	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.
2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).
- indicates there is no MEG
Bold number indicates a positive detection.
Bold number with shading indicates a detection above the MEG and/or action level.
U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).
UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.
J = Estimated value less than PQL or based on data evaluation of laboratory results.
Q = Qualifier

DRAFT Groundwater Analytical Data Table
April 11-17, 2008
Former GAT Facility Study Area
Glenburn, Maine
Sheet 2 of 4

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No.	GB-DW-22-0804-Before	Q	GB-DW-22-0804-Before DUP	Q	GB-DW-22-0804-Between	Q	GB-DW-22-0804-After	Q	GB-DW24-0804	Q	GB-DW26-0804	Q	GB-DW27-0804	Q	GB-DW31-0804	Q	GB-DW52-0804	Q	GB-DW52-0804 DUP	Q	GB-DW-53-0804	Q
			µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS	µg/L																							
(EPA METHOD 524.2)																								
1,1,1,2-Tetrachloroethane	13		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,1,1-Trichloroethane	200		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,1,2,2-Tetrachloroethane	1.8		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,1,2-Trichloroethane	6		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,1-Dichloroethane	70		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,1-Dichloroethene	1		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,1-Dichloropropene	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,2,3-Trichlorobenzene	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,2,3-Trichloropropane	0.05		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,2,4-Trichlorobenzene	70		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,2,4-Trimethylbenzene	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,2-Dibromo-3-chloropropane	0.25		2.0 U		2.0 U		2.0 U		2.0 U		2.0 U		2.0 U		2.0 U		2.0 U		2.0 U		2.0 U		2.0	U
1,2-Dibromoethane	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,2-Dichlorobenzene	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,2-Dichloroethane	4		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,2-Dichloropropane	5		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,3,5-Trimethylbenzene	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,3-Dichlorobenzene	60		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,3-Dichloropropane	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
1,4-Dichlorobenzene	21		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
2,2-Dichloropropane	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
2-Chlorotoluene	140		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 UJ		0.5 U		0.5	U
4-Chlorotoluene	140		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
4-Isopropyltoluene	70		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Benzene	6		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Bromobenzene	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Bromochloromethane	10		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Bromodichloromethane	6		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Bromoform	44		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Bromomethane	10		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Carbon Tetrachloride	3		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Chlorobenzene	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Chloroethane	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Chloroform	70		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Chloromethane	3		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
cis-1,2-Dichloroethene	70		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
cis-1,3-Dichloropropene	4		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Dibromochloromethane	4		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Dibromomethane	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Dichlorodifluoromethane	1,400		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 UJ		0.5 U		0.5	UJ
Ethylbenzene	70		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Hexachlorobutadiene	4		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Isopropylbenzene	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Methyl tert-Butyl Ether	35		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Methylene Chloride	47		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Naphthalene	14		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
n-Butylbenzene	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
n-Propylbenzene	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
sec-Butylbenzene	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Styrene	140		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
tert-Butylbenzene	-		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Tetrachloroethene	7		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Toluene	1,400		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
trans-1,2-Dichloroethene	140		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
trans-1,3-Dichloropropene	4		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 UJ		0.5 U		0.5	UJ
Trichloroethene	2.5		**3.8**		**3.9**		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Trichlorofluoromethane	2,100		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
Vinyl Chloride	0.2		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1	U
o-Xylene	1,400		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U
p,m-Xylene	1,400		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.
2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).
- indicates there is no MEG
Bold number indicates a positive detection.
Bold number with shading indicates a detection above the MEG and/or action level.
U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).
UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.
J = Estimated value less than PQL or based on data evaluation of laboratory results.
Q = Qualifier

DRAFT Groundwater Analytical Data Table
April 11-17, 2008
Former GAT Facility Study Area
Glenburn, Maine
Sheet 3 of 4

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No.	GB-DW-54-0804	Q	GB-DW-55-0804	Q	GB-DW-56-0804	Q	GB-DW-57-0804	Q	GB-DW-60-0804	Q	GB-DW-61-0804	Q	GB-DW-76-0804	Q	GB-DW-78-0804	Q	GB-DW-79-0804	Q	GB-DW-80-0804	Q	GB-DW-81-0804	Q	GB-DW-85-0804	Q	GB-DW-87-0804	Q
			µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS	µg/L																											
(EPA METHOD 524.2)																												
1,1,1,2-Tetrachloroethane	13		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	200		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	1.8		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	6		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	70		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	1		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	0.05		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	70		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trimethylbenzene	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromo-3-chloropropane	0.25		2.0	U	2.0	U	2.0	UJ	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
1,2-Dibromoethane	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichlorobenzene	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	4		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	5		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-Trimethylbenzene	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichlorobenzene	60		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	21		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Chlorotoluene	140		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	UJ	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chlorotoluene	140		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Isopropyltoluene	70		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene	6		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromochloromethane	10		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	6		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	44		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromomethane	10		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon Tetrachloride	3		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	70		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloromethane	3		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	70		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	4		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	4		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromomethane	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	1,400		0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	70		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	4		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Isopropylbenzene	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-Butyl Ether	35		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	**1.2**		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylene Chloride	47		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	14		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Butylbenzene	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
sec-Butylbenzene	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	140		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	-		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	7		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	1,400		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	140		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	4		0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	2.5		**1.4**		**1.6**		0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	2,100		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl Chloride	0.2		0.1	U	0.1	U	0.1	UJ	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
o-Xylene	1,400		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p,m-Xylene	1,400		0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.
2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).
- indicates there is no MEG
Bold number indicates a positive detection.
Bold number with shading indicates a detection above the MEG and/or action level.
U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).
UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.
J = Estimated value less than PQL or based on data evaluation of laboratory results.
Q = Qualifier

DRAFT Groundwater Analytical Data Table
April 11-17, 2008
Former GAT Facility Study Area
Glenburn, Maine
Sheet 4 of 4

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No.	GB-PW-01-0804	Q	GB-PW02-0804	Q	GB-PW03-0804	Q	GB-PW03-0804 DUP	Q	GB-SW-01-0804	Q	GB-SW-01-0804-Duplicate	Q	GB-SW-02-0804	Q	GB-SW04-0804	Q	GB-SW-A-0804	Q
			µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS	µg/L																			
(EPA METHOD 524.2)																				
1,1,1,2-Tetrachloroethane	13		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1,1-Trichloroethane	200		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1,2,2-Tetrachloroethane	1.8		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1,2-Trichloroethane	6		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1-Dichloroethane	70		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1-Dichloroethene	1		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1-Dichloropropene	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,2,3-Trichlorobenzene	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,2,3-Trichloropropane	0.05		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,2,4-Trichlorobenzene	70		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,2,4-Trimethylbenzene	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,2-Dibromo-3-chloropropane	0.25		2.0 U		2.0 UJ		2.0 UJ		2.0 UJ		2.0 U		2.0 U		2.0 U		2.0 U		2.0 U	
1,2-Dibromoethane	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,2-Dichlorobenzene	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,2-Dichloroethane	4		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,2-Dichloropropane	5		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,3,5-Trimethylbenzene	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,3-Dichlorobenzene	60		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,3-Dichloropropane	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,4-Dichlorobenzene	21		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
2,2-Dichloropropane	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
2-Chlorotoluene	140		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U	
4-Chlorotoluene	140		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
4-Isopropyltoluene	70		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Benzene	6		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Bromobenzene	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Bromochloromethane	10		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Bromodichloromethane	6		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Bromoform	44		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Bromomethane	10		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Carbon Tetrachloride	3		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Chlorobenzene	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Chloroethane	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Chloroform	70		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Chloromethane	3		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
cis-1,2-Dichloroethene	70		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
cis-1,3-Dichloropropene	4		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Dibromochloromethane	4		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Dibromomethane	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Dichlorodifluoromethane	1,400		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U	
Ethylbenzene	70		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Hexachlorobutadiene	4		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Isopropylbenzene	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Methyl tert-Butyl Ether	35		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Methylene Chloride	47		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Naphthalene	14		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
n-Butylbenzene	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
n-Propylbenzene	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
sec-Butylbenzene	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Styrene	140		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
tert-Butylbenzene	-		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Tetrachloroethene	7		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Toluene	1,400		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		**7.1**		**0.6**		0.5 U	
trans-1,2-Dichloroethene	140		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
trans-1,3-Dichloropropene	4		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U	
Trichloroethene	2.5		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		**0.9**		**0.9**		0.5 U		**3.6**		0.5 U	
Trichlorofluoromethane	2,100		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
Vinyl Chloride	0.2		0.1 U		0.1 UJ		0.1 UJ		0.1 UJ		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
o-Xylene	1,400		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
p,m-Xylene	1,400		0.5 U		0.5 UJ		0.5 UJ		0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	

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2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).
- indicates there is no MEG
Bold number indicates a positive detection.
Bold number with shading indicates a detection above the MEG and/or action level.
U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).
UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.
J = Estimated value less than PQL or based on data evaluation of laboratory results.
Q = Qualifier

DRAFT Groundwater Analytical Data Table
October 2-7, 2008
Former GAT Facility Study Area
Glenburn, Maine
Sheet 1 of 4

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No.	GB-DW-02-0810	Q	GB-DW-04-0810	Q	GB-DW-05-0810	Q	GB-DW-06-0810	Q	GB-DW-07-0810	Q	GB-DW-08-0810	Q	GB-DW-09-0810	Q	GB-DW-10-0810	Q	GB-DW-11-0810	Q	GB-DW-19-0810	Q
			µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS	µg/L																					
(EPA METHOD 524.2)																						
1,1,1,2-Tetrachloroethane	13		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	200		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	1.8		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	1		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	0.05		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trimethylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromo-3-chloropropane	0.25		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
1,2-Dibromoethane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichlorobenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-Trimethylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichlorobenzene	60		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	21		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Chlorotoluene	140		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chlorotoluene	140		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Isopropyltoluene	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene	6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromochloromethane	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	44		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromomethane	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon Tetrachloride	3		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloromethane	3		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromomethane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	1,400		0.5	U	0.5	UJ	0.5	UJ	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Isopropylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-Butyl Ether	35		0.5	U	0.5	U	**0.8**		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	**1.9**		0.5	U
Methylene Chloride	47		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	14		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Butylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
sec-Butylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	140		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	7		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	1,400		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	140		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene[2]	2.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	2,100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl Chloride	0.2		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
o-Xylene	1,400		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p,m-Xylene	1,400		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the MEG and/or action level.

U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than PQL or based on data evaluation of laboratory results.

Q = Qualifier

Table 1
DRAFT Groundwater Analytical Data Table
October 2-7, 2008
Former GAT Facility Study Area
Glenburn, Maine
Sheet 2 of 4

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No.	GB-DW-22-0810-Before	Q	GB-DW-22-0810-Before DUP	Q	GB-DW-22-0810-Between	Q	GB-DW-22-0810-After	Q	GB-DW24-0810	Q	GB-DW26-0810	Q	GB-DW27-0810	Q	GB-DW31-0810	Q	GB-DW52-0810	Q	GB-DW-53-0810	Q
			µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS	µg/L																					
(EPA METHOD 524.2)																						
1,1,1,2-Tetrachloroethane	13		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	200		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	1.8		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	1		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	0.05		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trimethylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromo-3-chloropropane	0.25		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
1,2-Dibromoethane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichlorobenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-Trimethylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichlorobenzene	60		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	21		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Chlorotoluene	140		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chlorotoluene	140		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Isopropyltoluene	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene	6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromochloromethane	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	44		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromomethane	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon Tetrachloride	3		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloromethane	3		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromomethane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	1,400		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	UJ	0.5	U	0.5	U
Ethylbenzene	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Isopropylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-Butyl Ether	35		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylene Chloride	47		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	14		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Butylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
sec-Butylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	140		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	7		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	1,400		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	140		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	2.5		**3.3**		**3.0**		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	2,100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl Chloride	0.2		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
o-Xylene	1,400		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p,m-Xylene	1,400		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the MEG and/or action level.

U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than PQL or based on data evaluation of laboratory results.

Q = Qualifier

Table 1
DRAFT Groundwater Analytical Data Table
October 2-7, 2008
Former GAT Facility Study Area
Glenburn, Maine
Sheet 3 of 4

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No.	GB-DW-54-0810	Q	GB-DW-55-0810	Q	GB-DW-56-0810	Q	GB-DW-57-0810	Q	GB-DW-60-0810	Q	GB-DW-61-0810	Q	GB-DW-76-0810	Q	GB-DW-78-0810	Q	GB-DW-79-0810	Q	GB-DW-80-0810	Q	GB-DW-81-0810	Q	GB-DW-85-0810	Q	GB-DW-87-0810	Q	GB-DW-94-0810	Q
			µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 524.2)	µg/L																													
1,1,1,2-Tetrachloroethane	13		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	200		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	1.8		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	1		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	0.05		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trimethylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromo-3-chloropropane	0.25		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
1,2-Dibromoethane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichlorobenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-Trimethylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichlorobenzene	60		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	21		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Chlorotoluene	140		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chlorotoluene	140		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Isopropyltoluene	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene	6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromochloromethane	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	44		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromomethane	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon Tetrachloride	3		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloromethane	3		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ
cis-1,2-Dichloroethene	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromomethane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	1,400		0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	UJ
Ethylbenzene	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Isopropylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-Butyl Ether	35		0.5	U	0.5	U	0.5	U	0.5	U	**0.6**	U	**1.8**		**0.6**		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylene Chloride	47		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	14		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Butylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
sec-Butylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	140		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	7		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	1,400		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	140		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	2.5		0.5	U	**0.6**		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	2,100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl Chloride	0.2		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
o-Xylene	1,400		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p,m-Xylene	1,400		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.
2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).
- indicates there is no MEG
Bold number indicates a positive detection.
Bold number with shading indicates a detection above the MEG and/or action level.
U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).
UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.
J = Estimated value less than PQL or based on data evaluation of laboratory results.
Q = Qualifier

DRAFT Groundwater Analytical Data Table
October 2-7, 2008
Former GAT Facility Study Area
Glenburn, Maine
Sheet 4 of 4

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No. GB-PW-01-0810	Q	GB-PW02-0810	Q	GB-PW02-0810 DUP	Q	GB-PW03-0810	Q	GB-SW-01-0810	Q	GB-SW-01-0810-Duplicate	Q	GB-SW-02-0810	Q	GB-SW-03B-0810	Q	GB-SW-03C-0810	Q	GB-SW04-0810	Q
		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS	µg/L																				
(EPA METHOD 524.2)																					
1,1,1,2-Tetrachloroethane	13	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	200	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	1.8	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	6	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	70	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	1	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	-	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	-	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	0.05	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	70	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trimethylbenzene	-	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromo-3-chloropropane	0.25	2.0		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
1,2-Dibromoethane	-	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichlorobenzene	-	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	4	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	5	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-Trimethylbenzene	-	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichlorobenzene	60	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	-	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	21	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	-	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Chlorotoluene	140	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chlorotoluene	140	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Isopropyltoluene	70	0.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene	6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromochloromethane	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	44	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromomethane	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon Tetrachloride	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloromethane	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ
cis-1,2-Dichloroethene	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromomethane	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	1,400	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ
Ethylbenzene	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Isopropylbenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-Butyl Ether	35	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylene Chloride	47	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	14	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Butylbenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
sec-Butylbenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	140	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	1,400	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	**5.5**		0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	140	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	2.5	0.5	U	0.5	U	0.5	U	0.5	U	**1.2**		**1.0**		0.5	U	0.5	U	0.5	U	**3.5**	
Trichlorofluoromethane	2,100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl Chloride	0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
o-Xylene	1,400	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p,m-Xylene	1,400	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the MEG and/or action level.

U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than PQL or based on data evaluation of laboratory results.

Q = Qualifier

Table 2
Groundwater Analytical Data Table
May 12-18, 2009
Former GAT Facility Study Area
Glenburn, Maine
Sheet 1 of 3

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No.	GB-MW-01-P1	Q	GB-MW-01-P2	Q	GB-MW-01-P2 DUP	Q	GB-MW-01-P3	Q	GB-MW-02-P1	Q	GB-MW-02-P2	Q	GB-MW-02-P3	Q	GB-MW-02-P4	Q
			µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS	µg/L																	
(EPA METHOD 8260)																		
1,1,1,2-Tetrachloroethane	13		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1,1-Trichloroethane	200		1.0	U	1.0	U	1.0	U	**0.2**	**J**	1.0	U	1.0	U	1.0	U	1.0	U
1,1,2,2-Tetrachloroethane	1.8		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	6		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-Dichloroethane	70		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-Dichloroethene	1		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-Dichloropropene	-		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
1,2,3-Trichlorobenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2,3-Trichloropropane	0.05		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2,4-Trichlorobenzene	70		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2,4-Trimethylbenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-Dibromo-3-chloropropane	0.25		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,2-Dibromoethane	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-Dichlorobenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-Dichloroethane	4		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-Dichloropropane	5		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,3,5-Trimethylbenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,3-Dichlorobenzene	60		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,3-Dichloropropane	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,4-Dichlorobenzene	21		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1-Chlorohexane	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
2,2-Dichloropropane	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
2-Butanone	-		25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U
2-Chlorotoluene	140		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
2-Hexanone	-		10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
4-Chlorotoluene	140		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
4-Isopropyltoluene	70		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
4-Methyl-2-Pentanone	-		25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U
Acetone	6,300		25.0	U	25.0	U	25.0	U	**9.8**	**J**	25.0	U	25.0	U	25.0	U	**11.1**	**J**
Benzene	6		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Bromobenzene	-		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Bromochloromethane	10		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Bromodichloromethane	6		0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
Bromoform	44		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Bromomethane	10		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Carbon Disulfide	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Carbon Tetrachloride	3		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Chlorobenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Chloroethane	-		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Chloroform	70		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Chloromethane	3		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
cis-1,2-Dichloroethene	70		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
cis-1,3-Dichloropropene	4		0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Dibromochloromethane	4		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Dibromomethane	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Dichlorodifluoromethane	1,400		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Ethylbenzene	70		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Hexachlorobutadiene	4		0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
Isopropylbenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Methyl tert-Butyl Ether	35		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Methylene Chloride	47		4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U
Naphthalene	14		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
n-Butylbenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
n-Propylbenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
sec-Butylbenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Styrene	140		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
tert-Butylbenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Tetrachloroethene	7		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Toluene	1,400		**0.2**	**J**	**0.2**	**J**	**0.2**	**J**	**10.1**		1.0	U	**0.3**	**J**	**0.3**	**J**	**2.6**	
trans-1,2-Dichloroethene	140		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
trans-1,3-Dichloropropene	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene[2]	2.5		**40.1**		**49.4**		**42.3**		**17.3**		**3.2**		**15.1**		**5.1**		**2.7**	
Trichlorofluoromethane	2,100		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Vinyl Chloride	0.2		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
o-Xylene	1,400		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
p,m-Xylene	1,400		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the MEG and/or action level.

U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than PQL or based on data evaluation of laboratory results.

Q = Qualifier

DUP = Field Duplicate Sample

Table 2
Groundwater Analytical Data Table
May 12-18, 2009
Former GAT Facility Study Area
Glenburn, Maine
Sheet 2 of 3

Well No.		GB-MW-03S-0905	Q	GB-MW-03D-0905	Q	GB-MW-04S-0905	Q	GB-MW-04D-0905	Q	GB-MW-05S-0905	Q	GB-MW-05D-0905	Q	GB-MW-06-0905	Q
PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8260)	µg/L														
1,1,1,2-Tetrachloroethane	13	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1,1-Trichloroethane	200	1.0	U	**0.2**	**J**	1.0	U	**0.3**	**J**	1.0	U	1.0	U	1.0	U
1,1,2,2-Tetrachloroethane	1.8	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	6	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-Dichloroethane	70	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-Dichloroethene	1	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-Dichloropropene	-	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2,3-Trichlorobenzene	-	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
1,2,3-Trichloropropane	0.05	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2,4-Trichlorobenzene	70	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2,4-Trimethylbenzene	-	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-Dibromo-3-chloropropane	0.25	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-Dibromoethane	-	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,2-Dichlorobenzene	-	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-Dichloroethane	4	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-Dichloropropane	5	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,3,5-Trimethylbenzene	-	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,3-Dichlorobenzene	60	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,3-Dichloropropane	-	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,4-Dichlorobenzene	21	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1-Chlorohexane	-	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
2,2-Dichloropropane	-	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
2-Butanone	-	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U
2-Chlorotoluene	140	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
2-Hexanone	-	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
4-Chlorotoluene	140	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
4-Isopropyltoluene	70	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
4-Methyl-2-Pentanone	-	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U
Acetone	6,300	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U
Benzene	6	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Bromobenzene	-	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Bromochloromethane	10	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Bromodichloromethane	6	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
Bromoform	44	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Bromomethane	10	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Carbon Disulfide	-	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Carbon Tetrachloride	3	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Chlorobenzene	-	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Chloroethane	-	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Chloroform	70	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Chloromethane	3	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
cis-1,2-Dichloroethene	70	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
cis-1,3-Dichloropropene	4	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Dibromochloromethane	4	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Dibromomethane	-	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Dichlorodifluoromethane	1,400	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Ethylbenzene	70	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Hexachlorobutadiene	4	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
Isopropylbenzene	-	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Methyl tert-Butyl Ether	35	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Methylene Chloride	47	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U
Naphthalene	14	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
n-Butylbenzene	-	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
n-Propylbenzene	-	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
sec-Butylbenzene	-	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Styrene	140	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
tert-Butylbenzene	-	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Tetrachloroethene	7	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Toluene	1,400	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
trans-1,2-Dichloroethene	140	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
trans-1,3-Dichloropropene	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	2.5	1.0	U	**4.0**		1.0	U	**4.5**		**0.7**	**J**	1.0	U	**0.5**	**J**
Trichlorofluoromethane	2,100	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Vinyl Chloride	0.2	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
o-Xylene	1,400	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
p,m-Xylene	1,400	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the M

U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than PQL or based on data evaluation of laboratory results.

Q = Qualifier

Table 2
Groundwater Analytical Data Table
May 12-18, 2009
Former GAT Facility Study Area
Glenburn, Maine
Sheet 3 of 3

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No.	GB-OB-5A-0905	Q	GB-OB-8-0905	Q	GB-OB-8-0905- DUP	Q	GB-OB-11-0905	Q	GB-OB-16-0905	Q	GB-OB-19-0905	Q	GB-OB-20-0905	Q
			µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS	µg/L															
(EPA METHOD 8260)																
1,1,1,2-Tetrachloroethane	13		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1,1-Trichloroethane	200		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1,2,2-Tetrachloroethane	1.8		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	6		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-Dichloroethane	70		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-Dichloroethene	1		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,1-Dichloropropene	-		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
1,2,3-Trichlorobenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2,3-Trichloropropane	0.05		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2,4-Trichlorobenzene	70		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2,4-Trimethylbenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-Dibromo-3-chloropropane	0.25		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,2-Dibromoethane	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-Dichlorobenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-Dichloroethane	4		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,2-Dichloropropane	5		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,3,5-Trimethylbenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,3-Dichlorobenzene	60		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,3-Dichloropropane	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1,4-Dichlorobenzene	21		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
1-Chlorohexane	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
2,2-Dichloropropane	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
2-Butanone	-		25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	
2-Chlorotoluene	140		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
2-Hexanone	-		10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
4-Chlorotoluene	140		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
4-Isopropyltoluene	70		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
4-Methyl-2-Pentanone	-		25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U
Acetone	6,300		25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U
Benzene	6		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Bromobenzene	-		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Bromochloromethane	10		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Bromodichloromethane	6		0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
Bromoform	44		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Bromomethane	10		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Carbon Disulfide	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Carbon Tetrachloride	3		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Chlorobenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Chloroethane	-		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Chloroform	70		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Chloromethane	3		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
cis-1,2-Dichloroethene	70		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
cis-1,3-Dichloropropene	4		0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Dibromochloromethane	4		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Dibromomethane	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Dichlorodifluoromethane	1,400		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Ethylbenzene	70		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Hexachlorobutadiene	4		0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
Isopropylbenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Methyl tert-Butyl Ether	35		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Methylene Chloride	47		4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U
Naphthalene	14		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
n-Butylbenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
n-Propylbenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
sec-Butylbenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Styrene	140		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
tert-Butylbenzene	-		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Tetrachloroethene	7		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Toluene	1,400		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
trans-1,2-Dichloroethene	140		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
trans-1,3-Dichloropropene	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	2.5		1.0	U	**0.5**	**J**	**0.4**	**J**	1.0	U	1.0	U	**0.8**	**J**	1.0	U
Trichlorofluoromethane	2,100		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Vinyl Chloride	0.2		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
o-Xylene	1,400		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
p,m-Xylene	1,400		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the M

U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than PQL or based on data evaluation of laboratory results.

Q = Qualifier

DUP = Field Duplicate Sample

Table 1
Groundwater Analytical Data Table
December 10-13, 2009
Former GAT Facility Study Area
Glenburn, Maine
Sheet 1 of 2

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No.	GB-DW-22-0905-Before	Q	GB-DW-22-0905-Between	Q	GB-DW-22-0905-After	Q	GB-DW-54-0905	Q	GB-DW-54-0905 DUP	Q	GB-DW-55-0905	Q	GB-DW-56-0905	Q
			µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS	µg/L															
(EPA METHOD 524.2)																
1,1,1,2-Tetrachloroethane	13		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	200		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	1.8		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	1		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	0.05		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	**0.08**	**UJ**
1,2,4-Trimethylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromo-3-chloropropane	0.25		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
1,2-Dibromoethane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichlorobenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-Trimethylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichlorobenzene	60		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	21		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Chlorotoluene	140		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chlorotoluene	140		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Isopropyltoluene	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene	6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromochloromethane	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	44		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromomethane	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon Tetrachloride	3		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloromethane	3		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromomethane	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	1,400		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U
Ethylbenzene	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Isopropylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-Butyl Ether	35		0.5	U	0.5	U	0.5	U	**0.2**	**J**	**0.2**	**J**	**0.4**	**J**	0.5	U
Methylene Chloride	47		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	14		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Butylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
sec-Butylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	140		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	-		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	7		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	1,400		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	140		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene[2]	2.5		**4.0**		0.5	U	0.5	U	**0.8**		**0.9**		**1.2**		0.5	U
Trichlorofluoromethane	2,100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl Chloride	0.2		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
o-Xylene	1,400		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p,m-Xylene	1,400		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the M

U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than PQL or based on data evaluation of laboratory results.

Q = Qualifier

Table 1
Groundwater Analytical Data Table
December 10-13, 2009
Former GAT Facility Study Area
Glenburn, Maine
Sheet 2 of 2

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No. GB-PW-01-0905	Q	GB-PW02-0905	Q	GB-PW03-0905	Q	GB-SW-01-0905	Q	GB-SW04-0905	Q
	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS	µg/L										
(EPA METHOD 524.2)											
1,1,1,2-Tetrachloroethane	13	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	200	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	1.8	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	70	0.5	U	0.5	U	0.5	U	0.07	UJ	0.5	U
1,2,4-Trimethylbenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromo-3-chloropropane	0.25	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
1,2-Dibromoethane	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichlorobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-Trimethylbenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichlorobenzene	60	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	21	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Chlorotoluene	140	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Chlorotoluene	140	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Isopropyltoluene	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene	6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromochloromethane	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	44	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromomethane	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon Tetrachloride	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloromethane	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	70	0.5	U	0.5	U	0.5	U	0.5	U	**0.3**	**J**
cis-1,3-Dichloropropene	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromomethane	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	1,400	0.5	U	0.5	U	0.5	U	**0.3**	**J**	0.5	U
Ethylbenzene	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Isopropylbenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-Butyl Ether	35	**0.2**	**J**	**0.2**	**J**	**0.5**	**J**	0.5	U	0.5	U
Methylene Chloride	47	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	14	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Butylbenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
sec-Butylbenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	140	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	-	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	1,400	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,2-Dichloroethene	140	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene[2]	2.5	0.5	U	**0.1**	**J**	0.5	U	**1.1**		**3.5**	
Trichlorofluoromethane	2,100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl Chloride	0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
o-Xylene	1,400	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p,m-Xylene	1,400	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the M

U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than PQL or based on data evaluation of laboratory results.

Q = Qualifier

Table 1
Groundwater Analytical Data Table
June 28-30, 2010
Former GAT Facility Study Area
Glenburn, Maine
Sheet 1 of 4

PARAMETER (METHOD)	Well No. / [1]Maine CDC MEGs for DW	GB-DW-02-1006	Q	GB-DW-04-1006	Q	GB-DW-05-1006	Q	GB-DW-8-1006	Q	GB-DW-19-1006	Q	GB-DW-22-1006-Before	Q	GB-DW-22-1006-Before DUP	Q	GB-DW-22-1006-Between	Q	GB-DW-22-1006-After	Q
		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 524.2)	µg/L																		
1,1,1,2-TETRACHLOROETHANE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	**0.5**	U
1,1,1-TRICHLOROETHANE	200.0	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-TETRACHLOROETHANE	0.3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-TRICHLOROETHANE	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHANE	60	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHENE	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROPROPENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROPROPANE	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRICHLOROBENZENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMO-3-CHLOROPROPANE	0.20	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMOETHANE	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROBENZENE	200	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROETHANE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROPROPANE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROBENZENE	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROPROPANE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-DICHLOROBENZENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-DICHLOROPROPANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-CHLOROTOLUENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-CHLOROTOLUENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-ISOPROPYLTOLUENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BENZENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOCHLOROMETHANE	90	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMODICHLOROMETHANE	6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOFORM	40	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOMETHANE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CARBON TETRACHLORIDE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROBENZENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROETHANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROFORM	70	**0.32**	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROMETHANE	20	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,2-DICHLOROETHENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOCHLOROMETHANE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOMETHANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DICHLORODIFLUOROMETHANE	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ETHYLBENZENE	30	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
HEXACHLOROBUTADIENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ISOPROPYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
M,P-XYLENES	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYL TERT-BUTYL ETHER	35	0.5	U	0.5	U	**0.42**	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYLENE CHLORIDE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
NAPHTHALENE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-PROPYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
O-XYLENE	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
SEC-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
STYRENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TERT-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TETRACHLOROETHENE	0.6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TOLUENE	600	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,2-DICHLOROETHENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRICHLOROETHENE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	**2.8**		**2.8**		0.5	U	0.5	U
TRICHLOROFLUOROMETHANE	2,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VINYL CHLORIDE	0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the MEG and/or action level.

U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than PQL or based on data evaluation of laboratory results.

Q = Qualifier

Table 1
Groundwater Analytical Data Table
June 28-30, 2010
Former GAT Facility Study Area
Glenburn, Maine
Sheet 2 of 4

Well No.	GB-DW24-1006	Q	GB-DW31-1006	Q	GB-DW52-1006	Q	GB-DW-53-1006	Q	GB-DW-54-1006	Q	GB-DW-55-1006	Q	GB-DW-55-1006-Dup	Q	GB-DW-56-1006	Q	GB-DW-57-1006	Q
PARAMETER (METHOD)	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
[1]Maine CDC MEGs for DW																		
VOLATILE ORGANIC COMPOUNDS	µg/L																	
(EPA METHOD 524.2)																		
1,1,1,2-TETRACHLOROETHANE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-TRICHLOROETHANE	200.0	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-TETRACHLOROETHANE	0.3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-TRICHLOROETHANE	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHANE	60	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHENE	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROPROPENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROPROPANE	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRICHLOROBENZENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMO-3-CHLOROPROPANE	0.20	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	2.0	U	2.0	U	0.5	U
1,2-DIBROMOETHANE	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROBENZENE	200	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROETHANE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROPROPANE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROBENZENE	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROPROPANE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-DICHLOROBENZENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-DICHLOROPROPANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-CHLOROTOLUENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-CHLOROTOLUENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-ISOPROPYLTOLUENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BENZENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOCHLOROMETHANE	90	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMODICHLOROMETHANE	6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOFORM	40	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOMETHANE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CARBON TETRACHLORIDE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROBENZENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROETHANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROFORM	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROMETHANE	20	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,2-DICHLOROETHENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOCHLOROMETHANE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOMETHANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DICHLORODIFLUOROMETHANE	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ETHYLBENZENE	30	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
HEXACHLOROBUTADIENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ISOPROPYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
M,P-XYLENES	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYL TERT-BUTYL ETHER	35	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	**0.29**	**J**	0.5	U	0.5	U	0.5	U
METHYLENE CHLORIDE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
NAPHTHALENE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-PROPYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
O-XYLENE	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
SEC-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
STYRENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TERT-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TETRACHLOROETHENE	0.6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TOLUENE	600	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,2-DICHLOROETHENE	100	0.5	U	0.5	U	0.5	U	0.5	U	**0.5**	U	0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRICHLOROETHENE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	**0.62**		0.1	U	0.1	U	0.5	U
TRICHLOROFLUOROMETHANE	2,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VINYL CHLORIDE	0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the M

U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than PQL or based on data evaluation of laboratory results.

Q = Qualifier

Table 1
Groundwater Analytical Data Table
June 28-30, 2010
Former GAT Facility Study Area
Glenburn, Maine
Sheet 3 of 4

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No.	GB-DW-60-1006	Q	GB-DW-78-1006	Q	GB-DW-80-1006	Q	GB-PW-01-1006	Q	GB-PW02-1006	Q	GB-PW02-1006 DUP	Q	GB-PW03-1006	Q
			µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS	µg/L															
(EPA METHOD 524.2)																
1,1,1,2-TETRACHLOROETHANE	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-TRICHLOROETHANE	200.0		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-TETRACHLOROETHANE	0.3		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-TRICHLOROETHANE	3		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHANE	60		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHENE	7		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROPROPENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROPROPANE	0.05		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRICHLOROBENZENE	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRIMETHYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMO-3-CHLOROPROPANE	0.20		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMOETHANE	0.05		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROBENZENE	200		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROETHANE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROPROPANE	5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-TRIMETHYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROBENZENE	1		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROPROPANE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-DICHLOROBENZENE	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-DICHLOROPROPANE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-CHLOROTOLUENE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-CHLOROTOLUENE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-ISOPROPYLTOLUENE	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BENZENE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOCHLOROMETHANE	90		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMODICHLOROMETHANE	6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOFORM	40		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOMETHANE	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CARBON TETRACHLORIDE	5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROBENZENE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROETHANE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROFORM	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROMETHANE	20		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,2-DICHLOROETHENE	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,3-DICHLOROPROPENE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOCHLOROMETHANE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOMETHANE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DICHLORODIFLUOROMETHANE	1,000		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ETHYLBENZENE	30		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
HEXACHLOROBUTADIENE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ISOPROPYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
M,P-XYLENES	1,000		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYL TERT-BUTYL ETHER	35		**1.2**		0.5	U	0.5	U	0.5	U	**0.25**	**J**	**0.26**	**J**	**0.42**	**J**
METHYLENE CHLORIDE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
NAPHTHALENE	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-BUTYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-PROPYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
O-XYLENE	1,000		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
SEC-BUTYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
STYRENE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TERT-BUTYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TETRACHLOROETHENE	0.6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TOLUENE	600		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,2-DICHLOROETHENE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,3-DICHLOROPROPENE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRICHLOROETHENE	5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRICHLOROFLUOROMETHANE	2,000		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VINYL CHLORIDE	0.2		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the M

U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than PQL or based on data evaluation of laboratory results.

Q = Qualifier

Table 1
Groundwater Analytical Data Table
June 28-30, 2010
Former GAT Facility Study Area
Glenburn, Maine
Sheet 4 of 4

Well No.		GB-SW-01-1006	Q	GB-SW-02-1006	Q	GB-SW-03-1006	Q	GB-SW04-1006	Q	GB-SW04-1006-DUP	Q
PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS	µg/L										
(EPA METHOD 524.2)											
1,1,1,2-TETRACHLOROETHANE	10	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,1,1-TRICHLOROETHANE	200.0	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,1,2,2-TETRACHLOROETHANE	0.3	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,1,2-TRICHLOROETHANE	3	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,1-DICHLOROETHANE	60	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,1-DICHLOROETHENE	7	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,1-DICHLOROPROPENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2,3-TRICHLOROBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2,3-TRICHLOROPROPANE	0.05	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2,4-TRICHLOROBENZENE	70	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2,4-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2-DIBROMO-3-	0.20	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2-DIBROMOETHANE	0.05	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2-DICHLOROBENZENE	200	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2-DICHLOROETHANE	4	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2-DICHLOROPROPANE	5	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,3,5-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,3-DICHLOROBENZENE	1	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,3-DICHLOROPROPANE	100	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,4-DICHLOROBENZENE	70	0.5	U	0.5	U	NS		0.5	U	0.5	U
2,2-DICHLOROPROPANE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
2-CHLOROTOLUENE	100	0.5	U	0.5	U	NS		0.5	U	0.5	U
4-CHLOROTOLUENE	100	0.5	U	0.5	U	NS		0.5	U	0.5	U
4-ISOPROPYLTOLUENE	70	0.5	U	0.5	U	NS		0.5	U	0.5	U
BENZENE	4	0.5	U	0.5	U	NS		0.5	U	0.5	U
BROMOBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
BROMOCHLOROMETHANE	90	0.5	U	0.5	U	NS		0.5	U	0.5	U
BROMODICHLOROMETHANE	6	0.5	U	0.5	U	NS		0.5	U	0.5	U
BROMOFORM	40	0.5	U	0.5	U	NS		0.5	U	0.5	U
BROMOMETHANE	10	0.5	U	0.5	U	NS		0.5	U	0.5	U
CARBON TETRACHLORIDE	5	0.5	U	0.5	U	NS		0.5	U	0.5	U
CHLOROBENZENE	100	0.5	U	0.5	U	NS		0.5	U	0.5	U
CHLOROETHANE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
CHLOROFORM	70	0.5	U	0.5	U	NS		0.5	U	0.5	U
CHLOROMETHANE	20	0.5	U	0.5	U	NS		0.5	U	0.5	U
CIS-1,2-DICHLOROETHENE	70	0.5	U	0.5	U	NS		0.5	U	0.5	U
CIS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	NS		0.5	U	0.5	U
DIBROMOCHLOROMETHANE	4	0.5	U	0.5	U	NS		0.5	U	0.5	U
DIBROMOMETHANE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
DICHLORODIFLUOROMETHANE	1,000	0.5	U	0.5	U	NS		0.5	U	0.5	U
ETHYLBENZENE	30	0.5	U	0.5	U	NS		0.5	U	0.5	U
HEXACHLOROBUTADIENE	4	0.5	U	0.5	U	NS		0.5	U	0.5	U
ISOPROPYLBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
M,P-XYLENES	1,000	0.5	U	0.5	U	NS		0.5	U	0.5	U
METHYL TERT-BUTYL ETHER	35	0.5	U	0.5	U	NS		0.5	U	0.5	U
METHYLENE CHLORIDE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
NAPHTHALENE	10	0.5	U	0.5	U	NS		0.5	U	0.5	U
N-BUTYLBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
N-PROPYLBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
O-XYLENE	1,000	0.5	U	0.5	U	NS		0.5	U	0.5	U
SEC-BUTYLBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
STYRENE	100	0.5	U	0.5	U	NS		0.5	U	0.5	U
TERT-BUTYLBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
TETRACHLOROETHENE	0.6	0.5	U	0.5	U	NS		0.5	U	0.5	U
TOLUENE	600	0.5	U	0.5	U	NS		0.5	U	0.5	U
TRANS-1,2-DICHLOROETHENE	100	0.5	U	0.5	U	NS		0.5	U	0.5	U
TRANS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	NS		0.5	U	0.5	U
TRICHLOROETHENE	5	**0.78**		0.5	U	NS		**0.78**		**0.75**	
TRICHLOROFLUOROMETHANE	2,000	0.5	U	0.5	U	NS		0.5	U	0.5	U
VINYL CHLORIDE	0.2	0.1	U	0.1	U	NS		0.1	U	0.1	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.
2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared t
- indicates there is no MEG
Bold number indicates a positive detection.
Bold number with shading indicates a detection above the
U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).
UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.
J = Estimated value less than PQL or based on data evaluation of laboratory results.
Q = Qualifier

Table 2
Groundwater Analytical Data Table
June 28-30, 2010
Former GAT Facility Study Area
Glenburn, Maine
Sheet 1 of 3

Well No.		GB-MW-01-P1	Q	GB-MW-01-P1 DU	Q	GB-MW-01-P2	Q	GB-MW-01-P3	Q	GB-MW-02-P1	Q	GB-MW-02-P2	Q	GB-MW-02-P2-DUP	Q	GB-MW-02-P3	Q
PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 524.2)	µg/L																
1,1,1,2-TETRACHLOROETHANE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-TRICHLOROETHANE	200.0	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	**0.29**	**J**
1,1,2,2-TETRACHLOROETHANE	0.3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-TRICHLOROETHANE	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHANE	60	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHENE	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROPROPENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROPROPANE	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRICHLOROBENZENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMO-3-CHLOROPROPANE	0.20	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMOETHANE	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROBENZENE	200	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROETHANE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROPROPANE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROBENZENE	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROPROPANE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-DICHLOROBENZENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-DICHLOROPROPANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-CHLOROTOLUENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-CHLOROTOLUENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-ISOPROPYLTOLUENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BENZENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOCHLOROMETHANE	90	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMODICHLOROMETHANE	6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOFORM	40	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOMETHANE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CARBON TETRACHLORIDE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROBENZENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROETHANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROFORM	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROMETHANE	20	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,2-DICHLOROETHENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOCHLOROMETHANE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOMETHANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DICHLORODIFLUOROMETHANE	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ETHYLBENZENE	30	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
HEXACHLOROBUTADIENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ISOPROPYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
M,P-XYLENES	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYL TERT-BUTYL ETHER	35	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYLENE CHLORIDE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
NAPHTHALENE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-PROPYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
O-XYLENE	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
SEC-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
STYRENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TERT-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TETRACHLOROETHENE	0.6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TOLUENE	600	0.5	U	0.5	U	0.5	U	**2.5**		0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,2-DICHLOROETHENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRICHLOROETHENE	5	**26**		**25**		**53**		**21**		**2.6**		**22**		**22**		**8.5**	
TRICHLOROFLUOROMETHANE	2,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VINYL CHLORIDE	0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the MEG and/or action level.

U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than PQL or based on data evaluation of laboratory results.

Q = Qualifier

DUP = Field Duplicate Sample

Table 2
Groundwater Analytical Data Table
June 28-30, 2010
Former GAT Facility Study Area
Glenburn, Maine
Sheet 2 of 3

Well No.		GB-MW-03S-1006	Q	GB-MW-03D-1006	Q	GB-MW-04S-1006	Q	GB-MW-04D-1006	Q	GB-MW-05S-1006	Q	GB-MW-05D-1006	Q	GB-MW-06-1006	Q
PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8260)	µg/L														
1,1,1,2-TETRACHLOROETHANE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-TRICHLOROETHANE	200.0	0.5	U	0.5	U	0.5	U	**0.32**	**J**	0.5	U	0.5	U	0.5	U
1,1,2,2-TETRACHLOROETHANE	0.3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-TRICHLOROETHANE	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHANE	60	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHENE	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROPROPENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROPROPANE	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRICHLOROBENZENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMO-3-	0.20	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMOETHANE	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROBENZENE	200	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROETHANE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROPROPANE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROBENZENE	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROPROPANE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-DICHLOROBENZENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-DICHLOROPROPANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-CHLOROTOLUENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-CHLOROTOLUENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-ISOPROPYLTOLUENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BENZENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOCHLOROMETHANE	90	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMODICHLOROMETHANE	6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOFORM	40	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOMETHANE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CARBON TETRACHLORIDE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROBENZENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROETHANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROFORM	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROMETHANE	20	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,2-DICHLOROETHENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOCHLOROMETHANE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOMETHANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DICHLORODIFLUOROMETHANE	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ETHYLBENZENE	30	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
HEXACHLOROBUTADIENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ISOPROPYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
M,P-XYLENES	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYL TERT-BUTYL ETHER	35	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYLENE CHLORIDE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
NAPHTHALENE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-PROPYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
O-XYLENE	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
SEC-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
STYRENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TERT-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TETRACHLOROETHENE	0.6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TOLUENE	600	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,2-DICHLOROETHENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRICHLOROETHENE	5	**0.94**		**3.4**		**0.62**		**5.7**		**0.79**		0.5	U	0.5	U
TRICHLOROFLUOROMETHANE	2,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VINYL CHLORIDE	0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the M

U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than PQL or based on data evaluation of laboratory results.

Q = Qualifier

Table 2
Groundwater Analytical Data Table
June 28-30, 2010
Former GAT Facility Study Area
Glenburn, Maine
Sheet 3 of 3

PARAMETER (METHOD)	Well No. / [1]Maine CDC MEGs for DW	GB-OB-5A-1006 µg/L	Q	GB-OB-8-1006 µg/L	Q	GB-OB-8-1006- DUP µg/L	Q	GB-OB-11-1006 µg/L	Q	GB-OB-16-1006 µg/L	Q	GB-OB-19-1006 µg/L	Q	GB-OB-20-1006 µg/L	Q
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 8260)	µg/L														
1,1,1,2-TETRACHLOROETHANE	10	0.5	U	NS		NS		NS		NS		NS		NS	
1,1,1-TRICHLOROETHANE	200.0	0.5	U	NS		NS		NS		NS		NS		NS	
1,1,2,2-TETRACHLOROETHANE	0.3	0.5	U	NS		NS		NS		NS		NS		NS	
1,1,2-TRICHLOROETHANE	3	0.5	U	NS		NS		NS		NS		NS		NS	
1,1-DICHLOROETHANE	60	0.5	U	NS		NS		NS		NS		NS		NS	
1,1-DICHLOROETHENE	7	0.5	U	NS		NS		NS		NS		NS		NS	
1,1-DICHLOROPROPENE	NA	0.5	U	NS		NS		NS		NS		NS		NS	
1,2,3-TRICHLOROBENZENE	NA	0.5	U	NS		NS		NS		NS		NS		NS	
1,2,3-TRICHLOROPROPANE	0.05	0.5	U	NS		NS		NS		NS		NS		NS	
1,2,4-TRICHLOROBENZENE	70	0.5	U	NS		NS		NS		NS		NS		NS	
1,2,4-TRIMETHYLBENZENE	NA	0.5	U	NS		NS		NS		NS		NS		NS	
1,2-DIBROMO-3-CHLOROPROPANE	0.20	0.5	U	NS		NS		NS		NS		NS		NS	
1,2-DIBROMOETHANE	0.05	0.5	U	NS		NS		NS		NS		NS		NS	
1,2-DICHLOROBENZENE	200	0.5	U	NS		NS		NS		NS		NS		NS	
1,2-DICHLOROETHANE	4	0.5	U	NS		NS		NS		NS		NS		NS	
1,2-DICHLOROPROPANE	5	0.5	U	NS		NS		NS		NS		NS		NS	
1,3,5-TRIMETHYLBENZENE	NA	0.5	U	NS		NS		NS		NS		NS		NS	
1,3-DICHLOROBENZENE	1	0.5	U	NS		NS		NS		NS		NS		NS	
1,3-DICHLOROPROPANE	100	0.5	U	NS		NS		NS		NS		NS		NS	
1,4-DICHLOROBENZENE	70	0.5	U	NS		NS		NS		NS		NS		NS	
2,2-DICHLOROPROPANE	NA	0.5	U	NS		NS		NS		NS		NS		NS	
2-CHLOROTOLUENE	100	0.5	U	NS		NS		NS		NS		NS		NS	
4-CHLOROTOLUENE	100	0.5	U	NS		NS		NS		NS		NS		NS	
4-ISOPROPYLTOLUENE	70	0.5	U	NS		NS		NS		NS		NS		NS	
BENZENE	4	0.5	U	NS		NS		NS		NS		NS		NS	
BROMOBENZENE	NA	0.5	U	NS		NS		NS		NS		NS		NS	
BROMOCHLOROMETHANE	90	0.5	U	NS		NS		NS		NS		NS		NS	
BROMODICHLOROMETHANE	6	0.5	U	NS		NS		NS		NS		NS		NS	
BROMOFORM	40	0.5	U	NS		NS		NS		NS		NS		NS	
BROMOMETHANE	10	0.5	U	NS		NS		NS		NS		NS		NS	
CARBON TETRACHLORIDE	5	0.5	U	NS		NS		NS		NS		NS		NS	
CHLOROBENZENE	100	0.5	U	NS		NS		NS		NS		NS		NS	
CHLOROETHANE	NA	0.5	U	NS		NS		NS		NS		NS		NS	
CHLOROFORM	70	0.5	U	NS		NS		NS		NS		NS		NS	
CHLOROMETHANE	20	0.5	U	NS		NS		NS		NS		NS		NS	
CIS-1,2-DICHLOROETHENE	70	0.5	U	NS		NS		NS		NS		NS		NS	
CIS-1,3-DICHLOROPROPENE	4	0.5	U	NS		NS		NS		NS		NS		NS	
DIBROMOCHLOROMETHANE	4	0.5	U	NS		NS		NS		NS		NS		NS	
DIBROMOMETHANE	NA	0.5	U	NS		NS		NS		NS		NS		NS	
DICHLORODIFLUOROMETHANE	1,000	0.5	U	NS		NS		NS		NS		NS		NS	
ETHYLBENZENE	30	0.5	U	NS		NS		NS		NS		NS		NS	
HEXACHLOROBUTADIENE	4	0.5	U	NS		NS		NS		NS		NS		NS	
ISOPROPYLBENZENE	NA	0.5	U	NS		NS		NS		NS		NS		NS	
M,P-XYLENES	1,000	0.5	U	NS		NS		NS		NS		NS		NS	
METHYL TERT-BUTYL ETHER	35	0.5	U	NS		NS		NS		NS		NS		NS	
METHYLENE CHLORIDE	NA	0.5	U	NS		NS		NS		NS		NS		NS	
NAPHTHALENE	10	0.5	U	NS		NS		NS		NS		NS		NS	
N-BUTYLBENZENE	NA	0.5	U	NS		NS		NS		NS		NS		NS	
N-PROPYLBENZENE	NA	0.5	U	NS		NS		NS		NS		NS		NS	
O-XYLENE	1,000	0.5	U	NS		NS		NS		NS		NS		NS	
SEC-BUTYLBENZENE	NA	0.5	U	NS		NS		NS		NS		NS		NS	
STYRENE	100	0.5	U	NS		NS		NS		NS		NS		NS	
TERT-BUTYLBENZENE	NA	0.5	U	NS		NS		NS		NS		NS		NS	
TETRACHLOROETHENE	0.6	0.5	U	NS		NS		NS		NS		NS		NS	
TOLUENE	600	0.5	U	NS		NS		NS		NS		NS		NS	
TRANS-1,2-DICHLOROETHENE	100	0.5	U	NS		NS		NS		NS		NS		NS	
TRANS-1,3-DICHLOROPROPENE	4	0.5	U	NS		NS		NS		NS		NS		NS	
TRICHLOROETHENE	5	0.5	U	NS		NS		NS		NS		NS		NS	
TRICHLOROFLUOROMETHANE	2,000	0.5	U	NS		NS		NS		NS		NS		NS	
VINYL CHLORIDE	0.2	0.1	U	NS		NS		NS		NS		NS		NS	

[1] **Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 7, 2006.**

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the M

U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than PQL or based on data evaluation of laboratory results.

Q = Qualifier

DUP = Field Duplicate Sample

Table 1
Groundwater Analytical Data Table
November 8-11, 2010
Former GAT Facility Study Area
Glenburn, Maine
Sheet 1 of 4

Well No.		GB-DW-02-1011	Q	GB-DW-04-1011	Q	GB-DW-05-1011	Q	GB-DW-6-1011	Q	GB-DW-8-1011	Q	GB-DW-19-1011	Q	GB-DW-22-1011-Before	Q	GB-DW-22-1011-Before DUP	Q	GB-DW-22-1011-Between	Q
PARAMETER (METHOD)	[1]**Maine CDC MEGs for DW**	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 524.2)	µg/L																		
1,1,1,2-TETRACHLOROETHANE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-TRICHLOROETHANE	200.0	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-TETRACHLOROETHANE	0.3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-TRICHLOROETHANE	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHANE	60	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHENE	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROPROPENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROPROPANE	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRICHLOROBENZENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMO-3-	0.20	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMOETHANE	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROBENZENE	200	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROETHANE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROPROPANE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROBENZENE	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROPROPANE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-DICHLOROBENZENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-DICHLOROPROPANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-CHLOROTOLUENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-CHLOROTOLUENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-ISOPROPYLTOLUENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BENZENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOCHLOROMETHANE	90	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMODICHLOROMETHANE	6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOFORM	40	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOMETHANE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CARBON TETRACHLORIDE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROBENZENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROETHANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROFORM	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROMETHANE	20	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,2-DICHLOROETHENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOCHLOROMETHANE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOMETHANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DICHLORODIFLUOROMETHANE	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ETHYLBENZENE	30	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
HEXACHLOROBUTADIENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ISOPROPYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
M,P-XYLENES	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYL TERT-BUTYL ETHER	35	0.5	U	0.5	U	**1.2**		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYLENE CHLORIDE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
NAPHTHALENE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-PROPYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
O-XYLENE	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
SEC-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
STYRENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TERT-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TETRACHLOROETHENE	0.6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TOLUENE	600	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,2-DICHLOROETHENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRICHLOROETHENE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	**2.2**		**2.2**		0.5	U
TRICHLOROFLUOROMETHANE	2,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VINYL CHLORIDE	0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. July 2010.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the MEG and/or action level.

U = Compound not detected above laboratory's Repoting Limit (RL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than RL or based on data evaluation of laboratory results.

Q = Qualifier

Table 1
Groundwater Analytical Data Table
November 8-11, 2010
Former GAT Facility Study Area
Glenburn, Maine
Sheet 2 of 4

Well No.		GB-DW24-1011	Q	GB-DW31-1011	Q	GB-DW52-1011	Q	GB-DW-53-1011	Q	GB-DW-54-1011	Q	GB-DW-55-1011	Q	GB-DW-55-1011-Dup	Q	GB-DW-56-1011	Q	GB-DW-57-1011	Q
PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS	µg/L																		
(EPA METHOD 524.2)																			
1,1,1,2-TETRACHLOROETHANE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,1,1-TRICHLOROETHANE	200.0	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,1,2,2-TETRACHLOROETHANE	0.3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,1,2-TRICHLOROETHANE	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,1-DICHLOROETHANE	60	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,1-DICHLOROETHENE	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,1-DICHLOROPROPENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,2,3-TRICHLOROBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,2,3-TRICHLOROPROPANE	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,2,4-TRICHLOROBENZENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,2,4-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,2-DIBROMO-3-	0.20	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	2.0	U	NS		0.5	U
1,2-DIBROMOETHANE	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,2-DICHLOROBENZENE	200	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,2-DICHLOROETHANE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,2-DICHLOROPROPANE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,3,5-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,3-DICHLOROBENZENE	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,3-DICHLOROPROPANE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
1,4-DICHLOROBENZENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
2,2-DICHLOROPROPANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
2-CHLOROTOLUENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
4-CHLOROTOLUENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
4-ISOPROPYLTOLUENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
BENZENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
BROMOBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
BROMOCHLOROMETHANE	90	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
BROMODICHLOROMETHANE	6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
BROMOFORM	40	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
BROMOMETHANE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
CARBON TETRACHLORIDE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
CHLOROBENZENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
CHLOROETHANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
CHLOROFORM	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
CHLOROMETHANE	20	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
CIS-1,2-DICHLOROETHENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
CIS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
DIBROMOCHLOROMETHANE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
DIBROMOMETHANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
DICHLORODIFLUOROMETHANE	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
ETHYLBENZENE	30	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
HEXACHLOROBUTADIENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
ISOPROPYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
M,P-XYLENES	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
METHYL TERT-BUTYL ETHER	35	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
METHYLENE CHLORIDE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
NAPHTHALENE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
N-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
N-PROPYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
O-XYLENE	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
SEC-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
STYRENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
TERT-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
TETRACHLOROETHENE	0.6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
TOLUENE	600	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
TRANS-1,2-DICHLOROETHENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
TRANS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
TRICHLOROETHENE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	**0.57**		**0.61**		NS		0.5	U
TRICHLOROFLUOROMETHANE	2,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	NS		0.5	U
VINYL CHLORIDE	0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	NS		0.1	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. July 15, 2010.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the M

U = Compound not detected above laboratory's Reporting (RL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than RL or based on data evaluation of laboratory results.

Q = Qualifier

Table 1
Groundwater Analytical Data Table
November 8-11, 2010
Former GAT Facility Study Area
Glenburn, Maine
Sheet 3 of 4

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No.	GB-DW-60-1011	Q	GB-DW-78-1011	Q	GB-DW-80-1011	Q	GB-DW-85-1011	Q	GB-PW-01-1011	Q	GB-PW02-1011	Q	GB-PW02-1011 DUP	Q	GB-PW03-1011	Q
	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 524.2)	µg/L																	
1,1,1,2-TETRACHLOROETHANE	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-TRICHLOROETHANE	200.0		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-TETRACHLOROETHANE	0.3		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-TRICHLOROETHANE	3		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHANE	60		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHENE	7		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROPROPENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROPROPANE	0.05		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRICHLOROBENZENE	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRIMETHYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMO-3-	0.20		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMOETHANE	0.05		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROBENZENE	200		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROETHANE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROPROPANE	5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-TRIMETHYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROBENZENE	1		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROPROPANE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-DICHLOROBENZENE	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-DICHLOROPROPANE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-CHLOROTOLUENE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-CHLOROTOLUENE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-ISOPROPYLTOLUENE	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BENZENE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOCHLOROMETHANE	90		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMODICHLOROMETHANE	6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOFORM	40		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOMETHANE	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CARBON TETRACHLORIDE	5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROBENZENE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROETHANE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROFORM	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROMETHANE	20		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,2-DICHLOROETHENE	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,3-DICHLOROPROPENE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOCHLOROMETHANE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOMETHANE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DICHLORODIFLUOROMETHANE	1,000		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ETHYLBENZENE	30		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
HEXACHLOROBUTADIENE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ISOPROPYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
M,P-XYLENES	1,000		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYL TERT-BUTYL ETHER	35		0.5	U	0.5	U	0.5	U	**2.1**		0.5	U	0.5	U	0.5	U	**0.39**	**J**
METHYLENE CHLORIDE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
NAPHTHALENE	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-BUTYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-PROPYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
O-XYLENE	1,000		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
SEC-BUTYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
STYRENE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TERT-BUTYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TETRACHLOROETHENE	0.6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TOLUENE	600		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,2-DICHLOROETHENE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,3-DICHLOROPROPENE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRICHLOROETHENE	5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRICHLOROFLUOROMETHANE	2,000		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VINYL CHLORIDE	0.2		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. August 15, 2010.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the M

U = Compound not detected above laboratory's Reporting Limit (RL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than RL or based on data evaluation of laboratory results.

Q = Qualifier

Table 1
Groundwater Analytical Data Table
November 8-11, 2010
Former GAT Facility Study Area
Glenburn, Maine
Sheet 4 of 4

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No. GB-SW-01-1011	Q	GB-SW-02-1011	Q	GB-SW-03-1011	Q	GB-SW04-1011	Q	GB-SW04-1011-DUP	Q
	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 524.2)	µg/L										
1,1,1,2-TETRACHLOROETHANE	10	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,1,1-TRICHLOROETHANE	200.0	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,1,2,2-TETRACHLOROETHANE	0.3	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,1,2-TRICHLOROETHANE	3	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,1-DICHLOROETHANE	60	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,1-DICHLOROETHENE	7	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,1-DICHLOROPROPENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2,3-TRICHLOROBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2,3-TRICHLOROPROPANE	0.05	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2,4-TRICHLOROBENZENE	70	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2,4-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2-DIBROMO-3-	0.20	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2-DIBROMOETHANE	0.05	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2-DICHLOROBENZENE	200	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2-DICHLOROETHANE	4	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,2-DICHLOROPROPANE	5	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,3,5-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,3-DICHLOROBENZENE	1	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,3-DICHLOROPROPANE	100	0.5	U	0.5	U	NS		0.5	U	0.5	U
1,4-DICHLOROBENZENE	70	0.5	U	0.5	U	NS		0.5	U	0.5	U
2,2-DICHLOROPROPANE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
2-CHLOROTOLUENE	100	0.5	U	0.5	U	NS		0.5	U	0.5	U
4-CHLOROTOLUENE	100	0.5	U	0.5	U	NS		0.5	U	0.5	U
4-ISOPROPYLTOLUENE	70	0.5	U	0.5	U	NS		0.5	U	0.5	U
BENZENE	4	0.5	U	0.5	U	NS		0.5	U	0.5	U
BROMOBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
BROMOCHLOROMETHANE	90	0.5	U	0.5	U	NS		0.5	U	0.5	U
BROMODICHLOROMETHANE	6	0.5	U	0.5	U	NS		0.5	U	0.5	U
BROMOFORM	40	0.5	U	0.5	U	NS		0.5	U	0.5	U
BROMOMETHANE	10	0.5	U	0.5	U	NS		0.5	U	0.5	U
CARBON TETRACHLORIDE	5	0.5	U	0.5	U	NS		0.5	U	0.5	U
CHLOROBENZENE	100	0.5	U	0.5	U	NS		0.5	U	0.5	U
CHLOROETHANE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
CHLOROFORM	70	0.5	U	0.5	U	NS		0.5	U	0.5	U
CHLOROMETHANE	20	0.5	U	0.5	U	NS		0.5	U	0.5	U
CIS-1,2-DICHLOROETHENE	70	0.5	U	0.5	U	NS		0.5	U	0.5	U
CIS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	NS		0.5	U	0.5	U
DIBROMOCHLOROMETHANE	4	0.5	U	0.5	U	NS		0.5	U	0.5	U
DIBROMOMETHANE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
DICHLORODIFLUOROMETHANE	1,000	0.5	U	0.5	U	NS		0.5	U	0.5	U
ETHYLBENZENE	30	0.5	U	0.5	U	NS		0.5	U	0.5	U
HEXACHLOROBUTADIENE	4	0.5	U	0.5	U	NS		0.5	U	0.5	U
ISOPROPYLBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
M,P-XYLENES	1,000	0.5	U	0.5	U	NS		0.5	U	0.5	U
METHYL TERT-BUTYL ETHER	35	0.5	U	0.5	U	NS		0.5	U	0.5	U
METHYLENE CHLORIDE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
NAPHTHALENE	10	0.5	U	0.5	U	NS		0.5	U	0.5	U
N-BUTYLBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
N-PROPYLBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
O-XYLENE	1,000	0.5	U	0.5	U	NS		0.5	U	0.5	U
SEC-BUTYLBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
STYRENE	100	0.5	U	0.5	U	NS		0.5	U	0.5	U
TERT-BUTYLBENZENE	NA	0.5	U	0.5	U	NS		0.5	U	0.5	U
TETRACHLOROETHENE	0.6	0.5	U	0.5	U	NS		0.5	U	0.5	U
TOLUENE	600	0.5	U	0.5	U	NS		0.5	U	0.5	U
TRANS-1,2-DICHLOROETHENE	100	0.5	U	0.5	U	NS		0.5	U	0.5	U
TRANS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	NS		0.5	U	0.5	U
TRICHLOROETHENE	5	**0.82**		0.5	U	NS		**0.46**	**J**	**0.43**	**J**
TRICHLOROFLUOROMETHANE	2,000	0.5	U	0.5	U	NS		0.5	U	0.5	U
VINYL CHLORIDE	0.2	0.1	U	0.1	U	NS		0.1	U	0.1	U

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U = Compound not detected above laboratory's Reporting Limit (RL).

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J = Estimated value less than RL or based on data evaluation of laboratory results.

Q = Qualifier

Table 2
Groundwater Analytical Data Table
November 8-11, 2010
Former GAT Facility Study Area
Glenburn, Maine
Sheet 1 of 3

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No.	GB-MW-01-P1	Q	B-MW-01-P1 DU	Q	GB-MW-01-P2	Q	GB-MW-01-P3	Q	GB-MW-02-P1	Q	GB-MW-02-P2	Q	GB-MW-02-P2-DUP	Q	GB-MW-02-P3	Q
			µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS	µg/L																	
(EPA METHOD 524.2)																		
1,1,1,2-TETRACHLOROETHANE	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-TRICHLOROETHANE	200.0		0.5	U	0.5	U	0.5	U	**0.36**	**J**	0.5	U	**0.3**	**J**	**0.28**	**J**	**0.38**	**J**
1,1,2,2-TETRACHLOROETHANE	0.3		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-TRICHLOROETHANE	3		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHANE	60		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHENE	7		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROPROPENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROPROPANE	0.05		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRICHLOROBENZENE	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRIMETHYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMO-3-	0.20		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMOETHANE	0.05		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROBENZENE	200		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROETHANE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROPROPANE	5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-TRIMETHYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROBENZENE	1		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROPROPANE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-DICHLOROBENZENE	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-DICHLOROPROPANE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-CHLOROTOLUENE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-CHLOROTOLUENE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-ISOPROPYLTOLUENE	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BENZENE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOCHLOROMETHANE	90		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMODICHLOROMETHANE	6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOFORM	40		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOMETHANE	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CARBON TETRACHLORIDE	5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROBENZENE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROETHANE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROFORM	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROMETHANE	20		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,2-DICHLOROETHENE	70		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,3-DICHLOROPROPENE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOCHLOROMETHANE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOMETHANE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DICHLORODIFLUOROMETHANE	1,000		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ETHYLBENZENE	30		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
HEXACHLOROBUTADIENE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ISOPROPYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
M,P-XYLENES	1,000		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYL TERT-BUTYL ETHER	35		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYLENE CHLORIDE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
NAPHTHALENE	10		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-BUTYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-PROPYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
O-XYLENE	1,000		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
SEC-BUTYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
STYRENE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TERT-BUTYLBENZENE	NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TETRACHLOROETHENE	0.6		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TOLUENE	600		0.5	U	0.5	U	0.5	U	**1.7**		0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,2-DICHLOROETHENE	100		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,3-DICHLOROPROPENE	4		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRICHLOROETHENE	5		**41**		**42**		**41**		**21**		**2.5**		**22**		**21**		**9**	
TRICHLOROFLUOROMETHANE	2,000		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VINYL CHLORIDE	0.2		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. July 15, 2010.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the MEG and/or action level.

U = Compound not detected above laboratory's Reporting Limit (RL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than RL or based on data evaluation of laboratory results.

Q = Qualifier

DUP = Field Duplicate Sample

Table 2
Groundwater Analytical Data Table
November 8-11, 2010
Former GAT Facility Study Area
Glenburn, Maine
Sheet 2 of 3

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No. GB-MW-03S-1011	Q	GB-MW-03D-1011	Q	GB-MW-04S-1011	Q	GB-MW-04D-1011	Q	GB-MW-04D-1011 DUP	Q	GB-MW-05S-1011	Q	GB-MW-05D-1011	Q	GB-MW-06-1011	Q
	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS (EPA METHOD 524.2)	µg/L																
1,1,1,2-TETRACHLOROETHANE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-TRICHLOROETHANE	200.0	0.5	U	0.5	U	0.5	U	**0.38**	**J**	**0.37**	**J**	0.5	U	0.5	U	0.5	U
1,1,2,2-TETRACHLOROETHANE	0.3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-TRICHLOROETHANE	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHANE	60	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROETHENE	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-DICHLOROPROPENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-TRICHLOROPROPANE	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRICHLOROBENZENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMO-3-CHLOROPROPANE	0.20	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DIBROMOETHANE	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROBENZENE	200	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROETHANE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-DICHLOROPROPANE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3,5-TRIMETHYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROBENZENE	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-DICHLOROPROPANE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-DICHLOROBENZENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-DICHLOROPROPANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-CHLOROTOLUENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-CHLOROTOLUENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-ISOPROPYLTOLUENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BENZENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOCHLOROMETHANE	90	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMODICHLOROMETHANE	6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOFORM	40	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
BROMOMETHANE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CARBON TETRACHLORIDE	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROBENZENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROETHANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROFORM	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CHLOROMETHANE	20	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,2-DICHLOROETHENE	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
CIS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOCHLOROMETHANE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DIBROMOMETHANE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DICHLORODIFLUOROMETHANE	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ETHYLBENZENE	30	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
HEXACHLOROBUTADIENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
ISOPROPYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
M,P-XYLENES	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
METHYL TERT-BUTYL ETHER	35	0.5	U	0.5	U	0.5	U	**0.26**	**J**	**0.26**	**J**	0.5	U	0.5	U	0.5	U
METHYLENE CHLORIDE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
NAPHTHALENE	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
N-PROPYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
O-XYLENE	1,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
SEC-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
STYRENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TERT-BUTYLBENZENE	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TETRACHLOROETHENE	0.6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TOLUENE	600	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,2-DICHLOROETHENE	100	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRANS-1,3-DICHLOROPROPENE	4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
TRICHLOROETHENE	5	**2.0**		**4.2**		**0.65**		**5.1**		**5.1**		**0.78**		0.5	U	**0.24**	**J**
TRICHLOROFLUOROMETHANE	2,000	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
VINYL CHLORIDE	0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. July 15, 201

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the M

U = Compound not detected above laboratory's Reporting Limit (RL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than RL or based on data evaluation of laboratory results.

Q = Qualifier

Table 2
Groundwater Analytical Data Table
November 8-11, 2010
Former GAT Facility Study Area
Glenburn, Maine
Sheet 3 of 3

PARAMETER (METHOD)	[1]Maine CDC MEGs for DW	Well No.	GB-OB-5A-1011	Q	GB-OB-8-1011	Q	GB-OB-8-1011- DUP	Q	GB-OB-11-1011	Q	GB-OB-16-1011	Q	GB-OB-19-1011	Q	GB-OB-20-1011	Q
			µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
VOLATILE ORGANIC COMPOUNDS	µg/L															
(EPA METHOD 524.2)																
1,1,1,2-TETRACHLOROETHANE	10		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,1,1-TRICHLOROETHANE	200.0		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,1,2,2-TETRACHLOROETHANE	0.3		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,1,2-TRICHLOROETHANE	3		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,1-DICHLOROETHANE	60		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,1-DICHLOROETHENE	7		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,1-DICHLOROPROPENE	NA		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,2,3-TRICHLOROBENZENE	NA		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,2,3-TRICHLOROPROPANE	0.05		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,2,4-TRICHLOROBENZENE	70		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,2,4-TRIMETHYLBENZENE	NA		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,2-DIBROMO-3-CHLOROPROPANE	0.20		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,2-DIBROMOETHANE	0.05		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,2-DICHLOROBENZENE	200		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,2-DICHLOROETHANE	4		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,2-DICHLOROPROPANE	5		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,3,5-TRIMETHYLBENZENE	NA		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,3-DICHLOROBENZENE	1		0.5	U	NS		NS		0.5	U	NS		NS		**0.39**	**J**
1,3-DICHLOROPROPANE	100		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
1,4-DICHLOROBENZENE	70		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
2,2-DICHLOROPROPANE	NA		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
2-CHLOROTOLUENE	100		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
4-CHLOROTOLUENE	100		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
4-ISOPROPYLTOLUENE	70		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
BENZENE	4		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
BROMOBENZENE	NA		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
BROMOCHLOROMETHANE	90		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
BROMODICHLOROMETHANE	6		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
BROMOFORM	40		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
BROMOMETHANE	10		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
CARBON TETRACHLORIDE	5		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
CHLOROBENZENE	100		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
CHLOROETHANE	NA		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
CHLOROFORM	70		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
CHLOROMETHANE	20		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
CIS-1,2-DICHLOROETHENE	70		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
CIS-1,3-DICHLOROPROPENE	4		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
DIBROMOCHLOROMETHANE	4		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
DIBROMOMETHANE	NA		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
DICHLORODIFLUOROMETHANE	1,000		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
ETHYLBENZENE	30		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
HEXACHLOROBUTADIENE	4		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
ISOPROPYLBENZENE	NA		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
M,P-XYLENES	1,000		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
METHYL TERT-BUTYL ETHER	35		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
METHYLENE CHLORIDE	NA		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
NAPHTHALENE	10		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
N-BUTYLBENZENE	NA		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
N-PROPYLBENZENE	NA		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
O-XYLENE	1,000		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
SEC-BUTYLBENZENE	NA		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
STYRENE	100		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
TERT-BUTYLBENZENE	NA		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
TETRACHLOROETHENE	0.6		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
TOLUENE	600		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
TRANS-1,2-DICHLOROETHENE	100		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
TRANS-1,3-DICHLOROPROPENE	4		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
TRICHLOROETHENE	5		0.5	U	NS		NS		0.5	U	NS		NS		**0.24**	**J**
TRICHLOROFLUOROMETHANE	2,000		0.5	U	NS		NS		0.5	U	NS		NS		0.5	U
VINYL CHLORIDE	0.2		0.1	U	NS		NS		0.1	U	NS		NS		0.5	U

[1] Maine Environmental and Occupational Health Program Center for Disease Contol and Prevention. Maximum Exposure Guidelines (MEGs) for drinking water. July 15, 2010.

2 MEG = 32 ppb, however the Maine DEP policy on TCE in drinkingwater is to use one-half of the EPA Maximum Contaminant Level (MCL) as the action level, therefore the results are compared to 2.5 ppb (5 ppb * 1/2).

- indicates there is no MEG

Bold number indicates a positive detection.

Bold number with shading indicates a detection above the M

U = Compound not detected above laboratory's Reporting Limit (RL).

UJ = Compound tentatively not detected at reported concentration due to blank contamination or the reporting limit is estimated based on data evaluation of laboratory results.

J = Estimated value less than RL or based on data evaluation of laboratory results.

Q = Qualifier

DUP = Field Duplicate Sample

APPENDIX 4

ECOLOGICAL TRIP REPORT OCTOBER 15, 2008

The Johnson Company ENVIRONMENTAL SCIENCE AND ENGINEERING SOLUTIONS

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fax (802) 229-5876
100 State Street, Suite 600
Montpelier, VT 05602
www.johnsonco.com

November 4, 2008

Mr. Robert A. Leitch, P.E.
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742

Subject: Trip Report for October 15, 2008 Site Walkover, Former GAT Facility, Glenburn, Maine
Contract W912WJ-05-D0006; Task Order 0007

Dear Mr. Leitch:

On October 15, 2008, Kathleen Nolan, ENSR, and I conducted a site walkover at the Former GAT Facility in Glenburn, ME, and the adjacent and nearby surface water areas that have been the subject of the RI/FS investigation. The purpose of the site walkover was to familiarize ourselves with the site and the adjacent areas that provide habitat for ecological receptors. The information that was collected will be used to refine the proposed ecological risk assessment.

Copies of our field notes and photographs are enclosed.

Sincerely yours,

By: Sonja A. Schuyler

Sonja A. Schuyler, Senior Scientist
sschuyler@jcomail.com

Enclosure

cc: Don Maynard

K:\1-2128-9\glenburn OI\Trip Report Walkover 10-15-08.doc

Field Notes
Former GAT Facility, Glenburn, Maine
Sonja Schuyler, The Johnson Company, Inc.
October 15, 2008

Location 1-2128-9 Glenburn Date 10/15/08

Project / Client Glenburn, ME

Ecological Risk Site Review

1220 On-site

Kate Nolan EMSR

Sonja Schuyler - JCC SAS

Partly sunny

Around 60°F

Looked for GB-SW-01

Willow ~~Heter~~ Swamp - water at surface

10/15/08 SAS

Steeplebush

Willow - Raspberry

Sensitive fern - Reed canary

Some cattail

Rice cut-grass

Photos 1+2

Photo 3 Cedars

talk Don to take photo of sample location, if possible

Photos 4, 5, 6 "East Pond"

- a few inches of water

willows, paper birch

Location 1-2128-9 Glenburn Date 10/15/08

Project / Client Glenburn, ME

Ecological Risk Site Review

West Pond

Photos 7+8 Pond #1 looking NW

Photo 9 - outlet - flowing

2nd Open water pond #2

W of first pond

drainage ditch into open water

Cedar grove between #1 + 2

photos 10, 11, + 12

North end of West Pond

Photos 13, 14, 15, + 16

Photo 17 Skate board park

Photo 18 + 19 behind Town Office

Photo 20 horseshoe pits

1550 Off-site

Field Notes
Former GAT Facility, Glenburn, Maine
Kathleen Nolan, ENSR
October 15, 2008

Glenburn Maine GAT Facility
Notes from Field Walkover, October 15, 2008 and October 16, 2008

Spring/Seep Along Lakeview Avenue

GB-SW-01 Sample Location (formerly GB-DW-23).

Analytical: April 2008 (pore water sample, not surface water) – Parent and duplicate sample, same results - 0.9 ug/L trichloroethene; <0.5 ug/L tetrachloroethene

Did not find location of shallow well/spring (possibly near the house at 97 Lakeview?). Walked east along Lakeview from Lakeview Cemetery (north side of road).
Lakeview Cemetery is upland and dry.
Drainage ditch present along edge of the road, shallow and relatively dry near the cemetery, then deeper and wetter to the east. In the ditch were grasses, steeplebush, and purple loosestrife. There were some moist areas in the ditch, then at 97 Lakeview Avenue, wetter. Near 97 Lakeview Avenue, the ditch was approximately 3 feet deep. East of the 97 Lakeview driveway, there was an especially wet area, with standing water approximately 0.5-1 inch deep. Rice-cut grass and a few cattails were present. Autumn olive may have been present.

An area with shallow standing water and grassy hummocks, approximately 30 feet by 40 feet was present, surrounded by small trees (less than 1 foot diameter) and shrubs. Species observed: asters, rice-cut grass, steeplebush (an especially large specimen), impatiens, ferns, raspberry, sensitive ferns (brown and curled from frost). Alder and cedar were present, as well as white birch around the edge of the wet area. A small multi-trunk oak was present. Winterberry present at road edge of the wet area. Fall warbler (myrtle warbler?) observed in the grasses at the edge of the wet area.

The shallow well/spring where sample GB-SW-01 was collected was not visible from the road or from the edge of the wet area.

East Pond
GB-SW-02A
Analytical April 2008 (pore water sample) - Toluene 7.1 ug/L – not considered ACOE COPEC; trichloroethene <0.5 ug/L, tetrachloroethene <0.5 ug/L.

Off Birch Avenue. At roadside, goldenrod, alder, hemlock (?). Path in to East Pond, moist hydric soil. Dwarf cornel, sphagnum moss in path. East Pond is approximately 12 feet by 20 feet of 1-2 inch deep standing water. Covered with leaves. No obvious aquatic vegetation. Around edge of standing water, gray birch, pines, white birch, tree with tri-part leaves (twig collected, steeplebush. Bermed up soil around the standing water. Map shows former roadbed of Birch Avenue going through current wet area.

West Pond
GB-SW-04

Analytical Data: April 2008 (pore water sample) - - Toluene 0.6 ug/L – not considered ACOE COPEC; trichloroethene 3.6 ug/L, tetrachloroethene <0.5 ug/L.

From Braslett road, follow path through residential (trailer park) property through conifer and hardwoods (maple and oak), sphagnum moss and marginal wood fern along path. Trailer park property, mowed grass, raspberries along edge of path. West Pond approximately 90 foot by 60 foot surface water, apparently 1-2 feet deep in the middle. Duckweed present in some locations. Cedar, hemlock, alder, sensitive fern, ward's fern (?) around perimeter. Dead, barkless tree (approximately 30 feet long) down and lying in surface water. At south end of pond, slow discharge seep from pond. Bermed soil along southern edge of pond. At southern edge, grasses growing in water (inundated?). Beyond pond to the west, cedar/hardwoods (including maple). Dense tree growth, trees several feet in diameter. Another small surface water feature to the west, with cedars between larger pond and smaller surface water feature. Duckweed thick in this surface water. Residential properties, residence visible through trees to the west. Drainage ditch with water flowing from one of the residential back yards to the smaller surface water feature. Blue plastic pipe culvert at one place in the drainage ditch. Frog jumped in.
At the northern edge of the pond, plant with leaves like wild ginger (?), wood mint, this edge not bermed up. Cedars all around and a few swamp maples. Asters, grasses, wild geranium, another frog, duckweed at an apparent inlet. Wet underfoot. Also oak at east side of West Pond.
According to trailer park residents, a bear has been frequenting the woods around West Pond this summer.

GAT Facility/Glenburn Town Offices
No surface water features. No surface water or pore water data.
Is there surface soil data?

Oldfield, developed with town office, fire department, salt shed, skate park, regularly mowed. Beyond mowed area, open field, mowed seasonally: yarrow, queen anne's lace, milkwee, bedstraw, goldenrod, clover, vetch, calico aster, strawberry. Yellow (sulfur?) butterfly, grasshopper. Specimen maple trees along road edge and near skate park. Birch, maple stand southwest, mostly less than 2 foot diameter (approximately 100 feet by 50 feet). Blue jay in this stand. At furthest southwest edge of property, spruce, pine hemlock. Animal trails in field in southwest edge between birch maple stand and spruce pine hemlocks. Residences beyond.

Title	Date	Dwg.	Project	Proposal
	10/15/2008		GAT, Glenburn ME	

Glenburn Town Offices / Former GAT

FD
Skate Park
Town offices
Mowed Fields

% Wooded
% Open

Spring / Seep Along Lakeview

mostly dry
grasses
spirea
some moist areas
~ 97 Lakeview
water
ditch < 3' deep
thick grasses, mickey breath
then reeds

Wet area
standing water ~ 1/2 - 1"
asters
reeds
spirea - steeplebush
Impatiens (yellow)
ferns
raspberry
hummocky

surrounded by small trees, shrubs, whitebirch
< 1' diameter

Swampy Area Along Lakeview (West Side)
Picture (1)
(2)

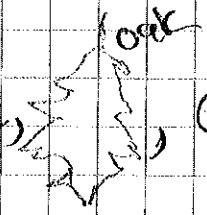
10/16 canopy cover amount: 50%
perching areas - for small birds
not suitable for duck / fish, likely
dry at times not good amphibian

10/16 no signs of water flow along ditch - bent grasses, leaf buildup/dams

FORM 1052

Title	Date 10/15/2008	Dwg.	Project	Proposal

P.2

Further N on Lakeview
Small multi-trunked oak, 

, cedar
upland Along
Picture (3) Lakeview West Side
ditch along roadside - 1/2" or so of standing water
small white birch < 0.5" diameter
fern (sensitive)
tamarack / alders
water / hummocky alder / cedar swamp
rice cut grass / cattails in swamp
winterberry
purple loosestrife (in seed)

yellow breast / brown back - myrtle warbler, in Picture (1), picture (2)
cattails in picture 1/2

cattails in ditch near 97 Lakeview
autumn olive?

10/16
structure hummocky, very shallow standing water
approx 50% - 60% canopy cover
wooded area - residential lot / cleared
debris visible beyond

FORM 1052

Title	Date	Dwg.	Project	Proposal
	10/15/2008			

P3 East Pond
GB SW 02A
Roadside (Birch Ave) upland Antagalus & Idea

path in /
wet, mucky hydric soil
several inches deep standing water — ~ 12' x 20' standing water w/ leaves

Pictures 4, 5, 6

green textured balls

shrub
alternate lanceolate leaves

Around edge
gray birch
pines
White birch
yellow / tri-leaved (in bags)
steeplebush
shrub by tree

berned up around
in path dwarf cornel
princess pine?

helmlock? along path

10/16
no visible inlet / outlet
not enough water for duck fish
~50% canopy cover

FORM 1052

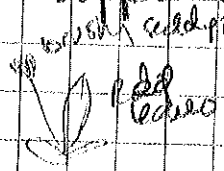
Title	Date	Dwg.	Project	Proposal
	10/15/2008			

p4 West Pond.
(path through trailer park)

perimeter cedar hemlock
hardwoods
sensitive fern
wards fern (?)

Photos (7) (8) (9)
outlet of West Pond

Approx 30-40' backless tree trunk in water — about 1/3 of pond
Water appears ~ 1-2' deep in middle
maybe 90' long



S end - seep flowing out - outlet.

10/16
open in pond area
potential perching trees

perimeter astragalus

bermed / dug lock to South end of pond.
cedar

at edge - grasses growing in water

beyond pond to west cedar / hardwood
maple
denser trees

Another small pond to W. (Cedars between W Pond & 2nd smaller pond)
residential properties backing up to
drainage ditch dug into it
frog

(10) (11) (12)
drainage ditch w/ blue plastic culvert
small pond

North - not bermed up (13) (14) (15) (16)

leaves like ginger
wet beneath reeds apparent inlet dwarf corn
cedar swamp
frog
duckweed at apparent inlet
duckweed in pond
cedar around
wet underfoot
wood mint
one or two swamp maples
NE Aster
grasses
astragalus
geranium

FORM 1052

Title	Date 10/15/2008	Dwg.	Project	Proposal

E Side of W Pond

p5

oak

path to Brasett R.

Sphagnum moss

marginal wood fern

bear all summer per residents at path

conifers

spruce

pine

hemlock

Town office

(18) (19)

dead tree w/ shelf fungi

woodpecker holes (round)

birch + blue jay

goldenrod blows

young maple

GPT facility

(17) Skate Park

paved

edge-grassy

tower

Town offices

yarrow

milkweed

grass

red strawberry

astrapolis

clover

Queen Anne's lace

calico aster

strawberry

flagpole

mowed often

mowed occasionally

yellow (sulfur?) butterfly

~~cricket~~

grasshopper

specimen maple

Skate park

maples

Lakeview

FORM 1052

Title	Date 10/15/2008	Dwg.	Project	Proposal

p6 Oldfield behind town office / back of trailer park
higher grass - waist high
juniper
sweet-cicely? - umbel/white

(20) horseshoe pit

10/16 No catch basins noted
wet area behind bldgs, near parking lot - surface water flow

inlet/outlet to west pond noted - very slow flow at outlet

moved + seasonally moved field - no flow noted

FORM 1052

Title	Date	Dwg.	Project	Proposal
Glenburn ME	10/15/2008			

10th Rail.

Opposite 30 Birchcroft.

Maples Birch

drainage ditch ~ 2' deep

Ferns wet grasses road grade Pine

130 BIRCHCROFT

drainage ditch

dam 2' deep

large bermed soil

Maintained

higher corner

path

bermed soil

wet area

open woods

very open

pine

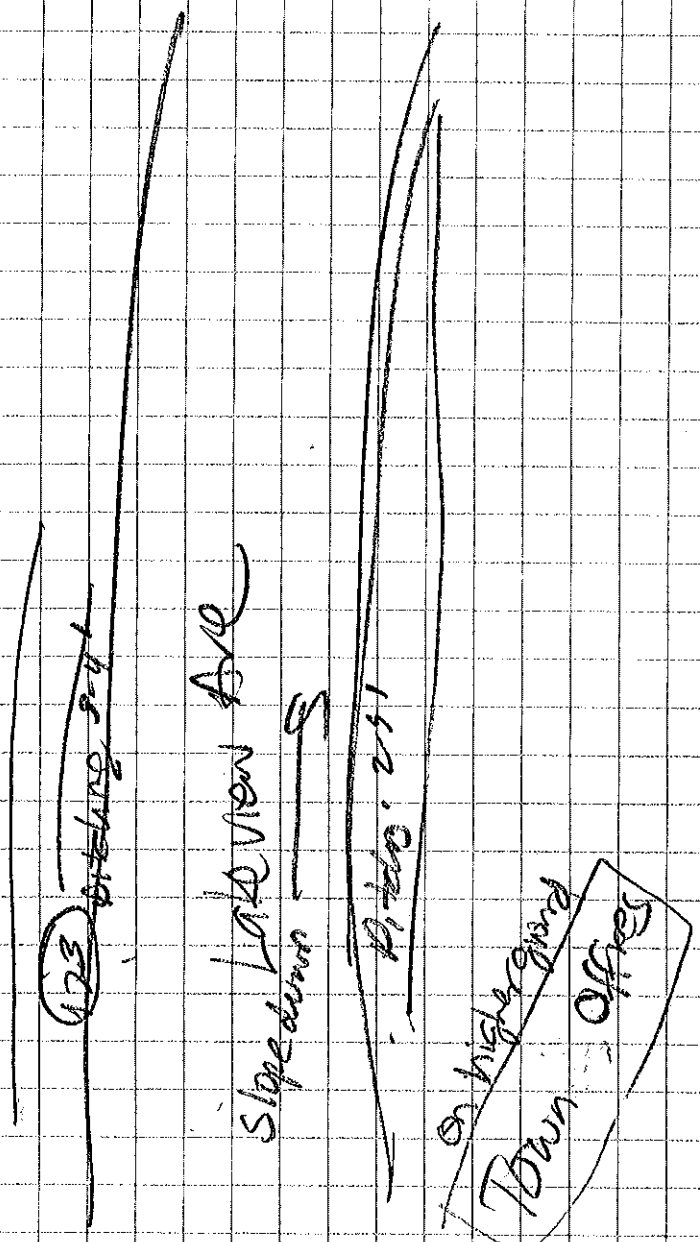
pine

pine

Title	Date	Dwg.	Project	Proposal
Glenburn ME	10/16/2008			

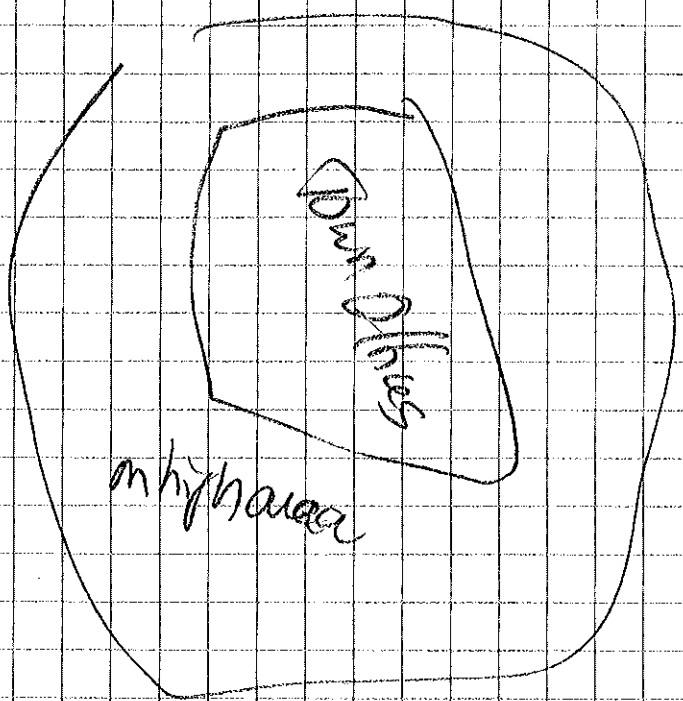
Cressy, opposite Bransfield

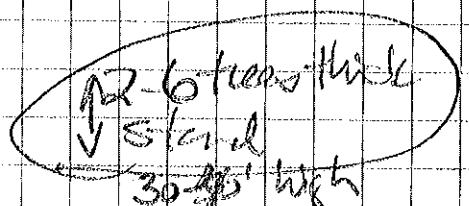
Oak birch comfor. 30-40' tall trees
few 72' diameter
relatively dense canopy



FORM 1052

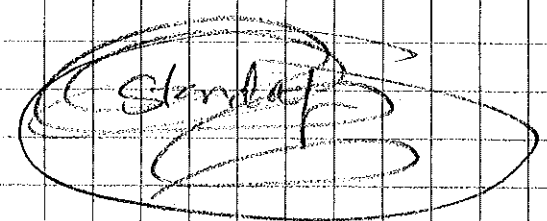
Title	Date	Dwg.	Project	Proposal
Glenburn ME	10/16/2018			





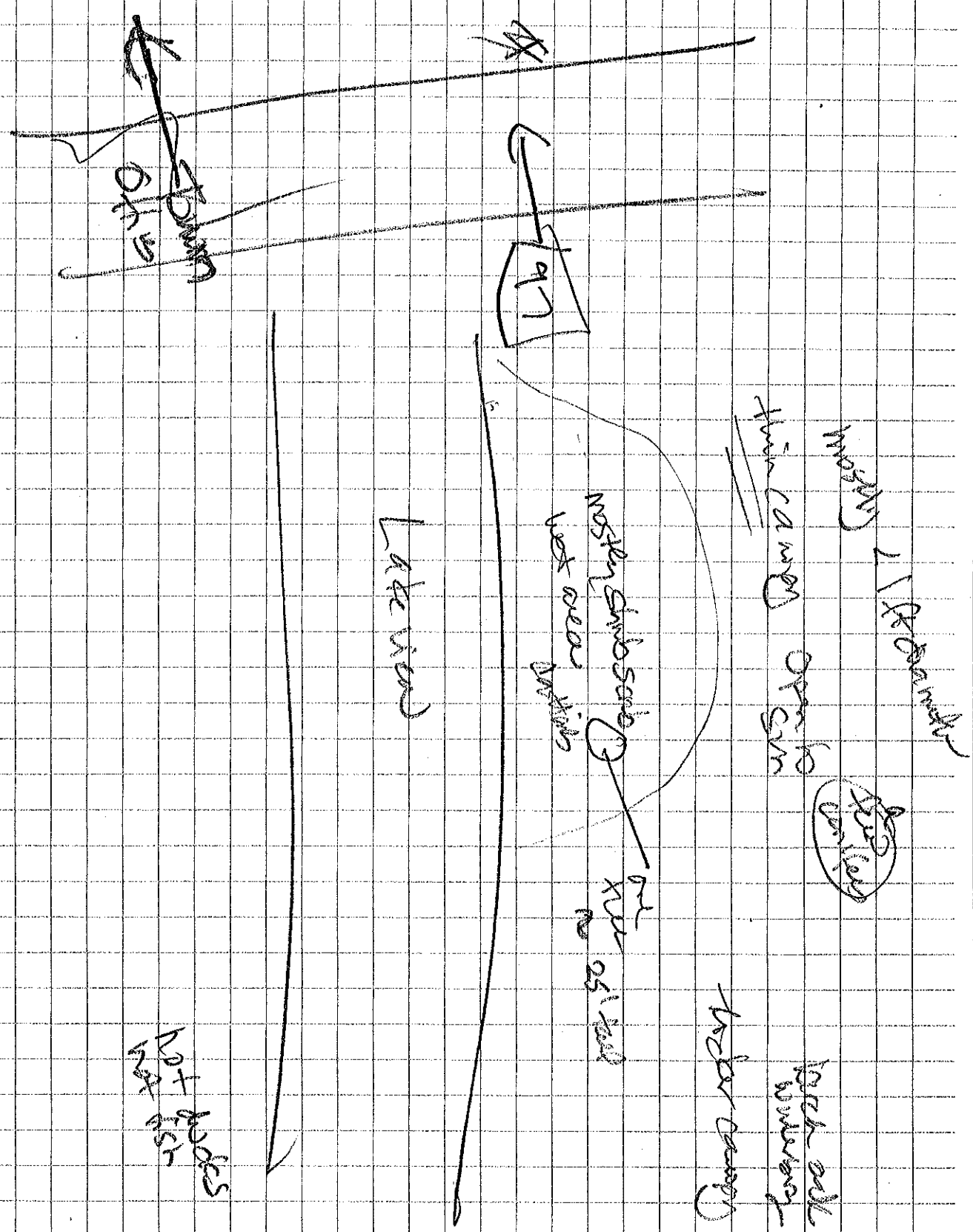
High value habitat

crows
likely deer habitat



Title	Date	Dwg.	Project	Proposal
Glenburn ME	10/16/2008			

Below 97 Lakeview



Photographs
Former GAT Facility, Glenburn, Maine
October 15, 2008



Photo 1 Swamp east of GB-SW-01 looking north from Lakeview Avenue



Photo 2 Swamp east of GS-SW-01 looking north from Lakeview Avenue



Photo 3 Cedars in Swamp east of GB-SW-01 from Lakeview Avenue looking north



Photo 4 East Pond standing water



Photo 5 East Pond looking east southeast



Photo 6 East Pond scrub-shrub vegetation



Photo 7 West Pond looking northwest



Photo 8 West Pond looking northwest



Photo 9 Outlet of West Pond south end of pond, flowing



Photo 10 Open water pond northwest of West Pond, note culvert



Photo 11 Drainage ditch to open water northwest of West Pond



Photo 12 Full view of open water northwest of West Pond



Photo 13 Cedars northeast of West Pond



Photo 14 Cedars and grassed margin northeast of West Pond



Photo 15 Vegetation northeast of West Pond



Photo 16 Northeast of West Pond note duckweed and ferns



Photo 17 Skateboard Park on municipal property



Photo 18 Old field south of Town Office looking south



Photo 19 Wooded area south of Town Office looking southeast



Photo 20 Horseshoe pits north of Town Office

Glenburn

Maine Department of Inland Fisheries & Wildlife

MDIFW
Region B Wildlife
270 Lyons Rd
Sidney ME 04330

(207) 547-5319
(207) 547-4035 fax

Email keel.kemper@maine.gov
IFW Website http://www.maine.gov/ifw

May 27, 2009

Christine Archer
AECOM
171 Daniel Webster Highway
Suite 11
Belmont, NH 03220

Re: Wildlife Habitat Information Request – Glenburn, Maine

Dear Christine:

As requested we have reviewed department files for the presence of any Essential or Significant Wildlife Habitats and other areas of special concern associated with the subject area described above. Our findings are limited to those for which MDIFW has responsibility for identifying and are provided below.

