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SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT FOR 1, 4-DIOXANE IN THE EASTERN PLUME AND BEDROCK VOLUME I OF II TEXT, TABLES, FIGURES NAS BRUNSWICK ME

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TETRA TECH

Supplemental Remedial Investigation Report

for

1,4-Dioxane in the Eastern Plume and Bedrock

Former Naval Air Station Brunswick Brunswick, Maine

Volume I of II - Text, Tables, Figures

Naval Facilities Engineering Command Mid-Atlantic

Contract Number N62472-03-D-0057
Contract Task Order 69

February 2012

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SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT

FOR

1,4-DIOXANE IN THE
EASTERN PLUME AND BEDROCK
FORMER NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION - NAVY (CLEAN) CONTRACT

Submitted to:
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As per the State of Maine Department of Professional and Financial Regulations, Title 32, Chapter 73, the undersigned has reviewed the geological content of the attached report entitled: "*Supplemental Remedial Investigation Report for 1,4-Dioxane in the Eastern Plume and Bedrock, Former Naval Air Station Brunswick, Brunswick, Maine*", dated February 2012.

1/31/12

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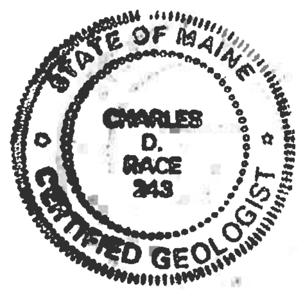

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ACRONYMS

ATV	acoustical televiewer
BACSE	Brunswick Area Citizens for a Safe Environment
bgs	below ground surface
BRAC	Base Realignment and Closure
ºC	degree Celsius
CDC	Center for Disease Control
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CG	Certified Geologist
CLEAN	Comprehensive Long-Term Environmental Action
CLP	Contract Laboratory Program
COC	contaminant of concern
cps	count per second
CSM	Conceptual Site Model
CTO	Contract Task Order
CVOC	Chlorinated Volatile Organic Compound
CWA	Clean Water Act
DoD	Department of Defense
DCA	dichloroethane
DCE	dichloroethene
DCN	Document Control Number
DNAPL	Dense non-aqueous phase liquid
DPT	direct-push technology
DQI	Data Quality Indicator
DQO	Data Quality Objective
DQR	Data Quality Review
DO	dissolved oxygen
EC	electrical conductivity
EIA	EPA Investigations and Analysis Unit
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
eV	electron-volt
FOL	Field Operations Leader
FTMR	Field Task Modification Request
gpm	gallon per minute

GPS	Global Positioning System
GWETS	Groundwater Extraction and Treatment System
HCl	hydrochloric acid
ID	inside diameter
IDW	investigation-derived waste
K	hydraulic conductivity
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LTMP	Long-Term Monitoring Plan
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
MEDEP	Maine Department of Environmental Protection
MEG	Maximum Exposure Guideline
MNA	monitored natural attenuation
mS/m	microSiemen per meter
MS/MSD	Matrix spike/Matrix spike duplicate
msl	mean sea level
NAD	North America Datum
NAS	Naval Air Station
NERL	New England Regional Laboratory
NGVD	National Geodetic Vertical Datum
NPL	National Priorities List
OD	outside diameter
ORP	oxidation-reduction potential
OTV	optical televiewer
PAL	Project Action Limit
PARCC	Precision, Accuracy, Representativeness, Completeness, and Comparability
PCE	tetrachloroethene
PID	photoionization detector
PM	Project Manager
PMO NE	Program Management Office Northeast
PPE	polypropylene
PRG	Preliminary Remediation Goal
PQL	Project Quantitation Goal
PQLG	Project Quantitation Limit Goal
PVC	polyvinyl chloride
QA	Quality assurance

QAM	Quality Assurance Manager
QAO	Quality Assurance Officer
QC	Quality control
RAO	Remedial Action Objective
RI	Remedial Investigation
ROD	Record of Decision
RPD	Relative percent difference
RPM	Remedial Project Manager
RQD	rock quality designation
SAP	Sampling and Analysis Plan
SDG	Sample delivery group
SDWA	Safe Drinking Water Act
SIM	Selective Ion Monitoring
SOP	Standard Operating Procedure
TCA	trichloroethane
TCE	trichloroethene
TCL	Target Compound List
TOC	Total Organi Carbon
TtNUS	Tetra Tech NUS, Inc.
UFP	Uniform Federal Policy
USGS	United States Geological Survey
VC	Vinyl chloride
VOC	Volatile organic compound

EXECUTIVE SUMMARY

This Supplemental Remedial Investigation (RI) was prepared under Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62472-03-D-0057, Contract Task Order (CTO) 69. The Scope of Work directs Tetra Tech to develop a Supplemental RI for 1,4-Dioxane in the Eastern Plume and Bedrock at Naval Air Station (NAS) Brunswick in Brunswick, Maine.