Essential Habitats:

Essential Habitats (EH) are defined as "areas currently or historically providing physical or biological features essential to the conservation of an Endangered or Threatened species in Maine and which may require special management considerations". Essential Habitat protection in Maine currently applies only to Bald Eagle nest sites and Roseate Tern, Piping Plover, and Least Tern colonies, but additional listed species may receive attention in the future.

According to MDIFW records there are no known Essential Habitats from the list above that are associated with the subject site.

Significant Wildlife Habitats:

The Natural Resources Protection Act (NRPA), administered by the Maine Department of Environmental Protection, provides protection to certain natural resources including Significant Wildlife Habitats. Significant Wildlife Habitats are defined by the NRPA as:

- Habitat for State and Federally listed Endangered and Threatened species
- High and moderate value deer wintering areas and travel corridors
- High and moderate value waterfowl and wading bird habitats, including nesting and feeding areas
- Shorebird nesting, feeding, and staging areas
- Seabird Nesting islands

According to MDIFW records, there are no known Significant Wildlife Habitats from the list above that are associated with the project site.

Other Considerations:

This letter is only meant to be a response to the request for information on the presence of essential or significant habitats on this parcel. This is not meant to be a comment on the merits of a particular development project, permit application, or proposal. That review can only be done with a written proposal and as part of a regular review process.

Please be aware that, while relatively comprehensive, MDIFW files are far from complete. Many habitat features or communities essential to Maine's wildlife (e.g. vernal pools, grasslands) are not included in the present database. In addition other agencies have jurisdiction for other natural resources. The Department of Marine Resources (633-9500) or Atlantic Salmon Commission (941-4452) can provide information describing use of an area by anadromous fishes and other species. For comprehensive data relating to rare or exemplary plant habitats and ecological communities, the Maine Natural Areas Program may be reached at (207) 287-8042. If I can provide any further information please feel free to contact me at 547-5319.

Sincerely,

G. Keel Kemper
Regional Wildlife Biologist
Maine Department of Inland Fisheries & Wildlife

Glenburn

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Maine Field Office – Ecological Services
1168 Main Street
Old Town, ME 04468
(207) 827-5938 Fax: (207) 827-6099

FWS/Region 5/ES/MEFO

May 22, 2009

Ms. Christine Archer
AECOM Environment
171 Daniel Webster Highway, Suite 11
Belmont, NH 03220

Dear Ms. Archer:

Thank you for your letter dated May 5, 2009 requesting information or recommendations from the U.S. Fish and Wildlife Service (Service). This letter provides the Service's response pursuant to Section 7 of the Endangered Species Act (ESA), as amended (16 U.S.C. 1531-1543), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250), and the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667d).

Project Name/Location: Former ~~Lyndonville Air Force Station~~ Glenburn GAT = Glenburn, ME

Log Number: 53411-2009-TA-0289

Federally Listed Species

This project occurs within the range of a recent proposal to list a Gulf of Maine Distinct Population Segment (DPS) of Atlantic salmon (*Salmo salar*) as a federally-endangered species in Maine under the joint jurisdiction of the Service and the National Marine Fisheries Service (NMFS) (73 FR 51415; September 3, 2008). The proposal to list the Atlantic salmon under the ESA is expected to be finalized in the next few weeks. NMFS and the Service share consultation responsibilities under Section 7 of the ESA, with the Service generally handling projects in the freshwater component of the salmon's habitat and NMFS handling projects in the marine and estuarine environment (below the head of tide).

The Glenburn site is located in the watershed of Pushaw Stream. Pushaw Stream is a tributary of the Stillwater River, which supports Atlantic salmon. Pushaw Stream, however, is currently considered unoccupied by Atlantic salmon. An Atlantic salmon may occasionally stray into the lower section of Pushaw Stream near its confluence with the Stillwater River. Salmon, however, do not occur in the upper reaches of the Pushaw watershed near the project site in Glenburn.

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Please note that under Section 7 of the ESA, it is the federal action agency's responsibility to determine if a project may affect a federally listed species. If the federal agency determines that a project would have "no effect" on a listed species or designated critical habitat, they do not need to seek the concurrence of the Service (written or otherwise). If the federal agency determines that a project is "not likely to adversely affect" a listed species or designated critical habitat, the agency must explain the basis for their determination and seek the written concurrence of the Service. Projects that would have an "adverse effect" on a listed species or critical habitat require formal Section 7 consultation with the Service.

Based on the information currently available to us, no other federally-listed species under the jurisdiction of the Service are known to occur in the project area.

Other Protected Species

Occasional, transient bald eagles (*Haliaeetus leucocephalus*) may occur in the general project area. The bald eagle was removed from the federal threatened list on August 9, 2007 and is now protected from take under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. "Take" means to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. The term "disturb" under the Bald and Golden Eagle Protection Act was recently defined within a final rule published in the Federal Register on June 5, 2007 (72 Fed. Reg. 31332). "Disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle; 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

Further information on bald eagle delisting and their protection can be found at http://www.fws.gov/migratorybirds/baldeagle.htm.

Please consult with our new national bald eagle guidelines, which can found at http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf.

These Guidelines are voluntary and were prepared to help landowners, land managers and others meet the intent of the Eagle Act and avoid disturbing bald eagles. If you believe this project will result in taking or disturbing bald or golden eagles, please contact our office for further guidance. We encourage early and frequent consultations to avoid take of eagles.

We have not reviewed this project for state-threatened and endangered wildlife, wildlife species of special concern, and significant wildlife habitats protected under the Maine Natural Resources Protection Act. We recommend that you contact the Maine Department of Inland Fisheries and Wildlife:

Steve Timpano
Maine Department of Inland Fisheries and Wildlife
284 State St.
State House Station 41
Augusta, ME 04333-0041
Phone: 207 287-5258

We also recommend that you contact the Maine Natural Areas Program for additional information on state-threatened and endangered plant species, plant species of special concern, and rare natural communities:

Lisa St. Hilaire
Maine Natural Areas Program
Department of Conservation
93 State House Station
Augusta, ME 04333
Phone: 207 287-8046

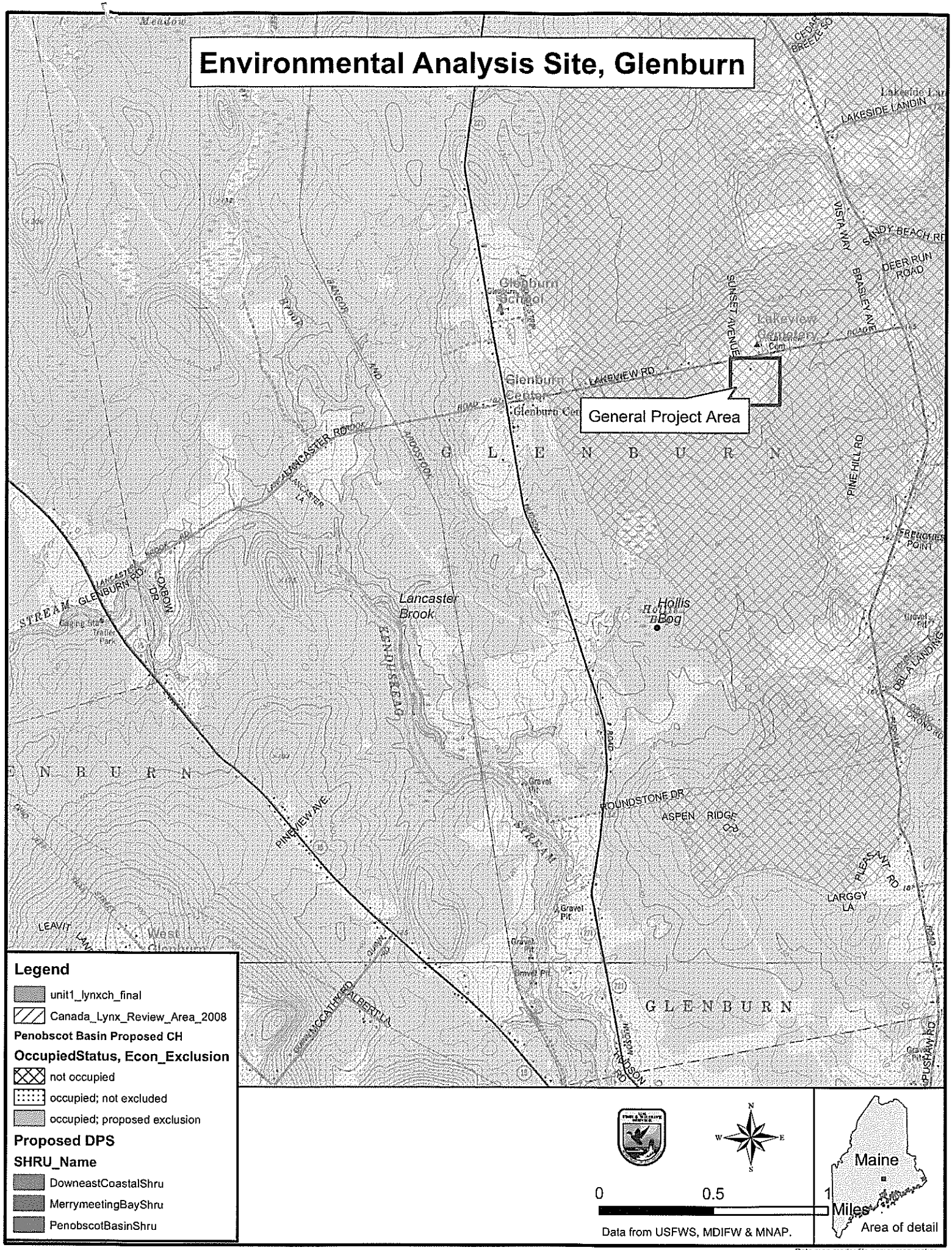
If you have any questions about this project, please contact Wende Mahaney at (207) 827-5938 Ext. 20.

Sincerely,

Lori H. Nordstrom

Lori H. Nordstrom
Field Supervisor

Enclosure


Environmental Analysis Site, Glenburn
General Project Area
Glenburn Center
Glenburn School
Lakeview Cemetery
Lancaster Brook
Hollis Bog
LAKESIDE LANDING
SUNSET AVENUE
LAKEVIEW RD
VISTA WAY
SANDY BEACH RD
DEER RUN ROAD
BRADLEY AVE
PINE HILL RD
FERNANDES POINT
OLD LANDING
LANCASTER RD
GLENBURN RD
OXBOW DR
PINEVIEW AVE
ROUNDSTONE DR
ASPEN RIDGE DR
PLEASANT RD
LARGGY LA
LEAVITT LANE
McCATHERN LA
PUSHAW RD
Gravel Pit
Legend
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Canada_Lynx_Review_Area_2008
Penobscot Basin Proposed CH
OccupiedStatus, Econ_Exclusion
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occupied; not excluded
occupied; proposed exclusion
Proposed DPS
SHRU_Name
DowneastCoastalShru
MerrymeetingBayShru
PenobscotBasinShru
N
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E
S
0
0.5
1
Miles
Data from USFWS, MDIFW & MNAP.
Maine
Area of detail

APPENDIX 5

HUMAN HEALTH RISK ASSESSMENT REPORT

Prepared for:
The Johnson Company, Inc.
Montpelier, VT

Human Health Risk Assessment for the Former Glenburn GAT Facility Glenburn, Maine

AECOM, Inc.
June 2011
Document No.: 03817-005-0100

AECOM

Prepared for:
The Johnson Company, Inc.
Montpelier, VT

Human Health Risk Assessment for the Former Glenburn GAT Facility Glenburn, Maine



Prepared By
Ishrat Chaudhuri, Ph.D., DABT



Prepared By
Katherine Moon



Reviewed By
Julie A. F. Kabel, MPH

AECOM, Inc.
June 2011
Document No.: 03817-005-0100

AECOM

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List of Acronyms

ACH	Air changes/hour
ACS	American Cancer Society
AT	Averaging time
BW	Body weight
CA	Concentration in air
CADD	Chronic Average Daily Dose
CalEPA	California Environmental Protection Agency
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CF	Conversion factor
cm	Centimeters
COPC	Constituent of potential concern
CSF	Cancer slope factor
DAD	Dermal absorbed dose
DEP	Department of Environmental Protection
DERP	Defense Environmental Restoration Project
DHS	Department of Health and Human Services
ED	Exposure duration
EF	Exposure frequency
ELCR	Excess Lifetime Cancer Risk
EPC	Exposure point concentration
ET	Exposure time
FUDS	Formerly Used Defense Sites
GAT	Ground-Air Transmitter
HEAST	Health Effects Assessment Summary Tables
HHRA	Human Health Risk Assessment
HI	Hazard Index
HQ	Hazard quotient
IRIS	Integrated Risk Information System
IUR	Inhalation Unit Risk
JEM	Johnson and Ettinger Model
LADD	Lifetime average daily dose
LOAEL	Lowest observed adverse effect level
MCL	Maximum Contaminant Level
MEDEP	Maine Department of Environmental Protection
MEG	Maximum Exposure Guideline
mg/kg	Milligrams per kilogram
mg/kg-day	milligrams per kilogram per day
MRL	Minimal Risk Level
MTBE	Methyl tertiary butyl ether
NCEA	National Center for Environmental Assessment
NOAEL	No observed adverse effect level
OEHHA	Office of Environmental Health and Hazard Assessment
PC	Permeability constant
PPRTV	Provisional Peer-Reviewed Toxicity Value

RSL	Regional Screening Level
RfD	Reference dose
TCE	Trichloroethylene
$\mu g/m^3$	Micrograms per cubic meter
URF	Unit risk factor
USACE	US Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOC	Volatile organic compound

Executive Summary

A human health risk assessment (HHRA) has been conducted in support of a Remedial Investigation and Feasibility Study at the former Ground-Air Transmitter (GAT) Facility in Glenburn, Maine (the site). The purpose of the HHRA is to evaluate potential human health effects of chronic exposures to constituents detected in samples of environmental media collected from the site. The HHRA will identify whether there are media and corresponding constituents of concern (COC) that risk management must address (e.g., through institutional controls, contaminated media removal, or in-situ treatment).The HHRA for the site has been conducted in accordance with USEPA Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Maine Department of Environmental Protection (MEDEP) guidelines.

The HHRA report includes the following sections.

Data Evaluation - This step of the HHRA involves compiling and summarizing the data for the HHRA, and selecting constituents of potential concern (COPCs), which will be evaluated quantitatively. Site data are available for soil, groundwater and porewater. Groundwater data were divided into on-site and off-site areas. Porewater data were used to represent off-site surface water bodies. There are no on-site surface water bodies. Maximum detected concentrations in each media were compared against appropriate risk-based screening levels. The risk-based screening levels are based on daily exposure and conservative exposure assumptions (such as daily drinking water exposure). If the maximum detected concentrations are lower than these screening levels, then potential risks are not predicted, and these constituents are not carried through the risk assessment. Furthermore, these constituents would also not pose risks above target levels through other site-specific exposure pathways. The screening level values used in the HHRA were USEPA's Regional Screening Levels (RSLs; USEPA, 2011). The RSLs for constituents based on noncancer effects were based on a Hazard Quotient (HQ) of 0.1 (in other words, they were divided by a factor of 10) to account for cumulative effects

All of the maximum detected concentrations of constituents in soil were found to be lower than residential soil RSLs, therefore soil was not selected as a medium of concern in the HHRA. For off-site groundwater, seven wells (GB-DW-22, GB-DW-23, GB-DW-54, GB-DW-55, GB-DW-56, GB-DW-61 and GB-PW-03) were found to have detected concentrations of one of two constituents that exceeded the drinking water RSLs: trichloroethylene (TCE) and methyl tertiary butyl ether (MTBE). TCE was identified as a COPC for all of the wells except GB-DW-61. MTBE was a COPC in GB-DW-61 only. No other constituents were identified as COPCs in off-site groundwater. For on-site groundwater, four constituents in five wells (GB-MW-01, GB-MW-02, GB-MW-03, GB-MW-04 and Cesspool Water) were found to have detected concentrations that exceeded the drinking water RSLs: TCE was identified as a COPC for all of the wells, except for Cesspool Water. COPCs identified in Cesspool Water were 1,3,5-trimethylbenzene, 1,4-dichlorobenzene, and naphthalene. No other constituents were identified as COPCs in on-site groundwater.

The porewater samples were used to estimate possible concentrations in off-site ephemeral streams and surface water bodies. The maximum detected concentrations of 1,3-dichlorobenzene and TCE exceeded the RSLs for tap water. For both constituents, the exceedance was by less than an order of magnitude. It is likely that porewater would be significantly diluted by the time it discharges into a surface water body, and therefore the actual surface water concentrations would likely be less than the RSLs. In addition, exposure to surface water is expected to be limited because of the small size and ephemeral nature of the surface water bodies. For these reasons, porewater was not selected as a medium of concern.

Thus, overall, off-site and on-site groundwater were the only media selected for further quantitative evaluation in the HHRA.

Exposure Assessment - The purpose of the exposure assessment is to estimate the magnitude and frequency of potential human exposure to COPCs identified in media of interest at the site. Off-site groundwater exposure was evaluated for a resident, because a resident is likely to receive the highest exposures. Off-site groundwater samples were collected from existing public water supply and private drinking water wells. Potential future on-site receptors to groundwater included a resident, worker and day care child. These receptors were identified on the assumption that the site could be developed for residential or commercial uses in the future. The site buildings are served with groundwater from the on-site well GB-PW-01. This well has not shown a detection of TCE since 1995 when it was first tested for TCE. For both the on-site and off-site resident, groundwater exposure pathways evaluated in the HHRA include potable use of groundwater (ingestion, dermal contact while showering, and inhalation of volatiles while showering) and exposure to volatilized constituents in indoor air. Risk estimates for the vapor intrusion pathway were calculated using the USEPA version of the Johnson and Ettinger model (JEM). Potential volatile organic compound (VOC) concentrations in shower air were modeled using a model developed by Foster and Chrostowski (1987).

Dose-Response Assessment - The purpose of the dose-response assessment is to identify the types of adverse health effects a constituent may potentially cause, and to define the relationship between the dose of a constituent and the likelihood or magnitude of an adverse effect (response). Adverse effects are classified by USEPA as potentially carcinogenic or noncarcinogenic (i.e., potential effects other than cancer). Dose-response values for COPCs at the site were selected from USEPA and California EPA sources in accordance with a hierarchy of sources recommended by USEPA (2003).

Risk Characterization - Risk characterization is the process in which the dose-response information is combined with quantitative estimates of human exposure. The result is a quantitative estimate of the likelihood that humans will experience any adverse health effects given the exposure assumptions made. Two general types of health risk are characterized for each potential exposure pathway considered: potential carcinogenic risk and potential noncarcinogenic risk, called Hazard Index (HI). The total cancer risk for each receptor was compared to the USEPA's target cancer risk range of 10^{-4} to 10^{-6} (one in ten thousand to one in one million). The total cancer risks were also compared to $1x10^{-5}$, which has been set by Maine DEP as the upper bound for an acceptable cancer risk level. The total HI for each receptor was compared to the acceptable HI of 1 defined by USEPA and MEDEP.

For the off-site resident, the total potential carcinogenic risks based on results from individual off-site wells were all less than USEPA's target cancer risk range of $1x10^{-4}$ to $1x10^{-6}$ and MEDEP's upper bound cancer risk of $1x10^{-5}$. The total HIs for each well were below USEPA and MEDEP's upper bound HI of 1.

For the on-site resident, total potential carcinogenic risks based on results from individual off-site wells were all within or less than USEPA's target cancer risk range of $1x10^{-4}$ to $1x10^{-6}$ and less than MEDEP's upper bound cancer risk level of $1x10^{-5}$. The total HIs for each well were below USEPA and MEDEP's upper bound HI of 1.

It was assumed that the other on-site receptors, the worker and the day care child, could be exposed to vapors in indoor air arising from groundwater. For both the on-site worker and day care child, the total potential carcinogenic risks based on results from individual on-site wells were within or less than USEPA's target cancer risk range of $1x10^{-4}$ to $1x10^{-6}$, and less than MEDEP's upper bound cancer risk of $1x10^{-5}$. Total HIs for each well were below USEPA and MEDEP's upper bound HI of 1.

Comparison to Drinking Water Standards - The on-site and off-site wells with identified COPCs were also compared to USEPA drinking water guidelines and Maine Maximum Exposure Guidelines (MEGs). For the off-site wells, TCE in well GB-DW-22 (5.1 ug/L) slightly exceeded USEPA's Maximum Contaminant Level (MCL) for TCE of 5 ug/L. The detected concentrations in the other wells were lower than guidelines. For the on-site wells, TCE in well GB-MW-01 (60 ug/L) exceeded both the USEPA MCL (5 ug/L) and MEG (32 ug/L) for TCE. TCE in wells GB-MW-02 (26 ug/L) and GB-MW-03 (5.1 ug/L) exceeded only the USEPA MCL. The other COPC concentrations were below relevant guidelines.

Summary and Conclusions –

The HHRA concludes that VOCs detected in soil, off-site groundwater and porewater, and on-site groundwater do not result in unacceptable risks to potential receptors.

A comparison to drinking water guidelines was conducted for informational purposes. Concentrations of TCE in both on and off-site wells exceed drinking water standards. Groundwater concentrations of TCE slightly exceeds the USEPA MCL in one off-site monitoring well, GB-DW-22, and three on-site monitoring wells, GB-MW-01, GB-MW-2, and GB-MW-03.

1.0 Introduction

A human health risk assessment (HHRA) has been conducted in support of a Remedial Investigation Study at the former Ground-Air Transmitter (GAT) Facility in Glenburn, Maine. The Remedial Investigation is being conducted under the authority of the Defense Environmental Restoration Project (DERP) Formerly Used Defense Sites (FUDS) program. The site is defined as the former FUDS property boundary containing the Former GAT Facility, and is approximately 9.09 acres located southeast of the corner of Lakeview Road and Birch Avenue in Glenburn, Maine. Figure 1-1 shows the site location.

The purpose of the HHRA is to evaluate potential human health effects of chronic exposures to constituents detected in samples of environmental media collected from the site. The HHRA will identify whether there are media and corresponding constituents of concern (COC) that risk management must address (e.g., through institutional controls, contaminated media removal, or in-situ treatment).

1.1 Approach for HHRA

The HHRA for the site has been conducted in accordance with USEPA CERCLA and Maine Department of Environmental Protection (MEDEP) guidelines. A Workplan for the HHRA was submitted as a section of the Final Remedial Investigation/Feasibility Study Workplan (Johnson Co., 2008a). The Final Workplan was revised in accordance with comments from MEDEP. The HHRA was conducted to be consistent with USEPA and MEDEP guidance including, but not limited to, the following documents:

- Guidance for Human Health Risk Assessments For Hazardous Substance Sites In Maine. (MEDEP, 2009);
- Risk Assessment Guidance for Superfund (RAGS): Volume 1 - Human Health Evaluation Manual (Part A) (USEPA, 1989);
- Exposure Factors Handbook (USEPA, 1997a);
- Guidance Manual for Human Health Risk Assessments at Hazardous Substance Sites (MEDEP, 1994).

The HHRA Report is organized in the following sections:

- Data Evaluation
- Exposure Assessment
- Dose-Response Assessment
- Risk Characterization
- Summary and Conclusions

2.0 Data Evaluation

This step of the HHRA involves compiling and summarizing the data for the HHRA, and selecting constituents of potential concern (COPCs), which will be evaluated quantitatively.

2.1 Data Compilation

Site data were available for soil, groundwater and porewater, as discussed in detail by media below. The sampling locations are shown in Figure 2-1.

2.1.1 Soil

The soil data evaluated in this report was collected on March 2004 and June 2006. A list of the sample IDs for soil is presented in Attachment 1.

Field laboratory data were also collected in April 2008. At the recommendation of MEDEP, these data were used for screening purposes only, and were not used in the HHRA. MEDEP and USACE arranged for duplicate samples collected in April 2008 to be analyzed by fixed laboratories. These data are presented in the Draft Trip Report for Overburden Investigation (Johnson Co., 2008b). No chlorinated volatile organic compounds (VOCs) were detected in the soil samples (discussed in Johnson Co., 2008b).

2.1.2 Groundwater

Based on identified exposure pathways (discussed in the Exposure Assessment section), the groundwater data are divided into on-site and off-site exposure areas. Off-site groundwater data are currently available from November 1993 to April 2008. The most recent sampling events, from spring 2005 to April 2008, were considered most representative of current and potential future site conditions. Therefore, only data from these sampling events were evaluated in the HHRA. For on-site groundwater, all data available, from August and November 2008, were evaluated in the HHRA. Additional overburden/saprolite groundwater sampling was conducted in April 2008 (Johnson Co., 2008b). These data were analyzed in the field, and were not considered usable in the risk assessment (as recommended by MEDEP).

Attachment 1 lists sample IDs of samples evaluated as on-site and off-site groundwater. For off-site groundwater, some sample locations had various sample point identifications (i.e. kitchen tap, bathroom tap, hose bib, etc.). All sample point identifications for all sample IDs were considered points of consumption, except for sample points identified as post filtration at wells DW-22 and DW-23. For these wells, only the pre-treatment samples, identified as “before filtration”, were evaluated in the HHRA.

2.1.3 Porewater

There are no surface waters present on the FUDS property. However, there are some ephemeral streams and seeps off-site. To assess the off-site surface waters, several porewater samples were collected. The sample IDs for porewater samples evaluated in the HHRA are presented in Attachment 1. The porewater samples were collected by the US Army Corps of Engineers from the following locations: the dug well near GB-DW-22 (GB-SW-01), West Pond (GB-SW-04), East Pond (GB-SW-02) and the north-south ditch between mobile homes south of the former GAT facility (SW-03) (USACE 2008a). East Pond is ephemeral and West Pond is perennial, containing significant water only in the springtime. The porewater samples were used to estimate possible concentrations in the surface water bodies.

2.2 Selection of Constituents of Potential Concern

Constituents of Potential Concern (COPCs) are a subset of the complete list of constituents detected in site media that are carried through the quantitative HHRA. COPCs related to operations at the facility are limited to chlorinated volatile organic compounds (VOCs). Selection of COPCs focuses the analysis on the most likely risk "drivers." As stated in USEPA guidance (USEPA, 1993):

> "Most risk assessments are dominated by a few compounds and a few routes of exposure. Inclusion of all detected compounds at a site in the risk assessment has minimal influence on the total risk. Moreover, quantitative risk calculations using data from environmental media that may contain compounds present at concentrations too low to adversely affect public health have no effect on the overall risk estimate for the site. The use of a toxicity screen allows the risk assessment to focus on the compounds and media that may make significant contributions to overall risk."

Screening on the basis of toxicity is done by comparing site concentrations against appropriate risk-based screening levels. The risk-based screening levels are based on daily exposure and conservative exposure assumptions (such as daily drinking water exposure). If the maximum detected concentrations are lower than these screening levels, then they would also not pose risks above target levels through other site-specific exposure pathways.

2.2.1 Soil

As presented in Table 2-1, the maximum detected concentrations in soil were compared against USEPA Regional Screening Levels (RSLs) for residential soil (USEPA, 2011). The RSLs for constituents based on noncancer effects were based on a Hazard Quotient (HQ) of 0.1 (in other words, they were divided by a factor of 10) to account for cumulative effects. The RSLs for cancer effects were based on a lifetime cancer risk of $1x10^{-6}$. All constituents in soil were below the RSLs.

2.2.2 Groundwater

For the on-site and off-site groundwater data sets, maximum detected concentrations were compared against RSLs for tap water (USEPA, 2011). The RSLs for constituents based on noncancer effects were based on an HQ of 0.1 to account for cumulative effects. The RSLs for cancer effects were based on a lifetime cancer risk of 1 x 10-6. Table 2-2 presents the comparison to RSLs for off-site groundwater and Table 2-3 presents the comparison to RSLs for on-site groundwater. Maximum detected concentrations of MTBE and TCE exceeded the RSLs and were selected as COPC in off-site groundwater. For on-site groundwater, maximum detected concentrations of TCE, naphthalene, and 1,4-dichlorobenzene exceeded the RSLs and were selected as COPC in on-site groundwater. Although detected in on-site groundwater, chloride was not evaluated further in the risk assessment because there are no dose-response values or screening values currently available.

2.2.3 Porewater

Table 2-4 presents the comparison of maximum detected concentrations in porewater samples to RSLs for tap water (USEPA, 2011). The RSLs for constituents based on noncancer effects were based on an HQ of 0.1 to account for cumulative effects. The RSLs for cancer effects were based on a lifetime cancer risk of 1 x 10-6. As shown in Table 2-4, maximum detected concentrations of 1,3-dichlorobenzene and TCE exceeded the RSLs. For both constituents, the exceedance was by less than an order of magnitude. It is likely that porewater would be significantly diluted by the time it discharged into a surface water body, so that the actual surface water concentrations would likely be less than the RSLs. In addition, exposure to surface water is expected to be limited because of the small size and ephemeral nature of the surface water bodies. Exposure to porewater could occur if porewater discharges into a surface water body, and a receptor wades in the surface water body. Since the tap water RSLs assumes daily drinking water consumption, using the tap water

RSLs for screening is a very conservative approach. Any exposure to a surface water body would be significantly less than daily drinking water consumption. However, to further evaluate whether any pore water COPCs are identified, a cumulative screen which compares the maximum detected pore water concentration to the USEPA RSLs for residential tap water (i.e., drinking water) was conducted, and is presented on Table 2-5. As shown on Table 2-5, the potential cumulative risk and hazard index (HI) associated with ingestion of the maximum concentrations for each compound detected in pore water are below MEDEP target risk/HI levels of 1x10-5 and 1, respectively. Therefore, since exposure to these concentrations in drinking water does not pose a risk/HI above target levels and concentrations detected in pore water will likely be diluted in a potential downgradient surface water body or drinking water point of exposure, dermal exposure to these concentrations in surface water will also have a cumulative risk/HI below target levels. Therefore, there are no COPCs identified in porewater.

3.0 Exposure Assessment

The purpose of the exposure assessment is to estimate the magnitude and frequency of potential human exposure to COPCs present in media of interest at the site. The first step in the exposure assessment process is determining potential receptors (i.e., people who may contact the impacted environmental media of interest). Potential exposure scenarios identifying appropriate environmental media and exposure pathways for current and potential future site uses are then developed. This HHRA considers potential exposure to on-site and off-site groundwater.

3.1 Identification of Potential Exposure Scenarios and Receptors

Off-site groundwater exposure was evaluated for a resident, since a resident is likely to result in the highest exposure estimates. Off-site groundwater samples were taken from existing public water supply and private drinking water wells. Off-site groundwater exposure pathways include potable use of groundwater, and exposure to volatilized constituents in indoor air. Potential on-site receptors to groundwater include a future resident, future worker and future day care child. These receptors were identified on the assumption that the site could be developed for residential or commercial uses in the future. The Site buildings are served with groundwater from the on-site well GB-PW-01. This well has not shown a detection of TCE since 1995 when it was first tested for TCE. Several of the on-site monitoring wells have shown the presence of chlorinated solvents above screening levels, and also above drinking water standards. Because of the exceedance of drinking water standards, drinking water use of water from the monitoring well locations would not be permitted. Institutional controls would be required to prevent this use. For these reasons, potable use of on-site groundwater was not evaluated quantitatively in the HHRA. The only exposure pathway identified for on-site receptors was exposure to volatilized constituents in indoor air. Therefore, the only exposure pathway identified for on-site receptors was exposure to volatilized constituents in indoor air.

It is noted that an earlier study conducted by the US Army Corps of Engineers (USACE, 2007) determined that the vapor intrusion pathway did not pose unacceptable risks for potential on-site receptors. In this study, eight soil gas samples were collected in March 2004 through four holes cored through the Former GAT Facility floor by USACE and the United States Army Center for Health Promotion and Preventive Medicine. The soil gas samples contained TCE concentrations ranging from 2.7 to 150 µg/m3. As a result of these detected concentrations, further indoor air sampling was performed in 2006. TCE was not detected in any of the indoor air samples collected in 2006. Cumulative risk calculations performed based on the detected indoor air concentrations of 1,3-butadiene, benzene and carbon tetrachloride estimated a cancer risk level of $1.4x10^{-5}$. The estimated cancer risk level is within the USEPA acceptable cancer risk range of $1x10^{-4}$ to $1x10^{-6}$, and slightly exceeds the MEDEP threshold of $1x10^{-5}$. The results of the testing and corresponding risk calculations indicated that there is no unacceptable risk to human health from vapor intrusion of TCE into the town hall building (USACE, 2007).

As a supplement to the indoor air testing study, on-site and off-site groundwater data were evaluated for volatilization into indoor air. The models used to evaluate groundwater to indoor air volatilization tend to be very conservative, and the actual indoor air testing data are likely to be more representative of potential risks posed through the vapor intrusion pathway. However, there is also uncertainty associated with the assumption that all indoor air concentrations are the result of vapor intrusion.

3.1.1 On-Site and Off-site Resident

It was assumed that the off-site resident and on-site resident could be exposed to potable groundwater through ingestion of drinking water, inhalation of volatiles during showering and dermal contact with volatiles during showering. It is noted that MEDEP (1994) states “Because the ingestion dose itself is based on a

conservative ingestion rate of 2 L/day, Maine DEP and DHS recommend that in the absence of site-specific information, the risk assessment should estimate the inhalation dose from VOCs in tap water for each age group in a residential scenario as equal to the ingestion dose for that age group, and should estimate the dermal dose from VOCs in tap water for each group as equal to 0.3 times the ingestion dose for that age group". Rather than using these default estimates, this HHRA estimated the showering-related inhalation and dermal contact pathways using a shower model, and inhalation and dermal risk calculations. It was also assumed that an off-site resident could be exposed to vapors in indoor air arising from groundwater. Because of the differences in activity patterns and sensitivity to potential COPC exposures, two age groups for the resident receptor were evaluated: the child (age 0 to 6 years, 15 kg body weight) and the adult resident (70 kg body weight) (USEPA, 1991). The child's lower body weight often results in a higher dose per kilogram of body weight than for other age groups. This receptor is then the most sensitive to the noncarcinogenic health effects of COPCs and is, therefore, the target receptor for the noncarcinogenic analysis. Because carcinogenic effects are assumed to be additive over a lifetime, it is more conservative to evaluate carcinogenic effects of COPCs over the assumed 30-year period of residence (6 years as a child and 24 years as an adult). Thus, the evaluation of potential carcinogenic effects for the on-site resident is based on the combined doses/risks of the child and adult age groups. Exposure assumptions for both the on-site and off-site receptor are shown in Table 3-1.

3.1.2 On-site Worker

It was assumed that an on-site worker could be exposed to vapors in indoor air arising from groundwater. Exposure assumptions for this receptor are shown in Table 3-2.

3.1.3 On-site Day Care Child

It was assumed that the site could be developed for commercial purposes, and a that a day care center could be established on site. It was assumed that an on-site day care child could be exposed to vapors in indoor air arising from groundwater. Exposure assumptions for this receptor are shown in Table 3-3.

3.2 Quantification of Potential Exposures

To estimate the potential risk to human health that may be posed by the presence of COPCs at the site, it is first necessary to estimate the potential exposure dose of each COPC. The exposure dose is estimated for each COPC via each exposure pathway by which the receptor is assumed to be exposed. Exposure dose equations combine the estimates of COPC concentration in the environmental medium of interest with assumptions regarding the type and magnitude of each receptor's potential exposure to provide a numerical estimate of the exposure dose. The exposure dose is defined as the amount of COPC taken into the receptor and is expressed in units of milligrams of COPC per kilogram of body weight per day (mg/kg-day). In accordance with USEPA's recent Supplemental Guidance for Inhalation Risk Assessment (USEPA, 2009a), inhalation exposures through the shower pathway were evaluated by developing an exposure air concentration in units of mg constituent per cubic meter air (mg/m^3).

Exposure doses are defined differently for potential carcinogenic and noncarcinogenic effects. The Chronic Average Daily Dose (CADD) is used to estimate a receptor's potential intake from exposure to a COPC with noncarcinogenic effects. According to USEPA (1989), the CADD should be calculated by averaging the dose over the period of time for which the receptor is assumed to be exposed. Therefore, the averaging period is the same as the exposure duration. For COPC with potential carcinogenic effects, however, the Lifetime Average Daily Dose (LADD) is employed to estimate potential exposures. In accordance with USEPA (1989) guidance, the LADD is calculated by averaging exposure over the receptor's assumed lifetime (70 years). Therefore, the averaging period is the same as the receptor's assumed lifetime. The same approach was used to evaluate inhalation exposures using exposure air concentrations. The standardized equations for estimating a receptor's daily intake (both lifetime and chronic) are presented below, followed by descriptions of receptor-specific exposure parameters and constituent-specific parameters.

3.2.1 Estimating Potential Exposure to COPCs via Inhalation

For the groundwater to indoor air vapor intrusion pathway, exposure and risk estimates were calculated using the USEPA version of the Johnson and Ettinger model (JEM) (USEPA, 2004a), which is described further in Section 3.3.2.1Therefore, for this pathway, it was not necessary to input exposure air concentrations into AECOM's risk calculation spreadsheets. For the showering pathway for the off-site and on-site residents, the following equation was used to estimate exposure to COPC in shower air:

Exposure Air Concentration (mg/m^3):

$$\text{ExposureAirConcentration} = \frac{\text{CA x ET x EF x ED}}{\text{AT}}$$

where:

CA = Air Concentration (mg/m^3)

ET = Exposure Time (hours/day)

EF = Exposure Frequency (days/year)

ED = Exposure Duration (year)

AT = Averaging Time (hours)

3.2.2 Estimating Potential Exposure to COPCs from Groundwater

The off-site resident was assumed to contact groundwater through ingestion and dermal contact while showering. Attachment 2 shows the exposure and risk calculation spreadsheets for the ingestion and dermal contact pathways for the off-site resident and the on-site resident. The equation used to estimate a receptor's potential exposure via ingestion of groundwater is:

Daily Intake (Lifetime and Chronic) Following Ingestion of Groundwater (mg/kg-day):

$$\text{Daily Intake} = \frac{\text{CW x IR x EF x ED xET}}{\text{BWxAT}}$$

where:

CW = Water Concentration (mg/L)

IR = Water Ingestion Rate (L/hr)

EF = Exposure Frequency (days/year)

ED = Exposure Duration (year)

ET = Exposure Time (hour)

BW = Body Weight (kg)

AT = Averaging Time (days)

Calculation of the dose from dermal exposure to groundwater follows USEPA guidance (2004b) which differentiates between organics and inorganics, as presented below. The following equations are used to estimate the dermal absorbed dose (DAD) following dermal contact with groundwater:

Daily Intake (Lifetime and Chronic) Following Dermal Contact with Groundwater (mg/kg-day):

$$DAD = \frac{DA_{event} \text{ x } EV \text{ x } EF \text{ x } ED \text{ x } SA}{BW \text{ x } AT}$$

where:

DAD = Dermal Absorbed Dose (mg/kg-day)

DA_{event} = Absorbed Dose per Event (mg/cm^2-event)

SA = Surface Area (cm^2)

EV = Event Frequency (events/day)

EF = Exposure Frequency (days/year)

ED = Exposure Duration (years)

BW = Body Weight (kg)

AT = Averaging Time (years)

The calculation of the dose absorbed per unit area per event (DA_{event}) is as follows for inorganics or highly ionized organics:

$$DA_{event} = CW \text{ x } PC \text{ x } ET \text{ x } CF$$

where:

DA_{event} = Absorbed Dose per Event (mg/cm^2-event)

CW = Concentration in Water (mg/L)

PC = Permeability Constant (cm/hr)

ET = Exposure Time (hr/event)

CF = Conversion factor (L/1000 cm^3)

The calculation of DA_{event} is as follows for organics:

If ET < t*, then: $$DA_{event} = 2FA \text{ x } PC \text{ x } CW \text{ x } CF \sqrt{\frac{6T \text{ x } ET}{\pi}}$$

If ET > t*, then $DA_{event} = FA x PC x CW x CF x \left[\frac{ET}{1+B} + 2T\left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$

where:

DA_{event} = Absorbed Dose per Event (mg/cm^2-event)

FA = Fraction Absorbed water (dimensionless)

PC = Permeability Constant (cm/hour)

CW = Concentration in Water (mg/L)

T = Lag Time per event (hr/event)

ET = Exposure Time (hr/event)

t* = Time to Steady State (hr) = 2.4T

B = Dimensionless ratio of the PC of a constituent through the stratum corneum relative to its permeability constant across the viable epidermis

CF = Conversion Factor (L/1000 cm^3)

Parameters for Water Dermal Dose Calculation

The estimation of exposure dose resulting from incidental dermal contact with groundwater or surface water requires the use of a dermal permeability constant (PC) in units of centimeters per hour (cm/hr). This method assumes that the behavior of constituents dissolved in water is described by Fick's Law. In Fick's Law, the steady-state flux of the solute across the skin (mg/cm^2/hr) equals the permeability constant (pc, cm/hr) multiplied by the concentration difference of the solute across the membrane (mg/cm^3). This approach is discussed by USEPA (USEPA, 1989; 2004b).

The PC values were derived from USEPA (2004b) Exhibit B-3. In addition to PCs, several other parameters are necessary to calculate dermal dose from exposure to organic constituents in water. These parameters, also obtained from USEPA (2004b), Exhibit B-3, include the ratio of the permeability coefficient of a constituent through the stratum corneum relative to its permeability coefficient across the viable epidermis (B, dimensionless), lag time (τ, hours/event), and time to steady state (t*, hours). Table 3-4 presents the parameters for dermal dose calculation. Parameters not available from USEPA (2004b) were calculated in Table 3-5.

3.3 Calculation of Exposure Point Concentrations

Exposure points are the locations where potential receptors may contact COPCs at or from the site. The concentrations of COPCs in the environmental medium that receptors may contact, referred to as exposure point concentrations (EPCs), must be estimated in order to determine the magnitude of potential exposure.

Measurement data were used to develop EPCs for groundwater on a well-by-well basis. These data were then used to model EPCs for the inhalation pathways.

3.3.1 Measured EPCs

Measured data for individual wells were used as EPCs for groundwater. Only wells containing constituents at concentrations above risk-based screening levels were evaluated in the HHRA. Table 3-6 shows EPCs for off-site groundwater. Table 3-7 shows EPCs for on-site groundwater. Each well was evaluated separately to account for the possibility that separate receptors could be exposed to individual wells.

The measured EPCs were used in the ingestion and dermal contact with groundwater exposure pathways for the off-site and on-site residents. As shown in Attachment 2, the ingestion and dermal contact calculations were performed initially using unit input concentrations of 1 mg/L. Potential risk estimates were calculated for detected concentrations in each well by adjusting for the actual constituent concentrations. This adjustment process uses the linear relationship between risk and exposure concentration.

3.3.2 Modeled EPCs

Modeled EPCs were required for the estimation of COPC concentrations in the following media:

- Volatilization of COPCs in groundwater to indoor air and
- Volatilization of COPCs in groundwater while shower/bathing.

3.3.2.1 Volatilization of COPCs from Groundwater to Indoor Air

Risk estimates for the vapor intrusion pathway were calculated using the USEPA version of the Johnson and Ettinger model (JEM) (USEPA, 2004a). JEM considers both diffusion of constituents migrating from the subsurface and convection, which is driven by the pressure difference between the subsurface and the building. Equations and parameters required for the implementation of this model are provided in User's Guide For Evaluating Subsurface Vapor Intrusion Into Buildings (USEPA, 2004a). Additional guidance on the evaluation of this pathway was obtained from Draft Guidance for Evaluating the Indoor Air Pathway From Groundwater and Soils (USEPA, 2002).The spreadsheet "GW-ADV-Feb04.XLS", available from USEPA for implementation of the JEM (USEPA, 2004c) was used in this HHRA. The advanced version of the JEM was used to allow for two different soil strata between the ground surface and the water table.

When available, site-specific information was used in the JEM. If site-specific information was not available for a certain input, the USEPA (2004a) recommended defaults were selected. EPCs for each well, presented in Table 3-6 and 3-7, were used as inputs for groundwater concentration. Table 3-9 presents the site-specific and default assumptions used as inputs to the JEM. The groundwater to indoor air JE models are provided in Attachment 3.

For the resident and daycare child receptors, which assume a residential building with a basement, the site-specific soil strata thicknesses were adjusted to meet JEM requirements. Specifically, the JEM requires that the soil stratum closest to the ground surface (soil stratum A) extend to a depth equal to or greater than the bottom of the building foundation (200 cm for a basement). As shown in Table 3-9, the site-specific thickness of soil stratum A is 153 cm. For the resident and daycare child building scenarios, the thickness of soil stratum A was adjusted to 200 cm, equal to the depth to the bottom of the building foundation. To be conservative, the depth of the soil stratum directly beneath stratum A, soil stratum B, was adjusted accordingly to extend from the bottom of the building's foundation to the water table (410 cm). These adjustments are considered conservative (i.e., result in higher potential risk estimates) because it assumes that the more permeable soil layer closest to the ground surface is thicker and the less permeable soil layer directly beneath it is thinner. For the on-site worker scenario, which assumes a building with slab-on-grade construction, the site-specific soil parameters were used with no adjustments.

3.3.2.2 Volatilization of COPCs from Groundwater While Showering

During showering, it is possible that VOCs present in groundwater will volatilize into the air of a bathroom. To estimate the potential VOC concentrations in shower/bathroom air, a model developed by Foster and Chrostowski (1987) was used. This model is based on the experimental work of Andelman (1985), who measured air concentrations of trichloroethylene and chloroform in a bench scale shower assembly.

The shower model utilizes several assumptions, including a 12 cubic meter (m^3) bathroom volume and instant equilibrium in the air between the shower stall and the rest of the bathroom. The volumetric flow rate through the bathroom was assumed to be 0.1 m^3/min. This gives an effective air change rate of 0.5 air changes/hour (ACH). This value represents a reasonably conservative estimate given that median values for homes with closed windows is about 0.5 ACH (TRJ Environmental, 2002), and bathrooms with showers generally need a greater air exchange rate to remove moisture.

The model calculates the maximum concentrations, assuming that exposure time equals duration of the shower use. In reality, an individual would experience an integrated exposure that would gradually increase during shower usage and decrease again after the water was turned off. It was conservatively assumed that the peak concentration would persist for the entire duration of exposure.

The equation to calculate air concentrations in the bathroom is shown below:

$$C_{VOC} = \frac{S\,(e^{RDs} - 1)(e^{-Rt})}{R} \qquad \text{(Eq. 1)}$$

where:

C_{VOC} = bathroom VOC air concentration, ug/m^3
S = VOC source generation rate, ug/m^3- minute
R = air exchange rate of bathroom, min^{-1}
t = time at which concentration is being calculated, min
D_s = duration of shower, min

R, the air exchange rate, is calculated as the volumetric flow rate through the bathroom (m^3/min) divided by the volume of the bathroom (m^3).

S, the VOC source generation rate, is calculated based on the concentration of the compound in the water, emission of compound from a droplet, flow rate of water, and volume of room for dilution. S is calculated from the following series of equations:

$$S = \frac{C_{wd}\,Fr}{S_v} \qquad \text{(Eq. 2)}$$

where:

S = VOC source generation rate, ug/m^3-min
C_{wd} = concentration of VOC leaving the shower droplet, µg/l
F_r = water flow rate in shower, 10 liters/min
S_v = shower volume, 2.94 m^3

C_{wd} is calculated as follows:

$$C_{wd} = C_{wc} * (1 - e^{[(-KaL)(ts)/600d]}) \qquad \text{(Eq. 3)}$$

Where:

C_{wc} = concentration of VOC in water, µg/l
K_{aL} = temperature-connected mass transfer coefficient, cm/hr
t_s = shower droplet drop time, 2 sec
d = droplet diameter, 0.1 cm
1/600d = 6/d (mm) * (1 hr/3600 sec)

K_{aL} is calculated according to:

$$K_{aL} = K_L * [(T_1 * u_s)/(T_s * u_1)]^{-0.5} \quad \text{(Eq. 4)}$$

Where:

K_L = mass transfer coefficient at reference conditions (20°C and 1 atm), cm/hr
T_1 = reference temperature, 293°K
T_s = temperature of shower water, 318°K
u_1 = viscosity of water at reference temperature, 1.002 cp
u_s = viscosity of water at shower temperature, 0.5960 cp

K_L is calculated according to:

$$K_L = 1/[1/k_l + RT/(H\ k_g)] \quad \text{(Eq. 5)}$$

Where:

k_l = liquid-film mass transfer, cm/hr
k_g = gas-film mass transfer, cm/hr
H = Henry's Law constant, atm-m^3/mole
R = molar gas constant, 8.191×10^{-5} atm-m^3/mole-k
T = temperature, 293°K

The input values of k_l and k_g are based on the mass transfer coefficients of CO_2 and water. They are calculated for the particular constituent of potential interest according to the following equations:

$$k_l = (kCO_2)\ [(44g/mole)/MW_{VOC}]^{0.5} \quad \text{(Eq. 6)}$$

$$k_g = (kH_2O)\ [(18g/mole)/MW_{VOC}]^{0.5} \quad \text{(Eq. 7)}$$

where:

kCO_2 = 20 cm/hr
kH_2O = 3,000 cm/hr
MW = molecular weight of constituent of potential interest, g/mole

These equations were used to calculate bathroom air VOC concentrations derived from VOCs in groundwater. Attachment 4 shows the output of the shower model. The shower model was run initially using unit input concentrations for each constituent of 1 mg/L. The resulting unit air concentrations were then input into inhalation risk calculation spreadsheets. Potential risk estimates were calculated for

detected concentrations in off-site wells by adjusting for the actual EPCs. This adjustment process uses the linear relationship between risk and exposure concentration. The risk calculation spreadsheets and well-by-well inhalation risk estimates are also shown in Attachment 2.

4.0 Dose Response Assessment

The purpose of the dose-response assessment is to identify the types of adverse health effects a constituent may potentially cause, and to define the relationship between the dose of a constituent and the likelihood or magnitude of an adverse effect (response) (USEPA, 1989). Adverse effects are classified by USEPA as potentially carcinogenic or noncarcinogenic (i.e., potential effects other than cancer). Dose-response relationships are defined by USEPA for oral and inhalation exposure. Oral toxicity values are also used to assess dermal exposures, with appropriate adjustments. Combining the results of the toxicity assessment with information on the magnitude of potential human exposure provides an estimate of potential risk.

Numerical toxicity values are generally obtained from USEPA databases/sources. The dose-response relationship is often determined from laboratory studies conducted under controlled conditions with laboratory animals. These laboratory studies are controlled to minimize responses due to confounding variables, and are conducted at relatively high dose levels to ensure that responses can be observed using as few animals as possible in the experiments. Humans are typically exposed to constituents in the environment at levels much lower than those tested in animals. Mathematical models or uncertainty factors are used to extrapolate the relatively high doses administered to animals to predict potential human responses at dose levels far below those tested in animals.

Section 4.1 describes the sources of dose-response values. Section 4.2 describes the dose-response values developed by USEPA for the evaluation of potential carcinogenic effects. Section 4.3 describes USEPA's approach for developing noncarcinogenic dose-response values. Section 4.4 discusses dose-response issues related to TCE.

4.1 Sources of Dose-Response Values

The USEPA's guidance regarding the hierarchy of sources of human health dose-response values in risk assessment was followed (USEPA, 2003). Sources of the published dose-response values in this risk assessment include:

- Tier 1: USEPA's Integrated Risk Information System (IRIS) (USEPA, 2010),
- Tier 2: Provisional Peer-Reviewed Toxicity Values (PPRTVs) obtained from USEPA via the USEPA National Center for Environmental Assessment (NCEA) in Cincinnati, Ohio,
- Tier 3: California EPA's Office of Environmental Health and Hazard Assessment (OEHHA) (CalEPA 2008, 2009), Minimal Risk Levels (MRLs) published by the Agency for Toxic Substances and Disease Registry (ATSDR, 2009), and the Health Effects Assessment Summary Tables (HEAST) (USEPA, 1997b).

The primary (Tier 1) USEPA source of dose-response values is IRIS, an on-line computer database of toxicological information (USEPA, 2010). The IRIS database is updated monthly to provide the most current USEPA verified dose-response values. As defined by the USEPA (1997b), a dose-response value is "Work Group-Verified" if all available information on the value has been examined by an Agency Work Group, the value has been calculated using current Work Group methodology, a unanimous consensus has been reached on the value by the Work Group, and the value appears on IRIS.

When a dose-response value is not available from IRIS, PPRTVs or other provisional values published by the USEPA NCEA in Cincinnati were used (Tier 2). The NCEA generally provides a toxicological summary for the value.

Where Tier 1 or Tier 2 values were not available, Tier 3 sources including the California EPA Office of Environmental Health and Hazard Assessment (OEHHA) (CalEPA, 2008a, and 2008b) were consulted.

4.2 Carcinogenic Dose-Response Assessment

USEPA has developed new carcinogen risk assessment guidelines (USEPA, 2005) that revise and replace the previous carcinogen risk assessment guidelines. However, the carcinogen risk assessments for many of the constituents listed in USEPA's IRIS database still follow the classification system developed in the previous guidance (USEPA, 1999). The classification system in the previous guidance was developed according to the weight of evidence from epidemiologic and animal studies:

Group A - Human Carcinogen (sufficient evidence of carcinogenicity in humans)

Group B - Probable Human Carcinogen (B1 - limited evidence of carcinogenicity in humans; B2 - sufficient evidence of carcinogenicity in animals with inadequate or lack of evidence in humans)

Group C - Possible Human Carcinogen (limited evidence of carcinogenicity in animals and inadequate or lack of human data)

Group D - Not Classifiable as to Human Carcinogenicity (inadequate or no evidence)

Group E - Evidence of Noncarcinogenicity for Humans (no evidence of carcinogenicity in adequate studies)

In the previous guidance, it was assumed that there is some finite level of risk associated with each non-zero dose. The USEPA has developed computerized models that extrapolate dose-response relations observed at the relatively high doses used in animal studies to the low dose levels encountered by humans in environmental situations. The mathematical models developed by USEPA assume no threshold, and use both animal and human data (where available) to develop a potency estimate for a given constituent.

USEPA (2005) places greater emphasis on critically evaluating available data from which a default option may be invoked if needed in the absence of critical information. The guidance also emphasizes the use of mode of action data. Mode of action is defined as a sequence of key events and processes, starting with interaction of an agent with a cell and resulting in cancer formation. Some modes of action are anticipated to be mutagenic and are assessed with a linear approach. Other modes of action may be modeled with either linear or nonlinear approaches after a rigorous analysis of available data under the guidance provided in the framework for mode of action analysis. USEPA (2005) uses a weight of evidence narrative rather than the classification system that was used in the previous guidance. The following descriptors are recommended along with the weight of evidence narrative:

- Carcinogenic to humans – this descriptor indicates strong evidence of human carcinogenicity.
- Likely to be carcinogenic to humans – this descriptor is appropriate when the weight of evidence is adequate to demonstrate carcinogenic potential to humans.
- Suggestive evidence of carcinogenic potential – this descriptor is appropriate when the weight of evidence is suggestive of carcinogenicity; a concern for potential carcinogenic effects in humans is raised, but the data are judged not sufficient for a stronger conclusion.
- Inadequate information to assess carcinogenic potential – this descriptor is appropriate when available data are judged inadequate for applying one of the other descriptors.

- Not likely to be carcinogenic to humans – this descriptor is appropriate when the available data are considered robust for deciding that there is no basis for human hazard concern.

More than one descriptor can be used when a constituent's effects differ by dose or exposure route.

4.2.1 Oral carcinogenic dose-response values

The oral cancer potency estimate is called a cancer slope factor (CSF) is expressed in units of $(mg/kg\text{-}day)^{-1}$; the higher the CSF, the greater the carcinogenic potential. Table 4-1 summarizes the dose-response information for COPCs classified by the USEPA as potential carcinogens for the oral route of exposure. For each constituent, the CAS number, USEPA carcinogenicity class, the oral cancer-slope factor and the reference are provided. In addition, the study animal and route of exposure upon which the CSF is based are presented. As shown in Table 4-3, several of the COPCs do not have CSFs listed in USEPA's IRIS database, but have CSFs listed by CalEPA (2008b). The CalEPA CSFs were used whenever available.

4.2.2 Inhalation carcinogenic dose-response values

The toxicity values used to evaluate potential carcinogenic health effects resulting from long-term inhalation exposure to COPC are called Inhalation Unit Risks (IURs), and are expressed in units of the inverse of micrograms of the constituent per cubic meter of air $(ug/m^3)^{-1}$. Unit risk refers to the upper bound excess cancer risk from a continuous lifetime exposure to a constituent at one microgram per cubic meter (1 ug/m^3) in air. Table 4-2 provides IURs for COPCs classified as potential carcinogens for the inhalation route of exposure. It is noted that CalEPA lists IURs for MTBE and naphthalene (CalEPA, 2008b); neither of these constituents have carcinogenic dose-response values developed by USEPA. Therefore, the approach of using CalEPA toxicity values is conservative.

4.3 Noncarcinogenic Dose-Response Assessment

Constituents with known or potential noncarcinogenic effects are assumed to have a dose below which no adverse effect occurs or, conversely, above which an adverse effect may be seen. This dose is called the threshold dose. A conservative estimate of the true threshold dose is called a No Observed Adverse Effect Level (NOAEL). The lowest dose at which an adverse effect has been observed is called a Lowest Observed Adverse Effect Level (LOAEL). By applying uncertainty factors to the NOAEL or the LOAEL, noncarcinogenic dose-response values have been developed for oral and inhalation exposures.

4.3.1 Oral noncarcinogenic dose-response values

Noncancer oral dose-response values are termed Reference Doses (RfDs). The RfD is defined as an estimate, with uncertainty spanning perhaps an order of magnitude, of a daily oral exposure to the human population, including sensitive subgroups, which is likely to be without an appreciable risk of deleterious effects during a lifetime. The RfD is expressed in units of milligrams of the constituent per kilogram of body weight per day (mg/kg-day). It can be derived from a NOAEL, LOAEL, or benchmark dose, with uncertainty factors generally applied to reflect limitations of the scientific data available. Uncertainty factors are applied to the NOAEL (or LOAEL or benchmark dose) to account for uncertainties associated with the dose-response relationship. These include using an animal study to derive a human dose-response value, extrapolating from a LOAEL to a NOAEL, extrapolating from a subchronic (partial lifetime) to a chronic lifetime exposure, and evaluating sensitive subpopulations. Generally, a 10-fold factor is used to account for each of these uncertainties; thus, the total uncertainty factor can range from 10 to 10,000. In addition, an uncertainty factor or a modifying factor of up to 10 can be used to account for inadequacies in the database or other uncertainties. The resulting RfDs are very conservative, i.e., health protective, because of the use of the large uncertainty factors. The lower the RfD value, the lower is the assumed threshold for effects, and the greater the assumed toxicity. Table 4-3 lists dose-response information for COPCs for noncarcinogenic effects through the oral route. For each COPC, the chemical abstracts service number (CAS number), the dose-

response value (RfD), and the reference for the dose-response value are presented. In addition, the USEPA confidence level in the value, the uncertainty factor, the modifying factor, the study animal, study method, target organ and critical effect upon which the dose-response value is based are also presented for each COPC, where available. The confidence level is provided for constituents published on IRIS, and is based on the confidence in the study and the extent of toxicity information available for that constituent.

4.3.2 Inhalation noncarcinogenic dose-response values

Noncancer inhalation dose-response values are termed Reference Concentrations (RfC) and are expressed in units of milligrams of the constituent in cubic meter of air (mg/m^3). The RfC is defined as an estimate, with uncertainty spanning perhaps an order of magnitude, of a continuous inhalation exposure to the human population, including sensitive subgroups, which is likely to be without an appreciable risk or deleterious effects during a lifetime. Similar the RfD approach, the RfC is derived from a NOAEL, LOAEL, or benchmark concentration, with uncertainty factors generally applied to reflect limitations on the scientific data available. Table 4-4 lists dose-response information for COPCs for noncarcinogenic effects through the inhalation route.

4.4 TCE Dose-Response

Finalized dose-response values for TCE have not been published in USEPA's IRIS database. CalEPA has developed dose-response values for the noncarcinogenic inhalation (CalEPA, 2008a), and carcinogenic oral and inhalation routes (CalEPA, 2008b). In an earlier report (USEPA, 2001), USEPA developed provisional dose-response values for TCE, which included a range of CSFs for TCE of 0.02 to 0.4 per mg/kg-day. This document is considered draft and is still undergoing peer review outside the USEPA; therefore it is not considered a PPRTV. Therefore, in accordance with USEPA's hierarchy (USEPA, 2003), the CalEPA dose-response values were used to quantify potential risks from TCE.

5.0 Risk Characterization

The potential risk to human health associated with potential exposure to COPCs at the site is evaluated in this step of the risk assessment process. Risk characterization is the process in which the dose-response information (Section 4.0) is integrated with quantitative estimates of human exposure derived in the Exposure Assessment (Section 3.0). The result is a quantitative estimate of the likelihood that humans will experience any adverse health effects given the exposure assumptions made. Two general types of health risk are characterized for each potential exposure pathway considered: potential carcinogenic risk and potential noncarcinogenic risk. Carcinogenic risk is evaluated by averaging exposure over a normal human lifetime, which, based on USEPA guidance (1989), is assumed to be 70 years. Noncarcinogenic risk is evaluated by averaging exposure over the total exposure period.

The approach to carcinogenic risk characterization is presented in Section 5.1, and the approach to noncarcinogenic risk characterization is presented in Section 5.2. The risk characterization results are presented in Section 5.3. Section 5.4 includes a comparison to drinking water guidelines. An uncertainty assessment is included in Section 5.5. The risk calculation spreadsheets are presented in Attachments 2, 3 and 4.

5.1 Carcinogenic Risk Characterization

The purpose of carcinogenic risk characterization is to estimate the upper-bound likelihood, over and above the background cancer rate, that a receptor will develop cancer in his or her lifetime as a result of exposure to a compound in environmental media at the site. This likelihood is a function of the dose of a compound (described in the Exposure Assessment) and the CSF (described in the Toxicity Assessment) for that compound. The Excess Lifetime Cancer Risk (ELCR) is the likelihood over and above the background cancer rate that an individual will contract cancer in his or her lifetime. The risk value is expressed as a probability (e.g., 10^{-6}, or one in one million). The American Cancer Society (ACS) estimates that the lifetime probability of contracting cancer in the U.S. is 1 in 2 for men and 1 in 3 for women (ACS, 2004).

For oral cancer risk estimates, a Lifetime Average Daily Dose (LADD) is calculated that averages a receptor's exposure dose over a lifetime. The relationship between the ELCR and the estimated LADD of a compound may be expressed as:

$$ELCR = 1\text{-}e^{-(CSF \times LADD)}$$

When the product of the CSF and the LADD is much greater than 1, the ELCR approaches 1 (i.e., 100 percent probability). When the product is less than 0.01 (one chance in 100), the equation can be closely approximated by:

$$ELCR = LADD\ (mg/kg\text{-}day) \times CSF\ (mg/kg\text{-}day)^{-1}$$

The product of the CSF and the LADD is unitless, and provides an upper-bound estimate of the potential carcinogenic risk associated with a receptor's exposure to that compound via that pathway.

For inhalation cancer risk estimates, a Lifetime Average Air Concentration is estimated which represents the air concentration that the receptor could inhale averaged over a lifetime. This concentration is multiplied by the IUR, as shown in the following equation:

$$ELCR = \text{Lifetime average air concentration}\ (ug/m^3) \times IUR\ (ug/m^3)^{-1}$$

The potential carcinogenic risk for each exposure pathway is calculated for each receptor. In current regulatory risk assessment, it is assumed that cancer risks are additive or cumulative. A summary of the total site cancer risks for each receptor group is presented in this section and compared to the USEPA's target risk range of 10^{-4} to 10^{-6} (one in ten thousand to one in one million). The total site cancer risks are also compared to $1x10^{-5}$, which has been set by Maine DEP as the upper bound for an acceptable cancer risk level (MEDEP, 1994).

It should be noted that USEPA provides the following guidance regarding actions to be taken based on risk assessment results (USEPA, 1991):

> "Where the cumulative carcinogenic site risk to an individual based on reasonable maximum exposure for both current and future land use is less than 10^{-4}, and the non-carcinogenic hazard quotient is less than 1, action generally is not warranted unless there are adverse environmental impacts." and,
>
> "The upper boundary of the risk range is not a discrete line at 1×10^{-4}, although EPA generally uses 1×10^{-4} in making risk management decisions. A specific risk estimate around 10^{-4} may be considered acceptable if justified based on site-specific conditions."

5.2 Noncarcinogenic Risk Characterization

For oral noncancer risk estimates, a Chronic Average Daily Dose (CADD) is calculated that averages a receptor's exposure dose over the exposure duration. The potential risk of adverse noncarcinogenic health effects is estimated for each receptor by comparing the CADD for each compound with the RfD for that compound. The resulting ratio, which is unitless, is known as the Hazard Quotient (HQ) for that compound. The HQ is calculated using the following equation:

$$HQ = \frac{CADD\ (mg/kg\text{-}day)}{RfD\ mg/kg\text{-}day}$$

For inhalation noncancer risk estimates, a Chronic Average Air Concentration is estimated which represents the air concentration that the receptor could inhale averaged over the exposure duration. This concentration is divided by the Reference Concentration (RfC), as shown in the following equation:

$$HQ = \frac{\text{Chronic Average Air Concentration}\ \ (mg/m^3)}{RfC\ \ (mg/m^3)}$$

The total H(HI for each receptor is calculated by summing the HQs for each pathway and constituent within that pathway. The total HI is compared to the acceptable HI of 1 defined by USEPA (1989) and MEDEP (1994). Where the total site HI is greater than 1 for any receptor, a more detailed evaluation of potential noncarcinogenic effects based on specific health or target endpoints (e.g., liver effects, neurotoxicity) is performed (USEPA, 1989).

5.3 Risk Characterization Results

The results of the risk characterization are summarized for each receptor below. Tables 5-1 through 5-8 summarize total potential risk and HI for each receptor.

5.3.1 Off-site Resident

It was assumed that an off-site resident could be exposed to potable groundwater through ingestion of drinking water, inhalation of volatiles during showering and dermal contact with volatiles during showering. It was also

assumed that an off-site resident could be exposed to vapors in indoor air volatilizing from groundwater. Potential risks were calculated based on exposure to individual wells. As shown in Table 5-1, total potential carcinogenic risks for each well were less than USEPA's target cancer risk range of $1x10^{-4}$ to $1x10^{-6}$, and less than MEDEP's upper bound cancer risk of $1x10^{-5}$. As shown in Table 5-2, total HIs for each well were below USEPA and MEDEP's upper bound HI of 1.

5.3.2 On-site Resident

It was assumed that an on-site resident could be exposed to potable groundwater through ingestion of drinking water, inhalation of volatiles during showering and dermal contact with volatiles during showering. It was also assumed that an on-site resident could be exposed to vapors in indoor air volatilizing from groundwater. As shown in Table 5-3, total potential carcinogenic risks for each well were within or less than USEPA's target cancer risk range of $1x10^{-4}$ to $1x10^{-6}$. In addition, the total potential carcinogenic risks for all wells were less than MEDEP's upper bound cancer risk of $1x10^{-5}$. As shown in Table 5-4, total HIs for each well were below USEPA and MEDEP's upper bound HI of 1.

5.3.3 On-site Worker

It was assumed that an on-site worker could be exposed to vapors in indoor air volatilizing from groundwater. As shown in Table 5-5, total potential carcinogenic risks for each well were less than USEPA's target cancer risk range of $1x10^{-4}$ to $1x10^{-6}$ and MEDEP's upper bound cancer risk of $1x10^{-5}$. As shown in Table 5-6, total HIs for each well were below USEPA and MEDEP's upper bound HI of 1.

5.3.4 On-site Day Care Child

It was assumed that the site could be developed for commercial purposes, and a that a day care center could be established on site. It was assumed that an on-site day care child could be exposed to vapors in indoor air volatilizing from groundwater. As shown in Table 5-7, total potential carcinogenic risks for each well were less than USEPA's target cancer risk range of $1x10^{-4}$ to $1x10^{-6}$ and MEDEP's upper bound cancer risk of $1x10^{-5}$. As shown in Table 5-8, total HIs for each well were below USEPA and MEDEP's upper bound HI of 1.

5.4 Comparison of Groundwater Concentrations to Drinking Water Guidelines

For informational purposes, the on-site and off-site wells with COPCs were also compared to USEPA drinking water guidelines (USEPA, 2009c) and Maine Maximum Exposure Guidelines (MEGs; Maine CDC, 2008). Table 5-9 compares COPC concentrations from off-site wells to guidelines. As shown in Table 5-9, TCE in off-site well GB-DW-22 (5.1 ug/L) slightly exceeds USEPA's MCL for TCE of 5 ug/L. The detected concentrations in the other off-site wells are lower than guidelines. Table 5-10 compares COPC concentrations from on-site wells to guidelines. As shown in Table 5-10, TCE in on-site well GB-MW-01 (60 ug/L) exceeds both the USEPA MCL (5 ug/L) and MEG (32 ug/L) for TCE. TCE in on-site wells GB-MW-02 (26 ug/L) and GB-MW-03 (5.1 ug/L) exceed only the USEPA MCL. The other COPC concentrations are below relevant guidelines.

5.5 Uncertainty Analysis

Within any of the four steps of the risk assessment process, assumptions must be made due to a lack of absolute scientific knowledge. Some of the assumptions are supported by considerable scientific evidence, while others have less support. Every assumption introduces some degree of uncertainty into the risk assessment process. Regulatory risk assessment methodology requires that conservative assumptions be made throughout the risk assessment to ensure that public health is protected. Therefore, when all of the assumptions are combined, it is much more likely that risks are overestimated rather than underestimated.

The assumptions that introduce the greatest amount of uncertainty in this risk assessment are discussed in this section. They are discussed in qualitative terms, because for most of the assumptions there is not enough information to assign a numerical value to the uncertainty that can be factored into the calculation of risk.

5.5.1 Data Evaluation

The constituents detected in various site media were screened against risk-based screening levels. Constituents exceeding these concentrations were selected as COPCs for quantitative evaluation in the risk assessment. A subset of constituents detected at a site is generally selected for quantitative analysis for several reasons. Some constituents may be present at concentrations that can be assumed with reasonable assurance not to pose a risk to human health. A review of the results of risk assessments demonstrate that in most cases risks are attributable only to one or a few constituents, and that many of the constituents quantitatively evaluated do not contribute significantly to total risk estimates (USEPA, 1993). The screening process is conducted to identify the COPCs that may contribute the greatest to potential risk. The screening process used here is conservative. Although the excluded constituents may pose a finite level of risk, that risk would contribute negligibly to the total site risk. Therefore, not evaluating the excluded constituents does not measurably affect the numerical estimates of hazard or risk, and does not affect remedial decision-making at the site.

5.5.2 Exposure Assessment

Exposure scenarios in a risk assessment are selected to be representative of potential exposures to COPCs in media that may be experienced by human receptors based on current and reasonably foreseeable land use. For this site, it was assumed that an on-site resident, on-site worker and on-site day care child could be present on the site in the future. An off-site residential scenario was also evaluated. When estimating potential human doses (i.e., intakes) from potential exposure to various media containing COPCs, several assumptions are made. Uncertainty may exist, for example, in assumptions concerning rates of ingestion, frequency and duration of exposure, and bioavailability of the constituents in the medium. Typically, when limited information is available to establish these assumptions, a conservative (i.e., health-protective) estimate of potential exposure is employed. The exposure assumptions used here considered the likelihood of inhalation of volatilized constituents originating from groundwater for the on-site receptors. For the off-site receptors, it was assumed that the resident could use also use the groundwater for consumption. It was conservatively assumed that separate receptors could be exposed to individual wells over the entire exposure duration.

5.5.3 Dose-Response Assessment

The purpose of the dose-response assessment is to identify the types of adverse health effects a constituent may potentially cause and to define the relationship between the dose of a constituent and the likelihood or magnitude of an adverse effect (response). Dose-response assessments for both carcinogenic and noncarcinogenic health effects share many of the same sources of uncertainty. There are uncertainties involved in animal to human extrapolations, high to low dose extrapolations, and the specific models used to develop dose-response values. To compensate for these uncertainties, regulatory agencies develop dose-response values that are biased to overestimate rather than under-estimate human health risks.

Finalized dose-response values for TCE have not been published in USEPA's IRIS database. In this HHRA, dose-response values developed by CalEPA were used. USEPA developed provisional dose-response values for TCE in an earlier 2001 report (USEPA, 2001), but this document is considered draft and has not completed peer review. Therefore, in accordance with USEPA's hierarchy (USEPA, 2003), the CalEPA dose-response values were used to quantify potential risks from TCE. There is some uncertainty associated with this approach, since USEPA's dose-response values for TCE are not finalized.

5.5.4 Risk Characterization

The potential risk of adverse human health effects is characterized based on estimated potential exposures and potential dose-response relationships. Three areas of uncertainty are introduced in this phase of the risk assessment: the evaluation of potential exposure to multiple constituents, the combination of upper-bound exposure estimates with upper-bound toxicity estimates, and the risk to sensitive populations.

Once potential exposure to and potential risk from each COPC is estimated, the total upper-bound potential risk posed by the site is determined by combining the estimated potential health risk from each of the COPCs. Presently, potential carcinogenic effects are added unless evidence exists indicating that the COPCs interact synergistically (a combined effect that is greater than a simple addition of potential individual effects) or antagonistically (a combined effect that is less than a simple addition of potential individual effects) with each other. For noncarcinogenic effects, the HI should only be summed for constituents that have the same or similar toxic endpoints (USEPA, 1989). The toxic endpoint is defined as the most sensitive noncarcinogenic health effect used to derive the RfD or other suitable toxicity value (USEPA, 1989). Again, there is little evidence to suggest whether those COPCs associated with a common toxicity endpoint are additive, synergistic, antagonistic, or independent in terms of mechanism of action. Whether assuming additivity leads to an underestimation or overestimation of risk is unknown.

Generally, the goal of a risk assessment is to estimate an upper-bound, but reasonable, potential exposure and risk. Most of the assumptions about exposure and toxicity used in this evaluation are representative of statistical upper-bounds or even maximum levels for each parameter. The result of combining several such upper-bound assumptions is that the final estimate of potential exposure or potential risk is very conservative.

6.0 Summary and conclusions

The purpose of the HHRA is to evaluate potential human health effects of chronic exposures to constituents detected in samples of environmental media collected from the site. The HHRA for the site has been conducted in accordance with USEPA CERCLA and Maine Department of Environmental Protection (MEDEP) guidelines.

Site data are available for soil, groundwater and porewater. Groundwater data were divided into on-site and off-site areas. Porewater data were used to represent off-site surface water bodies. Based on the comparison of maximum detected concentrations in each medium to conservative risk-based screening levels, it was determined that soil and porewater are not media of concern in the HHRA.

Seven off-site groundwater wells (GB-DW-22, GB-DW-23, GB-DW-54, GB-DW-55, GB-DW-56, GB-DW-61 and GB-PW-03) were found to have detected concentrations of one of two constituents that exceeded the drinking water RSLs: TCE and MTBE. TCE was identified as a COPC for all of the off-site wells except GB-DW-61. MTBE was a COPC in GB-DW-61 only. No other constituents were identified as COPCs in off-site groundwater. Four constituents in five on-site groundwater wells (GB-MW-01, GB-MW-02, GB-MW-03, GB-MW-04 and Cesspool Water) were found to have detected concentrations that exceeded the drinking water RSLs: TCE was identified as a COPC for all of the wells, except for Cesspool Water. COPCs identified in Cesspool Water were 1,3,5-trimethylbenzene, 1,4-dichlorobenzene, and naphthalene. No other constituents were identified as COPCs in on-site groundwater.

Off-site groundwater exposure was evaluated for a resident, since a resident is likely to receive the highest exposure. Off-site groundwater samples were collected from existing public water supply and private drinking water wells. Potential future on-site receptors to groundwater include a resident, worker and day care child. These receptors were identified on the assumption that the site could be developed for residential or commercial uses in the future. The site buildings are served with groundwater from the on-site well GB-PW-01. This well has not shown a detection of TCE since 1995 when it was first tested for TCE. For both the on-site and off-site resident, groundwater exposure pathways evaluated in the HHRA included potable use of groundwater (ingestion, dermal contact while showering, and inhalation of volatiles while showering) and exposure to volatilized constituents in indoor air. Risk estimates for the vapor intrusion pathway were calculated using the USEPA version of the Johnson and Ettinger model (JEM). Potential volatile organic compound (VOC) concentrations in shower air were modeled using a model developed by Foster and Chrostowski (1987).

For all of the receptors, the total potential carcinogenic risks based on groundwater results from individual on-site wells are within or less than USEPA's target cancer risk range of $1x10^{-4}$ to $1x10^{-6}$, and less than MEDEP's target cancer risk level of $1x10^{-5}$. Total HIs for each well are below USEPA and MEDEP's upper bound HI of 1.

A comparison to drinking water guidelines was conducted for informational purposes. Concentrations of TCE in both on and off-site wells exceed drinking water standards. Groundwater concentrations of TCE slightly exceeds the USEPA MCL in one off-site monitoring well, GB-DW-22, and three on-site monitoring wells, GB-MW-01, GB-MW-2, and GB-MW-03.

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Tables

Table 2-1
Comparison of Maximum Detected On-Site Soil Concentrations to Risk-Based Screening Levels
Former Glenburn GAT Facility
Glenburn, Maine

Constituent (a)	CAS Number	Maximum Detected Concentration (c) (mg/kg)	Location of Maximum Detected Concentration	USEPA Regional Screening Level for Residential Soil (d,e) (mg/kg)	Basis of Screening Level (e)	Maximum Detected Concentration > Screening Level?
1,2,4 Trimethylbenzene	95-63-6	4.60E+00	GBTP01-1-10	6.20E+00	NC	No
1,3,5 Trimethylbenzene	108-67-8	2.60E+00	GBTP01-1-10	7.80E+01	NC	No
1,3-Dichlorobenzene	541-73-1	8.30E-03	CESSPOOL	2.40E+00 (f)	C	No
1,4 Dichlorobenzene	106-46-7	7.90E-03	CESSPOOL	2.40E+00	C	No
2-Butanone	78-93-3	2.50E-02	GBTP01-1-2	2.80E+03	NC	No
Acetone	67-64-1	1.40E-01	GBTP01-1-2	6.10E+03	NC	No
Ethylbenzene	100-41-4	3.40E-01	GBTP01-1-10	5.40E+00	C	No
Naphthalene	91-20-3	2.40E+00	GBTP01-1-10	3.60E+00	C	No
n-Propylbenzene	103-65-1	5.70E-01	GBTP01-2-10	3.40E+02	NC	No
p-Isopropyltoluene	99-87-6	6.10E-01	GBTP01-1-10	2.10E+02 (g)	NC	No
sec-Butylbenzene	135-98-8	4.50E-01	GBTP01-1-10	2.10E+02 (g)	NC	No
Total Xylenes (b)	1330-20-7	2.17E+00	GBTP01-1-10	6.30E+01 (h)	NC	No
Trichloroethylene	79-01-6	1.10E-03	GB-SB-04B	2.80E+00	C	No

Notes:
NA - Not available or not applicable.
CAS - Chemical Abstracts Service.
NC - Based on a noncarcinogenic endpoint.
C - Based on a carcinogenic endpoint.
(a) Only constituents detected at least once are shown.
(b) Sum of o-, m-, and p-Xylenes.
(c) Maximum detected concentration in soil from March 2004 and June 2006.
(d) USEPA, 2011. Regional Screening Levels for Chemical Contaminants at Superfund Sites. Value for Residential Soil. May 2011. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm
(e) The USEPA Regional Screening Levels are based on a Target Risk of $1x10^{-6}$ and a Target Hazard Quotient of 1.0. In order to calculate a screening level based on a Target Hazard Quotient of 0.1, any screening level based on a noncarcinogenic endpoint was divided by 10.
(f) 1,4-Dichlorobenzene used as a surrogate based on structural similarity.
(g) Isopropylbenzene (cumene) used as a surrogate based on structural similarity.
(h) The USEPA Regional Screening Level for mixed Xylenes.

Table 2-2
Comparison of Maximum Detected Off-Site Groundwater Concentrations to Risk-Based Screening Levels
Former Glenburn GAT Facility
Glenburn, Maine

Constituent (a)	CAS Number	Maximum Detected Concentration (b) (ug/L)	Location of Maximum Detected Concentration	USEPA Regional Screening Level for Tap Water (c) (ug/L)	Basis of Screening Level (d)	Maximum Detected Concentration > Screening Level?
Methyl tert butyl ether	1634-04-4	1.47E+01	GB-DW-61	1.20E+01	C	Yes
Toluene	108-88-3	5.00E-01	GB-DW-79	2.30E+02	NC	No
Trichloroethylene	79-01-6	5.10E+00	GB-DW-22 (e)	2.00E+00	C	Yes

Notes:
CAS - Chemical Abstracts Service.
NA - Not available or not applicable.
(a) Only constituents detected at least once are shown.
(b) Maximum detected concentration in off-site groundwater from Spring 2005 through September 2008.
(c) USEPA, 2011. Regional Screening Levels for Chemical Contaminants at Superfund Sites. Value for Tap Water. May 2011.
http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm
(d) The USEPA Regional Screening Levels are based on a Target Risk of 1x10-6 and a Target Hazard Quotient of 1.0. In order to calculate a screening level based on a Target Hazard Quotient of 0.1, any screening level based on a noncarcinogenic endpoint was divided by 10.
(e) Concentration before filtration.

Table 2-3
Comparison of Maximum Detected On-Site Groundwater Concentrations to Risk-Based Screening Levels
Former Glenburn GAT Facility
Glenburn, Maine

Constituent (a)	CAS Number	Maximum Detected Concentration (c) (ug/L)	Location of Maximum Detected Concentration	USEPA Regional Screening Level for Tap Water (d) (ug/L)	Basis of Screening Level (e)	Maximum Detected Concentration > Screening Level?
1,3-Dichloropropane	142-28-9	8.00E-01	GBMW01-125-GW	7.30E+01	NC	No
Toluene	108-88-3	4.62E+01	GBMW01-125-GW	2.30E+02	NC	No
Total Xylenes (b)	1330-20-7	6.90E+00	CESSPOOL WATER	2.00E+01	NC	No
Trichloroethylene	79-01-6	6.00E+01	GB-MW-01	2.00E+00	C	Yes
Naphthalene	91-20-3	3.20E+00	CESSPOOL WATER	1.40E-01	C	Yes
1,4-Dichlorobenzene	106-46-7	1.80E+01	CESSPOOL WATER	4.30E-01	C	Yes
p-Isopropyltoluene	99-87-6	2.40E+00	CESSPOOL WATER	6.80E+01 (f)	NC	No
1,3,5-Trimethylbenzene	108-67-8	3.50E+00	CESSPOOL WATER	3.70E+01	NC	No
Trichlorotrifluroethane	26523-64-8	5.20E+00	CESSPOOL WATER	1.30E+02 (g)	NC	No

Notes:
CAS - Chemical Abstracts Service.
NA - Not available or not applicable.
NC - Based on a noncarcinogenic endpoint.
C - Based on a carcinogenic endpoint.
(a) Only constituents detected at least once are shown.
(b) Total Xylenes is the sum of m&p- and o-Xylenes. The maximum detected concentration for both m&p- and o-Xylenes was in the same sample.
(c) Maximum detected concentration in on-site groundwater from Spring 2005, June 2006, and August, September, and November 2008.
(d) USEPA, 2011. Regional Screening Levels for Chemical Contaminants at Superfund Sites. Value for Tap Water. May 2011.
http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm
(e) The USEPA Regional Screening Levels are based on a Target Risk of $1x10^{-6}$ and a Target Hazard Quotient of 1.0. In order to calculate a screening level based on a Target Hazard Quotient of 0.1, any screening level based on a noncarcinogenic endpoint was divided by 10.
(f) Isopropylbenzene (cumene) used as a surrogate based on structural similarity.
(g) Trichlorofluoromethane used as a surrogate based on structural similarity.

Table 2-4
Comparison of Maximum Detected Off-Site Pore Water Concentrations to Risk-Based Screening Levels
Former Glenburn GAT Facility
Glenburn, Maine

Constituent (a)	CAS Number	Maximum Detected Concentration (b) (ug/L)	Location of Maximum Detected Concentration	USEPA Regional Screening Level for Tap Water (d) (ug/L)	Basis of Screening Level (e)	Maximum Detected Concentration > Screening Level?
1,3-Dichlorobenzene	541-73-1	2.20E+00	GB-SW-04	4.30E-01 (c)	C	Yes
cis-1,2-Dichloroethene	156-59-2	6.00E-01	GB-SW-04	7.30E+00	NC	No
Toluene	108-88-3	7.10E+00	GB-SW-02	2.30E+02	NC	No
Trichloroethylene	79-01-6	3.60E+00	GB-SW-04	2.00E+00	C	Yes

Notes:
CAS - Chemical Abstracts Service.
C - Carcinogenic endpoint.
NC - Noncarcinogenic endpoint.
(b) Maximum detected concentration in off-site pore water from June 2006 through April 2008.
(c) 1,4-Dichlorobenzene used as a surrogate based on structural similarity.
(d) USEPA, 2011. Regional Screening Levels for Chemical Contaminants at Superfund Sites. Value for Tap Water. May 2011. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm
(e) The USEPA Regional Screening Levels are based on a Target Risk of 1x10-6 and a Target Hazard Quotient of 1.0. In order to calculate a screening level based on a Target Hazard Quotient of 0.1, any screening level based on a noncarcinogenic endpoint was divided by 10.

Table 2-5
Cumulative Screening of Maximum Detected Off-Site Pore Water Concentrations to Risk-Based Screening Levels
Former Glenburn GAT Facility
Glenburn, Maine

Constituent (a)	CAS Number	Maximum Detected Concentration (b) (ug/L)	Location of Maximum Detected Concentration	USEPA Regional Screening Level for Tap Water (ug/L) (d)	Basis of Screening Level	Ratio (e)	COPC? (f)
Potential Carcinogenics							
1,3-Dichlorobenzene	541-73-1	2.20E+00	GB-SW-04	4.30E-01 (c)	C	5.12E-06	No
Trichloroethylene	79-01-6	3.60E+00	GB-SW-04	2.00E+00	C	1.80E-06	No
Sum of Ratio for NCOPCs:						**6.92E-06**	
Noncarcinogens							
1,3-Dichlorobenzene	541-73-1	2.20E+00	GB-SW-04	1.00E+03	NC	2.20E-03	No
cis-1,2-Dichloroethene	156-59-2	6.00E-01	GB-SW-04	7.30E+01	NC	8.22E-03	No
Toluene	108-88-3	7.10E+00	GB-SW-02	2.30E+03	NC	3.09E-03	No
Sum of Ratio for NCOPCs:						**1.35E-02**	

Notes:
CAS - Chemical Abstracts Service.
COC - Constituent of potential concern.
C - Carcinogenic endpoint.
NC - Noncarcinogenic endpoint.
NCOPCs - Not a constituent of potential concern.
(b) Maximum detected concentration in off-site pore water from June 2006 through April 2008.
(c) 1,4-Dichlorobenzene used as a surrogate based on structural similarity.
(d) USEPA Regional Screening Levels (RSLs) (May 2011) for Residential Tap Water based on a Target Risk of 1x10-6 and a Target Hazard Quotient of 1.0.
(c) Ratio of maximum detected concentration to the screening level. For potential carcinogens, the ratio has been multiplied by the target risk level of $1x10^{-6}$ associated with the USEPA RSL.
(f) For the cumulative risk screen, COPCs were identified such that the summed ratios of the NCOPCs do not exceed the target risk level of $1x10^{-5}$ for potential carcinogens or the target hazard index of 1.0 for noncarcinogens.

Table 3-1
Summary of Potential Exposure Assumptions - On-Site and Off-Site Resident
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Parameter	On-Site and Off-Site Resident			
	Adult		Child (0 to 6 yrs)	
Parameters Used in the Vapor Intrusion from Groundwater Pathway				
Exposure Frequency (days/year)	350	(a,e)	NA	
Exposure Duration (yr)	30	(e)	NA	
Inhalation Rate (m3/day)	20	(f)	NA	
Exposure Time (hr/day)	24	(f)	NA	
Parameters Used in the Drinking Water Pathway				
Exposure Frequency (days/year)	350	(a)	350	(a)
Exposure Duration (yr)	24	(a)	6	(a)
Water Ingestion Rate (l/event)	2	(a)	1	(a)
Body Weight (kg)	70	(a)	15	(a)
Parameters Used in the Showering Pathway				
Exposure Time (hr/day)	0.58	(c)	1	(c)
Exposure Frequency (days/year)	350	(a)	350	(a)
Exposure Duration (yr)	24	(a)	6	(a)
Skin Contacting Medium (cm^2)	18000	(c)	6600	(c)
Body Weight (kg)	70	(a,d)	15	(a,d)

Notes:
NA - Not applicable. The Johnson and Ettinger (JE) model evaluates a resident through the entire time of residence and does not separately evaluate a child.
(a) USEPA, 1991. Standard Default Exposure Factors.
(b) USEPA, 1997. Exposure Factors Handbook. Table 15-176. Recommended value for time spent showering (10 minutes per day).
(c) Maine Department of Environmental Protection (MEDEP) Risk Assessment Guidance. Table 1 - Standard Default Exposure Assumptions for Maine Risk Assessments. August 25, 2009.
(d) Body weight is only used in the dermal contact pathway.
(e) USEPA, 2004. User's Guide to Evalutating Subsurface Vapor Intrusion into Buildings. Johnson and Ettinger (JE) Model default exposure duration for residential exposure.
(f) Default values assumed in JE model. Not necessary for use in risk calculation equations.

Table 3-2
Summary of Potential Exposure Assumptions - On-Site Worker
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Parameter	On-Site Worker	
Parameters Used in the Vapor Intrusion from Groundwater Pathway		
Exposure Frequency (days/year)	250	(b)
Exposure Duration (yr)	25	(b)
Inhalation Rate (m3/day)	20	(a)
Exposure Time (hr/day)	24	(a)

Notes:
(a) Default values assumed in the Johnson and Ettinger Model. Not necessary for use in risk calculation equations.
(b) USEPA, 1991. Standard Default Exposure Factors.

Table 3-3
Summary of Potential Exposure Assumptions - On-Site Day Care Child
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Parameter	On-Site Day Care Child (0 to 6 yrs)	
Parameters Used in the Vapor Intrusion from Groundwater Pathway		
Exposure Frequency (days/year)	250	(a)
Exposure Duration (yr)	6	(a)
Inhalation Rate (m3/day)	20	(b)
Exposure Time (hr/day)	24	(b)

Notes:
(a) USEPA, 1991. Standard Default Exposure Factors. Assumes child is present at day care during work days; occupational exposure frequency is used.
(b) Default values assumed in Johnson and Ettinger Model. Not necessary for use in risk calculation equations.

Table 3-4
Constants and Variables Used in the Calculation of Dermal Dose
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent (b)	Dermal Permeability Constant (cm/hr)		B (dimensionless)		Lag Time (t) (hr)		Time to Steady State (t*) (hr)		Fraction Absorbed (dimensionless)	
1,4-Dichlorobenzene	4.20E-02	(a)	1.96E-01	(a)	7.11E-01	(a)	1.71E+00	(a)	1.00E+00	(a)
Methyl tert butyl ether	2.12E-03	(b)	7.66E-03	(b)	3.28E-01	(b)	7.87E-01	(b)	1.00E+00	(c)
Naphthalene	4.66E-02	(a)	2.03E-01	(a)	5.58E-01	(a)	1.34E+00	(a)	1.00E+00	(a)
Trichloroethylene	1.16E-02	(a)	5.13E-02	(a)	5.81E-01	(a)	1.39E+00	(a)	1.00E+00	(a)

Notes:

(a) U.S. EPA, 2004b. Risk Assessment Guidance for Superfund. Volume 1, Part E, Supplemental Guidance for Dermal Risk Assessment. Exhibit B-3 (Organics). Note that values were obtained from the spreadsheet provided with the guidance, therefore, rounding differs from that presented in Exhibit B-3.

(b) Calculated in Table 3-5.

(c) Assumed to be 1.

Table 3-5
Constants and Variables Used in the Calculation of Dermal Dose - Calculated Values
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	Compound Data		Calculations							
Constituent	Molecular Weight (g/mol)	Log Kow	Log PC (a)	PC (cm/hr) (a)	B (b) (--)	D_{sc} (c) (cm2/hr)	Lag Time (t) (Tau) (d) (hr)	b (e)	c (e)	Time to Steady State (t*) (e) (hr)
Methyl tert butyl ether	88.2 (f)	0.94 (f)	-2.67352	2.12E-03	7.66E-03	5.08E-07	3.28E-01	3.08E-01	3.38E-01	7.87E-01

Notes:

Kow - Octanol-Water Partition Coefficient.

lsc - Apparent thickness of the strateum corneum (10^{-3} cm).

PC - Permeability Constant.

(a) U.S. EPA, 2004b. Supplemental Guidance for Dermal Risk Assessment, Equation 3.8: Log PC = -2.80 + 0.66 log Kow - 0.0056 MW

(b) U.S. EPA, 2004b. Supplemental Guidance for Dermal Risk Assessment, Equation A.1: B = PC x $MW^{0.5}$/2.6

(c) U.S. EPA, 2004b. Supplemental Guidance for Dermal Risk Assessment, Equation A.2: Log Dsc/lsc = -2.8-0.0056 MW, where lsc = 1E-3 cm.
Solving for Dsc: Dsc = 10-2.8-0.0056 MW * lsc.

(d) U.S. EPA, 2004b. Supplemental Guidance for Dermal Risk Assessment, Equation A.4: t = l^2sc/(6*Dsc).

(e) U.S. EPA, 2004b. Supplemental Guidance for Dermal Risk Assessment:
If B < 0.6, Equation A.5: t* = 2.4* t
If B> 0.6: t* = (b- (b2-c2)0.5) * l^2sc/(Dsc)
Equation A-7: b = (2*(1+B)2/p) -c
Equation A-8: c = (1+3B+3B2)/(3*(1+B))

(f) Risk Assessment Information System (RAIS). Toxicity and Chemical-Specific Factors Data Base. URL: <http://risk.lsd.ornl.gov/index.shtml>.

Table 3-6
Off-Site Groundwater Exposure Point Concentrations
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

		Exposure Point Concentrations (b) (ug/L)						
Constituent (a)	**CAS Number**	**GB-DW-22 (c)**	**GB-DW-23 (c)**	**GB-DW-54**	**GB-DW-55**	**GB-DW-56**	**GB-DW-61**	**GB-PW-03**
Methyl tert butyl ether	1634-04-4	NCOPC	ND	ND	ND	ND	1.47E+01	ND
Trichloroethylene	79-01-6	5.10E+00	4.20E+00	4.20E+00	1.90E+00	2.10E+00	ND	2.20E+00

Notes:
CAS - Chemical Abstracts Service.
ND - Not detected.
NCOPC - Not a Compound of Concern in this well. The constituent was not detected above screening levels.
(a) Only constituents that were detected at least once above screening levels are shown. See Table 2-2.
(b) Detected concentrations above screening levels in off-site groundwater from 2005 through September 2008.
(c) Concentrations before filtration.

Table 3-7
On-Site Groundwater Exposure Point Concentrations
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

		Exposure Point Concentrations (b) (ug/L)				
Constituent (a)	**CAS Number**	**GB-MW-01**	**GB-MW-02**	**GB-MW-03**	**GB-MW-04**	**CESSPOOL WATER**
1,4-Dichlorobenzene	106-46-7	ND	ND	ND	ND	1.80E+01
Naphthalene	91-20-3	ND	ND	ND	ND	3.20E+00
Trichloroethylene	79-01-6	6.00E+01	2.57E+01	5.10E+00	7.80E+00	ND

Notes:
CAS - Chemical Abstracts Service.
ND - Not detected.
(a) Only constituents that were detected at least once above screening levels are shown. See Table 2-3.
(b) Detected concentrations above screening levels in on-site groundwater from Spring 2005, June 2006, and August, September, and November 2008.

Table 3-8
Summary of Inputs for USEPA Johnson and Ettinger Model (a)
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Parameter Name (b)	Default Inputs Used in JE Model		Site-Specific Inputs Used in JE Model
Average soil/groundwater temperature	6°C (42 °F)	USEPA (2004) Default for Maine	NA
Depth below grade to bottom of enclosed space floor:			
residential building (Off-Site Resident and On-Site Daycare Child)	200 cm	USEPA (2004) Default for Basement Construction	NA
commercial/industrial building (On-Site Worker)	15 cm	USEPA (2004) Default for Slab-on-grade Construction	NA
Depth below grade to water table	NA	Site-specific	610 cm (20 feet) (b)
SCS Soil Type (Stratum A)	NA	Site-specific	Sandy Loam
Thickness of soil stratum A			
Residential building (Off-Site Resident and On-Site Daycare Child)	NA	Site-specific	200 cm (6.6 feet) (b,c)
Commercial/industrial building (On-Site Worker)	NA	Site-specific	153 cm (5 feet) (b)
Vadose zone soil dry bulk density (Stratum A)	1.62 g/cm^3	USEPA (2004) Default based on site-specific soil type	NA
Vadose zone soil total porosity (Stratum A)	0.387		NA
Vadose zone soil water filled porosity (Stratum A)	0.103 cm^3/cm^3		NA
SCS Soil Type (Stratum B)	NA	Site-specific	Silt Loam
Thickness of soil stratum B			
Residential building (Off-Site Resident and On-Site Daycare Child)	NA	Site-specific	410 cm (13.5 feet) (b,c)
Commercial/industrial building (On-Site Worker)	NA	Site-specific	457 cm (15 feet) (b)
Vadose zone soil dry bulk density (Stratum B)	1.49 g/cm^3	USEPA (2004) Default based onsite-specific soil type	NA
Vadose zone soil total porosity (Stratum B)	0.439		NA
Vadose zone soil water filled porosity (Stratum B)	0.18 cm^3/cm^3		NA
Enclosed space floor length	1000 cm (32.8 feet)	USEPA (2004) Default for residential building with basement	NA
Enclosed space floor width	1000 cm (32.8 feet)		
Enclosed space floor height			
Residential building (Off-Site Resident and On-Site Daycare Child)	366 cm (12 feet)	USEPA (2004) Default for residential building with basement	NA
Commercial/industrial building (On-Site Worker)	244 cm (8 feet)	USEPA (2004) Default for residential building with slab	NA
Indoor Air Exchange Rate:			
Residential building (Off-Site Resident and On-Site Daycare Child)	0.25 $hour^{-1}$	USEPA (2004) Default for a residential building	NA
Commercial/industrial building (On-Site Worker)	1 $hour^{-1}$	CalEPA (2005) Default for a commercial/industrial building	NA
Qsoil (Average Vapor Flow Rate into Building)			
Residential building (Off-Site Resident and On-Site Daycare Child)	5 L/min	USEPA (2004) default	5
Commercial/industrial building (On-Site Worker)	NA	(d)	NA (d)
Exposure Time	24 hr/day	USEPA (2004) default	NA
Inhalation Rate	20 m^3/day	USEPA (2004) default	NA

Notes:
CalEPA. 2005. Californial Environmental Protection Agency. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion To Indoor Air. February 7, 2005.
USEPA. 2004. User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings. February 2004.
C - Celsius.
F - Fahrenheit.
ft bgs - Feet below ground surface.
NA - Not applicable.
(a) USEPA, 2004. USEPA Version of the Johnson and Ettinger (JE) Model. GW-ADV. Version 3.1.
(b) Based on site-specific boring logs and cross section figures presented in Johnson Company. 2008. Draft Trip Report for Overburden Invesitigation. Former GAT Facility, Glenburn, ME. June 2008.
(c) Due to model requirement that soil stratum A extend to a depth greater than the building's foundation, soil stratum A (sandy loam) was extended to 200 cm, equal to the depth below grade to bottom of enclosed floor space. The thickness of soil stratum B was adjusted accordingly from 457 cm to 410 cm.
(d) Default not available for non-residential building; left blank for JE model to calculate.

Table 4-1
Dose-Response Information for COPC with Potential Carcinogenic Effects from Chronic Exposure Through the Oral Route
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent	CAS Number	USEPA Carcinogen Class	Oral CSF $(mg/kg\text{-}day)^{-1}$	Fraction Absorbed ABS_{GI} (a)	Dermal CSF (b) $(mg/kg\text{-}day)^{-1}$	Reference (Last Verified)	Study Animal	Study Method
1,4-Dichlorobenzene	106-46-7	NA	5.40E-03	--	5.40E-03	CalEPA (2009)	NA	NA
Methyl tert butyl ether	1634-04-4	NA	1.80E-03	--	1.80E-03	CalEPA (2009)	NA	NA
Naphthalene	91-20-3	C	NA	--	NA	IRIS (11/10)	NA	NA
Trichloroethylene	79-01-6	NA	5.90E-03	--	5.90E-03	CalEPA (2009)	NA	NA

Notes:
C - Possible Human Carcinogen.
CalEPA, 2009. California Environmental Protection Agency. OEHHA Cancer Potency Values. <http://www.oehha.org/risk/chemicalDB/index.asp> July 21, 2009.
CAS - Chemical Abstracts Service.
CSF - Cancer Slope Factor.
COPC - Constituent of Potential Concern.
IRIS - Integrated Risk Information System, an on-line computer database of toxicological information (USEPA, 2010). Accessed November, 2010.
NA - Not available.
(a) USEPA, 2004. Risk Assessment Guidance for Superfund. Volume 1, Part E, Supplemental Guidance for Dermal Risk Assessment. Exhibit 4-1. Where USEPA, 2004 does not recommend adjustments, no value is listed.
(b) Oral CSF divided by ABS_{GI}. Where no adjustment is recommended, Dermal CSF = Oral CSF.

Table 4-2
Dose-Response Information for COPC with Potential Carcinogenic Effects from Chronic Exposure Through the Inhalation Route
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent	CAS Number	USEPA Carcinogen Class	Inhalation Unit Risk (m^3/ug)	Reference	Study Animal	Study Method
1,4-Dichlorobenzene	106-46-7	NA	1.10E-05	CalEPA (2009)	NA	NA
Methyl tert butyl ether	1634-04-4	NA	2.60E-07	CalEPA (2009)	NA	NA
Naphthalene	91-20-3	C	3.40E-05	CalEPA (2009)	NA	NA
Trichloroethylene	79-01-6	NA	2.00E-06	CalEPA (2009)	MOUSE	INHALATION

Notes:
C - Possible Human Carcinogen.
CalEPA, 2009. California Environmental Protection Agency. OEHHA Cancer Potency Values. <http://www.oehha.org/risk/chemicalDB/index.asp> July 21, 2009.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
CSF - Cancer Slope Factor.
NA - Not available.

Table 4-3
Dose-Response Information for COPC with Potential Noncarcinogenic Effects from Chronic Exposure Through the Oral Route
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent	CAS Number	Oral RfD (mg/kg-day)	Fraction Absorbed ABS_{GI} (a)	Dermal RfD (b) (mg/kg-day)	Reference (Last Verified)	USEPA Confidence Level	Uncertainty Factor	Modifying Factor	Target Organ/ Critical Effect at LOAEL	Study Animal	Study Method
1,4-Dichlorobenzene	106-46-7	7.00E-02	--	7.00E-02	ATSDR (08/06)	NA	100	NA	Changes in serum alkaline phosphatase levels	DOG	ORAL: CAPSULE
Methyl tert butyl ether	1634-04-4	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	2.00E-02	--	2.00E-02	IRIS (11/10)	LOW	3000	1	Decreased mean terminal body weight in males	RAT	ORAL
Trichloroethylene	79-01-6	NA	--	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
"--" - No adjustment necessary.
ATSDR - Agency for Toxic Substances & Disease Registry.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
IRIS - Integrated Risk Information System, an on-line computer database of toxicological information (USEPA, 2010). Accessed November, 2010.
LOAEL - Lowest Observed Adverse Effects Level.
NA - Not available.
PPRTV - Provisional Peer Reviewed Toxicity Value. Provided by USEPA on March 8, 1996.
RfD - Reference Dose.
(a) USEPA, 2004. Risk Assessment Guidance for Superfund. Volume 1, Part E, Supplemental Guidance for Dermal Risk Assessment. Exhibit 4-1. Where USEPA, 2004 does not recommend adjustments, no value is listed.
(b) Oral RfD multiplied by ABS_{GI}. Where no adjustment is recommended by USEPA, 2004, Dermal RfD = Oral RfD.

Table 4-4
Dose-Response Information for COPC with Potential Noncarcinogenic Effects from Chronic Exposure Through the Inhalation Route
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent	CAS Number	Inhalation RfC (mg/m^3)	Reference (Last Verified)	USEPA Confidence Level	Uncertainty Factor	Modifying Factor	Target Organ/ Critical Effect at LOAEL	Study Animal	Study Method
1,4-Dichlorobenzene	106-46-7	8.00E-01	IRIS (11/10)	MEDIUM	100	1	Increased liver weight	RAT	INHALATION
Methyl tert butyl ether	1634-04-4	3.00E+00	IRIS (11/10)	MEDIUM	100	1	Increased absolute and relative liver and kidney weights and increased severity of spontaneous renal lesions (females), increased prostration (females), and swollen periocular tissue (males and females)	RAT	INHALATION
Naphthalene	91-20-3	3.00E-03	IRIS (11/10)	LOW - MEDIUM	3000	1	Nasal Effects; hyperplasia and metaplasia in respiratory and olfactory epithelium, respectively	MOUSE	INHALATION
Trichloroethylene	79-01-6	6.00E-01	CalEPA (2008)	NA	100	1	Nervous system, eyes	HUMAN	INHALATION: OCCUPATIONAL

Notes:
CalEPA, 2008. Chronic Reference Exposure Levels (ChRELs). California Environmental Protection Agency. December 2008. <http://www.oehha.org/air/chronic_rels/AllChrels.html>.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
IRIS - Integrated Risk Information System, an on-line computer database of toxicological information (USEPA, 2010). Accessed November, 2010.
LOAEL - Lowest Observed Adverse Effects Level.
NA - Not Available.
RfC - Reference Concentration.

Table 5-1
Summary of Total Potential Excess Lifetime
Cancer Risk - Off-Site Resident
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	GB-DW-22					GB-DW-23				
	Potential Excess Lifetime Cancer Risk					Potential Excess Lifetime Cancer Risk				
Constituent	**Vapor Intrusion from Groundwater**	**Ingestion of Groundwater as Drinking Water**	**Inhalation of Volatiles in Groundwater while Showering**	**Dermal Contact with Groundwater while Showering**	**Total Potential ELCR**	**Vapor Intrusion from Groundwater**	**Ingestion of Groundwater as Drinking Water**	**Inhalation of Volatiles in Groundwater while Showering**	**Dermal Contact with Groundwater while Showering**	**Total Potential ELCR**
Methyl tert butyl ether	NCOPC	NCOPC	NCOPC	NCOPC	NC	NC	NC	NC	NC	NC
Trichloroethylene	8.74E-08	4.48E-07	1.54E-09	7.42E-08	6.11E-07	7.20E-08	3.69E-07	1.27E-09	6.11E-08	5.03E-07
Total Potential ELCR:	8.74E-08	4.48E-07	1.54E-09	7.42E-08	**6.11E-07**	7.20E-08	3.69E-07	1.27E-09	6.11E-08	**5.03E-07**

Notes:
Bold and highlighted values indicate an exceedance of MEDEP's benchmark of 1E-05 for total potential ELCR.
NCOPC - Not a Chemical of Potential Concern.
ELCR - Excess Lifetime Cancer Risk.
NA - Not Applicable.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.

Table 5-1
Summary of Total Potential Excess Lifetime
Cancer Risk - Off-Site Resident
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	GB-DW-54					GB-DW-55				
	Potential Excess Lifetime Cancer Risk					Potential Excess Lifetime Cancer Risk				
Constituent	**Vapor Intrusion from Groundwater**	**Ingestion of Groundwater as Drinking Water**	**Inhalation of Volatiles in Groundwater while Showering**	**Dermal Contact with Groundwater while Showering**	**Total Potential ELCR**	**Vapor Intrusion from Groundwater**	**Ingestion of Groundwater as Drinking Water**	**Inhalation of Volatiles in Groundwater while Showering**	**Dermal Contact with Groundwater while Showering**	**Total Potential ELCR**
Methyl tert butyl ether	NC	NC	NC	NC	NC	ND	NC	NC	NC	NC
Trichloroethylene	7.20E-08	3.69E-07	1.27E-09	6.11E-08	5.03E-07	3.26E-08	1.67E-07	5.73E-10	2.76E-08	2.28E-07
Total Potential ELCR:	7.20E-08	3.69E-07	1.27E-09	6.11E-08	**5.03E-07**	3.26E-08	1.67E-07	5.73E-10	2.76E-08	**2.28E-07**

Notes:
Bold and highlighted values indicate an exceedance of MEDEP's benchmark of 1E-05 for total potential ELCR.
NCOPC - Not a Chemical of Potential Concern.
ELCR - Excess Lifetime Cancer Risk.
NA - Not Applicable.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.

Table 5-1
Summary of Total Potential Excess Lifetime
Cancer Risk - Off-Site Resident
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	GB-DW-56					GB-DW-61				
	Potential Excess Lifetime Cancer Risk					Potential Excess Lifetime Cancer Risk				
Constituent	**Vapor Intrusion from Groundwater**	**Ingestion of Groundwater as Drinking Water**	**Inhalation of Volatiles in Groundwater while Showering**	**Dermal Contact with Groundwater while Showering**	**Total Potential ELCR**	**Vapor Intrusion from Groundwater**	**Ingestion of Groundwater as Drinking Water**	**Inhalation of Volatiles in Groundwater while Showering**	**Dermal Contact with Groundwater while Showering**	**Total Potential ELCR**
Methyl tert butyl ether	ND	NC	NC	NC	NC	4.42E-09	3.94E-07	6.67E-10	9.22E-09	4.08E-07
Trichloroethylene	3.60E-08	1.84E-07	6.33E-10	3.05E-08	2.51E-07	ND	NC	NC	NC	NC
Total Potential ELCR:	3.60E-08	1.84E-07	6.33E-10	3.05E-08	**2.51E-07**	4.42E-09	3.94E-07	6.67E-10	9.22E-09	**4.08E-07**

Notes:
Bold and highlighted values indicate an exceedance of MEDEP's benchmark of 1E-05 for total potential ELCR.
NCOPC - Not a Chemical of Potential Concern.
ELCR - Excess Lifetime Cancer Risk.
NA - Not Applicable.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.

Table 5-1
Summary of Total Potential Excess Lifetime
Cancer Risk - Off-Site Resident
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	GB-PW-03				
	Potential Excess Lifetime Cancer Risk				
Constituent	**Vapor Intrusion from Groundwater**	**Ingestion of Groundwater as Drinking Water**	**Inhalation of Volatiles in Groundwater while Showering**	**Dermal Contact with Groundwater while Showering**	**Total Potential ELCR**
Methyl tert butyl ether	NC	NC	NC	NC	NC
Trichloroethylene	3.77E-08	1.93E-07	6.63E-10	3.20E-08	2.63E-07
Total Potential ELCR:	3.77E-08	1.93E-07	6.63E-10	3.20E-08	**2.63E-07**

Notes:
Bold and highlighted values indicate an exceedance of MEDEP's benchmark of 1E-05 for total potential ELCR.
NCOPC - Not a Chemical of Potential Concern.
ELCR - Excess Lifetime Cancer Risk.
NA - Not Applicable.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.

Table 5-2
Summary of Total Hazard Indices - Off-Site Resident
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	GB-DW-22					GB-DW-23				
	Hazard Quotients					Hazard Quotients				
Constituent	Vapor Intrusion from Groundwater	Ingestion of Groundwater as Drinking Water	Inhalation of Volatiles in Groundwater while Bathing/ Showering	Dermal Contact with Groundwater while Bathing/ Showering	Total HI	Vapor Intrusion from Groundwater	Ingestion of Groundwater as Drinking Water	Inhalation of Volatiles in Groundwater while Bathing/ Showering	Dermal Contact with Groundwater while Bathing/ Showering	Total HI
Methyl tert butyl ether	NCOPC	NC	NCOPC	NC	NC	NC	NC	NC	NC	NC
Trichloroethylene	1.70E-04	NC	2.61E-06	NC	1.73E-04	1.40E-04	NC	2.15E-06	NC	1.42E-04
Total HI:	1.70E-04	NC	2.61E-06	NC	**1.73E-04**	1.40E-04	NC	2.15E-06	NC	**1.42E-04**

Notes:
Bold and highlighted values indicate an exceedance of USEPA's benchmark of 1 for total HI.
NCOPC - Not a Chemical of Potential Concern.
HI - Hazard Index.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.
NA - Not Applicable.

Table 5-2
Summary of Total Hazard Indices - Off-Site Resident
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	GB-DW-54					GB-DW-55				
	Hazard Quotients					Hazard Quotients				
Constituent	Vapor Intrusion from Groundwater	Ingestion of Groundwater as Drinking Water	Inhalation of Volatiles in Groundwater while Bathing/ Showering	Dermal Contact with Groundwater while Bathing/ Showering	Total HI	Vapor Intrusion from Groundwater	Ingestion of Groundwater as Drinking Water	Inhalation of Volatiles in Groundwater while Bathing/ Showering	Dermal Contact with Groundwater while Bathing/ Showering	Total HI
Methyl tert butyl ether	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Trichloroethylene	1.40E-04	NC	2.15E-06	NC	1.42E-04	6.33E-05	NC	9.73E-07	NC	6.43E-05
Total HI:	1.40E-04	NC	2.15E-06	NC	**1.42E-04**	6.33E-05	NC	9.73E-07	NC	**6.43E-05**

Notes:
Bold and highlighted values indicate an exceedance of USEPA's benchmark of 1 for total HI.
NCOPC - Not a Chemical of Potential Concern.
HI - Hazard Index.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.
NA - Not Applicable.

Table 5-2
Summary of Total Hazard Indices - Off-Site Resident
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	GB-DW-56					GB-DW-61				
	Hazard Quotients					Hazard Quotients				
Constituent	Vapor Intrusion from Groundwater	Ingestion of Groundwater as Drinking Water	Inhalation of Volatiles in Groundwater while Bathing/ Showering	Dermal Contact with Groundwater while Bathing/ Showering	Total HI	Vapor Intrusion from Groundwater	Ingestion of Groundwater as Drinking Water	Inhalation of Volatiles in Groundwater while Bathing/ Showering	Dermal Contact with Groundwater while Bathing/ Showering	Total HI
Methyl tert butyl ether	NC	NC	NC	NC	NC	1.32E-05	NC	1.74E-06	NC	1.50E-05
Trichloroethylene	7.00E-05	NC	1.08E-06	NC	7.11E-05	NC	NC	NC	NC	NC
Total HI:	7.00E-05	NC	1.08E-06	NC	**7.11E-05**	1.32E-05	NC	1.74E-06	NC	**1.50E-05**

Notes:
Bold and highlighted values indicate an exceedance of USEPA's benchmark of 1 for total HI.
NCOPC - Not a Chemical of Potential Concern.
HI - Hazard Index.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.
NA - Not Applicable.

Table 5-2
Summary of Total Hazard Indices - Off-Site Resident
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	GB-PW-03				
	Hazard Quotients				
Constituent	**Vapor Intrusion from Groundwater**	**Ingestion of Groundwater as Drinking Water**	**Inhalation of Volatiles in Groundwater while Bathing/ Showering**	**Dermal Contact with Groundwater while Bathing/ Showering**	**Total HI**
Methyl tert butyl ether	NC	NC	NC	NC	NC
Trichloroethylene	7.33E-05	NC	1.13E-06	NC	7.44E-05
Total HI:	7.33E-05	NC	1.13E-06	NC	**7.44E-05**

Notes:
Bold and highlighted values indicate an exceedance of USEPA's benchmark of 1 for total HI.
NCOPC - Not a Chemical of Potential Concern.
HI - Hazard Index.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.
NA - Not Applicable.

Table 5-3
Summary of Total Potential Excess Lifetime
Cancer Risk - On-Site Resident
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	GB-MW-01					GB-MW-02				
	Potential Excess Lifetime Cancer Risk					Potential Excess Lifetime Cancer Risk				
Constituent	**Vapor Intrusion from Groundwater**	**Ingestion of Groundwater as Drinking Water**	**Inhalation of Volatiles in Groundwater while Showering**	**Dermal Contact with Groundwater while Showering**	**Total Potential ELCR**	**Vapor Intrusion from Groundwater**	**Ingestion of Groundwater as Drinking Water**	**Inhalation of Volatiles in Groundwater while Showering**	**Dermal Contact with Groundwater while Showering**	**Total Potential ELCR**
1,4-Dichlorobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Naphthalene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Trichloroethylene	1.03E-06	5.26E-06	1.81E-08	8.73E-07	7.18E-06	4.41E-07	2.26E-06	7.75E-09	3.74E-07	3.08E-06
Total Potential ELCR:	1.03E-06	5.26E-06	1.81E-08	8.73E-07	**7.18E-06**	4.41E-07	2.26E-06	7.75E-09	3.74E-07	**3.08E-06**

Notes:
Bold and highlighted values indicate an exceedance of MEDEP's benchmark of 1E-05 for total potential ELCR.
ELCR - Excess Lifetime Cancer Risk.
NA - Not Applicable.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.

Table 5-3
Summary of Total Potential Excess Lifetime
Cancer Risk - On-Site Resident
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	GB-MW-03					GB-MW-04				
	Potential Excess Lifetime Cancer Risk					Potential Excess Lifetime Cancer Risk				
Constituent	**Vapor Intrusion from Groundwater**	**Ingestion of Groundwater as Drinking Water**	**Inhalation of Volatiles in Groundwater while Showering**	**Dermal Contact with Groundwater while Showering**	**Total Potential ELCR**	**Vapor Intrusion from Groundwater**	**Ingestion of Groundwater as Drinking Water**	**Inhalation of Volatiles in Groundwater while Showering**	**Dermal Contact with Groundwater while Showering**	**Total Potential ELCR**
1,4-Dichlorobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Naphthalene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Trichloroethylene	8.74E-08	4.48E-07	1.54E-09	7.42E-08	6.11E-07	1.34E-07	6.84E-07	2.35E-09	1.13E-07	9.34E-07
Total Potential ELCR:	8.74E-08	4.48E-07	1.54E-09	7.42E-08	**6.11E-07**	1.34E-07	6.84E-07	2.35E-09	1.13E-07	**9.34E-07**

Notes:
Bold and highlighted values indicate an exceedance of MEDEP's benchmark of 1E-05 for total potential ELCR.
ELCR - Excess Lifetime Cancer Risk.
NA - Not Applicable.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.

Table 5-3
Summary of Total Potential Excess Lifetime
Cancer Risk - On-Site Resident
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	CESSPOOL WATER				
	Potential Excess Lifetime Cancer Risk				
Constituent	**Vapor Intrusion from Groundwater**	**Ingestion of Groundwater as Drinking Water**	**Inhalation of Volatiles in Groundwater while Showering**	**Dermal Contact with Groundwater while Showering**	**Total Potential ELCR**
1,4-Dichlorobenzene	3.12E-07	1.45E-06	2.86E-08	9.56E-07	2.74E-06
Naphthalene	4.74E-08	NC	1.66E-08	NC	6.39E-08
Trichloroethylene	NC	NC	NC	NC	NC
Total Potential ELCR:	3.60E-07	1.45E-06	4.51E-08	9.56E-07	**2.81E-06**

Notes:
Bold and highlighted values indicate an exceedance of MEDEP's benchmark of 1E-05 for total potential ELCR.
ELCR - Excess Lifetime Cancer Risk.
NA - Not Applicable.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.

Table 5-4
Summary of Total Hazard Indices - On-Site Resident
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	GB-MW-01					GB-MW-02				
	Hazard Quotients					Hazard Quotients				
Constituent	Vapor Intrusion from Groundwater	Ingestion of Groundwater as Drinking Water	Inhalation of Volatiles in Groundwater while Bathing/ Showering	Dermal Contact with Groundwater while Bathing/ Showering	Total HI	Vapor Intrusion from Groundwater	Ingestion of Groundwater as Drinking Water	Inhalation of Volatiles in Groundwater while Bathing/ Showering	Dermal Contact with Groundwater while Bathing/ Showering	Total HI
1,4-Dichlorobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Naphthalene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Trichloroethylene	2.00E-03	NC	3.07E-05	NC	2.03E-03	8.57E-04	NC	1.32E-05	NC	8.70E-04
Total HI:	2.00E-03	NC	3.07E-05	NC	**2.03E-03**	8.57E-04	NC	1.32E-05	NC	**8.70E-04**

Notes:
Bold and highlighted values indicate an exceedance of USEPA's benchmark of 1 for total HI.
HI - Hazard Index.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.
NA - Not Applicable.

Table 5-4
Summary of Total Hazard Indices - On-Site Resident
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	GB-MW-03					GB-MW-04				
	Hazard Quotients					Hazard Quotients				
Constituent	**Vapor Intrusion from Groundwater**	**Ingestion of Groundwater as Drinking Water**	**Inhalation of Volatiles in Groundwater while Bathing/ Showering**	**Dermal Contact with Groundwater while Bathing/ Showering**	**Total HI**	**Vapor Intrusion from Groundwater**	**Ingestion of Groundwater as Drinking Water**	**Inhalation of Volatiles in Groundwater while Bathing/ Showering**	**Dermal Contact with Groundwater while Bathing/ Showering**	**Total HI**
1,4-Dichlorobenzene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Naphthalene	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Trichloroethylene	1.70E-04	NC	2.61E-06	NC	1.73E-04	2.60E-04	NC	3.99E-06	NC	2.64E-04
Total HI:	1.70E-04	NC	2.61E-06	NC	**1.73E-04**	2.60E-04	NC	3.99E-06	NC	**2.64E-04**

Notes:
Bold and highlighted values indicate an exceedance of USEPA's benchmark of 1 for total HI.
HI - Hazard Index.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.
NA - Not Applicable.

Table 5-4
Summary of Total Hazard Indices - On-Site Resident
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	CESSPOOL WATER				
	Hazard Quotients				
Constituent	**Vapor Intrusion from Groundwater**	**Ingestion of Groundwater as Drinking Water**	**Inhalation of Volatiles in Groundwater while Bathing/ Showering**	**Dermal Contact with Groundwater while Bathing/ Showering**	**Total HI**
1,4-Dichlorobenzene	8.28E-05	2.35E-02	6.62E-06	1.06E-02	3.42E-02
Naphthalene	1.08E-03	1.46E-02	3.31E-04	6.50E-03	2.25E-02
Trichloroethylene	NC	NC	NC	NC	NC
Total HI:	1.17E-03	3.81E-02	3.37E-04	1.71E-02	**5.67E-02**

Notes:
Bold and highlighted values indicate an exceedance of USEPA's benchmark of 1 for total HI.
HI - Hazard Index.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.
NA - Not Applicable.

Table 5-5
Summary of Total Potential Excess Lifetime Cancer Risk - On-Site Worker
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent	Potential Excess Lifetime Cancer Risk (Vapor Intrusion from Groundwater)				
	GB-MW-01	GB-MW-02	GB-MW-03	GB-MW-04	CESSPOOL WATER
1,4-Dichlorobenzene	NC	NC	NC	NC	2.95E-08
Naphthalene	NC	NC	NC	NC	3.73E-09
Trichloroethylene	9.95E-08	4.26E-08	8.46E-09	1.29E-08	NC
Total Potential ELCR:	9.95E-08	4.26E-08	8.46E-09	1.29E-08	3.32E-08

Notes:
Bold and highlighted values indicate an exceedance of MEDEP's benchmark of 1E-05 for total potential ELCR.
NCOPC - Not a Chemical of Potential Concern.
ELCR - Excess Lifetime Cancer Risk.
NA - Not Applicable.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.

Table 5-6
Summary of Total Hazard Indices - On-Site Worker
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent	Potential Hazard Quotients (Vapor Intrusion from Groundwater)				
	GB-MW-01	GB-MW-02	GB-MW-03	GB-MW-04	CESSPOOL WATER
1,4-Dichlorobenzene	NC	NC	NC	NC	9.37E-06
Naphthalene	NC	NC	NC	NC	1.02E-04
Trichloroethylene	2.32E-04	9.94E-05	1.97E-05	3.02E-05	NC
Total HI:	2.32E-04	9.94E-05	1.97E-05	3.02E-05	1.12E-04

Notes:
Bold and highlighted values indicate an exceedance of USEPA's benchmark of 1 for total HI.
NCOPC - Not a Chemical of Potential Concern.
HI - Hazard Index.
NA - Not Applicable.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.

Table 5-7
Summary of Total Potential Excess Lifetime Cancer Risk - On-Site Daycare Child
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent	Potential Excess Lifetime Cancer Risk (Vapor Intrusion from Groundwater)				
	GB-MW-01	GB-MW-02	GB-MW-03	GB-MW-04	CESSPOOL WATER
1,4-Dichlorobenzene	NC	NC	NC	NC	6.24E-08
Naphthalene	NC	NC	NC	NC	9.47E-09
Trichloroethylene	2.06E-07	8.81E-08	1.75E-08	2.67E-08	NC
Total Potential ELCR:	2.06E-07	8.81E-08	1.75E-08	2.67E-08	7.19E-08

Notes:
Bold and highlighted values indicate an exceedance of MEDEP's benchmark of 1E-05 for total potential ELCR.
NCOPC - Not a Chemical of Potential Concern.
ELCR - Excess Lifetime Cancer Risk.
NA - Not Applicable.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.

Table 5-8
Summary of Total Hazard Indices - On-Site Daycare Child
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent	Potential Hazard Quotients (Vapor Intrusion from Groundwater)				
	GB-MW-01	GB-MW-02	GB-MW-03	GB-MW-04	CESSPOOL WATER
1,4-Dichlorobenzene	NC	NC	NC	NC	8.28E-05
Naphthalene	NC	NC	NC	NC	1.08E-03
Trichloroethylene	2.00E-03	8.57E-04	1.70E-04	2.60E-04	NC
Total HI:	2.00E-03	8.57E-04	1.70E-04	2.60E-04	1.17E-03

Notes:
Bold and highlighted values indicate an exceedance of USEPA's benchmark of 1 for total HI.
NCOPC - Not a Chemical of Potential Concern.
HI - Hazard Index.
NA - Not Applicable.
NC - Not calculated. Either no dose-response value is available or constituent was not detected.

Table 5-9
Comparison of Detected Off-Site Groundwater Concentrations to Drinking Water Standards
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent (a)	CAS Number	USEPA Drinking Water Standards (d) (ug/L)	Maine MEG (e) (ug/L)	Off-Site Groundwater (b) (ug/L)						
				GB-DW-22 (c)	GB-DW-23 (c)	GB-DW-54	GB-DW-55	GB-DW-56	GB-DW-61	GB-PW-03
Methyl tert butyl ether	1634-04-4	2.00E+01 (f)	3.50E+01	NCOPC	ND	ND	ND	ND	1.47E+01	ND
Trichloroethylene	79-01-6	5.00E+00	3.20E+01	5.10E+00	4.20E+00	4.20E+00	1.90E+00	2.10E+00	ND	2.20E+00

Notes:
Results highlighed in green exceed USEPA Drinking Water Standards.
CAS - Chemical Abstracts Service.
ND - Not detected.
COPC - Constituent of Potential Concern.
NCOPC - Not a Constituent of Potential Concern.
MEG - Maximum Exposure Guidelines.
(a) Only COPC in off-site groundwater are shown.
(b) Detected concentrations above screening levels in off-site groundwater from 2005 through September 2008.
(c) Concentrations before filtration.
(d) USEPA. 2009. 2009 Edition of the Drinking Water Standards and Health Advisories. EPA 822-R-09-011. October 2009.
Maximum Contaminant Levels (MCL).
(e) Maine CDC. 2008. Maine Center for Disease Control and Prevention Maximum Exposure Guidelines (MEGs) for Drinking Water.
Maine Department of Health and Human Services. December 2008. <http://www.maine.gov/dhhs/eohp/wells/documents/megtable.pdf>
(f) Secondary Drinking Water Regulation; not an Maximum Contaminant Level. Listed in the Drinking Water Advisory Table as based on an odor threshold.

Table 5-10
Comparison of Detected On-Site Groundwater Concentrations to Drinking Water Standards
Former Glenburn GAT Facility
Glenburn, Maine

Constituent (a)	CAS Number	USEPA Drinking Water Standards (c) (ug/L)	Maine MEG (d) (ug/L)	On-Site Groundwater (b) ug/L				
				GB-MW-01	GB-MW-02	GB-MW-03	GB-MW-04	CESSPOOL WATER
1,4-Dichlorobenzene	106-46-7	7.50E+01	2.10E+01	ND	ND	ND	ND	1.80E+01
Naphthalene	91-20-3	NA	1.40E+01	ND	ND	ND	ND	3.20E+00
Trichloroethylene	79-01-6	5.00E+00	3.20E+01	6.00E+01	2.57E+01	5.10E+00	7.80E+00	ND

Notes:
Results highlighed in green exceed USEPA Drinking Water Standards.
Results highlighed in yellow exceed the USEPA Drinking Water Standards and the Maine CDC MEGs for drinking water.
CAS - Chemical Abstracts Service.
NA - Not available.
COPC - Constituent of Potential Concern.
MEG - Maximum Exposure Guidelines.
ND - Not detected.
(a) Only COPC in on-site groundwater are shown.
(b) Detected concentrations in on-site groundwater from Spring 2005, June 2006, and August, September, and November 2008.
(c) USEPA. 2009. 2009 Edition of the Drinking Water Standards and Health Advisories. EPA 822-R-09-011. October 2009.
Maximum Contaminant Levels (MCL).
(d) Maine CDC. 2008. Maine Center for Disease Control and Prevention Maximum Exposure Guidelines (MEGs) for Drinking Water.
Maine Department of Health and Human Services. December 2008. <http://www.maine.gov/dhhs/eohp/wells/documents/megtable.pdf>

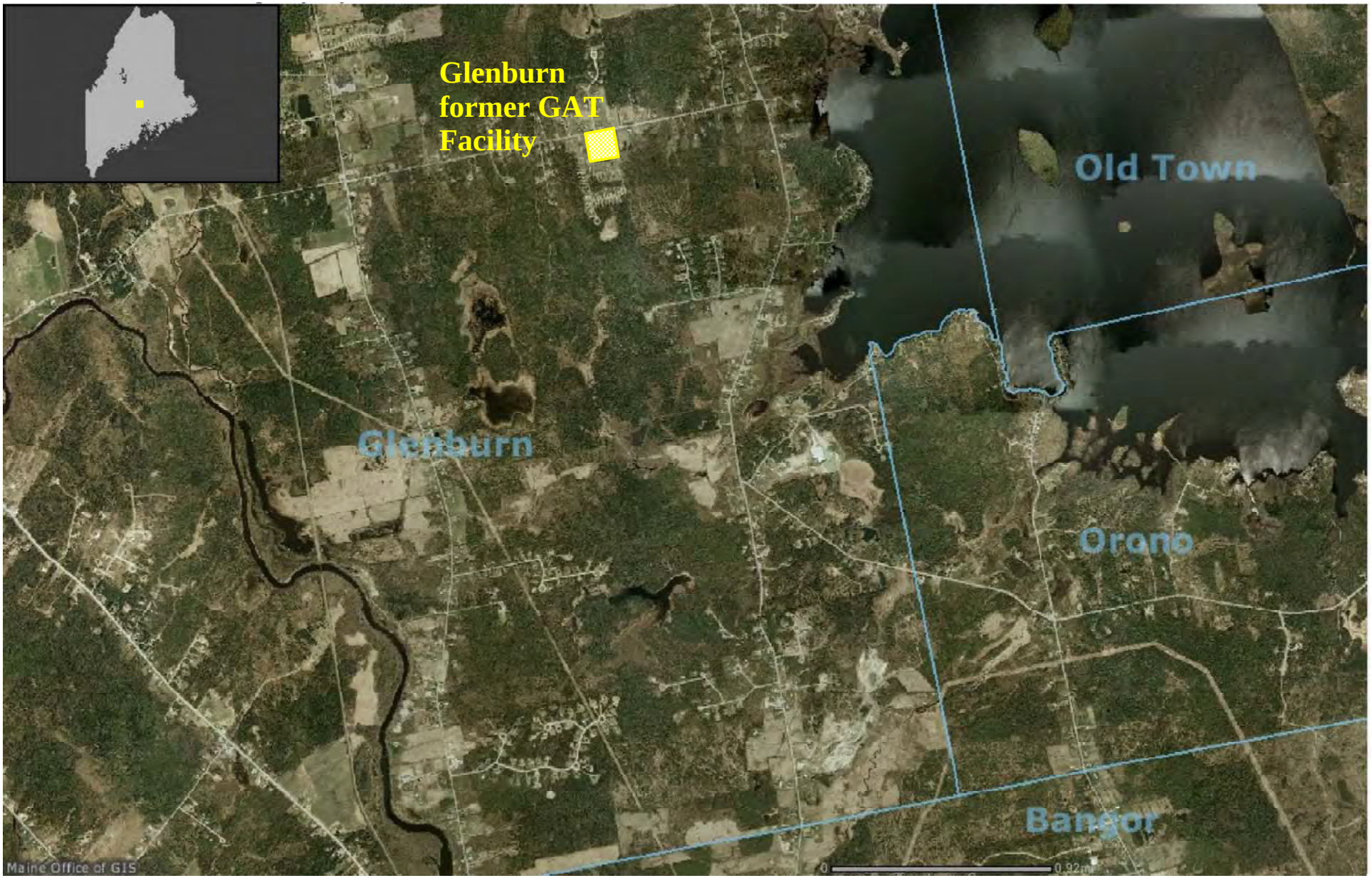
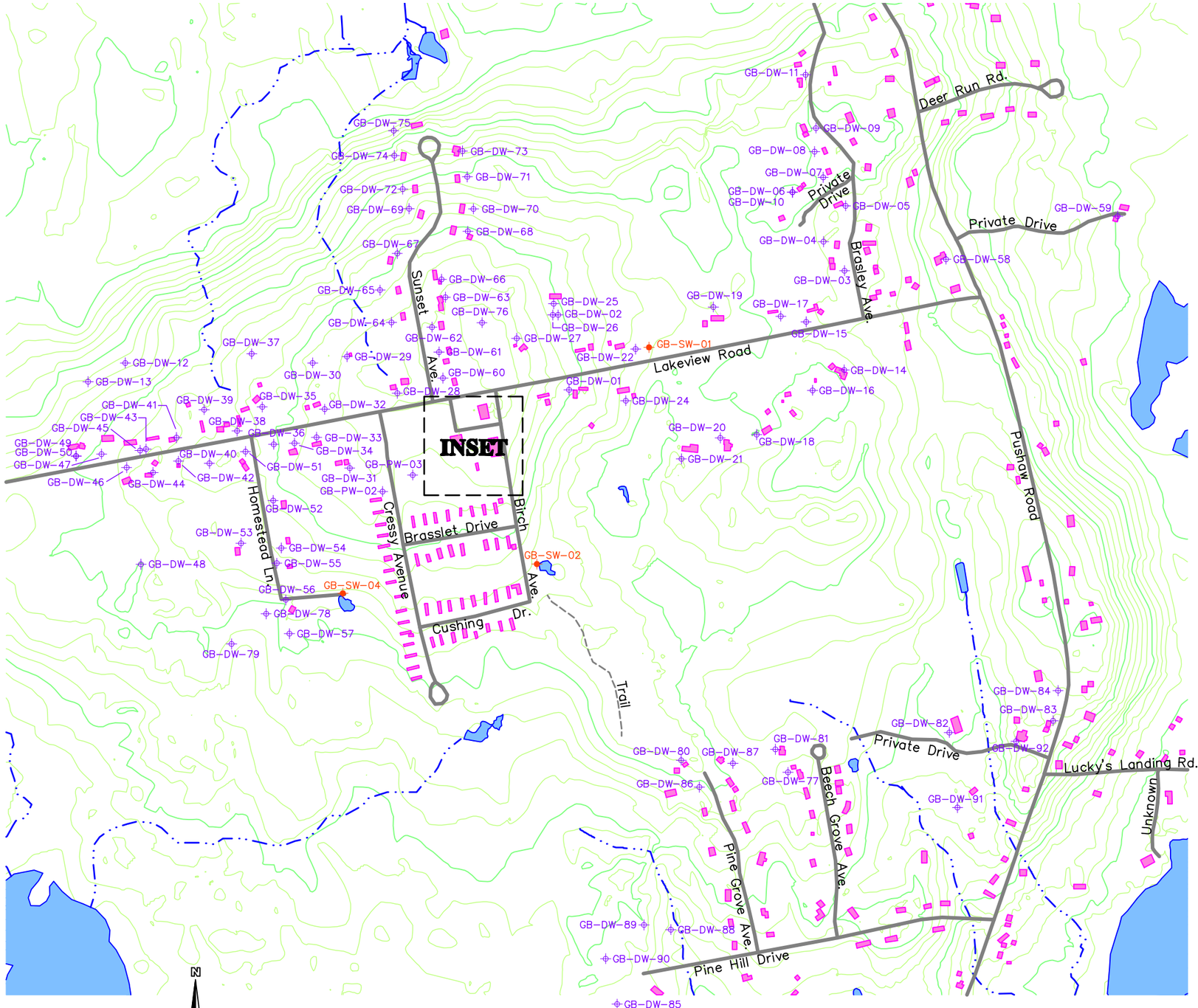
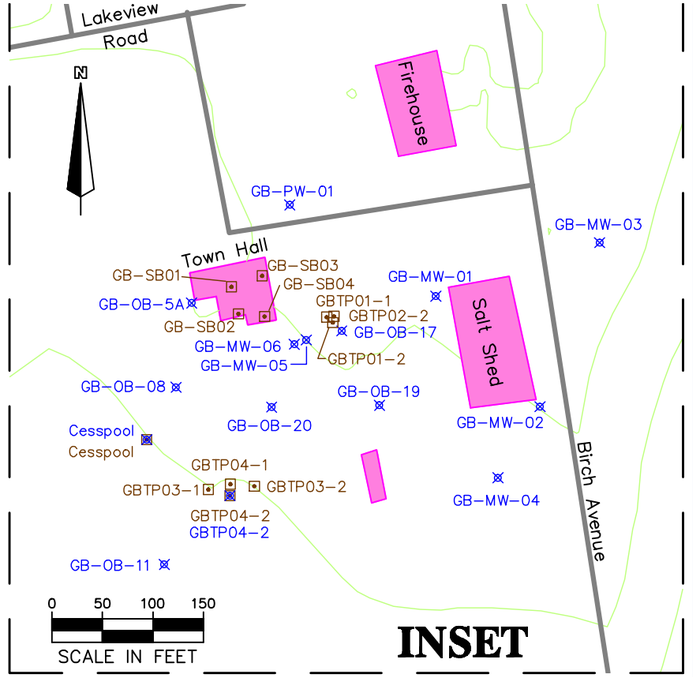


Figure 1-1: Site Location Map - Former GAT Facility - Glenburn, Maine

From Maine GIS On-line photograph downloaded August 13, 2008 Prepared by The Johnson Co., Montpelier, VT 1-2128-9_RIFS field Data_fig1siteloc 030509.srf-pdf





LEGEND

- ON-SITE GROUNDWATER SAMPLING LOCATION
- OFF-SITE GROUNDWATER SAMPLING LOCATION
- OFF-SITE PORE WATER SAMPLLING LOCATION
- ON-SITE SOIL SAMPLING LOCATION
- EXISTING BUILDING LOCATION
- SURFACE WATER BODY
- SURFACE WATER / DRAINAGE
- 5' GROUND SURFACE CONTOUR
- 25' GROUND SURFACE CONTOUR
- ROAD

NOTE: LOCATIONS UNKNOWN FOR THE FOLLOWING SAMPLES

- GB-DW-23
- GB-SW-03
- GBTP02-1

Sample Locations.dwg

The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602
(802) 229-4600

Drawn by: TJK Date: 5/19/09
Chk'd by: Date:
Scale: As Shown Project: 1-2128-9

FIGURE 2-1: SAMPLING LOCATIONS
HUMAN HEALTH RISK ASSESSMENT
FORMER GAT STUDY AREA
GLENBURN, MAINE

Attachment 1

Samples used in the HHRA

Attachment 1
List of Sample IDs included in Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

On-Site Soil	Groundwater			Off-Site Pore Water
	On-Site Groundwater	Off-Site Groundwater		
GBTP01-1-2	CESSPOOL	GB-DW-01	GB-DW-49	GB-SW-01
GBTP01-1-6	GBMW01-52-GW	GB-DW-02	GB-DW-50	GB-SW-02
GBTP01-1-10	GBMW01-72-GW	GB-DW-03	GB-DW-51	GB-SW-03
GBTP01-2-2	GBMW01-125-GW	GB-DW-04	GB-DW-52	GB-SW-04
GBTP01-2-6	GBMW02 Port1-55-GW	GB-DW-05	GB-DW-53	
GBTP01-2-10	GBMW02-132-GW	GB-DW-06	GB-DW-54	
GBTP01-2-10 DUP	GBMW02-198-GW	GB-DW-07	GB-DW-55	
GBTP02-1-2	GBMW02-98-D	GB-DW-08	GB-DW-56	
GBTP02-1-6	GBMW02-98-GW	GB-DW-09	GB-DW-57	
GBTP02-1-10	GBMW03-142-GW	GB-DW-10	GB-DW-58	
GBTP02-2-2	GBMW03-45-GW	GB-DW-11	GB-DW-59	
GBTP02-2-6	GBMW03-49-GW	GB-DW-12	GB-DW-60	
GBTP03-1-6	GBMW03-58-GW	GB-DW-13	GB-DW-61	
GBTP03-1-15.5	GBMW03-86-GW	GB-DW-14	GB-DW-62	
GBTP03-2-6	GBMW03-91-GW	GB-DW-15	GB-DW-63	
GBTP03-2-17	GBMW04-108-D	GB-DW-16	GB-DW-64	
GBTP04-1-6	GBMW04-108-GW	GB-DW-17	GB-DW-65	
GBTP04-1-17.5	GBMW04-110-GW	GB-DW-18	GB-DW-66	
GBTP04-2-6	GBMW04-46-GW	GB-DW-19	GB-DW-67	
GBTP04-2-6 DUP	GBMW04-47-GW	GB-DW-20	GB-DW-68	
GBTP04-2-17.5	GBMW04-55-GW	GB-DW-21	GB-DW-69	
CESSPOOL	GBMW04-70-GW	GB-DW-22 - Before Filters	GB-DW-70	
GB-SB-01A	GBMW04-93-GW	GB-DW-23 - Before Filters	GB-DW-71	
GB-SB-01B	GBMW05-112-GW	GB-DW-24	GB-DW-72	
GB-SB-02A	GBMW05-141-D	GB-DW-25	GB-DW-73	
GB-SB-02B	GBMW05-141-GW	GB-DW-26	GB-DW-74	
GB-SB-03A	GBMW05-145-D	GB-DW-27	GB-DW-75	
GB-SB-03B	GBMW05-145-GW	GB-DW-28	GB-DW-76	
GB-SB-04A	GBMW05-47-GW	GB-DW-29	GB-DW-77	
GB-SB-04B	GBMW06-113-GW	GB-DW-30	GB-DW-78	
	GBMW06-116-IDW	GB-DW-31	GB-DW-79	
	GBOB11-11-GW	GB-DW-32	GB-DW-80	
	GBOB17-25-GW	GB-DW-33	GB-DW-81	
	GBOB19-26-GW	GB-DW-34	GB-DW-82	
	GBOB20-26-GW	GB-DW-35	GB-DW-83	
	GB-OB-5A-9-GW	GB-DW-36	GB-DW-84	
	GBOB8-25-GW	GB-DW-37	GB-DW-85	
	GBTP04-2-17.5	GB-DW-38	GB-DW-86	
	GBTP04-2-6 DUP	GB-DW-39	GB-DW-87	
		GB-DW-40	GB-DW-88	
		GB-DW-41	GB-DW-89	
		GB-DW-42	GB-DW-90	
		GB-DW-43	GB-DW-91	
		GB-DW-44	GB-DW-92	
		GB-DW-45	GB-PW-01	
		GB-DW-46	GB-PW-02	
		GB-DW-47	GB-PW-03	
		GB-DW-48		

Attachment 2

Risk Calculation Spreadsheets for the Groundwater Ingestion, Dermal Contact while Showering, and Inhalation of Volatiles while Showering Pathways for the Off-Site Resident and On-Site Resident

Off-Site Resident

Ingestion of Groundwater as Drinking Water

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Receptors Evaluated:	
Receptor 1:	Off-Site Resident Child
Receptor 2:	Off-Site Resident Adult

CARCINOGENIC AND NONCARCINOGENIC ASSUMPTIONS FOR OFF-SITE RESIDENT INGESTION OF DRINKING WATER		Assumed Value	Units	Calculated Value
Water Ingestion Rate	Off-Site Resident Child	1	(L/day)	
Water Ingestion Rate	Off-Site Resident Adult	2	(L/day)	
Body Weight	Off-Site Resident Child	15	(kg)	
Body Weight	Off-Site Resident Adult	70	(kg)	
Exposure Frequency	Off-Site Resident Child	350	(days)/365 (days) =	9.59E-01
Exposure Frequency	Off-Site Resident Adult	350	(days)/365 (days) =	9.59E-01
Exposure Duration (cancer)	Off-Site Resident Child	6	(yrs)/ 70(yrs) =	8.57E-02
Exposure Duration (cancer)	Off-Site Resident Adult	24	(yrs)/ 70(yrs) =	3.43E-01
Exposure Duration (noncancer)	Off-Site Resident Child	6	(yrs)/ 6(yrs) =	1.00E+00
Exposure Duration (noncancer)	Off-Site Resident Adult	24	(yrs)/ 24(yrs) =	1.00E+00
Lifetime		70	(years)	

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine
CARCINOGENIC ASSESSMENT - UNIT RISK CALCULATION
INGESTION OF DRINKING WATER
OFF-SITE RESIDENT

Constituent	Unit Concentration In Groundwater (mg/l)	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDing Off-Site Resident Child (mg/kg-day)	ADDing Off-Site Resident Adult (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	Unit Excess Lifetime Cancer Risk
Methyl tert butyl ether	1.00E+00	1.80E-03	5.48E-03	9.39E-03	1.49E-02	2.68E-05
Trichloroethylene	1.00E+00	5.90E-03	5.48E-03	9.39E-03	1.49E-02	8.77E-05

TABLE
POTENTIAL CARCINOGENIC RISK
INGESTION OF DRINKING WATER
OFF-SITE RESIDENT
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent	Reference Risk (per mg/l)	GB-DW-22		GB-DW-23		GB-DW-54		GB-DW-55		GB-DW-56		GB-DW-61		GB-PW-03	
		EPC (mg/l)	Risk	EPC (mg/l)	Risk	EPC (mg/l)	Risk	EPC (mg/l)	Risk	EPC (mg/l)	Risk	EPC (mg/l)	Risk	EPC (mg/l)	Risk
Methyl tert butyl ether	2.68E-05	NCOPC	NCOPC	ND	NC	ND	NC	ND	NC	ND	NC	1.47E-02	3.94E-07	ND	NC
Trichloroethylene	8.77E-05	5.10E-03	4.48E-07	4.20E-03	3.69E-07	4.20E-03	3.69E-07	1.90E-03	1.67E-07	2.10E-03	1.84E-07	ND	NC	2.20E-03	1.93E-07
Total Potential Risk:			**4.48E-07**		**3.69E-07**		**3.69E-07**		**1.67E-07**		**1.84E-07**		**3.94E-07**		**1.93E-07**

Notes:

EPC - Exposure Point Concentration.

NC - Not calculated. No dose-response value available or constituent was not detected.

NCOPC - Not a compound of potential concern in this area/medium.

ND - Not detected.

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine
NONCARCINOGENIC ASSESSMENT
INGESTION OF DRINKING WATER
OFF-SITE RESIDENT

Constituent	Unit Concentration In Groundwater (mg/l)	Oral Reference Dose (mg/kg-day)	ADDing Off-Site Resident Child (mg/kg-day)	ADDing Off-Site Resident Adult (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	Unit Hazard Index
Methyl tert butyl ether	1.00E+00	NA	6.39E-02	2.74E-02	9.13E-02	NC
Trichloroethylene	1.00E+00	NA	6.39E-02	2.74E-02	9.13E-02	NC

Dermal Contact with Groundwater while Showering

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Receptors Evaluated:	
Receptor 1:	Off-Site Resident Child
Receptor 2:	Off-Site Resident Adult

CARCINOGENIC AND NONCARCINOGENIC ASSUMPTIONS FOR OFF-SITE RESIDENT DERMAL CONTACT WITH GROUNDWATER DURING SHOWERING		Assumed Value	Units	Calculated Value
Skin Exposed	Off-Site Resident Child	6,600	(cm^2)	
Skin Exposed	Off-Site Resident Adult	18,000	(cm^2)	
Body Weight	Off-Site Resident Child	15	(kg)	
Body Weight	Off-Site Resident Adult	70	(kg)	
Exposure Time	Off-Site Resident Child	1	(hr/day)	
Exposure Time	Off-Site Resident Adult	0.58	(hr/day)	
Exposure Frequency	Off-Site Resident Child	350	(days)/365(days) =	9.59E-01
Exposure Frequency	Off-Site Resident Adult	350	(days)/365(days) =	9.59E-01
Exposure Duration (cancer)	Off-Site Resident Child	6	(yrs)/70(yrs) =	8.57E-02
Exposure Duration (cancer)	Off-Site Resident Adult	24	(yrs)/70(yrs) =	3.43E-01
Exposure Duration (noncancer)	Off-Site Resident Child	6	(yrs)/6(yrs) =	1.00E+00
Lifetime		70		
Unit Conversion Factor		0.001	(l/cm^3)	

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine
CARCINOGENIC ASSESSMENT - UNIT RISK CALCULATION
OFF-SITE RESIDENT
DERMAL CONTACT WITH
GROUNDWATER DURING SHOWERING

Constituent	Unit Groundwater Concentration (mg/l)	Dermal Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Dermal Permeability Constant (cm/hr)	B (unitless)	Tau Event (hr/event)	Time To Steady State t* (hr)	Fraction Absorbed		Child DA Event Dose Absorbed (mg/cm^2-event)		Adult DA Event Dose Absorbed (mg/cm^2-event)	DAD Off-Site Resident Child (mg/kg-day)	DAD Off-Site Resident Adult (mg/kg-day)	Lifetime Average Daily Dose - Derm. (mg/kg-day)	Unit Lifetime Cancer Risk	
															Dermal Contact	Total
Methyl tert butyl ether	1.00E+00	1.80E-03	2.12E-03	7.66E-03	3.28E-01	7.87E-01	1.00E+00	ET>t*	3.51E-06	ET<t*	2.62E-06	1.27E-04	2.22E-04	3.48E-04	6.27E-07	6.27E-07
Trichloroethylene	1.00E+00	5.90E-03	1.16E-02	5.13E-02	5.81E-01	1.39E+00	1.00E+00	ET<t*	2.45E-05	ET<t*	1.87E-05	8.87E-04	1.58E-03	2.47E-03	1.45E-05	1.45E-05

TABLE
POTENTIAL CARCINOGENIC RISK
OFF-SITE RESIDENT
DERMAL CONTACT WITH
GROUNDWATER DURING SHOWERING
OFF-SITE RESIDENT CHILD
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	Reference	GB-DW-22		GB-DW-23		GB-DW-54		GB-DW-55		GB-DW-56		GB-DW-61		GB-PW-03	
Constituent	**Risk (per mg/L)**	**EPC (mg/L)**	**Risk**	**EPC (mg/L)**	**Risk**	**EPC (mg/L)**	**Risk**	**EPC (mg/L)**	**Risk**	**EPC (mg/L)**	**Risk**	**EPC (mg/L)**	**Risk**	**EPC (mg/L)**	**Risk**
Methyl tert butyl ether	6.27E-07	NCOPC	NCOPC	ND	NC	ND	NC	ND	NC	ND	NC	1.47E-02	9.22E-09	ND	NC
Trichloroethylene	1.45E-05	5.10E-03	7.42E-08	4.20E-03	6.11E-08	4.20E-03	6.11E-08	1.90E-03	2.76E-08	2.10E-03	3.05E-08	ND	NC	2.20E-03	3.20E-08
Total Potential Risk:			**7.42E-08**		**6.11E-08**		**6.11E-08**		**2.76E-08**		**3.05E-08**		**9.22E-09**		**3.20E-08**

Notes:
EPC - Exposure Point Concentration.
NC - Not calculated. No dose-response value available or constituent was not detected.
NCOPC - Not a compound of potential concern in this area/medium.
ND - Not detected.

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine
NONCARCINOGENIC ASSESSMENT - HAZARD INDEX CALCULATION
OFF-SITE RESIDENT
DERMAL CONTACT WITH
GROUNDWATER DURING SHOWERING

Constituent	Unit Groundwater Concentration (mg/l)	Dermal Reference Dose (mg/kg-day)	Dermal Permeability Constant (cm/hr)	B (unitless)	Tau Event (hr/event)	Time To Steady State t* (hr)	Fraction Absorbed	Exposure Time (hr)		Child DA Event Dose Absorbed (mg/cm^2-event)	DAD Off-Site Resident Child (mg/kg-day)	Chronic Average Daily Dose-derm (mg/kg-day)	Unit Hazard Quotient	
													Dermal Contact	Total
Methyl tert butyl ether	1.00E+00	NA	2.12E-03	7.66E-03	3.28E-01	7.87E-01	1.00E+00	1.00E+00	ET>t*	3.51E-06	1.48E-03	1.48E-03	NA	NC
Trichloroethylene	1.00E+00	NA	1.16E-02	5.13E-02	5.81E-01	1.39E+00	1.00E+00	1.00E+00	ET<t*	2.45E-05	1.03E-02	1.03E-02	NA	NC

Inhalation of Volatiles in Groundwater while Showering

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Receptors Evaluated:	
Receptor :	Off-Site Resident

CARCINOGENIC AND NONCARCINOGENIC ASSUMPTIONS FOR OFF-SITE RESIDENT INHALATION OF VOLATILES IN GROUNDWATER WHILE SHOWERING		Assumed Value	Units
Exposure Time	Off-Site Resident Adult	0.58	(hrs/day)
Exposure Time	Off-Site Resident Child	1	(hrs/day)
Exposure Frequency	Off-Site Resident	350	(days/year)
Exposure Duration	Off-Site Resident Adult	24	(years)
Exposure Duration	Off-Site Resident Child	6	(years)
Lifetime	Off-Site Resident	70	(years)
Averaging Time (cancer)	Off-Site Resident	613,200	(hours) [lifetime (years) * 365 days/year * 24 hours/day]
Averaging Time (noncancer)	Off-Site Resident Adult	210,240	(hours) [exposure duration (years) * 365 days/year * 24 hours/day]
Averaging Time (noncancer)	Off-Site Resident Child	52,560	(hours) [exposure duration (years) * 365 days/year * 24 hours/day]
Unit Conversion Factor		1,000	ug/mg

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine
CARCINOGENIC ASSESSMENT
INHALATION OF VOLATILES IN GROUNDWATER WHILE SHOWERING
OFF-SITE RESIDENT

Constituent	Unit Concentration In Air (mg/m^3 air)	Average Daily Exposure - Child (mg/m^3 air)	Average Daily Exposure - Adult (mg/m^3 air)	Unit Risk Factor $(ug/m^3)^{-1}$	Lifetime Average Daily Exposure (Child + Adult) (mg/m3)	Potential Excess Lifetime Cancer Risk Per Unit Concentration (Child + Adult)
Methyl tert butyl ether	1.54E-02	5.26E-05	1.22E-04	2.60E-07	1.75E-04	4.54E-08
Trichloroethylene	1.33E-02	4.54E-05	1.05E-04	2.00E-06	1.51E-04	3.01E-07

TABLE
POTENTIAL CARCINOGENIC RISK
INHALATION OF VOLATILES IN GROUNDWATER WHILE SHOWERING
FOR OFF-SITE RESIDENT
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent	Reference Risk (per mg/l)	GB-DW-22		GB-DW-23		GB-DW-54		GB-DW-55		GB-DW-56		GB-DW-61		GB-PW-03	
		EPC (mg/l)	Risk	EPC (mg/l)	Risk	EPC (mg/l)	Risk	EPC (mg/l)	Risk	EPC (mg/l)	Risk	EPC (mg/l)	Risk	EPC (mg/l)	Risk
Methyl tert butyl ether	4.54E-08	NCOPC	NCOPC	ND	NC	ND	NC	ND	NC	ND	NC	1.47E-02	6.67E-10	ND	NC
Trichloroethylene	3.01E-07	5.10E-03	1.54E-09	4.20E-03	1.27E-09	4.20E-03	1.27E-09	1.90E-03	5.73E-10	2.10E-03	6.33E-10	ND	NC	2.20E-03	6.63E-10
Total Risk:			**1.54E-09**		**1.27E-09**		**1.27E-09**		**5.73E-10**		**6.33E-10**		**6.67E-10**		**6.63E-10**

Notes:
EPC - Exposure Point Concentration.
NC - Not calculated. No dose-response value available or constituent was not detected.
NCOPC - Not a compound of potential concern in this area/medium.
ND - Not detected.

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine
NONCARCINOGENIC ASSESSMENT
INHALATION OF VOLATILES IN GROUNDWATER WHILE SHOWERING
OFF-SITE RESIDENT

Constituent	Unit Concentration In Air (mg/m^3 air)	Average Daily Exposure - Child (mg/m^3 air)	Average Daily Exposure - Adult (mg/m^3 air)	Reference Concentration (mg/m^3)	Potential Hazard Quotient Per Unit Concentration (Child)	Potential Hazard Quotient Per Unit Concentration (Adult)
Methyl tert butyl ether	1.54E-02	6.14E-04	3.56E-04	3.00E+00	2.05E-04	1.19E-04
Trichloroethylene	1.33E-02	5.30E-04	3.07E-04	6.00E-01	8.83E-04	5.12E-04

TABLE
POTENTIAL HAZARD INDEX
INHALATION OF VOLATILES IN GROUNDWATER WHILE SHOWERING
FOR OFF-SITE RESIDENT
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent	Reference HQ (per mg/l)	GB-DW-22		GB-DW-23		GB-DW-54		GB-DW-55		GB-DW-56		GB-DW-61		GB-PW-03	
		EPC (mg/l)	HQ	EPC (mg/l)	HQ	EPC (mg/l)	HQ	EPC (mg/l)	HQ	EPC (mg/l)	HQ	EPC (mg/l)	HQ	EPC (mg/l)	HQ
Methyl tert butyl ether	1.19E-04	NCOPC	NCOPC	ND	NC	ND	NC	ND	NC	ND	NC	1.47E-02	1.74E-06	ND	NC
Trichloroethylene	5.12E-04	5.10E-03	2.61E-06	4.20E-03	2.15E-06	4.20E-03	2.15E-06	1.90E-03	9.73E-07	2.10E-03	1.08E-06	ND	NC	2.20E-03	1.13E-06
Total HI:			**2.61E-06**		**2.15E-06**		**2.15E-06**		**9.73E-07**		**1.08E-06**		**1.74E-06**		**1.13E-06**

Notes:
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not calculated. No dose-response value available or constituent was not detected.
NCOPC - Not a compound of potential concern in this area/medium.
ND - Not detected.

On-Site Resident

Ingestion of Groundwater as Drinking Water

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Receptors Evaluated:	
Receptor 1:	On-Site Resident Child
Receptor 2:	On-Site Resident Adult

CARCINOGENIC AND NONCARCINOGENIC ASSUMPTIONS FOR ON-SITE RESIDENT INGESTION OF DRINKING WATER		Assumed Value	Units	Calculated Value
Water Ingestion Rate	On-Site Resident Child	1	(L/day)	
Water Ingestion Rate	On-Site Resident Adult	2	(L/day)	
Body Weight	On-Site Resident Child	15	(kg)	
Body Weight	On-Site Resident Adult	70	(kg)	
Exposure Frequency	On-Site Resident Child	350	(days)/365 (days) =	9.59E-01
Exposure Frequency	On-Site Resident Adult	350	(days)/365 (days) =	9.59E-01
Exposure Duration (cancer)	On-Site Resident Child	6	(yrs)/ 70(yrs) =	8.57E-02
Exposure Duration (cancer)	On-Site Resident Adult	24	(yrs)/ 70(yrs) =	3.43E-01
Exposure Duration (noncancer)	On-Site Resident Child	6	(yrs)/ 6(yrs) =	1.00E+00
Exposure Duration (noncancer)	On-Site Resident Adult	24	(yrs)/ 24(yrs) =	1.00E+00
Lifetime		70	(years)	

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine
CARCINOGENIC ASSESSMENT - UNIT RISK CALCULATION
INGESTION OF DRINKING WATER
ON-SITE RESIDENT

Constituent	Unit Concentration In Groundwater (mg/l)	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	ADDing On-Site Resident Child (mg/kg-day)	ADDing On-Site Resident Adult (mg/kg-day)	Lifetime Average Daily Dose-Ing. (mg/kg-day)	Unit Excess Lifetime Cancer Risk
1,4-Dichlorobenzene	1.00E+00	5.40E-03	5.48E-03	9.39E-03	1.49E-02	8.03E-05
Naphthalene	1.00E+00	NA	5.48E-03	9.39E-03	1.49E-02	NC
Trichloroethylene	1.00E+00	5.90E-03	5.48E-03	9.39E-03	1.49E-02	8.77E-05

TABLE
POTENTIAL CARCINOGENIC RISK
INGESTION OF DRINKING WATER
ON-SITE RESIDENT
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent	Reference Risk (per mg/l)	GB-MW-01 EPC (mg/l)	GB-MW-01 Risk	GB-MW-02 EPC (mg/l)	GB-MW-02 Risk	GB-MW-03 EPC (mg/l)	GB-MW-03 Risk	GB-MW-04 EPC (mg/l)	GB-MW-04 Risk	CESSPOOL WATER EPC (mg/l)	CESSPOOL WATER Risk
1,4-Dichlorobenzene	8.03E-05	ND	NC	ND	NC	ND	NC	ND	NC	1.80E-02	1.45E-06
Naphthalene	NC	ND	NC	ND	NC	ND	NC	ND	NC	3.20E-03	NC
Trichloroethylene	8.77E-05	6.00E-02	5.26E-06	2.57E-02	2.26E-06	5.10E-03	4.48E-07	7.80E-03	6.84E-07	ND	NC
Total Potential Risk:			**5.26E-06**		**2.26E-06**		**4.48E-07**		**6.84E-07**		**1.45E-06**

Notes:

EPC - Exposure Point Concentration.

NC - Not calculated. No dose-response value available or constituent was not detected.

ND - Not detected.

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine
NONCARCINOGENIC ASSESSMENT
INGESTION OF DRINKING WATER
ON-SITE RESIDENT

Constituent	Unit Concentration In Groundwater (mg/l)	Oral Reference Dose (mg/kg-day)	ADDing On-Site Resident Child (mg/kg-day)	ADDing On-Site Resident Adult (mg/kg-day)	Chronic Average Daily Dose-Ing. (mg/kg-day)	Unit Hazard Index
1,4-Dichlorobenzene	1.00E+00	7.00E-02	6.39E-02	2.74E-02	9.13E-02	1.30E+00
Naphthalene	1.00E+00	2.00E-02	6.39E-02	2.74E-02	9.13E-02	4.57E+00
Trichloroethylene	1.00E+00	NA	6.39E-02	2.74E-02	9.13E-02	NC

TABLE
POTENTIAL HAZARD INDEX
INGESTION OF DRINKING WATER
ON-SITE RESIDENT
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent	Reference HQ (per mg/l)	GB-MW-01 EPC (mg/l)	GB-MW-01 HQ	GB-MW-02 EPC (mg/l)	GB-MW-02 HQ	GB-MW-03 EPC (mg/l)	GB-MW-03 HQ	GB-MW-04 EPC (mg/l)	GB-MW-04 HQ	CESSPOOL WATER EPC (mg/l)	CESSPOOL WATER HQ
1,4-Dichlorobenzene	1.30E+00	ND	NC	ND	NC	ND	NC	ND	NC	1.80E-02	2.35E-02
Naphthalene	4.57E+00	ND	NC	ND	NC	ND	NC	ND	NC	3.20E-03	1.46E-02
Trichloroethylene	NC	6.00E-02	NC	2.57E-02	NC	5.10E-03	NC	7.80E-03	NC	ND	NC
Total HI:			**NC**		**NC**		**NC**		**NC**		**3.81E-02**

Notes:

EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not calculated. No dose-response value available or constituent was not detected.
ND - Not detected.

Dermal Contact with Groundwater while Showering

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Receptors Evaluated:	
Receptor 1:	On-Site Resident Child
Receptor 2:	On-Site Resident Adult

CARCINOGENIC AND NONCARCINOGENIC ASSUMPTIONS FOR ON-SITE RESIDENT DERMAL CONTACT WITH GROUNDWATER DURING SHOWERING		Assumed Value	Units	Calculated Value
Skin Exposed	On-Site Resident Child	6,600	(cm^2)	
Skin Exposed	On-Site Resident Adult	18,000	(cm^2)	
Body Weight	On-Site Resident Child	15	(kg)	
Body Weight	On-Site Resident Adult	70	(kg)	
Exposure Time	On-Site Resident Child	1	(hr/day)	
Exposure Time	On-Site Resident Adult	0.58	(hr/day)	
Exposure Frequency	On-Site Resident Child	350	(days)/365(days) =	9.59E-01
Exposure Frequency	On-Site Resident Adult	350	(days)/365(days) =	9.59E-01
Exposure Duration (cancer)	On-Site Resident Child	6	(yrs)/70(yrs) =	8.57E-02
Exposure Duration (cancer)	On-Site Resident Adult	24	(yrs)/70(yrs) =	3.43E-01
Exposure Duration (noncancer)	On-Site Resident Child	6	(yrs)/6(yrs) =	1.00E+00
Lifetime		70		
Unit Conversion Factor		0.001	(l/cm^3)	

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine
CARCINOGENIC ASSESSMENT - UNIT RISK CALCULATION
ON-SITE RESIDENT
DERMAL CONTACT WITH
GROUNDWATER DURING SHOWERING

Constituent	Unit Groundwater Concentration (mg/l)	Dermal Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Dermal Permeability Constant (cm/hr)	B (unitless)	Tau Event (hr/event)	Time To Steady State t* (hr)	Fraction Absorbed		Child DA Event Dose Absorbed (mg/cm^2-event)		Adult DA Event Dose Absorbed (mg/cm^2-event)	DAD On-Site Resident Child (mg/kg-day)	DAD On-Site Resident Adult (mg/kg-day)	Lifetime Average Daily Dose - Derm. (mg/kg-day)	Unit Lifetime Cancer Risk	
															Dermal Contact	Total
1,4-Dichlorobenzene	1.00E+00	5.40E-03	4.20E-02	1.96E-01	7.11E-01	1.71E+00	1.00E+00	ET<t*	9.78E-05	ET<t*	7.45E-05	3.54E-03	6.30E-03	9.84E-03	5.31E-05	5.31E-05
Naphthalene	1.00E+00	NA	4.66E-02	2.03E-01	5.58E-01	1.34E+00	1.00E+00	ET<t*	9.62E-05	ET<t*	7.33E-05	3.48E-03	6.20E-03	9.68E-03	NA	NC
Trichloroethylene	1.00E+00	5.90E-03	1.16E-02	5.13E-02	5.81E-01	1.39E+00	1.00E+00	ET<t*	2.45E-05	ET<t*	1.87E-05	8.87E-04	1.58E-03	2.47E-03	1.45E-05	1.45E-05

TABLE
POTENTIAL CARCINOGENIC RISK
OFF-SITE RESIDENT
DERMAL CONTACT WITH
GROUNDWATER DURING SHOWERING
OFF-SITE RESIDENT CHILD

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent	Reference Risk (per mg/L)	GB-MW-01 EPC (mg/L)	GB-MW-01 Risk	GB-MW-02 EPC (mg/L)	GB-MW-02 Risk	GB-MW-03 EPC (mg/L)	GB-MW-03 Risk	GB-MW-04 EPC (mg/L)	GB-MW-04 Risk	CESSPOOL WATER EPC (mg/L)	CESSPOOL WATER Risk
1,4-Dichlorobenzene	5.31E-05	ND	NC	ND	NC	ND	NC	ND	NC	1.80E-02	9.56E-07
Naphthalene	NC	ND	NC	ND	NC	ND	NC	ND	NC	3.20E-03	NC
Trichloroethylene	1.45E-05	6.00E-02	8.73E-07	2.57E-02	3.74E-07	5.10E-03	7.42E-08	7.80E-03	1.13E-07	ND	NC
Total Potential Risk:			**8.73E-07**		**3.74E-07**		**7.42E-08**		**1.13E-07**		**9.56E-07**

Notes:
EPC - Exposure Point Concentration.
NC - Not calculated. No dose-response value available or constituent was not detected.
NCOPC - Not a compound of potential concern in this area/medium.
ND - Not detected.

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine
NONCARCINOGENIC ASSESSMENT - HAZARD INDEX CALCULATION
ON-SITE RESIDENT
DERMAL CONTACT WITH
GROUNDWATER DURING SHOWERING

Constituent	Unit Groundwater Concentration (mg/l)	Dermal Reference Dose (mg/kg-day)	Dermal Permeability Constant (cm/hr)	B (unitless)	Tau Event (hr/event)	Time To Steady State t* (hr)	Fraction Absorbed	Exposure Time (hr)		Child DA Event Dose Absorbed (mg/cm^2-event)	DAD On-Site Resident Child (mg/kg-day)	Chronic Average Daily Dose-derm (mg/kg-day)	Unit Hazard Quotient	
													Dermal Contact	Total
1,4-Dichlorobenzene	1.00E+00	7.00E-02	4.20E-02	1.96E-01	7.11E-01	1.71E+00	1.00E+00	1.00E+00	ET<t*	9.78E-05	4.13E-02	4.13E-02	5.90E-01	5.90E-01
Naphthalene	1.00E+00	2.00E-02	4.66E-02	2.03E-01	5.58E-01	1.34E+00	1.00E+00	1.00E+00	ET<t*	9.62E-05	4.06E-02	4.06E-02	2.03E+00	2.03E+00
Trichloroethylene	1.00E+00	NA	1.16E-02	5.13E-02	5.81E-01	1.39E+00	1.00E+00	1.00E+00	ET<t*	2.45E-05	1.03E-02	1.03E-02	NA	NC

TABLE
POTENTIAL HAZARD INDEX
OFF-SITE RESIDENT
DERMAL CONTACT WITH
GROUNDWATER DURING SHOWERING
OFF-SITE RESIDENT CHILD

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

	Reference	GB-MW-01		GB-MW-02		GB-MW-03		GB-MW-04		CESSPOOL WATER	
Constituent	HQ (per mg/L)	EPC (mg/L)	Risk	EPC (mg/L)	Risk	EPC (mg/L)	Risk	EPC (mg/L)	HQ	EPC (mg/L)	HQ
1,4-Dichlorobenzene	5.90E-01	ND	NC	ND	NC	ND	NC	ND	NC	1.80E-02	1.06E-02
Naphthalene	2.03E+00	ND	NC	ND	NC	ND	NC	ND	NC	3.20E-03	6.50E-03
Trichloroethylene	NC	6.00E-02	NC	2.57E-02	NC	5.10E-03	NC	7.80E-03	NC	ND	NC
Total HI:			**NC**		**NC**		**NC**		**NC**		**1.71E-02**

Notes:
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not calculated. No dose-response value available or constituent was not detected.
NCOPC - Not a compound of potential concern in this area/medium.
ND - Not detected.

Inhalation of Volatiles in Groundwater while Showering

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Receptors Evaluated:	
Receptor :	On-Site Resident

CARCINOGENIC AND NONCARCINOGENIC ASSUMPTIONS FOR ON-SITE RESIDENT INHALATION OF VOLATILES IN GROUNDWATER WHILE SHOWERING		Assumed Value	Units
Exposure Time	On-Site Resident Adult	0.58	(hrs/day)
Exposure Time	On-Site Resident Child	1	(hrs/day)
Exposure Frequency	On-Site Resident	350	(days/year)
Exposure Duration	On-Site Resident Adult	24	(years)
Exposure Duration	On-Site Resident Child	6	(years)
Lifetime	On-Site Resident	70	(years)
Averaging Time (cancer)	On-Site Resident	613,200	(hours) [lifetime (years) * 365 days/year * 24 hours/day]
Averaging Time (noncancer)	On-Site Resident Adult	210,240	(hours) [exposure duration (years) * 365 days/year * 24 hours/day]
Averaging Time (noncancer)	On-Site Resident Child	52,560	(hours) [exposure duration (years) * 365 days/year * 24 hours/day]
Unit Conversion Factor		1,000	ug/mg

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine
CARCINOGENIC ASSESSMENT
INHALATION OF VOLATILES IN GROUNDWATER WHILE SHOWERING
OFF-SITE RESIDENT

Constituent	Unit Concentration In Air (mg/m^3 air)	Average Daily Exposure - Child (mg/m^3 air)	Average Daily Exposure - Adult (mg/m^3 air)	Unit Risk Factor $(ug/m^3)^{-1}$	Lifetime Average Daily Exposure (Child + Adult) (mg/m^3)	Potential Excess Lifetime Cancer Risk Per Unit Concentration (Child + Adult)
1,4-Dichlorobenzene	1.27E-02	4.35E-05	1.01E-04	1.10E-05	1.44E-04	1.59E-06
Naphthalene	1.34E-02	4.58E-05	1.06E-04	3.40E-05	1.52E-04	5.17E-06
Trichloroethylene	1.33E-02	4.54E-05	1.05E-04	2.00E-06	1.51E-04	3.01E-07

TABLE
POTENTIAL CARCINOGENIC RISK
INHALATION OF VOLATILES IN GROUNDWATER WHILE SHOWERING
FOR ON-SITE RESIDENT
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent	Reference Risk (per mg/l)	GB-MW-01		GB-MW-02		GB-MW-03		GB-MW-04		CESSPOOL WATER	
		EPC (mg/l)	Risk	EPC (mg/l)	Risk	EPC (mg/l)	Risk	EPC (mg/l)	Risk	EPC (mg/l)	Risk
1,4-Dichlorobenzene	1.59E-06	ND	NC	ND	NC	ND	NC	ND	NC	1.80E-02	2.86E-08
Naphthalene	5.17E-06	ND	NC	ND	NC	ND	NC	ND	NC	3.20E-03	1.66E-08
Trichloroethylene	3.01E-07	6.00E-02	1.81E-08	2.57E-02	7.75E-09	5.10E-03	1.54E-09	7.80E-03	2.35E-09	ND	NC
Total Risk:			**1.81E-08**		**7.75E-09**		**1.54E-09**		**2.35E-09**		**4.51E-08**

Notes:
EPC - Exposure Point Concentration.
NC - Not calculated. No dose-response value available or constituent was not detected.
ND - Not detected.

Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine
NONCARCINOGENIC ASSESSMENT
INHALATION OF VOLATILES IN GROUNDWATER WHILE SHOWERING
OFF-SITE RESIDENT

Constituent	Unit Concentration In Air (mg/m^3 air)	Average Daily Exposure - Child (mg/m^3 air)	Average Daily Exposure - Adult (mg/m^3 air)	Reference Concentration (mg/m^3)	Potential Hazard Quotient Per Unit Concentration (Child)	Potential Hazard Quotient Per Unit Concentration (Adult)
1,4-Dichlorobenzene	1.27E-02	5.07E-04	2.94E-04	8.00E-01	6.34E-04	3.68E-04
Naphthalene	1.34E-02	5.35E-04	3.10E-04	3.00E-03	1.78E-01	1.03E-01
Trichloroethylene	1.33E-02	5.30E-04	3.07E-04	6.00E-01	8.83E-04	5.12E-04

TABLE
POTENTIAL HAZARD INDEX
INHALATION OF VOLATILES IN GROUNDWATER WHILE SHOWERING
FOR ON-SITE RESIDENT
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Constituent	Reference HQ (per mg/l)	GB-MW-01		GB-MW-02		GB-MW-03		GB-MW-04		CESSPOOL WATER	
		EPC (mg/l)	HQ	EPC (mg/l)	HQ	EPC (mg/l)	HQ	EPC (mg/l)	HQ	EPC (mg/l)	HQ
1,4-Dichlorobenzene	3.68E-04	ND	NC	ND	NC	ND	NC	ND	NC	1.80E-02	6.62E-06
Naphthalene	1.03E-01	ND	NC	ND	NC	ND	NC	ND	NC	3.20E-03	3.31E-04
Trichloroethylene	5.12E-04	6.00E-02	3.07E-05	2.57E-02	1.32E-05	5.10E-03	2.61E-06	7.80E-03	3.99E-06	ND	NC
Total HI:			**3.07E-05**		**1.32E-05**		**2.61E-06**		**3.99E-06**		**3.37E-04**

Notes:
EPC - Exposure Point Concentration.
HI - Hazard Index.
HQ - Hazard Quotient.
NC - Not calculated. No dose-response value available or constituent was not detected.
ND - Not detected.

Attachment 3

Vapor intrusion spreadsheets

Off-Site Resident

DATA ENTRY SHEET

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	5.10E+00	Trichloroethylene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of L_{WT} (cell G28)							
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	7.52E-04	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	8.51E+02	0.10	8.33E+01	7.98E-03	4.00E+02	2.77E+113	1.25E-04	1.06E-01	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
8.7E-08	1.7E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	4.20E+00	Trichloroethylene

MORE

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	7.52E-04	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	7.01E+02	0.10	8.33E+01	7.98E-03	4.00E+02	2.77E+113	1.25E-04	8.76E-02	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
7.2E-08	1.4E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	4.20E+00	Trichloroethylene

MORE

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	7.52E-04	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	7.01E+02	0.10	8.33E+01	7.98E-03	4.00E+02	2.77E+113	1.25E-04	8.76E-02	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
7.2E-08	1.4E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	1.90E+00	Trichloroethylene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	7.52E-04	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	3.17E+02	0.10	8.33E+01	7.98E-03	4.00E+02	2.77E+113	1.25E-04	3.96E-02	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.3E-08	6.3E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	2.10E+00	Trichloroethylene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of L_{WT} (cell G28)							
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	7.52E-04	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	3.50E+02	0.10	8.33E+01	7.98E-03	4.00E+02	2.77E+113	1.25E-04	4.38E-02	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.6E-08	7.0E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
1634044	1.47E+01	MTBE

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
1.02E-01	1.05E-05	6.23E-04	25	6,678	328.30	497.10	7.26E+00	5.10E+04	2.6E-07	3.0E+00

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	7,345	2.68E-04	1.17E-02	1.74E-04	1.03E-02	5.93E-03	0.00E+00	3.16E-04	1.50E-03	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	1.72E+02	0.10	8.33E+01	1.03E-02	4.00E+02	3.13E+87	2.40E-04	4.13E-02	2.6E-07	3.0E+00

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	NA	NA	5.10E+07	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
4.4E-09	1.3E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)		Chemical
79016	2.20E+00		Trichloroethylene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	7.52E-04	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	3.67E+02	0.10	8.33E+01	7.98E-03	4.00E+02	2.77E+113	1.25E-04	4.59E-02	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.8E-08	7.3E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

On-Site Resident

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
106467	1.80E+01	1,4-Dichlorobenzene

MORE

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
6.90E-02	7.90E-06	2.39E-03	25	9,271	447.21	684.75	6.17E+02	7.90E+01	1.1E-05	8.0E-01

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	11,284	6.55E-04	2.86E-02	1.74E-04	6.97E-03	3.99E-03	0.00E+00	1.62E-04	8.10E-04	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	5.15E+02	0.10	8.33E+01	6.97E-03	4.00E+02	7.40E+129	1.34E-04	6.91E-02	1.1E-05	8.0E-01

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	NA	NA	7.90E+04	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.1E-07	8.3E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
91203	3.20E+00	Naphthalene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
5.90E-02	7.50E-06	4.82E-04	25	10,373	491.14	748.40	2.00E+03	3.10E+01	3.4E-05	3.0E-03

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	12,954	1.09E-04	4.75E-03	1.74E-04	5.96E-03	3.43E-03	0.00E+00	3.47E-04	1.39E-03	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	1.52E+01	0.10	8.33E+01	5.96E-03	4.00E+02	5.80E+151	2.23E-04	3.39E-03	3.4E-05	3.0E-03

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	NA	NA	3.10E+04	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
4.7E-08	1.1E-03

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	6.00E+01	Trichloroethylene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	7.52E-04	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	1.00E+04	0.10	8.33E+01	7.98E-03	4.00E+02	2.77E+113	1.25E-04	1.25E+00	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.0E-06	2.0E-03

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	2.57E+01	Trichloroethylene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	7.52E-04	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	4.29E+03	0.10	8.33E+01	7.98E-03	4.00E+02	2.77E+113	1.25E-04	5.36E-01	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
4.4E-07	8.6E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	5.10E+00	Trichloroethylene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28): Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

CHEMICAL PROPERTIES SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	7.52E-04	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	8.51E+02	0.10	8.33E+01	7.98E-03	4.00E+02	2.77E+113	1.25E-04	1.06E-01	2.0E-06	6.0E-01

END

CHEMICAL PROPERTIES SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
8.7E-08	1.7E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	7.80E+00	Trichloroethylene

MORE

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	7.52E-04	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	1.30E+03	0.10	8.33E+01	7.98E-03	4.00E+02	2.77E+113	1.25E-04	1.63E-01	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.3E-07	2.6E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

On-Site Worker

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
106467	1.80E+01	1,4-Dichlorobenzene

MORE

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	15	610 (20 ft bgs)	153 (5 ft bgs)	457 (15 ft bgs)	0	B	SIL	SL		

MORE

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	244	0.1	1	

MORE

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	25	25	250	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
6.90E-02	7.90E-06	2.39E-03	25	9,271	447.21	684.75	6.17E+02	7.90E+01	1.1E-05	8.0E-01

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
7.88E+08	595	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
6.78E+04	1.06E+06	3.77E-04	15	11,284	6.55E-04	2.86E-02	1.74E-04	6.97E-03	3.99E-03	0.00E+00	1.62E-04	1.11E-03	595

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
15	5.15E+02	0.10	5.37E+00	6.97E-03	4.00E+02	2.32E+08	2.13E-05	1.09E-02	1.1E-05	8.0E-01

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	7.90E+04	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.9E-08	9.4E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
91203	3.20E+00	Naphthalene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	15	610 (20 ft bgs)	153 (5 ft bgs)	457 (15 ft bgs)	0	B	SIL	SL		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	244	0.1	1	

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	25	25	250	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
5.90E-02	7.50E-06	4.82E-04	25	10,373	491.14	748.40	2.00E+03	3.10E+01	3.4E-05	3.0E-03

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
7.88E+08	595	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
6.78E+04	1.06E+06	3.77E-04	15	12,954	1.09E-04	4.75E-03	1.74E-04	5.96E-03	3.43E-03	0.00E+00	3.47E-04	1.79E-03	595

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
15	1.52E+01	0.10	5.37E+00	5.96E-03	4.00E+02	5.97E+09	2.95E-05	4.48E-04	3.4E-05	3.0E-03

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	3.10E+04	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.7E-09	1.0E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	6.00E+01	Trichloroethylene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	15	610 (20 ft bgs)	153 (5 ft bgs)	457 (15 ft bgs)	0	B	SIL	SL		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	244	0.1	1	

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	25	25	250	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
7.88E+08	595	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
6.78E+04	1.06E+06	3.77E-04	15	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	1.04E-03	595

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
15	1.00E+04	0.10	5.37E+00	7.98E-03	4.00E+02	2.03E+07	2.03E-05	2.03E-01	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
9.9E-08	2.3E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES: X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	2.57E+01	Trichloroethylene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	15	610 (20 ft bgs)	153 (5 ft bgs)	457 (15 ft bgs)	0	B	SIL	SL		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	244	0.1	1	

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	25	25	250	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
7.88E+08	595	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
6.78E+04	1.06E+06	3.77E-04	15	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	1.04E-03	595

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
15	4.29E+03	0.10	5.37E+00	7.98E-03	4.00E+02	2.03E+07	2.03E-05	8.71E-02	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
4.3E-08	9.9E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	5.10E+00	Trichloroethylene

MORE

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	15	610 (20 ft bgs)	153 (5 ft bgs)	457 (15 ft bgs)	0	B	SIL	SL		

MORE

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	244	0.1	1	

MORE

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	25	25	250	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
7.88E+08	595	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
6.78E+04	1.06E+06	3.77E-04	15	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	1.04E-03	595

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
15	8.51E+02	0.10	5.37E+00	7.98E-03	4.00E+02	2.03E+07	2.03E-05	1.73E-02	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
8.5E-09	2.0E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	7.80E+00	Trichloroethylene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	15	610 (20 ft bgs)	153 (5 ft bgs)	457 (15 ft bgs)	0	B	SIL	SL		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	244	0.1	1	

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	25	25	250	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

DATA ENTRY SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
7.88E+08	595	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
6.78E+04	1.06E+06	3.77E-04	15	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	1.04E-03	595

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
15	1.30E+03	0.10	5.37E+00	7.98E-03	4.00E+02	2.03E+07	2.03E-05	2.64E-02	2.0E-06	6.0E-01

END

DATA ENTRY SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	1.47E+06	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.3E-08	3.0E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

On-Site Daycare Child

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
106467	1.80E+01	1,4-Dichlorobenzene

MORE

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	6	6	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
6.90E-02	7.90E-06	2.39E-03	25	9,271	447.21	684.75	6.17E+02	7.90E+01	1.1E-05	8.0E-01

END

CHEMICAL PROPERTIES SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1.89E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	11,284	6.55E-04	2.86E-02	1.74E-04	6.97E-03	3.99E-03	0.00E+00	1.62E-04	8.10E-04	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	5.15E+02	0.10	8.33E+01	6.97E-03	4.00E+02	7.40E+129	1.34E-04	6.91E-02	1.1E-05	8.0E-01

END

CHEMICAL PROPERTIES SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA	NA	7.90E+04	NA	6.2E-08	8.3E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

CHEMICAL PROPERTIES SHEET

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
91203	3.20E+00	Naphthalene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	6	6	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
5.90E-02	7.50E-06	4.82E-04	25	10,373	491.14	748.40	2.00E+03	3.10E+01	3.4E-05	3.0E-03

END

CHEMICAL PROPERTIES SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1.89E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	12,954	1.09E-04	4.75E-03	1.74E-04	5.96E-03	3.43E-03	0.00E+00	3.47E-04	1.39E-03	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	1.52E+01	0.10	8.33E+01	5.96E-03	4.00E+02	5.80E+151	2.23E-04	3.39E-03	3.4E-05	3.0E-03

END

CHEMICAL PROPERTIES SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (μg/L)	Indoor exposure groundwater conc., noncarcinogen (μg/L)	Risk-based indoor exposure groundwater conc., (μg/L)	Pure component water solubility, S (μg/L)	Final indoor exposure groundwater conc., (μg/L)	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA	NA	3.10E+04	NA	9.5E-09	1.1E-03

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES: X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	6.00E+01	Trichloroethylene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28): Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	6	6	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

CHEMICAL PROPERTIES SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1.89E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	7.52E-04	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	1.00E+04	0.10	8.33E+01	7.98E-03	4.00E+02	2.77E+113	1.25E-04	1.25E+00	2.0E-06	6.0E-01

END

CHEMICAL PROPERTIES SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA	NA	1.47E+06	NA	2.1E-07	2.0E-03

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	2.57E+01	Trichloroethylene

MORE	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
	6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE	ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE	ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
	10	40	1000	1000	366	0.1	0.25	5

MORE	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
	70	6	6	350	1.0E-06	1
					Used to calculate risk-based groundwater concentration.	

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

CHEMICAL PROPERTIES SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1.89E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	7.52E-04	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	4.29E+03	0.10	8.33E+01	7.98E-03	4.00E+02	2.77E+113	1.25E-04	5.36E-01	2.0E-06	6.0E-01

END

CHEMICAL PROPERTIES SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA	NA	1.47E+06	NA	8.8E-08	8.6E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	5.10E+00	Trichloroethylene

MORE	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
	6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE	ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE	ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
	10	40	1000	1000	366	0.1	0.25	5

MORE	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
	70	6	6	350	1.0E-06	1
					Used to calculate risk-based groundwater concentration.	

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

CHEMICAL PROPERTIES SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1.89E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	7.52E-04	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	8.51E+02	0.10	8.33E+01	7.98E-03	4.00E+02	2.77E+113	1.25E-04	1.06E-01	2.0E-06	6.0E-01

END

CHEMICAL PROPERTIES SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA	NA	1.47E+06	NA	1.7E-08	1.7E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

CHEMICAL PROPERTIES SHEET

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
79016	7.80E+00	Trichloroethylene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
6	200	610 (20 ft bgs)	200	410	0	B	SIL	SL		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SL	1.62	0.387	0.103	SIL	1.49	0.439	0.18		0	0	0

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	6	6	350	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

CHEMICAL PROPERTIES SHEET

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.47E+03	2.0E-06	6.0E-01

END

CHEMICAL PROPERTIES SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{te} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
1.89E+08	410	0.284	0.259	0.000	0.184	5.89E-09	0.901	5.30E-09	68.18	0.439	0.090	0.349	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
2.54E+04	1.80E+06	2.22E-04	200	8,606	3.82E-03	1.67E-01	1.74E-04	7.98E-03	4.56E-03	0.00E+00	1.45E-04	7.52E-04	410

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
200	1.30E+03	0.10	8.33E+01	7.98E-03	4.00E+02	2.77E+113	1.25E-04	1.63E-01	2.0E-06	6.0E-01

END

CHEMICAL PROPERTIES SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA	NA	1.47E+06	NA	2.7E-08	2.6E-04

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based groundwater concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

Attachment 4

Shower model spreadsheets

Calculation of Chemical Vapor Concentrations in Shower Stall Air (a)
Human Health Risk Assessment
Former Glenburn GAT Facility
Glenburn, Maine

Non-Chemical Specific Parameters			
Parameter	**Symbol**	**Units**	**Value**
Air exchange rate in shower stall	R	min^{-1}	8.33E-03
Shower stall volume	S_v	m^3	2.94
Duration of shower (c)	t	min	10
Water flow rate in shower	F_r	liters/min	10
Shower droplet drop time	t_s	sec	2
Shower droplet diameter	d	cm	0.1
Calibration water temperature of transfer coefficient	T_1	^oK	293
Shower water temperature	T_s	^oK	318
Water viscosity at calibration temperature	u_1	cp	1.002
Water viscosity at shower temperature	u_s	cp	0.596
Kg for water (cm/hr)	kH_20	cm/hr	3000
Kl for CO2 (cm/hr)	kCO_2	cm/hr	20

Intermediate Calculations			
Parameter	**Symbol**	**Units**	**Value**
Temperature correction factor for transfer rate	--	--	1.351
Universal gas constant	R	atm-m3/(mole-^oK)	8.20E-05

Constituent	**Unit Concentration in Groundwater (ug/L)**	**Molecular Weight (b) (g/mole)**	**Henry's Law Constant (b) (atm-m^3/mole)**	**k_g (cm/hr)**	**k_l (cm/hr)**	**K_L (cm/hr)**	**K_{aL} (cm/hr)**	**C_{wd} (ug/L)**	**S (ug/(m^3-min))**	**C_{voc} per Unit Concentration (ug/m^3)**
1,4-Dichlorobenzene	1.00E+00	1.47E+02	2.37E+00	1.05E+03	1.09E+01	1.09E+01	1.48E+01	3.89E-01	1.32E+00	1.27E+01
Methyl tert butyl ether	1.00E+00	8.82E+01	5.77E-01	1.36E+03	1.41E+01	1.41E+01	1.91E+01	4.71E-01	1.60E+00	1.54E+01
Naphthalene	1.00E+00	1.28E+02	4.33E-01	1.13E+03	1.17E+01	1.17E+01	1.58E+01	4.10E-01	1.39E+00	1.34E+01
Trichloroethylene	1.00E+00	1.31E+02	9.69E+00	1.11E+03	1.16E+01	1.16E+01	1.56E+01	4.06E-01	1.38E+00	1.33E+01

Notes:
(a) Based on the Foster and Chrostowski model. Foster, S.A. and P.C. Chrostowski. 1987. Inhalation exposures to volatile organic contaminants in the shower. APCA 80th Annual Meeting, New York, New York.
(b) Risk Assessment Information System (RAIS). Toxicity and Chemical-Specific Factors Data Base. URL: <http://risk.lsd.ornl.gov/index.shtml>.
(c) USEPA, 1997. Exposure Factors Handbook. Table 15-176. Recommended value for time spent showering (10 minutes per day).

APPENDIX 6

ECOLOGICAL RISK ASSESSMENT REPORT AND LETTERS FROM MAINE DEPT. OF INLAND FISHERIES AND WILDLIFE AND U.S. FISH AND WILDLIFE SERVICE

Prepared for:
The Johnson Company
Montpelier, VT

Screening Level Ecological Risk Assessment for the Former Glenburn GAT Facility Glenburn, Maine

AECOM, Inc.
May 2009
Document No.: 03817-005-0200

AECOM

Prepared for:
The Johnson Company
Montpelier, VT

Screening Level Ecological Risk Assessment for the Former Glenburn GAT Facility Glenburn, Maine



Prepared By
Christine Archer



Reviewed By
Kristen Durocher

AECOM, Inc.
May 2009
Document No.: 03817-005-0200

AECOM

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List of Acronyms

BTAG	Biological Technical Assistance Group
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CCC	Criteria Continuous Concentration
CCME	Canadian Council of Ministers of the Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COPC	Constituent of Potential Concern
COPEC	Constituent of Potential Ecological Concern
CSM	Conceptual Site Model
CVOC	Chlorinated Volatile Organic Compound
DERP	Defense Environmental Restoration Project
Eco-SSL	Ecological Soil Screening Level
ft	feet
FS	Feasibility Study
FUDS	Formerly Used Defense Sites
GAT	Ground-Air Transmitter
GLWQI	Great Lakes Water Quality Initiative
HHRA	Human Health Risk Assessment
HQ	Hazard Quotient
LOAEL	Lowest Observed Adverse Effect Level
MEDEP	Maine Department of Environmental Protection
mg/kg	milligrams per kilogram
mg/kg-day	milligrams per kilogram per day
MTBE	Methyl Tertiary Butyl Ether
NOAEL	No Observed Adverse Effect Level
OSWER	Office of Solid Waste and Emergency Response

RI	Remedial Investigation
SLERA	Screening Level Ecological Risk Assessment
TCE	Trichloroethylene
USACE	US Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

Executive Summary

A screening level ecological risk assessment (SLERA) has been conducted in support of a Remedial Investigation/Feasibility Study (RI/FS) being conducted at the former Ground-Air Transmitter (GAT) Facility in Glenburn, Maine. The purpose of the SLERA is to evaluate the potential adverse environmental effects of site-related constituents of potential concern (COPCs) on ecological receptors and resources at or near the site. The SLERA has been conducted in accordance with United States Environmental Protection Agency (USEPA) guidelines for ecological risk assessment under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Previous investigations indicated that the primary COPCs at the site are chlorinated volatile organic compounds (CVOCs); particularly trichloroethylene (TCE) and its degradation products; cis-1, 2 dichloroethene (cis-1, 2 DCE) and vinyl chloride. Chlorinated solvents, including TCE, were reportedly used on the site to clean electronics and generators, to degrease fittings, and to prepare surfaces for new paint. These historic site operations may have resulted in direct releases of constituents to soil which may have migrated downward into sub-surface soil and ultimately to on-site groundwater. Dissolved constituents in groundwater may have migrated to off-site groundwater which discharges into downgradient streams and ponds.

Site data are available for soil, groundwater and porewater. Porewater and off-site groundwater data were used to represent off-site surface water bodies, as there are no on-site surface water bodies. On-site groundwater data were not evaluated in this assessment because there is no complete exposure pathway at the site for ecological receptors to be exposed to groundwater.

To evaluate potential for risks to ecological receptors due to exposure to these COPCs, an ecological screening assessment was conducted, in which constituent concentrations from surface soil, pore water, and off-site groundwater samples were compared to ecological risk-based screening levels. Ecological risk-based screening values identified for surface water and soil were derived to be protective of aquatic life (i.e., fish and other aquatic receptors) and herbivorous mammals (i.e., the deer mouse), respectively. Concentrations below these screening values would indicate that risks to ecological receptors are unlikely. Concentrations above these conservative screening values would indicate that additional investigation might be warranted. The results of the screening, summarized below, indicate that adverse effects to ecological receptors at or near the site are unlikely.

As mentioned above, there is no complete exposure pathway at the site for ecological receptors to be exposed to groundwater. However, aquatic and benthic receptors may be exposed to COPCs present in groundwater as it discharges into off-site surface water bodies. To evaluate this potential exposure pathway, two surface water surrogates were evaluated: off-site porewater and off-site groundwater. No constituents in off-site groundwater were present in excess of the surface water screening values. Toluene in off-site porewater was present above the surface water screening value; however, a conservative consideration of dilution into the water body (i.e., a ten-fold dilution) indicates that toluene is not likely to result in adverse impacts to ecological receptors. Therefore, discharge of groundwater to off-site water bodies is not expected to result in adverse impacts to ecological receptors in the ponds, streams, or wetlands.

The deer mouse was selected as the representative terrestrial receptor for exposure to surface soil. Few VOCs were detected in the surface soil data set. The detected VOC concentrations were converted into doses for the deer mouse and compared against soil screening levels. The screening indicated that none of the detected VOCs is expected to adversely impact the deer mouse.

The results of the evaluation of off-site porewater, off-site groundwater, and on-site surface soil indicate that adverse effects to ecological receptors at or near the site are unlikely. Therefore, no further investigation is recommended.

1.0 Introduction

A screening level ecological risk assessment (SLERA) has been conducted in support of a Remedial Investigation/Feasibility Study (RI/FS) being conducted at the former Ground-Air Transmitter (GAT) Facility in Glenburn, Maine. The RI/FS is being conducted under the authority of the Defense Environmental Restoration Project (DERP) Formerly Used Defense Sites (FUDS) program. The site is defined as the former FUDS property boundary containing the Former GAT Facility, and is approximately 9.09 acres located southwest of the corner of Lakeview Road and Birch Avenue in Glenburn, Maine (Figure 1-1).

The purpose of the SLERA is to evaluate the potential adverse environmental effects of site-related constituents of potential concern (COPCs) on ecological receptors and resources at or near the site. The SLERA may identify COPCs that require further evaluation by a Baseline Ecological Risk Assessment (BERA) in order to identify contaminants of ecological concern (COECs) that need to be addressed by remedial actions.

1.1 Approach for Ecological Risk Assessment

Conducting a SLERA is consistent with a tiered approach to ecological risk assessment recommended by USEPA (1997). Conducting assessments in a tiered, step-wise manner allows the risk assessor and risk manager to maximize the use of available site information and sampling data, while providing the opportunity to reduce the uncertainties inherent in the ecological risk assessment process through the use of focused supplemental data collection to fill key data gaps identified in the previous tier of the assessment, if necessary. A SLERA is considered the first tier of the ecological risk process. If the results of the SLERA indicate sufficient potential ecological risk, further ecological risk assessment may be warranted.

The SLERA presents a preliminary screening of existing data against available screening values. It also presents the risk assessment problem formulation, which includes an evaluation of potential exposure pathways, a CSM, and the risk assessment measurement and assessment endpoints. The SLERA serves as Steps 1 and 2 of the USEPA eight-step process for ecological risk assessments conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA; USEPA, 1997), or Superfund.

Each successive tier of ERA requires more detailed and quantitative data analysis and interpretation. The proposed tiered approach has been designed to focus the work efforts at the site, to permit technical flexibility, to ensure that the needs of the ERA are incorporated into the analytical sampling program, and to ensure that the ERA provides the required information to help make informed risk-based management decisions.

A Work Plan for the SLERA was submitted as a section of the Final Remedial Investigation/Feasibility Study Work Plan (Johnson Co., 2008). The Final Work Plan was revised in accordance with comments from Maine Department of Environmental Protection (MEDEP). The SLERA for the site was conducted in accordance with relevant state and federal guidance, including the following:

- Framework for Ecological Risk Assessment (USEPA, 1992);
- Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessment, Interim Final. (USEPA, 1997);
- Guidelines for Ecological Risk Assessment (USEPA, 1998); and
- The Role of Screening-Level Risk Assessments and Refining Contaminants of Concern in Baseline Ecological Risk Assessments (USEPA, 2001).

The SLERA is organized according to the three following major sections suggested by USEPA guidance (USEPA, 1992; 1997; 1998):

1. Problem Formulation: In this step, the objectives of the SLERA are defined, and a plan for characterizing and analyzing risks is determined. Available information regarding stressors and the specific site is integrated. Products generated through problem formulation include measurement and assessment endpoints and the conceptual site model (CSM).

2. Risk Analysis: Risk analysis is directed by the problem formulation. Data are evaluated to characterize potential ecological exposures and effects.

3. Risk Characterization: During risk characterization, exposure and stressor response profiles are integrated through risk estimation. Risk characterization also includes a summary of uncertainties, strengths, and weaknesses associated with risk assessment.

These three components are semi-sequential. The risk assessment process is frequently iterative, and new information brought forth during the risk characterization phase, for instance, may lead to a review of the problem formulation phase, or additional data collection and analysis.

The SLERA Report is organized in the following sections:

- Problem Formulation
- Risk Analysis
- Risk Characterization
- Summary and Conclusions
- References

2.0 Problem Formulation

Problem formulation is the initial step of the SLERA process and provides the basis for decisions regarding the scope and objectives of the SLERA. Information is collected to develop a CSM in which the COPCs and exposure pathways are identified. The problem formulation phase for the SLERA includes:

- Definition of risk assessment objectives;
- Definition of the geographic area to be considered;
- Selection of specific ecological receptors and exposure pathways;
- Selection of assessment and measurement endpoints;
- Definition of data evaluated in the SLERA and identification of the COPECs; and
- Development of the CSM.

2.1 Definition of Risk Assessment Objectives

The primary objective of this SLERA is to conservatively evaluate RI analytical chemistry data to determine whether or not there is potential current or future exposure of environmental receptors to chemical stressors at or near the site.

2.2 Definition of the Geographic Area to be Considered

The site is defined as the former FUDS property boundary containing the Former GAT Facility, and is approximately 9.09 acres located southwest of the corner of Lakeview Road and Birch Avenue in Glenburn, Maine. As described in the Work Plan (Johnson Co., 2008), the site lies within the Lower Penobscot River Watershed. The site drains to the southwest to Kenduskeag Stream which eventually enters the Penobscot River near Bangor. Impacted wells within the study area show that groundwater flows to the north, east, and west of the site.

A site visit was conducted by ecologists from The Johnson Company and AECOM in October 2008 in order to identify potential ecological habitat at and near the site. The observations from the site visit are discussed in Section 3.5 of the Remedial Investigation/Feasibility Study (Johnson Co., 2009) and are incorporated into the description below.

The area in the immediate vicinity of the former GAT facility contains regularly mowed grass with pavement, buildings, and sidewalks. These maintained areas are not likely to represent significant ecological habitat. A seasonally mowed old field habitat is located to the west and south of the former GAT facility. To the southwest this open field transitions to a stand of small birch and maple trees. At the southwest edge of the property is a stand of mature spruce, pine, and hemlock which forms a buffer between the property and the adjacent mobile home park. The open grasslands are likely to support small mammals, song birds, and insects and the young hardwood stand may provide deer with browsing material. The seasonal mowing of the open areas and the proximity of the trailer park, municipal complex, and surrounding residential areas reduces the habitat value of the area.

There is no surface water on the Property but there are several off-site streams and drainage pathways. The site visit assessed the potential off-site impacts to surface water and wetlands at East Pond (an ephemeral pond located east of Birch Avenue), West Pond (a perennial pond located west of Cressy Avenue) and at a small emergent and wooded wetland east of 97 Lakeview Road and north of Lakeside Road. Although the

National Wetlands Inventory does not identify mapped wetlands within the study area, the site inspection did identify wetlands at these off-site locations.

During the site visit, springs were observed to the east and southeast of the former GAT facility. The spring closest to Birch Avenue is near East Pond. In October 2008 East Pond was approximately 12 feet by 20 feet with 1 to 2 inches of standing water. Organic soils and sphagnum moss were visible along the path to the pond. The bottom of the pond was covered with leaves and no aquatic vegetation was observed. Species along the edge of the pond included gray birch, pines, white birch, and steeplebush. Goldenrod, alder, and hemlock were observed along the roadside on Birch Avenue. The vegetation, hydrology, and observed surface soils indicate a wetland habitat.

Sphagnum moss, marginal wood fern, raspberries, conifers and hardwoods, such as maple and oak, were observed through the residential and wooded area leading to West Pond. West Pond was approximately 90 feet by 60 feet and approximately 1 to 2 feet deep in the middle during the October 2008 site visit. Duckweed was present in some locations with northern white cedar, hemlock, alder, sensitive fern, and ward's fern around the perimeter of the water body and inundated grasses observed at the southern edge of the pond. The south end of the pond is bermed and a slow discharge flow exited through the berm to the south. The west side of the pond is densely grown with large cedar and hardwoods. Another smaller ponded area occurred to the west of West Pond and was connected to it by what appeared to be a drainage ditch. A drainage ditch from one of the nearby residential properties with flowing water entered this smaller ponded area. Duckweed was thick in the drainage ditch between the smaller pond and West Pond. A grove of cedars is located between the two ponds. A spring on the northeast edge of West Pond appears to be the primary water source for the pond. The area was densely wooded to the north and west with mixed conifers and hardwoods. Large white cedars and red maples were the dominant trees. In the more open areas around the pond grasses, asters, wild geranium and wood mint were observed. Frogs were also observed, but fish were not evident. The area is bordered by the trailer park lots to the east and residences on large wooded lots to the west. The vegetation and hydrology observed in the vicinity of West Pond indicates a wetland habitat.

Lakeview Cemetery, located on the northern side of Lakeview Avenue across from Birch Avenue, is upland and dry; however, a drainage ditch was present along edge of the road which becomes deeper and wetter East of 97 Lakeview Road, an area of shallow standing water and grassy hummocks approximately 30 feet by 40 feet area was present. Small trees less than 1 foot in diameter surrounded the perimeter and asters, rice-cutgrass, steeplebush, jewelweed, ferns, sensitive fern, and raspberry were observed. Alder and cedar were present as well as white birch to the north and east of the emergent marsh area. Winterberry was present along the road edge of this wooded area heading east along Lakeview Avenue. Cattails, reed canary grass, and rice cutgrass were present in the ditch. The standing water and vegetation indicate a wetland habitat, but the extent of the wetland area was not determined.

2.3 Selection of Specific Ecological Receptors and Receptor Pathways

Ecological receptors are the components of ecosystems (i.e., species or sensitive habitats) that are or may be adversely affected by a chemical, physical, or biological stressor. Receptors can be any part of an ecological system, including species, populations, communities, and the ecosystem itself. The SLERA is focused on the pathways for which (1) chemical exposures are the highest and most likely to occur, and (2) there are adequate data pertaining to the receptors, exposure pathways, and toxicity for completion of risk analyses.

Potentially complete exposure pathways for ecological receptors were identified through a review of historic site information and a site visit by a qualified ecologist. Exposure pathways for several groups of ecological receptors were identified as potentially relevant. Each exposure pathway includes a potential source of COPC, an environmental medium (e.g., surface soil), and a potential exposure route, including receptors. Incomplete routes of exposure were not evaluated in the SLERA. This approach is used to focus the risk

evaluation on exposure pathways that are considered potentially complete and for which there are adequate data pertaining to the receptors, exposure, and toxicity for completion of the risk analysis.

On the FUDS property, on-site surface soil is the primary medium of potential ecological concern. On-site groundwater may discharge to surface water bodies located off the FUDS property and ecological receptors may be exposed to COPCs in the water or sediment. Although chemical stressors may be present in groundwater and sub-surface soils at the site, no ecological exposure pathways are complete to sub-surface soil or on-site groundwater. Off-site groundwater itself is not a medium of concern; however, when the groundwater discharges to off-site surface water bodies aquatic receptors may become exposed to COPCs.

Based on a review of site documents and the reconnaissance survey information, the following potentially complete ecological exposure pathways have been identified:

- Terrestrial plants and invertebrates exposed directly to COPCs in on-site surface soils;
- Terrestrial wildlife receptors exposed to COPCs via consumption of impacted plant items; and
- Amphibians, benthic invertebrates, and aquatic receptors in off-site surface water bodies exposed to COPCs in groundwater discharge.

Although higher trophic wildlife receptors (i.e., birds and mammals) are likely to be present in the vicinity of the off-site water bodies, impacts due to bioaccumulation of COPCs are unlikely. The COPCs are volatile organic compounds (VOCs) which are likely to dissipate from the surface water and are not likely to bioaccumulate into prey items. Therefore, potential risks to birds and mammals in the off-site water bodies have not been evaluated in this SLERA.

2.4 Selection of Assessment and Measurement Endpoints

According to the USEPA (1998), assessment endpoints are formal expressions of the actual environmental value to be protected. They usually describe potential adverse effects to long-term persistence, abundance, or reproduction of populations of key species or key habitats. Measurement endpoints are the physical, chemical, or biological aspects of the ecological system that are measured to approximate or represent assessment endpoints. Measurement endpoints are often stressor-specific and are used to evaluate the assessment endpoint with respect to potential ecological risks.

Assessment Endpoint 1: The sustainability of a small herbivorous mammal population in the mixed woodland and old field community on-site that is typical of comparable Maine sites with similar structure, morphology, and hydrology.

> Measurement Endpoint 1-1: Evaluation of the potential risks to the deer mouse due to exposure to constituents in the diet (i.e., terrestrial plants).

Assessment Endpoint 2: The sustainability of aquatic life ponds and wetlands in the vicinity of the site that is typical of comparable Maine sites with similar structure, morphology, and hydrology.

> Measurement Endpoint 2-1: Comparison of porewater and off-site groundwater concentrations against surface water screening levels designed to be protective of aquatic life. In the absence of surface water data, these media were assumed to provide acceptable surrogates for surface water.

These endpoints were selected to evaluate whether or not populations of ecological receptors are potentially at risk from exposure to chemical stressors in the various media evaluated at or near the site.

Although potential exposure pathways for terrestrial plants and invertebrates were identified in Section 2.3, ecological benchmarks for the site-related constituents were not available. Therefore, appropriate measurement endpoints were not available to evaluate these receptors. The site-related COPCs are VOCs which are likely to dissipate from the surface soil such that exposure for terrestrial plants and invertebrates is likely to be minimal. Since these constituents do not generally persist in the surface soil, few terrestrial benchmarks have been developed.

It is assumed that benthic receptors present in the ponds will be primarily exposed to COPCs in groundwater discharging into the water bodies. VOCs discharged into the surface water are expected to volatilize from the surface of the water rather than settle into the sediment. Therefore, the comparison of groundwater and porewater concentrations against surface water screening values is assumed to be protective of this exposure pathway. Surface water screening values are designed to be protective of aquatic invertebrates (among other aquatic receptors), so it is assumed that they are sufficiently protective of benthic invertebrates exposed to COPCs discharging to the water bodies.

2.5 Data Evaluated in SLERA and Identification of COPECs

As described in Section 2 of the Human Health Risk Assessment (HHRA; presented in Appendix 6 of Johnson Co., 2009), data were available for on-site soil, on- and off-site groundwater, and off-site porewater. Sampling locations considered in the SLERA are presented in Figure 2-1.

Soil data were collected between March 2004 and June 2006. Soil samples collected were collected for a variety of investigative purposes and represent depths from 0.5 to 10 feet deep. Terrestrial ecological receptors are only likely to encounter COPCs in surface soils, generally the top few feet. None of the soils samples were collected beginning at the ground surface (most shallow starts at 0.5 ft), so the surface soils evaluated in the SLERA were those collected within the top 3.5 ft of the ground surface.

Groundwater data collected between June 2006 and April 2008 were considered most representative of current and potential future site conditions. Therefore, only data from these sampling events were evaluated in the SLERA. Since there are no on-site surface water bodies, on-site groundwater data were not evaluated in the SLERA. Since groundwater discharges to the surface as springs or seeps near the site, the off-site groundwater was evaluated in the SLERA. These data were assumed to represent concentrations to which ecological receptors within the pond and wetlands might be exposed.

Porewater samples were collected in order to assess the off-site ponds, ephemeral streams, seeps and wetlands. Porewater samples were collected from the following locations: the dug well near GB-DW-22 (GB-SW-01), West Pond (GB-SW-04), East Pond (GB-SW-02) and the north-south ditch between mobile homes south of the former GAT facility (SW-03). East Pond is ephemeral and West Pond is perennial. The porewater samples were used to estimate possible concentrations in the surface water bodies.

As described in the Work Plan (Johnson Co., 2008), the primary constituents of concern at the site have been identified during previous investigations as chlorinated volatile organic compounds (CVOCs); particularly trichloroethylene (TCE) and its degradation products; cis-1, 2 dichloroethene (cis-1, 2 DCE) and vinyl chloride. Information previously collected indicates that low levels of dissolved or sorbed-phase TCE have existed and may still exist in soils and groundwater. Chlorinated solvents, including TCE were reportedly used on the site to clean electronics and generators, to degrease fittings, and to prepare surfaces for new paint. Therefore, the COPCs for this SLERA have been limited to VOCs detected in surface soil and porewater.

Constituents of potential ecological concern (COPECs) were identified based on the comparison of detected VOC data against ecological benchmarks. COPECs represent the COPCs retained after the ecological benchmark screening. COPECs may warrant additional investigation.

2.6 Ecological Conceptual Site Model

Section 3 of the Remedial Investigation/Feasibility Study (Johnson Co., 2009) presents a discussion of the potential sources of CVOCs related to historic activities at the site and the fate and transport of these constituents in the environment. As indicated previously, these constituents were present in solvents used to clean electronics and generators, to degrease fittings, and to prepare surfaces for new paint.

The ecological CSM describes how potential exposure to COPCs might pose a potential risk to the ecosystem and ecological receptors at and near the site. The CSM helps describe the origin, fate, transport, exposure pathways, and receptors of concern at the site.

Past site operations may have resulted in direct releases of constituents to soil in the form of leaks in drains and wastewater pipes, discharges to the cesspool, or disposal of debris on-site. Constituents in soil may migrate downward into sub-surface soil and ultimately to on-site groundwater. Dissolved constituents in groundwater may migrate to off-site groundwater and may eventually discharge to downgradient streams and ponds.

Based on available information, the media of interest for the SLERA are:

- On-site surface soil;
- Off-site groundwater (representing off-site surface water exposure); and
- Off-site porewater (representing off-site surface water exposure).

As described in Section 2.3, terrestrial plants and invertebrates, and higher trophic level wildlife receptors may be exposed to on-site surface soils via direct contact or ingestion, respectively. Groundwater discharge may expose aquatic and benthic receptors to COPCs in the surface water bodies. Exposure to surface water is expected to be limited because of the small size and ephemeral nature of the surface water bodies.

3.0 Risk Analysis

The risk analysis phase of the SLERA is based on the CSM developed in problem formulation. Risk analysis includes the characterization of potential ecological exposure and corresponding effects. The ecological exposure assessment involves the identification of potential exposure pathways and an evaluation of the magnitude of exposure of identified ecological receptors. The ecological effects assessment describes the potential adverse effects associated with the identified COPCs to ecological receptors and reflects the type of assessment endpoints selected.

In this screening level risk assessment, potential risk was estimated by calculating hazard quotients (HQs). For the exposure pathways identified in Section 2.3, the highest measured constituent concentration for each environmental medium was used to estimate exposure to constituents in the SLERA. This conservative method was used to make sure that potential risks are being fully addressed.

Screening level HQs were calculated by comparing the maximum detected concentration (or dose) of each constituent in each medium to the appropriate ecological screening value using the following formula:

Hazard Quotient = Maximum Detected Concentration/Ecological Screening Value

Constituents with maximum concentrations less than their respective literature-derived screening values (i.e., HQs<1) were not retained as COPECs. Constituents with maximum concentrations in excess of the ecological screening values were retained as COPECs. Constituents with no applicable screening value were retained as COPECs, as appropriate. Those COPECs lacking screening values were assessed for potential ecological risk, as feasible, and were considered in the uncertainty analysis.

The presence of COPECs in environmental media at concentrations which exceed benchmark screening values does not necessarily constitute ecological risk. For instance, certain COPECs may not be absorbed into an organism's system following ingestion, or may not be absorbed through direct contact due to the chemical form of the COPECs. The decision concerning the necessity for further evaluation requires the weighing of such factors as the frequency, magnitude, and pattern of these exceedences.

3.1 Surface Water Evaluation

To evaluate the potential risks associated with exposure to COPECs in surface water, the maximum concentrations of each constituent in off-site groundwater and in porewater were compared to its respective chronic surface water risk-based benchmark. The primary source for potential benchmarks was the Maine surface water criteria (MRSA Ch. 584). However, Ch. 584 does not include aquatic life criteria continuous concentration (CCC) values for the detected VOCs.

The USEPA Region III Biological Technical Assistance Group (BTAG) screening values list (USEPA Region III, 2008) provides surface water benchmarks for most of the detected VOCs. BTAG selected the criteria according to an established hierarchy, after evaluating criteria from numerous sources including Suter and Tsao (1996), the Canadian Council of Ministers of the Environment (CCME), USEPA Office of Solid Waste and Emergency Response (OSWER), the Great Lakes Water Quality Initiative (GLWQI), and state agencies. According to USEPA Region III, priority was given to values based on direct toxicity over food chain modeling and values under consideration were rejected if the source documents did not provide original citations and the ECOTOX database indicated no studies were available. Acute and sub-acute exposures and lethal endpoints were accepted if appropriate safety factors were applied. Based on the careful selection process, the Region III BTAG surface water criteria are considered appropriate for use at the site.

When values were not available from the Region III BTAG, alternative literature sources were also considered.

3.2 Surface Soil Evaluation

To identify COPECs in the surface soil data set, the maximum concentration of each constituent was compared to its respective soil risk-based benchmark. Ecological benchmarks for soil, such as USEPA ecological soil screening levels (Eco-SSLs) are not available for the detected VOCs. Maine's Bureau of Waste Management and Remediation provides SSLs based on potential risks to human health, but Maine SSLs for ecological receptors are not available. No benchmarks were found for terrestrial soil invertebrates, plants amphibians, or avian receptors, so these receptors could not be evaluated.

To address potential risks to terrestrial receptors, soil benchmarks for the deer mouse were identified in *Toxicological Benchmarks for Wildlife* (Sample et al, 1996). As described in the Work Plan (Johnson Co., 2008), the screening makes the conservative assumption that the concentration of the constituent in food equals the concentration of the constituent in soil. Wildlife benchmarks based on both no observed adverse effect levels (NOAEL) and lowest observed adverse effect levels (LOAELs) were selected.

4.0 Risk Characterization

Risk characterization provides a quantitative evaluation of the potential for adverse ecological impacts due to COPECs in an area of concern. The ecological risk characterization integrates the results of the exposure and effects phases of work (i.e., risk analysis), and presents an integrated approach to provide estimates of actual or potential risks to ecological receptors.

The results of the environmental risk analysis are analyzed and interpreted to determine the likelihood of adverse environmental effects, and to determine whether a conclusion of no significant risk can be reached for each assessment endpoint evaluated. This ecological risk characterization summarizes the results of the risk analysis phase of work and provides an interpretation of the ecological significance findings.

4.1 Surface Water Evaluation

As noted in Section 2.5, off-site groundwater and porewater data have been used as surrogates for surface water exposure within the off-site ephemeral streams, seeps, ponds, and wetlands. The comparison the maximum detected concentrations in these media against surface water screening values is highly conservative since the concentrations within the surface water body are likely to be diluted as the groundwater is discharged. Tables 4-1 and 4-2 present the screening of the porewater and off-site groundwater data, respectively.

As presented in Table 4-1, four VOCs were detected in the porewater: 1,3-dichlorobenzene, cis-1,2-dichloroethene, toluene, and trichloroethylene. Region III BTAG screening values were available for all four VOCs (a structural surrogate was used for cis-1,2-dichloroethene). Toluene is the only constituent with an HQ greater than 1 (HQ = 3.6). Further examination of the data (data tables available in Appendix 4 of Johnson Co., 2009) shows individual concentrations of toluene exceeded the screening value twice in GB-SW-02 located near East Pond. Exceedances were not noted in any other off-site porewater sampling locations or off-site groundwater (discussed below).

As stated previously, porewater concentrations are likely to over-estimate the concentrations to which ecological receptors are exposed in the surface water. When groundwater and porewater are discharged to a water body, the concentrations of COPCs are diluted immediately due to the larger volume of the receiving water body. Therefore, aquatic receptors are not directly exposed to the COPC levels in groundwater and porewater, but are exposed a more diluted concentration in the surface water. The level of dilution varies widely based on the water flow and the volume of the receiving water body. If a conservative ten-fold dilution is assumed for the porewater data (for the porewater discharging into the stream or pond), then all of the porewater HQs are less than 1.

Table 4-2 indicates that three VOCs were detected in off-site groundwater: methyl tert butyl ether (MTBE), toluene, and trichloroethylene. Region III BTAG values were available for toluene and trichloroethylene and a CCC derived by Mancini, et al., (2002) was used for MTBE. All off-site groundwater HQs were less than 1.

4.2 Surface Soil Evaluation

Table 4-3 presents the evaluation of on-site surface soil data against soil screening values derived to be protective of the deer mouse. Three VOCs were detected in the top 3.5 ft of soil: 2-butanone, acetone, and trichloroethylene. Maximum detected concentrations in surface soil were converted to doses in order to compare them to the ecological benchmarks. As described in the Work Plan (Johnson Co., 2008), the screening makes the conservative assumption that the concentration of the constituent in food equals the

concentration of the constituent in soil. The dose was derived using the following equation and receptor body weight and food intake values from Sample et al (1996):

Dose (mg/kg-day) = Maximum Detected Concentration (mg/kg) x Food Intake (kg/day) / Body Weight (kg)

The doses were compared against soil benchmarks based on NOAELs and LOAELs (Sample, et al., 1996). None of the resulting HQs were above 1.

4.3 Uncertainty Analysis

Uncertainty is introduced into the SLERA in several places throughout the process. Every time an assumption is made, some level of uncertainty is introduced into the risk assessment. The major areas of uncertainty include: the adequacy of site characterization, the quality of the analytical data, the level of conservatism, and the availability of the medium-specific screening values. Although the uncertainties may potentially over- or under-estimate risk for a site, the SLERA has been designed to serve as an extremely conservative first approximation of the potential for ecological risk, and therefore deliberately over-estimates the potential for risk through use of a number of conservative assumptions.

The emphasis of the uncertainty analysis is to discuss the assumptions and data gaps of the SLERA process that may influence the risk characterization results and assessment conclusions. General uncertainties inherent in the risk assessment process, as well as uncertainties specific to this site are discussed below.

4.3.1 Uncertainties Associated with Natural System Variability

Numerous factors may influence the bioavailability of constituents in the environment. In soil, for example, factors such as pH and organic carbon levels may affect constituent bioavailability. Although it is likely not the case, in accordance with USEPA guidance, constituents were conservatively assumed to be 100% bioavailable for the purposes of this SLERA analysis.

The analytical results may not be representative of all site conditions across the seasons. This may result in an over-estimation or under-estimation of the risk.

4.3.2 Uncertainties Associated with Analytical Data

As indicated in Section 2.5, the data evaluated in this SLERA were collected as part of various site investigations. The focus of these investigations was generally on the nature and extent of site-related VOCs, not on assessing ecological risk or evaluating potential ecological habitat. Therefore, the data set available for evaluation in the SLERA contained media to which ecological receptors would not be exposed (i.e., soils 10 ft deep or groundwater).

The data were reviewed to focus the SLERA on the most surficial soil samples; however, only 12 of the 27 soil samples were collected at depths of less than 3.5 ft and not all constituents were analyzed in each of these sample (trichloroethylene and acetone were analyzed in all samples). None of these samples represented the horizons often used to evaluate the potential for risks to terrestrial receptors (0 to 1 or 2 ft deep). Since ecological receptors are not generally exposed to deeper soils, the inclusion of some deeper samples (i.e., 3 to 3.5 ft) in the SLERA may over-estimate the potential for risks. There is some uncertainty in the evaluation since the 0 to 0.5 ft horizon is not captured in the available samples. Due to the volatile nature of the COPCs, it is anticipated that concentrations would be lower at the soil surface and risk may be overestimated by using deeper soil.

Groundwater and porewater were conservatively used to estimate risks in surface water since surface water data were not available. As stated previously, groundwater and porewater concentrations would be diluted

significantly upon discharge to the water body. Therefore, the use of these data may over-estimate risks due to surface water exposure.

In the absence of sediment data, it was assumed that the conservative evaluation of groundwater and porewater data would be protective of benthic receptors. Since surface water screening values are designed to be protective of aquatic invertebrates (among other aquatic receptors), so was assumed that they would be sufficiently protective of benthic invertebrates exposed to COPCs discharging to the water bodies. These benthic receptors may be exposed to constituents in groundwater as it discharges through the sediment and into the water. Due to the volatile nature of the site-related constituents it is unlikely that the constituents would remain in the sediment; therefore this assumption is not likely to under-estimate risks to benthic receptors.

4.3.3 Uncertainties Associated with Benchmark Evaluation

The risk screening is based on the assumption that all constituents are 100% bioavailable and that the most sensitive life stages of all organisms are present. The screening values are very conservative and often based on toxicity tests performed with very sensitive test organisms. These factors are likely to over-estimate the actual risk to receptors.

No ecological benchmarks were found for terrestrial soil invertebrates, plants, amphibians or avian receptors, so these receptors could not be evaluated. This results in some uncertainties in the SLERA. Few VOCs were detected in the surface soils so it is anticipated that most VOCs have dissipated over time and adverse impacts to plants and invertebrates exposed to surface soil are likely to be minimal. It is anticipated that the surface water screening evaluation would also be protective of amphibians. Impacts to birds were not evaluated due to a lack of screening values. Impacts to the deer mouse were not predicted due to the low levels of VOCs in the surface soil and similar results would be anticipated for birds. However, this cannot be confirmed without an avian screening value.

The comparison of groundwater and porewater concentrations against surface water screening values is also likely to over-estimate potential risks to aquatic receptors. Dilution will likely reduce the groundwater concentrations substantially upon discharge.

The ecological screening values used in this SLERA do not generally account for possible synergistic, antagonistic, or additive effects of contaminant mixtures. These factors may result in an under-estimate or over-estimate of potential risks.

5.0 Summary and Conclusions

This SLERA provides an analysis of the potential for adverse environmental effects on ecological receptors and resources at or near the site due to exposure to site-related COPCs. The results of this SLERA suggest that ecological receptors are not at risk from exposure to VOCs detected in off-site porewater, off-site groundwater, or on-site surface soil.

Aquatic and benthic receptors may be exposed to COPCs present in groundwater as it discharges into off-site surface water bodies. Exposure to COPCs in surface water is expected to be limited because of the small size and ephemeral nature of the surface water bodies. To evaluate this potential exposure pathway, two surface water surrogates were evaluated: off-site porewater and off-site groundwater. No constituents in off-site groundwater were present in excess of the surface water screening values. Toluene in off-site porewater was present above the surface water screening value; however, a conservative consideration of dilution into the water body (i.e., a ten-fold dilution) indicates that toluene is not likely to result in adverse impacts to ecological receptors (HQ = 0.36). Therefore, discharge of groundwater to off-site water bodies is not expected to result in adverse impacts to ecological receptors in the ponds, streams, or wetlands.

The deer mouse was selected as the representative terrestrial receptor for exposure to surface soil. Few VOCs were detected in the surface soil data set. The detected VOC concentrations were converted into doses for the deer mouse and compared against soil screening levels. The screening indicated that none of the detected VOCs is expected to adversely impact the deer mouse.

The results of the evaluation of off-site porewater, off-site groundwater, and on-site surface soil indicate that adverse effects to ecological receptors at or near the site are unlikely. Therefore, no further investigation is recommended.

6.0 References

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Tables

Table 4-1
Comparison of Porewater Data against Ecological Screening Values
Former Glenburn GAT Facility
Glenburn, Maine

Constituent (a)	CAS Number	Maximum Detected Concentration (b) (µg/l)	Location of Maximum Detected Concentration	Freshwater Screening Benchmarks (µg/l)		Maximum Hazard Quotient (d)
1,3-Dichlorobenzene	541-73-1	2.20E+00	GB-SW-04	1.50E+02	(c)	1.47E-02
cis-1,2-Dichloroethene	156-59-2	6.00E-01	GB-SW-04	9.70E+02	(c,d)	6.19E-04
Toluene	108-88-3	7.10E+00	GB-SW-02	2.00E+00	(c)	**3.55E+00**
Trichloroethylene	79-01-6	3.60E+00	GB-SW-04	2.10E+01	(c)	1.71E-01

Notes:
CAS - Chemical Abstracts Service.
(a) Only constituents detected at least once are shown.
(b) Maximum detected concentration in off-site pore water from June 2006 through April 2008.
(c) USEPA, 2008. Region III Biological Technical Assistance Group. Freshwater Screening Benchmark Values. September 2008.
http://www.epa.gov/reg3hwmd/risk/eco/btag/sbv/fw/screenbench.htm
(d) Value for trans-1,2-Dichloroethene used as a surrogate due to structural similarities.
(e) Hazard Quotient = Concentration/ Benchmark. Values > 1 indicated with boldface and shading.

Table 4-2
Comparison of Off-site Groundwater Data against Ecological Screening Values
Former Glenburn GAT Facility
Glenburn, Maine

Constituent (a)	CAS Number	Maximum Detected Concentration (b) (µg/l)	Location of Maximum Detected Concentration	Freshwater Screening Benchmarks (µg/l)		Maximum Hazard Quotient (e)
Methyl tert butyl ether	1634-04-4	1.47E+01	GB-DW-61	1.81E+04	(d)	8.14E-04
Toluene	108-88-3	5.00E-01	GB-DW-79	2.00E+00	(c)	2.50E-01
Trichloroethylene	79-01-6	5.10E+00	GB-DW-22 (f)	2.10E+01	(c)	2.43E-01

Notes:
CAS - Chemical Abstracts Service.
(a) Only constituents detected at least once are shown.
(b) Maximum detected concentration in off-site groundwater from Spring 2005 through September 2008.
(c) USEPA, 2008. Regional Screening Levels for Chemical Contaminants at Superfund Sites. Value for Tap Water. September 2008.
http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm
(d) Criterion continuous concentration derived by Mancini, et al. (2002).
(e) Hazard Quotient = Concentration/ Benchmark. Values > 1 indicated with boldface and shading.
(f) Concentration before filtration.

Table 4-3
Comparison of On-site Surface Soil Data against Ecological Screening Values
Former Glenburn GAT Facility
Glenburn, Maine

Constituent (a)	CAS Number	Maximum Detected Concentration (mg/kg)	Maximum Dose (c) (mg/kg-day)	Location of Maximum Detected Concentration	Depth (fbgs)	Wildlife Benchmark Deer Mouse (d) (mg/kg-day)		Maximum Hazard Quotient (e)	
						NOAEL	LOAEL	NOAEL-based	LOAEL-based
2-Butanone	78-93-3	2.50E-02	3.86E-03	GBTP01-1-2	1-2	3.54E+03	9.13E+03	1.09E-06	4.23E-07
Acetone	67-64-1	1.40E-01	2.16E-02	GBTP01-1-2	1-2	2.00E+01	9.99E+01	1.08E-03	2.17E-04
Trichloroethylene	79-01-6	1.10E-03	1.70E-04	GB-SB-04B	3-3.5	7.56E-01	7.56E+00	2.25E-04	2.25E-05

Notes:
CAS - Chemical Abstracts Service.
fbgs - Feet Below Ground Surface.
LOAEL - Lowest Observed Adverse Effects Level.
NA - Not available or not applicable.
NOAEL - No Observed Adverse Effects Level.
(a) Only constituents detected at least once in surface soil (0-3 feet) are shown.
(b) Sum of o-, m-, and p-Xylenes.
(c) Dose (mg/kg-day) derived from detected soil concentrations from March 2004 and June 2006
using White Footed Mouse weight and food intake values from Sample et al (1996; Table 1):
Body Weight (kg) 0.0220
Food Intake (kg/day) 0.0034
where Dose (mg/kg-day) = Maximum Detected Concentration (mg/kg) x Food Intake (kg/day) / Body Weight (kg)
(d) Sample et al, 1996. Toxicological Benchmarks for Wildlife. Risk Assessment Program, Health Sciences Reseach Division. Oak Ridge, TN. June 1996.
(e) Hazard Quotient = Dose/Wildlife Benchmark. Values > 1 indicated with boldface and shading.

Figures

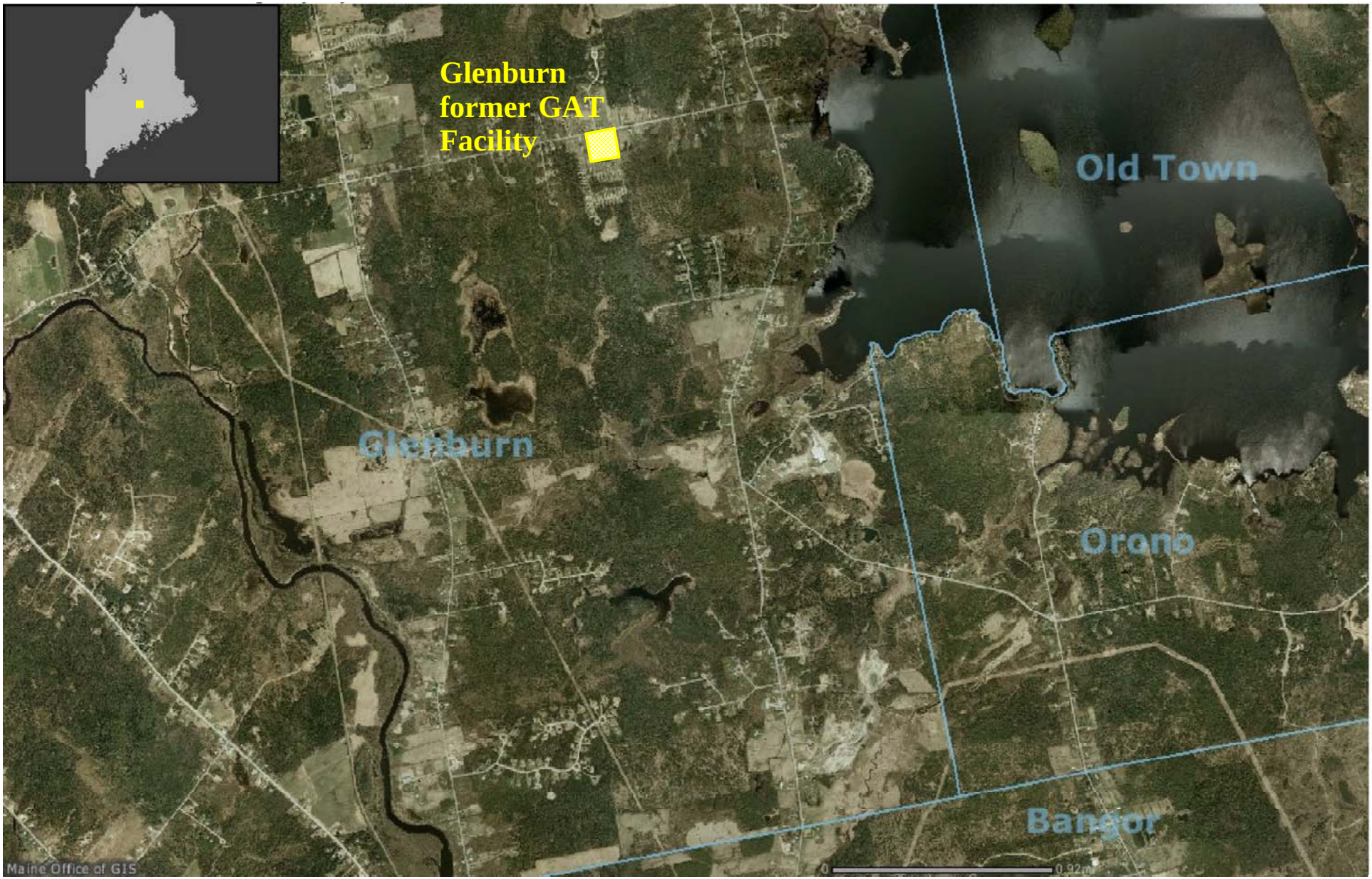
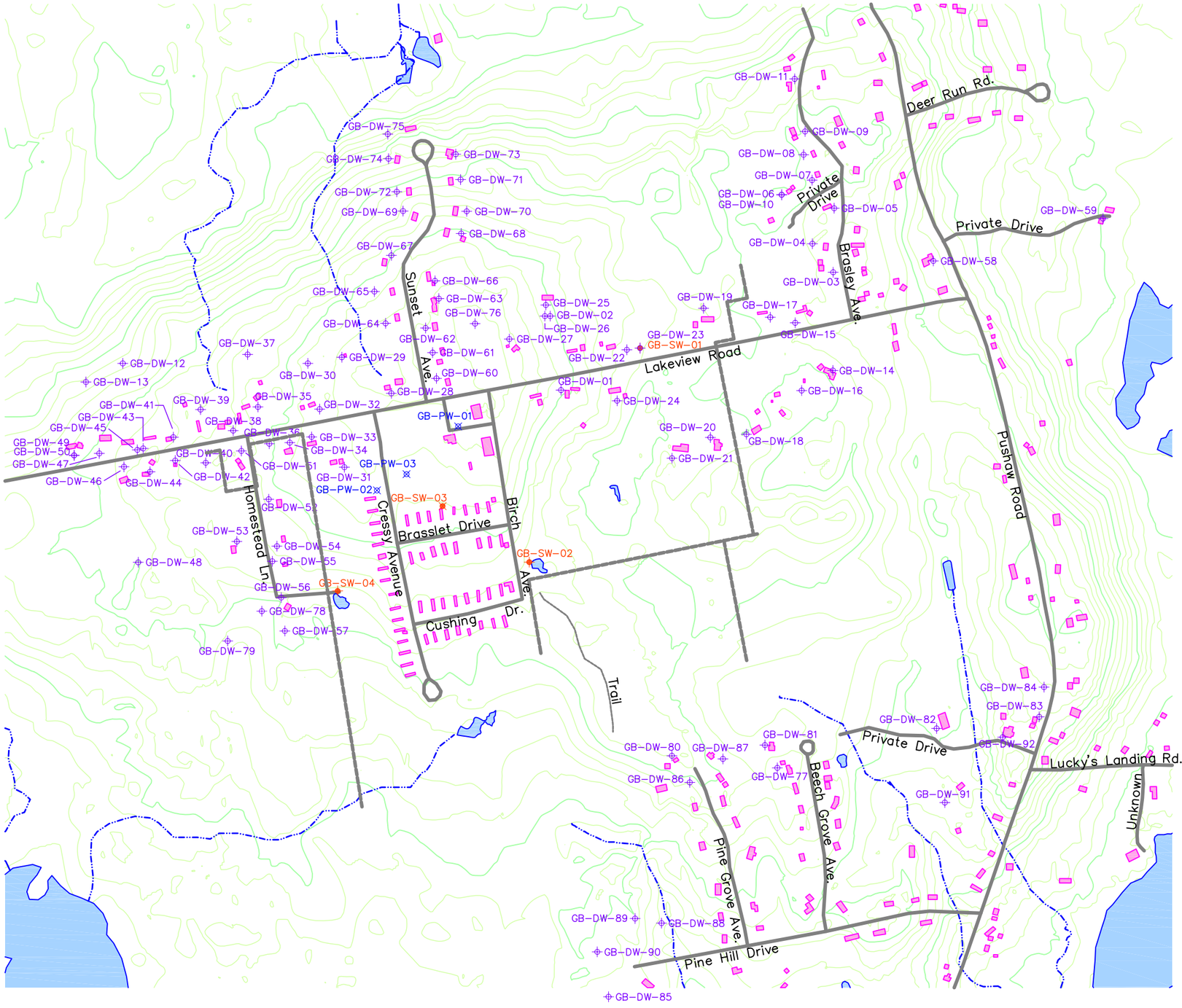


Figure 1-1: Site Location Map - Former GAT Facility - Glenburn, Maine

From Maine GIS On-line photograph downloaded August 13, 2008 Prepared by The Johnson Co., Montpelier, VT 1-2128-9_RIFS field Data_fig1siteloc 030509.srf-pdf



LEGEND

- ON-SITE GROUNDWATER SAMPLING LOCATION
- OFF-SITE GROUNDWATER SAMPLING LOCATION
- ON-SITE PORE WATER SAMPLLING LOCATION
- OFF-SITE PORE WATER SAMPLLING LOCATION
- EXISTING BUILDING LOCATION
- SURFACE WATER BODY
- SURFACE WATER / DRAINAGE
- 5' GROUND SURFACE CONTOUR (FT NAD83)
- 25' GROUND SURFACE CONTOUR (FT NAD83)
- ROAD

NOTE: CONTENTS FROM USACE TEC 2004

N

TRUE NORTH

0 250 500 750

SCALE IN FEET

Sample Locations.dwg

The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602
(802) 229-4600

Drawn by: TJK Date: 10/19/10
Chk'd by: SMD Date: 10/19/10
Scale: As Shown Project: 1-2128-9

FIGURE 3.4-1: WATER SUPPLY AND PORE WATER SAMPLE LOCATIONS FORMER GAT STUDY AREA GLENBURN, MAINE

APPENDIX 7

FS COST CALCULATIONS

Prepared by The Johnson Company **Project Name: Glenburn Feasibility Study Cost Estimate**

Submitted to the USACE New England District **Contract No: W912WJ-05-D-0006 RFP #9**

LABOR CATEGORY	Ave. 2008 RATE $/hr	NO ACTION RA #1	MNA and IC RA #2 1st Year	MNA and IC RA #2 Annual	Pump & Treat Installation RA#3	Pump & Treat O&M Annual RA#3
Program Manager	$57.00		$855	$228	$228	$228
Senior Project Manager	$43.00		$645	$430	$344	$344
Senior Hydrogeologist	$44.00		$1,760	$440	$6,160	$176
Mid Hydrogeologist	$32.00		$6,400	$2,880	$6,400	$5,600
Sr. Env. Engineer	$32.00		$0	$0	$0	$0
Jr. Scientist	$20.00		$3,200	$1,800	$4,000	$0
Sr. Technician	$21.00		$0	$1,890	$4,200	$1,680
Contract Administrator	$35.00		$210	$70	$420	$0
Sr. Comp/CADD Operator	$32.00		$320	$320	$256	$0
Word Processor	$18.00		$360	$180	$288	$288
SUBTOTAL			$13,750	$8,238	$22,296	$8,316
OVERHEAD ON DIRECT LABOR @	40.0%		$5,500	$3,295	$8,918	$3,326
G & A OH @	135%		$18,563	$11,121	$30,100	$11,227
TOTAL LABOR + ODL + G&A OH		**$0**	**$37,813**	**$22,655**	**$61,314**	**$22,869**
DIRECT EXPENSES						
Equipment and Direct Expenses			$8,192	$4,410	$14,150	$3,873
TRAVEL			$6,551	$7,198	$4,521	$2,277
TOTAL DIRECT EXPENSES		**$0**	**$14,743**	**$11,608**	**$18,671**	**$6,150**
SUBCONTRACTOR COSTS						
Long Term Monitoring (including $57,000 for new well pair)			$72,000	$7,200		
Pump & Treat Installation					$20,373	
Operation and Maintenance				$3,000		$4,900
TOTAL SUBCONTRACTOR		**$0**	**$72,000**	**$10,200**	**$20,373**	**$4,900**
TOTAL LABOR, ODL, G&A OH, Subcontractors and Direct Expenses	---------		$124,556	$44,462	$100,358	$33,919
FEE (excluding travel) @	**9.00%**		$10,620	$3,354	$8,625	$2,848
TOTAL COST & FEES		**$0**	**$135,176**	**$47,816**	**$108,983**	**$36,767**
		None	**1st Year**	**Annual**	**One-time**	**Annual**

TOTALS	RA #1	RA #2	RA #3
Annual Costs (2011 $)	**$0**	**$47,816**	**$84,583**
One-Time 1st Year Costs (2011 $)	**$0**	**$135,176**	**$244,159**
Total 30-year Costs Present Worth (MNA monitoring 1st year only)	**$0**	**$1,206,258**	**$2,138,827**

2% interest P/A, 30 yrs = 22.4

2% interest from OMB Circular (A-94) updated 12/2011

REMEDIAL ALTERNATIVES

RA #1: NO ACTION

RA #2: MONITORED NATURAL ATTENUATION (MNA), DW-22 CARBON SYSTEM O&M, INSTITUTIONAL CONTROLS

RA #3: PUMP-AND-TREAT PLUS RA#2

Prepared by The Johnson Company
Submitted to the USACE New England District

Project Name: Glenburn Feasibility Study Cost
Contract No: W912WJ-05-D-0006 RFP #9

LABOR DETAIL BY TASK

		RA #1: No Action		RA #2: MNA and Institutional Controls Initial Costs		RA #2: MNA and Institutional Controls Annual Costs		RA #3 Pump and Treat Installation		RA #3 Pump and Treat O&M Annual Costs	
LABOR CATEGORY	**Average 2008**	**HRS**	**TOTAL $**	**HRS**	**TOTAL $**	**HRS**	**TOTAL $**	**HRS**	**TOTAL $**	**HRS**	**TOTAL $**
Program Manager	$57.00		$0	15	$855	4	$228	4	$228	4	$228
Senior Project Mgr	$43.00		$0	15	$645	10	$430	8	$344	8	$344
Senior Hydrogeologist	$44.00		$0	40	$1,760	10	$440	140	$6,160	4	$176
Mid Hydrogeologist	$32.00		$0	200	$6,400	90	$2,880	200	$6,400	175	$5,600
Sr. Env. Engineer	$32.00		$0		$0		$0		$0		$0
Jr. Scientist	$20.00		$0	160	$3,200	90	$1,800	200	$4,000		$0
Sr. Technician	$21.00		$0	0	$0	90	$1,890	200	$4,200	80	$1,680
Contract Admin.	$35.00		$0	6	$210	2	$70	12	$420		$0
Sr. CADD Operator	$32.00		$0	10	$320	10	$320	8	$256	0	$0
Word Processor	$18.00		$0	20	$360	10	$180	16	$288	16	$288
SUBTOTAL LABOR		0	$0	466	$13,750	316	$8,238	788	$22,296	287	$8,316
OH on DL @	40.0%		$0		$5,500		$3,295		$8,918		$3,326
G & A OH @	135%		$0		$18,563		$11,121		$30,100		$11,227
TOTAL LABOR + ODL + G&A OH			**$0**		**$37,813**		**$22,655**		**$61,314**		**$22,869**
			None		**One Time**		**Annual**		**One Time**		**Annual**
Assumptions		No monitoring or reporting		Five events of MNA sampling in GB-MW-01 and GB-MW-02 in first year and Institutional Controls Implementation		Institutional Controls Confirmation and 5-year reporting extrapolated over 30 years, one LTM event annually = 3 people-five 12-hr days on-site, 2 travel days, one report/yr		2 people, on-site 12 days, 6 days travel, pump test, design and reporting		four events/year, 2 people, total 4 days on-site, 4 days travel, 4 reports/yr	

Prepared by The Johnson Company **Project Name: Glenburn Feasibility Study Cost Estimate**

Submitted to the USACE New England District **Contract No: W912WJ-05-D-0006 RFP #9**

Item	RA #1 Cost	Natural Attenuation - first year monitoring (5 events) and Institutional Controls Implementation	Natural Attenuation and Long Term Monitoring RA #2 and #3 Annual Costs	Pump and Treat RA #3 Installation	Pump and Treat RA #3 O&M Annual Costs	Total	Billing Rate/Unit	Units
Telephone / Fax /cell phone		$567	$340	$920	$343		1.5% of labor cost	
Reprod. (prelim, draft & final rpts)		$1,500	$150	$500	$200		Allowance	
Support Truck		$750	$300	$900	$300		$300	weeks
Support Van			$150	$300			$150	weeks
Support Van mob/demob			$650	$650			$650	event
Autolevel-survey equipment				$100			$100	days
Trimble Sub-meter GPS				$150			$150	days
Distilled water		$50	$80	$20			$2	gallons
carbon drums, filters &disposal				$1,500			$1,500	drums
Generator (includes gas)		$500	$175	$350			$175	weeks
Grundfoss Redi-Flo2 pump		$500	$320	$320			$320	weeks
Pump, Wire and Plumbing				$3,000	$500		Allowance	
PPE, & decon. supplies		$350	$525	$840	$280		$35	man-days
Electric Power Drop & Inspection				$2,000			Allowance	
Perstaltic pump			$350				$175	weeks
Sample tubing (silicon)			$20				$2.50	feet
Steam Cleaner & water tank				$400			$200	weeks
OVM PID		$500	$200	$600	$400		$200	weeks
MNA kits/probes FIVE EVENTS		$2,500		$350	$700		50 samples	
YSI, WL marker, Turbidometer		$525	$700	$350	$700		$350	weeks
Waste rolloff + disposal (non-haz)				$600			$200	weeks
Shipping (samples & reports)		$450	$450	$300	$450		$75	coolers
Subtotal	**$0**	**$8,192**	**$4,410**	**$14,150**	**$3,873**	**$0**		
		One Time	**Annual**	**One Time**	**Annual**			

Prepared by The Johnson Company **Project Name: Glenburn Feasibility Study Cost Estimate**
Submitted to the USACE New England District **Contract No: W912WJ-05-D-0006 RFP #9**

TRAVEL AND RELATED EXPENSES - from Montpelier, VT

Task	No. of People	No. of Trips	No. of Miles Round Trip	Mileage[1]	Lodging		Meals and Incidental Expenses		Total	Assumptions
					Days	Expense[2]	Days	Expense[3]		
RA #1	0	0	520	$0	0	$0	0.0	$0	$0	
Monitored Natural Attenuation and Institutional Controls Implementation (RA #2) (1st YEAR ONLY)	2	5	520	$1,326	20	$3,080	25.0	$2,145	$6,551	2 people, on-site 5 days sampling five events, plus 10 days travel
MNA + Monitoring RA #2 and #3 (ANNUAL COST)	3	2	520	$530	18	$4,158	20	$2,510	$7,198	once/year 3 people-five 12-hr days on-site, travel-lodging - 2 travel days
Pump and Treat RA #3 (ONE TIME)	2	3	520	$796	15	$2,310	16.5	$1,416	$4,521	2 people, on-site 4 days drilling/geophysics, 4 days pump test, 4 days system installation plus 6 days travel
Pump and Treat RA #3 (ANNUAL COST)	2	4	520	$1,061	4	$616	7	$601	$2,277	four events/year, 2 people, total 4 days on-site, 4 days travel

[1] $/mile: $0.510
[2] $/day $70.00 plus taxes
[3] $/day $39.00 plus taxes

Note: Lodging and M & IE rates from: www.gsa.gov/Portal/gsa/ep/home.do?tabId=0
75% times the day rate for M & IE applies for the 1st and last days

Prepared by The Johnson Company **Project Name: Glenburn Feasibility Study Cost Estimate**
Submitted to the USACE New England District **Contract No: W912WJ-05-D-0006 RFP #9**
Costs in 2011 dollars

NOTE: RA #3 COSTS ALSO INCLUDE RA #2 COSTS

LONG TERM MONITORING ANALYTICAL COSTS Water Supply & Monitoring Wells - Once per year

Item	RA #1	RA #2	RA #3	
Water VOC 524.2 (Annual)		$7,200	$7,200	90 samples/event at $80/sample (includes QA/QC) One event/yr for RAO #2 and #3
Water MNA parameters - Nitrate/nitrite 353.2, Sulfite 376.1, Sulfate 375.4, Total phosphorous 365.2, Methane/ethane RSK-175, Ammonia 315.1 and 315.2 (Year 1 only)		$15,000	$15,000	FIRST YEAR ONLY Assume 10 samples per event, for five events TOTAL at $300/sample. DO, Temperature, ORP, SC, turbidity, PID, alkalinity, CO2, ferrous iron and pH by Field Measurement
Subtotal Analysis	**$0**	**$15,000**	**$15,000**	**First Year (RA #2 & #3)**
Subtotal Analysis	**$0**	**$7,200**	**$7,200**	**Annual (RA #2 & #3)**

Costs for Pump and Treat System GB-MW-06 used for re-injection

Item	RA #1	RA #2	RA #3	
Drilling			$1,125	75 feet @ $15/ft
Steel Casing			$148	50 feet @ $17/ft
Drilling Supplies			$500	$500/well
OSHA H&S and and Decon. Time			$1,600	8 hours @ $200/hr
Water VOC 524.2			$800	ten samples at $80/sample (includes QA/QC)
Borehole geophysics			$10,000	One well
Electrician (including misc.supplies)			$3,000	
Excavator for pipe and electrical lines			$3,200	Drilling waste disposal with excavation soils
Subtotal Drilling	**$0**	**$0**	**$20,373**	**One-time Event - RA #3**

Operations and Maintenance (annual cost)

Item	RA #1	RA #2	RA #3	
Point-of-Use Treatment System		$3,000		Carbon change out, one cannister - annual
Pump and Treat system			$1,500	Carbon change-out 1 drums/year - annual
Water VOC 524.2			$1,600	Analysis of 20 samples for pump-and-treat O & M at $80/sample
Electric Power for Pump			$1,800	20,000 KWH at $0.09/KW
Subtotal O & M	**$0**	**$3,000**	**$4,900**	**Annual Cost - RA #3**

APPENDIX 8

RAW DATA FILES (CD ONLY)

APPENDIX 9

TRIP REPORT FOR SALT SHED BORING INVESTIGATION

Prepared for:
U.S. Army Corps of Engineers
New England District

FINAL TRIP REPORT FOR SALT SHED SOIL BORING INVESTIGATION

Former Glenburn GAT Facility
Glenburn, Maine

October 2010

Prepared by:

The Johnson Company, Inc.
100 State Street, Suite 600
Montpelier, VT 05602

Task Order 0007
Contract W912WJ-05-D0006

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Acronyms and Abbreviations:

Bldg	Building
CVOC	Chlorinated Volatile Organic Compound
DQOs	Data Quality Objectives
fbgs	Feet below ground surface
ft.	Feet
GAT	Ground Air Transmitter
GPS	Global Positioning System
JCO	The Johnson Company, Inc.
MEDEP	Maine Department of Environmental Protection
MCL	Maximum Contaminant Level
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MTBE	Methyl-tert-butyl-ether
NAVD88	Reference elevation of 1988 National Geodetic Vertical Datum
PCE	Tetrachloroethene
PID	Photoionization detector
PPB	Parts per billion (equivalent to micrograms/kilogram or micrograms/liter)
PPM	Parts per million (equivalent to milligrams/kilogram or milligrams/liter)
QA/QC	Quality Assurance/Quality Control
QC	Quality Control
RAGs	Remedial Action Guidelines
RCRA	Resource Conservation and Recovery Act
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedure
SOW	Scope of Work
SSM	Site Specific Method
SSO	Site Health and Safety Officer
TCA	Trichloroethane
TCE	Trichloroethene, trichloroethylene
USACE	United States Army Corps of Engineers, New England District
USAF	United States Air Force
VOC	Volatile Organic Compounds

1.0 OVERVIEW

This document has been prepared by The Johnson Company, Inc. (JCO) under contract with the U.S. Army Corps of Engineers (USACE). This Trip Report pertains specifically to the soil boring investigation in and around the existing on-site salt storage shed and in the vicinity of GB-MW-01at the former Ground Air Transmitter (GAT) Facility in Glenburn, Maine (the Site – see Figures 1 and 2). The field activities as described in this report occurred on August 3-4, 2010.

The Site is defined in this document to include the property at the southwest corner of Lakeview Road and Birch Avenue currently owned by the Town of Glenburn. This former GAT facility property contains the Glenburn Town Hall, Public Safety Building, Salt Storage Shed, a skateboard park, and the Glenburn Town Hall Supply Well GB-PW-01. The field investigation activities documented in this report are consistent with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Maine state law, and USACE regulations. The scope of work conducted at the Site was done in accordance with JCOs previously submitted and approved Sampling and Analysis Plan (SAP) dated July 2010 (JCO, 2010).

The primary contaminants of concern at the Site have been identified during previous investigations as chlorinated and aliphatic volatile organic compounds (VOCs). Of particular interest for this additional soil boring investigation is the distribution of the primary VOC detected: trichloroethylene (TCE), in soils inside and adjacent to the existing on-site salt storage shed. Recent discussions with the State of Maine Department of Environmental Protection (MEDEP) raised questions regarding a potential contamination source area near a former wall at the Site; the existing salt storage shed has since been constructed on top of the location of the former wall (see Figure 2). It is plausible that contaminants may have been introduced to the ground surface at this location while the GAT facility was operational.

The primary goal of the additional soil boring investigation work is to identify and characterize potential TCE source area(s) underneath and along the western portion of the salt shed and in the vicinity of GB-MW-01 on the former GAT facility property.

The salt shed overburden soil investigation included installing twenty vertical boreholes via direct push technology. Continuous sampling was achieved with three foot cores from the ground surface to the gravel/top-of-till interface at each of the boring locations. Laboratory analytical samples were collected from each of the soil borings at the top-of-till interface based on the theory that TCE would have permeated through the coarse grained fill material and residual contamination would therefore most likely reside near the top of the native fine grained dense silty till unit.

This report is intended to present the data collected during the Salt Shed Soil Boring Investigation; conclusions and recommendations were deliberately not included. All of the data presented here-in, in addition to the data previously collected, will be evaluated and incorporated into a Final Remedial Investigation/Feasibility Study report to be submitted to USACE and MEDEP in the autumn, 2010.

2.0 TASK SCOPE AND OBJECTIVES

Additional investigatory data were needed to determine if potential sources of chlorinated solvent contamination still exist in the overburden on the former GAT facility property. The field program was designed to determine the concentration of chlorinated VOC contamination at potential source areas near the salt storage shed. The soil boring location rationale included evaluating areas where maximum historical contaminant concentrations were reported (ground water and overburden soil at GB-MW-01 and OB04 locations respectively). A summary of the August 3-4, 2010 field activities is provided below, along with the data quality objectives (DQOs) for each task. The sample locations are shown on Figure 2.

Scope: Collect and analyze soil samples for VOCs from fill/top-of-till interface at each of the twenty additional soil boring locations

DQOs: To evaluate each presumed or potential source area in and adjacent to the existing on-site salt storage shed in an effort to determine if VOCs were released in that area.

2.1 CHEMICAL DATA QUALITY OBJECTIVES AND METHODS

The soil samples were collected and analyzed as indicated in Tables 2-1 and 2-2. Quality control samples such as field duplicates, matrix spikes, matrix spike duplicates, field blanks and trip blanks were prepared and analyzed as indicated in Tables 2-1 and 2-2 and in accordance with the above referenced SAP dated July 2010 (JCO, 2010).

Table 2-1
Laboratory Analysis Method and Expected Numbers of Soil Samples

Matrix	Preparation/Analysis Method	#Field Samples	QA/QC Samples			Totals
			Duplicate	Field/Trip Blanks	MS/MSD	
Soil	SW-846 Method 5035/8260B for low-level VOCs with distilled water	20	2	1/1	1/1	26

Table 2-2 Fixed Laboratory Method Detection Limits and Reporting Limits for Soil Samples		
Analyte	**Method SW-846 VOC: 5035/8260B Low**	
	Detection Limit ug/Kg	**Reporting Limit ug/Kg**
1,1,1,2-Tetrachloroethane	1.5	5
1,1,1-Trichloroethane	1.6	5
1,1,2,2-Tetrachloroethane	1.5	5
1,1,2-Trichloroethane	1.7	5
1,1-Dichloroethane	1.6	5
1,1-Dichloroethene	1.6	5
1,1-Dichloropropene	1.6	5
1,2,3-Trichlorobenzene	1.4	5
1,2,3-Trichloropropane	1.7	5
1,2,4-Trichlorobenzene	1.3	5
1,2,4-Trimethylbenzene	1.6	5
1,2-Dibromo-3-Chloropropane	1.6	5
1,2-Dibromoethane	1.5	5
1,2-Dichlorobenzene	1.5	5
1,2-Dichloroethane	1.6	5
1,2-Dichloropropane	1.7	5
1,3,5-Trimethylbenzene	1.6	5
1,3-Dichlorobenzene	1.6	5
1,3-Dichloropropane	1.5	5
1,4-Dichlorobenzene	1.5	5
1-Chlorohexane	1.6	5
2,2-Dichloropropane	1.6	5
2-Butanone	8.2	50
2-Chlorotoluene	1	5
2-Hexanone	6.4	50
4-Chlorotoluene	1.7	5
4-Isopropyltoluene	1.6	5
4-Methyl-2-Pentanone	7.4	50
Acetone	14.2	50
Benzene	1.7	5
Bromobenzene	1.6	5
Bromochloromethane	1.6	5
Bromodichloromethane	1.6	5
Bromoform	1.4	5
Bromomethane	1.7	10
Carbon Disulfide	1.6	5
Carbon Tetrachloride	1.6	5
Chlorobenzene	1.6	5
Chloroethane	1.8	10

Table 2-2 Fixed Laboratory Method Detection Limits and Reporting Limits for Soil Samples		
Analyte	**Method SW-846 VOC: 5035/8260B Low**	
	Detection Limit ug/Kg	**Reporting Limit ug/Kg**
Chloroform	1.7	5
Chloromethane	1.7	10
cis-1,2-Dichloroethene	1.7	5
cis-1,3-Dichloropropene	1.7	5
Dibromochloromethane	1.6	5
Dibromomethane	1.7	5
Dichlorodifluoromethane	1.4	10
Ethylbenzene	1.6	5
Hexachlorobutadiene	1.5	5
Isopropylbenzene	1.7	5
Methyl tert-Butyl Ether	1.7	5
Methylene Chloride	1.9	25
Naphthalene	1.3	5
n-Butylbenzene	1.6	5
n-Propylbenzene	1.2	5
sec-Butylbenzene	1.6	5
Styrene	1.5	5
tert-Butylbenzene	1.6	5
Tetrachloroethene	1.7	5
Toluene	1.6	5
trans-1,2-Dichloroethene	1.7	5
trans-1,3-Dichloropropene	1.6	5
Trichloroethene	1.7	5
Trichlorofluoromethane	1.7	5
Vinyl Chloride	1.7	10
Xylene O	1.6	5
Xylene P,M	3.2	10

Note: Analytical results detected above the detection limit but below the reporting limit will be reported as estimated values by the laboratory with a "J" qualifier. Detection and reporting limits will be adjusted based on sample specific factors (e.g., sample dry weight).

3.0 INVESTIGATION ACTIVITIES

Investigatory field work was conducted at the Site on August 3rd and 4th, 2010. Dig-safe pre-marking and utility clearance was performed prior to the soil boring investigation. Appendix 1 of this report contains soil boring logs, Appendix 2 contains field notes, Appendix 3 contains chain of custody forms, Appendix 4 contains JCOs data validation memorandum, and Appendix 5 contains laboratory analytical reports. Standard Operating Procedures (SOPs) and Site Specific Methods (SSM) referenced here-in were provided as appendices to the approved Final Sampling and Analysis Plan for the On-Site Salt Shed Soil Boring Investigation, prepared by JCO in July 2010 (JCO, 2010). The remainder of this section provides the details of the field work as performed at the Site.

The dates of significant field activities are summarized below:

- July 20 — Pre-mark soil boring locations for Dig-Safe clearance
- August 3-4 — Conduct soil boring investigation with T&K Drilling, Inc. and collect samples for analytical analysis
- August 4 — Conduct site survey of recently installed soil borings

3.1 SOIL BORING INSTALLATION

Drilling at the Site occurred on August 3rd and 4th 2010 and was performed by T&K Drilling of Troy, New Hampshire. Also onsite the day of August 3rd was Gail Lipfert, a Geologist with MEDEP and Paul Young, a Geologist with USACE; their role was for oversight and guidance if needed. The drilling locations are shown on Figure 2, and include OB22 through OB41. The soil boring location rational included evaluating maximum historical contaminant concentrations in ground water and overburden soil at GB-MW-01 and OB04 locations respectively.

Along with the pre-mark and subsurface utility clearance, the underground electrical conduit that leads from the northwestern corner of the salt shed to the adjacent pump island was located and flagged. As a result the soil boring locations OB22 and OB23 were relocated approximately 5 feet to the north from their initially proposed locations. Additionally, several

locations were moved with the approval of on-site MEDEP and USACE representatives due to the presence of stock piled salt and sand material inside the building.

The T&K Drilling team utilized a truck mounted SIMCO Earthprobe 200 unit that is equivalent to the 6620DT track mounted Geoprobe™ equipped to perform both direct-push and hollow stem auger drilling. The mechanics of the drill rig include dual tube sampling which utilizes two sets of probe rods allowing for continuous soil coring; each rod section is three feet long. One length of 2.0 inch diameter rod was driven into the ground to create an outer "sealed" casing. A second, smaller set of rods is placed inside the outer casing with a polyethylene terephthalate (poly) liner. Once advanced into the subsurface, the poly liner effectively containerized the overburden material allowing us to log the soil characteristics and collect discrete samples. When shallow refusal or insufficient soil recovery occurred at a designated soil boring location, the drill rig was offset by 1 or 2 feet and another attempt was made to reach native glacial till. In some instances, multiple attempts were made until penetration to native till was achieved.

All down-hole equipment was decontaminated prior to use and between soil boring locations with Alconox™ and water, followed by a triple rinse with distilled water, and then allowed to air dry briefly. Water used for decontamination was tap water obtained from an outside spigot at the Town Hall building. The equipment decontamination was performed at the point of sampling or at a dedicated decontamination area outside the salt shed, near the entrance of the building.

3.2 SOIL SAMPLING

Once the plastic core liners were retrieved from the soil borings and cut open, a calibrated OVM photoionization detector (PID) was used to screen for VOCs. The grain size of the soil and clasts along with structure, angularity, color, staining, odors, etc. were noted and documented on individual core logs. Sample recovery within each section of poly liner was also noted on the core logs. Descriptions of sedimentary structures in the overburden were not applicable as the material was consistently massive coarse grained gravelly fill directly over native till. The soils were also

examined for the visual or olfactory presence of non-aqueous phase liquids. Descriptions of the soil lithology and the exact total depth of each boring are shown on the well logs located in Appendix 1.

As described in the July 2010 SAP, the sample collection depth was based on where the fill/top-of-till interface was encountered. Throughout the investigation area sample depths ranged from 2.2 fbgs to 4.4 fbgs. A dedicated laboratory supplied plastic syringe was used to collect an approximate 5 gram aliquot of soil at each boring location from the top-of-till. The syringe plunger was used to transfer the sample into a pre-weighed and labeled 40 mL VOA vial containing de-ionized water. As per laboratory protocol, additional sample aliquots were transferred to identical VOA vials with methanol preservative for high level VOC analysis if needed. Additionally, unpreserved soil samples were collected for the laboratory determination of dry weight. Once containerized, the soil samples were immediately placed on ice. For quality assurance purposes MEDEP collected split samples from two soil boring locations (OB26 and OB34) that were analyzed for low level VOCs via SW-846 Method 5035/8260B at a MEDEP laboratory. Upon completion of the soil sampling, the samples were shipped to ESS laboratory in Cranston, Rhode Island under chain-of-custody and analyzed for low-level VOCs via SW-846 Method 5035/8260B. There was no deviation from protocols or standard operating procedures during sample collection and transport.

3.3 LOCATION AND ELEVATION SURVEY

All map coordinates for this project are referenced to the Maine State East 1801 Coordinate System (units in feet), North American Datum of 1983 (NAD 83) horizontal datum, and North American Vertical Datum of 1988 (NAVD88).

The northing and easting coordinates and ground surface elevations of each soil boring located inside the salt shed, as well as OB22 and OB23, were surveyed with the use of the Sokkisha SDM3FR Total Station Transit. The exterior soil borings around GB-MW-01, along with the two soil borings that were placed immediately adjacent to the southern exterior wall of the

salt shed (OB28 and OB29) were located with 300-foot measuring tapes from known, surveyed existing monitoring wells. Ground surface elevation measurements for the exterior soil boring locations were measured using an autolevel to the nearest 0.01 foot and referenced to the NAVD88 datum (in feet) using the existing on-site benchmark elevation provided by the USACE. Section 5.3 summarizes the results of the survey, including location and elevation data for the newly installed salt shed soil borings.

3.4 INVESTIGATION DERIVED WASTE

Only solid waste suitable for disposal at a certified solid waste landfill was generated during the soil boring investigation. Examples of solid IDW that was accumulated during this investigation include nitrile gloves, paper towels, poly tubes from drilling, etc. All IDW was properly sealed and placed in dumpsters for future pick up and disposal at a lined landfill.

3.5 SAMPLE DESIGNATION AND HANDLING

Each sample was assigned a unique sample identifier shown on the COC and container labels:

The first set of characters is the alphanumeric location identification (ID) which identifies the sample location. Each location is then assigned an individual consecutive number preceded by the letters "OB" for overburden investigation.

The location ID code is followed by a dash (e.g., "OB22-").

The next characters identify the depth interval from which the sample was collected. The actual depth was rounded to the nearest foot. The depth interval is the depth of the sample in feet below ground surface (fbgs), or in feet below top-of-casing (fbtoc) for wells. If the sample interval sequence was not valid or unknown, an "X" was used. The interval code is followed by a dash. Equipment blanks were identified in relation to the sample location tested immediately prior to their collection/submittal to ESS Laboratory. Trip blanks were identified by the date that the cooler was shipped, followed by –TB.

The last character(s) is a letter(s) identifying the type of sample:

S	Soil sample
D	Field duplicate
EB	Equipment blank
TB	Trip Blank

MS Matrix spike sample
MSD Matrix spike duplicate sample

Examples of sample IDs are as follows:

- Sample OB22-4-S is a soil sample from the investigation location OB22. The soil was collected from a depth of 4 fbgs.
- Sample OB37-4-D is a field duplicate sample from the soil collected at the same depth interval and boring location as OB37-4-S.
- OB31-X-EB is an equipment blank collected after the soil sample collection at location OB31.

3.6 EQUIPMENT USE, CALIBRATION AND MAINTENANCE

All monitoring equipment used on-site was maintained, calibrated and operated in accordance with the manufacturer's specifications and JCO SOPs and site specific methods (SSMs, including SSM-JCO-055). The sole instrument used as a field monitoring device was an OVM PID. Prior to any soil screenings with the PID, the response factor was set to 1.3 to adjust for TCE and properly calibrated. Copies of the field calibration sheets are included in Appendix 2.

3.7 SITE RESTORATION

The Site was restored to its original condition following completion of the field work. All holes in pavement were repaired with asphalt cold patch to match existing conditions. No significant ruts or damage to vegetation occurred.

4.0 QUALITY ASSURANCE AND CONTROL

In accordance with the July 2010 Salt Shed Soil Boring Investigation SAP quality control measures were conducted to assess the accuracy and precision of the laboratory analytical data. Quality control measures implemented in the field included collecting duplicate samples, matrix spike/matrix spike duplicate samples, equipment blanks, and trip blanks. Laboratory analytical quality control measures include laboratory control samples, analysis of equipment calibration standards, blank spike, blank spike duplicates, and two MEDEP quality assurance split samples.

Limited data validation was also performed on the soil samples and accompanying quality control samples collected from the soil borings at the former GAT facility Site. The validation consisted of processing the staged electronic data deliverables (SEDD) via USACE's Automated Data Review (ADR) software. All of the data as processed through ADR were valid as reported and therefore the data usability or completeness goal of 90% was achieved. A summary of the data validation, along with tables produced by the ADR are included in Appendix 3.

5.0 RESULTS

5.1 OVERBURDEN GEOLOGY

Overburden stratigraphy beneath and immediately adjacent to the salt storage shed is characterized by approximately two to four feet of unconsolidated coarse grained gravelly fill with cobbles and rocks, overlying very dense silty basal till. The soil cores indicate that the overburden and till interface is generally dry and the till has very low permeability based on field observations such as soil density, grain size distribution, plasticity, mottling, and moisture content. Groundwater was not encountered at the site during the investigation.

5.2 LABORATORY ANALYTICAL DATA

Review of the laboratory analytical data indicate that there is no source area(s) of VOC contamination beneath or adjacent to the on-site salt storage shed. No TCE was detected in any of the soil samples.

All but one of the analytical samples collected at the Site reported a detection of methylene chloride below the method specific reporting limit. Methylene chloride was also detected below the reporting limit in both laboratory supplied trip blanks, suggesting that the reported detections are due to laboratory contamination. The laboratory provided an estimated ("J") qualifier for all associated samples. During data validation, the samples with methylene chloride detections were qualified as non-detect ("U") at the method reporting limit (which is based upon the sample dry weight and instrument detection limit). This change is in accordance with standard validation methods; i.e. if a positive sample result for a common laboratory contaminant (methylene chloride) is less than the reporting limit and less than 10 times the concentration of the compound in the blank (the blank action level), then the analyte is considered undetected at the reporting limit.

Acetone was also detected below the method specific reporting limit in soil samples OB24-2-S, OB25-2-S, OB28-4-S, OB30-4-S, OB31-3-S, and OB35-4-S through OB38-3-S which resulted in a "J" laboratory qualifier. It is possible that the acetone detections are related

to laboratory contamination since acetone recoveries in the continuing calibration, matrix spike, and matrix spike duplicate were above the upper control limit indicating a high bias in the data.

The VOC 2-Butanone was reported below the reporting limit in the field sample OB33-2-S thus qualifying the detection as estimated ("J"). Copies of the certified laboratory analytical reports are included in this report as Appendix 5.

All other method specific analytes were reported non-detect below the method reporting limits which is based on the dry weight of each sample. Table 5-2 below summarizes the analytical results for the soil samples directly compared to the MEDEP remedial action guidelines (RAGs) for soil contamination. The chemical compounds listed in Table 5-2 include VOCs that have been previously detected in analytical soil samples throughout the Site during past investigations. As mentioned above, detections of methylene chloride in samples are reported as non-detected below the reporting limit due to methylene chloride contamination in both trip blanks; this was applicable for all but one field sample OB34-4-S and the field duplicate of sample OB37-4-S. A complete list of the most recent MEDEP RAGs for contaminated soil can be found in the previously submitted Final SAP for On-Site Salt Shed Soil Boring Investigation dated July 2010 (JCO, 2010 and MEDEP, 2007).

Soil Boring Location	Easting (ft ME East 1801)	Northing (ft ME East 1801)	Ground Elev. (ftNAVD 1988)	Sample name	Sample Date	TCE Result Compared to Lowest MEDEP RAG Category for TCE in Soil (ug/kg)	Q	Acetone Result Compared to Lowest MEDEP RAG Category for Acetone in Soil (ug/kg)	Q	2-Butaneone Results (ug/kg) - No MEDEP RAG Listed	Q	Ethylbenzene Results Compared to Lowest MEDEP RAG Category Listed for Soil (ug/kg)	Q	m&p-Xylenes Results Compared to Lowest MEDEP RAG Category Listed for Soils (ug/kg)	Q	n-Propylbenzene Results (ug/kg) - No MEDEP RAG Listed	Q	1,3,5 Trimethylbenzene Results (ug/kg) - No MEDEP RAG Listed	Q
OB22	900161.27	454468.91	241.76	OB22-4-S	08/03/10	0.0012 / 0.0015	U	0.0096 / 150	U	0.0056	U	0.0011 / 0.00081	U	0.0022 / 0.026	U	0.0008	U	0.0011	U
OB23	900178.08	454470.09	241.77	OB23-3-S	08/03/10	0.0013 / 0.0015	U	0.0111 / 150	U	0.0064	U	0.0012 / 0.00081	U	0.0025 / 0.026	U	0.0009	U	0.0012	U
OB24	900163.12	454441.6	243.36	OB24-2-S	08/03/10	0.0014 / 0.0015	U	0.012 / 150	J	0.0069	U	0.0013 / 0.00081	U	0.0027 / 0.026	U	0.001	U	0.0013	U
OB24	900163.12	454441.6	243.36	OB24-2-D	08/03/10	0.0011 / 0.0015	U	0.0092 / 150	U	0.0053	U	0.001 / 0.00081	U	0.0021 / 0.026	U	0.0008	U	0.001	U
OB25	900172.17	454438.46	243.66	OB25-2-S	08/03/10	0.0012 / 0.0015	U	0.0098 / 150	J	0.0056	U	0.0011 / 0.00081	U	0.0022 / 0.026	U	0.0008	U	0.0011	U
OB26	900172.49	454435.11	243.64	OB26-4-S	08/03/10	0.0013 / 0.0015	U	0.0105 / 150	U	0.0061	U	0.0012 / 0.00081	U	0.0024 / 0.026	U	0.0009	U	0.0012	U
OB27	900163.57	454434.83	243.91	OB27-4-S	08/03/10	0.0015 / 0.0015	U	0.0123 / 150	U	0.0071	U	0.0014 / 0.00081	U	0.0028 / 0.026	U	0.001	U	0.0014	U
OB28	900230.26	454338.69	242.47	OB28-4-S	08/03/10	0.0012 / 0.0015	U	0.0096 / 150	J	0.0056	U	0.0011 / 0.00081	U	0.0022 / 0.026	U	0.0008	U	0.0011	U
OB29	900250.1	454344.04	242.82	OB29-4-S	08/03/10	0.0015 / 0.0015	U	0.0123 / 150	U	0.0071	U	0.0014 / 0.00081	U	0.0028 / 0.026	U	0.001	U	0.0014	U
OB30	900240.1	454393.04	243.12	OB30-4-S	08/03/10	0.0015 / 0.0015	U	0.0121 / 150	J	0.007	U	0.0014 / 0.00081	U	0.0027 / 0.026	U	0.001	U	0.0014	U
OB31	900223.82	454400.93	243.23	OB31-3-S	08/03/10	0.0012 / 0.0015	U	0.0099 / 150	J	0.0057	U	0.0011 / 0.00081	U	0.0022 / 0.026	U	0.0008	U	0.0011	U
OB32	900222.1	454382.88	243.17	OB32-4-S	08/03/10	0.0011 / 0.0015	U	0.0094 / 150	U	0.0054	U	0.0011 / 0.00081	U	0.0021 / 0.026	U	0.0008	U	0.0011	U
OB33	900200.98	454394.76	243.08	OB33-2-S	08/03/10	0.0015 / 0.0015	U	0.0123 / 150	U	0.0071	J	0.0014 / 0.00081	U	0.0028 / 0.026	U	0.001	U	0.0014	U
OB34	900212.87	454404.76	243.24	OB34-4-S	08/03/10	0.0013 / 0.0015	U	0.0108 / 150	U	0.0063	U	0.0012 / 0.00081	U	0.0024 / 0.026	U	0.0009	U	0.0012	U
OB35	900197.31	454416.2	243.02	OB35-4-S	08/03/10	0.0013 / 0.0015	U	0.0107 / 150	J	0.0062	U	0.0012 / 0.00081	U	0.0024 / 0.026	U	0.0009	U	0.0012	U
OB36	900211.87	454427.4	243.16	OB36-4-S	08/03/10	0.0013 / 0.0015	U	0.0106 / 150	J	0.0061	U	0.0012 / 0.00081	U	0.0024 / 0.026	U	0.0009	U	0.0012	U
OB37	900239.3	454413.97	243.21	OB37-4-S	08/04/10	0.0015 / 0.0015	U	0.0121 / 150	J	0.007	U	0.0014 / 0.00081	U	0.0027 / 0.026	U	0.001	U	0.0014	U
OB37	900239.3	454413.97	243.21	OB37-4-D	08/04/10	0.0014 / 0.0015	U	0.012 / 150	J	0.0069	U	0.0013 / 0.00081	U	0.0027 / 0.026	U	0.001	U	0.0013	U
OB38	900225.9	454456.05	242.68	OB38-3-S	08/04/10	0.0013 / 0.0015	U	0.0106 / 150	J	0.0061	U	0.0012 / 0.00081	U	0.0024 / 0.026	U	0.0009	U	0.0012	U
OB39	900208.45	454454.26	242.54	OB39-3-S	08/04/10	0.001 / 0.0015	U	0.008 / 150	U	0.0046	U	0.0009 / 0.00081	U	0.0018 / 0.026	U	0.0007	U	0.0009	U
OB40	900193.79	454442.23	242.72	OB40-3-S	08/04/10	0.0012 / 0.0015	U	0.0098 / 150	U	0.0057	U	0.0011 / 0.00081	U	0.0022 / 0.026	U	0.0008	U	0.0011	U
OB41	900225.93	454430.77	243.14	OB41-3-S	08/04/10	0.0014 / 0.0015	U	0.0116 / 150	U	0.0067	U	0.0013 / 0.00081	U	0.0026 / 0.026	U	0.001	U	0.0013	U

Samples collected by The Johnson Company, Inc. August 3-4, 2010

ug/ky Dry Weight

U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).

UJ = Compound not detected at estimated concentration.

J = Estimated value less than PQL or based on data evaluation of laboratory results.

Q = Qualifier

Soil Boring Location	Easting (ft ME East 1801)	Northing (ft ME East 1801)	Ground Elev. (ftNAVD 1988)	Sample name	Sample Date	1,2,4 Trimethylbenzene Results (ug/kg) - No MEDEP RAG Listed	Q	sec-Butylbenzene Results (ug/kg) - No MEDEP RAG Listed	Q	1,3-Dichlorobenzene Results Compared to Lowest MEDEP RAG Category Listed for Soil (ug/kg)	Q	1,4 Dichlorobenzene Results Compared to Lowest MEDEP RAG Category Listed for Soil (ug/kg)	Q	Napthalene Results Compared to Lowest MEDEP RAG Category Listed for Soil (ug/kg)	Q	Methylene Chloride Reporting Limit* Compared to Lowest MEDEP RAG Category Listed for Soil (ug/kg)	Q
OB22	900161.27	454468.91	241.76	OB22-4-S	08/03/10	0.0011	U	0.0011	U	0.0011 / 0.0011	U	0.001 / 0.004	U	0.0009 / 0.0017	U	0.0169 / 1.9	U
OB23	900178.08	454470.09	241.77	OB23-3-S	08/03/10	0.0012	U	0.0012	U	0.0012 / 0.0011	U	0.0012 / 0.004	U	0.001 / 0.0017	U	0.0195 / 1.9	U
OB24	900163.12	454441.6	243.36	OB24-2-S	08/03/10	0.0013	U	0.0013	U	0.0013 / 0.0011	U	0.0013 / 0.004	U	0.0011 / 0.0017	U	0.0161 / 1.9	U
OB24	900163.12	454441.6	243.36	OB24-2-D	08/03/10	0.001	U	0.001	U	0.001 / 0.0011	U	0.001 / 0.004	U	0.0008 / 0.0017	U	0.0210 / 1.9	U
OB25	900172.17	454438.46	243.66	OB25-2-S	08/03/10	0.0011	U	0.0011	U	0.0011 / 0.0011	U	0.001 / 0.004	U	0.0009 / 0.0017	U	0.0172 / 1.9	U
OB26	900172.49	454435.11	243.64	OB26-4-S	08/03/10	0.0012	U	0.0012	U	0.0012 / 0.0011	U	0.0011 / 0.004	U	0.001 / 0.0017	U	0.0185 / 1.9	U
OB27	900163.57	454434.83	243.91	OB27-4-S	08/03/10	0.0014	U	0.0014	U	0.0014 / 0.0011	U	0.0013 / 0.004	U	0.0011 / 0.0017	U	0.0216 / 1.9	U
OB28	900230.26	454338.69	242.47	OB28-4-S	08/03/10	0.0011	U	0.0011	U	0.0011 / 0.0011	U	0.001 / 0.004	U	0.0009 / 0.0017	U	0.0169 / 1.9	U
OB29	900250.1	454344.04	242.82	OB29-4-S	08/03/10	0.0014	U	0.0014	U	0.0014 / 0.0011	U	0.0013 / 0.004	U	0.0011 / 0.0017	U	0.0217 / 1.9	U
OB30	900240.1	454393.04	243.12	OB30-4-S	08/03/10	0.0014	U	0.0014	U	0.0014 / 0.0011	U	0.0013 / 0.004	U	0.0011 / 0.0017	U	0.0213 / 1.9	U
OB31	900223.82	454400.93	243.23	OB31-3-S	08/03/10	0.0011	U	0.0011	U	0.0011 / 0.0011	U	0.001 / 0.004	U	0.0009 / 0.0017	U	0.0174 / 1.9	U
OB32	900222.1	454382.88	243.17	OB32-4-S	08/03/10	0.0011	U	0.0011	U	0.0011 / 0.0011	U	0.001 / 0.004	U	0.0009 / 0.0017	U	0.0165 / 1.9	U
OB33	900200.98	454394.76	243.08	OB33-2-S	08/03/10	0.0014	U	0.0014	U	0.0014 / 0.0011	U	0.0013 / 0.004	U	0.0011 / 0.0017	U	0.0216 / 1.9	U
OB34	900212.87	454404.76	243.24	OB34-4-S	08/03/10	0.0012	U	0.0012	U	0.0012 / 0.0011	U	0.0011 / 0.004	U	0.001 / 0.0017	U	0.0014 / 1.9	U
OB35	900197.31	454416.2	243.02	OB35-4-S	08/03/10	0.0012	U	0.0012	U	0.0012 / 0.0011	U	0.0011 / 0.004	U	0.001 / 0.0017	U	0.0188 / 1.9	U
OB36	900211.87	454427.4	243.16	OB36-4-S	08/03/10	0.0012	U	0.0012	U	0.0012 / 0.0011	U	0.0011 / 0.004	U	0.001 / 0.0017	U	0.0187 / 1.9	U
OB37	900239.3	454413.97	243.21	OB37-4-S	08/04/10	0.0014	U	0.0014	U	0.0014 / 0.0011	U	0.0013 / 0.004	U	0.0011 / 0.0017	U	0.0210 / 1.9	U
OB37	900239.3	454413.97	243.21	OB37-4-D	08/04/10	0.0013	U	0.0013	U	0.0013 / 0.0011	U	0.0013 / 0.004	U	0.0011 / 0.0017	U	0.0016 / 1.9	U
OB38	900225.9	454456.05	242.68	OB38-3-S	08/04/10	0.0012	U	0.0012	U	0.0012 / 0.0011	U	0.0011 / 0.004	U	0.001 / 0.0017	U	0.0187 / 1.9	U
OB39	900208.45	454454.26	242.54	OB39-3-S	08/04/10	0.0009	U	0.0009	U	0.0009 / 0.0011	U	0.0008 / 0.004	U	0.0007 / 0.0017	U	0.0141 / 1.9	U
OB40	900193.79	454442.23	242.72	OB40-3-S	08/04/10	0.0011	U	0.0011	U	0.0011 / 0.0011	U	0.001 / 0.004	U	0.0009 / 0.0017	U	0.0173 / 1.9	U
OB41	900225.93	454430.77	243.14	OB41-3-S	08/04/10	0.0013	U	0.0013	U	0.0013 / 0.0011	U	0.0012 / 0.004	U	0.0011 / 0.0017	U	0.0204 / 1.9	U

Samples collected by The Johnson Company, Inc. August 3-4, 2010

ug/ky Dry Weight

U = Compound not detected above laboratory's Practical Quantitation Limit (PQL).

UJ = Compound not detected at estimated concentration.

J = Estimated value less than PQL or based on data evaluation of laboratory results.

Q = Qualifier

The MEDEP RAGs listed in Table 5-2 represent the most conservative (or lowest) value published in the current guidance document on State of Maine's online search engine MEDEP, 2007). The RAG guidance document for soil contamination categorizes the values for select chemical compounds by scenario. For example, the lowest RAG value for every analyte listed fall under the heading (or category) "Leaching to Groundwater". If a detected compound in the salt shed soil samples did not appear in the "Leaching to Groundwater" category than the next most conservative category was used for comparison. For example, the lowest RAG published by MEDEP for acetone and methylene chloride was under the category "Residential". The column headers in Table 5-2 indicate which RAG category the results were compared to. It should be noted that MEDEP has not published RAGs for every analyte, this is also noted in the column header in Table 5-2.

5.3 LOCATION AND ELEVATION SURVEY RESULTS

Table 5-3 below summarizes the location and ground surface elevations for the newly installed soil borings as part of the salt shed soil boring investigation. Each soil boring was surveyed with an accuracy of 0.7 feet horizontally and 0.01 feet vertically. The elevation benchmark that was used to locate the recently installed soil borings was created by USACE and used as a reference point in previous site surveys. The 2008 Work Plan and Sampling and Analysis Plan specify that the soil boring locations will be survey with sub-meter accuracy (JCO, 2008a and 2008b). The ground surface elevations are surveyed and reported to the nearest 0.01 feet.

TABLE 5-3 Location and Elevation Survey Results						
Soil Boring ID	**Easting (ft ME East 1801)**	**Northing (ft ME East 1801)**	**Elevation (ft NAVD)**	**Ending Depth (ft bgs)**	**Geologist**	**Date**
OB22	900161.27	454468.91	241.76	4.9	A. Robtoy	8/3/2010
OB23	900178.08	454470.09	241.77	5.8	A. Robtoy	8/3/2010
OB24	900163.12	454441.60	243.36	3	A. Robtoy	8/3/2010
OB25	900172.17	454438.46	243.66	3	A. Robtoy	8/3/2010
OB26	900172.49	454435.11	243.64	5	A. Robtoy	8/3/2010
OB27	900163.57	454434.83	243.91	5.5	A. Robtoy	8/3/2010
OB28	900230.26	454338.69	242.47	4.9	A. Robtoy	8/3/2010
OB29	900250.10	454344.04	242.82	5.1	S. Donovan	8/3/2010
OB30	900240.10	454393.04	243.12	6	S. Donovan	8/3/2010
OB31	900223.82	454400.93	243.23	4.7	S. Donovan	8/3/2010
OB32	900222.10	454382.88	243.17	5.2	S. Donovan	8/3/2010
OB33	900200.98	454394.76	243.08	6	S. Donovan	8/3/2010
OB34	900212.87	454404.76	243.24	4.9	S. Donovan	8/3/2010
OB35	900197.31	454416.20	243.02	6	S. Donovan	8/3/2010
OB36	900211.87	454427.40	243.16	5.6	S. Donovan	8/3/2010
OB37	900239.30	454413.97	243.21	4.9	S. Donovan	8/4/2010
OB38	900225.90	454456.05	242.68	6	S. Donovan	8/4/2010
OB39	900208.45	454454.26	242.54	6	S. Donovan	8/4/2010
OB40	900193.79	454442.23	242.72	6	S. Donovan	8/4/2010
OB41	900225.93	454430.77	243.14	6	S. Donovan	8/4/2010

6.0 REFRENCES

JCO, 2008a. FINAL Work Plan for RI/FS Investigation, Former GAT Facility Glenburn, Maine. The Johnson Company, Inc., December 2008.

JCO, 2008b. FINAL Sampling and Analysis Plan for RI/FS Investigation, Former GAT Facility Glenburn, Maine. The Johnson Company, Inc., December 2008.

JCO, 2010. Final Sampling and Analysis Plan, Former GAT Facility Glenburn, Maine. The Johnson Company, Inc. July 2010.

MEDEP, 2007. Implementation of Remedial Action Guidelines (RAGs), prepared by Bureau of Remediation and Waste Management, Hazardous Substances Division of Remediation Guidance, downloaded November, 2007 from: http://www.maine.gov:8080/dep/rwm/rem/documents/fed-dod/rags.pdf

USACE, 2007, EM 1110-1-1005 Engineering and Design - Control and Topographic Surveying http://www.usace.army.mil/publications/eng-manuals/em1110-1-1005/entire.pdf

USACE, 2004. GIS-Based Historical Photo Analysis Glenburn Town Hall Area 1939-1969 Glenburn, Maine. Produced for the New England District by the US Army Engineer Research and Development Center, Topographic Engineering Center, Alexandria, Virginia.

USACE, 2003. Photogrammetric Map and Photogeologic Analysis/Fracture Trace Analysis, Glenburn City Town Hall, Glenburn Maine. Produced for the New England District by the US Army Engineer Research and Development Center, Topographic Engineering Center, Alexandria, Virginia.

USACE, 1998. ER 1110-1-263 Chemical Data Quality Management for Hazardous, Toxic, Radioactive Waste Remedial Activities.

USACE, 1997. EM 200-1-6 Chemical Quality Assurance for HTRW Projects.

USEPA Region I, 1988, Laboratory Data Validation, Functional Guidelines for evaluation Organic and Inorganic Analyses (1 Feb 1988 and 13 June 1988 respectively)

FIGURES

K:\1-2128-9\GIS\Site Location.mxt





LOCATION

0 1,000 2,000 4,000 6,000 Feet

N

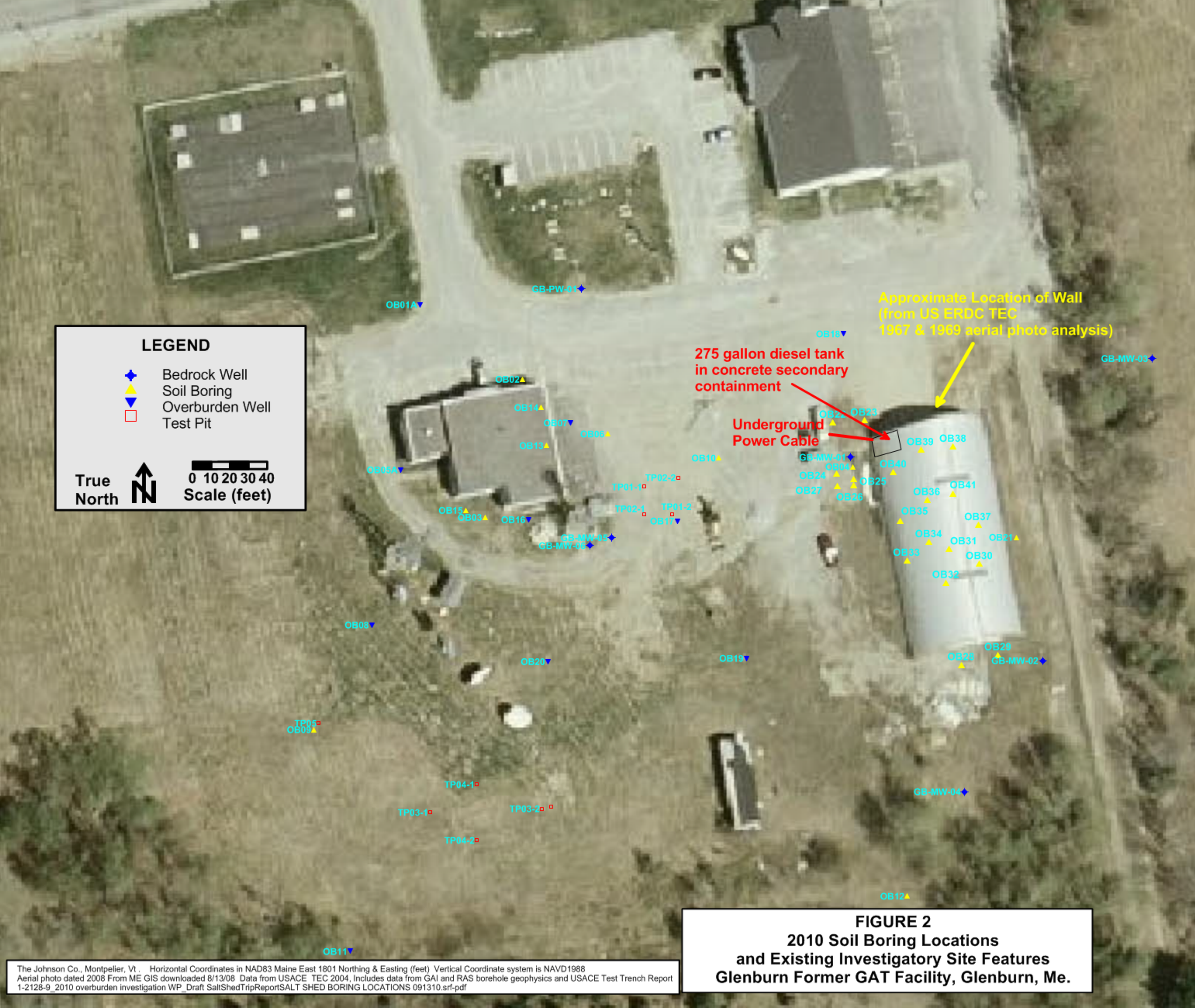
Figure 1.0
General Site Location
Former Glenburn GAT Facility
Glenburn, Maine

The Johnson Company

100 State Street, Suite 600
Montpelier, VT 05602

Drawn by: DPB Date: 06/04/09
Reviewed by: DMM Date: 06/04/09

Scale: 1:25,000 Project: 1-2128-9



The Johnson Co., Montpelier, Vt . Horizontal Coordinates in NAD83 Maine East 1801 Northing & Easting (feet) Vertical Coordinate system is NAVD1988
Aerial photo dated 2008 From ME GIS downloaded 8/13/08 Data from USACE TEC 2004, Includes data from GAI and RAS borehole geophysics and USACE Test Trench Report 1-2128-9_2010 overburden investigation WP_Draft SaltShedTripReportSALT SHED BORING LOCATIONS 091310.srf-pdf

FIGURE 2
2010 Soil Boring Locations
and Existing Investigatory Site Features
Glenburn Former GAT Facility, Glenburn, Me.

APPENDIX 1

SOIL BORING LOGS

The Johnson Company, Inc.
100 State St. Suite 600
Montpelier, VT 05602
(802) 229-4600

Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB22

Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0	241		Dry, light brown coarse sand with some fine angular gravel, few subangular Qtz. Fragments	GP	0	
1						
2	240					
3	239		No recovery			
			Dry, light brown coarse sand with some fine angular gravel, few subangular Qtz. Fragments			
4	238		Dry, olive to light gray silty till, trace fine sand, few angular pebbles. TD as planned below top-of-till.	ML	0	OB22-4-S
5	237					
6	236					
7	235					
8	234					
9	233					
10	232					

Drilling Date: 8/3/10
Geologist: S. Donovan / D.Maynard CG-GE267
Signature:
Drilling Company: T&K
Method: Geoprobe-Macrocore
Ground Elevation (ft NAVD): 241.76
ME East 1801 Northing (ft): 454468.91 Easting (ft): 900161.27

Depth to Groundwater: Dry
Date of Measurement: 8/3/10
Total Depth Drilled (fbgs): 4.9
Borehole sealed with Bentonite

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Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB23

Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0	241		Dry, light brown and orange medium to coarse sand and fine angular gravel. Fill.	GP	0	
1						
2	240					
3	239		No recovery			
			Dry to moist, light brown, olive green silty till, trace fine sand, fine angular gravel. Till. TD as planned below top-of-till.			OB23-3-S
4	238			ML	0	
5	237					
6	236					
7	235					
8	234					
9	233					
10	232					

Drilling Date: 8/3/10
Geologist: S. Donovan / D.Maynard CG GE267
Drilling Company: T&K
Signature:
Method: Geoprobe-Macrocore
Ground Elevation (ft NAVD): 241.77
ME East 1801 Northing (ft): 454470.09 Easting (ft): 900178.08

Depth to Groundwater: Dry
Date of Measurement: 8/3/10
Total Depth Drilled (fbgs): 5.8
Borehole sealed with Bentonite

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Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB24

Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0	243		Dry, light brown, fine angular gravel and medium to coarse sand. Fill.	GP	0	
1	242					
2	241		Dry, dense, light brown, silty till with some subangular gravel. TD as planned below top-of-till.	ML		OB24-2-S
3	240					
4	239					
5	238					
6	237					
7	236					
8	235					
9	234					
10						

Drilling Date: 8/3/10
Geologist: S. Donovan / D.Maynard CG GE267
Drilling Company: T&K
Method: Geoprobe-Macrocore
Signature:
Ground Elevation (ft NAVD): 243.36
ME East 1801 Northing (ft): 454441.6 Easting (ft): 900163.12

Depth to Groundwater: Dry
Date of Measurement: 8/3/10
Total Depth Drilled (fbgs): 3
Borehole sealed with Bentonite

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Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB25

Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0	243		Dry, light brown to tan, medium and coarse sand with fine angular gravel.	GP	0	
1						
2	242					
3	241		Dry, dense, brown silty till, trace medium to fine sand, angular gravel. TD as planned below top-of-till.	ML		OB25-2-S
4	240					
5	239					
6	238					
7	237					
8	236					
9	235					
10	234					

Drilling Date: 8/3/10
Geologist: S. Donovan / ~~D.Maynard CG~~ GE267
Drilling Company: T&K
Signature:
Method: Geoprobe-Macrocore
Ground Elevation (ft NAVD): 243.66
ME East 1801 Northing (ft): 454438.46 Easting (ft): 900172.17

Depth to Groundwater: Dry
Date of Measurement: 8/3/10
Total Depth Drilled (fbgs): 3
Borehole sealed with Bentonite

The Johnson Company, Inc.
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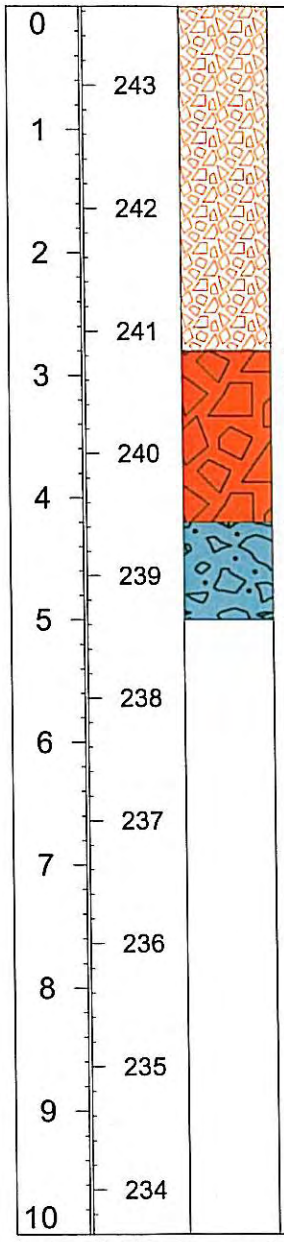
Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB26

Prepared for U.S.A.C.E. New England District



Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0	243		Dry, light brown medium to coarse sand and fine angular gravel. 7.5 yr 4/3			
1				GP	0	
2	242					
3	241		Dry, dark brown, fine to medium sand with some silt, trace subangular gravel. 10yr 3/6			
4	240		Dry, dark brown, fine to medium sand with some silt, trace subangular gravel. 10yr 3/6	GM	0	OB26-4-S MEDEP QA Split Sample
5	239		Dry, dense, olive green to light brown, silty till, trace fine to medium sand with subangular pebbles. 2.5y 5/6 TD as planned below top-of-till.	ML		
6	238					
7	237					
8	236					
9	235					
10	234					

Drilling Date: 8/3/10
Geologist: S. Donovan / D.Maynard CG GE267
Drilling Company: T&K
Signature:
Method: Geoprobe-Macrocore
Ground Elevation (ft NAVD): 243.64
ME East 1801 Northing (ft): 454435.11 Easting (ft): 900172.49

Depth to Groundwater: Dry
Date of Measurement: 8/3/10
Total Depth Drilled (fbgs): 5
Borehole sealed with Bentonite

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Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB27

Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0			Dry, brown, medium to coarse sand and fine angular gravel. 7.5 yr 5/4			
1	243				0	
2	242		No recovery			
3	241		Dark brown medium to coarse sand and fine angular gravel. -10 yr 5/6	GP		
4	240				0	
5	239		Dry, light brown to olive, dense sitly till, trace fine sand and angular gravel. -2.5 yr 5/6 TD as planned below top-of-till.	ML		OB27-4-S
6	238					
7	237					
8	236					
9	235					
10	234					

Drilling Date: 8/3/10
Geologist: S. Donovan / D.Maynard CG GE267
Drilling Company: T&K
Signature:
Method: Geoprobe-Macrocore
Ground Elevation (ft NAVD): 243.91
ME East 1801 Northing (ft): 454434.83 Easting (ft): 900163.57

Depth to Groundwater: Dry
Date of Measurement: 8/3/10
Total Depth Drilled (fbgs): 5.5
Borehole sealed with Bentonite

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Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB28

Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0			Asphalt.			
	242		Brown, dry, loose, coarse sandy gravel fill.			
1			Dark brown, dry, coarse sandy gravel fill.		0	
	241					
2			No recovery	GP		
	240					
3			Dark brown, dry, coarse sandy gravel fill.			
	239					OB28-4-S
4			Dry, dense, olive green to light brown, silty till, some fine to medium sand, trace subrounded gravel. TD as planned below top-of-till.	ML	0	
	238					
5						
	237					
6						
	236					
7						
	235					
8						
	234					
9						
	233					
10						

Drilling Date: 8/3/10
Geologist: S. Donovan / D.Maynard CG GE267
Signature:
Drilling Company: T&K
Method: Geoprobe-Macrocore
Ground Elevation (ft NAVD): 242.47
ME East 1801 Northing (ft): 454338.69 Easting (ft): 900230.26

Depth to Groundwater: Dry
Date of Measurement: 8/3/10
Total Depth Drilled (fbgs): 4.9
Borehole sealed with Bentonite & Cold Patch

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Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB29

Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0			Dark brown, fine to medium sandy topsoil, roots, grass.			
1	242		Light brown, dry, loose, meduim to coarse sand, trace subangular gravel.		0	
2	241		No recovery			
3	240		Same as above with some subangular and subrounded gravel. TD as planned below top-of-till.	GP		
4	239		Light brown dense silty till with some coarse subangular and angular gravel. Some rock fragments.	ML	0	OB29-4-S
5	238					
6	237					
7	236					
8	235					
9	234					
10	233					

Drilling Date: 8/3/10
Geologist: S. Donovan / D.Maynard CG GE267
Depth to Groundwater: Dry

Drilling Company: T&K
Method: Geoprobe-Macrocore
Signature:
Date of Measurement: 8/3/10

Ground Elevation (ft NAVD): 242.82
Total Depth Drilled (fbgs): 5.1

ME East 1801 Northing (ft): 454344.04 Easting (ft): 900250.1
Borehole sealed with Bentonite

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Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB30

Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0	243		Asphalt and coarse gravel.			
			Dark brown and "salt and pepper" fine to meduim sand, loose, dry, no structure.	SP	0	
1	242					
2	241		Dark brown fine to coarse gravelly sand, loose, dry.			
3	240		No recovery Dark brown fine to coarse gravelly sand, loose, dry.	GP		
4	239		Light brown, dense, silty gravelly till, fractured rock at 3.9-4.1and lens of "salt and pepper" sand at 4.7-5.0' bgs. TD as planned below top-of-till.			OB30-4-S
					0	
5	238			ML		
6	237					
7	236					
8	235					
9	234					
10						

Drilling Date: 8/3/10
Geologist: S. Donovan / D.Maynard CG GE267
Signature:

Drilling Company: T&K
Method: Geoprobe-Macrocore

Ground Elevation (ft NAVD): 243.12

ME East 1801 Northing (ft): 454393.04 Easting (ft): 900240.1

Depth to Groundwater: Dry
Date of Measurement: 8/3/10
Total Depth Drilled (fbgs): 6
Borehole sealed with Bentonite & Cold Patch

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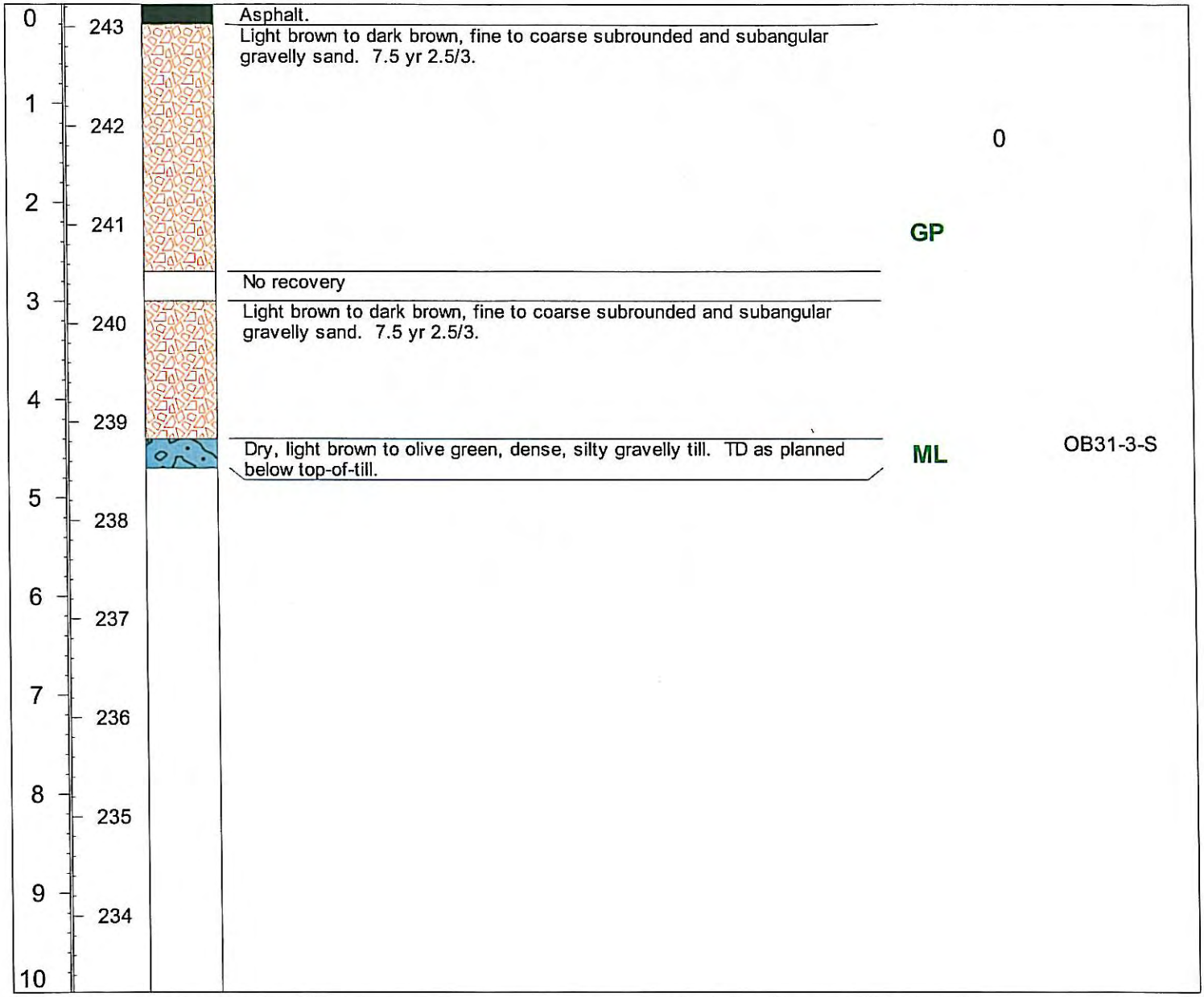
Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB31

Prepared for U.S.A.C.E. New England District



Drilling Date: 8/3/10
Geologist: S. Donovan / ~~D. Maynard CG GE267~~
Signature:

Drilling Company: T&K
Method: Geoprobe-Macrocore

Ground Elevation (ft NAVD): 243.23

ME East 1801 Northing (ft): 454400.93 Easting (ft): 900223.82

Depth to Groundwater: Dry
Date of Measurement: 8/3/10
Total Depth Drilled (fbgs): 4.7
Borehole sealed with Bentonite & Cold Patch

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Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB32

Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0	243		Asphalt.			
			Light brown to dark brown, dry, medium to coarse sand and fine subangular gravel.			
1	242				0	
2	241			GP		
			No recovery			
3	240		Light brown to dark brown, dry, medium to coarse sand and fine subangular gravel.			
4	239				0	OB32-4-S
			Light brown to olive green, dry dense, sitly gravelly till. TD as planned below top-of-till.	ML		
5	238					
6	237					
7	236					
8	235					
9	234					
10						

Drilling Date: 8/3/10
Geologist: S. Donovan / D.Maynard CG GE267
Drilling Company: T&K
Signature:
Method: Geoprobe-Macrocore
Ground Elevation (ft NAVD): 243.17
ME East 1801 Northing (ft): 454382.88 Easting (ft): 900222.1

Depth to Groundwater: Dry
Date of Measurement: 8/3/10
Total Depth Drilled (fbgs): 5.2
Borehole sealed with Bentonite & Cold Patch

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Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB33

Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0	243		Asphalt.			
			Dark brown to brown, loose, dry, medium to coarse angular and subangular gravelly sand.	GP	0	
1	242					
2	241		Dark brown to gray, dense, dry, friable, silty angular gravelly till.			OB33-2-S
			No recovery			
3	240		Same as above but light brown to olive green with some subround pebbles. TD as planned below top-of-till.			
4	239			ML	0	
5	238					
6	237					
7	236					
8	235					
9	234					
10						

Drilling Date: 8/3/10
Geologist: S. Donovan / D. Maynard CG GE267
Drilling Company: T&K
Signature:
Method: Geoprobe-Macrocore
Ground Elevation (ft NAVD): 243.08
ME East 1801 Northing (ft): 454394.76 Easting (ft): 900200.98

Depth to Groundwater: Dry
Date of Measurement: 8/3/10
Total Depth Drilled (fbgs): 6
Borehole sealed with Bentonite & Cold Patch

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Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB34

Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0	243		Asphalt.			
			Light brown, fine to coarse gravelly sand, loose, dry, no structure.			
1	242					
2	241		Dark brown, medium to coarse gravelly sand, angular to subrounded, loose, dry.	GP		
3	240		No recovery Same as above with two subround pebbles.			
4	239		Light brown to olive gray, dry, dense, silty gravelly till. TD as planned below top-of-till.	ML	0	OB34-4-S MEDEP QA Split Sample
5	238					
6	237					
7	236					
8	235					
9	234					
10						

Drilling Date: 8/3/10
Geologist: S. Donovan / ~~D.Maynard CG GE267~~
Drilling Company: T&K
Signature:
Method: Geoprobe-Macrocore
Ground Elevation (ft NAVD): 243.24
ME East 1801 Northing (ft): 454404.76 Easting (ft): 900212.87

Depth to Groundwater: Dry
Date of Measurement: 8/3/10
Total Depth Drilled (fbgs): 4.9
Borehole sealed with Bentonite & Cold Patch

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Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB35

Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0	243		Asphalt.			
			Light brown to brown, loose, dry, fine to coarse gravelly sand, subrounded to rounded gravel. Lens of orange brown, very fine to coarse gravelly sand from 1.7-2.' bgs.		0	
1	242					
2	241			GP		
			No recovery			
3	240		Light brown to brown, loose, dry, fine to coarse gravelly sand, subrounded to rounded gravel. Lens of orange brown, very fine to coarse gravelly sand from 1.7-2.' bgs.			
4	239		Light brown to olive gray, dry dense, silty gravelly till. TD as planned below top-of-till.		0	OB35-4-S
5	238			ML		
6	237					
7	236					
8	235					
9	234					
10						

Drilling Date: 8/3/10
Geologist: S. Donovan / D.Maynard CG-GE267
Signature:

Drilling Company: T&K
Method: Geoprobe-Macrocore

Ground Elevation (ft NAVD): 243.02

ME East 1801 Northing (ft): 454416.2 Easting (ft): 900197.31

Depth to Groundwater: Dry
Date of Measurement: 8/3/10
Total Depth Drilled (fbgs): 6
Borehole sealed with Bentonite & Cold Patch

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Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB36

Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0	243		Light brown to brown, loose, dry, fine to coarse gravelly sand, trace subrounded and subangular gravel.			
1	242			GP	0	
2	241		No recovery			
3	240		Light brown to brown, loose, dry, fine to coarse gravelly sand, trace subrounded and subangular gravel.			
4	239		Light brown to gray and olive green, dense, silty gravelly till, dry, some subround pebbles. TD as planned below top-of-till.	ML		OB36-4-S
5	238					
6	237					
7	236					
8	235					
9	234					
10						

Drilling Date: 8/3/10
Geologist: S. Donovan / D.Maynard CG GE267
Drilling Company: T&K
Signature:
Method: Geoprobe-Macrocore
Ground Elevation (ft NAVD): 243.16
ME East 1801 Northing (ft): 454427.4 Easting (ft): 900211.87

Depth to Groundwater: Dry
Date of Measurement: 8/3/10
Total Depth Drilled (fbgs): 5.6
Borehole sealed with Bentonite & Cold Patch

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Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB37

Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0	243		Asphalt.			
			Dark brown, loose, dry, medium to coarse gravelly sand, subrounded to rounded.	GP		
1	242		Light brown, fine to medium sand, loose, dry, no gravel.	SP	0	
2	241		Brown to dark brown, loose, dry, sandy gravel with some large subrounded and subangular gravel. TD as planned below top-of-till.			
			No recovery			
3	240		Brown to dark brown, loose, dry, sandy gravel with some large subrounded and subangular gravel. TD as planned below top-of-till.	GP		
4	239		Light brown to gray, dry, dense, silty gravelly till, trace large subangular gravel. TD as planned below top-of-till.	ML	0	OB37-4-S
5	238					
6	237					
7	236					
8	235					
9	234					
10						

Drilling Date: 8/4/10
Geologist: S. Donovan / D.Maynard ~~CG GE267~~
Signature:

Drilling Company: T&K
Method: Geoprobe-Macrocore

Ground Elevation (ft NAVD): 243.21

ME East 1801 Northing (ft): 454413.97 Easting (ft): 900239.3

Depth to Groundwater: Dry
Date of Measurement: 8/4/10
Total Depth Drilled (fbgs): 4.9
Borehole sealed with Bentonite & Cold Patch

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Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB38

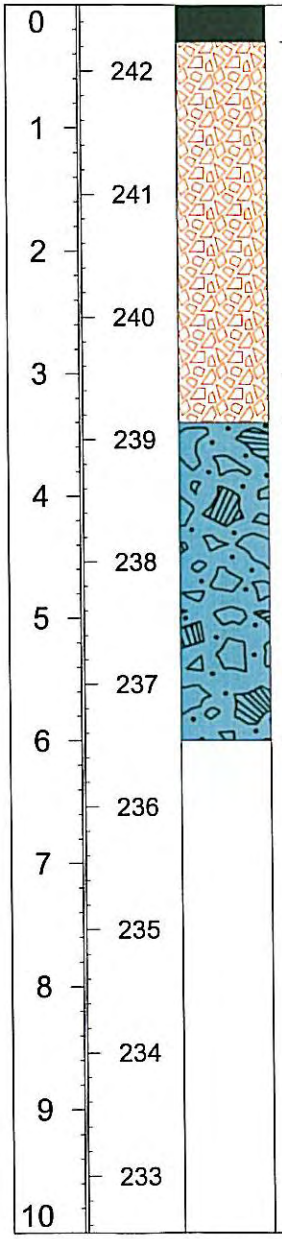
Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0	242		Asphalt.			
1			Light brown and dark brown, dry, loose, fine to coarse sandy gravel, some very large subrounded and subangular gravel.		0	
2	241			GP		
3	240		No recovery			
			Light brown and dark brown, dry, loose, fine to coarse sandy gravel, some very large subrounded and subangular gravel.			OB38-3-S
4	239		Light brown to light gray, dry dense, silty gravell till, some subrounded gravel. TD as planned below top-of-till.			
5	238			ML	0	
6	237					
7	236					
8	235					
9	234					
10	233					

Drilling Date: 8/4/10
Geologist: S. Donovan / D.Maynard ~~CG GE267~~
Drilling Company: T&K
Signature:
Method: Geoprobe-Macrocore
Ground Elevation (ft NAVD): 242.68
ME East 1801 Northing (ft): 454456.05 Easting (ft): 900225.9

Depth to Groundwater: Dry
Date of Measurement: 8/4/10
Total Depth Drilled (fbgs): 6
Borehole sealed with Bentonite & Cold Patch

The Johnson Company, Inc. 100 State St. Suite 600 Montpelier, VT 05602 (802) 229-4600	Project Name: Glenburn Former GAT Facility Location: Glenburn, Maine Project Number: 1-2128-9	**Boring ID: OB39** Prepared for U.S.A.C.E. New England District



Lithology Description	USCS	PID (ppmV)	Sample Names
Asphalt.			
Brown and dark brown, loose, dry, fine to coarse sandy gravel, subrounded to angular.	GP	0	
Brown and dark brown, loose, dry, fine to coarse sandy gravel, subrounded to angular.			
Light brown to light gray, dry, dense, silty gravell till, some subrounded gravel. TD as planned below top-of-till.	ML	0	OB39-3-S

Drilling Date: 8/4/10	Geologist: S. Donovan / D.Maynard CG GE267	Depth to Groundwater:	Dry
Drilling Company: T&K Method: Geoprobe-Macrocore	Signature:	Date of Measurement:	8/4/10
Ground Elevation (ft NAVD): 242.54		Total Depth Drilled (fbgs):	6
ME East 1801 Northing (ft): 454454.26 Easting (ft): 900208.45		Borehole sealed with Bentonite & Cold Patch	

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Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB40

Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0			Asphalt.			
	242		Dark brown and light brown with trace orange brown, loose, dry, fine to coarse sandy gravel, subrounded to angular fine to large gravel.			
1					0	
	241			GP		
2						
	240					
3			No recovery			
			Dark brown and light brown with trace orange brown, loose, dry, fine to coarse sandy gravel, subrounded to angular fine to large gravel.			OB40-3-S
	239		Light brown to light gray, dry, dense, silty gravell till, some subrounded gravel. TD as planned below top-of-till.			
4						
	238			ML	0	
5						
	237					
6						
	236					
7						
	235					
8						
	234					
9						
	233					
10						

Drilling Date: 8/4/10
Geologist: S. Donovan / D.Maynard CG GE267
Signature:
Drilling Company: T&K
Method: Geoprobe-Macrocore
Ground Elevation (ft NAVD): 242.72
ME East 1801 Northing (ft): 454442.23 Easting (ft): 900193.79

Depth to Groundwater: Dry
Date of Measurement: 8/4/10
Total Depth Drilled (fbgs): 6
Borehole sealed with Bentonite & Cold Patch

The Johnson Company, Inc.
100 State St. Suite 600
Montpelier, VT 05602
(802) 229-4600

Project Name: Glenburn Former GAT Facility
Location: Glenburn, Maine
Project Number: 1-2128-9

Boring ID: OB41

Prepared for U.S.A.C.E. New England District

Depth (fbgs)	Elevation (ft NAVD 1988)	Lithology	Lithology Description	USCS	PID (ppmV)	Sample Names
0	243		Asphalt.			
			Light brown to brown, loose, dry, fine to coarse gravelly sand, trace large subrounded and angular gravel.		0	
1	242					
2	241			GP		
			No recovery			
3	240		likely slough from above.			
			Light brown to light gray, dry, dense, silty gravell till, some subrounded gravel, rock at 3.5 - 3.7' bgs. TD as planned below top-of-till.			OB-41-3-S
4	239			ML	0	
5	238					
6	237					
7	236					
8	235					
9	234					
10						

Drilling Date: 8/4/10
Geologist: S. Donovan / D.Maynard CG GE267
Signature
Drilling Company: T&K
Method: Geoprobe-Macrocore
Ground Elevation (ft NAVD): 243.14
ME East 1801 Northing (ft): 454430.77 Easting (ft): 900225.93

Depth to Groundwater: Dry
Date of Measurement: 8/4/10
Total Depth Drilled (fbgs): 6
Borehole sealed with Bentonite & Cold Patch

APPENDIX 2

FIELD NOTES

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Location USACE - GLENBURN GAT Date 7/20/10

Project / Client USACE FB#1

SMD ONSITE @ 1240 TO PRE-MARK SALT SHED SOIL BORINGS.
MOSTLY CLOUDY, SLIGHT BREEZE, 75°F

OBSERVED ± 40 FEET WIDE BY ± 20 FEET HIGH STOCKPILE OF SALT OCCUPYING THE SOUTHERN PORTION OF THE SHED, CANNOT ACCESS THIS LOCATION. ALSO OBSERVED SMALLER STOCKPILES ALONG THE EASTERN SIDE OF SALT SHED, THIS MATERIAL COULD BE MOVED IF NECESSARY.

INSTALLED PIN FLAGS FROM CENTER LINE OF SHED TO THE WESTERN SIDE IN AN OFFSET OR ZIG-ZAG PATTERN, EACH FLAG IS SPACED ± 15 FEET APART.

CURVED ROOF @ EAST + WEST SIDE OF BLDG. WILL NOT ALLOW SOIL BORINGS TO BE INSTALLED IMMEDIATELY ADJACENT TO WALL.

CALLED DIGSAFE FOR CLEARANCE, CONFIRMATION # IS 20103004575

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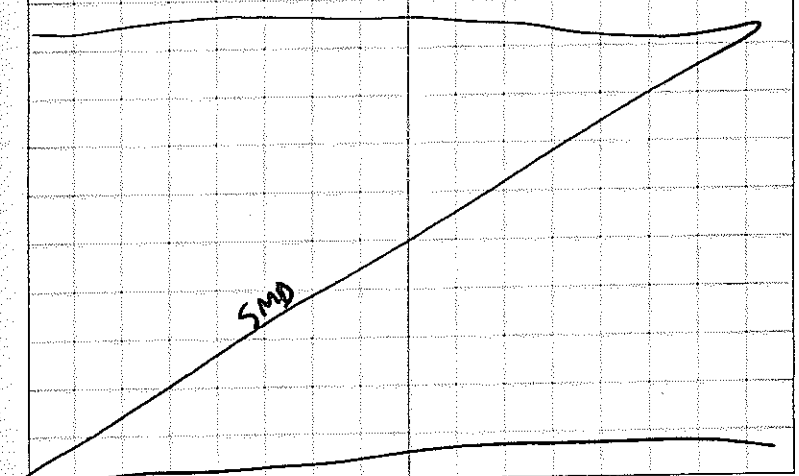
Location USACE - GLENBURN GAT Date 8/2/2010

Project / Client USACE FB #1

SMD / AWR ONSITE @ 1328
MOSTLY SUNNY, MODERATE NE BREEZE, ~80°F

RELOCATED SALT SHED SOIL BORING LOCATIONS AS PER REVISED FIGURE 2 IN 2010 SAP.
LOCATED UNDERGROUND CABLE FROM CIRCUIT BREAKER @ SALT SHED CORNER. MOVED TWO PROPOSED SOIL BORING LOCATIONS (TOWARD PUBLIC SAFETY BLDG.) TO MISS CONDUIT.

SMD / AWR OFFSITE @ 1455



Location USACE - GLENBURN GAT Date 8/3/2010

Project / Client USACE FB #1

SALT SHED SOIL BORING INVESTIGATION

SMD/AWR ONSITE @ 0640
OVERCAST, SLIGHT DRIZZLE, CALM, 65°F

SAMPLED OB22 @ 0735
SAMPLED OB23 @ 0755
THREE ATTEMPTS TO SAMPLE OB24, REFUSAL @ 14" BGS FIRST TWO ATTEMPTS
COLLECTED DUPLICATE SAMPLE FROM OB24
SAMPLED ID IS OB24-2-D
SAMPLED OB25 @ 0840
SAMPLED OB26 @ 0900 - MEDEP Split sample collected.
SAMPLED OB27 @ 0930, COLLECTED MS/MSD
QA/QC SAMPLES FROM OB27 SOIL BORING LOCATION.
SAMPLE ID's: OB27-4-MS / OB27-4-MSD
WITH SAME SAMPLE TIME.
SAMPLED OB28 @ 0950
SAMPLED OB29 @ 1000, OB30 @ 1030, OB31 @ —
Sampled OB34 @ 1350 - MEDEP Split Samples
OB32 @ 1250, OB33 @ 1300, OB34 @ 1350.

SMD/AWR OFFSITE @ 1630

Location USACE - GLENBURN GAT Date 8/4/2010

Project / Client USACE FB #1

COMPLETE SALT SHED SOIL BORINGS

SMD/AWR ONSITE @ 0645
T&K ONSITE @ 0700
OVERCAST, SLIGHT RAIN, CALM, 60°F
COLLECTED OB37 @ 0730
OB38 @ 0750
OB39 @ 0810
OB40 @ 0820
OB41 @ 0930
OB31 @ 1000
COLLECTED DUPLICATE SAMPLE FROM OB37
SOIL BORING, OB37-4-D @ 0735
SEE SOIL BORING FIELD FORMS FOR SOIL DETAILS AND DEPTH TO TILL

SOIL BORING GROUND ELEVATIONS:
AUTO-LEVEL SET UP NEAR SOUTH END OF SALT SHED.

MW-04 TOC PVC = 1.23'
TOC STEEL = 0.85'

OB-28 GS = 3.37'
OB-29 GS = 3.02'
OB-24 GS = 2.48'
OB-25 GS = 2.18'
OB-26 GS = 2.20'
OB-27 GS = 1.93'
OB-19 (MW) TOC PVC = 3.94'

Location USACE - GLENBURN CAT Date 8/4/10

Project / Client USACE FB #1

SOIL BORING SURVEY DETAILS

DIST. TO OB28 FROM GB-MW-02: 43.70'
" " GB-MW-04: 67.50'
" " OB-19: 117.2'

DIST TO OB29 FROM GB-MW-02: 23.90'
" " GB-MW-04: 75.0'
" " OB-19: 137.7

DIST. TO OB24 FROM FIREHOUSE BM: 148.6'
" " OB-18: 75.4
" " GB&MW-01: 12.0'

DIST. TO OB25 FROM FIREHOUSE BM: 152.1'
" " OB-18: 76.8'
" " GB-MW-01: 12.8'

DIST. TO OB26 FROM FIREHOUSE BM: 155.4'
" " OB-18: 80.3'
" " GB-MW-01: 15.8'

DIST. TO OB27 FROM FIREHOUSE BM: 155.1'
" " OB-18: 80.1'
" " GB-MW-01: ~~80.3'~~ 17.6'
SMG 8/4/10

* SUBTRACT 1.0' FROM FIREHOUSE BM READING DUE TO CUT TAPE.

Location USACE - GLENBURN CAT Date 8/4/10

Project / Client USACE FB #1

SOIL BORING SURVEY CONT.

TOTAL STATION SET UP DETAILS:
BACKSIGHT PRISM SET UP ON TRAV. SPIKE IN PAVEMENT NEAR FIREHOUSE. TOTAL PRISM HEIGHT = 5.14'
TOTAL STATION IS SET UP IN FRONT OF THE SALT SHED. HEIGHT OF TOTAL STATION IS 5.21'

Δ DIST. (H)	ΔV	∠	DESCRIPTION
118.88'	0.56'	0.0'00"	BACKSIGHT TRAV ~~BM @ FIREHOUSE~~ IN PAVEMENT
136.73'	3.03'	22.21'40"	BM @ FIREHOUSE
69.28'	-0.43'	3.49'20"	OB-18 TOC
47.87'	-1.31'	322.17'40"	OB22
31.58'	-1.30'	328.40'10"	OB23
57.18'	0.14'	191.55'45"	OB37
76.01'	0.05'	199.53'25"	OB30
63.17'	0.16'	210.26'20"	OB31
80.50'	0.10'	214.42'40"	OB32
57.65'	0.17'	220.8'00"	OB34
67.93'	0.01'	230.48'30"	OB33
47.44'	-0.05'	238.10'15"	OB35
35.00'	0.09	219.4'00"	OB36
24.96'	-0.35'	260.55'50"	OB40
8.00'	-0.53'	225.55'55"	OB39
18.31'	-0.39'	154.8'25"	OB38
35.90	0.07'	195 35'20"	OB41

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Location USACE - GLENBURN GAT Date 8/4/10

Project / Client USACE FB#1

SOIL BUILDING SURVEY CONT.

ADIST.	AV	∠	DESCRIPTION
156.68'	3.04'	22.22'35"	BM @ FIREHOUSE
118.89'	0.56'	0.000"	BACKSIGHT

AWIZ / SMD OFFSITE @ 1220

SMD 8/4/10

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Location Date

Project / Client

PROJECT: Glendon - GAT - 1-2128-9	Log of Well No. OB-22	
BORING LOCATION: OB - 22	ELEVATION AND DATUM:	
DRILLING CONTRACTOR: T & K Drilling	DATE STARTED: 8/3/10	DATE FINISHED: 8/3/10
DRILLING METHOD: Geoprobe - Macrocore	TOTAL DEPTH: 4.9' bgs	SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL	CASING: /
SAMPLING METHOD: Soil PLUNGER	LOGGED BY: AWR	
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL: REG. NO.	

DEPTH (feet)	SAMPLES: Sample No.	Sample	Blows/ Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					Core 0-3'-4' - 2.7' Rec. AWR-8-3-10 - Dry. Lt. Brn, C-Sand, Some fn-Ang. Gravel, few Sub Ang. quartzite fragments.	PID = 0.0 ppmv.
2						
3					Core 3-4.9' - Refusal @ 4.9' 3-3.8' = SAA. 3.8-4.9' - Dry - Olive/Lt. gray, silty till, tr. fn Sand, few ang. pebbles.	PID = 0.0ppmv. Sample collected from 3.8-4.0' @ 735 OB-22-4-S
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Project No.		Page 1 of 1

O:\Copy of WellLogForm (2)

PROJECT: Glenburn - GAT - 1-2128-9	**Log of Well No.** OB-23
BORING LOCATION: OB-23	ELEVATION AND DATUM:
DRILLING CONTRACTOR: T & K Drilling	DATE STARTED: 8/3/10 / DATE FINISHED: 8/3/10
DRILLING METHOD: Geoprobe - macrocore	TOTAL DEPTH: 5.8' bgs / SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST / COMPL / CASING: /
SAMPLING METHOD: Soil Syringe	LOGGED BY: AWR
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL: REG. NO.

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
					Surface Elevation:	
1					Core 0-3' - 2.7' Rec. Dry, Lt. Brown orange, m-C sand and fn. Ang. Gravel.	PID = 0.0 ppmv.
2						
3						
4					Core 3-6' - 2.8' Rec. - Dry / moist, Lt. Brown, Gl.Wl, Silty fill, fr. fn Sand, fn. ang. gravel.	PID = 0.0 ppmv AWR 8-3-10 OB-23-4-5 (755) 3
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Project No.		Page 1 of 1

PROJECT: Glenburn - GAT 1-2128-9	Log of Well No. OB-24	
BORING LOCATION: OB-24	ELEVATION AND DATUM:	
DRILLING CONTRACTOR: T&K Drilling	DATE STARTED: 8/3/10	DATE FINISHED: 8/3/10
DRILLING METHOD: Geoprobe - macrocore	TOTAL DEPTH: 3.0' Bgs	SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL	CASING: /
SAMPLING METHOD: Soil Syringe	LOGGED BY: AWR	
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL: REG. NO.	

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
					Surface Elevation:	
1					Core 0-3' - 2 Refusals @ ~2'-3rd. Attempt: 3' Rec. - 0-2' - Dry Lt. Brown, fn. arg. gravel and m-C sand. -	OB-24-2-S (815) Dup Collected. OB-24-2-D (820) PID - 0.0 ppmv.
2					2-3' = Dry, Dense, Lt. Brown, silty till to. Sub. arg. Gravel.	
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Project No.		Page 1 of 1

PROJECT: Glenbrm - GAT - 1-2128-9	Log of Well No. OB-25	
BORING LOCATION: OB-25	ELEVATION AND DATUM:	
DRILLING CONTRACTOR: T&K Drilling	DATE STARTED: 8/3/10	DATE FINISHED: 8/3/10
DRILLING METHOD: Geoprobe - Macrocore	TOTAL DEPTH: 3.0' BGS	SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL	CASING: /
SAMPLING METHOD: Soil Syringe	LOGGED BY: AWR	
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL: REG. NO.	

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					Core 0-3' 0-2.4' = Dry, Lt. Brown/Tan m-C Sand and fn. Ang. Gravel.	PID = 0.0 ppmv.
2					2.4 - 3.0' = Dry, Dense, Brown silty till fr. m-fn sand and ang. gravel.	OB25-2-5 (840)
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Project No.		Page 1 of 1

PROJECT: Glenburn - GAT - 1-2128-9	Log of Well No. OB-26	
BORING LOCATION: OB-26	ELEVATION AND DATUM:	
DRILLING CONTRACTOR: T&K Drilling	DATE STARTED: 8/3/10	DATE FINISHED: 8/3/10
DRILLING METHOD: Geoprobe - Macrocore	TOTAL DEPTH: 5.5' BGS	SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL	CASING: /
SAMPLING METHOD: Soil Syringe	LOGGED BY: AWR	
HAMMER WEIGHT: DROP:	RESPONSIBLE PROFESSIONAL: REG. NO.	

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					Core 0-3' - 3' Rec. - 0-2.8' = Dry, 7.5yr 4/3 Lt. Brown, M-C Sand and fn. ang. Gravel.	PID = 0.0 ppmv
2					2.8-3.0' - Dry, Dark. Brown, f-m Sand, Some silt, tr. sub. ang. Gravel. 10yr 3/6	
3					Core 3 - 5.5' - Refusal @ 5.5 - 2.0' Rec. 0 - 1.2' = SAA.	PID = 0.0 ppmv.
4					1.2' - 2.0' = Dry, Dense, olive/Lt. Brown, Silty Till, Tr. f-m sand and Sub ang pebbles. 2.5y 5/6	OB 26-4-5 (900)
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PROJECT: Glenbrook-GAT -1-2128-9	Log of Well No. OB-27	
BORING LOCATION: OB-27	ELEVATION AND DATUM:	
DRILLING CONTRACTOR: T&K Drilling	DATE STARTED: 8/3/10	DATE FINISHED: 8/3/10
DRILLING METHOD: Geoprobe / macrocore	TOTAL DEPTH: 5.5' bgs	SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL	CASING: /
SAMPLING METHOD: Soil Syringe	LOGGED BY: AWR	
HAMMER WEIGHT: DROP:	RESPONSIBLE PROFESSIONAL: REG. NO.	

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					Core 0-3' - 2.0' Rec. Dry, Brown, m-C Sand and fn. Ang. Gravel 7.5yr 5/4	PID = 0.0 ppmv.
2					Refusal @ 3.9' - only slough in core w/ few Rock chips in t.p. more 2' Re-Core.	
3					Core 0.3' - 5A 0.3' AGrt	PID = 0.0 ppmv.
4					Core 3-5.5' - 2' Rec. 0 - 1.4': Drk. Brown m-C Sand and fn. Ang. Gravel. -10 yr 5/6	
5						
6					1.4' - 2.6' - Ang, Lt. Brown/olive Dense silty Till, Tr. f-Sand and ang. Gravel. -2.5yr 5/6	OB27-4-S (930)
7						OB27-4-MS OB27-4-MSD } MS/MSD Sample.
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Project No.		Page 1 of 1

PROJECT: Glenburn - GAT -1-2128-9	**Log of Well No.** OB-28
BORING LOCATION: OB-28	ELEVATION AND DATUM:
DRILLING CONTRACTOR: T&L Drilling	DATE STARTED: 8-3-10 / DATE FINISHED: 8/3/10
DRILLING METHOD: Geoprobe / macrocore	TOTAL DEPTH: 4.9' Bgs / SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL / CASING: /
SAMPLING METHOD: Soil Syringe	LOGGED BY: AWR
HAMMER WEIGHT: DROP:	RESPONSIBLE PROFESSIONAL: REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					Core 0-3' Bgs 2.0' recovery 0 - 0.3' Bgs Asphalt 0.3 - 1.0' Bgs Loose, dry, brown coarse sandy gravl.	PID = 0.0 ppmV
2						
3					1.0 - 2.0' Bgs Dk. brown, coarse sandy gravl., dry,	
4					Core 3-4.9' Bgs 1.9' recovery 3.0 - 3.6' Bgs SAA.	PID = 0.0 ppmV
5					3.6' - 4.9' Bgs Dry, dense, olive / lt. brown silty till, some fine to med. sand, trace subrounded gravl.	OB2B-4-5 Sample time = 0950
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Project No.		Page 1 of 1

PROJECT: Glenburn-GAT-1-2128-9	Log of Well No. OB-29	
BORING LOCATION: OB29	ELEVATION AND DATUM:	
DRILLING CONTRACTOR: T&K Drilling	DATE STARTED: 8/3/10	DATE FINISHED: 8/3/10
DRILLING METHOD: Geoprobe / Macrocore	TOTAL DEPTH: 5.1' Bgs	SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL	CASING: /
SAMPLING METHOD: Soil Syringe	LOGGED BY: AWR	
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL: REG. NO.	

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					CORE 0 - 3' Bgs 1.5' RECOVERY 0 - 0.3' Bgs TOPSOIL, DK. BROWN FINE - MED. ROOTS, GRASS 0.3 - 1.5' Bgs LIGHT BROWN MED - COARSE SAND, LOOSE, DRY, TRACE SUBANGULAR GRVL.	PID = 0.0 PPMV
2						
3					CORE 3 - 5.1' Bgs 2.1' RECOVERY	PID = 0.0 PPMV
4					0 - 1.2' Bgs SAA W/ SOME SUBANGULAR AND SUBROUNDED GRVL.	
5					@ 1.2 - 2.1' Bgs LT. BROWN SILTY TILL W/ SOME COARSE SUBAGULAR / ANGULAR GRVL. & ROCK FRAGMENTS	COLLECTED OB29-4-5 @ 1000
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Project No.		Page 1 of 1

PROJECT: Glenburn -GAT 1-2128-9	Log of Well No. OB30	
BORING LOCATION: OB30	ELEVATION AND DATUM:	
DRILLING CONTRACTOR: T&K Drilling	DATE STARTED: 8/3/10	DATE FINISHED: 8/3/10
DRILLING METHOD: Geoprobe / macrocore	TOTAL DEPTH: 6.0' BGS	SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL	CASING: /
SAMPLING METHOD: Soil Syringe	LOGGED BY: AWR	
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL: REG. NO.	

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					CORE 0-3' BGS 2.9' RECOVERY 0 - 0.4' GRVL. / ASPHALT 0.4 - 2.2' DK BROWN + "SALT + PEPPER" BEACH SAND. FINE TO MED SAND, LOOSE, DRY, NO STRUCTURE 2.2 - 2.9' DK BROWN FINE TO COARSE GRAVELLY SAND. LOOSE, DRY	PID = 0.0 PPMV
2						
3						
4					CORE 3-6' BGS 3.0' RECOVERY 0 - 0.8 SAA 0.8 - 6.0' SAME SILTY / GRVL TILL. (0.9 - 1.1' ROCK (FRACTURED) 1.7 - 2.0' SALT + PEPPER BEACH SAND LENSE)	PID = 0.0 PPMV COLLECTED OB30.4-5 @ 10:30
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Project No.		Page 1 of 1

PROJECT: Glenburn GAT 1-2128-9	Log of Well No. OB-31	
BORING LOCATION: OB31	ELEVATION AND DATUM:	
DRILLING CONTRACTOR: T+K Drilling	DATE STARTED: 8/3/10	DATE FINISHED: 8/4/10
DRILLING METHOD: Geoprobe / Macrocore	TOTAL DEPTH: 4.7' Bgs	SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL	CASING: /
SAMPLING METHOD: Soil Syringe	LOGGED BY: SMD	
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL: REG. NO.	

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					Core 0 - 3' Bgs 2.7' Recovery 0 - 0.2' Asphalt 0.2 - 2.7' Lt. Brown to Dk. Brown Fine to Coarse Gravly. Sand with some Subangular / Subrounded Gravel. 5 Munsell Color Range 7.5YR 2.5/3 and 2.5Y 5/3	PID = 0.0 ppmV First Attempt Refusal @ 3.1' Bgs
2						2nd Attempt Refusal @ 1.0'
3						3rd Attempt Refusal @ 2.5' Bgs
4					Core 3.0 - 4.7' 1.7' Recovery 0 - 1.4' Sha.	4th Attempt Refusal @ ±2.7' 5th Attempt Refusal @ ±2'
5					1.4 - 1.7' Lt. Brown to Olive Green. Silty Gravly. Till, Dense Dry. Rock @ 0.8 - 1.0'	6th " " @ ±2.5' 7th " " @ ±1.0'
6						Collected OB31-3-S @ 1000
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Project No.		Page ___ of ___

PROJECT: Glenburn GAT - 1-2128-9	Log of Well No. OB32	
BORING LOCATION: OB32	ELEVATION AND DATUM:	
DRILLING CONTRACTOR: T&K Drilling	DATE STARTED: 8/3/10	DATE FINISHED: 8/3/10
DRILLING METHOD: Geoprobe / Macrocore	TOTAL DEPTH: 5.2' bgs	SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL	CASING: /
SAMPLING METHOD: Soil Syringe	LOGGED BY: SMD	
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL: REG. NO.	

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					CORE 0-3' Bgs 2.3' RECOVERY -0-0.4'- Asphalt. -0.4- 4. Brown - Drk. Brown, Dry, m-C Sand and fn. Sub ang. Gravel.	PID = 0.0 ppmv THREE ATTEMPTS WERE MADE BEFORE BREAKTHROUGH of 3' MARK
2						
3						
4					CORE 3-5.2' Bgs 2.2' RECOVERY 0-1.1' SAA. (3-4.1' Bgs) 1.1-2.2' LT. BROWN TO OLIVE SILTY GRVL. TILL, DENSE, DRY, FRIABLE.	PID = 0.0 ppmv COLLECTED OB32-4-S @ 1250
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PROJECT: GLENBURN - GAT 1-2128-9	Log of Well No. OB33	
BORING LOCATION: OB-33	ELEVATION AND DATUM:	
DRILLING CONTRACTOR: T+K DRILLING	DATE STARTED: 8/3/10	DATE FINISHED: 8/3/10
DRILLING METHOD: GEOPROBE / MACROCORE	TOTAL DEPTH:	SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL	CASING: /
SAMPLING METHOD: SOIL SYRINGE	LOGGED BY: SMD	
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL:	REG. NO.

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
					Surface Elevation:	
1					CORE 0-3' BGS 2.5' RECOVERY	0.0 PPMV
2					0-0.3' ASPHALT 0.3-2.0' BROWN / DK. BROWN MED-COARSE GRAVLY. SAND, LOOSE, DRY, ANGULAR TO SUBANGULAR	COLLECTED SAMPLE: OB33-2-5 @ 1300
3					2.0-2.5 DK. BROWN TO GRAY SILTY GRAVLY TILL, DENSE, DRY, FRIABLE, ANGULAR	
4					CORE 3-6' BGS 3' RECOVERY	PID: 0.0 PPMV
5					SAA BUT LT. BROWN TO OLIVE GREEN W/ SOME V. LARGE SUBROUNDED GRVL.	
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PROJECT: GLENBURN GAT 1-2128-9	Log of Well No. OB 34	
BORING LOCATION: OB-34	ELEVATION AND DATUM:	
DRILLING CONTRACTOR: T+K DRILLING	DATE STARTED: 8/3/10	DATE FINISHED: 8/3/10
DRILLING METHOD:	TOTAL DEPTH: 4.9' Bgs	SCREEN INTERVAL: /
DRILLING EQUIPMENT: GEOPROBE / MACROCORE	DEPTH TO WATER: FIRST COMPL	CASING: /
SAMPLING METHOD: SOIL SYRINGE	LOGGED BY:	
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL: REG. NO.	

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					CORE 0-3' BGS 2.8' RECOVERY 0-0.3' ASPHALT 0.3-2.1' LT. BROWN FINE TO COARSE GRVLY. SAND, LOOSE, DRY, NO STRUCTURE 2.1-2.8 DK. BROWN MED. TO COARSE GRVLY. SAND ANGULAR TO SUBROUNDED, DRY, LOOSE	FIRST 2 ATTEMPTS REFUSAL @ 1.5' BGS + 1.7' BGS
2						
3					CORE 3-4.9' BGS 1.9' RECOVERY	PID = 0.0 PPM
4					0-0.9' SAA W/ TWO V.LARGE SUBROUNDED GRAVEL PIECES	COLLECTED SAMPLE OB 34-4-5 @ 1350
5					0.9-1.9 LT. BROWN TO OLIVE GRAY SILTY GRVLY. TILL, DENSE, DRY	
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Project No.		Page 1 of 1

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PROJECT: GLENBURN GAT 1-2128-9	Log of Well No. OB35	
BORING LOCATION: OB-35	ELEVATION AND DATUM:	
DRILLING CONTRACTOR: T+K DRILLING	DATE STARTED: 8/3/10	DATE FINISHED: 8/3/10
DRILLING METHOD: GEOPROBE / MACROCORE	TOTAL DEPTH: 6.0' BGS	SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL	CASING: /
SAMPLING METHOD: SOIL SYRINGE	LOGGED BY: SMD	
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL: REG. NO.	

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					CORE 0-3' BGS 2.6' RECOVERY 0-0.3' ASPHALT 0.3-2.6 LT. BROWN TO BROWN FINE TO COARSE GRAVLY. SAND LOOSE, DRY, SUBROUNDED TO RANDED GRVL. ORANGE BROWN V. FINE TO COARSE GRAVLY. SAND FROM 1.7-2.0' BGS	PID = 0.0 PPMV THREE ATTEMPTS TO REFUSAL @ 3", 5", AND 3.0'
2						
3						
4					CORE 3-6' BGS 3' RECOVERY 0-1.1 SAA 1.1-3.0 LT. BROWN TO OLIVE/GRAY SILTY GRVLY. TILL, DENSE, DRY SAME EXACT TILL THROUGHOUT SALT SHED SOIL BORINGS	PID = 0.0 PPMV COLLECTED OB35-4-S @ 1500
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Project No.		Page 1 of 1

PROJECT: Glenburn - GAT 1-2128-9	**Log of Well No.** OB-36
BORING LOCATION: OB36	ELEVATION AND DATUM:
DRILLING CONTRACTOR: T&K Drilling	DATE STARTED: 8/3/10 / DATE FINISHED: 8/3/10
DRILLING METHOD: Geoprobe / Macrocore	TOTAL DEPTH: / SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL / CASING: /
SAMPLING METHOD: Soil Syringe	LOGGED BY: SMD
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL: REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	Sample	Blows/ Foot	OVM Reading (ppm)	DESCRIPTION: NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. — Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					Core 0-3' BGS – 2.3' Rec. Lt. Brown – Brown fine - Coarse Gravelly Sand, Loose, Dry, tr. Sub Round → Sub Ang Gravel.	PID: 0.0 ppmv
2						
3					Core 3-5.6' Bgs 2.6' Recovery	Collected Sample: OB36-4-S (1525)
4					0-0.5 SAA Some Olive Green	
5					0.5 - 2.6 Lt. Brown to Gray Silty Gravly, Till, Dense, Dry Same Till w/ some V. Large Subrounded Gravel.	
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Project No. | Page 1 of 1

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PROJECT: GLENBURN GAT 1-2128-9	Log of Well No. OB37	
BORING LOCATION: OB-37	ELEVATION AND DATUM:	
DRILLING CONTRACTOR: T & K DRILLING	DATE STARTED: 8/4/10	DATE FINISHED: 8/4/10
DRILLING METHOD: GEOPROBE / MACROCORE	TOTAL DEPTH: 4.9' BGS	SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL	CASING: /
SAMPLING METHOD: SOIL SYRINGE	LOGGED BY: SMD	
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL: REG. NO.	

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					CORE 0-3' 2.4' RECOVERY 0-0.3' ASPHALT 0.3-1.1' DK. BROWN MED - COARSE GRVLY. SAND, LOOSE, DRY, SUBROUNDED TO ROUNDED	PID = 0.0 FIRST ATTEMPT REFUSAL @ 2.3' BGS
2					1.1-1.7' LT. BROWN FINE TO MED. SAND, NO GRVL., LOOSE, DRY	
3					1.7-2.4 BROWN / DK. BROWN SANDY GRVL. W/ SOME SUBROUNDED & SUBANGULAR LARGE GRVL. DRY, LOOSE	
4						
5					CORE 3-4.9' 1.9' RECOVERY	PID = 0.0ppmv
6					0-0.8 SAA.	COLLECTED OB37-4-5 @ 0730
7					0.8-1.9 LT. BROWN TO GRAY SILTY GRVLY. TILL, DENSE, DRY TRACE LARGE SUBANGULAR GRVL.	AND OB37-4-D @ 0735
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Project No.		Page 1 of 1

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PROJECT: GLENBURN - GAT 1-2128-9	Log of Well No. OB38	
BORING LOCATION: OB - 38	ELEVATION AND DATUM:	
DRILLING CONTRACTOR: T+K DRILLING	DATE STARTED: 8/4/10	DATE FINISHED: 8/4/10
DRILLING METHOD: GEOPROBE / MACROCORE	TOTAL DEPTH: 6.0'BGS	SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL	CASING: /
SAMPLING METHOD: SOIL SYRINGE	LOGGED BY: SMD	
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL: REG. NO.	

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist, % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					CORE 0-3'BGS 2.6' RECOVERY 0-0.3' ASPHALT 0.3-2.6' LT. BROWN + DK. BROWN FINE TO COARSE SANDY GRVL., SOME V. LARGE SUBROUNDED AND SUB-ANGULAR GRVL., DRY, LOOSE	PID = 0.0 PPMV
2						
3					CORE 3-6' 3.0' RECOVERY 0-0.2' SAND.	
4					0.2-3.0' LT. BROWN TO LT. GRAY SILTY GRVLY. TILL, DENSE, DRY SUBROUNDED GRVL.	PID = 0.0 PPMV
5						COLLECTED OB38-3-S @ 0750
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Project No.		Page 1 of 1

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PROJECT: GLENBURN - GAT 1-2128-9	**Log of Well No.** OB39
BORING LOCATION: OB-39	ELEVATION AND DATUM:
DRILLING CONTRACTOR: T+K DRILLING	DATE STARTED: 8/4/10 — DATE FINISHED: 8/4/10
DRILLING METHOD: GEOPROBE / MACROCORE	TOTAL DEPTH: 6.0'BGS — SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL — CASING: /
SAMPLING METHOD: SOIL SYRINGE	LOGGED BY: SMD
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL: REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					CORE 0.3' 3.0' RECOVERY 0-0.3' ASPHALT 0.3-3.0' BROWN + DK. BROWN FINE TO COARSE SANDY GRVL. SUBROUNDED TO ANGULAR, DRY, LOOSE	PID = 0.0 PPMV
2						
3					CORE 3-6'BGS 3.0' RECOVERY 0-0.4' SAA.	PID = 0.0 PPMV
4					0.4-3.0' LT. BROWN TO LT. GRAY SILTY GRVLY. TILL ROUNDED TO SUBANGULAR MED-FINE GRVL. DENSE, DRY SOME LARGE SUB-ROUNDED GRVL.	COLLECTE OB39-3-5 @ 0810
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PROJECT: GLENBURN - GAT 1-2128-9	Log of Well No. OB40	
BORING LOCATION: OB-40	ELEVATION AND DATUM:	
DRILLING CONTRACTOR: TTK DRILLING	DATE STARTED: 8/4/10	DATE FINISHED: 8/4/10
DRILLING METHOD: GEOPROBE / MACROCORE	TOTAL DEPTH: 6.0' BGS	SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL	CASING: /
SAMPLING METHOD: SOIL SYRINGE	LOGGED BY: SMD	
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL: REG. NO.	

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					CORE 0-3' BGS 2.8' RECOVERY 0-0.3' ASPHALT 0.3-2.8' DK. BROWN, LT. BROWN, TRACE ORANGE BROWN FINE TO COARSE SANDY GRVL. SUBROUNDED TO ANGULAR, LOOSE, DRY. FINE TO LARGE GRVL.	PID = 0.0 PPMV
2						
3						
4					CORE 3-6' 3.0' RECOVERY 0-0.2' SAA. 0.2-3.0' SAME EXACT TILL UNIT AS DESCRIBED THROUGHOUT SALT SHED BORINGS WITH MORE OLIVE GREEN COLOR	PID = 0.0 PPMV COLLECTED OB40-3-5 @ 0820
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Project No.		Page 1 of 1

PROJECT: GLENBURN - GAT 1-2128-10	Log of Well No. OB41	
BORING LOCATION: OB-41	ELEVATION AND DATUM:	
DRILLING CONTRACTOR: T+K DRILLING	DATE STARTED: 8/4/10	DATE FINISHED: 8/4/10
DRILLING METHOD: GEOPROBE / MACROCORE	TOTAL DEPTH: 5.0' BGS	SCREEN INTERVAL: /
DRILLING EQUIPMENT:	DEPTH TO WATER: FIRST COMPL	CASING: /
SAMPLING METHOD: SOIL SYRINGE	LOGGED BY:	
HAMMER WEIGHT: / DROP: /	RESPONSIBLE PROFESSIONAL: REG. NO.	

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading (ppm)	DESCRIPTION NAME (USCS Symbol): color, moist. % by weight, plast., consistency, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					CORE 0-3' BGS 2.4' RECOVERY 0-0.3' ASPHALT 0.3-2.4' BROWN TO LT. BROWN FINE TO COARSE SANDY GRVL. SUBROUNDED TO ANGULAR MED.-LARGE GRVL. DRY, LOOSE	PID = 0.0 PPMV
2						
3						
4					CORE 3-6' BGS 2.0' RECOVERY 0-0.5 SLOUGH OR BACKFILL SAA. 0.5-2.0' LT. BROWN, LT. GRAY SILTY GRVLY. TILL. FINE TO MED. SUBROUNDED, ROUNDED GRVL. DRY, DENSE. ROCK @ 0.5-0.7'	
5						PID = 0.0 PPMV COLLECTED OB41-3-S @ 0930
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Project No.		Page 1 of 1

FedEx. US Airbill
Express

FedEx Tracking Number 8731 1007 4540

Form ID No. 0215 — Sender's Copy

1 From *Please print and press hard.*

Date 8/3/10 Sender's FedEx Account Number SENDER'S FEDEX ACCOUNT NUMBER ONLY 1075-7336-4

Sender's Name SHAWN DONOVAN Phone (802) 229-4600

Company THE JOHNSON CO

Address 100 STATE ST STE 600 Dept/Floor/Suite/Room

City MONTPELIER State VT ZIP 05602-2848

2 Your Internal Billing Reference First 24 characters will appear on invoice. OPTIONAL

3 To

Recipient's Name ESS LABORATORY Phone (401) 461-7181

Company

Address 185 FRANCES AVE. Dept/Floor/Suite/Room

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address

Use this line for the HOLD location address or for continuation of your shipping address.

City CRANSTON State RI ZIP 02910-2211

HOLD Weekday — FedEx location address REQUIRED. NOT available for FedEx First Overnight.

HOLD Saturday — FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

0422830667

4a Express Package Service * To most locations. — *Packages up to 150 lbs.*

- [x] FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations.*
- [ ] FedEx 2Day — Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

4b Express Freight Service ** To most locations. — *Packages over 150 lbs.*

- [ ] FedEx 1Day Freight — Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected. FedEx 1Day Freight Booking No. CALL 1.800.332.0807
- [ ] FedEx 2Day Freight — Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available.

5 Packaging * Declared value limit $500.

- [ ] FedEx Envelope*
- [ ] FedEx Pak* — Includes FedEx Small Pak and FedEx Large Pak.
- [ ] FedEx Box
- [ ] FedEx Tube
- [x] Other

6 Special Handling and Delivery Signature Options

- [ ] SATURDAY Delivery — NOT available for FedEx Standard Overnight, FedEx Express Saver, or FedEx 3Day Freight.

Signature options:

- [ ] No Signature Required — Package may be left without obtaining a signature for delivery.
- [x] Direct Signature — Someone at recipient's address may sign for delivery. Fee applies.
- [ ] Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies.

Does this shipment contain dangerous goods? One box must be checked.

- [x] No
- [ ] Yes — As per attached Shipper's Declaration.
- [ ] Yes — Shipper's Declaration not required.
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

- [ ] Cargo Aircraft Only

7 Payment *Bill to:*

Enter FedEx Acct. No. or Credit Card No. below.

- [x] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

FedEx Acct. No. / Credit Card No. Exp. Date

Total Packages	Total Weight	Total Declared Value†
1	50 lbs.	$ 500 .00

†Our liability is limited to $100 unless you declare a higher value. See back for details. By using this Airbill you agree to the service conditions on the back of this Airbill and in the current FedEx Service Guide, including terms that limit our liability.

605

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FedEx. US Airbill
Express

FedEx Tracking Number 8731 1007 4518

Form ID No. 0215 — Sender's Copy — SPH12

1 From *Please print and press hard.*

Date 8/4/10 Sender's FedEx Account Number SENDER'S FEDEX ACCOUNT NUMBER ONLY 1075-7336-4

Sender's Name Adam Roktoy Phone (802) 229-4600

Company THE JOHNSON CO

Address 100 STATE ST STE 600 Dept/Floor/Suite/Room

City MONTPELIER State VT ZIP 05602-2848

2 Your Internal Billing Reference First 24 characters will appear on invoice. OPTIONAL

3 To

Recipient's Name Phone (401) 461-4486

Company ESS Laboratory

Address 185 Frances Av. Dept/Floor/Suite/Room

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address

Use this line for the HOLD location address or for continuation of your shipping address.

City Cranston State RI ZIP 02910-2211

HOLD Weekday — FedEx location address REQUIRED. NOT available for FedEx First Overnight.

HOLD Saturday — FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

0422830667

4a Express Package Service * To most locations. — *Packages up to 150 lbs.*

- [x] FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations.*
- [ ] FedEx 2Day — Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

4b Express Freight Service ** To most locations. — *Packages over 150 lbs.*

- [ ] FedEx 1Day Freight — Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected. FedEx 1Day Freight Booking No. CALL 1.800.332.0807
- [ ] FedEx 2Day Freight — Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available.

5 Packaging * Declared value limit $500.

- [ ] FedEx Envelope*
- [ ] FedEx Pak* — Includes FedEx Small Pak and FedEx Large Pak.
- [ ] FedEx Box
- [ ] FedEx Tube
- [x] Other

6 Special Handling and Delivery Signature Options

- [ ] SATURDAY Delivery — NOT available for FedEx Standard Overnight, FedEx Express Saver, or FedEx 3Day Freight.

Signature options:

- [ ] No Signature Required — Package may be left without obtaining a signature for delivery.
- [ ] Direct Signature — Someone at recipient's address may sign for delivery. Fee applies.
- [ ] Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies.

Does this shipment contain dangerous goods? One box must be checked.

- [x] No
- [ ] Yes — As per attached Shipper's Declaration.
- [ ] Yes — Shipper's Declaration not required.
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

- [ ] Cargo Aircraft Only

7 Payment *Bill to:*

Enter FedEx Acct. No. or Credit Card No. below.

- [x] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

FedEx Acct. No. / Credit Card No. Exp. Date

Total Packages	Total Weight	Total Declared Value†
1	46 lbs.	$ 500 .00

†Our liability is limited to $100 unless you declare a higher value. See back for details. By using this Airbill you agree to the service conditions on the back of this Airbill and in the current FedEx Service Guide, including terms that limit our liability.

605

Ship on the go at mobile.fedex.com
Tap into all our FedEx® shipping tools with FedEx® Mobile.

Health and Safety Plan

Receipt and Acceptance Form

Former Glenburn Ground Air Transmitter Facility

Glenburn, Maine

I have received a copy of the Health and Safety Plan prepared for the above referenced site, I have read and understand its content and I agree that I will abide by its requirements.

Name	Signature	Company	Date
SHAWN DONOVAN	Shawn Donovan	JCO	8/2/10
Adam Robtoy	Adam Robtoy	JCO	8/2/10
Sean M'Garry	Sean M'Garry	TEK	8/3/10
Kevin Singleton	Kevin Singleton	TEK	8/3/10
PAUL YOUNG	Paul Young	USACE	8/3/10
Gail Lipferd	Gail Lipferd	MEDEP	8/3/10

Health and Safety Plan Pre-Entry Briefing Attendance Form

Glenburn Former Ground Air Transmitter Facility

Glenburn, Maine

Conducted by:	SHAWN DUNOVAN	**Date Performed:**	8/3/10
Topics Discussed:	1. Review of the content of the HASP (Required)		
	2. SLIPS, TRIPS, FALLS		
	3. TRAFFIC CONTROL		
	4. CONTAMINANT OF COLLERS		

Printed Name	Signature	Time On-site	Time Off-site	Representing
Kevin Singleton	[signature]	7.00	1545	T&K
Sean McGarry	[signature]	7:00	1545	TEK
SHAWN DUNOVAN	[signature]	6:40	1630	JCO
Adam Robtop	[signature]	6:40	1630	JCO
Gail Lipfert	[signature]	07:30	1530	MEDEA

Health and Safety Plan Pre-Entry Briefing Attendance Form

Glenburn Former Ground Air Transmitter Facility

Glenburn, Maine

Conducted by:	SHAWN DONOVAN	**Date Performed:**	8/2/10 - 8/4/10
Topics Discussed:	1. Review of the content of the HASP (Required)		
	2. HEAT STRESS		
	3. SLOUGHING STOCKPILE MATERIAL		
	4. TRAFFIC SAFETY		

Printed Name	Signature	Time On-site	Time Off-site	Representing
SHAWN DONOVAN		1526	1500	JCO
Adam Robtoy		1320	1500	JCO
8/4/2010	DRILLING INSIDE / NOISE			
	SLOUGHING MATERIAL			
Kevin Singleton		7:00	10:30	TCK
Sean McGarry		7:00	10:30	TCK
SHAWN DONOVAN		0645	1220	JCO
Adam Robtoy		645	1220	JCO

WEEKLY SAFETY MEETING

Date Held: 8/2/10 Time: 1410

CONTRACTOR: JCD Contract No: DACW33-

PERSONNEL PRESENT (check): Contractor ✓ Sub. ____ Government ____

SUBJECTS DISCUSSED (check items that were discussed during meeting):

USACE EM385-1-1 ____ (Specific sections)
On-site Accident Prevention Plan (or Site Safety and Health Plan) ✓
Individual protective equipment (saftey-toed boots, safety glasses, etc..) ✓
Prevention of slips/falls ✓
Back injury/safe lifting techniques ✓
Fire prevention X
First aid ✓
Tripping hazards ✓
Equipment inspection and maintenance ✓
Hoisting equipment, winch and crane safety ✓
Ropes, hooks, chains, and slings X
Water safety X Boat safety X
HAZMAT, Toxic hazards, MSDS, respiratory, ventilation ✓
Staging, ladders, concrete forms, safety nets, handrails X
Hand tools, power tools, machinery, chain saws X
Vehicle operation safety ✓
Electrical grounding, temporary wiring, GFCI ✓
Lockouts/safe clearance procedures X
Welding, cutting X
Excavation hazards/rescue X
Loose rock/steep slopes X
Explosives X
Sanitation and waste disposal X
Clean-up, trash ✓

Other safety issues of concern specific to contract that was discussed during meeting:

All persons attending meeting the meeting must sign below or on the back of the form.

Contractor Representative Signature _____ Date: 8/2/10
CE Inspector/QA (if present at meeting) _____ Date:

The Johnson Company, Inc.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

PID CALIBRATION SHEET				
Job Name: Former GAT Facility – Glenburn, Maine			Job #: 1-2128-9	
Equipment ID:		Serial # 005366		Lamp: 10.6 eV
Brand of Standard		SPEC AIR		
Lot #				
Expiration Date				
Date	Time	Initials	100 ppm Isobutylene Value (ppm)	Site Background Value (ppm)
8/3/10	0710	SMD	100.8	0.0
8/4/10	0650	SMD	* 130.2	0.0
8/4/10	1210	SMD	* 129.9	0.0
* RESPONSE FACTOR SET TO 1.3 FOR TCE				

Bottle Orders

1. Contact Person & Phone Number: **Shawn Donovan (802) 922-3447**
2. Company Name: **The Johnson Company**
3. Project Reference: **USACE Glenburn No. 1-21-28-9**
4. Location where bottles are to be dropped off: **Ship to: The Johnson Company 100 State Street, Suite 600 Montpelier, VT 05602**
5. Date and time of Delivery: **Needs by Friday, 07/30/10**

Analysis	Matrix	Number of Samples	Number of bottles per sample	*Type of Container	Volume of Container	Preservative
VOC (High)	**Soil**	**2**	**1**	P, G, V, O	**40ml**	**MeOH**
VOC (Low Level)	**Soil**	**2**	**2**	P, G, V, O	**40ml**	**DI Water**
%Solid for VOC	**Soil**	**2**	**1**	P, G, V, O	**2oz**	**None**
		1	**1**	P, G, V, O	**1L**	**DI water**

*P = Plastic, G = Glass, V = VOA Vial, O = Other

Does client need Chains of Custody and Custody Seal?		Yes:	X	No:	
Trip Blanks required?	1	Yes:	X	No:	
Is a cooler required?		Yes:	X	No:	
Do all VOA Soil Samples have jars for %Solids?		Yes:	X	N/A:	
Is VOA Soil Sampling Instruction Sheet included?		Yes:	X	N/A:	
Does Bottle Order agree w/Quote and/or Reg. Limits Requested?		Yes:	X	No:	
Has this order been placed in the Courier Log Book?		Yes:		No:	X

Received by: **Liz Ouk**

Prepared by:

Reviewed by:

APPENDIX 3

CHAIN OF CUSTODY FORMS

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Page 1 of 1

Turn Time: X Standard Other ____
If faster than 5 days, prior approval by laboratory is required # ____

State where samples were collected from: MA RI CT NH NJ NY (ME) Other ____

Is this project for any of the following: MA-MCP Navy (USACE) Other ____

Reporting Limits

ESS LAB PROJECT ID

Electronic Deliverable: Yes X No ____

Format: Excel X Access X PDF X Other ____

Co. Name	Project #	Project Name (20 Char. or less)
The Johnson Company	1-2128-9	Glenburn - GAT 1

Contact Person	Address
Don Maynard	100 State Street, Suite 600

City	State	Zip	PO#
Montpelier	VT	05602	

Telephone #	Fax #	Email Address
802-229-4600		Dmm@jcomay1.com

Circle and/or Write Required Analysis

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	8260 VOA / 624 / 524.2	8021 MTBE/BTEX / 8015 GRO / VPH w/target	8100 TPH / EPH w/o PAHs / 8015 DRO / EPH w/PAHs / EPH 4 Diesel	8081 Pesticides / 8082 PCB / 608 Pesticides / 608 PCB	8270 SVOA / 625 / PAH 8270	RCRA5 / RCRA8 / PP13 / TAL23	TCLP-RCRA8 / NBC7	MCP-METALS (13) / MCP-METALS (13) w/Hg	5035/8260B Low Level VOC
	8/4/10	730		X	S	OB37-4-S	G/9	4	V/G									X
		735		X	S	OB37-4-D												X
		750		X	S	OB38-3-S												X
		810		X	S	OB39-3-S												X
		820		X	S	OB40-3-S												X
		930		X	S	OB41-3-S												X
		1000		X	S	OB31-3-S												X
		1015		X	DI	OB31-x-EB		2										X
	8/4/10	—	—	—	DI	080410-TB	G/9	2	V									X

Container Type: P-Poly G-Glass S-Sterile V-VOA

Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present ___ Yes ___ No

Seals Intact ___ Yes ___ No NA: ___

Cooler Temp: ___

Internal Use Only

[ ] Pickup

[ ] Technicians ___

Preservation Code 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ICE/H_2O

Sampled by: Adam Robey (Adam)

Comments: Questions Call Adam Robey - 802-522-0965

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	8/4/10 1130						

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 B

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time X Standard Other _____
If faster than 5 days, prior approval by laboratory is required # _____

State where samples were collected from: MA RI CT NH NJ NY (ME) Other _____

Is this project for any of the following: MA-MCP Navy (USACE) Other _____

Reporting Limits

ESS LAB PROJECT ID

Electronic Deliverable Yes X No ____
Format: Excel X Access X PDF X Other _____

Co. Name	Project #	Project Name (20 Char. or less)
The Johnson Company	1-2128-9	Glenburn - GAT

Contact Person	Address
Don Maynard.	100 State Street, Suite 600

City	State	Zip	PO#
Montpelier	VT	05602	

Telephone #	Fax #	Email Address
802-229-4600		DMM@JCOmail.com

Circle and/or Write Required Analysis

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	8260 624 524.2 VOA	8021 8015 VPH MTBE/BTEX GRO w/targets	8100 8015 TPH DRO	EPH EPH w/o PAHs w/PAHs 4 Diesel	8081 8082 608 608 Pesticides PCB Pesticides PCB	8270 625 PAH SVOA 8270	RCRA5 RCRA8 PP13 TAL23	TCLP-RCRA8 NBC7	MCP-METALS (13) MCP-METALS (13) w/Hg	SOSS/8260B LOW LEVEL VOC				
	8/3/10	0735		X	S	OB22-4-S	6/4	4	V/G										X				
		0755				OB23-~~4~~ 3-S Rev 8-3-10													X				
		815				OB24-2-S													X				
		820				OB24-2-D													X				
		840				OB25-2-S													X				
		900				OB26-4-S													X				
		930				OB27-4-S													X				
		930				OB27-4-MS													X				
		930				OB27-4-MSD													X				
		950				OB28-4-S													X				

Container Type: P-Poly G-Glass S-Sterile V-VOA | Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present ___ Yes ___ No
Seals Intact ___ Yes ___ No NA: ___
Cooler Temp: _____

Internal Use Only
[ ] Pickup
[ ] Technicians _____

Preservation Code 1- NP, 2- HC1, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____

Sampled by: Adam Rostoy (CAR) / Shawn Donovan

Comments: QUESTIONS CALL ADAM ROSTOY (802) 522-0905

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	8/3/10 1630						
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 B

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time X Standard Other ____
If faster than 5 days, prior approval by laboratory is required # ____
State where samples were collected from: MA RI CT NH NJ NY (ME) Other ____
Is this project for any of the following: MA-MCP Navy (USACE) Other ____

Reporting Limits

ESS LAB PROJECT ID

Electronic Deliverable Yes X No ____
Format: Excel X Access X PDF X Other ____

Co. Name	Project #	Project Name (20 Char. or less)
The Johnson Company	1-2128-9	Glenburn-GAT

Contact Person	Address
Don Maynard	100 State Street

City	State	Zip	PO#
Montpelier	VT	05602	

Telephone #	Fax #	Email Address
802-229-4600		Dmm@jcomail.com

Circle and/or Write Required Analysis

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	8260 624 524.2 VOA	8021 8015 VPH MTBE/BTEX GRO w/targets	8100 8015 TPH DRO	EPH EPH w/o PAHs w/PAHs 4 Diesel	8081 8082 608 608 Pesticides PCB PCB	8270 625 PAH SVOA 8270	RCRA5 RCRA8 PP13 TAL23	TCLP-RCRA8 NBC7	MCP-METALS (13) MCP-METALS (13) w/Hg	5035/8260B Low Level VOC				
	8/3/10	1000	X	X	S	OB29-4-S	6/H2O	4	V/6										X				
	↓	1030		X	S	OB30-4-S	↓	↓	↓										X				
	↓	1250		X	S	OB32-4-S	↓	↓	↓										X				
	↓	1300		X	S	OB33-2-S	↓	↓	↓										X				
	↓	1350		X	S	OB34-4-S	↓	↓	↓										X				
	↓	1500		X	S	OB35-4-S	↓	↓	↓										X				
	↓	1525		X	S	OB36-4-S	↓	↓	↓										X				
	↓	1610		X	[illegible]	OB36-x-EB	H2O	2	V										X				
	8/3/10	—		—	—	080310-TB	6/H2O	2	V										X				

Container Type: P-Poly G-Glass S-Sterile V-VOA | Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present ___ Yes ___ No
Seals Intact ___ Yes ___ No NA: ___
Cooler Temp: ___

Internal Use Only
[ ] Pickup
[ ] Technicians ___

Preservation Code 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ___

Sampled by: Adam Robtoy (Cody) / [signature]

Comments: Questions Call Adam Robtoy 802-522-0905

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	8/3/10 16:30						
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 B

APPENDIX 4

DATA VALIDATION MEMORANDUM

THE JOHNSON COMPANY, INC.
100 State Street, Montpelier, Vermont 05602
Phone: (802) 229-4600
FAX: (802) 229-5876

MEMORANDUM

Date: **October 18, 2010**

From: **Shawn Donovan, Project Scientist**

To: **File**

CC: **Marie Wojtas, USACOE**
Donald Maynard, Project Manager

Re: **Final Data Validation Summary**
August 2010 Sampling and Analyses:
Low Level Volatile Organic Compounds (VOCs) – Glenburn GAT Rifs
Glenburn, Maine
ESS Laboratory Work Order Number: 1008055

Job#: **1-2128-9**

Limited data validation was performed on the laboratory analytical data for subsurface soil samples and accompanying quality control (QC) samples collected from twenty direct push soil borings at the former Glenburn Ground Air Transmitter Facility located in Glenburn, Maine. The samples were collected by The Johnson Company (JCO). on August 3-4, 2010 and shipped via overnight courier to ESS Laboratory (ESS) in Cranston, Rhode Island under chain of custody and specified for analyses for low level volatile organic compounds (VOCs) by Environmental Protection Agency (EPA) method 5035/8260B. The data were processed and reported under ESS work order number: 1008055.

The validation consisted of processing the staged electronic data deliverable file (SEDD) via United States Army Corps of Engineers (USACE) Automatic Data Review (ADR) software. The data as processed through ADR were valid as reported and may be used for decision making purposes. Summary reports processed via ADR and EDMS are included as Attachments 1 through 3.

Outliers were reported by the ADR system for matrix spike/matrix spike duplicate recovery and relative percent difference (RPD), detections below the reporting limit, methylene chloride detections in the Trip Blank samples, and assigned Field Duplicate RPD value based on analyte

-DRAFT-
MEMORANDUM

Date: October 18, 2010
From: Shawn Donovan, Project Scientist
To: File
CC: Marie Wojtas, USACOE
Donald Maynard, Project Manager (JCO)
Re: Draft Data Validation Summary
August 2010 Sampling and Analyses:
Low Level Volatile Organic Compounds (VOCs) – Glenburn GAT RIFS
Glenburn, Maine
ESS Laboratory Work Order Number: 1008055
Job#: 1-2128-9

---

detection in one sample but not in the related sample. The outlier reports generated by the ADR 8.1 program are presented in Attachment 2.

A description of the reported outliers is as follows:

1) Percent recovery for acetone on the matrix spike and matrix spike duplicate samples (OB27-4-SMS and OB27-4-SMSD) exceeded the upper limit which resulted in an estimated "J" qualifier for the parent sample OB27-4-S.

2) A non-qualified outlier report was documented as a result of the analyte acetone being detected in the field sample OB24-2-S but not in the duplicate sample. As a result the ADR software calculated the RPD using a default value of 200. The analytical data associated with OB24-2-S should be considered acceptable although the RPD could not be accurately calculated due to the above referenced recovery discrepancy.

3) Detected methylene chloride results via analysis method 8260B were reported below the reporting limit in all but one sample (OB34-4-S) including both trip blanks which resulted in a "J" laboratory qualifier. Methylene chloride was not detected in either of the two field equipment blanks. Acetone was also detected below the method specific reporting limit in soil samples OB24-2-S, OB25-2-S, OB28-4-S, OB30-4-S, OB31-3-S, and OB35-4-S through OB38-3-S which also resulted in a "J" laboratory qualifier. The VOC 2-Butanone was reported below the reporting limit in the field sample OB33-2-S thus qualifying the detection as estimated ("J").

4) Methylene chloride was detected below the reporting limit in both of the trip blanks submitted for VOC analysis and all associated samples with methylene chloride detections were qualified as non-detect ("U") below the method reporting limit. As stated above, this was the case for all but one field sample (OB34-4-S). The rational for reporting the method reporting limit as opposed to the estimated analytical results is based on the fact that

---

based on the fact that if a positive sample result for a common laboratory contaminant (methylene chloride) is less than the RL and less than 10 times the concentration of the compound in the blank (the blank action level), then the RL should be reported.

The samples and analytes that were qualified as described above are listed in the print out titled "Overall Qualified Results" and the reasons for qualification are presented in Attachment 2. No data were rejected. No further data qualifications or follow up actions are deemed necessary beyond this document. Detected Target Analytes are also reported in Attachment 2.

The laboratory's Non-Conformance Report is included as Attachment 3. The reasons for Non-Conformance as described in the laboratory's report as well as JCOs Non-Conformance report generated through ADR processing indicate a total of four instances where batch QC records are missing or incorrectly entered; however, the laboratory comment explains that batch QA was not performed on this specific work order. No further actions should be taken and the data should be assumed permissible. The EDD Non-Conformance Report that was generated through ADR processing tools indicated that the project name and project number (USACE Glenburn GAT Rifs / 1-2128-9) does not match the standard value table. This non-conformance does not affect the data in any way and should not be considered relevant for the purposes data validation protocol.

ATTACHMENT 1

QC Outlier Report: Trip Blank

Lab Reporting Batch : 1008055
Lab ID: ESS
Method/Preparation Batch : CH01014 / CH01014
Analysis Date : 08/10/2010
Client Sample ID : 080310-TB
Preparation Date : 08/10/2010
Lab Sample ID : 1008056-16
Preparation Type : 5035

Analysis Method : 8260B

Methylene Chloride	Result	Reporting Limit	Units	Lab Qual	Comments
Trip Blank Result:	**0.0067**	**0.0250**	**mg/kg**	**J**	

Methylene Chloride was qualified due to trip blank contamination in the following associated samples:

Client Sample ID	Lab Sample ID	Dilution	Result	Lab Qual	Result Unit
OB22-4-S	1008056-01	1	0.0038	J	mg/kg
OB23-3-S	1008056-02	1	0.0047	J	mg/kg
OB24-2-D	1008056-04	1	0.0026	J	mg/kg
OB24-2-S	1008056-03	1	0.0032	J	mg/kg
OB25-2-S	1008056-05	1	0.0031	J	mg/kg
OB26-4-S	1008056-06	1	0.0022	J	mg/kg
OB27-4-S	1008056-07	1	0.0039	J	mg/kg
OB28-4-S	1008056-08	1	0.0025	J	mg/kg
OB29-4-S	1008056-09	1	0.0038	J	mg/kg
OB30-4-S	1008056-10	1	0.0041	J	mg/kg
OB32-4-S	1008056-11	1	0.0016	J	mg/kg
OB33-2-S	1008056-12	1	0.0029	J	mg/kg
OB35-4-S	1008056-14	1	0.0033	J	mg/kg
OB36-4-S	1008056-15	1	0.0046	J	mg/kg

Methylene Chloride	Result	Reporting Limit	Units	Lab Qual	Comments
Trip Blank Result:	**0.0049**	**0.0250**	**mg/kg**	**J**	

Methylene Chloride was qualified due to trip blank contamination in the following associated samples:

Client Sample ID	Lab Sample ID	Dilution	Result	Lab Qual	Result Unit
OB31-3-S	1008091-07	1	0.0019	J	mg/kg
OB37-4-S	1008091-01	1	0.0045	J	mg/kg
OB38-3-S	1008091-03	1	0.0055	J	mg/kg
OB39-3-S	1008091-04	1	0.0013	J	mg/kg
OB40-3-S	1008091-05	1	0.0024	J	mg/kg
OB41-3-S	1008091-06	1	0.0043	J	mg/kg

QC Outlier Report: Field Duplicates (Non-qualified Outliers)

Lab Report Batch: 1008055 **Lab ID:** ESS

			Field Sample				Field Sample Duplicate						
Analysis Method	**Matrix**	**Analyte Name**	**Client Sample ID**	**Ana Type**	**Result**	**Lab Qualifier**	**Client Sample Duplicate ID**	**Ana Type**	**Result**	**Lab Qualifier**	**RPD Dup* (%)**	**RPD Criteria (%)**	**Result Units**
8260B	SO	Acetone	OB24-2-S	1RES	0.0143	J	OB24-2-D	1RES	0.0421	U	200.0	50	mg/kg

**Note: Outlier report also includes analytes detected in one sample but not in the related sample, i.e., analyte was detected in the field sample but not in the field duplicate sample, or vice versa. In this case, RPD value assigned to the field duplicate sample is 200.*

Project Number and Name: ***1-2128-9 - USACE Glenburn Gat Rifs***

Matrix Spike / Matrix Spike Duplicate Recovery and RPD Outlier Report

Method Batch : CH00918 **Analysis Method :** 8260B **Analysis Date :** 08/09/2010

Preparation Batch : CH00918 **Preparation Type :** 5035 **Preparation Date :** 08/09/2010

Lab Reporting Batch : 1008055 **Lab ID:** ESS

Client Sample ID	Lab Sample ID	Matrix	Analyte Name	Reported *		Project Limits (Percent)			
				Percent Recovery	RPD	Rejection Point**	Lower Limit	Upper Limit	RPD
OB27-4-SMS	CH00918-MS1	SO	Acetone	175		10.00	20.00	160.00	30.00
OB27-4-SMSD	CH00918-MSD1		Acetone	184		10.00	20.00	160.00	30.00

Associated Samples All samples in Method Batch

Client Sample ID	Lab Sample ID
OB22-4-S	1008056-01
OB23-3-S	1008056-02
OB24-2-D	1008056-04
OB24-2-S	1008056-03
OB25-2-S	1008056-05
OB26-4-S	1008056-06
OB27-4-S	1008056-07
OB28-4-S	1008056-08
OB29-4-S	1008056-09
OB30-4-S	1008056-10
OB32-4-S	1008056-11
OB34-4-S	1008056-13

* Only those Percent Recovery and/or RPD values outside project limits are listed in this report.
** Metal are also assessed against an upper rejection point of 150 percent for waters and 200 percent for soils and sediments

Project Number and Name: 1-2128-9 - USACE Glenburn Gat Rifs

Reporting Limits Outlier Report (detected results reported below the reporting limit)

Lab Report Batch: 1008055 **Lab ID:** ESS

Client Sample ID	Lab Sample ID	Analysis Method	Matrix	Analyte Name	Lab Qualifier	Result	EDD Reporting Limit	Units
080310-TB	1008056-16	8260B	SO	Methylene Chloride	J	0.0067	0.0250	mg/kg
080410-TB	1008091-08			Methylene Chloride	J	0.0049	0.0250	mg/kg
OB22-4-S	1008056-01			Methylene Chloride	J	0.0038	0.0169	mg/kg
OB23-3-S	1008056-02			Methylene Chloride	J	0.0047	0.0195	mg/kg
OB24-2-D	1008056-04			Methylene Chloride	J	0.0026	0.0210	mg/kg
OB24-2-S	1008056-03			Acetone	J	0.0143	0.0323	mg/kg
				Methylene Chloride	J	0.0032	0.0161	mg/kg
OB25-2-S	1008056-05			Acetone	J	0.0134	0.0343	mg/kg
				Methylene Chloride	J	0.0031	0.0172	mg/kg
OB26-4-S	1008056-06			Methylene Chloride	J	0.0022	0.0185	mg/kg
OB27-4-S	1008056-07			Methylene Chloride	J	0.0039	0.0216	mg/kg
OB28-4-S	1008056-08			Acetone	J	0.0141	0.0338	mg/kg
				Methylene Chloride	J	0.0025	0.0169	mg/kg
OB29-4-S	1008056-09			Methylene Chloride	J	0.0038	0.0217	mg/kg
OB30-4-S	1008056-10			Acetone	J	0.0163	0.0427	mg/kg
				Methylene Chloride	J	0.0041	0.0213	mg/kg
OB31-3-S	1008091-07			Acetone	J	0.0237	0.0348	mg/kg
				Methylene Chloride	J	0.0019	0.0174	mg/kg
OB32-4-S	1008056-11			Methylene Chloride	J	0.0016	0.0165	mg/kg
OB33-2-S	1008056-12			2-Butanone	J	0.0109	0.0432	mg/kg
				Methylene Chloride	J	0.0029	0.0216	mg/kg
OB35-4-S	1008056-14			Acetone	J	0.0161	0.0375	mg/kg
				Methylene Chloride	J	0.0033	0.0188	mg/kg
OB36-4-S	1008056-15			Acetone	J	0.0198	0.0375	mg/kg
				Methylene Chloride	J	0.0046	0.0187	mg/kg
OB37-4-D	1008091-02			Acetone	J	0.0200	0.0427	mg/kg
OB37-4-S	1008091-01			Acetone	J	0.0215	0.0421	mg/kg
				Methylene Chloride	J	0.0045	0.0210	mg/kg
OB38-3-S	1008091-03			Acetone	J	0.0166	0.0375	mg/kg
				Methylene Chloride	J	0.0055	0.0187	mg/kg
OB39-3-S	1008091-04			Methylene Chloride	J	0.0013	0.0141	mg/kg
OB40-3-S	1008091-05			Methylene Chloride	J	0.0024	0.0173	mg/kg
OB41-3-S	1008091-06			Methylene Chloride	J	0.0043	0.0204	mg/kg

ATTACHMENT 2

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : 080310-TB
Sample Date : 08/03/2010
Lab Sample ID: 1008056-16

Lab Report Batch : 1008055
Analysis Type: 1RES

Lab ID : ESS
Sample Matrix : SO

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Methylene Chloride	0.0067		mg/kg	J	YES	**J**								J							RL

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : 080410-TB
Sample Date : 08/04/2010
Lab Sample ID: 1008091-08

Lab Report Batch : 1008055
Analysis Type: **1RES**

Lab ID : ESS
Sample Matrix : SO

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Methylene Chloride	0.0049		mg/kg	J	YES	**J**								J							RL

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB22-4-S
Lab Report Batch : 1008055
Lab ID : ESS
Sample Date : 08/03/2010
Analysis Type: 1RES
Sample Matrix : SO
Lab Sample ID: 1008056-01

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Methylene Chloride	0.0169		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB23-3-S
Lab Report Batch : 1008055
Lab ID : ESS
Sample Date : 08/03/2010
Analysis Type: 1RES
Sample Matrix : SO
Lab Sample ID: 1008056-02

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Methylene Chloride	0.0195		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB24-2-D
Lab Report Batch : 1008055
Lab ID : ESS
Sample Date : 08/03/2010
Analysis Type: 1RES
Sample Matrix : SO
Lab Sample ID: 1008056-04

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Methylene Chloride	0.0210		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB24-2-S
Lab Report Batch : 1008055
Lab ID : ESS
Sample Date : 08/03/2010
Analysis Type: 1RES
Sample Matrix : SO
Lab Sample ID: 1008056-03

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Acetone	0.0143		mg/kg	J	YES	**J**								J							RL
Methylene Chloride	0.0161		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB25-2-S
Lab Report Batch : 1008055
Lab ID : ESS
Sample Date : 08/03/2010
Analysis Type: 1RES
Sample Matrix : SO
Lab Sample ID: 1008056-05

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Acetone	0.0134		mg/kg	J	YES	**J**								J							RL
Methylene Chloride	0.0172		mg/kg	J	YES**U**	J								U		TB					

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB26-4-S
Sample Date : 08/03/2010
Lab Sample ID: 1008056-06

Lab Report Batch : 1008055
Analysis Type: 1RES

Lab ID : ESS
Sample Matrix : SO

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Methylene Chloride	0.0185		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB27-4-S
Lab Report Batch : 1008055
Lab ID : ESS
Sample Date : 08/03/2010
Analysis Type: 1RES
Sample Matrix : SO
Lab Sample ID: 1008056-07

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Methylene Chloride	0.0216		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB28-4-S
Sample Date : 08/03/2010
Lab Sample ID: 1008056-08

Lab Report Batch : 1008055
Analysis Type: 1RES

Lab ID : ESS
Sample Matrix : SO

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Acetone	0.0141		mg/kg	J	YES	**J**								J							RL
Methylene Chloride	0.0169		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB29-4-S
Lab Report Batch : 1008055
Lab ID : ESS
Sample Date : 08/03/2010
Analysis Type: 1RES
Sample Matrix : SO
Lab Sample ID: 1008056-09

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Methylene Chloride	0.0217		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB30-4-S
Sample Date : 08/03/2010
Lab Sample ID: 1008056-10

Lab Report Batch : 1008055
Analysis Type: 1RES

Lab ID : ESS
Sample Matrix : SO

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Acetone	0.0163		mg/kg	J	YES	**J**								J							RL
Methylene Chloride	0.0213		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB31-3-S
Lab Report Batch : 1008055
Lab ID : ESS
Sample Date : 08/04/2010
Analysis Type: 1RES
Sample Matrix : SO
Lab Sample ID: 1008091-07

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Acetone	0.0237		mg/kg	J	YES	**J**								J							RL
Methylene Chloride	0.0174		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB32-4-S
Lab Report Batch : 1008055
Lab ID : ESS
Sample Date : 08/03/2010
Analysis Type: 1RES
Sample Matrix : SO
Lab Sample ID: 1008056-11

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Methylene Chloride	0.0165		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB33-2-S
Sample Date : 08/03/2010
Lab Sample ID: 1008056-12

Lab Report Batch : 1008055
Analysis Type: 1RES

Lab ID : ESS
Sample Matrix : SO

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
2-Butanone	0.0109		mg/kg	J	YES	**J**								J							RL
Methylene Chloride	0.0216		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB35-4-S
Sample Date : 08/03/2010
Lab Sample ID: 1008056-14

Lab Report Batch : 1008055
Analysis Type: 1RES

Lab ID : ESS
Sample Matrix : SO

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Acetone	0.0161		mg/kg	J	YES	**J**								J							RL
Methylene Chloride	0.0188		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB36-4-S
Sample Date : 08/03/2010
Lab Sample ID: 1008056-15

Lab Report Batch : 1008055
Analysis Type: 1RES

Lab ID : ESS
Sample Matrix : SO

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Acetone	0.0198		mg/kg	J	YES	**J**								J							RL
Methylene Chloride	0.0187		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB37-4-D
Lab Report Batch : 1008055
Lab ID : ESS
Sample Date : 08/04/2010
Analysis Type: 1RES
Sample Matrix : SO
Lab Sample ID: 1008091-02

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Acetone	0.0200		mg/kg	J	YES	**J**								J							RL

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB37-4-S
Sample Date : 08/04/2010
Lab Sample ID: 1008091-01

Lab Report Batch : 1008055
Analysis Type: 1RES

Lab ID : ESS
Sample Matrix : SO

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Acetone	0.0215		mg/kg	J	YES	**J**								J							RL
Methylene Chloride	0.0210		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB38-3-S
Lab Report Batch : 1008055
Lab ID : ESS
Sample Date : 08/04/2010
Analysis Type: 1RES
Sample Matrix : SO
Lab Sample ID: 1008091-03

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Acetone	0.0166		mg/kg	J	YES	**J**								J							RL
Methylene Chloride	0.0187		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB39-3-S
Lab Report Batch : 1008055
Lab ID : ESS
Sample Date : 08/04/2010
Analysis Type: 1RES
Sample Matrix : SO
Lab Sample ID: 1008091-04

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Methylene Chloride	0.0141		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB40-3-S
Lab Report Batch : 1008055
Lab ID : ESS
Sample Date : 08/04/2010
Analysis Type: 1RES
Sample Matrix : SO
Lab Sample ID: 1008091-05

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Methylene Chloride	0.0173		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Sample Qualification Report with Reason Codes (All Qualified Results sorted by Client Sample ID)

Client Sample ID : OB41-3-S
Lab Report Batch : 1008055
Lab ID : ESS
Sample Date : 08/04/2010
Analysis Type: 1RES
Sample Matrix : SO
Lab Sample ID: 1008091-06

Reviewed By / Date :

Approved By / Date

Analyte Name	Result	Uncertainty /	Result Units	Lab Qual	Rep Res	Overal l	Temp	HT	MB	LCS	MS	Lab Dup	Surr	Rep Limit	Moist Tot/Dis	Field QC	Tune	IC	ICV	CV / CCV	Reason Codes
Analysis Method : 8260B						**Dilution: 1**															
Methylene Chloride	0.0204		mg/kg	J	YES	**U**								J		U					TB

* Overall result qualifier reflects summation of qualifiers added during automated data review and any qualifiers added manually for categories not assessed by

Primary and Field QC Samples by Method

Analytical Method	Matrix	Primary Samples	Field Duplicates	Trip Blanks	Equipment Blanks	Field Blanks
8260B	AQ	None	None	None	2	None
8260B	SO	21	1	2	None	None

The Johnson Company, Inc.

Reason for Qualified Results

SDG Nos. : 1008055

Sample Del Group (SDG)	Sample ID	Test Method	CAS No.	Detected Qualifier	Non Detected Qualifier	Analyte Name	Reason
1008055	OB22-4-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB23-3-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB24-2-D	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB24-2-S	8260B	67-64-1	J		Acetone	Matrix spike recovery
1008055	OB24-2-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB25-2-S	8260B	67-64-1	J		Acetone	Matrix spike recovery
1008055	OB25-2-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB26-4-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB27-4-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB28-4-S	8260B	67-64-1	J		Acetone	Matrix spike recovery
1008055	OB28-4-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB29-4-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB30-4-S	8260B	67-64-1	J		Acetone	Matrix spike recovery
1008055	OB30-4-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB31-3-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB32-4-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB33-2-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB35-4-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB36-4-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB37-4-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB38-3-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB39-3-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB40-3-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank
1008055	OB41-3-S	8260B	75-09-2	U		Methylene Chloride	Present in trip blank

Detected Target Analytes

Analytical Method	Field Sample ID	Matrix	Sample Type	Analyte	RL	Lab Result	Unc / Error	Units
SDG: 1008055								
8260B	080310-TB	SO	TB					
				Methylene Chloride	0.0250	0.0067J		mg/kg
8260B	080410-TB	SO	TB					
				Methylene Chloride	0.0250	0.0049J		mg/kg
8260B	OB24-2-S	SO	N					
				Acetone	0.0323	0.0143J		mg/kg
8260B	OB25-2-S	SO	N					
				Acetone	0.0343	0.0134J		mg/kg
8260B	OB28-4-S	SO	N					
				Acetone	0.0338	0.0141J		mg/kg
8260B	OB30-4-S	SO	N					
				Acetone	0.0427	0.0163J		mg/kg
8260B	OB31-3-S	SO	N					
				Acetone	0.0348	0.0237J		mg/kg
8260B	OB33-2-S	SO	N					
				2-Butanone	0.0432	0.0109J		mg/kg
				Acetone	0.0432	0.105		mg/kg
8260B	OB35-4-S	SO	N					
				Acetone	0.0375	0.0161J		mg/kg
8260B	OB36-4-S	SO	N					
				Acetone	0.0375	0.0198J		mg/kg
8260B	OB37-4-D	SO	N					
				Acetone	0.0427	0.0200J		mg/kg
8260B	OB37-4-S	SO	N					
				Acetone	0.0421	0.0215J		mg/kg
8260B	OB38-3-S	SO	N					
				Acetone	0.0375	0.0166J		mg/kg

**Note: This report excludes laboratory detects that were qualified as ND due to Blank Contamination*

N = Normal Sample TB = Trip Blank
FD = Field Duplicate FB = Field Blank

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
03-Aug-2010	080310-TB	1008056-16	TB	5035	8260B	2a
03-Aug-2010	OB22-4-S	1008056-01	N	5035	8260B	2a
03-Aug-2010	OB23-3-S	1008056-02	N	5035	8260B	2a
03-Aug-2010	OB24-2-S	1008056-03	N	5035	8260B	2a
03-Aug-2010	OB24-2-D	1008056-04	FD	5035	8260B	2a
03-Aug-2010	OB25-2-S	1008056-05	N	5035	8260B	2a
03-Aug-2010	OB26-4-S	1008056-06	N	5035	8260B	2a
03-Aug-2010	OB27-4-S	1008056-07	N	5035	8260B	2a
03-Aug-2010	OB27-4-SMS	CH00918-MS1	MS	5035	8260B	2a
03-Aug-2010	OB27-4-SMSD	CH00918-MSD1	MSD	5035	8260B	2a
03-Aug-2010	OB28-4-S	1008056-08	N	5035	8260B	2a
03-Aug-2010	OB29-4-S	1008056-09	N	5035	8260B	2a
03-Aug-2010	OB30-4-S	1008056-10	N	5035	8260B	2a
03-Aug-2010	OB32-4-S	1008056-11	N	5035	8260B	2a
03-Aug-2010	OB33-2-S	1008056-12	N	5035	8260B	2a
03-Aug-2010	OB34-4-S	1008056-13	N	5035	8260B	2a
03-Aug-2010	OB35-4-S	1008056-14	N	5035	8260B	2a
03-Aug-2010	OB36-4-S	1008056-15	N	5035	8260B	2a
03-Aug-2010	OB36-X-EB	1008055-01	EB	5030B	8260B	2a
04-Aug-2010	080410-TB	1008091-08	TB	5035	8260B	2a
04-Aug-2010	OB37-4-S	1008091-01	N	5035	8260B	2a
04-Aug-2010	OB37-4-D	1008091-02	N	5035	8260B	2a
04-Aug-2010	OB38-3-S	1008091-03	N	5035	8260B	2a
04-Aug-2010	OB39-3-S	1008091-04	N	5035	8260B	2a
04-Aug-2010	OB40-3-S	1008091-05	N	5035	8260B	2a
04-Aug-2010	OB41-3-S	1008091-06	N	5035	8260B	2a

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
04-Aug-2010	OB31-3-S	1008091-07	N	5035	8260B	2a
04-Aug-2010	OB31-X-EB	1008090-01	EB	5030B	8260B	2a

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

ATTACHMENT 3

EDD Non-Conformance Report
Lab Reporting Batch ID: 1008055

Project Library: Glenburn GAT **Laboratory: ESS**
Library Description: Glenburn, ME Groundwater Monitoring Plan **Report Date: 8/18/2010 08:29**

Non-Conformance Summary Page

Type	Count	Type	Count
0001	0	0020	0
0002	0	0021	0
0003	0	0022	0
0004	0	0023	0
0005	0	0024	0
0006	0	0025	0
0007	0	0026	0
0008	0	0027	0
0009	0	0028	0
0010	0	0029	0
0011	0	0030	4
0012	0	0031	0
0013	0	0032	0
0014	0	0033	0
0015	0	0034	0
0016	0	0035	0
0017	0	0036	0
0018	0	0037	0
0019	0	0038	0
		0039	0

Total : 4

EDD Non-Conformance Detail Report
Lab Reporting Batch ID: 1008055

Project Library: Glenburn GAT **Laboratory: ESS**

Library Description: Glenburn, ME Groundwater Monitoring Plan **Report Date: 8/18/2010 08:29**

Method/QAPP QC Non-conformances

Table	Record	Field	Type	Description	Lab Comments
A3		Method_Batch / Lab_Analysis_Ref_Method_ID	0030	Table A3 is missing a Matrix Spike Duplicate record in method batch CH01014 for method 8260B. Either the record is missing, you have the wrong QCType value ("MSD" is the correct value in this case), or your MethodBatch IDs are incorrectly entered.	Batch QC was not performed on this client's work orders.
A3		Method_Batch / Lab_Analysis_Ref_Method_ID	0030	Table A3 is missing a Matrix Spike Duplicate record in method batch CH00908 for method 8260B. Either the record is missing, you have the wrong QCType value ("MSD" is the correct value in this case), or your MethodBatch IDs are incorrectly entered.	Batch QC was not performed on this client's work orders.
A3		Method_Batch / Lab_Analysis_Ref_Method_ID	0030	Table A3 is missing a Matrix Spike record in Method Batch CH01014 for method 8260B. Either the record is missing, you have the wrong QCType value ("MS" is the correct value in this case), or your MethodBatch IDs are incorrectly entered.	Batch QC was not performed on this client's work orders.
A3		Method_Batch / Lab_Analysis_Ref_Method_ID	0030	Table A3 is missing a Matrix Spike record in Method Batch CH00908 for method 8260B. Either the record is missing, you have the wrong QCType value ("MS" is the correct value in this case), or your MethodBatch IDs are incorrectly entered.	Batch QC was not performed on this client's work orders.

EDD Non-Conformance Detail Report
Lab Reporting Batch ID: 1008055

Project Library: Glenburn GAT **Laboratory: ESS**

Library Description: Glenburn, ME Groundwater Monitoring Plan **Report Date: 8/18/2010 08:29**

0001	*0002 Field character length exceeded*
0002	*Non-numeric value in a numeric field*
0003	*Incorrectly formatted date/time value*
0004	*Invalid value*
0005	*Analytical Method, Analtye ID, Analyte Name, Matrix, and Units not found in the reference project library*
0006	*RPD value is missing from a MSD, LCSD, or laboratory duplicate sample*
0007	*Target analyte specified in library files not found in the EDD*
0008	*Discrepancy in related records found between the tables Sample Analysis and Analytical Result*
0009	*Required field not populated*
0010	*Surrogate compounds specified in the reference project library are not found in table Analytical Results*
0011	*Surrogate compounds not specified in the reference project library are found in table Analytical Results*
0012	*Spike compounds specified in the reference project library are not found in table Analytical Results or vice versa*
0013	*Target analyte not specified in the reference project library is found in Analytical Results table*
0014	*Handling Batch ID (for leachates) is missing in Table A3*
0015	*Lab_Sample_ID can not have more than one matrix type assigned to it*
0016	*Analysis_Batch ID present in the Sample Analysis table is missing from the Laboratory Instrument table*
0017	*Analysis_Batch ID present in the Laboratory Instrument table is missing from the Sample Analysis table*
0018	*Run_Batch present in the Sample Analysis table is missing from the Laboratory Instrument table*
0019	*Run_Batch present in the Laboratory Instrument table is missing from the Sample Analysis table*
0020	*Target analytes and surrogates not specified in the reference project library are found in the Laboratory Intrument table*
0021	*Analysis_Batch relationship missing between a GC/MS tune (QC_Type = IPC) and a GC/MS continuing calibration (QC_Type = CCV)*
0022	*Run_Batch relationship missing between a GC/MS tune (QC_Type = IPC) and a GC/MS initial calibration (QC_Type = IC)*
0023	*Incorrect naming or inconsistent collection date for MS/MSD sample and/or parent sample*
0024	*Problems with %RSD, Correlation Coefficient, and/or RRFs reported for GC/MS calibration records.*
0025	*Project Number or Project Name reported in the EDD not found in the Standard Value table*
0026	*Result value for a non-detected analyte does not match the Reporting_Limit value as reported in the EDD*
0027	*ClientSampleID present in Analytical Results table but missing in the Sample Analysis table or vice versa*
0028	*Missing associated Method Blank records for a specific Preparation Batch / Analytical Method*
0029	*Missing associated Laboratory Control Sample records for a specific Preparation Batch / Analytical Method*
0030	*Missing associated Matrix Spike / Duplicate records for a specific Method Batch / Analytical Method*
0031	*Record specified in the reference project library not found in the Analytical Results table where Reportable Result = Yes*
0032	*Duplicate records found in table Analytical Results for fields ClientSampleID, Collected, AnalyticalMethod, AnalytedID where Reportable_Result = Yes*
0033	*Missing calibration records in Table A2*

EDD Non-Conformance Detail Report
Lab Reporting Batch ID: 1008055

Project Library: Glenburn GAT **Laboratory: ESS**

Library Description: Glenburn, ME Groundwater Monitoring Plan **Report Date: 8/18/2010 08:29**

0034	*Report Limit from table Analytical Results exceeds the value in the reference project library (corrected for dilution and perc moist, if appl)*
0035	*Missing target analytes in IC, ICV, CV, or CCV*
0036	*Surrogate Recovery has a value greater than zero but the Lab Qualifier is like "*U*"*
0037	*Duplicate records in Table A1, A2, or A3*
0038	*Problems with QC Batch assignment*
0039	*Non-conformances related to Total Uranium assessment*

APPENDIX 5

LABORATORY ANALYTICAL REPORTS

CERTIFICATE OF ANALYSIS

Donald Maynard
The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602

RE: USACE Glenburn Gat Rifs (1-2128-9)
ESS Laboratory Work Order Number: 1008055

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

ESS Laboratory certifies that the test results meet the requirements of NELAC and A2LA, except where noted within this project narrative.

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008091

SAMPLE RECEIPT

The following samples were received on August 04, 2010 for the analyses specified on the enclosed Chain of Custody Record.

To achieve DoD compliance, ESS Laboratory has instituted the requirements set forth in DoD Quality Systems Manual for Environmental Laboratories (Current Version).

Lab Number	SampleName	Matrix	Analysis
1008055-01	OB36-X-EB	Aqueous	8260B, 8260B, 8260B, 8260B
1008056-01	OB22-4-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008056-02	OB23-3-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008056-03	OB24-2-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008056-04	OB24-2-D	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008056-05	OB25-2-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008056-06	OB26-4-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008056-07	OB27-4-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008056-08	OB28-4-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008056-09	OB29-4-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008056-10	OB30-4-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008056-11	OB32-4-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008056-12	OB33-2-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008056-13	OB34-4-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008056-14	OB35-4-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008056-15	OB36-4-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008056-16	080310-TB	Solid	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008090-01	OB31-X-EB	Aqueous	8260B, 8260B, 8260B, 8260B
1008091-01	OB37-4-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008091-02	OB37-4-D	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008091-03	OB38-3-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008091-04	OB39-3-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008091-05	OB40-3-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008091-06	OB41-3-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008091-07	OB31-3-S	Soil	8260B Low, 8260B Low, 8260B Low, 8260B Low
1008091-08	080410-TB	Solid	8260B Low, 8260B Low, 8260B Low, 8260B Low

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008091

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Low Level

1008056-12	**Surrogate recovery(ies) below lower control limit (S-).**
	4-Bromofluorobenzene (84% @ 85-120%)
CH00918-MS1	**Matrix Spike recovery is above upper control limit (M+).**
	Acetone (175% @ 20-160%)
CH00918-MSD1	**Matrix Spike recovery is above upper control limit (M+).**
	Acetone (184% @ 20-160%)
CTH0059-CCV1	**Continuing Calibration recovery is below lower control limit (C-).**
	Trichlorofluoromethane (79% @ 80-120%)
CTH0063-CCV1	**Continuing Calibration recovery is above upper control limit (C+).**
	Acetone (123% @ 80-120%)
CTH0063-CCV1	**Second Source Standard was outside of criteria.**
	Dichlorodifluoromethane (84% @ 80-120%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB36-X-EB
Date Sampled: 08/03/10 16:10
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008055-01
Sample Matrix: Aqueous
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
1,1,1-Trichloroethane	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
1,1,2,2-Tetrachloroethane	ND (0.5)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
1,1,2-Trichloroethane	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
1,1-Dichloroethane	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
1,1-Dichloroethene	ND (1.0)	0.5 (0.3)	1	08/09/10 13:08	CTH0057	CH00908
1,1-Dichloropropene	ND (2.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
1,2,3-Trichlorobenzene	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
1,2,3-Trichloropropane	ND (1.0)	0.5 (0.3)	1	08/09/10 13:08	CTH0057	CH00908
1,2,4-Trichlorobenzene	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
1,2,4-Trimethylbenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
1,2-Dibromo-3-Chloropropane	ND (5.0)	1.0 (1.0)	1	08/09/10 13:08	CTH0057	CH00908
1,2-Dibromoethane	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
1,2-Dichlorobenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
1,2-Dichloroethane	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
1,2-Dichloropropane	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
1,3,5-Trimethylbenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
1,3-Dichlorobenzene	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
1,3-Dichloropropane	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
1,4-Dichlorobenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
1-Chlorohexane	ND (1.0)	0.5 (0.4)	1	08/09/10 13:08	CTH0057	CH00908
2,2-Dichloropropane	ND (1.0)	0.5 (0.3)	1	08/09/10 13:08	CTH0057	CH00908
2-Butanone	ND (25.0)	10.0 (5.8)	1	08/09/10 13:08	CTH0057	CH00908
2-Chlorotoluene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
2-Hexanone	ND (10.0)	5.0 (1.5)	1	08/09/10 13:08	CTH0057	CH00908
4-Chlorotoluene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
4-Isopropyltoluene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
4-Methyl-2-Pentanone	ND (25.0)	5.0 (1.6)	1	08/09/10 13:08	CTH0057	CH00908
Acetone	ND (25.0)	5.0 (5.0)	1	08/09/10 13:08	CTH0057	CH00908
Benzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
Bromobenzene	ND (2.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
Bromochloromethane	ND (1.0)	0.5 (0.3)	1	08/09/10 13:08	CTH0057	CH00908
Bromodichloromethane	ND (0.6)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB36-X-EB
Date Sampled: 08/03/10 16:10
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008055-01
Sample Matrix: Aqueous
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
Bromomethane	ND (2.0)	1.0 (0.4)	1	08/09/10 13:08	CTH0057	CH00908
Carbon Disulfide	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
Carbon Tetrachloride	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
Chlorobenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
Chloroethane	ND (2.0)	1.0 (0.4)	1	08/09/10 13:08	CTH0057	CH00908
Chloroform	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
Chloromethane	ND (2.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
cis-1,2-Dichloroethene	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
cis-1,3-Dichloropropene	ND (0.4)	0.2 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
Dibromochloromethane	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
Dibromomethane	ND (1.0)	0.5 (0.3)	1	08/09/10 13:08	CTH0057	CH00908
Dichlorodifluoromethane	ND (2.0)	1.0 (0.3)	1	08/09/10 13:08	CTH0057	CH00908
Ethylbenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
Hexachlorobutadiene	ND (0.6)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
Isopropylbenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
Methyl tert-Butyl Ether	ND (1.0)	0.5 (0.3)	1	08/09/10 13:08	CTH0057	CH00908
Methylene Chloride	ND (4.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
Naphthalene	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
n-Butylbenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
n-Propylbenzene	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
sec-Butylbenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
Styrene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
tert-Butylbenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
Tetrachloroethene	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
Toluene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
trans-1,2-Dichloroethene	ND (1.0)	0.5 (0.3)	1	08/09/10 13:08	CTH0057	CH00908
trans-1,3-Dichloropropene	ND (0.5)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
Trichloroethene	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
Trichlorofluoromethane	ND (1.0)	0.5 (0.4)	1	08/09/10 13:08	CTH0057	CH00908
Vinyl Chloride	ND (1.0)	0.5 (0.2)	1	08/09/10 13:08	CTH0057	CH00908
Xylene O	ND (1.0)	0.2 (0.1)	1	08/09/10 13:08	CTH0057	CH00908
Xylene P,M	ND (2.0)	0.4 (0.2)	1	08/09/10 13:08	CTH0057	CH00908

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB36-X-EB
Date Sampled: 08/03/10 16:10
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008055-01
Sample Matrix: Aqueous
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*91 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*93 %*	*75-120*			
Surrogate: Dibromofluoromethane		*94 %*	*85-115*			
Surrogate: Toluene-d8		*106 %*	*85-120*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB22-4-S
Date Sampled: 08/03/10 07:35
Percent Solids: 89
Initial Volume: 8.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 12:26	CTH0059	CH00918
1,1,1-Trichloroethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
1,1,2,2-Tetrachloroethane	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 12:26	CTH0059	CH00918
1,1,2-Trichloroethane	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
1,1-Dichloroethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
1,1-Dichloroethene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
1,1-Dichloropropene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
1,2,3-Trichlorobenzene	ND (0.0034)	0.0027 (0.0009)	1	08/09/10 12:26	CTH0059	CH00918
1,2,3-Trichloropropane	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
1,2,4-Trichlorobenzene	ND (0.0034)	0.0027 (0.0009)	1	08/09/10 12:26	CTH0059	CH00918
1,2,4-Trimethylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
1,2-Dibromo-3-Chloropropane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
1,2-Dibromoethane	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 12:26	CTH0059	CH00918
1,2-Dichlorobenzene	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 12:26	CTH0059	CH00918
1,2-Dichloroethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
1,2-Dichloropropane	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
1,3,5-Trimethylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
1,3-Dichlorobenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
1,3-Dichloropropane	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 12:26	CTH0059	CH00918
1,4-Dichlorobenzene	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 12:26	CTH0059	CH00918
1-Chlorohexane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
2,2-Dichloropropane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
2-Butanone	ND (0.0338)	0.0135 (0.0056)	1	08/09/10 12:26	CTH0059	CH00918
2-Chlorotoluene	ND (0.0034)	0.0027 (0.0007)	1	08/09/10 12:26	CTH0059	CH00918
2-Hexanone	ND (0.0338)	0.0135 (0.0043)	1	08/09/10 12:26	CTH0059	CH00918
4-Chlorotoluene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
4-Isopropyltoluene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
4-Methyl-2-Pentanone	ND (0.0338)	0.0135 (0.0050)	1	08/09/10 12:26	CTH0059	CH00918
Acetone	ND (0.0338)	0.0135 (0.0096)	1	08/09/10 12:26	CTH0059	CH00918
Benzene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
Bromobenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
Bromochloromethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
Bromodichloromethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB22-4-S
Date Sampled: 08/03/10 07:35
Percent Solids: 89
Initial Volume: 8.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0034)	0.0027 (0.0009)	1	08/09/10 12:26	CTH0059	CH00918
Bromomethane	ND (0.0068)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
Carbon Disulfide	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
Carbon Tetrachloride	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
Chlorobenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
Chloroethane	ND (0.0068)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
Chloroform	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
Chloromethane	ND (0.0068)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
cis-1,2-Dichloroethene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
cis-1,3-Dichloropropene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
Dibromochloromethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
Dibromomethane	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
Dichlorodifluoromethane	ND (0.0068)	0.0027 (0.0009)	1	08/09/10 12:26	CTH0059	CH00918
Ethylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
Hexachlorobutadiene	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 12:26	CTH0059	CH00918
Isopropylbenzene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
Methyl tert-Butyl Ether	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
Methylene Chloride	**J 0.0038** (0.0169)	0.0027 (0.0013)	1	08/09/10 12:26	CTH0059	CH00918
Naphthalene	ND (0.0034)	0.0027 (0.0009)	1	08/09/10 12:26	CTH0059	CH00918
n-Butylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
n-Propylbenzene	ND (0.0034)	0.0027 (0.0008)	1	08/09/10 12:26	CTH0059	CH00918
sec-Butylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
Styrene	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 12:26	CTH0059	CH00918
tert-Butylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
Tetrachloroethene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
Toluene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
trans-1,2-Dichloroethene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
trans-1,3-Dichloropropene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
Trichloroethene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
Trichlorofluoromethane	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
Vinyl Chloride	ND (0.0068)	0.0027 (0.0012)	1	08/09/10 12:26	CTH0059	CH00918
Xylene O	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 12:26	CTH0059	CH00918
Xylene P,M	ND (0.0068)	0.0054 (0.0022)	1	08/09/10 12:26	CTH0059	CH00918

ESS Laboratory
Division of Thielsch Engineering, Inc.

BAL Laboratory
The Microbiology Division
of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB22-4-S
Date Sampled: 08/03/10 07:35
Percent Solids: 89
Initial Volume: 8.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*110 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*90 %*	*85-120*			
Surrogate: Dibromofluoromethane		*108 %*	*85-115*			
Surrogate: Toluene-d8		*100 %*	*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB23-3-S
Date Sampled: 08/03/10 07:55
Percent Solids: 89
Initial Volume: 7.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
1,1,1-Trichloroethane	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
1,1,2,2-Tetrachloroethane	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
1,1,2-Trichloroethane	ND (0.0039)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
1,1-Dichloroethane	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
1,1-Dichloroethene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
1,1-Dichloropropene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
1,2,3-Trichlorobenzene	ND (0.0039)	0.0031 (0.0011)	1	08/09/10 12:54	CTH0059	CH00918
1,2,3-Trichloropropane	ND (0.0039)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
1,2,4-Trichlorobenzene	ND (0.0039)	0.0031 (0.0010)	1	08/09/10 12:54	CTH0059	CH00918
1,2,4-Trimethylbenzene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
1,2-Dibromo-3-Chloropropane	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
1,2-Dibromoethane	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
1,2-Dichlorobenzene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
1,2-Dichloroethane	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
1,2-Dichloropropane	ND (0.0039)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
1,3,5-Trimethylbenzene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
1,3-Dichlorobenzene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
1,3-Dichloropropane	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
1,4-Dichlorobenzene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
1-Chlorohexane	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
2,2-Dichloropropane	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
2-Butanone	ND (0.0390)	0.0156 (0.0064)	1	08/09/10 12:54	CTH0059	CH00918
2-Chlorotoluene	ND (0.0039)	0.0031 (0.0008)	1	08/09/10 12:54	CTH0059	CH00918
2-Hexanone	ND (0.0390)	0.0156 (0.0050)	1	08/09/10 12:54	CTH0059	CH00918
4-Chlorotoluene	ND (0.0039)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
4-Isopropyltoluene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
4-Methyl-2-Pentanone	ND (0.0390)	0.0156 (0.0058)	1	08/09/10 12:54	CTH0059	CH00918
Acetone	ND (0.0390)	0.0156 (0.0111)	1	08/09/10 12:54	CTH0059	CH00918
Benzene	ND (0.0039)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
Bromobenzene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
Bromochloromethane	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
Bromodichloromethane	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB23-3-S
Date Sampled: 08/03/10 07:55
Percent Solids: 89
Initial Volume: 7.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0039)	0.0031 (0.0011)	1	08/09/10 12:54	CTH0059	CH00918
Bromomethane	ND (0.0078)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
Carbon Disulfide	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
Carbon Tetrachloride	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
Chlorobenzene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
Chloroethane	ND (0.0078)	0.0031 (0.0014)	1	08/09/10 12:54	CTH0059	CH00918
Chloroform	ND (0.0039)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
Chloromethane	ND (0.0078)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
cis-1,2-Dichloroethene	ND (0.0039)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
cis-1,3-Dichloropropene	ND (0.0039)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
Dibromochloromethane	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
Dibromomethane	ND (0.0039)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
Dichlorodifluoromethane	ND (0.0078)	0.0031 (0.0011)	1	08/09/10 12:54	CTH0059	CH00918
Ethylbenzene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
Hexachlorobutadiene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
Isopropylbenzene	ND (0.0039)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
Methyl tert-Butyl Ether	ND (0.0039)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
Methylene Chloride	**J 0.0047** (0.0195)	0.0031 (0.0015)	1	08/09/10 12:54	CTH0059	CH00918
Naphthalene	ND (0.0039)	0.0031 (0.0010)	1	08/09/10 12:54	CTH0059	CH00918
n-Butylbenzene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
n-Propylbenzene	ND (0.0039)	0.0031 (0.0009)	1	08/09/10 12:54	CTH0059	CH00918
sec-Butylbenzene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
Styrene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
tert-Butylbenzene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
Tetrachloroethene	ND (0.0039)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
Toluene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
trans-1,2-Dichloroethene	ND (0.0039)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
trans-1,3-Dichloropropene	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
Trichloroethene	ND (0.0039)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
Trichlorofluoromethane	ND (0.0039)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
Vinyl Chloride	ND (0.0078)	0.0031 (0.0013)	1	08/09/10 12:54	CTH0059	CH00918
Xylene O	ND (0.0039)	0.0031 (0.0012)	1	08/09/10 12:54	CTH0059	CH00918
Xylene P,M	ND (0.0078)	0.0062 (0.0025)	1	08/09/10 12:54	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB23-3-S
Date Sampled: 08/03/10 07:55
Percent Solids: 89
Initial Volume: 7.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*109 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*90 %*	*85-120*			
Surrogate: Dibromofluoromethane		*107 %*	*85-115*			
Surrogate: Toluene-d8		*97 %*	*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB24-2-S
Date Sampled: 08/03/10 08:15
Percent Solids: 90
Initial Volume: 8.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
1,1,1-Trichloroethane	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
1,1,2,2-Tetrachloroethane	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
1,1,2-Trichloroethane	ND (0.0032)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
1,1-Dichloroethane	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
1,1-Dichloroethene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
1,1-Dichloropropene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
1,2,3-Trichlorobenzene	ND (0.0032)	0.0026 (0.0009)	1	08/09/10 13:22	CTH0059	CH00918
1,2,3-Trichloropropane	ND (0.0032)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
1,2,4-Trichlorobenzene	ND (0.0032)	0.0026 (0.0008)	1	08/09/10 13:22	CTH0059	CH00918
1,2,4-Trimethylbenzene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
1,2-Dibromo-3-Chloropropane	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
1,2-Dibromoethane	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
1,2-Dichlorobenzene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
1,2-Dichloroethane	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
1,2-Dichloropropane	ND (0.0032)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
1,3,5-Trimethylbenzene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
1,3-Dichlorobenzene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
1,3-Dichloropropane	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
1,4-Dichlorobenzene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
1-Chlorohexane	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
2,2-Dichloropropane	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
2-Butanone	ND (0.0323)	0.0129 (0.0053)	1	08/09/10 13:22	CTH0059	CH00918
2-Chlorotoluene	ND (0.0032)	0.0026 (0.0006)	1	08/09/10 13:22	CTH0059	CH00918
2-Hexanone	ND (0.0323)	0.0129 (0.0041)	1	08/09/10 13:22	CTH0059	CH00918
4-Chlorotoluene	ND (0.0032)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
4-Isopropyltoluene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
4-Methyl-2-Pentanone	ND (0.0323)	0.0129 (0.0048)	1	08/09/10 13:22	CTH0059	CH00918
Acetone	**J 0.0143** (0.0323)	0.0129 (0.0092)	1	08/09/10 13:22	CTH0059	CH00918
Benzene	ND (0.0032)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
Bromobenzene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
Bromochloromethane	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
Bromodichloromethane	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB24-2-S
Date Sampled: 08/03/10 08:15
Percent Solids: 90
Initial Volume: 8.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0032)	0.0026 (0.0009)	1	08/09/10 13:22	CTH0059	CH00918
Bromomethane	ND (0.0065)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
Carbon Disulfide	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
Carbon Tetrachloride	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
Chlorobenzene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
Chloroethane	ND (0.0065)	0.0026 (0.0012)	1	08/09/10 13:22	CTH0059	CH00918
Chloroform	ND (0.0032)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
Chloromethane	ND (0.0065)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
cis-1,2-Dichloroethene	ND (0.0032)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
cis-1,3-Dichloropropene	ND (0.0032)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
Dibromochloromethane	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
Dibromomethane	ND (0.0032)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
Dichlorodifluoromethane	ND (0.0065)	0.0026 (0.0009)	1	08/09/10 13:22	CTH0059	CH00918
Ethylbenzene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
Hexachlorobutadiene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
Isopropylbenzene	ND (0.0032)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
Methyl tert-Butyl Ether	ND (0.0032)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
Methylene Chloride	**J 0.0032** (0.0161)	0.0026 (0.0012)	1	08/09/10 13:22	CTH0059	CH00918
Naphthalene	ND (0.0032)	0.0026 (0.0008)	1	08/09/10 13:22	CTH0059	CH00918
n-Butylbenzene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
n-Propylbenzene	ND (0.0032)	0.0026 (0.0008)	1	08/09/10 13:22	CTH0059	CH00918
sec-Butylbenzene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
Styrene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
tert-Butylbenzene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
Tetrachloroethene	ND (0.0032)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
Toluene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
trans-1,2-Dichloroethene	ND (0.0032)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
trans-1,3-Dichloropropene	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
Trichloroethene	ND (0.0032)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
Trichlorofluoromethane	ND (0.0032)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
Vinyl Chloride	ND (0.0065)	0.0026 (0.0011)	1	08/09/10 13:22	CTH0059	CH00918
Xylene O	ND (0.0032)	0.0026 (0.0010)	1	08/09/10 13:22	CTH0059	CH00918
Xylene P,M	ND (0.0065)	0.0052 (0.0021)	1	08/09/10 13:22	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB24-2-S
Date Sampled: 08/03/10 08:15
Percent Solids: 90
Initial Volume: 8.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*116 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*88 %*	*85-120*			
Surrogate: Dibromofluoromethane		*111 %*	*85-115*			
Surrogate: Toluene-d8		*99 %*	*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB24-2-D
Date Sampled: 08/03/10 08:20
Percent Solids: 90
Initial Volume: 6.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
1,1,1-Trichloroethane	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
1,1,2,2-Tetrachloroethane	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
1,1,2-Trichloroethane	ND (0.0042)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
1,1-Dichloroethane	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
1,1-Dichloroethene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
1,1-Dichloropropene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
1,2,3-Trichlorobenzene	ND (0.0042)	0.0034 (0.0012)	1	08/09/10 13:50	CTH0059	CH00918
1,2,3-Trichloropropane	ND (0.0042)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
1,2,4-Trichlorobenzene	ND (0.0042)	0.0034 (0.0011)	1	08/09/10 13:50	CTH0059	CH00918
1,2,4-Trimethylbenzene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
1,2-Dibromo-3-Chloropropane	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
1,2-Dibromoethane	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
1,2-Dichlorobenzene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
1,2-Dichloroethane	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
1,2-Dichloropropane	ND (0.0042)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
1,3,5-Trimethylbenzene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
1,3-Dichlorobenzene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
1,3-Dichloropropane	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
1,4-Dichlorobenzene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
1-Chlorohexane	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
2,2-Dichloropropane	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
2-Butanone	ND (0.0421)	0.0168 (0.0069)	1	08/09/10 13:50	CTH0059	CH00918
2-Chlorotoluene	ND (0.0042)	0.0034 (0.0008)	1	08/09/10 13:50	CTH0059	CH00918
2-Hexanone	ND (0.0421)	0.0168 (0.0054)	1	08/09/10 13:50	CTH0059	CH00918
4-Chlorotoluene	ND (0.0042)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
4-Isopropyltoluene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
4-Methyl-2-Pentanone	ND (0.0421)	0.0168 (0.0062)	1	08/09/10 13:50	CTH0059	CH00918
Acetone	ND (0.0421)	0.0168 (0.0120)	1	08/09/10 13:50	CTH0059	CH00918
Benzene	ND (0.0042)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
Bromobenzene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
Bromochloromethane	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
Bromodichloromethane	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB24-2-D
Date Sampled: 08/03/10 08:20
Percent Solids: 90
Initial Volume: 6.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0042)	0.0034 (0.0012)	1	08/09/10 13:50	CTH0059	CH00918
Bromomethane	ND (0.0084)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
Carbon Disulfide	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
Carbon Tetrachloride	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
Chlorobenzene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
Chloroethane	ND (0.0084)	0.0034 (0.0015)	1	08/09/10 13:50	CTH0059	CH00918
Chloroform	ND (0.0042)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
Chloromethane	ND (0.0084)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
cis-1,2-Dichloroethene	ND (0.0042)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
cis-1,3-Dichloropropene	ND (0.0042)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
Dibromochloromethane	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
Dibromomethane	ND (0.0042)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
Dichlorodifluoromethane	ND (0.0084)	0.0034 (0.0012)	1	08/09/10 13:50	CTH0059	CH00918
Ethylbenzene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
Hexachlorobutadiene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
Isopropylbenzene	ND (0.0042)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
Methyl tert-Butyl Ether	ND (0.0042)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
Methylene Chloride	**J 0.0026** (0.0210)	0.0034 (0.0016)	1	08/09/10 13:50	CTH0059	CH00918
Naphthalene	ND (0.0042)	0.0034 (0.0011)	1	08/09/10 13:50	CTH0059	CH00918
n-Butylbenzene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
n-Propylbenzene	ND (0.0042)	0.0034 (0.0010)	1	08/09/10 13:50	CTH0059	CH00918
sec-Butylbenzene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
Styrene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
tert-Butylbenzene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
Tetrachloroethene	ND (0.0042)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
Toluene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
trans-1,2-Dichloroethene	ND (0.0042)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
trans-1,3-Dichloropropene	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
Trichloroethene	ND (0.0042)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
Trichlorofluoromethane	ND (0.0042)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
Vinyl Chloride	ND (0.0084)	0.0034 (0.0014)	1	08/09/10 13:50	CTH0059	CH00918
Xylene O	ND (0.0042)	0.0034 (0.0013)	1	08/09/10 13:50	CTH0059	CH00918
Xylene P,M	ND (0.0084)	0.0067 (0.0027)	1	08/09/10 13:50	CTH0059	CH00918

ESS Laboratory
Division of Thielsch Engineering, Inc.

BAL Laboratory
The Microbiology Division
of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB24-2-D
Date Sampled: 08/03/10 08:20
Percent Solids: 90
Initial Volume: 6.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*111 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*89 %*	*85-120*			
Surrogate: Dibromofluoromethane		*107 %*	*85-115*			
Surrogate: Toluene-d8		*98 %*	*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB25-2-S
Date Sampled: 08/03/10 08:40
Percent Solids: 91
Initial Volume: 8
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 14:18	CTH0059	CH00918
1,1,1-Trichloroethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
1,1,2,2-Tetrachloroethane	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 14:18	CTH0059	CH00918
1,1,2-Trichloroethane	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
1,1-Dichloroethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
1,1-Dichloroethene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
1,1-Dichloropropene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
1,2,3-Trichlorobenzene	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 14:18	CTH0059	CH00918
1,2,3-Trichloropropane	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
1,2,4-Trichlorobenzene	ND (0.0034)	0.0027 (0.0009)	1	08/09/10 14:18	CTH0059	CH00918
1,2,4-Trimethylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
1,2-Dibromo-3-Chloropropane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
1,2-Dibromoethane	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 14:18	CTH0059	CH00918
1,2-Dichlorobenzene	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 14:18	CTH0059	CH00918
1,2-Dichloroethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
1,2-Dichloropropane	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
1,3,5-Trimethylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
1,3-Dichlorobenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
1,3-Dichloropropane	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 14:18	CTH0059	CH00918
1,4-Dichlorobenzene	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 14:18	CTH0059	CH00918
1-Chlorohexane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
2,2-Dichloropropane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
2-Butanone	ND (0.0343)	0.0137 (0.0056)	1	08/09/10 14:18	CTH0059	CH00918
2-Chlorotoluene	ND (0.0034)	0.0027 (0.0007)	1	08/09/10 14:18	CTH0059	CH00918
2-Hexanone	ND (0.0343)	0.0137 (0.0044)	1	08/09/10 14:18	CTH0059	CH00918
4-Chlorotoluene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
4-Isopropyltoluene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
4-Methyl-2-Pentanone	ND (0.0343)	0.0137 (0.0051)	1	08/09/10 14:18	CTH0059	CH00918
Acetone	**J 0.0134** (0.0343)	0.0137 (0.0098)	1	08/09/10 14:18	CTH0059	CH00918
Benzene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
Bromobenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
Bromochloromethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
Bromodichloromethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB25-2-S
Date Sampled: 08/03/10 08:40
Percent Solids: 91
Initial Volume: 8
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 14:18	CTH0059	CH00918
Bromomethane	ND (0.0069)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
Carbon Disulfide	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
Carbon Tetrachloride	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
Chlorobenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
Chloroethane	ND (0.0069)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
Chloroform	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
Chloromethane	ND (0.0069)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
cis-1,2-Dichloroethene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
cis-1,3-Dichloropropene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
Dibromochloromethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
Dibromomethane	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
Dichlorodifluoromethane	ND (0.0069)	0.0027 (0.0010)	1	08/09/10 14:18	CTH0059	CH00918
Ethylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
Hexachlorobutadiene	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 14:18	CTH0059	CH00918
Isopropylbenzene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
Methyl tert-Butyl Ether	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
Methylene Chloride	**J 0.0031** (0.0172)	0.0027 (0.0013)	1	08/09/10 14:18	CTH0059	CH00918
Naphthalene	ND (0.0034)	0.0027 (0.0009)	1	08/09/10 14:18	CTH0059	CH00918
n-Butylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
n-Propylbenzene	ND (0.0034)	0.0027 (0.0008)	1	08/09/10 14:18	CTH0059	CH00918
sec-Butylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
Styrene	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 14:18	CTH0059	CH00918
tert-Butylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
Tetrachloroethene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
Toluene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
trans-1,2-Dichloroethene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
trans-1,3-Dichloropropene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
Trichloroethene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
Trichlorofluoromethane	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
Vinyl Chloride	ND (0.0069)	0.0027 (0.0012)	1	08/09/10 14:18	CTH0059	CH00918
Xylene O	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 14:18	CTH0059	CH00918
Xylene P,M	ND (0.0069)	0.0055 (0.0022)	1	08/09/10 14:18	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB25-2-S
Date Sampled: 08/03/10 08:40
Percent Solids: 91
Initial Volume: 8
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*113 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*89 %*	*85-120*			
Surrogate: Dibromofluoromethane		*108 %*	*85-115*			
Surrogate: Toluene-d8		*97 %*	*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB26-4-S
Date Sampled: 08/03/10 09:00
Percent Solids: 90
Initial Volume: 7.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0037)	0.0030 (0.0011)	1	08/09/10 14:46	CTH0059	CH00918
1,1,1-Trichloroethane	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
1,1,2,2-Tetrachloroethane	ND (0.0037)	0.0030 (0.0011)	1	08/09/10 14:46	CTH0059	CH00918
1,1,2-Trichloroethane	ND (0.0037)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
1,1-Dichloroethane	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
1,1-Dichloroethene	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
1,1-Dichloropropene	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
1,2,3-Trichlorobenzene	ND (0.0037)	0.0030 (0.0010)	1	08/09/10 14:46	CTH0059	CH00918
1,2,3-Trichloropropane	ND (0.0037)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
1,2,4-Trichlorobenzene	ND (0.0037)	0.0030 (0.0010)	1	08/09/10 14:46	CTH0059	CH00918
1,2,4-Trimethylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
1,2-Dibromo-3-Chloropropane	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
1,2-Dibromoethane	ND (0.0037)	0.0030 (0.0011)	1	08/09/10 14:46	CTH0059	CH00918
1,2-Dichlorobenzene	ND (0.0037)	0.0030 (0.0011)	1	08/09/10 14:46	CTH0059	CH00918
1,2-Dichloroethane	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
1,2-Dichloropropane	ND (0.0037)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
1,3,5-Trimethylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
1,3-Dichlorobenzene	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
1,3-Dichloropropane	ND (0.0037)	0.0030 (0.0011)	1	08/09/10 14:46	CTH0059	CH00918
1,4-Dichlorobenzene	ND (0.0037)	0.0030 (0.0011)	1	08/09/10 14:46	CTH0059	CH00918
1-Chlorohexane	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
2,2-Dichloropropane	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
2-Butanone	ND (0.0370)	0.0148 (0.0061)	1	08/09/10 14:46	CTH0059	CH00918
2-Chlorotoluene	ND (0.0037)	0.0030 (0.0007)	1	08/09/10 14:46	CTH0059	CH00918
2-Hexanone	ND (0.0370)	0.0148 (0.0047)	1	08/09/10 14:46	CTH0059	CH00918
4-Chlorotoluene	ND (0.0037)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
4-Isopropyltoluene	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
4-Methyl-2-Pentanone	ND (0.0370)	0.0148 (0.0055)	1	08/09/10 14:46	CTH0059	CH00918
Acetone	ND (0.0370)	0.0148 (0.0105)	1	08/09/10 14:46	CTH0059	CH00918
Benzene	ND (0.0037)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
Bromobenzene	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
Bromochloromethane	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
Bromodichloromethane	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB26-4-S
Date Sampled: 08/03/10 09:00
Percent Solids: 90
Initial Volume: 7.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0037)	0.0030 (0.0010)	1	08/09/10 14:46	CTH0059	CH00918
Bromomethane	ND (0.0074)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
Carbon Disulfide	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
Carbon Tetrachloride	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
Chlorobenzene	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
Chloroethane	ND (0.0074)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
Chloroform	ND (0.0037)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
Chloromethane	ND (0.0074)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
cis-1,2-Dichloroethene	ND (0.0037)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
cis-1,3-Dichloropropene	ND (0.0037)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
Dibromochloromethane	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
Dibromomethane	ND (0.0037)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
Dichlorodifluoromethane	ND (0.0074)	0.0030 (0.0010)	1	08/09/10 14:46	CTH0059	CH00918
Ethylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
Hexachlorobutadiene	ND (0.0037)	0.0030 (0.0011)	1	08/09/10 14:46	CTH0059	CH00918
Isopropylbenzene	ND (0.0037)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
Methyl tert-Butyl Ether	ND (0.0037)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
Methylene Chloride	**J 0.0022** (0.0185)	0.0030 (0.0014)	1	08/09/10 14:46	CTH0059	CH00918
Naphthalene	ND (0.0037)	0.0030 (0.0010)	1	08/09/10 14:46	CTH0059	CH00918
n-Butylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
n-Propylbenzene	ND (0.0037)	0.0030 (0.0009)	1	08/09/10 14:46	CTH0059	CH00918
sec-Butylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
Styrene	ND (0.0037)	0.0030 (0.0011)	1	08/09/10 14:46	CTH0059	CH00918
tert-Butylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
Tetrachloroethene	ND (0.0037)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
Toluene	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
trans-1,2-Dichloroethene	ND (0.0037)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
trans-1,3-Dichloropropene	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
Trichloroethene	ND (0.0037)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
Trichlorofluoromethane	ND (0.0037)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
Vinyl Chloride	ND (0.0074)	0.0030 (0.0013)	1	08/09/10 14:46	CTH0059	CH00918
Xylene O	ND (0.0037)	0.0030 (0.0012)	1	08/09/10 14:46	CTH0059	CH00918
Xylene P,M	ND (0.0074)	0.0059 (0.0024)	1	08/09/10 14:46	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB26-4-S
Date Sampled: 08/03/10 09:00
Percent Solids: 90
Initial Volume: 7.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)		DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier				
Surrogate: 1,2-Dichloroethane-d4		*112 %*		*70-120*			
Surrogate: 4-Bromofluorobenzene		*90 %*		*85-120*			
Surrogate: Dibromofluoromethane		*106 %*		*85-115*			
Surrogate: Toluene-d8		*98 %*		*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB27-4-S
Date Sampled: 08/03/10 09:30
Percent Solids: 89
Initial Volume: 6.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-07
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0043)	0.0035 (0.0013)	1	08/09/10 15:13	CTH0059	CH00918
1,1,1-Trichloroethane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
1,1,2,2-Tetrachloroethane	ND (0.0043)	0.0035 (0.0013)	1	08/09/10 15:13	CTH0059	CH00918
1,1,2-Trichloroethane	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
1,1-Dichloroethane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
1,1-Dichloroethene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
1,1-Dichloropropene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
1,2,3-Trichlorobenzene	ND (0.0043)	0.0035 (0.0012)	1	08/09/10 15:13	CTH0059	CH00918
1,2,3-Trichloropropane	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
1,2,4-Trichlorobenzene	ND (0.0043)	0.0035 (0.0011)	1	08/09/10 15:13	CTH0059	CH00918
1,2,4-Trimethylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
1,2-Dibromo-3-Chloropropane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
1,2-Dibromoethane	ND (0.0043)	0.0035 (0.0013)	1	08/09/10 15:13	CTH0059	CH00918
1,2-Dichlorobenzene	ND (0.0043)	0.0035 (0.0013)	1	08/09/10 15:13	CTH0059	CH00918
1,2-Dichloroethane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
1,2-Dichloropropane	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
1,3,5-Trimethylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
1,3-Dichlorobenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
1,3-Dichloropropane	ND (0.0043)	0.0035 (0.0013)	1	08/09/10 15:13	CTH0059	CH00918
1,4-Dichlorobenzene	ND (0.0043)	0.0035 (0.0013)	1	08/09/10 15:13	CTH0059	CH00918
1-Chlorohexane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
2,2-Dichloropropane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
2-Butanone	ND (0.0432)	0.0173 (0.0071)	1	08/09/10 15:13	CTH0059	CH00918
2-Chlorotoluene	ND (0.0043)	0.0035 (0.0009)	1	08/09/10 15:13	CTH0059	CH00918
2-Hexanone	ND (0.0432)	0.0173 (0.0055)	1	08/09/10 15:13	CTH0059	CH00918
4-Chlorotoluene	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
4-Isopropyltoluene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
4-Methyl-2-Pentanone	ND (0.0432)	0.0173 (0.0064)	1	08/09/10 15:13	CTH0059	CH00918
Acetone	ND (0.0432)	0.0173 (0.0123)	1	08/09/10 15:13	CTH0059	CH00918
Benzene	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
Bromobenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
Bromochloromethane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
Bromodichloromethane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB27-4-S
Date Sampled: 08/03/10 09:30
Percent Solids: 89
Initial Volume: 6.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-07
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0043)	0.0035 (0.0012)	1	08/09/10 15:13	CTH0059	CH00918
Bromomethane	ND (0.0086)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
Carbon Disulfide	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
Carbon Tetrachloride	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
Chlorobenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
Chloroethane	ND (0.0086)	0.0035 (0.0016)	1	08/09/10 15:13	CTH0059	CH00918
Chloroform	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
Chloromethane	ND (0.0086)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
cis-1,2-Dichloroethene	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
cis-1,3-Dichloropropene	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
Dibromochloromethane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
Dibromomethane	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
Dichlorodifluoromethane	ND (0.0086)	0.0035 (0.0012)	1	08/09/10 15:13	CTH0059	CH00918
Ethylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
Hexachlorobutadiene	ND (0.0043)	0.0035 (0.0013)	1	08/09/10 15:13	CTH0059	CH00918
Isopropylbenzene	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
Methyl tert-Butyl Ether	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
Methylene Chloride	**J 0.0039** (0.0216)	0.0035 (0.0016)	1	08/09/10 15:13	CTH0059	CH00918
Naphthalene	ND (0.0043)	0.0035 (0.0011)	1	08/09/10 15:13	CTH0059	CH00918
n-Butylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
n-Propylbenzene	ND (0.0043)	0.0035 (0.0010)	1	08/09/10 15:13	CTH0059	CH00918
sec-Butylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
Styrene	ND (0.0043)	0.0035 (0.0013)	1	08/09/10 15:13	CTH0059	CH00918
tert-Butylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
Tetrachloroethene	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
Toluene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
trans-1,2-Dichloroethene	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
trans-1,3-Dichloropropene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
Trichloroethene	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
Trichlorofluoromethane	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
Vinyl Chloride	ND (0.0086)	0.0035 (0.0015)	1	08/09/10 15:13	CTH0059	CH00918
Xylene O	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 15:13	CTH0059	CH00918
Xylene P,M	ND (0.0086)	0.0069 (0.0028)	1	08/09/10 15:13	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB27-4-S
Date Sampled: 08/03/10 09:30
Percent Solids: 89
Initial Volume: 6.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-07
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)		DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier				
Surrogate: 1,2-Dichloroethane-d4		*110 %*		*70-120*			
Surrogate: 4-Bromofluorobenzene		*87 %*		*85-120*			
Surrogate: Dibromofluoromethane		*109 %*		*85-115*			
Surrogate: Toluene-d8		*98 %*		*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB28-4-S
Date Sampled: 08/03/10 09:50
Percent Solids: 89
Initial Volume: 8.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-08
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 15:41	CTH0059	CH00918
1,1,1-Trichloroethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
1,1,2,2-Tetrachloroethane	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 15:41	CTH0059	CH00918
1,1,2-Trichloroethane	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
1,1-Dichloroethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
1,1-Dichloroethene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
1,1-Dichloropropene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
1,2,3-Trichlorobenzene	ND (0.0034)	0.0027 (0.0009)	1	08/09/10 15:41	CTH0059	CH00918
1,2,3-Trichloropropane	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
1,2,4-Trichlorobenzene	ND (0.0034)	0.0027 (0.0009)	1	08/09/10 15:41	CTH0059	CH00918
1,2,4-Trimethylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
1,2-Dibromo-3-Chloropropane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
1,2-Dibromoethane	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 15:41	CTH0059	CH00918
1,2-Dichlorobenzene	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 15:41	CTH0059	CH00918
1,2-Dichloroethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
1,2-Dichloropropane	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
1,3,5-Trimethylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
1,3-Dichlorobenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
1,3-Dichloropropane	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 15:41	CTH0059	CH00918
1,4-Dichlorobenzene	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 15:41	CTH0059	CH00918
1-Chlorohexane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
2,2-Dichloropropane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
2-Butanone	ND (0.0338)	0.0135 (0.0056)	1	08/09/10 15:41	CTH0059	CH00918
2-Chlorotoluene	ND (0.0034)	0.0027 (0.0007)	1	08/09/10 15:41	CTH0059	CH00918
2-Hexanone	ND (0.0338)	0.0135 (0.0043)	1	08/09/10 15:41	CTH0059	CH00918
4-Chlorotoluene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
4-Isopropyltoluene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
4-Methyl-2-Pentanone	ND (0.0338)	0.0135 (0.0050)	1	08/09/10 15:41	CTH0059	CH00918
Acetone	**J 0.0141** (0.0338)	0.0135 (0.0096)	1	08/09/10 15:41	CTH0059	CH00918
Benzene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
Bromobenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
Bromochloromethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
Bromodichloromethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB28-4-S
Date Sampled: 08/03/10 09:50
Percent Solids: 89
Initial Volume: 8.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-08
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0034)	0.0027 (0.0009)	1	08/09/10 15:41	CTH0059	CH00918
Bromomethane	ND (0.0068)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
Carbon Disulfide	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
Carbon Tetrachloride	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
Chlorobenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
Chloroethane	ND (0.0068)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
Chloroform	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
Chloromethane	ND (0.0068)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
cis-1,2-Dichloroethene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
cis-1,3-Dichloropropene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
Dibromochloromethane	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
Dibromomethane	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
Dichlorodifluoromethane	ND (0.0068)	0.0027 (0.0009)	1	08/09/10 15:41	CTH0059	CH00918
Ethylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
Hexachlorobutadiene	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 15:41	CTH0059	CH00918
Isopropylbenzene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
Methyl tert-Butyl Ether	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
Methylene Chloride	**J 0.0025** (0.0169)	0.0027 (0.0013)	1	08/09/10 15:41	CTH0059	CH00918
Naphthalene	ND (0.0034)	0.0027 (0.0009)	1	08/09/10 15:41	CTH0059	CH00918
n-Butylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
n-Propylbenzene	ND (0.0034)	0.0027 (0.0008)	1	08/09/10 15:41	CTH0059	CH00918
sec-Butylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
Styrene	ND (0.0034)	0.0027 (0.0010)	1	08/09/10 15:41	CTH0059	CH00918
tert-Butylbenzene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
Tetrachloroethene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
Toluene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
trans-1,2-Dichloroethene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
trans-1,3-Dichloropropene	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
Trichloroethene	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
Trichlorofluoromethane	ND (0.0034)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
Vinyl Chloride	ND (0.0068)	0.0027 (0.0012)	1	08/09/10 15:41	CTH0059	CH00918
Xylene O	ND (0.0034)	0.0027 (0.0011)	1	08/09/10 15:41	CTH0059	CH00918
Xylene P,M	ND (0.0068)	0.0054 (0.0022)	1	08/09/10 15:41	CTH0059	CH00918

ESS Laboratory
Division of Thielsch Engineering, Inc.

BAL Laboratory
The Microbiology Division
of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB28-4-S
Date Sampled: 08/03/10 09:50
Percent Solids: 89
Initial Volume: 8.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-08
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*110 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*88 %*	*85-120*			
Surrogate: Dibromofluoromethane		*107 %*	*85-115*			
Surrogate: Toluene-d8		*97 %*	*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB29-4-S
Date Sampled: 08/03/10 10:00
Percent Solids: 90
Initial Volume: 6.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-09
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0043)	0.0035 (0.0013)	1	08/09/10 16:09	CTH0059	CH00918
1,1,1-Trichloroethane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
1,1,2,2-Tetrachloroethane	ND (0.0043)	0.0035 (0.0013)	1	08/09/10 16:09	CTH0059	CH00918
1,1,2-Trichloroethane	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
1,1-Dichloroethane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
1,1-Dichloroethene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
1,1-Dichloropropene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
1,2,3-Trichlorobenzene	ND (0.0043)	0.0035 (0.0012)	1	08/09/10 16:09	CTH0059	CH00918
1,2,3-Trichloropropane	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
1,2,4-Trichlorobenzene	ND (0.0043)	0.0035 (0.0011)	1	08/09/10 16:09	CTH0059	CH00918
1,2,4-Trimethylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
1,2-Dibromo-3-Chloropropane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
1,2-Dibromoethane	ND (0.0043)	0.0035 (0.0013)	1	08/09/10 16:09	CTH0059	CH00918
1,2-Dichlorobenzene	ND (0.0043)	0.0035 (0.0013)	1	08/09/10 16:09	CTH0059	CH00918
1,2-Dichloroethane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
1,2-Dichloropropane	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
1,3,5-Trimethylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
1,3-Dichlorobenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
1,3-Dichloropropane	ND (0.0043)	0.0035 (0.0013)	1	08/09/10 16:09	CTH0059	CH00918
1,4-Dichlorobenzene	ND (0.0043)	0.0035 (0.0013)	1	08/09/10 16:09	CTH0059	CH00918
1-Chlorohexane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
2,2-Dichloropropane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
2-Butanone	ND (0.0434)	0.0174 (0.0071)	1	08/09/10 16:09	CTH0059	CH00918
2-Chlorotoluene	ND (0.0043)	0.0035 (0.0009)	1	08/09/10 16:09	CTH0059	CH00918
2-Hexanone	ND (0.0434)	0.0174 (0.0056)	1	08/09/10 16:09	CTH0059	CH00918
4-Chlorotoluene	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
4-Isopropyltoluene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
4-Methyl-2-Pentanone	ND (0.0434)	0.0174 (0.0064)	1	08/09/10 16:09	CTH0059	CH00918
Acetone	ND (0.0434)	0.0174 (0.0123)	1	08/09/10 16:09	CTH0059	CH00918
Benzene	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
Bromobenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
Bromochloromethane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
Bromodichloromethane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB29-4-S
Date Sampled: 08/03/10 10:00
Percent Solids: 90
Initial Volume: 6.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-09
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0043)	0.0035 (0.0012)	1	08/09/10 16:09	CTH0059	CH00918
Bromomethane	ND (0.0087)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
Carbon Disulfide	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
Carbon Tetrachloride	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
Chlorobenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
Chloroethane	ND (0.0087)	0.0035 (0.0016)	1	08/09/10 16:09	CTH0059	CH00918
Chloroform	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
Chloromethane	ND (0.0087)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
cis-1,2-Dichloroethene	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
cis-1,3-Dichloropropene	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
Dibromochloromethane	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
Dibromomethane	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
Dichlorodifluoromethane	ND (0.0087)	0.0035 (0.0012)	1	08/09/10 16:09	CTH0059	CH00918
Ethylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
Hexachlorobutadiene	ND (0.0043)	0.0035 (0.0013)	1	08/09/10 16:09	CTH0059	CH00918
Isopropylbenzene	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
Methyl tert-Butyl Ether	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
Methylene Chloride	**J 0.0038** (0.0217)	0.0035 (0.0016)	1	08/09/10 16:09	CTH0059	CH00918
Naphthalene	ND (0.0043)	0.0035 (0.0011)	1	08/09/10 16:09	CTH0059	CH00918
n-Butylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
n-Propylbenzene	ND (0.0043)	0.0035 (0.0010)	1	08/09/10 16:09	CTH0059	CH00918
sec-Butylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
Styrene	ND (0.0043)	0.0035 (0.0013)	1	08/09/10 16:09	CTH0059	CH00918
tert-Butylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
Tetrachloroethene	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
Toluene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
trans-1,2-Dichloroethene	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
trans-1,3-Dichloropropene	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
Trichloroethene	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
Trichlorofluoromethane	ND (0.0043)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
Vinyl Chloride	ND (0.0087)	0.0035 (0.0015)	1	08/09/10 16:09	CTH0059	CH00918
Xylene O	ND (0.0043)	0.0035 (0.0014)	1	08/09/10 16:09	CTH0059	CH00918
Xylene P,M	ND (0.0087)	0.0069 (0.0028)	1	08/09/10 16:09	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB29-4-S
Date Sampled: 08/03/10 10:00
Percent Solids: 90
Initial Volume: 6.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-09
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)		DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier				
Surrogate: 1,2-Dichloroethane-d4		*114 %*		*70-120*			
Surrogate: 4-Bromofluorobenzene		*85 %*		*85-120*			
Surrogate: Dibromofluoromethane		*113 %*		*85-115*			
Surrogate: Toluene-d8		*99 %*		*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB30-4-S
Date Sampled: 08/03/10 10:30
Percent Solids: 93
Initial Volume: 6.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-10
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0043)	0.0034 (0.0013)	1	08/09/10 16:37	CTH0059	CH00918
1,1,1-Trichloroethane	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
1,1,2,2-Tetrachloroethane	ND (0.0043)	0.0034 (0.0013)	1	08/09/10 16:37	CTH0059	CH00918
1,1,2-Trichloroethane	ND (0.0043)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
1,1-Dichloroethane	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
1,1-Dichloroethene	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
1,1-Dichloropropene	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
1,2,3-Trichlorobenzene	ND (0.0043)	0.0034 (0.0012)	1	08/09/10 16:37	CTH0059	CH00918
1,2,3-Trichloropropane	ND (0.0043)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
1,2,4-Trichlorobenzene	ND (0.0043)	0.0034 (0.0011)	1	08/09/10 16:37	CTH0059	CH00918
1,2,4-Trimethylbenzene	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
1,2-Dibromo-3-Chloropropane	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
1,2-Dibromoethane	ND (0.0043)	0.0034 (0.0013)	1	08/09/10 16:37	CTH0059	CH00918
1,2-Dichlorobenzene	ND (0.0043)	0.0034 (0.0013)	1	08/09/10 16:37	CTH0059	CH00918
1,2-Dichloroethane	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
1,2-Dichloropropane	ND (0.0043)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
1,3,5-Trimethylbenzene	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
1,3-Dichlorobenzene	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
1,3-Dichloropropane	ND (0.0043)	0.0034 (0.0013)	1	08/09/10 16:37	CTH0059	CH00918
1,4-Dichlorobenzene	ND (0.0043)	0.0034 (0.0013)	1	08/09/10 16:37	CTH0059	CH00918
1-Chlorohexane	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
2,2-Dichloropropane	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
2-Butanone	ND (0.0427)	0.0171 (0.0070)	1	08/09/10 16:37	CTH0059	CH00918
2-Chlorotoluene	ND (0.0043)	0.0034 (0.0009)	1	08/09/10 16:37	CTH0059	CH00918
2-Hexanone	ND (0.0427)	0.0171 (0.0055)	1	08/09/10 16:37	CTH0059	CH00918
4-Chlorotoluene	ND (0.0043)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
4-Isopropyltoluene	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
4-Methyl-2-Pentanone	ND (0.0427)	0.0171 (0.0063)	1	08/09/10 16:37	CTH0059	CH00918
Acetone	**J 0.0163** (0.0427)	0.0171 (0.0121)	1	08/09/10 16:37	CTH0059	CH00918
Benzene	ND (0.0043)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
Bromobenzene	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
Bromochloromethane	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
Bromodichloromethane	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB30-4-S
Date Sampled: 08/03/10 10:30
Percent Solids: 93
Initial Volume: 6.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-10
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0043)	0.0034 (0.0012)	1	08/09/10 16:37	CTH0059	CH00918
Bromomethane	ND (0.0085)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
Carbon Disulfide	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
Carbon Tetrachloride	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
Chlorobenzene	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
Chloroethane	ND (0.0085)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
Chloroform	ND (0.0043)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
Chloromethane	ND (0.0085)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
cis-1,2-Dichloroethene	ND (0.0043)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
cis-1,3-Dichloropropene	ND (0.0043)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
Dibromochloromethane	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
Dibromomethane	ND (0.0043)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
Dichlorodifluoromethane	ND (0.0085)	0.0034 (0.0012)	1	08/09/10 16:37	CTH0059	CH00918
Ethylbenzene	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
Hexachlorobutadiene	ND (0.0043)	0.0034 (0.0013)	1	08/09/10 16:37	CTH0059	CH00918
Isopropylbenzene	ND (0.0043)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
Methyl tert-Butyl Ether	ND (0.0043)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
Methylene Chloride	**J 0.0041** (0.0213)	0.0034 (0.0016)	1	08/09/10 16:37	CTH0059	CH00918
Naphthalene	ND (0.0043)	0.0034 (0.0011)	1	08/09/10 16:37	CTH0059	CH00918
n-Butylbenzene	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
n-Propylbenzene	ND (0.0043)	0.0034 (0.0010)	1	08/09/10 16:37	CTH0059	CH00918
sec-Butylbenzene	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
Styrene	ND (0.0043)	0.0034 (0.0013)	1	08/09/10 16:37	CTH0059	CH00918
tert-Butylbenzene	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
Tetrachloroethene	ND (0.0043)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
Toluene	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
trans-1,2-Dichloroethene	ND (0.0043)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
trans-1,3-Dichloropropene	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
Trichloroethene	ND (0.0043)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
Trichlorofluoromethane	ND (0.0043)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
Vinyl Chloride	ND (0.0085)	0.0034 (0.0015)	1	08/09/10 16:37	CTH0059	CH00918
Xylene O	ND (0.0043)	0.0034 (0.0014)	1	08/09/10 16:37	CTH0059	CH00918
Xylene P,M	ND (0.0085)	0.0068 (0.0027)	1	08/09/10 16:37	CTH0059	CH00918

ESS Laboratory
Division of Thielsch Engineering, Inc.

BAL Laboratory
The Microbiology Division
of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB30-4-S
Date Sampled: 08/03/10 10:30
Percent Solids: 93
Initial Volume: 6.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-10
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*115 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*90 %*	*85-120*			
Surrogate: Dibromofluoromethane		*110 %*	*85-115*			
Surrogate: Toluene-d8		*99 %*	*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB32-4-S
Date Sampled: 08/03/10 12:50
Percent Solids: 90
Initial Volume: 8.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-11
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0033)	0.0026 (0.0010)	1	08/09/10 17:04	CTH0059	CH00918
1,1,1-Trichloroethane	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
1,1,2,2-Tetrachloroethane	ND (0.0033)	0.0026 (0.0010)	1	08/09/10 17:04	CTH0059	CH00918
1,1,2-Trichloroethane	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
1,1-Dichloroethane	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
1,1-Dichloroethene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
1,1-Dichloropropene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
1,2,3-Trichlorobenzene	ND (0.0033)	0.0026 (0.0009)	1	08/09/10 17:04	CTH0059	CH00918
1,2,3-Trichloropropane	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
1,2,4-Trichlorobenzene	ND (0.0033)	0.0026 (0.0009)	1	08/09/10 17:04	CTH0059	CH00918
1,2,4-Trimethylbenzene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
1,2-Dibromo-3-Chloropropane	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
1,2-Dibromoethane	ND (0.0033)	0.0026 (0.0010)	1	08/09/10 17:04	CTH0059	CH00918
1,2-Dichlorobenzene	ND (0.0033)	0.0026 (0.0010)	1	08/09/10 17:04	CTH0059	CH00918
1,2-Dichloroethane	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
1,2-Dichloropropane	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
1,3,5-Trimethylbenzene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
1,3-Dichlorobenzene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
1,3-Dichloropropane	ND (0.0033)	0.0026 (0.0010)	1	08/09/10 17:04	CTH0059	CH00918
1,4-Dichlorobenzene	ND (0.0033)	0.0026 (0.0010)	1	08/09/10 17:04	CTH0059	CH00918
1-Chlorohexane	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
2,2-Dichloropropane	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
2-Butanone	ND (0.0331)	0.0132 (0.0054)	1	08/09/10 17:04	CTH0059	CH00918
2-Chlorotoluene	ND (0.0033)	0.0026 (0.0007)	1	08/09/10 17:04	CTH0059	CH00918
2-Hexanone	ND (0.0331)	0.0132 (0.0042)	1	08/09/10 17:04	CTH0059	CH00918
4-Chlorotoluene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
4-Isopropyltoluene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
4-Methyl-2-Pentanone	ND (0.0331)	0.0132 (0.0049)	1	08/09/10 17:04	CTH0059	CH00918
Acetone	ND (0.0331)	0.0132 (0.0094)	1	08/09/10 17:04	CTH0059	CH00918
Benzene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Bromobenzene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Bromochloromethane	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Bromodichloromethane	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB32-4-S
Date Sampled: 08/03/10 12:50
Percent Solids: 90
Initial Volume: 8.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-11
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0033)	0.0026 (0.0009)	1	08/09/10 17:04	CTH0059	CH00918
Bromomethane	ND (0.0066)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Carbon Disulfide	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Carbon Tetrachloride	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Chlorobenzene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Chloroethane	ND (0.0066)	0.0026 (0.0012)	1	08/09/10 17:04	CTH0059	CH00918
Chloroform	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Chloromethane	ND (0.0066)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
cis-1,2-Dichloroethene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
cis-1,3-Dichloropropene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Dibromochloromethane	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Dibromomethane	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Dichlorodifluoromethane	ND (0.0066)	0.0026 (0.0009)	1	08/09/10 17:04	CTH0059	CH00918
Ethylbenzene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Hexachlorobutadiene	ND (0.0033)	0.0026 (0.0010)	1	08/09/10 17:04	CTH0059	CH00918
Isopropylbenzene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Methyl tert-Butyl Ether	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Methylene Chloride	**J 0.0016** (0.0165)	0.0026 (0.0013)	1	08/09/10 17:04	CTH0059	CH00918
Naphthalene	ND (0.0033)	0.0026 (0.0009)	1	08/09/10 17:04	CTH0059	CH00918
n-Butylbenzene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
n-Propylbenzene	ND (0.0033)	0.0026 (0.0008)	1	08/09/10 17:04	CTH0059	CH00918
sec-Butylbenzene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Styrene	ND (0.0033)	0.0026 (0.0010)	1	08/09/10 17:04	CTH0059	CH00918
tert-Butylbenzene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Tetrachloroethene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Toluene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
trans-1,2-Dichloroethene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
trans-1,3-Dichloropropene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Trichloroethene	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Trichlorofluoromethane	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Vinyl Chloride	ND (0.0066)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Xylene O	ND (0.0033)	0.0026 (0.0011)	1	08/09/10 17:04	CTH0059	CH00918
Xylene P,M	ND (0.0066)	0.0053 (0.0021)	1	08/09/10 17:04	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB32-4-S
Date Sampled: 08/03/10 12:50
Percent Solids: 90
Initial Volume: 8.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-11
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)		DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier				
Surrogate: 1,2-Dichloroethane-d4		*114 %*		*70-120*			
Surrogate: 4-Bromofluorobenzene		*89 %*		*85-120*			
Surrogate: Dibromofluoromethane		*111 %*		*85-115*			
Surrogate: Toluene-d8		*97 %*		*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB33-2-S
Date Sampled: 08/03/10 13:00
Percent Solids: 89
Initial Volume: 6.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-12
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0043)	0.0035 (0.0013)	1	08/10/10 12:56	CTH0063	CH01014
1,1,1-Trichloroethane	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
1,1,2,2-Tetrachloroethane	ND (0.0043)	0.0035 (0.0013)	1	08/10/10 12:56	CTH0063	CH01014
1,1,2-Trichloroethane	ND (0.0043)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
1,1-Dichloroethane	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
1,1-Dichloroethene	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
1,1-Dichloropropene	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
1,2,3-Trichlorobenzene	ND (0.0043)	0.0035 (0.0012)	1	08/10/10 12:56	CTH0063	CH01014
1,2,3-Trichloropropane	ND (0.0043)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
1,2,4-Trichlorobenzene	ND (0.0043)	0.0035 (0.0011)	1	08/10/10 12:56	CTH0063	CH01014
1,2,4-Trimethylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
1,2-Dibromo-3-Chloropropane	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
1,2-Dibromoethane	ND (0.0043)	0.0035 (0.0013)	1	08/10/10 12:56	CTH0063	CH01014
1,2-Dichlorobenzene	ND (0.0043)	0.0035 (0.0013)	1	08/10/10 12:56	CTH0063	CH01014
1,2-Dichloroethane	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
1,2-Dichloropropane	ND (0.0043)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
1,3,5-Trimethylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
1,3-Dichlorobenzene	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
1,3-Dichloropropane	ND (0.0043)	0.0035 (0.0013)	1	08/10/10 12:56	CTH0063	CH01014
1,4-Dichlorobenzene	ND (0.0043)	0.0035 (0.0013)	1	08/10/10 12:56	CTH0063	CH01014
1-Chlorohexane	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
2,2-Dichloropropane	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
2-Butanone	J **0.0109** (0.0432)	0.0173 (0.0071)	1	08/10/10 12:56	CTH0063	CH01014
2-Chlorotoluene	ND (0.0043)	0.0035 (0.0009)	1	08/10/10 12:56	CTH0063	CH01014
2-Hexanone	ND (0.0432)	0.0173 (0.0055)	1	08/10/10 12:56	CTH0063	CH01014
4-Chlorotoluene	ND (0.0043)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
4-Isopropyltoluene	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
4-Methyl-2-Pentanone	ND (0.0432)	0.0173 (0.0064)	1	08/10/10 12:56	CTH0063	CH01014
Acetone	**0.105** (0.0432)	0.0173 (0.0123)	1	08/10/10 12:56	CTH0063	CH01014
Benzene	ND (0.0043)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
Bromobenzene	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
Bromochloromethane	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
Bromodichloromethane	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB33-2-S
Date Sampled: 08/03/10 13:00
Percent Solids: 89
Initial Volume: 6.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-12
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0043)	0.0035 (0.0012)	1	08/10/10 12:56	CTH0063	CH01014
Bromomethane	ND (0.0086)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
Carbon Disulfide	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
Carbon Tetrachloride	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
Chlorobenzene	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
Chloroethane	ND (0.0086)	0.0035 (0.0016)	1	08/10/10 12:56	CTH0063	CH01014
Chloroform	ND (0.0043)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
Chloromethane	ND (0.0086)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
cis-1,2-Dichloroethene	ND (0.0043)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
cis-1,3-Dichloropropene	ND (0.0043)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
Dibromochloromethane	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
Dibromomethane	ND (0.0043)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
Dichlorodifluoromethane	ND (0.0086)	0.0035 (0.0012)	1	08/10/10 12:56	CTH0063	CH01014
Ethylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
Hexachlorobutadiene	ND (0.0043)	0.0035 (0.0013)	1	08/10/10 12:56	CTH0063	CH01014
Isopropylbenzene	ND (0.0043)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
Methyl tert-Butyl Ether	ND (0.0043)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
Methylene Chloride	J **0.0029** (0.0216)	0.0035 (0.0016)	1	08/10/10 12:56	CTH0063	CH01014
Naphthalene	ND (0.0043)	0.0035 (0.0011)	1	08/10/10 12:56	CTH0063	CH01014
n-Butylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
n-Propylbenzene	ND (0.0043)	0.0035 (0.0010)	1	08/10/10 12:56	CTH0063	CH01014
sec-Butylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
Styrene	ND (0.0043)	0.0035 (0.0013)	1	08/10/10 12:56	CTH0063	CH01014
tert-Butylbenzene	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
Tetrachloroethene	ND (0.0043)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
Toluene	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
trans-1,2-Dichloroethene	ND (0.0043)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
trans-1,3-Dichloropropene	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
Trichloroethene	ND (0.0043)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
Trichlorofluoromethane	ND (0.0043)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
Vinyl Chloride	ND (0.0086)	0.0035 (0.0015)	1	08/10/10 12:56	CTH0063	CH01014
Xylene O	ND (0.0043)	0.0035 (0.0014)	1	08/10/10 12:56	CTH0063	CH01014
Xylene P,M	ND (0.0086)	0.0069 (0.0028)	1	08/10/10 12:56	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB33-2-S
Date Sampled: 08/03/10 13:00
Percent Solids: 89
Initial Volume: 6.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-12
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)		DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier				
Surrogate: 1,2-Dichloroethane-d4		*114 %*		*70-120*			
Surrogate: 4-Bromofluorobenzene		*84 %*	*S-*	*85-120*			
Surrogate: Dibromofluoromethane		*111 %*		*85-115*			
Surrogate: Toluene-d8		*102 %*		*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB34-4-S
Date Sampled: 08/03/10 13:50
Percent Solids: 91
Initial Volume: 7.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-13
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0038)	0.0031 (0.0011)	1	08/09/10 18:00	CTH0059	CH00918
1,1,1-Trichloroethane	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
1,1,2,2-Tetrachloroethane	ND (0.0038)	0.0031 (0.0011)	1	08/09/10 18:00	CTH0059	CH00918
1,1,2-Trichloroethane	ND (0.0038)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
1,1-Dichloroethane	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
1,1-Dichloroethene	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
1,1-Dichloropropene	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
1,2,3-Trichlorobenzene	ND (0.0038)	0.0031 (0.0011)	1	08/09/10 18:00	CTH0059	CH00918
1,2,3-Trichloropropane	ND (0.0038)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
1,2,4-Trichlorobenzene	ND (0.0038)	0.0031 (0.0010)	1	08/09/10 18:00	CTH0059	CH00918
1,2,4-Trimethylbenzene	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
1,2-Dibromo-3-Chloropropane	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
1,2-Dibromoethane	ND (0.0038)	0.0031 (0.0011)	1	08/09/10 18:00	CTH0059	CH00918
1,2-Dichlorobenzene	ND (0.0038)	0.0031 (0.0011)	1	08/09/10 18:00	CTH0059	CH00918
1,2-Dichloroethane	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
1,2-Dichloropropane	ND (0.0038)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
1,3,5-Trimethylbenzene	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
1,3-Dichlorobenzene	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
1,3-Dichloropropane	ND (0.0038)	0.0031 (0.0011)	1	08/09/10 18:00	CTH0059	CH00918
1,4-Dichlorobenzene	ND (0.0038)	0.0031 (0.0011)	1	08/09/10 18:00	CTH0059	CH00918
1-Chlorohexane	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
2,2-Dichloropropane	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
2-Butanone	ND (0.0382)	0.0153 (0.0063)	1	08/09/10 18:00	CTH0059	CH00918
2-Chlorotoluene	ND (0.0038)	0.0031 (0.0008)	1	08/09/10 18:00	CTH0059	CH00918
2-Hexanone	ND (0.0382)	0.0153 (0.0049)	1	08/09/10 18:00	CTH0059	CH00918
4-Chlorotoluene	ND (0.0038)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
4-Isopropyltoluene	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
4-Methyl-2-Pentanone	ND (0.0382)	0.0153 (0.0056)	1	08/09/10 18:00	CTH0059	CH00918
Acetone	ND (0.0382)	0.0153 (0.0108)	1	08/09/10 18:00	CTH0059	CH00918
Benzene	ND (0.0038)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
Bromobenzene	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
Bromochloromethane	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
Bromodichloromethane	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB34-4-S
Date Sampled: 08/03/10 13:50
Percent Solids: 91
Initial Volume: 7.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-13
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0038)	0.0031 (0.0011)	1	08/09/10 18:00	CTH0059	CH00918
Bromomethane	ND (0.0076)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
Carbon Disulfide	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
Carbon Tetrachloride	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
Chlorobenzene	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
Chloroethane	ND (0.0076)	0.0031 (0.0014)	1	08/09/10 18:00	CTH0059	CH00918
Chloroform	ND (0.0038)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
Chloromethane	ND (0.0076)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
cis-1,2-Dichloroethene	ND (0.0038)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
cis-1,3-Dichloropropene	ND (0.0038)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
Dibromochloromethane	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
Dibromomethane	ND (0.0038)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
Dichlorodifluoromethane	ND (0.0076)	0.0031 (0.0011)	1	08/09/10 18:00	CTH0059	CH00918
Ethylbenzene	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
Hexachlorobutadiene	ND (0.0038)	0.0031 (0.0011)	1	08/09/10 18:00	CTH0059	CH00918
Isopropylbenzene	ND (0.0038)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
Methyl tert-Butyl Ether	ND (0.0038)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
Methylene Chloride	ND (0.0191)	0.0031 (0.0014)	1	08/09/10 18:00	CTH0059	CH00918
Naphthalene	ND (0.0038)	0.0031 (0.0010)	1	08/09/10 18:00	CTH0059	CH00918
n-Butylbenzene	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
n-Propylbenzene	ND (0.0038)	0.0031 (0.0009)	1	08/09/10 18:00	CTH0059	CH00918
sec-Butylbenzene	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
Styrene	ND (0.0038)	0.0031 (0.0011)	1	08/09/10 18:00	CTH0059	CH00918
tert-Butylbenzene	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
Tetrachloroethene	ND (0.0038)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
Toluene	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
trans-1,2-Dichloroethene	ND (0.0038)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
trans-1,3-Dichloropropene	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
Trichloroethene	ND (0.0038)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
Trichlorofluoromethane	ND (0.0038)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
Vinyl Chloride	ND (0.0076)	0.0031 (0.0013)	1	08/09/10 18:00	CTH0059	CH00918
Xylene O	ND (0.0038)	0.0031 (0.0012)	1	08/09/10 18:00	CTH0059	CH00918
Xylene P,M	ND (0.0076)	0.0061 (0.0024)	1	08/09/10 18:00	CTH0059	CH00918

ESS Laboratory
Division of Thielsch Engineering, Inc.

BAL Laboratory
The Microbiology Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB34-4-S
Date Sampled: 08/03/10 13:50
Percent Solids: 91
Initial Volume: 7.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-13
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*116 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*88 %*	*85-120*			
Surrogate: Dibromofluoromethane		*112 %*	*85-115*			
Surrogate: Toluene-d8		*100 %*	*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB35-4-S
Date Sampled: 08/03/10 15:00
Percent Solids: 90
Initial Volume: 7.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-14
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0038)	0.0030 (0.0011)	1	08/10/10 13:24	CTH0063	CH01014
1,1,1-Trichloroethane	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
1,1,2,2-Tetrachloroethane	ND (0.0038)	0.0030 (0.0011)	1	08/10/10 13:24	CTH0063	CH01014
1,1,2-Trichloroethane	ND (0.0038)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
1,1-Dichloroethane	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
1,1-Dichloroethene	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
1,1-Dichloropropene	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
1,2,3-Trichlorobenzene	ND (0.0038)	0.0030 (0.0011)	1	08/10/10 13:24	CTH0063	CH01014
1,2,3-Trichloropropane	ND (0.0038)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
1,2,4-Trichlorobenzene	ND (0.0038)	0.0030 (0.0010)	1	08/10/10 13:24	CTH0063	CH01014
1,2,4-Trimethylbenzene	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
1,2-Dibromo-3-Chloropropane	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
1,2-Dibromoethane	ND (0.0038)	0.0030 (0.0011)	1	08/10/10 13:24	CTH0063	CH01014
1,2-Dichlorobenzene	ND (0.0038)	0.0030 (0.0011)	1	08/10/10 13:24	CTH0063	CH01014
1,2-Dichloroethane	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
1,2-Dichloropropane	ND (0.0038)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
1,3,5-Trimethylbenzene	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
1,3-Dichlorobenzene	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
1,3-Dichloropropane	ND (0.0038)	0.0030 (0.0011)	1	08/10/10 13:24	CTH0063	CH01014
1,4-Dichlorobenzene	ND (0.0038)	0.0030 (0.0011)	1	08/10/10 13:24	CTH0063	CH01014
1-Chlorohexane	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
2,2-Dichloropropane	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
2-Butanone	ND (0.0375)	0.0150 (0.0062)	1	08/10/10 13:24	CTH0063	CH01014
2-Chlorotoluene	ND (0.0038)	0.0030 (0.0008)	1	08/10/10 13:24	CTH0063	CH01014
2-Hexanone	ND (0.0375)	0.0150 (0.0048)	1	08/10/10 13:24	CTH0063	CH01014
4-Chlorotoluene	ND (0.0038)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
4-Isopropyltoluene	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
4-Methyl-2-Pentanone	ND (0.0375)	0.0150 (0.0056)	1	08/10/10 13:24	CTH0063	CH01014
Acetone	**J 0.0161** (0.0375)	0.0150 (0.0107)	1	08/10/10 13:24	CTH0063	CH01014
Benzene	ND (0.0038)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
Bromobenzene	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
Bromochloromethane	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
Bromodichloromethane	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB35-4-S
Date Sampled: 08/03/10 15:00
Percent Solids: 90
Initial Volume: 7.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-14
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0038)	0.0030 (0.0011)	1	08/10/10 13:24	CTH0063	CH01014
Bromomethane	ND (0.0075)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
Carbon Disulfide	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
Carbon Tetrachloride	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
Chlorobenzene	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
Chloroethane	ND (0.0075)	0.0030 (0.0014)	1	08/10/10 13:24	CTH0063	CH01014
Chloroform	ND (0.0038)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
Chloromethane	ND (0.0075)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
cis-1,2-Dichloroethene	ND (0.0038)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
cis-1,3-Dichloropropene	ND (0.0038)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
Dibromochloromethane	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
Dibromomethane	ND (0.0038)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
Dichlorodifluoromethane	ND (0.0075)	0.0030 (0.0011)	1	08/10/10 13:24	CTH0063	CH01014
Ethylbenzene	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
Hexachlorobutadiene	ND (0.0038)	0.0030 (0.0011)	1	08/10/10 13:24	CTH0063	CH01014
Isopropylbenzene	ND (0.0038)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
Methyl tert-Butyl Ether	ND (0.0038)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
Methylene Chloride	**J 0.0033** (0.0188)	0.0030 (0.0014)	1	08/10/10 13:24	CTH0063	CH01014
Naphthalene	ND (0.0038)	0.0030 (0.0010)	1	08/10/10 13:24	CTH0063	CH01014
n-Butylbenzene	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
n-Propylbenzene	ND (0.0038)	0.0030 (0.0009)	1	08/10/10 13:24	CTH0063	CH01014
sec-Butylbenzene	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
Styrene	ND (0.0038)	0.0030 (0.0011)	1	08/10/10 13:24	CTH0063	CH01014
tert-Butylbenzene	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
Tetrachloroethene	ND (0.0038)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
Toluene	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
trans-1,2-Dichloroethene	ND (0.0038)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
trans-1,3-Dichloropropene	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
Trichloroethene	ND (0.0038)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
Trichlorofluoromethane	ND (0.0038)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
Vinyl Chloride	ND (0.0075)	0.0030 (0.0013)	1	08/10/10 13:24	CTH0063	CH01014
Xylene O	ND (0.0038)	0.0030 (0.0012)	1	08/10/10 13:24	CTH0063	CH01014
Xylene P,M	ND (0.0075)	0.0060 (0.0024)	1	08/10/10 13:24	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB35-4-S
Date Sampled: 08/03/10 15:00
Percent Solids: 90
Initial Volume: 7.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-14
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*114 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*90 %*	*85-120*			
Surrogate: Dibromofluoromethane		*112 %*	*85-115*			
Surrogate: Toluene-d8		*97 %*	*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB36-4-S
Date Sampled: 08/03/10 15:25
Percent Solids: 89
Initial Volume: 7.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-15
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0037)	0.0030 (0.0011)	1	08/10/10 13:52	CTH0063	CH01014
1,1,1-Trichloroethane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
1,1,2,2-Tetrachloroethane	ND (0.0037)	0.0030 (0.0011)	1	08/10/10 13:52	CTH0063	CH01014
1,1,2-Trichloroethane	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
1,1-Dichloroethane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
1,1-Dichloroethene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
1,1-Dichloropropene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
1,2,3-Trichlorobenzene	ND (0.0037)	0.0030 (0.0010)	1	08/10/10 13:52	CTH0063	CH01014
1,2,3-Trichloropropane	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
1,2,4-Trichlorobenzene	ND (0.0037)	0.0030 (0.0010)	1	08/10/10 13:52	CTH0063	CH01014
1,2,4-Trimethylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
1,2-Dibromo-3-Chloropropane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
1,2-Dibromoethane	ND (0.0037)	0.0030 (0.0011)	1	08/10/10 13:52	CTH0063	CH01014
1,2-Dichlorobenzene	ND (0.0037)	0.0030 (0.0011)	1	08/10/10 13:52	CTH0063	CH01014
1,2-Dichloroethane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
1,2-Dichloropropane	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
1,3,5-Trimethylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
1,3-Dichlorobenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
1,3-Dichloropropane	ND (0.0037)	0.0030 (0.0011)	1	08/10/10 13:52	CTH0063	CH01014
1,4-Dichlorobenzene	ND (0.0037)	0.0030 (0.0011)	1	08/10/10 13:52	CTH0063	CH01014
1-Chlorohexane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
2,2-Dichloropropane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
2-Butanone	ND (0.0375)	0.0150 (0.0061)	1	08/10/10 13:52	CTH0063	CH01014
2-Chlorotoluene	ND (0.0037)	0.0030 (0.0007)	1	08/10/10 13:52	CTH0063	CH01014
2-Hexanone	ND (0.0375)	0.0150 (0.0048)	1	08/10/10 13:52	CTH0063	CH01014
4-Chlorotoluene	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
4-Isopropyltoluene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
4-Methyl-2-Pentanone	ND (0.0375)	0.0150 (0.0055)	1	08/10/10 13:52	CTH0063	CH01014
Acetone	**J 0.0198** (0.0375)	0.0150 (0.0106)	1	08/10/10 13:52	CTH0063	CH01014
Benzene	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
Bromobenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
Bromochloromethane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
Bromodichloromethane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB36-4-S
Date Sampled: 08/03/10 15:25
Percent Solids: 89
Initial Volume: 7.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-15
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0037)	0.0030 (0.0010)	1	08/10/10 13:52	CTH0063	CH01014
Bromomethane	ND (0.0075)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
Carbon Disulfide	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
Carbon Tetrachloride	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
Chlorobenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
Chloroethane	ND (0.0075)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
Chloroform	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
Chloromethane	ND (0.0075)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
cis-1,2-Dichloroethene	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
cis-1,3-Dichloropropene	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
Dibromochloromethane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
Dibromomethane	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
Dichlorodifluoromethane	ND (0.0075)	0.0030 (0.0010)	1	08/10/10 13:52	CTH0063	CH01014
Ethylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
Hexachlorobutadiene	ND (0.0037)	0.0030 (0.0011)	1	08/10/10 13:52	CTH0063	CH01014
Isopropylbenzene	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
Methyl tert-Butyl Ether	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
Methylene Chloride	**J 0.0046** (0.0187)	0.0030 (0.0014)	1	08/10/10 13:52	CTH0063	CH01014
Naphthalene	ND (0.0037)	0.0030 (0.0010)	1	08/10/10 13:52	CTH0063	CH01014
n-Butylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
n-Propylbenzene	ND (0.0037)	0.0030 (0.0009)	1	08/10/10 13:52	CTH0063	CH01014
sec-Butylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
Styrene	ND (0.0037)	0.0030 (0.0011)	1	08/10/10 13:52	CTH0063	CH01014
tert-Butylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
Tetrachloroethene	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
Toluene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
trans-1,2-Dichloroethene	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
trans-1,3-Dichloropropene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
Trichloroethene	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
Trichlorofluoromethane	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
Vinyl Chloride	ND (0.0075)	0.0030 (0.0013)	1	08/10/10 13:52	CTH0063	CH01014
Xylene O	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 13:52	CTH0063	CH01014
Xylene P,M	ND (0.0075)	0.0060 (0.0024)	1	08/10/10 13:52	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB36-4-S
Date Sampled: 08/03/10 15:25
Percent Solids: 89
Initial Volume: 7.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-15
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*115 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*89 %*	*85-120*			
Surrogate: Dibromofluoromethane		*111 %*	*85-115*			
Surrogate: Toluene-d8		*99 %*	*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: 080310-TB
Date Sampled: 08/03/10 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-16
Sample Matrix: Solid
Units: mg/kg
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0050)	0.0040 (0.0015)	1	08/10/10 12:00	CTH0063	CH01014
1,1,1-Trichloroethane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
1,1,2,2-Tetrachloroethane	ND (0.0050)	0.0040 (0.0015)	1	08/10/10 12:00	CTH0063	CH01014
1,1,2-Trichloroethane	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
1,1-Dichloroethane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
1,1-Dichloroethene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
1,1-Dichloropropene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
1,2,3-Trichlorobenzene	ND (0.0050)	0.0040 (0.0014)	1	08/10/10 12:00	CTH0063	CH01014
1,2,3-Trichloropropane	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
1,2,4-Trichlorobenzene	ND (0.0050)	0.0040 (0.0013)	1	08/10/10 12:00	CTH0063	CH01014
1,2,4-Trimethylbenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
1,2-Dibromo-3-Chloropropane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
1,2-Dibromoethane	ND (0.0050)	0.0040 (0.0015)	1	08/10/10 12:00	CTH0063	CH01014
1,2-Dichlorobenzene	ND (0.0050)	0.0040 (0.0015)	1	08/10/10 12:00	CTH0063	CH01014
1,2-Dichloroethane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
1,2-Dichloropropane	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
1,3,5-Trimethylbenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
1,3-Dichlorobenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
1,3-Dichloropropane	ND (0.0050)	0.0040 (0.0015)	1	08/10/10 12:00	CTH0063	CH01014
1,4-Dichlorobenzene	ND (0.0050)	0.0040 (0.0015)	1	08/10/10 12:00	CTH0063	CH01014
1-Chlorohexane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
2,2-Dichloropropane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
2-Butanone	ND (0.0500)	0.0200 (0.0082)	1	08/10/10 12:00	CTH0063	CH01014
2-Chlorotoluene	ND (0.0050)	0.0040 (0.0010)	1	08/10/10 12:00	CTH0063	CH01014
2-Hexanone	ND (0.0500)	0.0200 (0.0064)	1	08/10/10 12:00	CTH0063	CH01014
4-Chlorotoluene	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
4-Isopropyltoluene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
4-Methyl-2-Pentanone	ND (0.0500)	0.0200 (0.0074)	1	08/10/10 12:00	CTH0063	CH01014
Acetone	ND (0.0500)	0.0200 (0.0142)	1	08/10/10 12:00	CTH0063	CH01014
Benzene	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
Bromobenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
Bromochloromethane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
Bromodichloromethane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: 080310-TB
Date Sampled: 08/03/10 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-16
Sample Matrix: Solid
Units: mg/kg
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0050)	0.0040 (0.0014)	1	08/10/10 12:00	CTH0063	CH01014
Bromomethane	ND (0.0100)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
Carbon Disulfide	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
Carbon Tetrachloride	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
Chlorobenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
Chloroethane	ND (0.0100)	0.0040 (0.0018)	1	08/10/10 12:00	CTH0063	CH01014
Chloroform	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
Chloromethane	ND (0.0100)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
cis-1,2-Dichloroethene	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
cis-1,3-Dichloropropene	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
Dibromochloromethane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
Dibromomethane	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
Dichlorodifluoromethane	ND (0.0100)	0.0040 (0.0014)	1	08/10/10 12:00	CTH0063	CH01014
Ethylbenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
Hexachlorobutadiene	ND (0.0050)	0.0040 (0.0015)	1	08/10/10 12:00	CTH0063	CH01014
Isopropylbenzene	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
Methyl tert-Butyl Ether	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
Methylene Chloride	**J 0.0067** (0.0250)	0.0040 (0.0019)	1	08/10/10 12:00	CTH0063	CH01014
Naphthalene	ND (0.0050)	0.0040 (0.0013)	1	08/10/10 12:00	CTH0063	CH01014
n-Butylbenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
n-Propylbenzene	ND (0.0050)	0.0040 (0.0012)	1	08/10/10 12:00	CTH0063	CH01014
sec-Butylbenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
Styrene	ND (0.0050)	0.0040 (0.0015)	1	08/10/10 12:00	CTH0063	CH01014
tert-Butylbenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
Tetrachloroethene	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
Toluene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
trans-1,2-Dichloroethene	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
trans-1,3-Dichloropropene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
Trichloroethene	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
Trichlorofluoromethane	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
Vinyl Chloride	ND (0.0100)	0.0040 (0.0017)	1	08/10/10 12:00	CTH0063	CH01014
Xylene O	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:00	CTH0063	CH01014
Xylene P,M	ND (0.0100)	0.0080 (0.0032)	1	08/10/10 12:00	CTH0063	CH01014

ESS Laboratory
Division of Thielsch Engineering, Inc.

BAL Laboratory
The Microbiology Division
of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: 080310-TB
Date Sampled: 08/03/10 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008056-16
Sample Matrix: Solid
Units: mg/kg
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)		DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier				
Surrogate: 1,2-Dichloroethane-d4		*107 %*		*70-120*			
Surrogate: 4-Bromofluorobenzene		*88 %*		*85-120*			
Surrogate: Dibromofluoromethane		*106 %*		*85-115*			
Surrogate: Toluene-d8		*98 %*		*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB31-X-EB
Date Sampled: 08/04/10 10:15
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008090-01
Sample Matrix: Aqueous
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
1,1,1-Trichloroethane	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
1,1,2,2-Tetrachloroethane	ND (0.5)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
1,1,2-Trichloroethane	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
1,1-Dichloroethane	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
1,1-Dichloroethene	ND (1.0)	0.5 (0.3)	1	08/09/10 13:40	CTH0057	CH00908
1,1-Dichloropropene	ND (2.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
1,2,3-Trichlorobenzene	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
1,2,3-Trichloropropane	ND (1.0)	0.5 (0.3)	1	08/09/10 13:40	CTH0057	CH00908
1,2,4-Trichlorobenzene	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
1,2,4-Trimethylbenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
1,2-Dibromo-3-Chloropropane	ND (5.0)	1.0 (1.0)	1	08/09/10 13:40	CTH0057	CH00908
1,2-Dibromoethane	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
1,2-Dichlorobenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
1,2-Dichloroethane	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
1,2-Dichloropropane	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
1,3,5-Trimethylbenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
1,3-Dichlorobenzene	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
1,3-Dichloropropane	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
1,4-Dichlorobenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
1-Chlorohexane	ND (1.0)	0.5 (0.4)	1	08/09/10 13:40	CTH0057	CH00908
2,2-Dichloropropane	ND (1.0)	0.5 (0.3)	1	08/09/10 13:40	CTH0057	CH00908
2-Butanone	ND (25.0)	10.0 (5.8)	1	08/09/10 13:40	CTH0057	CH00908
2-Chlorotoluene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
2-Hexanone	ND (10.0)	5.0 (1.5)	1	08/09/10 13:40	CTH0057	CH00908
4-Chlorotoluene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
4-Isopropyltoluene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
4-Methyl-2-Pentanone	ND (25.0)	5.0 (1.6)	1	08/09/10 13:40	CTH0057	CH00908
Acetone	ND (25.0)	5.0 (5.0)	1	08/09/10 13:40	CTH0057	CH00908
Benzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
Bromobenzene	ND (2.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
Bromochloromethane	ND (1.0)	0.5 (0.3)	1	08/09/10 13:40	CTH0057	CH00908
Bromodichloromethane	ND (0.6)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB31-X-EB
Date Sampled: 08/04/10 10:15
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008090-01
Sample Matrix: Aqueous
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
Bromomethane	ND (2.0)	1.0 (0.4)	1	08/09/10 13:40	CTH0057	CH00908
Carbon Disulfide	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
Carbon Tetrachloride	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
Chlorobenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
Chloroethane	ND (2.0)	1.0 (0.4)	1	08/09/10 13:40	CTH0057	CH00908
Chloroform	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
Chloromethane	ND (2.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
cis-1,2-Dichloroethene	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
cis-1,3-Dichloropropene	ND (0.4)	0.2 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
Dibromochloromethane	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
Dibromomethane	ND (1.0)	0.5 (0.3)	1	08/09/10 13:40	CTH0057	CH00908
Dichlorodifluoromethane	ND (2.0)	1.0 (0.3)	1	08/09/10 13:40	CTH0057	CH00908
Ethylbenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
Hexachlorobutadiene	ND (0.6)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
Isopropylbenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
Methyl tert-Butyl Ether	ND (1.0)	0.5 (0.3)	1	08/09/10 13:40	CTH0057	CH00908
Methylene Chloride	ND (4.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
Naphthalene	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
n-Butylbenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
n-Propylbenzene	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
sec-Butylbenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
Styrene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
tert-Butylbenzene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
Tetrachloroethene	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
Toluene	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
trans-1,2-Dichloroethene	ND (1.0)	0.5 (0.3)	1	08/09/10 13:40	CTH0057	CH00908
trans-1,3-Dichloropropene	ND (0.5)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
Trichloroethene	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
Trichlorofluoromethane	ND (1.0)	0.5 (0.4)	1	08/09/10 13:40	CTH0057	CH00908
Vinyl Chloride	ND (1.0)	0.5 (0.2)	1	08/09/10 13:40	CTH0057	CH00908
Xylene O	ND (1.0)	0.2 (0.1)	1	08/09/10 13:40	CTH0057	CH00908
Xylene P,M	ND (2.0)	0.4 (0.2)	1	08/09/10 13:40	CTH0057	CH00908

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB31-X-EB
Date Sampled: 08/04/10 10:15
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008090-01
Sample Matrix: Aqueous
Units: ug/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*90 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*92 %*	*75-120*			
Surrogate: Dibromofluoromethane		*93 %*	*85-115*			
Surrogate: Toluene-d8		*106 %*	*85-120*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB37-4-S
Date Sampled: 08/04/10 07:30
Percent Solids: 90
Initial Volume: 6.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
1,1,1-Trichloroethane	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
1,1,2,2-Tetrachloroethane	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
1,1,2-Trichloroethane	ND (0.0042)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
1,1-Dichloroethane	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
1,1-Dichloroethene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
1,1-Dichloropropene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
1,2,3-Trichlorobenzene	ND (0.0042)	0.0034 (0.0012)	1	08/10/10 14:19	CTH0063	CH01014
1,2,3-Trichloropropane	ND (0.0042)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
1,2,4-Trichlorobenzene	ND (0.0042)	0.0034 (0.0011)	1	08/10/10 14:19	CTH0063	CH01014
1,2,4-Trimethylbenzene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
1,2-Dibromo-3-Chloropropane	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
1,2-Dibromoethane	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
1,2-Dichlorobenzene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
1,2-Dichloroethane	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
1,2-Dichloropropane	ND (0.0042)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
1,3,5-Trimethylbenzene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
1,3-Dichlorobenzene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
1,3-Dichloropropane	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
1,4-Dichlorobenzene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
1-Chlorohexane	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
2,2-Dichloropropane	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
2-Butanone	ND (0.0421)	0.0168 (0.0069)	1	08/10/10 14:19	CTH0063	CH01014
2-Chlorotoluene	ND (0.0042)	0.0034 (0.0008)	1	08/10/10 14:19	CTH0063	CH01014
2-Hexanone	ND (0.0421)	0.0168 (0.0054)	1	08/10/10 14:19	CTH0063	CH01014
4-Chlorotoluene	ND (0.0042)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
4-Isopropyltoluene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
4-Methyl-2-Pentanone	ND (0.0421)	0.0168 (0.0062)	1	08/10/10 14:19	CTH0063	CH01014
Acetone	**J 0.0215** (0.0421)	0.0168 (0.0120)	1	08/10/10 14:19	CTH0063	CH01014
Benzene	ND (0.0042)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
Bromobenzene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
Bromochloromethane	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
Bromodichloromethane	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB37-4-S
Date Sampled: 08/04/10 07:30
Percent Solids: 90
Initial Volume: 6.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0042)	0.0034 (0.0012)	1	08/10/10 14:19	CTH0063	CH01014
Bromomethane	ND (0.0084)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
Carbon Disulfide	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
Carbon Tetrachloride	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
Chlorobenzene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
Chloroethane	ND (0.0084)	0.0034 (0.0015)	1	08/10/10 14:19	CTH0063	CH01014
Chloroform	ND (0.0042)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
Chloromethane	ND (0.0084)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
cis-1,2-Dichloroethene	ND (0.0042)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
cis-1,3-Dichloropropene	ND (0.0042)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
Dibromochloromethane	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
Dibromomethane	ND (0.0042)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
Dichlorodifluoromethane	ND (0.0084)	0.0034 (0.0012)	1	08/10/10 14:19	CTH0063	CH01014
Ethylbenzene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
Hexachlorobutadiene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
Isopropylbenzene	ND (0.0042)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
Methyl tert-Butyl Ether	ND (0.0042)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
Methylene Chloride	**J 0.0045** (0.0210)	0.0034 (0.0016)	1	08/10/10 14:19	CTH0063	CH01014
Naphthalene	ND (0.0042)	0.0034 (0.0011)	1	08/10/10 14:19	CTH0063	CH01014
n-Butylbenzene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
n-Propylbenzene	ND (0.0042)	0.0034 (0.0010)	1	08/10/10 14:19	CTH0063	CH01014
sec-Butylbenzene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
Styrene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
tert-Butylbenzene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
Tetrachloroethene	ND (0.0042)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
Toluene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
trans-1,2-Dichloroethene	ND (0.0042)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
trans-1,3-Dichloropropene	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
Trichloroethene	ND (0.0042)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
Trichlorofluoromethane	ND (0.0042)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
Vinyl Chloride	ND (0.0084)	0.0034 (0.0014)	1	08/10/10 14:19	CTH0063	CH01014
Xylene O	ND (0.0042)	0.0034 (0.0013)	1	08/10/10 14:19	CTH0063	CH01014
Xylene P,M	ND (0.0084)	0.0067 (0.0027)	1	08/10/10 14:19	CTH0063	CH01014

ESS Laboratory
Division of Thielsch Engineering, Inc.

BAL Laboratory
The Microbiology Division
of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB37-4-S
Date Sampled: 08/04/10 07:30
Percent Solids: 90
Initial Volume: 6.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*114 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*90 %*	*85-120*			
Surrogate: Dibromofluoromethane		*109 %*	*85-115*			
Surrogate: Toluene-d8		*97 %*	*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB37-4-D
Date Sampled: 08/04/10 07:35
Percent Solids: 90
Initial Volume: 6.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0043)	0.0034 (0.0013)	1	08/10/10 14:48	CTH0063	CH01014
1,1,1-Trichloroethane	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
1,1,2,2-Tetrachloroethane	ND (0.0043)	0.0034 (0.0013)	1	08/10/10 14:48	CTH0063	CH01014
1,1,2-Trichloroethane	ND (0.0043)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
1,1-Dichloroethane	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
1,1-Dichloroethene	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
1,1-Dichloropropene	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
1,2,3-Trichlorobenzene	ND (0.0043)	0.0034 (0.0012)	1	08/10/10 14:48	CTH0063	CH01014
1,2,3-Trichloropropane	ND (0.0043)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
1,2,4-Trichlorobenzene	ND (0.0043)	0.0034 (0.0011)	1	08/10/10 14:48	CTH0063	CH01014
1,2,4-Trimethylbenzene	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
1,2-Dibromo-3-Chloropropane	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
1,2-Dibromoethane	ND (0.0043)	0.0034 (0.0013)	1	08/10/10 14:48	CTH0063	CH01014
1,2-Dichlorobenzene	ND (0.0043)	0.0034 (0.0013)	1	08/10/10 14:48	CTH0063	CH01014
1,2-Dichloroethane	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
1,2-Dichloropropane	ND (0.0043)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
1,3,5-Trimethylbenzene	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
1,3-Dichlorobenzene	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
1,3-Dichloropropane	ND (0.0043)	0.0034 (0.0013)	1	08/10/10 14:48	CTH0063	CH01014
1,4-Dichlorobenzene	ND (0.0043)	0.0034 (0.0013)	1	08/10/10 14:48	CTH0063	CH01014
1-Chlorohexane	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
2,2-Dichloropropane	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
2-Butanone	ND (0.0427)	0.0171 (0.0070)	1	08/10/10 14:48	CTH0063	CH01014
2-Chlorotoluene	ND (0.0043)	0.0034 (0.0009)	1	08/10/10 14:48	CTH0063	CH01014
2-Hexanone	ND (0.0427)	0.0171 (0.0055)	1	08/10/10 14:48	CTH0063	CH01014
4-Chlorotoluene	ND (0.0043)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
4-Isopropyltoluene	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
4-Methyl-2-Pentanone	ND (0.0427)	0.0171 (0.0063)	1	08/10/10 14:48	CTH0063	CH01014
Acetone	**J 0.0200** (0.0427)	0.0171 (0.0121)	1	08/10/10 14:48	CTH0063	CH01014
Benzene	ND (0.0043)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
Bromobenzene	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
Bromochloromethane	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
Bromodichloromethane	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB37-4-D
Date Sampled: 08/04/10 07:35
Percent Solids: 90
Initial Volume: 6.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0043)	0.0034 (0.0012)	1	08/10/10 14:48	CTH0063	CH01014
Bromomethane	ND (0.0085)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
Carbon Disulfide	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
Carbon Tetrachloride	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
Chlorobenzene	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
Chloroethane	ND (0.0085)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
Chloroform	ND (0.0043)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
Chloromethane	ND (0.0085)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
cis-1,2-Dichloroethene	ND (0.0043)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
cis-1,3-Dichloropropene	ND (0.0043)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
Dibromochloromethane	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
Dibromomethane	ND (0.0043)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
Dichlorodifluoromethane	ND (0.0085)	0.0034 (0.0012)	1	08/10/10 14:48	CTH0063	CH01014
Ethylbenzene	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
Hexachlorobutadiene	ND (0.0043)	0.0034 (0.0013)	1	08/10/10 14:48	CTH0063	CH01014
Isopropylbenzene	ND (0.0043)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
Methyl tert-Butyl Ether	ND (0.0043)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
Methylene Chloride	ND (0.0214)	0.0034 (0.0016)	1	08/10/10 14:48	CTH0063	CH01014
Naphthalene	ND (0.0043)	0.0034 (0.0011)	1	08/10/10 14:48	CTH0063	CH01014
n-Butylbenzene	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
n-Propylbenzene	ND (0.0043)	0.0034 (0.0010)	1	08/10/10 14:48	CTH0063	CH01014
sec-Butylbenzene	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
Styrene	ND (0.0043)	0.0034 (0.0013)	1	08/10/10 14:48	CTH0063	CH01014
tert-Butylbenzene	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
Tetrachloroethene	ND (0.0043)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
Toluene	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
trans-1,2-Dichloroethene	ND (0.0043)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
trans-1,3-Dichloropropene	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
Trichloroethene	ND (0.0043)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
Trichlorofluoromethane	ND (0.0043)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
Vinyl Chloride	ND (0.0085)	0.0034 (0.0015)	1	08/10/10 14:48	CTH0063	CH01014
Xylene O	ND (0.0043)	0.0034 (0.0014)	1	08/10/10 14:48	CTH0063	CH01014
Xylene P,M	ND (0.0085)	0.0068 (0.0027)	1	08/10/10 14:48	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB37-4-D
Date Sampled: 08/04/10 07:35
Percent Solids: 90
Initial Volume: 6.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)		DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier				
Surrogate: 1,2-Dichloroethane-d4		*114 %*		*70-120*			
Surrogate: 4-Bromofluorobenzene		*91 %*		*85-120*			
Surrogate: Dibromofluoromethane		*113 %*		*85-115*			
Surrogate: Toluene-d8		*99 %*		*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB38-3-S
Date Sampled: 08/04/10 07:50
Percent Solids: 89
Initial Volume: 7.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0037)	0.0030 (0.0011)	1	08/10/10 15:15	CTH0063	CH01014
1,1,1-Trichloroethane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
1,1,2,2-Tetrachloroethane	ND (0.0037)	0.0030 (0.0011)	1	08/10/10 15:15	CTH0063	CH01014
1,1,2-Trichloroethane	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
1,1-Dichloroethane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
1,1-Dichloroethene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
1,1-Dichloropropene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
1,2,3-Trichlorobenzene	ND (0.0037)	0.0030 (0.0010)	1	08/10/10 15:15	CTH0063	CH01014
1,2,3-Trichloropropane	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
1,2,4-Trichlorobenzene	ND (0.0037)	0.0030 (0.0010)	1	08/10/10 15:15	CTH0063	CH01014
1,2,4-Trimethylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
1,2-Dibromo-3-Chloropropane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
1,2-Dibromoethane	ND (0.0037)	0.0030 (0.0011)	1	08/10/10 15:15	CTH0063	CH01014
1,2-Dichlorobenzene	ND (0.0037)	0.0030 (0.0011)	1	08/10/10 15:15	CTH0063	CH01014
1,2-Dichloroethane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
1,2-Dichloropropane	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
1,3,5-Trimethylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
1,3-Dichlorobenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
1,3-Dichloropropane	ND (0.0037)	0.0030 (0.0011)	1	08/10/10 15:15	CTH0063	CH01014
1,4-Dichlorobenzene	ND (0.0037)	0.0030 (0.0011)	1	08/10/10 15:15	CTH0063	CH01014
1-Chlorohexane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
2,2-Dichloropropane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
2-Butanone	ND (0.0375)	0.0150 (0.0061)	1	08/10/10 15:15	CTH0063	CH01014
2-Chlorotoluene	ND (0.0037)	0.0030 (0.0007)	1	08/10/10 15:15	CTH0063	CH01014
2-Hexanone	ND (0.0375)	0.0150 (0.0048)	1	08/10/10 15:15	CTH0063	CH01014
4-Chlorotoluene	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
4-Isopropyltoluene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
4-Methyl-2-Pentanone	ND (0.0375)	0.0150 (0.0055)	1	08/10/10 15:15	CTH0063	CH01014
Acetone	**J 0.0166** (0.0375)	0.0150 (0.0106)	1	08/10/10 15:15	CTH0063	CH01014
Benzene	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
Bromobenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
Bromochloromethane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
Bromodichloromethane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB38-3-S
Date Sampled: 08/04/10 07:50
Percent Solids: 89
Initial Volume: 7.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0037)	0.0030 (0.0010)	1	08/10/10 15:15	CTH0063	CH01014
Bromomethane	ND (0.0075)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
Carbon Disulfide	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
Carbon Tetrachloride	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
Chlorobenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
Chloroethane	ND (0.0075)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
Chloroform	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
Chloromethane	ND (0.0075)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
cis-1,2-Dichloroethene	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
cis-1,3-Dichloropropene	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
Dibromochloromethane	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
Dibromomethane	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
Dichlorodifluoromethane	ND (0.0075)	0.0030 (0.0010)	1	08/10/10 15:15	CTH0063	CH01014
Ethylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
Hexachlorobutadiene	ND (0.0037)	0.0030 (0.0011)	1	08/10/10 15:15	CTH0063	CH01014
Isopropylbenzene	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
Methyl tert-Butyl Ether	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
Methylene Chloride	**J 0.0055** (0.0187)	0.0030 (0.0014)	1	08/10/10 15:15	CTH0063	CH01014
Naphthalene	ND (0.0037)	0.0030 (0.0010)	1	08/10/10 15:15	CTH0063	CH01014
n-Butylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
n-Propylbenzene	ND (0.0037)	0.0030 (0.0009)	1	08/10/10 15:15	CTH0063	CH01014
sec-Butylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
Styrene	ND (0.0037)	0.0030 (0.0011)	1	08/10/10 15:15	CTH0063	CH01014
tert-Butylbenzene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
Tetrachloroethene	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
Toluene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
trans-1,2-Dichloroethene	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
trans-1,3-Dichloropropene	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
Trichloroethene	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
Trichlorofluoromethane	ND (0.0037)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
Vinyl Chloride	ND (0.0075)	0.0030 (0.0013)	1	08/10/10 15:15	CTH0063	CH01014
Xylene O	ND (0.0037)	0.0030 (0.0012)	1	08/10/10 15:15	CTH0063	CH01014
Xylene P,M	ND (0.0075)	0.0060 (0.0024)	1	08/10/10 15:15	CTH0063	CH01014

ESS Laboratory
Division of Thielsch Engineering, Inc.

BAL Laboratory
The Microbiology Division
of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB38-3-S
Date Sampled: 08/04/10 07:50
Percent Solids: 89
Initial Volume: 7.5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*113 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*93 %*	*85-120*			
Surrogate: Dibromofluoromethane		*113 %*	*85-115*			
Surrogate: Toluene-d8		*100 %*	*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB39-3-S
Date Sampled: 08/04/10 08:10
Percent Solids: 95
Initial Volume: 9.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0028)	0.0023 (0.0008)	1	08/10/10 15:43	CTH0063	CH01014
1,1,1-Trichloroethane	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
1,1,2,2-Tetrachloroethane	ND (0.0028)	0.0023 (0.0008)	1	08/10/10 15:43	CTH0063	CH01014
1,1,2-Trichloroethane	ND (0.0028)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
1,1-Dichloroethane	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
1,1-Dichloroethene	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
1,1-Dichloropropene	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
1,2,3-Trichlorobenzene	ND (0.0028)	0.0023 (0.0008)	1	08/10/10 15:43	CTH0063	CH01014
1,2,3-Trichloropropane	ND (0.0028)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
1,2,4-Trichlorobenzene	ND (0.0028)	0.0023 (0.0007)	1	08/10/10 15:43	CTH0063	CH01014
1,2,4-Trimethylbenzene	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
1,2-Dibromo-3-Chloropropane	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
1,2-Dibromoethane	ND (0.0028)	0.0023 (0.0008)	1	08/10/10 15:43	CTH0063	CH01014
1,2-Dichlorobenzene	ND (0.0028)	0.0023 (0.0008)	1	08/10/10 15:43	CTH0063	CH01014
1,2-Dichloroethane	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
1,2-Dichloropropane	ND (0.0028)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
1,3,5-Trimethylbenzene	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
1,3-Dichlorobenzene	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
1,3-Dichloropropane	ND (0.0028)	0.0023 (0.0008)	1	08/10/10 15:43	CTH0063	CH01014
1,4-Dichlorobenzene	ND (0.0028)	0.0023 (0.0008)	1	08/10/10 15:43	CTH0063	CH01014
1-Chlorohexane	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
2,2-Dichloropropane	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
2-Butanone	ND (0.0283)	0.0113 (0.0046)	1	08/10/10 15:43	CTH0063	CH01014
2-Chlorotoluene	ND (0.0028)	0.0023 (0.0006)	1	08/10/10 15:43	CTH0063	CH01014
2-Hexanone	ND (0.0283)	0.0113 (0.0036)	1	08/10/10 15:43	CTH0063	CH01014
4-Chlorotoluene	ND (0.0028)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
4-Isopropyltoluene	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
4-Methyl-2-Pentanone	ND (0.0283)	0.0113 (0.0042)	1	08/10/10 15:43	CTH0063	CH01014
Acetone	ND (0.0283)	0.0113 (0.0080)	1	08/10/10 15:43	CTH0063	CH01014
Benzene	ND (0.0028)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
Bromobenzene	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
Bromochloromethane	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
Bromodichloromethane	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB39-3-S
Date Sampled: 08/04/10 08:10
Percent Solids: 95
Initial Volume: 9.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0028)	0.0023 (0.0008)	1	08/10/10 15:43	CTH0063	CH01014
Bromomethane	ND (0.0057)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
Carbon Disulfide	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
Carbon Tetrachloride	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
Chlorobenzene	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
Chloroethane	ND (0.0057)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
Chloroform	ND (0.0028)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
Chloromethane	ND (0.0057)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
cis-1,2-Dichloroethene	ND (0.0028)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
cis-1,3-Dichloropropene	ND (0.0028)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
Dibromochloromethane	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
Dibromomethane	ND (0.0028)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
Dichlorodifluoromethane	ND (0.0057)	0.0023 (0.0008)	1	08/10/10 15:43	CTH0063	CH01014
Ethylbenzene	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
Hexachlorobutadiene	ND (0.0028)	0.0023 (0.0008)	1	08/10/10 15:43	CTH0063	CH01014
Isopropylbenzene	ND (0.0028)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
Methyl tert-Butyl Ether	ND (0.0028)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
Methylene Chloride	**J 0.0013** (0.0141)	0.0023 (0.0011)	1	08/10/10 15:43	CTH0063	CH01014
Naphthalene	ND (0.0028)	0.0023 (0.0007)	1	08/10/10 15:43	CTH0063	CH01014
n-Butylbenzene	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
n-Propylbenzene	ND (0.0028)	0.0023 (0.0007)	1	08/10/10 15:43	CTH0063	CH01014
sec-Butylbenzene	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
Styrene	ND (0.0028)	0.0023 (0.0008)	1	08/10/10 15:43	CTH0063	CH01014
tert-Butylbenzene	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
Tetrachloroethene	ND (0.0028)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
Toluene	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
trans-1,2-Dichloroethene	ND (0.0028)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
trans-1,3-Dichloropropene	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
Trichloroethene	ND (0.0028)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
Trichlorofluoromethane	ND (0.0028)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
Vinyl Chloride	ND (0.0057)	0.0023 (0.0010)	1	08/10/10 15:43	CTH0063	CH01014
Xylene O	ND (0.0028)	0.0023 (0.0009)	1	08/10/10 15:43	CTH0063	CH01014
Xylene P,M	ND (0.0057)	0.0045 (0.0018)	1	08/10/10 15:43	CTH0063	CH01014

ESS Laboratory
Division of Thielsch Engineering, Inc.

BAL Laboratory
The Microbiology Division
of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB39-3-S
Date Sampled: 08/04/10 08:10
Percent Solids: 95
Initial Volume: 9.3
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*116 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*92 %*	*85-120*			
Surrogate: Dibromofluoromethane		*112 %*	*85-115*			
Surrogate: Toluene-d8		*98 %*	*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB40-3-S
Date Sampled: 08/04/10 08:20
Percent Solids: 89
Initial Volume: 8.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 16:11	CTH0063	CH01014
1,1,1-Trichloroethane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
1,1,2,2-Tetrachloroethane	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 16:11	CTH0063	CH01014
1,1,2-Trichloroethane	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
1,1-Dichloroethane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
1,1-Dichloroethene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
1,1-Dichloropropene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
1,2,3-Trichlorobenzene	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 16:11	CTH0063	CH01014
1,2,3-Trichloropropane	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
1,2,4-Trichlorobenzene	ND (0.0035)	0.0028 (0.0009)	1	08/10/10 16:11	CTH0063	CH01014
1,2,4-Trimethylbenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
1,2-Dibromo-3-Chloropropane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
1,2-Dibromoethane	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 16:11	CTH0063	CH01014
1,2-Dichlorobenzene	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 16:11	CTH0063	CH01014
1,2-Dichloroethane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
1,2-Dichloropropane	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
1,3,5-Trimethylbenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
1,3-Dichlorobenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
1,3-Dichloropropane	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 16:11	CTH0063	CH01014
1,4-Dichlorobenzene	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 16:11	CTH0063	CH01014
1-Chlorohexane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
2,2-Dichloropropane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
2-Butanone	ND (0.0347)	0.0139 (0.0057)	1	08/10/10 16:11	CTH0063	CH01014
2-Chlorotoluene	ND (0.0035)	0.0028 (0.0007)	1	08/10/10 16:11	CTH0063	CH01014
2-Hexanone	ND (0.0347)	0.0139 (0.0044)	1	08/10/10 16:11	CTH0063	CH01014
4-Chlorotoluene	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
4-Isopropyltoluene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
4-Methyl-2-Pentanone	ND (0.0347)	0.0139 (0.0051)	1	08/10/10 16:11	CTH0063	CH01014
Acetone	ND (0.0347)	0.0139 (0.0098)	1	08/10/10 16:11	CTH0063	CH01014
Benzene	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
Bromobenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
Bromochloromethane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
Bromodichloromethane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB40-3-S
Date Sampled: 08/04/10 08:20
Percent Solids: 89
Initial Volume: 8.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 16:11	CTH0063	CH01014
Bromomethane	ND (0.0069)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
Carbon Disulfide	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
Carbon Tetrachloride	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
Chlorobenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
Chloroethane	ND (0.0069)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
Chloroform	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
Chloromethane	ND (0.0069)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
cis-1,2-Dichloroethene	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
cis-1,3-Dichloropropene	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
Dibromochloromethane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
Dibromomethane	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
Dichlorodifluoromethane	ND (0.0069)	0.0028 (0.0010)	1	08/10/10 16:11	CTH0063	CH01014
Ethylbenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
Hexachlorobutadiene	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 16:11	CTH0063	CH01014
Isopropylbenzene	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
Methyl tert-Butyl Ether	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
Methylene Chloride	**J 0.0024** (0.0173)	0.0028 (0.0013)	1	08/10/10 16:11	CTH0063	CH01014
Naphthalene	ND (0.0035)	0.0028 (0.0009)	1	08/10/10 16:11	CTH0063	CH01014
n-Butylbenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
n-Propylbenzene	ND (0.0035)	0.0028 (0.0008)	1	08/10/10 16:11	CTH0063	CH01014
sec-Butylbenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
Styrene	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 16:11	CTH0063	CH01014
tert-Butylbenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
Tetrachloroethene	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
Toluene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
trans-1,2-Dichloroethene	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
trans-1,3-Dichloropropene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
Trichloroethene	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
Trichlorofluoromethane	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
Vinyl Chloride	ND (0.0069)	0.0028 (0.0012)	1	08/10/10 16:11	CTH0063	CH01014
Xylene O	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 16:11	CTH0063	CH01014
Xylene P,M	ND (0.0069)	0.0055 (0.0022)	1	08/10/10 16:11	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB40-3-S
Date Sampled: 08/04/10 08:20
Percent Solids: 89
Initial Volume: 8.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*117 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*91 %*	*85-120*			
Surrogate: Dibromofluoromethane		*115 %*	*85-115*			
Surrogate: Toluene-d8		*97 %*	*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB41-3-S
Date Sampled: 08/04/10 09:30
Percent Solids: 90
Initial Volume: 6.8
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0041)	0.0033 (0.0012)	1	08/10/10 16:38	CTH0063	CH01014
1,1,1-Trichloroethane	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
1,1,2,2-Tetrachloroethane	ND (0.0041)	0.0033 (0.0012)	1	08/10/10 16:38	CTH0063	CH01014
1,1,2-Trichloroethane	ND (0.0041)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
1,1-Dichloroethane	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
1,1-Dichloroethene	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
1,1-Dichloropropene	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
1,2,3-Trichlorobenzene	ND (0.0041)	0.0033 (0.0011)	1	08/10/10 16:38	CTH0063	CH01014
1,2,3-Trichloropropane	ND (0.0041)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
1,2,4-Trichlorobenzene	ND (0.0041)	0.0033 (0.0011)	1	08/10/10 16:38	CTH0063	CH01014
1,2,4-Trimethylbenzene	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
1,2-Dibromo-3-Chloropropane	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
1,2-Dibromoethane	ND (0.0041)	0.0033 (0.0012)	1	08/10/10 16:38	CTH0063	CH01014
1,2-Dichlorobenzene	ND (0.0041)	0.0033 (0.0012)	1	08/10/10 16:38	CTH0063	CH01014
1,2-Dichloroethane	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
1,2-Dichloropropane	ND (0.0041)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
1,3,5-Trimethylbenzene	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
1,3-Dichlorobenzene	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
1,3-Dichloropropane	ND (0.0041)	0.0033 (0.0012)	1	08/10/10 16:38	CTH0063	CH01014
1,4-Dichlorobenzene	ND (0.0041)	0.0033 (0.0012)	1	08/10/10 16:38	CTH0063	CH01014
1-Chlorohexane	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
2,2-Dichloropropane	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
2-Butanone	ND (0.0408)	0.0163 (0.0067)	1	08/10/10 16:38	CTH0063	CH01014
2-Chlorotoluene	ND (0.0041)	0.0033 (0.0008)	1	08/10/10 16:38	CTH0063	CH01014
2-Hexanone	ND (0.0408)	0.0163 (0.0052)	1	08/10/10 16:38	CTH0063	CH01014
4-Chlorotoluene	ND (0.0041)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
4-Isopropyltoluene	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
4-Methyl-2-Pentanone	ND (0.0408)	0.0163 (0.0060)	1	08/10/10 16:38	CTH0063	CH01014
Acetone	ND (0.0408)	0.0163 (0.0116)	1	08/10/10 16:38	CTH0063	CH01014
Benzene	ND (0.0041)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
Bromobenzene	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
Bromochloromethane	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
Bromodichloromethane	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB41-3-S
Date Sampled: 08/04/10 09:30
Percent Solids: 90
Initial Volume: 6.8
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0041)	0.0033 (0.0011)	1	08/10/10 16:38	CTH0063	CH01014
Bromomethane	ND (0.0082)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
Carbon Disulfide	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
Carbon Tetrachloride	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
Chlorobenzene	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
Chloroethane	ND (0.0082)	0.0033 (0.0015)	1	08/10/10 16:38	CTH0063	CH01014
Chloroform	ND (0.0041)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
Chloromethane	ND (0.0082)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
cis-1,2-Dichloroethene	ND (0.0041)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
cis-1,3-Dichloropropene	ND (0.0041)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
Dibromochloromethane	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
Dibromomethane	ND (0.0041)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
Dichlorodifluoromethane	ND (0.0082)	0.0033 (0.0011)	1	08/10/10 16:38	CTH0063	CH01014
Ethylbenzene	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
Hexachlorobutadiene	ND (0.0041)	0.0033 (0.0012)	1	08/10/10 16:38	CTH0063	CH01014
Isopropylbenzene	ND (0.0041)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
Methyl tert-Butyl Ether	ND (0.0041)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
Methylene Chloride	**J 0.0043** (0.0204)	0.0033 (0.0016)	1	08/10/10 16:38	CTH0063	CH01014
Naphthalene	ND (0.0041)	0.0033 (0.0011)	1	08/10/10 16:38	CTH0063	CH01014
n-Butylbenzene	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
n-Propylbenzene	ND (0.0041)	0.0033 (0.0010)	1	08/10/10 16:38	CTH0063	CH01014
sec-Butylbenzene	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
Styrene	ND (0.0041)	0.0033 (0.0012)	1	08/10/10 16:38	CTH0063	CH01014
tert-Butylbenzene	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
Tetrachloroethene	ND (0.0041)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
Toluene	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
trans-1,2-Dichloroethene	ND (0.0041)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
trans-1,3-Dichloropropene	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
Trichloroethene	ND (0.0041)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
Trichlorofluoromethane	ND (0.0041)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
Vinyl Chloride	ND (0.0082)	0.0033 (0.0014)	1	08/10/10 16:38	CTH0063	CH01014
Xylene O	ND (0.0041)	0.0033 (0.0013)	1	08/10/10 16:38	CTH0063	CH01014
Xylene P,M	ND (0.0082)	0.0065 (0.0026)	1	08/10/10 16:38	CTH0063	CH01014

ESS Laboratory
Division of Thielsch Engineering, Inc.

BAL Laboratory
The Microbiology Division
of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB41-3-S
Date Sampled: 08/04/10 09:30
Percent Solids: 90
Initial Volume: 6.8
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*116 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*91 %*	*85-120*			
Surrogate: Dibromofluoromethane		*111 %*	*85-115*			
Surrogate: Toluene-d8		*98 %*	*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB31-3-S
Date Sampled: 08/04/10 10:00
Percent Solids: 91
Initial Volume: 7.9
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-07
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 17:06	CTH0063	CH01014
1,1,1-Trichloroethane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
1,1,2,2-Tetrachloroethane	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 17:06	CTH0063	CH01014
1,1,2-Trichloroethane	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
1,1-Dichloroethane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
1,1-Dichloroethene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
1,1-Dichloropropene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
1,2,3-Trichlorobenzene	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 17:06	CTH0063	CH01014
1,2,3-Trichloropropane	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
1,2,4-Trichlorobenzene	ND (0.0035)	0.0028 (0.0009)	1	08/10/10 17:06	CTH0063	CH01014
1,2,4-Trimethylbenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
1,2-Dibromo-3-Chloropropane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
1,2-Dibromoethane	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 17:06	CTH0063	CH01014
1,2-Dichlorobenzene	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 17:06	CTH0063	CH01014
1,2-Dichloroethane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
1,2-Dichloropropane	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
1,3,5-Trimethylbenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
1,3-Dichlorobenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
1,3-Dichloropropane	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 17:06	CTH0063	CH01014
1,4-Dichlorobenzene	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 17:06	CTH0063	CH01014
1-Chlorohexane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
2,2-Dichloropropane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
2-Butanone	ND (0.0348)	0.0139 (0.0057)	1	08/10/10 17:06	CTH0063	CH01014
2-Chlorotoluene	ND (0.0035)	0.0028 (0.0007)	1	08/10/10 17:06	CTH0063	CH01014
2-Hexanone	ND (0.0348)	0.0139 (0.0045)	1	08/10/10 17:06	CTH0063	CH01014
4-Chlorotoluene	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
4-Isopropyltoluene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
4-Methyl-2-Pentanone	ND (0.0348)	0.0139 (0.0051)	1	08/10/10 17:06	CTH0063	CH01014
Acetone	**J 0.0237** (0.0348)	0.0139 (0.0099)	1	08/10/10 17:06	CTH0063	CH01014
Benzene	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
Bromobenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
Bromochloromethane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
Bromodichloromethane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB31-3-S
Date Sampled: 08/04/10 10:00
Percent Solids: 91
Initial Volume: 7.9
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-07
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 17:06	CTH0063	CH01014
Bromomethane	ND (0.0070)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
Carbon Disulfide	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
Carbon Tetrachloride	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
Chlorobenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
Chloroethane	ND (0.0070)	0.0028 (0.0013)	1	08/10/10 17:06	CTH0063	CH01014
Chloroform	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
Chloromethane	ND (0.0070)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
cis-1,2-Dichloroethene	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
cis-1,3-Dichloropropene	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
Dibromochloromethane	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
Dibromomethane	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
Dichlorodifluoromethane	ND (0.0070)	0.0028 (0.0010)	1	08/10/10 17:06	CTH0063	CH01014
Ethylbenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
Hexachlorobutadiene	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 17:06	CTH0063	CH01014
Isopropylbenzene	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
Methyl tert-Butyl Ether	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
Methylene Chloride	**J 0.0019** (0.0174)	0.0028 (0.0013)	1	08/10/10 17:06	CTH0063	CH01014
Naphthalene	ND (0.0035)	0.0028 (0.0009)	1	08/10/10 17:06	CTH0063	CH01014
n-Butylbenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
n-Propylbenzene	ND (0.0035)	0.0028 (0.0008)	1	08/10/10 17:06	CTH0063	CH01014
sec-Butylbenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
Styrene	ND (0.0035)	0.0028 (0.0010)	1	08/10/10 17:06	CTH0063	CH01014
tert-Butylbenzene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
Tetrachloroethene	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
Toluene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
trans-1,2-Dichloroethene	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
trans-1,3-Dichloropropene	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
Trichloroethene	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
Trichlorofluoromethane	ND (0.0035)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
Vinyl Chloride	ND (0.0070)	0.0028 (0.0012)	1	08/10/10 17:06	CTH0063	CH01014
Xylene O	ND (0.0035)	0.0028 (0.0011)	1	08/10/10 17:06	CTH0063	CH01014
Xylene P,M	ND (0.0070)	0.0056 (0.0022)	1	08/10/10 17:06	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: OB31-3-S
Date Sampled: 08/04/10 10:00
Percent Solids: 91
Initial Volume: 7.9
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-07
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier			
Surrogate: 1,2-Dichloroethane-d4		*118 %*	*70-120*			
Surrogate: 4-Bromofluorobenzene		*91 %*	*85-120*			
Surrogate: Dibromofluoromethane		*111 %*	*85-115*			
Surrogate: Toluene-d8		*98 %*	*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: 080410-TB
Date Sampled: 08/04/10 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-08
Sample Matrix: Solid
Units: mg/kg
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0050)	0.0040 (0.0015)	1	08/10/10 12:28	CTH0063	CH01014
1,1,1-Trichloroethane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
1,1,2,2-Tetrachloroethane	ND (0.0050)	0.0040 (0.0015)	1	08/10/10 12:28	CTH0063	CH01014
1,1,2-Trichloroethane	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
1,1-Dichloroethane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
1,1-Dichloroethene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
1,1-Dichloropropene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
1,2,3-Trichlorobenzene	ND (0.0050)	0.0040 (0.0014)	1	08/10/10 12:28	CTH0063	CH01014
1,2,3-Trichloropropane	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
1,2,4-Trichlorobenzene	ND (0.0050)	0.0040 (0.0013)	1	08/10/10 12:28	CTH0063	CH01014
1,2,4-Trimethylbenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
1,2-Dibromo-3-Chloropropane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
1,2-Dibromoethane	ND (0.0050)	0.0040 (0.0015)	1	08/10/10 12:28	CTH0063	CH01014
1,2-Dichlorobenzene	ND (0.0050)	0.0040 (0.0015)	1	08/10/10 12:28	CTH0063	CH01014
1,2-Dichloroethane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
1,2-Dichloropropane	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
1,3,5-Trimethylbenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
1,3-Dichlorobenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
1,3-Dichloropropane	ND (0.0050)	0.0040 (0.0015)	1	08/10/10 12:28	CTH0063	CH01014
1,4-Dichlorobenzene	ND (0.0050)	0.0040 (0.0015)	1	08/10/10 12:28	CTH0063	CH01014
1-Chlorohexane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
2,2-Dichloropropane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
2-Butanone	ND (0.0500)	0.0200 (0.0082)	1	08/10/10 12:28	CTH0063	CH01014
2-Chlorotoluene	ND (0.0050)	0.0040 (0.0010)	1	08/10/10 12:28	CTH0063	CH01014
2-Hexanone	ND (0.0500)	0.0200 (0.0064)	1	08/10/10 12:28	CTH0063	CH01014
4-Chlorotoluene	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
4-Isopropyltoluene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
4-Methyl-2-Pentanone	ND (0.0500)	0.0200 (0.0074)	1	08/10/10 12:28	CTH0063	CH01014
Acetone	ND (0.0500)	0.0200 (0.0142)	1	08/10/10 12:28	CTH0063	CH01014
Benzene	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
Bromobenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
Bromochloromethane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
Bromodichloromethane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: 080410-TB
Date Sampled: 08/04/10 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-08
Sample Matrix: Solid
Units: mg/kg
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)	DF	Analyzed	Sequence	Batch
Bromoform	ND (0.0050)	0.0040 (0.0014)	1	08/10/10 12:28	CTH0063	CH01014
Bromomethane	ND (0.0100)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
Carbon Disulfide	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
Carbon Tetrachloride	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
Chlorobenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
Chloroethane	ND (0.0100)	0.0040 (0.0018)	1	08/10/10 12:28	CTH0063	CH01014
Chloroform	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
Chloromethane	ND (0.0100)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
cis-1,2-Dichloroethene	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
cis-1,3-Dichloropropene	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
Dibromochloromethane	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
Dibromomethane	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
Dichlorodifluoromethane	ND (0.0100)	0.0040 (0.0014)	1	08/10/10 12:28	CTH0063	CH01014
Ethylbenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
Hexachlorobutadiene	ND (0.0050)	0.0040 (0.0015)	1	08/10/10 12:28	CTH0063	CH01014
Isopropylbenzene	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
Methyl tert-Butyl Ether	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
Methylene Chloride	**J 0.0049** (0.0250)	0.0040 (0.0019)	1	08/10/10 12:28	CTH0063	CH01014
Naphthalene	ND (0.0050)	0.0040 (0.0013)	1	08/10/10 12:28	CTH0063	CH01014
n-Butylbenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
n-Propylbenzene	ND (0.0050)	0.0040 (0.0012)	1	08/10/10 12:28	CTH0063	CH01014
sec-Butylbenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
Styrene	ND (0.0050)	0.0040 (0.0015)	1	08/10/10 12:28	CTH0063	CH01014
tert-Butylbenzene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
Tetrachloroethene	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
Toluene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
trans-1,2-Dichloroethene	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
trans-1,3-Dichloropropene	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
Trichloroethene	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
Trichlorofluoromethane	ND (0.0050)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
Vinyl Chloride	ND (0.0100)	0.0040 (0.0017)	1	08/10/10 12:28	CTH0063	CH01014
Xylene O	ND (0.0050)	0.0040 (0.0016)	1	08/10/10 12:28	CTH0063	CH01014
Xylene P,M	ND (0.0100)	0.0080 (0.0032)	1	08/10/10 12:28	CTH0063	CH01014

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs
Client Sample ID: 080410-TB
Date Sampled: 08/04/10 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 1008055
ESS Laboratory Sample ID: 1008091-08
Sample Matrix: Solid
Units: mg/kg
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

Analyte	Results (MRL)	LOD (MDL)		DF	Analyzed	Sequence	Batch
		%Recovery	Qualifier				
Surrogate: 1,2-Dichloroethane-d4		*108 %*		*70-120*			
Surrogate: 4-Bromofluorobenzene		*90 %*		*85-120*			
Surrogate: Dibromofluoromethane		*110 %*		*85-115*			
Surrogate: Toluene-d8		*97 %*		*85-115*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008055

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CH00918 - 5035										
Blank										
1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1-Chlorohexane	ND	0.0050	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0500	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0500	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0500	mg/kg wet							
Acetone	ND	0.0500	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0050	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008055

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CH00918 - 5035										
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0250	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	*0.0518*		mg/kg wet	*0.05000*		*104*	*70-120*			
Surrogate: 4-Bromofluorobenzene	*0.0443*		mg/kg wet	*0.05000*		*89*	*85-120*			
Surrogate: Dibromofluoromethane	*0.0526*		mg/kg wet	*0.05000*		*105*	*85-115*			
Surrogate: Toluene-d8	*0.0490*		mg/kg wet	*0.05000*		*98*	*85-115*			
LCS										
1,1,1,2-Tetrachloroethane	0.0522	0.0050	mg/kg wet	0.05000		104	75-125			
1,1,1-Trichloroethane	0.0477	0.0050	mg/kg wet	0.05000		95	70-135			
1,1,2,2-Tetrachloroethane	0.0532	0.0050	mg/kg wet	0.05000		106	55-130			
1,1,2-Trichloroethane	0.0480	0.0050	mg/kg wet	0.05000		96	60-125			
1,1-Dichloroethane	0.0505	0.0050	mg/kg wet	0.05000		101	75-125			
1,1-Dichloroethene	0.0502	0.0050	mg/kg wet	0.05000		100	65-135			
1,1-Dichloropropene	0.0467	0.0050	mg/kg wet	0.05000		93	70-135			
1,2,3-Trichlorobenzene	0.0521	0.0050	mg/kg wet	0.05000		104	60-135			
1,2,3-Trichloropropane	0.0510	0.0050	mg/kg wet	0.05000		102	65-130			
1,2,4-Trichlorobenzene	0.0508	0.0050	mg/kg wet	0.05000		102	65-130			
1,2,4-Trimethylbenzene	0.0492	0.0050	mg/kg wet	0.05000		98	65-135			
1,2-Dibromo-3-Chloropropane	0.0459	0.0050	mg/kg wet	0.05000		92	40-135			
1,2-Dibromoethane	0.0507	0.0050	mg/kg wet	0.05000		101	70-125			
1,2-Dichlorobenzene	0.0496	0.0050	mg/kg wet	0.05000		99	75-120			
1,2-Dichloroethane	0.0482	0.0050	mg/kg wet	0.05000		96	70-135			
1,2-Dichloropropane	0.0477	0.0050	mg/kg wet	0.05000		95	70-120			
1,3,5-Trimethylbenzene	0.0496	0.0050	mg/kg wet	0.05000		99	65-135			
1,3-Dichlorobenzene	0.0499	0.0050	mg/kg wet	0.05000		100	70-125			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008055

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CH00918 - 5035										
1,3-Dichloropropane	0.0512	0.0050	mg/kg wet	0.05000		102	75-125			
1,4-Dichlorobenzene	0.0485	0.0050	mg/kg wet	0.05000		97	70-125			
1-Chlorohexane	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			
2,2-Dichloropropane	0.0530	0.0050	mg/kg wet	0.05000		106	65-135			
2-Butanone	0.257	0.0500	mg/kg wet	0.2500		103	30-160			
2-Chlorotoluene	0.0493	0.0050	mg/kg wet	0.05000		99	70-130			
2-Hexanone	0.265	0.0500	mg/kg wet	0.2500		106	45-145			
4-Chlorotoluene	0.0488	0.0050	mg/kg wet	0.05000		98	75-125			
4-Isopropyltoluene	0.0492	0.0050	mg/kg wet	0.05000		98	75-135			
4-Methyl-2-Pentanone	0.272	0.0500	mg/kg wet	0.2500		109	45-145			
Acetone	0.344	0.0500	mg/kg wet	0.2500		138	20-160			
Benzene	0.0470	0.0050	mg/kg wet	0.05000		94	75-125			
Bromobenzene	0.0502	0.0050	mg/kg wet	0.05000		100	65-120			
Bromochloromethane	0.0487	0.0050	mg/kg wet	0.05000		97	70-125			
Bromodichloromethane	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
Bromoform	0.0518	0.0050	mg/kg wet	0.05000		104	55-135			
Bromomethane	0.0465	0.0100	mg/kg wet	0.05000		93	30-160			
Carbon Disulfide	0.0525	0.0050	mg/kg wet	0.05000		105	45-160			
Carbon Tetrachloride	0.0464	0.0050	mg/kg wet	0.05000		93	65-135			
Chlorobenzene	0.0482	0.0050	mg/kg wet	0.05000		96	75-125			
Chloroethane	0.0455	0.0100	mg/kg wet	0.05000		91	40-155			
Chloroform	0.0495	0.0050	mg/kg wet	0.05000		99	70-125			
Chloromethane	0.0387	0.0100	mg/kg wet	0.05000		77	50-130			
cis-1,2-Dichloroethene	0.0517	0.0050	mg/kg wet	0.05000		103	65-125			
cis-1,3-Dichloropropene	0.0478	0.0050	mg/kg wet	0.05000		96	70-125			
Dibromochloromethane	0.0477	0.0050	mg/kg wet	0.05000		95	65-130			
Dibromomethane	0.0467	0.0050	mg/kg wet	0.05000		93	75-130			
Dichlorodifluoromethane	0.0351	0.0100	mg/kg wet	0.05000		70	35-135			
Ethylbenzene	0.0506	0.0050	mg/kg wet	0.05000		101	75-125			
Hexachlorobutadiene	0.0493	0.0050	mg/kg wet	0.05000		99	55-140			
Isopropylbenzene	0.0448	0.0050	mg/kg wet	0.05000		90	75-130			
Methyl tert-Butyl Ether	0.0487	0.0050	mg/kg wet	0.05000		97	70-130			
Methylene Chloride	0.0472	0.0250	mg/kg wet	0.05000		94	55-140			
Naphthalene	0.0588	0.0050	mg/kg wet	0.05000		118	40-125			
n-Butylbenzene	0.0522	0.0050	mg/kg wet	0.05000		104	65-140			
n-Propylbenzene	0.0523	0.0050	mg/kg wet	0.05000		105	65-135			
sec-Butylbenzene	0.0513	0.0050	mg/kg wet	0.05000		103	65-130			
Styrene	0.0518	0.0050	mg/kg wet	0.05000		104	75-125			
tert-Butylbenzene	0.0499	0.0050	mg/kg wet	0.05000		100	65-130			
Tetrachloroethene	0.0483	0.0050	mg/kg wet	0.05000		97	65-140			
Toluene	0.0478	0.0050	mg/kg wet	0.05000		96	70-125			
trans-1,2-Dichloroethene	0.0477	0.0050	mg/kg wet	0.05000		95	65-135			
trans-1,3-Dichloropropene	0.0448	0.0050	mg/kg wet	0.05000		90	65-125			
Trichloroethene	0.0454	0.0050	mg/kg wet	0.05000		91	75-125			
Trichlorofluoromethane	0.0415	0.0050	mg/kg wet	0.05000		83	25-185			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008055

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CH00918 - 5035										
Vinyl Chloride	0.0448	0.0100	mg/kg wet	0.05000		90	60-125			
Xylene O	0.0490	0.0050	mg/kg wet	0.05000		98	75-125			
Xylene P,M	0.0976	0.0100	mg/kg wet	0.1000		98	80-125			
Surrogate: 1,2-Dichloroethane-d4	*0.0457*		mg/kg wet	*0.05000*		*91*	*70-120*			
Surrogate: 4-Bromofluorobenzene	*0.0463*		mg/kg wet	*0.05000*		*93*	*85-120*			
Surrogate: Dibromofluoromethane	*0.0480*		mg/kg wet	*0.05000*		*96*	*85-115*			
Surrogate: Toluene-d8	*0.0483*		mg/kg wet	*0.05000*		*97*	*85-115*			
LCS Dup										
1,1,1,2-Tetrachloroethane	0.0536	0.0050	mg/kg wet	0.05000		107	75-125	3	30	
1,1,1-Trichloroethane	0.0509	0.0050	mg/kg wet	0.05000		102	70-135	6	30	
1,1,2,2-Tetrachloroethane	0.0528	0.0050	mg/kg wet	0.05000		106	55-130	0.8	30	
1,1,2-Trichloroethane	0.0480	0.0050	mg/kg wet	0.05000		96	60-125	0.08	30	
1,1-Dichloroethane	0.0527	0.0050	mg/kg wet	0.05000		105	75-125	4	30	
1,1-Dichloroethene	0.0534	0.0050	mg/kg wet	0.05000		107	65-135	6	30	
1,1-Dichloropropene	0.0483	0.0050	mg/kg wet	0.05000		97	70-135	3	30	
1,2,3-Trichlorobenzene	0.0507	0.0050	mg/kg wet	0.05000		101	60-135	3	30	
1,2,3-Trichloropropane	0.0502	0.0050	mg/kg wet	0.05000		100	65-130	2	30	
1,2,4-Trichlorobenzene	0.0488	0.0050	mg/kg wet	0.05000		98	65-130	4	30	
1,2,4-Trimethylbenzene	0.0477	0.0050	mg/kg wet	0.05000		95	65-135	3	30	
1,2-Dibromo-3-Chloropropane	0.0482	0.0050	mg/kg wet	0.05000		96	40-135	5	30	
1,2-Dibromoethane	0.0501	0.0050	mg/kg wet	0.05000		100	70-125	1	30	
1,2-Dichlorobenzene	0.0479	0.0050	mg/kg wet	0.05000		96	75-120	3	30	
1,2-Dichloroethane	0.0486	0.0050	mg/kg wet	0.05000		97	70-135	1	30	
1,2-Dichloropropane	0.0477	0.0050	mg/kg wet	0.05000		95	70-120	0	30	
1,3,5-Trimethylbenzene	0.0487	0.0050	mg/kg wet	0.05000		97	65-135	2	30	
1,3-Dichlorobenzene	0.0483	0.0050	mg/kg wet	0.05000		97	70-125	3	30	
1,3-Dichloropropane	0.0513	0.0050	mg/kg wet	0.05000		103	75-125	0.2	30	
1,4-Dichlorobenzene	0.0466	0.0050	mg/kg wet	0.05000		93	70-125	4	30	
1-Chlorohexane	0.0496	0.0050	mg/kg wet	0.05000		99	70-130	4	30	
2,2-Dichloropropane	0.0553	0.0050	mg/kg wet	0.05000		111	65-135	4	30	
2-Butanone	0.240	0.0500	mg/kg wet	0.2500		96	30-160	7	30	
2-Chlorotoluene	0.0485	0.0050	mg/kg wet	0.05000		97	70-130	2	30	
2-Hexanone	0.249	0.0500	mg/kg wet	0.2500		100	45-145	6	30	
4-Chlorotoluene	0.0474	0.0050	mg/kg wet	0.05000		95	75-125	3	30	
4-Isopropyltoluene	0.0480	0.0050	mg/kg wet	0.05000		96	75-135	2	30	
4-Methyl-2-Pentanone	0.252	0.0500	mg/kg wet	0.2500		101	45-145	8	30	
Acetone	0.270	0.0500	mg/kg wet	0.2500		108	20-160	24	30	
Benzene	0.0472	0.0050	mg/kg wet	0.05000		94	75-125	0.5	30	
Bromobenzene	0.0492	0.0050	mg/kg wet	0.05000		98	65-120	2	30	
Bromochloromethane	0.0492	0.0050	mg/kg wet	0.05000		98	70-125	0.9	30	
Bromodichloromethane	0.0470	0.0050	mg/kg wet	0.05000		94	70-130	0.3	30	
Bromoform	0.0508	0.0050	mg/kg wet	0.05000		102	55-135	2	30	
Bromomethane	0.0487	0.0100	mg/kg wet	0.05000		97	30-160	5	30	
Carbon Disulfide	0.0524	0.0050	mg/kg wet	0.05000		105	45-160	0.3	30	
Carbon Tetrachloride	0.0487	0.0050	mg/kg wet	0.05000		97	65-135	5	30	

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008055

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CH00918 - 5035										
Chlorobenzene	0.0469	0.0050	mg/kg wet	0.05000		94	75-125	3	30	
Chloroethane	0.0448	0.0100	mg/kg wet	0.05000		90	40-155	1	30	
Chloroform	0.0507	0.0050	mg/kg wet	0.05000		101	70-125	2	30	
Chloromethane	0.0354	0.0100	mg/kg wet	0.05000		71	50-130	9	30	
cis-1,2-Dichloroethene	0.0534	0.0050	mg/kg wet	0.05000		107	65-125	3	30	
cis-1,3-Dichloropropene	0.0485	0.0050	mg/kg wet	0.05000		97	70-125	1	30	
Dibromochloromethane	0.0490	0.0050	mg/kg wet	0.05000		98	65-130	3	30	
Dibromomethane	0.0461	0.0050	mg/kg wet	0.05000		92	75-130	1	30	
Dichlorodifluoromethane	0.0334	0.0100	mg/kg wet	0.05000		67	35-135	5	30	
Ethylbenzene	0.0488	0.0050	mg/kg wet	0.05000		98	75-125	4	30	
Hexachlorobutadiene	0.0477	0.0050	mg/kg wet	0.05000		95	55-140	3	30	
Isopropylbenzene	0.0444	0.0050	mg/kg wet	0.05000		89	75-130	1	30	
Methyl tert-Butyl Ether	0.0502	0.0050	mg/kg wet	0.05000		100	70-130	3	30	
Methylene Chloride	0.0457	0.0250	mg/kg wet	0.05000		91	55-140	3	30	
Naphthalene	0.0560	0.0050	mg/kg wet	0.05000		112	40-125	5	30	
n-Butylbenzene	0.0510	0.0050	mg/kg wet	0.05000		102	65-140	2	30	
n-Propylbenzene	0.0511	0.0050	mg/kg wet	0.05000		102	65-135	2	30	
sec-Butylbenzene	0.0506	0.0050	mg/kg wet	0.05000		101	65-130	1	30	
Styrene	0.0498	0.0050	mg/kg wet	0.05000		100	75-125	4	30	
tert-Butylbenzene	0.0491	0.0050	mg/kg wet	0.05000		98	65-130	2	30	
Tetrachloroethene	0.0484	0.0050	mg/kg wet	0.05000		97	65-140	0.2	30	
Toluene	0.0462	0.0050	mg/kg wet	0.05000		92	70-125	3	30	
trans-1,2-Dichloroethene	0.0495	0.0050	mg/kg wet	0.05000		99	65-135	4	30	
trans-1,3-Dichloropropene	0.0446	0.0050	mg/kg wet	0.05000		89	65-125	0.4	30	
Trichloroethene	0.0472	0.0050	mg/kg wet	0.05000		94	75-125	4	30	
Trichlorofluoromethane	0.0438	0.0050	mg/kg wet	0.05000		88	25-185	5	30	
Vinyl Chloride	0.0425	0.0100	mg/kg wet	0.05000		85	60-125	5	30	
Xylene O	0.0475	0.0050	mg/kg wet	0.05000		95	75-125	3	30	
Xylene P,M	0.0947	0.0100	mg/kg wet	0.1000		95	80-125	3	30	
Surrogate: 1,2-Dichloroethane-d4	*0.0506*		mg/kg wet	*0.05000*		*101*	*70-120*			
Surrogate: 4-Bromofluorobenzene	*0.0458*		mg/kg wet	*0.05000*		*92*	*85-120*			
Surrogate: Dibromofluoromethane	*0.0513*		mg/kg wet	*0.05000*		*103*	*85-115*			
Surrogate: Toluene-d8	*0.0496*		mg/kg wet	*0.05000*		*99*	*85-115*			
Matrix Spike **Source: 1008056-07**										
1,1,1,2-Tetrachloroethane	0.0424	0.0043	mg/kg dry	0.04322	ND	98	75-125			
1,1,1-Trichloroethane	0.0433	0.0043	mg/kg dry	0.04322	ND	100	70-135			
1,1,2,2-Tetrachloroethane	0.0500	0.0043	mg/kg dry	0.04322	ND	116	55-130			
1,1,2-Trichloroethane	0.0441	0.0043	mg/kg dry	0.04322	ND	102	60-125			
1,1-Dichloroethane	0.0428	0.0043	mg/kg dry	0.04322	ND	99	75-125			
1,1-Dichloroethene	0.0426	0.0043	mg/kg dry	0.04322	ND	99	65-135			
1,1-Dichloropropene	0.0399	0.0043	mg/kg dry	0.04322	ND	92	70-135			
1,2,3-Trichlorobenzene	0.0430	0.0043	mg/kg dry	0.04322	ND	99	60-135			
1,2,3-Trichloropropane	0.0468	0.0043	mg/kg dry	0.04322	ND	108	65-130			
1,2,4-Trichlorobenzene	0.0411	0.0043	mg/kg dry	0.04322	ND	95	65-130			
1,2,4-Trimethylbenzene	0.0427	0.0043	mg/kg dry	0.04322	ND	99	65-135			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008055

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CH00918 - 5035										
1,2-Dibromo-3-Chloropropane	0.0461	0.0043	mg/kg dry	0.04322	ND	107	40-135			
1,2-Dibromoethane	0.0454	0.0043	mg/kg dry	0.04322	ND	105	70-125			
1,2-Dichlorobenzene	0.0429	0.0043	mg/kg dry	0.04322	ND	99	75-120			
1,2-Dichloroethane	0.0462	0.0043	mg/kg dry	0.04322	ND	107	70-135			
1,2-Dichloropropane	0.0398	0.0043	mg/kg dry	0.04322	ND	92	70-120			
1,3,5-Trimethylbenzene	0.0429	0.0043	mg/kg dry	0.04322	ND	99	65-135			
1,3-Dichlorobenzene	0.0423	0.0043	mg/kg dry	0.04322	ND	98	70-125			
1,3-Dichloropropane	0.0449	0.0043	mg/kg dry	0.04322	ND	104	75-125			
1,4-Dichlorobenzene	0.0411	0.0043	mg/kg dry	0.04322	ND	95	70-125			
1-Chlorohexane	0.0413	0.0043	mg/kg dry	0.04322	ND	96	70-130			
2,2-Dichloropropane	0.0449	0.0043	mg/kg dry	0.04322	ND	104	65-135			
2-Butanone	0.261	0.0432	mg/kg dry	0.2161	ND	121	30-160			
2-Chlorotoluene	0.0430	0.0043	mg/kg dry	0.04322	ND	99	70-130			
2-Hexanone	0.253	0.0432	mg/kg dry	0.2161	ND	117	45-145			
4-Chlorotoluene	0.0422	0.0043	mg/kg dry	0.04322	ND	98	75-125			
4-Isopropyltoluene	0.0416	0.0043	mg/kg dry	0.04322	ND	96	75-135			
4-Methyl-2-Pentanone	0.258	0.0432	mg/kg dry	0.2161	ND	119	45-145			
Acetone	0.378	0.0432	mg/kg dry	0.2161	ND	175	20-160			M+
Benzene	0.0407	0.0043	mg/kg dry	0.04322	ND	94	75-125			
Bromobenzene	0.0438	0.0043	mg/kg dry	0.04322	ND	101	65-120			
Bromochloromethane	0.0427	0.0043	mg/kg dry	0.04322	ND	99	70-125			
Bromodichloromethane	0.0427	0.0043	mg/kg dry	0.04322	ND	99	70-130			
Bromoform	0.0456	0.0043	mg/kg dry	0.04322	ND	106	55-135			
Bromomethane	0.0410	0.0086	mg/kg dry	0.04322	ND	95	30-160			
Carbon Disulfide	0.0454	0.0043	mg/kg dry	0.04322	ND	105	45-160			
Carbon Tetrachloride	0.0408	0.0043	mg/kg dry	0.04322	ND	95	65-135			
Chlorobenzene	0.0412	0.0043	mg/kg dry	0.04322	ND	95	75-125			
Chloroethane	0.0413	0.0086	mg/kg dry	0.04322	ND	95	40-155			
Chloroform	0.0439	0.0043	mg/kg dry	0.04322	ND	102	70-125			
Chloromethane	0.0356	0.0086	mg/kg dry	0.04322	ND	82	50-130			
cis-1,2-Dichloroethene	0.0454	0.0043	mg/kg dry	0.04322	ND	105	65-125			
cis-1,3-Dichloropropene	0.0420	0.0043	mg/kg dry	0.04322	ND	97	70-125			
Dibromochloromethane	0.0405	0.0043	mg/kg dry	0.04322	ND	94	65-130			
Dibromomethane	0.0440	0.0043	mg/kg dry	0.04322	ND	102	75-130			
Dichlorodifluoromethane	0.0318	0.0086	mg/kg dry	0.04322	ND	74	35-135			
Ethylbenzene	0.0433	0.0043	mg/kg dry	0.04322	ND	100	75-125			
Hexachlorobutadiene	0.0380	0.0043	mg/kg dry	0.04322	ND	88	55-140			
Isopropylbenzene	0.0388	0.0043	mg/kg dry	0.04322	ND	90	75-130			
Methyl tert-Butyl Ether	0.0435	0.0043	mg/kg dry	0.04322	ND	101	70-130			
Methylene Chloride	0.0437	0.0216	mg/kg dry	0.04322	0.0039	92	55-140			
Naphthalene	0.0453	0.0043	mg/kg dry	0.04322	ND	105	40-125			
n-Butylbenzene	0.0438	0.0043	mg/kg dry	0.04322	ND	101	65-140			
n-Propylbenzene	0.0448	0.0043	mg/kg dry	0.04322	ND	104	65-135			
sec-Butylbenzene	0.0439	0.0043	mg/kg dry	0.04322	ND	102	65-130			
Styrene	0.0441	0.0043	mg/kg dry	0.04322	ND	102	75-125			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008055

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CH00918 - 5035										
tert-Butylbenzene	0.0421	0.0043	mg/kg dry	0.04322	ND	98	65-130			
Tetrachloroethene	0.0402	0.0043	mg/kg dry	0.04322	ND	93	65-140			
Toluene	0.0429	0.0043	mg/kg dry	0.04322	ND	99	70-125			
trans-1,2-Dichloroethene	0.0400	0.0043	mg/kg dry	0.04322	ND	93	65-135			
trans-1,3-Dichloropropene	0.0406	0.0043	mg/kg dry	0.04322	ND	94	65-125			
Trichloroethene	0.0399	0.0043	mg/kg dry	0.04322	ND	92	75-125			
Trichlorofluoromethane	0.0376	0.0043	mg/kg dry	0.04322	ND	87	25-185			
Vinyl Chloride	0.0394	0.0086	mg/kg dry	0.04322	ND	91	60-125			
Xylene O	0.0423	0.0043	mg/kg dry	0.04322	ND	98	75-125			
Xylene P,M	0.0851	0.0086	mg/kg dry	0.08643	ND	98	80-125			
Surrogate: 1,2-Dichloroethane-d4	*0.0440*		mg/kg dry	*0.04322*		*102*	*70-120*			
Surrogate: 4-Bromofluorobenzene	*0.0408*		mg/kg dry	*0.04322*		*94*	*85-120*			
Surrogate: Dibromofluoromethane	*0.0432*		mg/kg dry	*0.04322*		*100*	*85-115*			
Surrogate: Toluene-d8	*0.0416*		mg/kg dry	*0.04322*		*96*	*85-115*			
Matrix Spike Dup **Source: 1008056-07**										
1,1,1,2-Tetrachloroethane	0.0466	0.0043	mg/kg dry	0.04322	ND	108	75-125	9	30	
1,1,1-Trichloroethane	0.0471	0.0043	mg/kg dry	0.04322	ND	109	70-135	8	30	
1,1,2,2-Tetrachloroethane	0.0535	0.0043	mg/kg dry	0.04322	ND	124	55-130	7	30	
1,1,2-Trichloroethane	0.0460	0.0043	mg/kg dry	0.04322	ND	106	60-125	4	30	
1,1-Dichloroethane	0.0477	0.0043	mg/kg dry	0.04322	ND	110	75-125	11	30	
1,1-Dichloroethene	0.0477	0.0043	mg/kg dry	0.04322	ND	110	65-135	11	30	
1,1-Dichloropropene	0.0426	0.0043	mg/kg dry	0.04322	ND	99	70-135	7	30	
1,2,3-Trichlorobenzene	0.0401	0.0043	mg/kg dry	0.04322	ND	93	60-135	7	30	
1,2,3-Trichloropropane	0.0481	0.0043	mg/kg dry	0.04322	ND	111	65-130	3	30	
1,2,4-Trichlorobenzene	0.0390	0.0043	mg/kg dry	0.04322	ND	90	65-130	5	30	
1,2,4-Trimethylbenzene	0.0436	0.0043	mg/kg dry	0.04322	ND	101	65-135	2	30	
1,2-Dibromo-3-Chloropropane	0.0451	0.0043	mg/kg dry	0.04322	ND	104	40-135	2	30	
1,2-Dibromoethane	0.0476	0.0043	mg/kg dry	0.04322	ND	110	70-125	5	30	
1,2-Dichlorobenzene	0.0435	0.0043	mg/kg dry	0.04322	ND	101	75-120	2	30	
1,2-Dichloroethane	0.0478	0.0043	mg/kg dry	0.04322	ND	111	70-135	3	30	
1,2-Dichloropropane	0.0443	0.0043	mg/kg dry	0.04322	ND	103	70-120	11	30	
1,3,5-Trimethylbenzene	0.0440	0.0043	mg/kg dry	0.04322	ND	102	65-135	2	30	
1,3-Dichlorobenzene	0.0428	0.0043	mg/kg dry	0.04322	ND	99	70-125	1	30	
1,3-Dichloropropane	0.0477	0.0043	mg/kg dry	0.04322	ND	110	75-125	6	30	
1,4-Dichlorobenzene	0.0414	0.0043	mg/kg dry	0.04322	ND	96	70-125	0.6	30	
1-Chlorohexane	0.0420	0.0043	mg/kg dry	0.04322	ND	97	70-130	2	30	
2,2-Dichloropropane	0.0473	0.0043	mg/kg dry	0.04322	ND	109	65-135	5	30	
2-Butanone	0.275	0.0432	mg/kg dry	0.2161	ND	127	30-160	5	30	
2-Chlorotoluene	0.0443	0.0043	mg/kg dry	0.04322	ND	103	70-130	3	30	
2-Hexanone	0.254	0.0432	mg/kg dry	0.2161	ND	118	45-145	0.6	30	
4-Chlorotoluene	0.0434	0.0043	mg/kg dry	0.04322	ND	100	75-125	3	30	
4-Isopropyltoluene	0.0417	0.0043	mg/kg dry	0.04322	ND	96	75-135	0.08	30	
4-Methyl-2-Pentanone	0.261	0.0432	mg/kg dry	0.2161	ND	121	45-145	1	30	
Acetone	0.397	0.0432	mg/kg dry	0.2161	ND	184	20-160	5	30	M+
Benzene	0.0427	0.0043	mg/kg dry	0.04322	ND	99	75-125	5	30	

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008055

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CH00918 - 5035										
Bromobenzene	0.0450	0.0043	mg/kg dry	0.04322	ND	104	65-120	3	30	
Bromochloromethane	0.0462	0.0043	mg/kg dry	0.04322	ND	107	70-125	8	30	
Bromodichloromethane	0.0464	0.0043	mg/kg dry	0.04322	ND	107	70-130	8	30	
Bromoform	0.0474	0.0043	mg/kg dry	0.04322	ND	110	55-135	4	30	
Bromomethane	0.0430	0.0086	mg/kg dry	0.04322	ND	100	30-160	5	30	
Carbon Disulfide	0.0469	0.0043	mg/kg dry	0.04322	ND	109	45-160	3	30	
Carbon Tetrachloride	0.0455	0.0043	mg/kg dry	0.04322	ND	105	65-135	11	30	
Chlorobenzene	0.0422	0.0043	mg/kg dry	0.04322	ND	98	75-125	2	30	
Chloroethane	0.0415	0.0086	mg/kg dry	0.04322	ND	96	40-155	0.7	30	
Chloroform	0.0480	0.0043	mg/kg dry	0.04322	ND	111	70-125	9	30	
Chloromethane	0.0347	0.0086	mg/kg dry	0.04322	ND	80	50-130	3	30	
cis-1,2-Dichloroethene	0.0493	0.0043	mg/kg dry	0.04322	ND	114	65-125	8	30	
cis-1,3-Dichloropropene	0.0435	0.0043	mg/kg dry	0.04322	ND	101	70-125	4	30	
Dibromochloromethane	0.0449	0.0043	mg/kg dry	0.04322	ND	104	65-130	10	30	
Dibromomethane	0.0456	0.0043	mg/kg dry	0.04322	ND	106	75-130	4	30	
Dichlorodifluoromethane	0.0315	0.0086	mg/kg dry	0.04322	ND	73	35-135	1	30	
Ethylbenzene	0.0443	0.0043	mg/kg dry	0.04322	ND	102	75-125	2	30	
Hexachlorobutadiene	0.0363	0.0043	mg/kg dry	0.04322	ND	84	55-140	5	30	
Isopropylbenzene	0.0402	0.0043	mg/kg dry	0.04322	ND	93	75-130	3	30	
Methyl tert-Butyl Ether	0.0480	0.0043	mg/kg dry	0.04322	ND	111	70-130	10	30	
Methylene Chloride	0.0462	0.0216	mg/kg dry	0.04322	0.0039	98	55-140	6	30	
Naphthalene	0.0473	0.0043	mg/kg dry	0.04322	ND	110	40-125	4	30	
n-Butylbenzene	0.0434	0.0043	mg/kg dry	0.04322	ND	100	65-140	1	30	
n-Propylbenzene	0.0461	0.0043	mg/kg dry	0.04322	ND	107	65-135	3	30	
sec-Butylbenzene	0.0445	0.0043	mg/kg dry	0.04322	ND	103	65-130	1	30	
Styrene	0.0445	0.0043	mg/kg dry	0.04322	ND	103	75-125	0.8	30	
tert-Butylbenzene	0.0433	0.0043	mg/kg dry	0.04322	ND	100	65-130	3	30	
Tetrachloroethene	0.0419	0.0043	mg/kg dry	0.04322	ND	97	65-140	4	30	
Toluene	0.0422	0.0043	mg/kg dry	0.04322	ND	98	70-125	1	30	
trans-1,2-Dichloroethene	0.0432	0.0043	mg/kg dry	0.04322	ND	100	65-135	8	30	
trans-1,3-Dichloropropene	0.0404	0.0043	mg/kg dry	0.04322	ND	94	65-125	0.5	30	
Trichloroethene	0.0426	0.0043	mg/kg dry	0.04322	ND	98	75-125	6	30	
Trichlorofluoromethane	0.0418	0.0043	mg/kg dry	0.04322	ND	97	25-185	10	30	
Vinyl Chloride	0.0397	0.0086	mg/kg dry	0.04322	ND	92	60-125	0.7	30	
Xylene O	0.0429	0.0043	mg/kg dry	0.04322	ND	99	75-125	1	30	
Xylene P,M	0.0849	0.0086	mg/kg dry	0.08643	ND	98	80-125	0.2	30	
Surrogate: 1,2-Dichloroethane-d4	*0.0470*		mg/kg dry	*0.04322*		*109*	*70-120*			
Surrogate: 4-Bromofluorobenzene	*0.0410*		mg/kg dry	*0.04322*		*95*	*85-120*			
Surrogate: Dibromofluoromethane	*0.0466*		mg/kg dry	*0.04322*		*108*	*85-115*			
Surrogate: Toluene-d8	*0.0425*		mg/kg dry	*0.04322*		*98*	*85-115*			
Batch CH01014 - 5035										
Blank										
1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008055

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CH01014 - 5035										
1,1,1-Trichloroethane	ND	0.0050	mg/kg							
1,1,2,2-Tetrachloroethane	ND	0.0050	mg/kg							
1,1,2,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1-Chlorohexane	ND	0.0050	mg/kg							
1-Chlorohexane	ND	0.0050	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0500	mg/kg							
2-Butanone	ND	0.0500	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg							
2-Chlorotoluene	ND	0.0050	mg/kg wet							

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Client Name: The Johnson Company
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CH01014 - 5035										
2-Hexanone	ND	0.0500	mg/kg							
2-Hexanone	ND	0.0500	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0500	mg/kg							
4-Methyl-2-Pentanone	ND	0.0500	mg/kg wet							
Acetone	ND	0.0500	mg/kg							
Acetone	ND	0.0500	mg/kg wet							
Benzene	ND	0.0050	mg/kg							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg							
Bromoform	ND	0.0050	mg/kg wet							
Bromomethane	ND	0.0100	mg/kg							
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg							
Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg							
Chloroform	ND	0.0050	mg/kg							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0050	mg/kg							
Dibromochloromethane	ND	0.0050	mg/kg wet							
Dibromomethane	ND	0.0050	mg/kg							
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg							

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CH01014 - 5035										
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0250	mg/kg							
Methylene Chloride	ND	0.0250	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Toluene	ND	0.0050	mg/kg							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	*0.0529*		mg/kg	*0.05000*		*106*	*70-120*			
Surrogate: 1,2-Dichloroethane-d4	*0.0529*		mg/kg wet	*0.05000*		*106*	*70-120*			
Surrogate: 4-Bromofluorobenzene	*0.0444*		mg/kg	*0.05000*		*89*	*85-120*			
Surrogate: 4-Bromofluorobenzene	*0.0444*		mg/kg wet	*0.05000*		*89*	*85-120*			
Surrogate: Dibromofluoromethane	*0.0538*		mg/kg	*0.05000*		*108*	*85-115*			
Surrogate: Dibromofluoromethane	*0.0538*		mg/kg wet	*0.05000*		*108*	*85-115*			
Surrogate: Toluene-d8	*0.0500*		mg/kg	*0.05000*		*100*	*85-115*			

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CH01014 - 5035										
Surrogate: Toluene-d8	*0.0500*		mg/kg wet	*0.05000*		*100*	*85-115*			
LCS										
1,1,1,2-Tetrachloroethane	0.0517	0.0050	mg/kg wet	0.05000		103	75-125			
1,1,1-Trichloroethane	0.0516	0.0050	mg/kg wet	0.05000		103	70-135			
1,1,2,2-Tetrachloroethane	0.0536	0.0050	mg/kg wet	0.05000		107	55-130			
1,1,2-Trichloroethane	0.0490	0.0050	mg/kg wet	0.05000		98	60-125			
1,1-Dichloroethane	0.0522	0.0050	mg/kg wet	0.05000		104	75-125			
1,1-Dichloroethene	0.0531	0.0050	mg/kg wet	0.05000		106	65-135			
1,1-Dichloropropene	0.0487	0.0050	mg/kg wet	0.05000		97	70-135			
1,2,3-Trichlorobenzene	0.0536	0.0050	mg/kg wet	0.05000		107	60-135			
1,2,3-Trichloropropane	0.0503	0.0050	mg/kg wet	0.05000		101	65-130			
1,2,4-Trichlorobenzene	0.0518	0.0050	mg/kg wet	0.05000		104	65-130			
1,2,4-Trimethylbenzene	0.0512	0.0050	mg/kg wet	0.05000		102	65-135			
1,2-Dibromo-3-Chloropropane	0.0442	0.0050	mg/kg wet	0.05000		88	40-135			
1,2-Dibromoethane	0.0509	0.0050	mg/kg wet	0.05000		102	70-125			
1,2-Dichlorobenzene	0.0510	0.0050	mg/kg wet	0.05000		102	75-120			
1,2-Dichloroethane	0.0507	0.0050	mg/kg wet	0.05000		101	70-135			
1,2-Dichloropropane	0.0479	0.0050	mg/kg wet	0.05000		96	70-120			
1,3,5-Trimethylbenzene	0.0529	0.0050	mg/kg wet	0.05000		106	65-135			
1,3-Dichlorobenzene	0.0524	0.0050	mg/kg wet	0.05000		105	70-125			
1,3-Dichloropropane	0.0511	0.0050	mg/kg wet	0.05000		102	75-125			
1,4-Dichlorobenzene	0.0493	0.0050	mg/kg wet	0.05000		99	70-125			
1-Chlorohexane	0.0513	0.0050	mg/kg wet	0.05000		103	70-130			
2,2-Dichloropropane	0.0558	0.0050	mg/kg wet	0.05000		112	65-135			
2-Butanone	0.255	0.0500	mg/kg wet	0.2500		102	30-160			
2-Chlorotoluene	0.0524	0.0050	mg/kg wet	0.05000		105	70-130			
2-Hexanone	0.250	0.0500	mg/kg wet	0.2500		100	45-145			
4-Chlorotoluene	0.0510	0.0050	mg/kg wet	0.05000		102	75-125			
4-Isopropyltoluene	0.0518	0.0050	mg/kg wet	0.05000		104	75-135			
4-Methyl-2-Pentanone	0.270	0.0500	mg/kg wet	0.2500		108	45-145			
Acetone	0.296	0.0500	mg/kg wet	0.2500		118	20-160			
Benzene	0.0484	0.0050	mg/kg wet	0.05000		97	75-125			
Bromobenzene	0.0520	0.0050	mg/kg wet	0.05000		104	65-120			
Bromochloromethane	0.0497	0.0050	mg/kg wet	0.05000		99	70-125			
Bromodichloromethane	0.0489	0.0050	mg/kg wet	0.05000		98	70-130			
Bromoform	0.0512	0.0050	mg/kg wet	0.05000		102	55-135			
Bromomethane	0.0498	0.0100	mg/kg wet	0.05000		100	30-160			
Carbon Disulfide	0.0555	0.0050	mg/kg wet	0.05000		111	45-160			
Carbon Tetrachloride	0.0498	0.0050	mg/kg wet	0.05000		100	65-135			
Chlorobenzene	0.0492	0.0050	mg/kg wet	0.05000		98	75-125			
Chloroethane	0.0486	0.0100	mg/kg wet	0.05000		97	40-155			
Chloroform	0.0515	0.0050	mg/kg wet	0.05000		103	70-125			
Chloromethane	0.0427	0.0100	mg/kg wet	0.05000		85	50-130			
cis-1,2-Dichloroethene	0.0562	0.0050	mg/kg wet	0.05000		112	65-125			

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CH01014 - 5035										
cis-1,3-Dichloropropene	0.0499	0.0050	mg/kg wet	0.05000		100	70-125			
Dibromochloromethane	0.0488	0.0050	mg/kg wet	0.05000		98	65-130			
Dibromomethane	0.0488	0.0050	mg/kg wet	0.05000		98	75-130			
Dichlorodifluoromethane	0.0394	0.0100	mg/kg wet	0.05000		79	35-135			
Ethylbenzene	0.0516	0.0050	mg/kg wet	0.05000		103	75-125			
Hexachlorobutadiene	0.0504	0.0050	mg/kg wet	0.05000		101	55-140			
Isopropylbenzene	0.0471	0.0050	mg/kg wet	0.05000		94	75-130			
Methyl tert-Butyl Ether	0.0497	0.0050	mg/kg wet	0.05000		99	70-130			
Methylene Chloride	0.0495	0.0250	mg/kg wet	0.05000		99	55-140			
Naphthalene	0.0588	0.0050	mg/kg wet	0.05000		118	40-125			
n-Butylbenzene	0.0553	0.0050	mg/kg wet	0.05000		111	65-140			
n-Propylbenzene	0.0547	0.0050	mg/kg wet	0.05000		109	65-135			
sec-Butylbenzene	0.0551	0.0050	mg/kg wet	0.05000		110	65-130			
Styrene	0.0529	0.0050	mg/kg wet	0.05000		106	75-125			
tert-Butylbenzene	0.0524	0.0050	mg/kg wet	0.05000		105	65-130			
Tetrachloroethene	0.0478	0.0050	mg/kg wet	0.05000		96	65-140			
Toluene	0.0492	0.0050	mg/kg wet	0.05000		98	70-125			
trans-1,2-Dichloroethene	0.0499	0.0050	mg/kg wet	0.05000		100	65-135			
trans-1,3-Dichloropropene	0.0459	0.0050	mg/kg wet	0.05000		92	65-125			
Trichloroethene	0.0490	0.0050	mg/kg wet	0.05000		98	75-125			
Trichlorofluoromethane	0.0453	0.0050	mg/kg wet	0.05000		91	25-185			
Vinyl Chloride	0.0467	0.0100	mg/kg wet	0.05000		93	60-125			
Xylene O	0.0502	0.0050	mg/kg wet	0.05000		100	75-125			
Xylene P,M	0.102	0.0100	mg/kg wet	0.1000		102	80-125			
Surrogate: 1,2-Dichloroethane-d4	*0.0485*		mg/kg wet	*0.05000*		*97*	*70-120*			
Surrogate: 4-Bromofluorobenzene	*0.0474*		mg/kg wet	*0.05000*		*95*	*85-120*			
Surrogate: Dibromofluoromethane	*0.0501*		mg/kg wet	*0.05000*		*100*	*85-115*			
Surrogate: Toluene-d8	*0.0482*		mg/kg wet	*0.05000*		*96*	*85-115*			
LCS Dup										
1,1,1,2-Tetrachloroethane	0.0454	0.0050	mg/kg wet	0.05000		91	75-125	13	30	
1,1,1-Trichloroethane	0.0479	0.0050	mg/kg wet	0.05000		96	70-135	7	30	
1,1,2,2-Tetrachloroethane	0.0494	0.0050	mg/kg wet	0.05000		99	55-130	8	30	
1,1,2-Trichloroethane	0.0454	0.0050	mg/kg wet	0.05000		91	60-125	8	30	
1,1-Dichloroethane	0.0462	0.0050	mg/kg wet	0.05000		92	75-125	12	30	
1,1-Dichloroethene	0.0472	0.0050	mg/kg wet	0.05000		94	65-135	12	30	
1,1-Dichloropropene	0.0445	0.0050	mg/kg wet	0.05000		89	70-135	9	30	
1,2,3-Trichlorobenzene	0.0520	0.0050	mg/kg wet	0.05000		104	60-135	3	30	
1,2,3-Trichloropropane	0.0466	0.0050	mg/kg wet	0.05000		93	65-130	8	30	
1,2,4-Trichlorobenzene	0.0502	0.0050	mg/kg wet	0.05000		100	65-130	3	30	
1,2,4-Trimethylbenzene	0.0493	0.0050	mg/kg wet	0.05000		99	65-135	4	30	
1,2-Dibromo-3-Chloropropane	0.0457	0.0050	mg/kg wet	0.05000		91	40-135	3	30	
1,2-Dibromoethane	0.0468	0.0050	mg/kg wet	0.05000		94	70-125	9	30	
1,2-Dichlorobenzene	0.0499	0.0050	mg/kg wet	0.05000		100	75-120	2	30	
1,2-Dichloroethane	0.0464	0.0050	mg/kg wet	0.05000		93	70-135	9	30	
1,2-Dichloropropane	0.0455	0.0050	mg/kg wet	0.05000		91	70-120	5	30	

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CH01014 - 5035										
1,3,5-Trimethylbenzene	0.0497	0.0050	mg/kg wet	0.05000		99	65-135	6	30	
1,3-Dichlorobenzene	0.0494	0.0050	mg/kg wet	0.05000		99	70-125	6	30	
1,3-Dichloropropane	0.0462	0.0050	mg/kg wet	0.05000		92	75-125	10	30	
1,4-Dichlorobenzene	0.0476	0.0050	mg/kg wet	0.05000		95	70-125	4	30	
1-Chlorohexane	0.0491	0.0050	mg/kg wet	0.05000		98	70-130	5	30	
2,2-Dichloropropane	0.0508	0.0050	mg/kg wet	0.05000		102	65-135	9	30	
2-Butanone	0.234	0.0500	mg/kg wet	0.2500		94	30-160	9	30	
2-Chlorotoluene	0.0501	0.0050	mg/kg wet	0.05000		100	70-130	5	30	
2-Hexanone	0.240	0.0500	mg/kg wet	0.2500		96	45-145	4	30	
4-Chlorotoluene	0.0491	0.0050	mg/kg wet	0.05000		98	75-125	4	30	
4-Isopropyltoluene	0.0489	0.0050	mg/kg wet	0.05000		98	75-135	6	30	
4-Methyl-2-Pentanone	0.261	0.0500	mg/kg wet	0.2500		104	45-145	4	30	
Acetone	0.253	0.0500	mg/kg wet	0.2500		101	20-160	15	30	
Benzene	0.0449	0.0050	mg/kg wet	0.05000		90	75-125	7	30	
Bromobenzene	0.0506	0.0050	mg/kg wet	0.05000		101	65-120	3	30	
Bromochloromethane	0.0456	0.0050	mg/kg wet	0.05000		91	70-125	9	30	
Bromodichloromethane	0.0440	0.0050	mg/kg wet	0.05000		88	70-130	11	30	
Bromoform	0.0479	0.0050	mg/kg wet	0.05000		96	55-135	7	30	
Bromomethane	0.0509	0.0100	mg/kg wet	0.05000		102	30-160	2	30	
Carbon Disulfide	0.0541	0.0050	mg/kg wet	0.05000		108	45-160	3	30	
Carbon Tetrachloride	0.0455	0.0050	mg/kg wet	0.05000		91	65-135	9	30	
Chlorobenzene	0.0481	0.0050	mg/kg wet	0.05000		96	75-125	2	30	
Chloroethane	0.0470	0.0100	mg/kg wet	0.05000		94	40-155	3	30	
Chloroform	0.0461	0.0050	mg/kg wet	0.05000		92	70-125	11	30	
Chloromethane	0.0437	0.0100	mg/kg wet	0.05000		87	50-130	2	30	
cis-1,2-Dichloroethene	0.0490	0.0050	mg/kg wet	0.05000		98	65-125	14	30	
cis-1,3-Dichloropropene	0.0461	0.0050	mg/kg wet	0.05000		92	70-125	8	30	
Dibromochloromethane	0.0431	0.0050	mg/kg wet	0.05000		86	65-130	12	30	
Dibromomethane	0.0453	0.0050	mg/kg wet	0.05000		91	75-130	7	30	
Dichlorodifluoromethane	0.0371	0.0100	mg/kg wet	0.05000		74	35-135	6	30	
Ethylbenzene	0.0498	0.0050	mg/kg wet	0.05000		100	75-125	4	30	
Hexachlorobutadiene	0.0489	0.0050	mg/kg wet	0.05000		98	55-140	3	30	
Isopropylbenzene	0.0440	0.0050	mg/kg wet	0.05000		88	75-130	7	30	
Methyl tert-Butyl Ether	0.0452	0.0050	mg/kg wet	0.05000		90	70-130	9	30	
Methylene Chloride	0.0497	0.0250	mg/kg wet	0.05000		99	55-140	0.4	30	
Naphthalene	0.0572	0.0050	mg/kg wet	0.05000		114	40-125	3	30	
n-Butylbenzene	0.0530	0.0050	mg/kg wet	0.05000		106	65-140	4	30	
n-Propylbenzene	0.0520	0.0050	mg/kg wet	0.05000		104	65-135	5	30	
sec-Butylbenzene	0.0525	0.0050	mg/kg wet	0.05000		105	65-130	5	30	
Styrene	0.0524	0.0050	mg/kg wet	0.05000		105	75-125	0.9	30	
tert-Butylbenzene	0.0492	0.0050	mg/kg wet	0.05000		98	65-130	6	30	
Tetrachloroethene	0.0452	0.0050	mg/kg wet	0.05000		90	65-140	6	30	
Toluene	0.0490	0.0050	mg/kg wet	0.05000		98	70-125	0.2	30	
trans-1,2-Dichloroethene	0.0447	0.0050	mg/kg wet	0.05000		89	65-135	11	30	
trans-1,3-Dichloropropene	0.0442	0.0050	mg/kg wet	0.05000		88	65-125	4	30	

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008055

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Low Level										
Batch CH01014 - 5035										
Trichloroethene	0.0450	0.0050	mg/kg wet	0.05000		90	75-125	8	30	
Trichlorofluoromethane	0.0404	0.0050	mg/kg wet	0.05000		81	25-185	11	30	
Vinyl Chloride	0.0457	0.0100	mg/kg wet	0.05000		91	60-125	2	30	
Xylene O	0.0482	0.0050	mg/kg wet	0.05000		96	75-125	4	30	
Xylene P,M	0.0979	0.0100	mg/kg wet	0.1000		98	80-125	4	30	
Surrogate: 1,2-Dichloroethane-d4	*0.0461*		mg/kg wet	*0.05000*		*92*	*70-120*			
Surrogate: 4-Bromofluorobenzene	*0.0471*		mg/kg wet	*0.05000*		*94*	*85-120*			
Surrogate: Dibromofluoromethane	*0.0466*		mg/kg wet	*0.05000*		*93*	*85-115*			
Surrogate: Toluene-d8	*0.0473*		mg/kg wet	*0.05000*		*95*	*85-115*			
8260B Volatile Organic Compounds										
Batch CH00908 - 5030B										
Blank										
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L							
1,1,1-Trichloroethane	ND	1.0	ug/L							
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L							
1,1,2-Trichloroethane	ND	1.0	ug/L							
1,1-Dichloroethane	ND	1.0	ug/L							
1,1-Dichloroethene	ND	1.0	ug/L							
1,1-Dichloropropene	ND	2.0	ug/L							
1,2,3-Trichlorobenzene	ND	1.0	ug/L							
1,2,3-Trichloropropane	ND	1.0	ug/L							
1,2,4-Trichlorobenzene	ND	1.0	ug/L							
1,2,4-Trimethylbenzene	ND	1.0	ug/L							
1,2-Dibromo-3-Chloropropane	ND	5.0	ug/L							
1,2-Dibromoethane	ND	1.0	ug/L							
1,2-Dichlorobenzene	ND	1.0	ug/L							
1,2-Dichloroethane	ND	1.0	ug/L							
1,2-Dichloropropane	ND	1.0	ug/L							
1,3,5-Trimethylbenzene	ND	1.0	ug/L							
1,3-Dichlorobenzene	ND	1.0	ug/L							
1,3-Dichloropropane	ND	1.0	ug/L							
1,4-Dichlorobenzene	ND	1.0	ug/L							
1-Chlorohexane	ND	1.0	ug/L							
2,2-Dichloropropane	ND	1.0	ug/L							
2-Butanone	ND	25.0	ug/L							
2-Chlorotoluene	ND	1.0	ug/L							
2-Hexanone	ND	10.0	ug/L							
4-Chlorotoluene	ND	1.0	ug/L							
4-Isopropyltoluene	ND	1.0	ug/L							
4-Methyl-2-Pentanone	ND	25.0	ug/L							
Acetone	ND	25.0	ug/L							
Benzene	ND	1.0	ug/L							
Bromobenzene	ND	2.0	ug/L							
Bromochloromethane	ND	1.0	ug/L							

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008055

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch CH00908 - 5030B										
Bromodichloromethane	ND	0.6	ug/L							
Bromoform	ND	1.0	ug/L							
Bromomethane	ND	2.0	ug/L							
Carbon Disulfide	ND	1.0	ug/L							
Carbon Tetrachloride	ND	1.0	ug/L							
Chlorobenzene	ND	1.0	ug/L							
Chloroethane	ND	2.0	ug/L							
Chloroform	ND	1.0	ug/L							
Chloromethane	ND	2.0	ug/L							
cis-1,2-Dichloroethene	ND	1.0	ug/L							
cis-1,3-Dichloropropene	ND	0.4	ug/L							
Dibromochloromethane	ND	1.0	ug/L							
Dibromomethane	ND	1.0	ug/L							
Dichlorodifluoromethane	ND	2.0	ug/L							
Ethylbenzene	ND	1.0	ug/L							
Hexachlorobutadiene	ND	0.6	ug/L							
Isopropylbenzene	ND	1.0	ug/L							
Methyl tert-Butyl Ether	ND	1.0	ug/L							
Methylene Chloride	ND	4.0	ug/L							
Naphthalene	ND	1.0	ug/L							
n-Butylbenzene	ND	1.0	ug/L							
n-Propylbenzene	ND	1.0	ug/L							
sec-Butylbenzene	ND	1.0	ug/L							
Styrene	ND	1.0	ug/L							
tert-Butylbenzene	ND	1.0	ug/L							
Tetrachloroethene	ND	1.0	ug/L							
Toluene	ND	1.0	ug/L							
trans-1,2-Dichloroethene	ND	1.0	ug/L							
trans-1,3-Dichloropropene	ND	0.5	ug/L							
Trichloroethene	ND	1.0	ug/L							
Trichlorofluoromethane	ND	1.0	ug/L							
Vinyl Chloride	ND	1.0	ug/L							
Xylene O	ND	1.0	ug/L							
Xylene P,M	ND	2.0	ug/L							
Surrogate: 1,2-Dichloroethane-d4	*22.3*		ug/L	*25.00*		*89*	*70-120*			
Surrogate: 4-Bromofluorobenzene	*23.3*		ug/L	*25.00*		*93*	*75-120*			
Surrogate: Dibromofluoromethane	*23.3*		ug/L	*25.00*		*93*	*85-115*			
Surrogate: Toluene-d8	*26.5*		ug/L	*25.00*		*106*	*85-120*			
LCS										
1,1,1,2-Tetrachloroethane	11.1		ug/L	10.00		111	80-130			
1,1,1-Trichloroethane	10.4		ug/L	10.00		104	65-130			
1,1,2,2-Tetrachloroethane	10.1		ug/L	10.00		101	65-130			
1,1,2-Trichloroethane	10.3		ug/L	10.00		103	75-125			
1,1-Dichloroethane	10.2		ug/L	10.00		102	70-135			
1,1-Dichloroethene	10.8		ug/L	10.00		108	70-130			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008055

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch CH00908 - 5030B										
1,1-Dichloropropene	9.8		ug/L	10.00		98	75-130			
1,2,3-Trichlorobenzene	12.1		ug/L	10.00		121	55-140			
1,2,3-Trichloropropane	9.6		ug/L	10.00		96	75-125			
1,2,4-Trichlorobenzene	11.5		ug/L	10.00		115	65-135			
1,2,4-Trimethylbenzene	10.3		ug/L	10.00		103	75-130			
1,2-Dibromo-3-Chloropropane	10.7		ug/L	10.00		107	50-130			
1,2-Dibromoethane	10.6		ug/L	10.00		106	80-120			
1,2-Dichlorobenzene	10.5		ug/L	10.00		105	70-120			
1,2-Dichloroethane	10.0		ug/L	10.00		100	70-130			
1,2-Dichloropropane	10.3		ug/L	10.00		103	75-125			
1,3,5-Trimethylbenzene	10.6		ug/L	10.00		106	75-130			
1,3-Dichlorobenzene	10.6		ug/L	10.00		106	75-125			
1,3-Dichloropropane	10.5		ug/L	10.00		105	75-125			
1,4-Dichlorobenzene	10.4		ug/L	10.00		104	75-125			
1-Chlorohexane	10.2		ug/L	10.00		102	70-130			
2,2-Dichloropropane	10.4		ug/L	10.00		104	70-135			
2-Butanone	48.6		ug/L	50.00		97	30-150			
2-Chlorotoluene	10.3		ug/L	10.00		103	75-125			
2-Hexanone	50.4		ug/L	50.00		101	55-130			
4-Chlorotoluene	10.0		ug/L	10.00		100	75-130			
4-Isopropyltoluene	10.9		ug/L	10.00		109	75-130			
4-Methyl-2-Pentanone	47.8		ug/L	50.00		96	60-135			
Acetone	48.2		ug/L	50.00		96	40-140			
Benzene	10.0		ug/L	10.00		100	80-120			
Bromobenzene	10.5		ug/L	10.00		105	75-125			
Bromochloromethane	10.2		ug/L	10.00		102	65-130			
Bromodichloromethane	10.5		ug/L	10.00		105	75-120			
Bromoform	12.0		ug/L	10.00		120	70-130			
Bromomethane	8.4		ug/L	10.00		84	30-145			
Carbon Disulfide	12.2		ug/L	10.00		122	35-160			
Carbon Tetrachloride	11.0		ug/L	10.00		110	65-140			
Chlorobenzene	10.6		ug/L	10.00		106	80-120			
Chloroethane	9.7		ug/L	10.00		97	60-135			
Chloroform	10.3		ug/L	10.00		103	65-135			
Chloromethane	8.4		ug/L	10.00		84	40-125			
cis-1,2-Dichloroethene	10.4		ug/L	10.00		104	70-125			
cis-1,3-Dichloropropene	9.9		ug/L	10.00		99	70-130			
Dibromochloromethane	11.5		ug/L	10.00		115	60-135			
Dibromomethane	9.8		ug/L	10.00		98	75-125			
Dichlorodifluoromethane	8.6		ug/L	10.00		86	30-155			
Ethylbenzene	9.9		ug/L	10.00		99	75-125			
Hexachlorobutadiene	11.0		ug/L	10.00		110	50-140			
Isopropylbenzene	8.9		ug/L	10.00		89	75-125			
Methyl tert-Butyl Ether	9.6		ug/L	10.00		96	65-125			
Methylene Chloride	10.5		ug/L	10.00		105	55-140			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008055

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch CH00908 - 5030B										
Naphthalene	11.0		ug/L	10.00		110	55-140			
n-Butylbenzene	11.6		ug/L	10.00		116	70-135			
n-Propylbenzene	10.2		ug/L	10.00		102	70-130			
sec-Butylbenzene	11.3		ug/L	10.00		113	70-125			
Styrene	9.6		ug/L	10.00		96	65-135			
tert-Butylbenzene	10.9		ug/L	10.00		109	70-130			
Tetrachloroethene	11.2		ug/L	10.00		112	45-150			
Toluene	10.3		ug/L	10.00		103	75-120			
trans-1,2-Dichloroethene	9.7		ug/L	10.00		97	60-140			
trans-1,3-Dichloropropene	9.6		ug/L	10.00		96	55-140			
Trichloroethene	10.3		ug/L	10.00		103	70-125			
Trichlorofluoromethane	9.2		ug/L	10.00		92	60-145			
Vinyl Chloride	9.8		ug/L	10.00		98	50-145			
Xylene O	10.2		ug/L	10.00		102	80-120			
Xylene P,M	20.9		ug/L	20.00		104	75-130			
Surrogate: 1,2-Dichloroethane-d4	*25.2*		ug/L	*25.00*		*101*	*70-120*			
Surrogate: 4-Bromofluorobenzene	*25.8*		ug/L	*25.00*		*103*	*75-120*			
Surrogate: Dibromofluoromethane	*26.0*		ug/L	*25.00*		*104*	*85-115*			
Surrogate: Toluene-d8	*26.3*		ug/L	*25.00*		*105*	*85-120*			
LCS Dup										
1,1,1,2-Tetrachloroethane	9.8		ug/L	10.00		98	80-130	12	30	
1,1,1-Trichloroethane	9.6		ug/L	10.00		96	65-130	8	30	
1,1,2,2-Tetrachloroethane	9.3		ug/L	10.00		93	65-130	8	30	
1,1,2-Trichloroethane	9.2		ug/L	10.00		92	75-125	11	30	
1,1-Dichloroethane	9.2		ug/L	10.00		92	70-135	9	30	
1,1-Dichloroethene	9.7		ug/L	10.00		97	70-130	11	30	
1,1-Dichloropropene	8.9		ug/L	10.00		89	75-130	10	30	
1,2,3-Trichlorobenzene	10.9		ug/L	10.00		109	55-140	10	30	
1,2,3-Trichloropropane	9.6		ug/L	10.00		96	75-125	0.2	30	
1,2,4-Trichlorobenzene	10.3		ug/L	10.00		103	65-135	11	30	
1,2,4-Trimethylbenzene	9.0		ug/L	10.00		90	75-130	13	30	
1,2-Dibromo-3-Chloropropane	9.9		ug/L	10.00		99	50-130	8	30	
1,2-Dibromoethane	9.7		ug/L	10.00		97	80-120	9	30	
1,2-Dichlorobenzene	9.8		ug/L	10.00		98	70-120	7	30	
1,2-Dichloroethane	9.4		ug/L	10.00		94	70-130	6	30	
1,2-Dichloropropane	9.6		ug/L	10.00		96	75-125	7	30	
1,3,5-Trimethylbenzene	9.4		ug/L	10.00		94	75-130	12	30	
1,3-Dichlorobenzene	9.5		ug/L	10.00		95	75-125	10	30	
1,3-Dichloropropane	9.6		ug/L	10.00		96	75-125	9	30	
1,4-Dichlorobenzene	9.8		ug/L	10.00		98	75-125	6	30	
1-Chlorohexane	9.0		ug/L	10.00		90	70-130	12	30	
2,2-Dichloropropane	9.5		ug/L	10.00		95	70-135	9	30	
2-Butanone	45.2		ug/L	50.00		90	30-150	7	30	
2-Chlorotoluene	9.5		ug/L	10.00		95	75-125	8	30	
2-Hexanone	43.7		ug/L	50.00		87	55-130	14	30	

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008055

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch CH00908 - 5030B										
4-Chlorotoluene	9.3		ug/L	10.00		93	75-130	7	30	
4-Isopropyltoluene	9.4		ug/L	10.00		94	75-130	15	30	
4-Methyl-2-Pentanone	44.5		ug/L	50.00		89	60-135	7	30	
Acetone	46.3		ug/L	50.00		93	40-140	4	30	
Benzene	9.3		ug/L	10.00		93	80-120	7	30	
Bromobenzene	9.8		ug/L	10.00		98	75-125	7	30	
Bromochloromethane	9.6		ug/L	10.00		96	65-130	6	30	
Bromodichloromethane	9.7		ug/L	10.00		97	75-120	8	30	
Bromoform	11.2		ug/L	10.00		112	70-130	7	30	
Bromomethane	7.8		ug/L	10.00		78	30-145	8	30	
Carbon Disulfide	11.2		ug/L	10.00		112	35-160	8	30	
Carbon Tetrachloride	10.0		ug/L	10.00		100	65-140	10	30	
Chlorobenzene	9.6		ug/L	10.00		96	80-120	10	30	
Chloroethane	9.0		ug/L	10.00		90	60-135	8	30	
Chloroform	9.5		ug/L	10.00		95	65-135	8	30	
Chloromethane	7.5		ug/L	10.00		75	40-125	11	30	
cis-1,2-Dichloroethene	9.8		ug/L	10.00		98	70-125	6	30	
cis-1,3-Dichloropropene	9.4		ug/L	10.00		94	70-130	6	30	
Dibromochloromethane	10.5		ug/L	10.00		105	60-135	9	30	
Dibromomethane	9.1		ug/L	10.00		91	75-125	8	30	
Dichlorodifluoromethane	7.7		ug/L	10.00		77	30-155	11	30	
Ethylbenzene	9.2		ug/L	10.00		92	75-125	7	30	
Hexachlorobutadiene	10.3		ug/L	10.00		103	50-140	7	30	
Isopropylbenzene	8.0		ug/L	10.00		80	75-125	10	30	
Methyl tert-Butyl Ether	8.9		ug/L	10.00		89	65-125	8	30	
Methylene Chloride	9.6		ug/L	10.00		96	55-140	9	30	
Naphthalene	9.4		ug/L	10.00		94	55-140	15	30	
n-Butylbenzene	10.2		ug/L	10.00		102	70-135	13	30	
n-Propylbenzene	9.0		ug/L	10.00		90	70-130	12	30	
sec-Butylbenzene	10.0		ug/L	10.00		100	70-125	12	30	
Styrene	8.8		ug/L	10.00		88	65-135	9	30	
tert-Butylbenzene	9.8		ug/L	10.00		98	70-130	11	30	
Tetrachloroethene	10.0		ug/L	10.00		100	45-150	11	30	
Toluene	9.5		ug/L	10.00		95	75-120	8	30	
trans-1,2-Dichloroethene	8.8		ug/L	10.00		88	60-140	10	30	
trans-1,3-Dichloropropene	8.9		ug/L	10.00		89	55-140	8	30	
Trichloroethene	9.4		ug/L	10.00		94	70-125	10	30	
Trichlorofluoromethane	8.2		ug/L	10.00		82	60-145	11	30	
Vinyl Chloride	8.9		ug/L	10.00		89	50-145	10	30	
Xylene O	9.2		ug/L	10.00		92	80-120	11	30	
Xylene P,M	18.9		ug/L	20.00		95	75-130	10	30	
Surrogate: 1,2-Dichloroethane-d4	*25.4*		ug/L	*25.00*		*102*	*70-120*			
Surrogate: 4-Bromofluorobenzene	*24.8*		ug/L	*25.00*		*99*	*75-120*			
Surrogate: Dibromofluoromethane	*26.3*		ug/L	*25.00*		*105*	*85-115*			
Surrogate: Toluene-d8	*26.3*		ug/L	*25.00*		*105*	*85-120*			

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008055

Notes and Definitions

U	Analyte included in the analysis, but not detected
SS	Second Source Standard was outside of criteria.
S-	Surrogate recovery(ies) below lower control limit (S-).
M+	Matrix Spike recovery is above upper control limit (M+).
J	Reported between MDL and MRL; Estimated value.
C+	Continuing Calibration recovery is above upper control limit (C+).
C-	Continuing Calibration recovery is below lower control limit (C-).
ND	Analyte NOT DETECTED above the detection limit (LOD for DoD Reports)
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
LOD	Limit of Detection
[CALC]	Calculated Analyte

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs ESS Laboratory Work Order: 1008055

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)
A2LA Accredited: Testing Cert# 2864.01
http://www.a2la.org/scopepdf/2864-01.pdf

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/labs/waterlabs-instate.php

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/out_state.pdf

Maine Potable and Non Potable Water: RI0002
http://www.maine.gov/dep/blwq/topic/vessel/lab_list.pdf

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/labcert/labcert.aspx

New Hampshire (NELAP accredited) Potable and Non PotableWater, Solid and Hazardous Waste: 2424
http://www4.egov.nh.gov/des/nhelap/namesearch.asp

New York (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

United States Department of Agriculture Soil Permit: S-54210

Maryland Potable Water: 301
http://www.mde.state.md.us/assets/document/WSP_labs-2009apr20.pdf

South Carolina Volatile Organic Compounds in Potable Water: 78003

New Jersey Potable (VOA) and Non Potable Water (RCRA), Solids and Hazardous Waste: RI002
http://www.nj.gov/dep/oqa/certlabs.htm

Pensylvania Potable and Non Potable Water, Solid and Hazardous Waste: 68-01752
http://files.dep.state.pa.us/RegionalResources/Labs/LabsPortalFiles/2009-0911_accredited_laboratories.pdf

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01
Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)
http://www.A2LA.org/dirsearchnew/newsearch.cfm

CPSC ID# 1141
Lead Paint, Lead in Children's Metals Jewelry
http://www.cpsc.gov/cgi-bin/labapplist.aspx

Sample and Cooler Receipt Checklist

Client: The Johnson Co
Client Project ID: _____
Shipped/Delivered Via: FedEx

ESS Project ID: 10080055
Date Project Due: 8/11/10
Days For Project: 5 Day

Items to be checked upon receipt:

1. Air Bill Manifest Present?	* No	10. Are the samples properly preserved?	Yes
Air No.: 873110074		11. Proper sample containers used?	Yes
2. Were Custody Seals Present?	No	12. Any air bubbles in the VOA vials?	No
3. Were Custody Seals Intact?	N/A	13. Holding times exceeded?	No
4. Is Radiation count < 100 CPM?	Yes	14. Sufficient sample volumes?	Yes
5. Is a cooler present?	Yes	15. Any Subcontracting needed?	No
Cooler Temp: **2.9**		16. Are ESS labels on correct containers?	**Yes** / No
Iced With: **Icepacks**		17. Were samples received intact?	**Yes** / No
6. Was COC included with samples?	Yes	ESS Sample IDs: _____	
7. Was COC signed and dated by client?	Yes	Sub Lab: _____	
8. Does the COC match the sample	Yes	Analysis: _____	
9. Is COC complete and correct?	Yes	TAT: _____	

18. Was there need to call project manager to discuss status? If yes, please explain.

VOA SAMPLES TAKEN IN LL VIALS

Who was called?: _____ By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	40 ml - VOA	2	HCL UP

Completed By: MAS Date/Time: 8/4/10
MAS 8/4/10
Reviewed By: _____ Date/Time: _____

Sample and Cooler Receipt Checklist

Client: The Johnson Co
Client Project ID: _____
Shipped/Delivered Via: FedEx

ESS Project ID: 10080056
Date Project Due: 8/11/10
Days For Project: 5 Day

Items to be checked upon receipt:

1. Air Bill Manifest Present?	* No	10. Are the samples properly preserved?	Yes
Air No.: 873110074		11. Proper sample containers used?	Yes
2. Were Custody Seals Present?	No	12. Any air bubbles in the VOA vials?	N/A
3. Were Custody Seals Intact?	N/A	13. Holding times exceeded?	No
4. Is Radiation count < 100 CPM?	Yes	14. Sufficient sample volumes?	Yes
5. Is a cooler present?	Yes	15. Any Subcontracting needed?	No
Cooler Temp: **2.9**		16. Are ESS labels on correct containers?	Yes No
Iced With: **Icepacks**		17. Were samples received intact?	Yes No
6. Was COC included with samples?	Yes	ESS Sample IDs: _____	
7. Was COC signed and dated by client?	Yes	Sub Lab: _____	
8. Does the COC match the sample	Yes	Analysis: _____	
9. Is COC complete and correct?	Yes	TAT: _____	

18. Was there need to call project manager to discuss status? If yes, please explain.

_____

_____

_____

Who was called?:_____ By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	4 oz Soil Jar	1	NP
1	Yes	40 ml - VOA	1	MeOH
1	Yes	40 ml - VOA	2	other
2	Yes	4 oz Soil Jar	1	NP
2	Yes	40 ml - VOA	1	MeOH
2	Yes	40 ml - VOA	2	other
3	Yes	4 oz Soil Jar	1	NP
3	Yes	40 ml - VOA	1	MeOH
3	Yes	40 ml - VOA	2	other
4	Yes	4 oz Soil Jar	1	NP
4	Yes	40 ml - VOA	1	MeOH
4	Yes	40 ml - VOA	2	other
5	Yes	4 oz Soil Jar	1	NP
5	Yes	40 ml - VOA	1	MeOH
5	Yes	40 ml - VOA	2	other
6	Yes	4 oz Soil Jar	1	NP
6	Yes	40 ml - VOA	1	MeOH
6	Yes	40 ml - VOA	2	other
7	Yes	4 oz Soil Jar	3	NP
7	Yes	40 ml - VOA	3	MeOH
7	Yes	40 ml - VOA	6	other
8	Yes	4 oz Soil Jar	1	NP
8	Yes	40 ml - VOA	1	MeOH
8	Yes	40 ml - VOA	2	other
9	Yes	4 oz Soil Jar	1	NP

Sample and Cooler Receipt Checklist

Client: The Johnson Co ESS Project ID: 10080056

9	Yes	40 ml - VOA	1	MeOH
9	Yes	40 ml - VOA	2	other
10	Yes	4 oz Soil Jar	1	NP
10	Yes	40 ml - VOA	1	MeOH
10	Yes	40 ml - VOA	2	other
11	Yes	4 oz Soil Jar	1	NP
11	Yes	40 ml - VOA	1	MeOH
11	Yes	40 ml - VOA	2	other
12	Yes	4 oz Soil Jar	1	NP
12	Yes	40 ml - VOA	1	MeOH
12	Yes	40 ml - VOA	2	other
13	Yes	4 oz Soil Jar	1	NP
13	Yes	40 ml - VOA	1	MeOH
13	Yes	40 ml - VOA	2	other
14	Yes	4 oz Soil Jar	1	NP
14	Yes	40 ml - VOA	1	MeOH
14	Yes	40 ml - VOA	2	other
15	Yes	4 oz Soil Jar	1	NP
15	Yes	40 ml - VOA	1	MeOH
15	Yes	40 ml - VOA	2	other
~~16~~	~~Yes~~	~~4 oz Soil Jar~~	~~1~~	~~NP~~ UAS 8/4/10
16	Yes	40 ml - VOA	1	MeOH
16	Yes	40 ml - VOA	1 2 UAS 8/4/10	other
~~17~~	~~Yes~~	~~4 oz Soil Jar~~	~~1~~	~~NP~~
~~17~~	~~Yes~~	~~40 ml - VOA~~	~~1~~	~~MeOH~~ UAS
~~17~~	~~Yes~~	~~40 ml - VOA~~	~~2~~	~~other~~ 8/4/10
~~18~~	~~Yes~~	~~40 ml - VOA~~	~~1~~	~~MeOH~~
~~18~~	~~Yes~~	~~40 ml - VOA~~	~~1~~	~~other~~

Completed By: UAS Date/Time: 8/4/10

Reviewed By: D Date/Time: 8/4/10

010080056-16
Preservative: *NP*
010000000374118

010080056-16
Preservative: *other*
010000000374081

010080056-17
Preservative: *MeOH*
010000000374100

010080056-17
Preservative: *NP*
010000000374119

010080056-17
Preservative: *other*
010000000374082

010080056-18
Preservative: *MeOH*
010000000374101

010080056-18
Preservative: *other*
010000000374102

010080056-17
Preservative: *other*
010000000374083

Sample and Cooler Receipt Checklist

Client: The Johnson Co
Client Project ID: _____
Shipped/Delivered Via: FedEx

ESS Project ID: 10080090
Date Project Due: 8/12/10
Days For Project: 5 Day

Items to be checked upon receipt:

1. Air Bill Manifest Present?	Yes	10. Are the samples properly preserved?	Yes
Air No.: 873110074		11. Proper sample containers used?	Yes
2. Were Custody Seals Present?	Yes	12. Any air bubbles in the VOA vials?	No
3. Were Custody Seals Intact?	Yes	13. Holding times exceeded?	No
4. Is Radiation count < 100 CPM?	Yes	14. Sufficient sample volumes?	Yes
5. Is a cooler present?	Yes	15. Any Subcontracting needed?	No
Cooler Temp: **3.7**		16. Are ESS labels on correct containers?	Yes No
Iced With: **Icepacks**		17. Were samples received intact?	Yes No
6. Was COC included with samples?	Yes	ESS Sample IDs: _____	
7. Was COC signed and dated by client?	Yes	Sub Lab: _____	
8. Does the COC match the sample	Yes	Analysis: _____	
9. Is COC complete and correct?	Yes	TAT: _____	

18. Was there need to call project manager to discuss status? If yes, please explain.

VOA VIALS RECEIVED NON-PRESERVED.

Who was called?: _____ By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	40 ml - VOA	2	NP

Completed By: _____ Date/Time: 8/17/10
Reviewed By: LAS Date/Time: 8/5/10

Sample and Cooler Receipt Checklist

Client: The Johnson Co
Client Project ID: _____
Shipped/Delivered Via: FedEx

ESS Project ID: 10080091
Date Project Due: 8/12/10
Days For Project: 5 Day

Items to be checked upon receipt:

1. Air Bill Manifest Present?	Yes	10. Are the samples properly preserved?	Yes
Air No.: 873110074518		11. Proper sample containers used?	Yes
2. Were Custody Seals Present?	Yes	12. Any air bubbles in the VOA vials?	N/A
3. Were Custody Seals Intact?	Yes	13. Holding times exceeded?	No
4. Is Radiation count < 100 CPM?	Yes	14. Sufficient sample volumes?	Yes
5. Is a cooler present?	Yes	15. Any Subcontracting needed?	No
Cooler Temp: **3.7**		16. Are ESS labels on correct containers?	**Yes** | No
Iced With: **Icepacks**		17. Were samples received intact?	**Yes** | No
6. Was COC included with samples?	Yes	ESS Sample IDs: _____	
7. Was COC signed and dated by client?	Yes	Sub Lab: _____	
8. Does the COC match the sample	Yes	Analysis: _____	
9. Is COC complete and correct?	Yes	TAT: _____	

18. Was there need to call project manager to discuss status? If yes, please explain.

LL VIAL FROZEN 8/5/10 1730 UAD

Who was called?: _____ By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	4 oz Soil Jar	1	NP
1	Yes	40 ml - VOA	1	MeOH
1	Yes	40 ml - VOA	2	other
2	Yes	4 oz Soil Jar	1	NP
2	Yes	40 ml - VOA	1	MeOH
2	Yes	40 ml - VOA	2	other
3	Yes	4 oz Soil Jar	1	NP
3	Yes	40 ml - VOA	1	MeOH
3	Yes	40 ml - VOA	2	other
4	Yes	4 oz Soil Jar	1	NP
4	Yes	40 ml - VOA	1	MeOH
4	Yes	40 ml - VOA	2	other
5	Yes	4 oz Soil Jar	1	NP
5	Yes	40 ml - VOA	1	MeOH
5	Yes	40 ml - VOA	2	other
6	Yes	4 oz Soil Jar	1	NP
6	Yes	40 ml - VOA	1	MeOH
6	Yes	40 ml - VOA	2	other
7	Yes	4 oz Soil Jar	1	NP
7	Yes	40 ml - VOA	1	MeOH
7	Yes	40 ml - VOA	2	other
8	Yes	40 ml - VOA	1	MeOH
8	Yes	40 ml - VOA	1	other

Sample and Cooler Receipt Checklist

Client: The Johnson Co

ESS Project ID: 10080091

Completed By: _____ Date/Time: 8/5/10

Reviewed By: _____ Date/Time: 8/5/10

ASSIGN SDG AS 1008055 - PRINT ALL REPORTS TOGETHER

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time: X Standard Other ____
If faster than 5 days, prior approval by laboratory is required # ____
State where samples were collected from: MA RI CT NH NJ NY (ME) Other ____
Is this project for any of the following: MA-MCP Navy (USACE) Other ____

Reporting Limits

ESS LAB PROJECT ID: 1008055

Electronic Deliverable: Yes X No ____
Format: Excel X Access X PDF X Other ____

Co. Name	Project #	Project Name (20 Char. or less)
The Johnson Company	1-2128-9	Glenburn-GAT

Contact Person	Address
Don Maynard	100 State Street

City	State	Zip	PO#
Montpelier	VT	05602	

Telephone #	Fax #	Email Address
802-229-4600		Dmm@jcomail.com

Circle and/or Write Required Analysis

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	8260 VOA 624 524.2	8021 MTBE/BTEX 8015 GRO VPH w/targets	8100 TPH 8015 DRO	EPH w/o PAHs EPH w/PAHs EPH 4 Diesel	8081 Pesticides 8082 PCB 608 Pesticides 608 PCB	8270 SVOA 625 PAH 8270	RCRA5 RCRA8 PP13 TAL23	TCLP-RCRA8 NBC7	MCP-METALS (13) MCP-METALS (13) w/Hg	5035/8260B Low Level VOC				
—	8/3/10	1000	X	X	S	OB29-4-S	6/H2O	4	V/6										X				
—	↓	1030		X	S	OB30-4-S	↓	↓	↓										X				
—		1250		X	S	OB32-4-S													X				
—		1300		X	S	OB33-2-S													X				
—		1350		X	S	OB34-4-S													X				
—		1500		X	S	OB35-4-S													X				
—		1525		X	S	OB36-4-S	↓	↓	↓										X				
01	↓	1610		X	DI	OB36-X-EB	H2O	2	V										X				
—	8/8/10	—		—	—	080310-TB	6/H2O	2	V										X				

Container Type: P-Poly G-Glass S-Sterile V-VOA | Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present ___ Yes ___ No
Seals Intact ___ Yes ___ No NA: ___
Cooler Temp: 2.9°C

Internal Use Only
[ ] Pickup
[ ] Technicians ____

Preservation Code 1- NP, 2- HC1, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ____

Sampled by: Adam Robtoy (Cadd) / [signature]

Comments: Questions Call Adam Robtoy 802-522-0905

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	8/3/10 16:30	[signature]	8/4/10 1230				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

*By circling MA-MCP, client acknowledges samples were collected

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

ASSIGN SDG AS 1008055 - PRINT ALL REPORTS TOGETHER

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Page 1 of 2

Turn Time: X Standard Other ____
If faster than 5 days, prior approval by laboratory is required # ____
State where samples were collected from: MA RI CT NH NJ NY (ME) Other ____
Is this project for any of the following: MA-MCP Navy (USACE) Other ____

Reporting Limits

ESS LAB PROJECT ID: 1008056

Electronic Deliverable: Yes X No ____
Format: Excel X Access X PDF X Other ____

Co. Name	Project #	Project Name (20 Char. or less)
The Johnson Company	1-2128-9	Glenburn - GAT

Contact Person	Address
Don Maynard.	100 State Street, Suite 600

City	State	Zip	PO#
Montpelier	VT	05602	

Telephone #	Fax #	Email Address
802-229-4600		DMM@JCOmail.com

Circle and/or Write Required Analysis

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	8260 VOA	624	524.2	8021 MTBE/BTEX	8015 GRO	VPH w/targets	8100 TPH	8015 DRO	EPH w/o PAHs	EPH w/PAHs	EPH 4 Diesel	8081 Pesticides	8082 PCB	608 Pesticides	608 PCB	8270 SVOA	625	PAH 8270	RCRA5	RCRA8	PP13	TAL23	TCLP-RCRA8	NBC7	MCP-METALS (13)	MCP-METALS (13) w/Hg	5055/8260B LOW LEVEL VPC				
01	8/3/10	0735		X	S	OB22-4-S	6/H2O	4	V/G																											X				
02		0755				OB23-~~4~~ 3-S Ave 8-3-10																														X				
03		815				OB24-2-S																														X				
04		820				OB24-2-D																														X				
05		840				OB25-2-S																														X				
06		900				OB26-4-S																														X				
07		930				OB27-4-S																														X				
~~08~~		930				OB27-4-MS																														X				
~~09~~	LAB 8/4/10	930				OB27-4-MSD																														X				
08 ~~10~~		950				OB28-4-S																														X				

Container Type: P-Poly G-Glass S-Sterile V-VOA | Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present ___ Yes ___ No
Seals Intact ___ Yes ___ No NA: ___
Cooler Temp: 2.9°C

Internal Use Only
[ ] Pickup
[ ] Technicians ____

Preservation Code 1- NP, 2- HC1, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ____

Sampled by: Adam Rostoy (Clerk) / Shawn Donovan

Comments: QUESTIONS CALL ADAM ROSTOY (802) 522-0905

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	8/3/10 1630	[signature]	8/4/10 1230				

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

Report as one SDG

10/26/04 B

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Page 2 of 2

Turn Time: X Standard Other ____
If faster than 5 days, prior approval by laboratory is required # ____

State where samples were collected from: MA RI CT NH NJ NY (ME) Other ____

Is this project for any of the following: MA-MCP Navy (USACE) Other ____

Reporting Limits

ESS LAB PROJECT ID: 1008056

Electronic Deliverable: Yes X No ____

Format: Excel X Access X PDF X Other ____

Co. Name	Project #	Project Name (20 Char. or less)
The Johnson Company	1-2128-9	Glenburn-GAT

Contact Person	Address
Don Maynard	100 State Street

City	State	Zip	PO#
Montpelier	VT	05602	

Telephone #	Fax #	Email Address
802-229-4600		Dnm@jcoxmail.com

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	8260 VOA / 524.2 / 624	8021 MTBE/BTEX / VPH w/targets / 8015 GRO	8100 TPH / 8015 DRO	EPH w/o PAHs / EPH w/PAHs / EPH 4 Diesel	8081 Pesticides / 8082 PCB / 608 Pesticides / 608 PCB	8270 SVOA / 625 / PAH 8270	RCRA5 / RCRA8 / PP13 / TAL23	TCLP-RCRA8 / NBC7	MCP-METALS (13) / MCP-METALS (13) w/Hg	5035/8260B Low / 5035 Low
09 H	8/3/10	1000	X	X	S	OB29-4-S	6/H_2O	4	V/G										X
10 I2		1030		X	S	OB30-4-S													X
11 I3		1250		X	S	OB32-4-S													X
12 I4		1300		X	S	OB33-2-S													X
13 I5		1350		X	S	OB34-4-S													X
14 I6		1500		X	S	OB35-4-S													X
15 I7		1525		X	S	OB36-4-S													X
—		1610		X	EB	OB36-x-EB	H_2O	2	V										X
16 I8	8/8/10	—		—	—	080310-TB	6/H_2O	2	V										X

Container Type: P-Poly G-Glass S-Sterile V-VOA | Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present ___ Yes ___ No Internal Use Only

Seals Intact ___ Yes ___ No NA: ___ [ ] Pickup

Cooler Temp: 2.9°C [ ] Technicians ____

Preservation Code 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ____

Sampled by: Adam Robtoy (Adam Robtoy)

Comments: Questions Call Adam Robtoy 802-522-0905

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
	8/5/10 16:30		8/4/10 1230				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

Report as per SOG 01

10/26/04 B

ESS Laboratory

ADDION 2nd 1008055

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Page 1 of 1

Turn Time: X Standard Other ____
If faster than 5 days, prior approval by laboratory is required # ____

State where samples were collected from: MA RI CT NH NJ NY (ME) Other ____

Is this project for any of the following: MA-MCP Navy (USACE) Other ____

Reporting Limits

ESS LAB PROJECT ID: 1008090

Electronic Deliverable: Yes X No ____

Format: Excel X Access X PDF X Other ____

Co. Name	Project #	Project Name (20 Char. or less)
The Johnson Company	1-2128-9	Glenburn - GAT

Contact Person	Address
Don Maynard	100 State Street, Suite 600

City	State	Zip	PO#
Montpelier	VT	05602	

Telephone #	Fax #	Email Address
802-229-4600		Dmm@jcomail.com

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	8260 624 524.2 VOA	8021 8015 VPH MTBE/BTEX GRO w/targets	8100 8015 TPH DRO	EPH w/o PAHs EPH w/PAHs 4 Diesel	8081 Pesticides 8082 PCB 608 Pesticides 608 PCB	8270 625 PAH SVOA 8270	RCRA5 RCRA8 PP13 TAL23	TCLP-RCRA8 NBC7	MCP-METALS (13) MCP-METALS (13) w/Hg	5035/8260B Low/voc	
—	8/4/10	730		X	S	OB37-4-S	G/G	4	V/G										X	
—		735		X	S	OB37-4-D													X	
—		750		X	S	OB38-3-S													X	
—		810		X	S	OB39-3-S													X	
—		820		X	S	OB40-3-S													X	
—		930		X	S	OB41-3-S													X	
—		1000		X	S	OB31-3-S													X	
-01	↓	1015		X	DI	OB31-x-EB	↓	2	↓										X	
—	8/4/10	—	—	—	DI	080410-TB	G/G	2	V										X	

Container Type: P-Poly G-Glass S-Sterile V-VOA | Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present ___ Yes ___ No | Internal Use Only

Seals Intact ___ Yes ___ No NA: ___ [ ] Pickup

Cooler Temp: 3.7 [ ] Technicians ___

Preservation Code 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ICE/H_2O

Sampled by: Adam Robley (clay)

Comments: Questions Call Adam Robley - 802-522-0965

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	8/4/10 1130	[signature]	8/5/10 1630				

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 B

ESS Laboratory

ASSIGN SDG# 100805

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Page 1 of 1

Turn Time: X Standard Other ____
If faster than 5 days, prior approval by laboratory is required # ____

State where samples were collected from: MA RI CT NH NJ NY (ME) Other ____

Is this project for any of the following: MA-MCP Navy (USACE) Other ____

Reporting Limits

ESS LAB PROJECT ID: 100809

Electronic Deliverable: Yes X No ____

Format: Excel X Access X PDF X Other ____

Co. Name	Project #	Project Name (20 Char. or less)
The Johnson Company	1-2128-9	Glenburn - GAT

Contact Person	Address
Don Maynard	100 State Street, Suite 600

City	State	Zip	PO#
Montpelier	VT	05602	

Telephone #	Fax #	Email Address
802-229-4600		Dmm@jcomail.com

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	8260 VOA / 624 / 524.2	8021 MTBE/BTEX / 8015 GRO / VPH w/targets	8100 TPH / 8015 DRO	EPH w/o PAHs / EPH w/PAHs / EPH 4 Diesel	8081 Pesticides / 8082 PCB / 608 Pesticides / 608 PCB	8270 SVOA / 625 / PAH 8270	RCRA5 / RCRA8 / PP13 / TAL23	TCLP-RCRA8 / NBC7	MCP-METALS (13) / MCP-METALS (13) w/Hg	5035/8260B Low Level VOC
1	8/4/10	730		X	S	OB37-4-S	G/9	4	V/G										X
2		735		X	S	OB37-4-D													X
3		750		X	S	OB38-3-S													X
4		810		X	S	OB39-3-S													X
5		820		X	S	OB40-3-S													X
6		930		X	S	OB41-3-S													X
7		1000		X	S	OB31-3-S													X
—		1015		X	DI	OB31-x-EB		2											X
8	8/4/10	—	—	—	DI	080410-TB	G/9	2	V										X

Container Type: P-Poly G-Glass S-Sterile V-VOA

Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present ___ Yes ___ No

Seals Intact ___ Yes ___ No NA: ___

Cooler Temp: 3.7

Internal Use Only
[ ] Pickup
[ ] Technicians ____

Preservation Code 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ICE/H_2O

Sampled by: Adam Robtoy (Clay)

Comments: Questions Call Adam Robtoy - 802-522-0905

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	8/4/10 1130	[signature]	8/5/10 1630				

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 B

CERTIFICATE OF ANALYSIS

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs ESS Laboratory Work Order: 1008055

Items for Project Management Review

5035/8260B Volatile Organic Compounds / Low Level

	(Solid)	Result calculations based on MDL
	(Solid)	Result calculations based on MDL
1008056-12	4-Bromofluorobenzene	Exceeds lower control limit
	4-Bromofluorobenzene	S-: Surrogate recovery(ies) below lower control limit (S-)
CH00918-MS1	Acetone	Exceeds upper control limit
	Acetone	Exceeds upper control limit
CTH0014-CAL7	1,1,1,2-Tetrachloroethane	Possible data entry error
	1,1,2-Trichloroethane	Possible data entry error
	1,1-Dichloropropene	Possible data entry error
	1,2,3-Trichlorobenzene	Possible data entry error
	1,2,3-Trichloropropane	Possible data entry error
	1,2,4-Trichlorobenzene	Possible data entry error
	1,2-Dibromo-3-Chloropropane	Possible data entry error
	1,2-Dibromoethane	Possible data entry error
	1,2-Dichloropropane	Possible data entry error
	1,3-Dichloropropane	Possible data entry error
	4-Methyl-2-Pentanone	Possible data entry error
	Benzene	Possible data entry error
	Bromoform	Possible data entry error
	Bromomethane	Possible data entry error
	Carbon Disulfide	Possible data entry error
	Carbon Tetrachloride	Possible data entry error
	Chloroethane	Possible data entry error
	cis-1,3-Dichloropropene	Possible data entry error
	Dibromochloromethane	Possible data entry error
	Hexachlorobutadiene	Possible data entry error
	Naphthalene	Possible data entry error
	Styrene	Possible data entry error
	Tetrachloroethene	Possible data entry error
	trans-1,3-Dichloropropene	Possible data entry error
	Vinyl Chloride	Possible data entry error
CTH0014-SCV1	Dichlorodifluoromethane	Exceeds lower control limit
CTH0059-CCV1	Trichlorofluoromethane	C-: Continuing Calibration recovery is below lower contr limit (C-).
	Trichlorofluoromethane	Exceeds lower control limit
	Acetone	Exceeds upper control limit
	Dichlorodifluoromethane	SS: Second Source Standard was outside of criteria.

8260B Volatile Organic Compounds

	(Aqueous)	Result calculations based on MDL
CTG0064-CAL7	1,1,1,2-Tetrachloroethane	Possible data entry error
	1,1,1-Trichloroethane	Possible data entry error
	1,1,2-Trichloroethane	Possible data entry error
	1,2,3-Trichlorobenzene	Possible data entry error
	1,2,4-Trichlorobenzene	Possible data entry error

CERTIFICATE OF ANALYSIS

LAS 8/19/10

Client Name: The Johnson Company
Client Project ID: USACE Glenburn Gat Rifs

ESS Laboratory Work Order: 1008055

Items for Project Management Review

CTG0064-CAL7	1,2-Dibromoethane	Possible data entry error
	1,2-Dichlorobenzene	Possible data entry error
	1,2-Dichloroethane	Possible data entry error
	1,3-Dichlorobenzene	Possible data entry error
	1,3-Dichloropropane	Possible data entry error
	Benzene	Possible data entry error
	Bromobenzene	Possible data entry error
	Bromochloromethane	Possible data entry error
	Bromodichloromethane	Possible data entry error
	Bromoform	Possible data entry error
	Bromomethane	Possible data entry error
	Carbon Disulfide	Possible data entry error
	Carbon Tetrachloride	Possible data entry error
	Chlorobenzene	Possible data entry error
	Chloroform	Possible data entry error
	cis-1,2-Dichloroethene	Possible data entry error
	cis-1,3-Dichloropropene	Possible data entry error
	Dibromochloromethane	Possible data entry error
	Dibromomethane	Possible data entry error
	Ethylbenzene	Possible data entry error
	Styrene	Possible data entry error
	Tetrachloroethene	Possible data entry error
	Toluene	Possible data entry error
	trans-1,2-Dichloroethene	Possible data entry error
	trans-1,3-Dichloropropene	Possible data entry error
	Trichloroethene	Possible data entry error
	Trichlorofluoromethane	Possible data entry error
	Xylene O	Possible data entry error
	Xylene P,M	Possible data entry error

Classical Chemistry
Dioxins

APPENDIX 10

ENHANCED AEROBIC COMETABOLIC BIODEGRADATION EVALUATION

Task

MEDEP asked JCO to prepare a 1-2 page evaluation of the feasibility of aerobically degrading the 60 micrograms per liter (µg/L) TCE present in fractured bedrock at the Glenburn site. Site groundwater has high dissolved oxygen (DO) concentrations and a public water supply is directly hydraulically connected to the preferential bedding/mini-karst flow pathway, precluding injection of anything toxic (including nitrates) or that would cause the iron-rich bedrock aquifer environment to precipitate solids in the water supply system.

Key site conditions for selection of remediation technology:

- <100 µg/L TCE in groundwater at up to 100 foot depth in fractured bedrock
- high DO (9-11 mg/L @ 8-11°C) in the core of contamination
- high Cl- (up to 2000 mg/L) in nearby wells and 600-800 mg/L in the core of contamination
- positive ORP (400-500 mV SHE corrected) in the core of contamination
- neutral pH (6.8-7.2)
- low groundwater temperatures (8-10°C)
- public water supply is directly hydraulically connected to the preferential fractured bedrock flow pathway
- iron-rich bedrock aquifer environment could precipitate solids in water supply system
- fracture permeability 100 to 800 ft/day in the core of contamination

Aerobic Cometabolic Biodegradation of TCE

Biodegradation of chloroethenes, such as TCE, can proceed either anaerobically or aerobically under favorable conditions. Although the current focus of chloroethene remediation is largely on anaerobic biodegradation (ESTCP, 2005; ITRC, 2008), aerobic cometabolic degradation of TCE has been demonstrated in both laboratory and field studies (Munakata-Marr, 1997; Hopkins and McCarty, 1995; McCarty et al., 1998; Pooley et al., 2009). Conditions favorable to aerobic cometabolic biodegradation are typically more challenging to achieve in the field than those favoring anaerobic degradation; however, the key site conditions listed above suggest that evaluation of aerobic biodegradation of TCE at this site may be more applicable than anaerobic degradation. An overview of aerobic cometabolic biodegradation is presented below, followed by a discussion of site-specific data needs and potential challenges.

Cometabolism is the process by which one compound (the contaminant TCE) is fortuitously transformed (in this case, dechlorinated) by an enzyme produced by a microorganism for

metabolism of another compound (ESTCP, 2005). Cometabolic transformation is typically of no benefit to the microorganism involved (Hazen, 2010). Thus, cometabolic bioremediation has the potential to degrade contaminants at low to trace concentrations because the biodegrading microorganism is not dependent on that contaminant for carbon or energy (Hazen, 2010). However, because transformation of the contaminant does not yield a growth or energy benefit for the microorganisms, a growth substrate (or cometabolic inducer) must be added at least periodically to the system to sustain microbial activity (NRC, 2005).

A chlorinated ethene such as TCE can be degraded aerobically directly to carbon dioxide and chloride salts without the production of degradation intermediates such as vinyl chloride (Hazen, 2010), if supporting conditions exist. Cometabolic degradation rates for chloroethenes can in some instances be very fast (i.e., half-lives of hours) (ESTCP, 2005). Microorganisms with demonstrated capability for cometabolic dechlorination of TCE include methanotrophs and oxidizers of toluene, propane, ammonia, phenol, and ethane (ESTCP, 2005).

Growth substrates with demonstrated effectiveness in stimulating cometabolic degradation of chlorinated ethenes include methane, propane, toluene, phenol, and butane (NRC, 2005). The addition of chemicals such as toluene or phenol requires careful control of oxygen (added in the form of compressed oxygen, air, or hydrogen peroxide) and substrate delivery to ensure complete destruction of these substrates within the treatment zone. In response to regulatory problems posed by application of toluene and phenol as substrates, alternative compounds for the induction of toluene/TCE-degrading enzymes have been researched and tested. These include non-toxic plant essential oils (Suttinun et al., 2009). Suttinun et. al. tested several plant essential oils and their components were examined as alternative inducer for TCE cometabolic degradation in a toluene-degrading bacterium, Rhodococcus sp. L4. However, lemon oil, lemongrass oil, and cumin oil-grown cells were only capable of 20-36% TCE degradation, lower than the 57% of toluene-grown cells. Another substrate is the proprietary blend Cl-Out (Saul, 2000). Cl-out is a commercially-available proprietary blend of microbes that has been demonstrated in field applications to cometabolize chlorinated solvents, including TCE, under aerobic conditions. It is generally injected along with dextrose (sugar). Cl-solutions, the

manufacturer, recommends 50 pounds per unit of CL-Out (1 drum of CL-Out per 20,000 gallons of ground water) (Cl-Solutions, 2010).

Achieving effective mixing and transport of substrate and oxygen to promote microbial growth in the zone of contamination and completely degrade both the contaminant and substrate is a key challenge to successful implementation of cometabolic degradation. Thus, successful implementation of this technology generally requires more hydrogeologic control than bioremediation of an energy-yielding substrate (i.e., anaerobic bioremediation of chlorinated ethenes) (NRC, 2005). Additional challenges to implementing and sustaining cometabolic aerobic degradation in the field include competition between cosubstrate and contaminant for the target enzyme and potential toxicity of the cosubstrate (e.g., toluene, phenol) (NRC, 2005). Performance monitoring can also be a challenge if background chloride concentrations are high because aerobic cometabolic degradation of TCE does not produce readily-identifiable degradation intermediates like the dichloroethene (DCE) or vinyl chloride. While disappearance of TCE may suggest aerobic degradation, lack of measurable intermediates and high background concentrations of the biodegradation end product, in this case chloride, make distinguishing biodegradation from physical processes (such as dilution, sorption, or volatilization) difficult. High background concentrations of the biodegradation end product chloride, like those present at this site, can also inhibit degradation of the parent compound TCE (Lee and Liu, 2006). Inhibition occurs because high concentrations of chloride ions interfere with the naturally-occurring bacteria's ability to cometabolize TCE and/or because the degradation reaction requires significantly more energy to proceed when high concentrations of end product (chloride ion) present in the groundwater must be overcome.

Case Studies

Although there are many publications on applications of aerobic cometabolic bioremediation of fuel contaminated sites and a few on chlorinated solvents, the majority are classified as follows:

1. Most are from the early to mid 90s;
2. Cometabolic enhanced biodegradation is considered most applicable when "invented" for vadose zone projects including soil vapor extraction (SVE) involving primarily fuel spill cleanups;

3. Virtually all are pilot scale sized (not full scale) with very few chlorinated solvent sites and even fewer sites with fractured bedrock or low organic carbon till/silt fine soils;
4. Cometabolic remediation projects have typically employed injection of substantial quantities of nitrogen (typically nitrous oxide), phosphorous (typically tri-ethyl phosphate) in addition to the growth carbon (methane or propane or butane, etc.) required for (typically methanotrophic) cell multiplication. If toluene or phenol are used to sustain growth then oxygenation control (oxygen injection) is also required to ensure their destruction and not add to the contaminant loading;
5. Anaerobic dechlorination developed in the 90's and has been generally selected as the superior technology, even where the aquifer was initially aerobic;
6. End point targets such as the maximum contaminant level (MCL) for cometabolism of TCE have not been demonstrated to this reviewer's knowledge.

Edwards Air Force Base

Full-scale implementation of aerobic cometabolic degradation of TCE has been demonstrated in sandy alluvial aquifers. A full-scale application at Edwards Air Force Base in California involved delivery of toluene substrate and oxygen using groundwater circulation wells (McCarty et al., 1998). Groundwater containing 500-1200 µg/L TCE was treated *in situ* over a 410 day period by cometabolic biodegradation through injection of dissolved oxygen and 7-13.4 milligrams per liter (mg/L) of toluene in groundwater circulated between two treatment wells in the alluvial aquifers. The treatment reduced TCE concentrations to an average of 18-24 µg/L in groundwater exiting the treatment zone. Toluene was also reduced by 99.98 percent through biodegradation (to an average of 1.1 µg/L in groundwater at the boundary of the treatment zone). Prior laboratory studies had identified both toluene and phenol as acceptable substrates for cometabolic TCE degradation; one reason that toluene was selected as the primary substrate for the field trial was that it could be air stripped from groundwater if *in situ* degradation proved inadequate. At the start of the field test, pure oxygen was added for 4 days to provide an aerobic environment for toluene injection. After toluene-degrading conditions had been established, pulsed injection of neat toluene and dissolved oxygen were used to sustain organism growth. The authors noted that the addition of sufficient oxygen and the presence of sufficient nitrogen, phosphorus, and other nutrients for biological growth are required to obtain biodegradation of toluene substrate to below levels of regulatory concern. Possible problems identified for field applications of cometabolic TCE degradation included: clogging due to excessive biological growth near the treatment well; costs for well redevelopment/rehabilitation when clogging occurs; and potential inhibitory effects of some oxygen sources, such as hydrogen peroxide.

Moffett Federal Airfield

A full-scale application at Moffett Federal Airfield in California utilized toluene and phenol as substrates (Hopkins and McCarty, 1995) for aerobic cometabolic degradation of chlorinated ethenes. The removal efficiency for 250 µg/L TCE in the 4 m alluvial aquifer test zone, representing a groundwater travel time of less than two days, was greater than 90 percent. TCE removal efficiencies were similar for toluene and phenol substrates, but significantly lower for methane as a primary substrate. Both hydrogen peroxide and pure oxygen were successfully used as oxygen sources. The study authors noted that removal efficiencies for TCE at concentrations higher than 1000 µg/L are likely to be low because oxygen solubility in groundwater becomes a limiting factor for substrate transformation, and therefore cometabolic degradation of the contaminant.

Savannah River

In the mid 1990s Hazen et. al. performed tests of cometabolic degradation by injecting methane, nitrogen and phosphorous in gaseous phase at the Savannah River Department of Defense Site in Georgia. The treatment was supplemented with soil vapor extraction, so the effectiveness of the cometabolic degradation could not be verified, although increases in chloride content in the groundwater was cited as supporting evidence of bio-degradation (ECOVA, 1993).

Claystone Aquifer

Pooley et al. (2009) recently used compound-specific isotope analysis (CSIA) and reactive transport modeling to demonstrate natural aerobic biodegradation of TCE in a claystone aquifer containing thin layers of lime-rich mudstone with a dense network of fine, connected fissures. Aerobic degradation at the site was attributed to aerobic direct mineralization rather than cometabolic biodegradation, so no injection of substrate or oxygen source to enhance degradation was required.

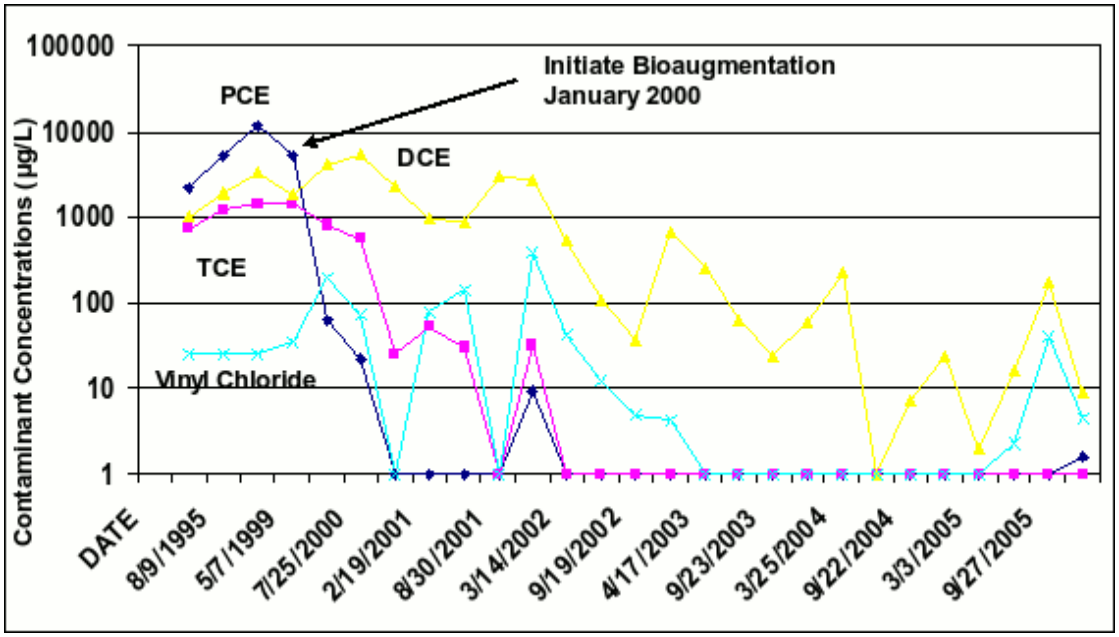
Tennessee Printing Facility

Cl-Out was used to remediate a printing facility contaminated with tetrachloroethene (PCE) in Tennessee (Cl-Solutions, 2010). Ground water was found to be contaminated by PCE up to 11.6

mg/l. The bedrock underlying the site is the Knox Dolomite which is a thick-bedded siliceous dolomite. The Knox Dolomite is susceptible to karst development with associated features such as sinkholes, solution channels, and caves. The geology included several zones of clay-filled solution channels, voids without water, and fracture zones. These zones were grouped into an upper dry fracture and a void layer as well as a lower water-bearing fracture and void layer with relatively competent bedrock in between and below. The bedrock became more competent with the depth and the frequency of solution channels or solution enlarged fractures diminished with depth. The ground water depth was approximately 110 feet below the ground surface in the lower void and fracture system. While the individual fractures and voids were discontinuous, the hydraulic zone appeared to be continuous. The hydrology was characterized by underground drainage through bedrock fractures and joints widened by solution.

The ground water was treated with CL-Out in the source area, and the ground water conditions were monitored downgradient. From January 2000 to 2003, CL-Out was injected on a monthly injection basis. From 2003 to 2004, CL-Out was added on a quarterly basis. The bioaugmentation treatment consisted of 110 gallons of the CL-Out and dextrose slurry into one monitoring well. While the evidence showed that natural breakdown was occurring, the bioaugmentation added a consortium of organisms known to degrade the contaminants without significant production of vinyl chloride.

Quarterly sampling was implemented during remediation. The first sampling event, which was taken one quarter after the first treatment, showed the PCE level in one monitoring well decreased from 11,000 µg/L to 64 µg/L. The concentration of TCE decreased from 1,450 to 800 µg/L. However, the cis-1,2 DCE and the vinyl chloride concentrations increased from 1,800 to 4,200 µg/L and from 35 to 200 µg/L, respectively. A graph is provided below.



The Federal MCLs were attained sporadically in 2003, but were not maintained for successive quarterly sampling (possibly due to rebound from contaminants diffused in the matrix). Data presented here-in and in the graph relates to the water quality in a single well (presumably near the injection well, or the injection well itself). Data on other wells in the plume is not available. Therefore, this case study does not provide convincing evidence of the success of the method for full remediation of the aquifer.

ITT Industries Night Vision

Boram (2002) describes a pilot test for remediation of chlorinated and non-chlorinated solvents in fractured shale and limestone bedrock. Gas injection of trimethyl phosphate, nitrous oxide, air and methane was performed in 1998 and 1999 into the naturally reducing, anaerobic aquifer. Cis-1,2-DCE and vinyl chloride concentrations were reduced substantially, however, clean-up was less than expected in the deeper portions of the aquifer. No information is available on the implementation of a full remedial system.

Request for Information from Experts

Ian Osgerby, PhD, PE, remediation expert for USACE NAE, and member of ITRC, requested information from various professionals regarding the potential for enhanced aerobic

biodegradation at the Glenburn Site. The permission of the respondents to publish their opinions was attained, with the understanding that the following opinions are informal, and not based upon a comprehensive study of the study conditions. Selected responses are included in Attachment 1.

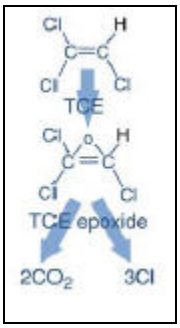
Preliminary Feasibility Evaluation

Factors that will influence the feasibility of implementing aerobic cometabolic biodegradation for remediation of TCE at the Glenburn site include:

- the concentration and distribution of contaminant (e.g., TCE diffused into the matrix);
- ability to deliver remediation agents at appropriate concentrations to the affected portions of the fractured bedrock aquifer;
- regulatory support for the type, concentration, and method of addition of cometabolic inducer
- geochemical characteristics of the groundwater in the contaminant zone and the indigenous microbial population currently supported; and
- the remedial objective (i.e., mass removal or meeting an MCL).

The following geochemical conditions must be achieved: positive oxidation-reduction potential and sufficiently high DO concentration to sustain a native aerobic microorganism population that can be further stimulated; sufficient nitrogen, phosphorus, and other nutrients for biological growth; relatively neutral pH; and low concentrations of competing substrates, enzyme growth inhibitors, and reaction inhibitors (see attached table). Achieving effective mixing and transport of substrate and oxygen to promote microbial growth in the zone of contamination so as to completely degrade both the contaminant and substrate is a key challenge to successful implementation of cometabolic biodegradation.

As noted above, high chloride concentrations in the reaction zone at the Glenburn Site is likely to be a significant reaction inhibitor. Saline conditions can severely limit or prevent TCE biodegradation due to (1) high concentrations of chloride ion interfering with the naturally-occurring bacteria's ability to cometabolize TCE, and (2) high chloride concentrations kinetically inhibiting the TCE degradation reaction, which proceeds from TCE through TCE epoxide to chloride and carbon dioxide as shown below (Hazen, 2010) driven by temperature (thermodynamics) and concentration gradients (reaction or process moves from higher to lower concentrations):



Typical soil and groundwater systems contain little or no chloride, so naturally-occurring bacteria can break down TCE by removing chloride ions. However, when a soil or groundwater system is supersaturated with chloride ions, such as underneath the former and current Salt Storage facilities, the reaction cannot proceed without a very large source of energy to overcome the high concentrations of chloride ions present in the groundwater, so TCE does not break down (Lee and Liu, 2006). Groundwater in the core of TCE contamination at the Glenburn Site contains 600-800 mg/L dissolved chloride. Biodegradation processes at this site likely also will be thermodynamically limited by the relatively cool 8-10°C groundwater temperatures, which mean TCE degradation will occur at very slow rates where conditions permit.

A literature search found very few references to aerobic biodegradation of TCE in fractured rock environments. A 2002 summary of chlorinated solvent bioremediation in fractured bedrock referenced one case study where enhanced aerobic cometabolic degradation was applied (Borum, 2002). Cl-out was added in saprolitic metamorphic bedrock as a polishing step to enhance aerobic degradation of PCE and daughter products following full-scale chemical oxidation. No data was provided on the effectiveness of the cometabolic enhancement for degrading PCE or TCE. Lehman et al. (2004) identified numerous microorganisms capable of aerobic TCE degradation in a fractured basalt aquifer impacted with TCE and sewage, but actual aerobic degradation activity was not evaluated. The authors did note significant differences between microbial populations between sample media (i.e., rock core, groundwater, crushed core incubated in a well) and high variation in microbiological properties within the fractured media. These data suggest that numerous samples of geologic media may be required to characterize microbial cometabolic degradation potential in a fractured aquifer.

Field evaluations of natural TCE biodegradation (i.e., under existing conditions without substrate or nutrient delivery) under aerobic conditions have been conducted in fractured rock (USGS, 2000; Lenczewski et al., 2003; Pooley at al., 2009). USGS (2000) evaluated biodegradation in a karst aquifer and Lenczewski et al. (2003) evaluated biodegradation in a fractured shale bedrock aquifer. In both cases, anaerobic degradation by indigenous microorganisms was the dominant TCE degradation process, and aerobic cometabolic biodegradation was identified as a likely mechanism in portions of the site where geochemical conditions likely limited reductive dechlorination. No field data demonstrating aerobic degradation was presented by either source, but USGS (2000) did report microcosm results in which TCE was readily degraded by aerobic bacteria in samples from the karst aquifer. Pooley et al. (2009) attributed observed aerobic degradation of TCE to direct mineralization rather than cometabolic biodegradation.

Successful biodegradation of TCE in fractured rock at the Glenburn Site will require a detailed understanding of the fracture hydrogeology so that oxygen, substrate, naturally-deficient nutrients, and potentially inoculant microbial culture can be delivered to the zone of TCE contamination without significant losses in order to enhance cometabolic degradation. Also, if the selected substrate may cause regulatory concern at delivery concentrations, sufficient oxygen and other naturally-deficient nutrients for biological growth must be delivered to and mixed within the reaction zone to consistently effect biodegradation of the substrate to below levels of regulatory concern.

Site-Specific Application

If the enhanced cometabolic biodegradation technology appeared feasible, as a pre-cursor to field testing, geochemical analysis of site groundwater and a bench-scale demonstration that either naturally-occurring bacteria or inoculant microbial cultures (such as Cl-out) can degrade TCE under the site-specific groundwater geochemical conditions would be recommended. This step would be followed by *in situ* evaluation of cometabolic inducers using Bio-Trap® samplers to (1) test potential substrates, (2) evaluate inorganic nutrient demand, and (3) demonstrate that either the naturally-occurring bacteria or an added microbial culture can be sufficiently stimulated *in situ* to degrade the low concentrations of TCE present in the core of contamination. Depending on the cometabolic substrate selected and the need to inject additional growth

nutrients (such as nitrate or phosphorous), a tracer test may also be required to assess whether added materials are sufficiently utilized/degraded in the relatively short travel time between the area of TCE contamination and the public water supply that they do not cause a regulatory concern in regard to the water supply.

Because the target matrix at this site is fractured rock, it is anticipated that substrate, necessary growth nutrients, and inoculant microbial culture, if used, could be delivered to subsurface using one or more delivery wells screened or packered to isolate the contaminated fracture(s). Based on the high fracture permeability (100 to 800 ft/day in the core of contamination), it is anticipated that gravity feed of liquids within the well screen would be sufficient to deliver these materials to the permeable fractures with the highest TCE concentrations in groundwater. However, delivery is virtually impossible to the rock matrix, where significant TCE is likely to be present due to 40+ years of diffusion.

For groundwater applications, Cl-out microbial culture is typically added at a ratio of 1 drum hydrated culture ($1700/drum) for 20,000 gallons of groundwater treated. A simple sugar (dextrose) substrate would be added to support Cl-out enzyme growth, and nutrients such as nitrogen and phosphorous may be added depending on the site-specific geochemical conditions. If an inoculant microbial culture is used, contaminant degradation efficiency decreases when TCE concentrations are less than approximately 100 µg/L because the probability that microbes will contact the contamination and cometabolic degradation will be stimulated decreases at low contaminant concentrations (M. Saul, personal communication). Reaching the MDL of 5 ppb for TCE is even more problematic.

Conclusions and Recommendations

Following are conclusions and recommendations regarding enhanced aerobic cometabolic biodegradation of TCE at the Glenburn Site:

1. High background concentrations of the biodegradation end product chloride at this site will likely inhibit degradation of the parent compound TCE (Lee and Liu, 2006). Saline conditions can limit or prevent TCE biodegradation due to (1) high concentrations of chloride ion interfering with the naturally-occurring bacteria's ability to cometabolize TCE, and (2) high chloride concentrations kinetically inhibiting the TCE degradation reaction. The high chloride background, although possibly not a major issue with

anaerobic degraders may be injurious under aerobic conditions. No results were available from an admittedly limited background search but high background conditions generally inhibit reactions generating the same species, and microbial reactions are generally subject to universal chemical laws.

2. The high chloride background would make monitoring for Cl production from the TCE impossible at the contaminant levels at the Glenburn Site.

3. The presence of the public water supply well GB-PW-03 approximately 500 feet from the TCE contamination core, combined with demonstrated hydraulic connection between that well and the TCE contamination core, will require: A) complete degradation of injected materials within 500 feet of the injection point; B) hydraulic containment of the injected materials; or C) injection of only non-toxic materials at concentrations below drinking water MCLs. Additionally, cometabolic biodegradation process are subject to inhibition of TCE degradation through both substrate competition and through the formation of TCE-epoxide, a toxic intermediate product (Hyman et al, 1995). Also of concern is the likely creation of a temporary reducing environment while building the methanotrophic microbial population, which is likely to create indigenous iron-rich bedrock dissolution conditions, risking contaminating the water supply with red staining dissolved iron.

4. Successful cometabolic biodegradation will likely require the injection of microbes, nitrogen, phosphorous and other nutrients in addition to a growth substrate. Proven growth substrates with demonstrated effectiveness in stimulating naturally-occurring bacteria to cometabolize chlorinated ethenes include methane, propane, toluene, phenol, and butane (NRC, 2005). These compounds are all (to one extent or another) considered contaminants if they are present in a water supply, and therefore injection of these substrates would carry a significant risk of adversely impacting the GB-PW-03 water supply

5. Possible problems identified for field applications of cometabolic TCE degradation include clogging due to excessive biological growth near the treatment well (similar to that experienced at the Edwards Air Force Base). Precipitation of iron, manganese or other naturally occurring metals due to the altered groundwater chemistry may also occur and cause plugging. The ongoing occurrence of recirculation well biofouling will be a limiting factor in the continuous operation and maintenance of a remedial system, with the potential for excessive biomass growth in the fractures resulting in decreases in fracture permeability and corresponding decrease in the effectiveness of the substrate delivery system (McCarty et al., 1998). These impacts will also need to be kept away from the public water supply well. Given the inherent uncertainties in predicting the formation of these clogging agents, as well as their transport and depletion, hydraulic containment of the treatment area would be the only responsible method to protect the GB-PW-03 water supply.

6. Conceptual sources of on-going contamination in groundwater at the Glenburn Site include residual DNAPL droplets in relatively low permeability fractures and TCE diffused into the rock matrix. Therefore, the delivery of the materials needed to enhance

aerobic degradation would require either 1) dispersion into the low permeability fractures and/or 2) diffusion into the rock matrix. Either of these processes requires the long-term maintenance of high concentrations of cometabolizing enzymes, substrate, and nutrients in the highly porous and permeable contaminant zone where one can expect rapid transport and mass flux of groundwater. Given the estimated 40 year historical presence of TCE in the aquifer, diffusion in particular (which is concentration and time driven) will likely take decades for full remediation (i.e., to the MCL). This matrix diffusion process represents a long-term source of TCE impacts to groundwater in fractured bedrock (West and Kueper, 2010). If full remediation of these residual source areas is not achieved, rebound (post-treatment increases in TCE) is likely to occur.

7. The estimated cost for only four years of treatment would be in excess of $300,000 in addition to the currently estimated $870,000 for hydraulic containment (from FS Table 9-1). However, it is over-optimistic to suggest four years of active treatment would be sufficient to cause TCE levels to reach drinking water standard MCL concentrations. The likely presence of TCE diffused into the rock matrix suggests instead that decades of treatment would be required, increasing remedial costs by millions of dollars. A full cost analysis is not warranted, however order-of-magnitude minimum costs for treatment presented above are based upon the following:
    - $110,000 for installation of injection well and system one time cost (*rough estimate from FS Appendix 7 cost of hydraulic containment system installation*)
    - $50,000 annual costs for supplies and operation (*Cl-out microbial culture and nutrients (e.g., 18-46-0 type ammonium phosphate fertilizer) at $2,000 each (say six times per year) plus, six operation and monitoring events estimated at $38,000/yr*).

Conceptually, cometabolism is an attractive approach for the Glenburn Site since it requires existing aerobic conditions, it results in rapid degradation rates, and it does not produce vinyl chloride as a degradation product (unlike anaerobic biodegradation processes). However, the technology has not received widespread application in the US, with reports of only limited field applications at CERCLA sites in the period 2005-2008 (USEPA, Superfund Remedy Report, 13th Ed, September 2010). This absence of wide-spread application of co-metabolic bioremediation results from the significant challenges to the successful field application of the technology.

In summary, enhanced aerobic cometabolic biodegradation of TCE in bedrock is unlikely to be effective at reducing the relatively low concentrations of TCE observed in groundwater at the Glenburn Site in a timely manner due to the limitations caused by the heterogeneous rock and the inability to speed up matrix diffusion. Potential adverse impacts to nearby water supplies are very likely, and the potential impacts to human health that may result from implementation of

this experimental technology out-weigh potential benefits. The application of this technology would dramatically increase remedial costs without providing significant reductions in risk to human health. Further research or evaluation is not warranted, and use of enhanced aerobic cometabolic biodegradation is not recommended.

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ATTACHMENT 1
CORRESPONDENCE

Ian Osgerby, PhD, PE, remediation expert for USACE NAE, and member of ITRC, requested information from various professionals regarding the potential for enhanced aerobic biodegradation at the Glenburn Site. He provided the following information to the remediation experts:

60 ppb TCE with at most 5 ppb end point result.
<100 µg/L TCE in groundwater at up to 100 foot depth in fractured bedrock
High DO (9-11 mg/L @ 8-11°C) in the core of contamination
High Cl- (up to 2000 mg/L) in nearby wells and 600-800 mg/L in the core of contamination
Positive ORP (400-500 mV SHE corrected) in the core of contamination
Neutral pH (6.8-7.2)
Low groundwater temperatures (8-10°C)
Public water supply is directly hydraulically connected to the preferential fractured bedrock flow pathway
Iron-rich bedrock aquifer environment could precipitate solids in water supply system
Fracture permeability 100 to 800 ft/day in the core of contamination

The permission of the respondents to publish their opinions was attained, with the understanding that the following opinions are informal, and not based upon a comprehensive study of the study conditions. Selected responses included the following:

From: Payne, Fred [mailto:Fred.Payne@arcadis-us.com]

The key question I would look at is: what's the travel time from the treatment zone to the receiving well? Fractured bedrock is typically low-volume, high-velocity (actual groundwater velocity, not porous medium equivalent). In these cases, there's often not enough run time from the injection zone to the receptor. You need at least 500 to 600 days to recover reduction-oxidation conditions, and there will still be taste and odor indications of the process in some systems.

One barrier to the method is that it requires a population of methane oxidizing bacteria, which are not always (often not) present. In any case, it's difficult in fractured bedrock due to volume issues.

Verbal communication and e-mail with Mary DeFlaun: MDeFlaun@Geosyntec.com
GeoSyntech was not able to make cometabolism work in any fractured bedrock project. Mary is not aware of any successful project utilizing cometabolism.

I tried cometabolism under aerobic conditions for TCE degradation in POROUS media while at my last company ENVIROGEN. It turned out to be too expensive to keep it oxygenated, but as long as I did that it did work. At Geosyntec I have only attempted to use reductive dechlorination for TCE remediation under anaerobic conditions. It is under these conditions that I have used emulsified oil products as the electron donor-the emulsified oil products have worked very well in fractured rock-these products are designed so that the emulsion breaks after several days coating all solid surfaces so they product does remain in the area of interest. As the

hydrophobic oil partitions to the surfaces so do the hydrophobic bacteria-therefore coating the fractured rock surfaces with a 'biobarrier' per se that is able to degrade any of the contaminants both in the water as well as those that diffuse out of the rock matrix. Cometabolism may be able to work in an oxygenated aquifer, but we had to bio-augment to get it to work-I have not heard of any successes with that technology, but we are having great successes in fractured rock under anaerobic conditions.

Lippincott, David [mailto:David.Lippincott@shawgrp.com:

Dave did not know of any productive co-metabolic project. They are currently embarking on two UDMA sites with co-metabolism (Colorado and CA/Aerojet of course) but not in bedrock.

As discussed, Dave looked into the issue of possible inhibition of our SDC-9 culture by the high chloride concentrations listed below. We performed jar tests with PCE and 10,000 mg/L total dissolved solids (NaCl). The results (when compared to controls) indicated no reduction in degradation of PCE to TCE or TCE to DCE. There was some reduced degradation from DCE to VC. We actually did not run the experiment long enough to determine VC dechlorination kinetics in the 10,000 mg/L TDS bottles. The results suggest that at 2,000 mg/L Cl-, you should be ok. However, you would want to perform treatability testing with site solids and groundwater to confirm. Please be aware that these data come from testing with Shaw SDC-9 dechlorinating culture, and may not be applicable to other cultures.

David Lippincott, P.G.
Senior Project Geologist
Shaw Environmental, Inc.

Dan Bryant [mailto:dbryant@geocleanse.com]

An ISCO or bio approach seems infeasible to me under those conditions.
Concentrations are too low for ISCO, plus the reagents (particularly permanganate or persulfate) could be transported in the aquifer to the water supply. Given those conditions I do not think bio would be feasible at all, although maybe if you could just get to the cis you would be okay because the MCL for cis is much higher than for TCE or VC. Downside is that if you do make any VC then it might not degrade.

Dan Bryant
Vice President, Senior Project Manager
Geo-Cleanse International, Inc.

M E M O R A N D U M

TO: Naji Akladiss, Remedial Project Manager, MEDEP

and Gail Lipfert, PhD, C.G. # GE506, Certified Environmental Hydrogeologist

FROM: Donald M. Maynard, CG, PE; The Johnson Company Inc.

DATE: March 14, 2011

RE: Responses to MEDEP February 24, 2011 Comments on Evaluation of Enhanced Aerobic Cometabolic Biodegradation of TCE Revision 1: 10/11/10
Former Ground Air Transmitter (GAT) Facility, Glenburn, Maine.

CC: Marie Wojtas, USACE CENAE

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The MEDEP comments are re-printed below followed by responses prepared by The Johnson Company in **bold type.**

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The Army Corps of Engineers (USACE) has submitted an evaluation of using aerobic cometabolic methods to increase the biodegradation of TCE that was prepared by Johnson Company (JCO). This report supports the previous assertions of the USACE that bioremediation methods won't work at this site and repeats the main points: high chloride concentrations will impede bacterial activity, the addition of amendments to the groundwater will negatively affect the public water supply, high iron concentrations will clog the system, the cost will be prohibitively expensive, and it won't work anyway. Although I agree that MCL concentrations at the most contaminated wells may not be achievable without a long, expensive effort, I disagree with the strong pessimism of the report.

The following are my comments regarding the conclusions in Appendix 10 (the numbers correspond with the conclusion numbers:

1. The USACE concludes that the chloride concentrations will likely inhibit aerobic biodegradation of TCE. I disagree with this for the following reasons:
    a. During discussions with Nancy Kinner (University of New Hampshire) and Sam Fogel (Bioremediation Consulting, Inc), both indicated that the chloride concentrations in the Glenburn groundwater would *not* be a factor for bioremediation.
    b. Chloride concentrations averaged 720 mg/L (compared to the current 600-800 mg/L at Glenburn) at a site where aerobic cometabolic degradation of TCE was successful (McCarthy et al, 1998).

Chloride concentrations up to approximately 3,000 mg/L are present in groundwater at the Site (2,990 mg/L in GB-MW-03). The McCarty Study may not be directly applicable to the Glenburn Site, because McCarty injected 7-13.4 mg/L toluene and hydrogen peroxide into a sand aquifer. The dominant effective enzyme system was toluene orthomonooxygenase, and the dissolved oxygen in the native groundwater was zero.

2. The USACE concludes that high chloride concentrations will make monitoring for chloride production during TCE biodegradation impossible.

a. Given the low TCE concentrations, it is unlikely that we would be able to detect a difference in chloride production with TCE degradation at more typical chloride concentrations, anyway. We will have to depend on reduction of TCE concentrations (which are currently stable) to assess the effectiveness of a bioremediation method.

There may be insufficient existing time series data from the bedrock monitoring wells on-site (including GB-MW-01 and -02) to determine changes over time under existing conditions, and to predict future concentrations even without remediation (see Comment #8 and response). Also, given the known seasonal variation in TCE concentrations at Glenburn, combined with the low TCE concentrations (relative to most published remediation Sites), it is uncertain if statistically valid determinations of remedial efficiency will be possible based upon TCE concentrations.

3. Concerning the risks of injecting potential contaminants such as toluene:
    a. As regulators, we are indeed concerned about the injection of contaminants into groundwater, but our review of previous studies shows that proper design of a remediation system can mitigate these concerns.

We strongly disagree with the comment above for this particular Site. We do not believe that adequate controls preventing chemical changes in the hydraulically connected public water supply wells located 300-500 feet away can be guaranteed.

b. McCarthy et al (1998) showed in a full-scale field test that toluene concentrations never exceeded their target of 20 μg/L beyond 22 m of the injection wells and declared that as long as sufficient oxygen and nutrients are available, toluene concentrations below regulatory concerns can be obtained.

The McCarty work is not directly applicable to Glenburn, because their remediation was performed in a sand aquifer at Edwards Air Force Base (AFB), not in fractured rock. Additionally, the Edwards AFB permeability was approximately 1 fpd instead of the hundreds of feet per day measured at Glenburn. The injection of nutrients and potential changing of the redox conditions required to deplete the toluene (or methane) are a primary concern at Glenburn in terms of the probable affects of altering yield or dissolved metals concentrations in the water supply wells.

c. Methane is not regulated in groundwater and has been used successfully at some sites (Carter, 2001) as a substrate for aerobic cometabolic degradation of TCE. We, therefore, recommend using methane as the substrate, if possible.

Methane was not extraordinarily successful according to other studies. We could not locate the referenced Carter, 2001 study.

d. TCE-epoxide is a short-lived entity that spontaneously breaks down to simpler compounds like formate etc, that rapidly degrade to carbon dioxide and water (Hazen, 2009).

Agreed.

e. Although anoxic environments may be created during aerobic bioremediation, an appropriately designed remediation plan can apply sufficient oxygen to maintain the oxidized nature of the groundwater. Considering the low TCE concentrations, it would not be necessary to add large amounts of substrate, so maintaining oxidizing conditions in an already very oxic system would be easier than at other sites with high concentrations of chlorinated solvents.

Some depletion of oxygen would be expected (based upon McCarty, et. al. and other studies) unless supplements are added. The control of the redox conditions would of necessity be a trial-and-error approach, and the likely swings in redox conditions during balancing would probably affect the adjacent water supply wells, either through metals precipitation (and reduced yield) or metals dissolution (and increased concentrations in drinking water).

f. We should consider using push-pull tests, where bioremediation amendments are injected, allowed to react for a period of time, then extracted. This would allow us to see what possible negative impacts the amendments would have while keeping any risk to nearby drinking-water wells to a minimum.

Due to the relatively high hydraulic conductivity (hundreds of feet per day), we do not expect that full recovery of chemicals injected in a push-pull test would be possible. The key question is: "How much risk that a public water supply becomes non-potable is acceptable?" We are not comfortable that trial-and-error tests can be performed without adversely affecting the currently potable water supply wells.

4. Concerning the injection of microbes, nitrogen, phosphorous, and other nutrients:
    a. It is not necessary to amend the groundwater with microbes because aerobic cometabolic bioremediation uses native microbial communities.

Such communities are usually, but not always present in sufficient numbers.

b. The addition of nitrogen and phosphorous should be designed properly so that these compounds will be consumed in the oxidation of the substrate.

Given the fractured rock and relatively high permeability, reliable designs cannot be developed without field tests which would put the public water supply well at risk.

5. Concerning biofouling and the precipitation of metals:
    a. Biofouling has been a problem at site with high TCE concentrations, but pulsing of the injection of the substrate and the addition of peroxide helped correct the problem (McCarthy, 1998). It is possible that the concentrations of TCE at this site are low enough that biological fouling of the recirculation well will not occur because the amount of amendments will be more modest.

However, during the McCarty tests, no measurements were made of downgradient metals concentrations following injection of hydrogen peroxide, which are a concern at Glenburn due to the adjacent public water supply well. There is no reliable basis to believe that fouling will not occur.

b. Soils on site have iron concentrations of 2.6-2.9 wt % which are not significantly different from average iron concentrations in soils throughout Maine and the rest of the US of 2.6 wt. %. We have no data concerning iron concentrations in the monitoring or domestic wells, but iron concentrations in the groundwater at PW-03 are below detection. Unless there is dissolved iron in the groundwater, aerobic treatment of groundwater will not result in the precipitation of iron from solution. Given the current oxidizing nature of the groundwater, I predict that maintaining oxidizing conditions will not result in the precipitation of iron solids and will not decrease the permeability of the bedrock.

However, aerobic cometabolic biodegradation is known to reduce oxygen levels in groundwater due to use of the oxygen by the microbes (McCarty, 1998). McCarty used injection of hydrogen

peroxide to maintain oxygen levels in the aquifer. However at the Glenburn Site, altered redox conditions could either 1) cause metals precipitation resulting in reduced permeability and well yield, or 2) dissolution and increased concentrations in the nearby water supplies 300-500 feet away, depending upon how the redox conditions are changed.

6. Concerning delivery difficulties, diffusion into the bedrock, and rebound of TCE concentrations:
    a. I agree that delivery of any amendment to the adsorbed TCE may be difficult, but if we try to maintain the current groundwater conditions, we may have better success. Many of the cases where product was unable to be administered to low-permeable locations involved attempts to oxidize anaerobic systems.

On concern at the Glenburn Site is that there are both relatively high and low permeability areas in the rock, increasing the difficulties. Diffused contaminants are least likely to be affected by the potential in-situ remedial technologies.

    b. Contaminant rebound is a common problem in reductive dechlorination methods, but I was unable to find instances of it in aerobic cometabolic bioremediation studies.

None of the studies reviewed had sufficient post-treatment data to determine if rebound occurred. That is, no documentation was found of permanent reduction in TCE to concentrations below MCLs as a result of cometabolic aerobic biodegradation, particularly in fractured rock. In the absence of any proven successful projects, the use of these technologies at this Site where human health is not directly at risk is not warranted (particularly given the potential adverse impacts to public water supplies).

7. Concerning high costs of remediation:
    a. I recommend starting with a pilot test that would involve a minimal injection schedule at a single well (MW01) to see if there is any reduction in TCE concentrations in this or surrounding wells.

The Johnson Company Maine Certified Geologist and Professional Engineer is unwilling to risk impacting the hydraulically connected public water supply by such a test given that the water supply well water is currently potable and in use.

    b. What are the costs of not remediating?

The costs associated with institutional controls, long term monitoring and one point-of-use treatment system were provided in the RI/FS.

Further comments:

8. Case studies. Although none of the case studies showed cleanup to MCLs, several of the studies demonstrated significant reductions in TCE concentrations. We would be content with this result. Anything that will shorten the time to cleanup should be a goal of both the MEDEP and the USACE. At the moment, TCE concentrations are not decreasing in the groundwater at this site, so it is impossible to estimate a time to clean up.

On-site, in GB-MW-01 and -02, there is insufficient time series data after the installation of the Flute liners to determine if TCE concentrations are declining or not (see Comment #2.a. and response). The primary remedial goal is to protect human health, and currently there is no unacceptable risk to human health.

9. The lack of case studies involving fractured bedrock is unfortunate, but should not be taken as evidence that the method will not work in fractured bedrock.

Please see the responses to Comment #3; the risks of implementing any remedial action incorporating injection of chemicals out-weigh the current conditions of no unacceptable risk to human health, particularly considering a method that is unproven in fractured bedrock.

10. MEDEP agrees that attainment of the TCE MCL at all wells at the Glenburn site may be unrealistic. Because TCE concentrations are generally low (< 10 μg/L) at the public water supply wells at this site, only modest decreases in TCE concentrations are needed bring them below the detection limit and to make a successful remediation effort. It is not necessary that we achieve MCLs at all monitoring wells, but it would be very helpful if a 75% reduction in TCE concentrations was achieved.

TCE in Glenburn public water supplies has historically been, and currently is below the MCL. Remediation is not required based upon existing water supply wells, which all have TCE less than the 5 ppb MCL.

11. All the studies showed significant success. If we use methane and design the remediation appropriately with sufficient oxygen and nutrients to make sure the system doesn't go anaerobic, there will be no negative effects on neighboring supply wells and the chance of decreasing TCE concentrations is good. I think that the aerobic cometabolic bioremediation method will be significantly better than doing nothing, which is what the USACE is proposing.

We do not necessarily agree that success was demonstrated in all the studies, particularly in meeting MCLs, but do not believe the point is worth additional discussion. The main points of our disagreement with MEDEP is their contentions that there will be no negative impacts on the neighboring supply wells and that USACE is proposing to do nothing. There is a significant likelihood of adversely impacting the public water supplies by injecting chemicals into the aquifer. USACE proposes to protect human health through institutional controls, monitoring, and point-of-use treatment.

12. Most importantly, USACE has not done any lab treatability studies to determine if there is a suitable community of bacterial for cometabolism to be successful. I recommend collecting some important data to assess the possibility of using cometabolic remediation, such as conducting a microcosm test to determine if the appropriate microbes exist in the aquifer and assess best substrate to use, analyzing the groundwater for chloride, iron, manganese, arsenic, etc. If these data indicate that the site is a possible candidate for cometabolic remediation, I recommend a proceeding with a preliminary injection study to see if there is a response to the substrate in the field.

Please refer to Comment #4 that suggests native microbial communities are likely present. Since an injection study would potentially create risks to human health where none currently exist for the users of the public water supply well, such a test is not justified, and additional data collection as suggested is not needed.

In summary:

- **Aerobic cometabolic remediation in fractured bedrock is still experimental. There are no known historical case studies regarding full-scale implementation and effectiveness in reducing TCE to less than the MCL of 5 ppb in bedrock, without later rebound;**

- **There will be difficulties delivering and maintaining the proper balance of co-metabolites, oxygen and nutrients, which will require trial-and-error testing in an aquifer with a hydraulically connected potable water supply well only hundreds of feet away;**
- **The likelihood of residual contamination diffused into the rock is high. The Glenburn Site has both relatively high and low permeability areas in the rock, and diffused contaminants in low permeability areas are least likely to be affected by the potential in-situ remedial technologies;**
- **There are currently insufficient available data and methods to evaluate remedial success (unless all the TCE goes away);**
- **Of most importance, there is currently no unacceptable risk from the TCE contamination, and any in-situ treatment technology has the strong potential to adversely affect existing potable public water supplies.**

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