SUPPLEMENTAL RI OBJECTIVES AND SCOPE

The objective of the Supplemental RI was to characterize the extent of 1,4-dioxane and chlorinated volatile organic compounds (CVOCs) in the overburden of the Eastern Plume and in underlying bedrock in the vicinity of a bedrock knob at monitoring well MW-308. The Navy undertook the Supplemental RI to obtain information ultimately supporting evaluation of remedial alternatives to address 1,4-dioxane contamination in the Eastern Plume, which was not addressed previously. Supplemental RI activities were implemented from August 2008 to January 2010 and included pore water sampling, collection of lithology data, electrical conductivity (EC) lithology profiling and associated discrete-interval groundwater sampling, bedrock borehole geophysics and bedrock monitoring well installation in the vicinity of well MW-308, overburden monitoring well construction, water level gauging, monitoring well sampling, hydraulic conductivity testing, surveying, and investigation-derived waste (IDW) disposal. To provide a comprehensive round of groundwater data, analytical results from wells sampled by TtNUS during the Supplemental RI were combined with analytical results from the April 2009 long-term monitoring event (Event 34) conducted by ECC, Inc. that was most closely matched in time.

The results in this report have been utilized for optimization of the Eastern Plume groundwater extraction and treatment system. An Explanation of Significant Differences (ESD) for the Eastern Plume modified the 1998 Record of Decision (ROD) to document the change in the groundwater treatment technology, included 1,4-dioxane and vinyl chloride as groundwater Contaminants of Concern (COCs), and established interim cleanup goals of 3.5 µg/L (EPA risk-based value) and 0.15 µg/L (1992 Maine MEG), respectively. These cleanup goals are being used for criteria comparison. Other criteria in effect at the time of evaluation of MEDEP comments in 2010 on the Supplemental RI report were included in this final report and remain unchanged. More current Eastern Plume data are documented in the long term monitoring program (LTMP) reports and also addressed in Five-Year Reviews. A separate pending effort is underway to establish Land Use Control (LUC) boundaries on the basis of the Supplemental RI report, most recent groundwater monitoring results, and most recent criteria for all constituents.

SITE DESCRIPTION

The Eastern Plume is located in the eastern portion of NAS Brunswick and is oriented approximately north-south. Historically, the Eastern Plume was approximately 3,500 feet long and up to 1,400 feet wide. Mere Brook flows from west to east bisecting the Eastern Plume and then continues south of its confluence with Merriconeag Stream near the eastern boundary of the Eastern Plume. The direction of groundwater flow across the Eastern Plume is interpreted to be generally east and south toward Merriconeag Stream and Mere Brook.

SITE HISTORY

Subsurface investigations of the Eastern Plume area began in 1987 when groundwater results indicated the presence of CVOC contamination as a result of leaching from past solvent disposal practices at Site 4 (Acid/Caustic Pit), Site 11 (Former Fire Training Area), and Site 13 (Defense Reutilization and Marketing Office Area).

In June 1992, an interim Record of Decision (ROD) was signed that identified a groundwater extraction and treatment system (GWETS) as the selected interim remedy for the Eastern Plume. The GWETS objective was to achieve hydraulic control and to reduce hot-spot concentrations and total concentrations of VOCs (primarily consisting of CVOCs) in the Eastern Plume. The Navy has since been performing long-term monitoring, maintenance, and corrective measures as required by the ROD.

In June 1995, the GWETS, consisting of a groundwater extraction system addressing the northern and southern lobes of the plume and treatment via ultraviolet oxidation, began operation. The treated water was discharged to the Brunswick Sewer District. The original extraction system consisted of seven extraction wells (EW-1 through EW-7), five of which were associated with the Eastern Plume (EW-1 through EW-5). Over the years, the GWETS underwent changes to improve operational efficiency. Between 1997 and 2001, five extraction wells (EW-02, EW-03, EW-05, EW-06, and EW-07) were decommissioned, and from 1998 to 2009, five extraction wells (EW-02A, EW-05A, EW-05B, EW-8, and EW-9) were installed. Wells EW-8 and EW-9 were installed in October 2009 based on preliminary results from this Supplemental RI and on the results of groundwater modeling by ECC.

In 1998, the final ROD was signed documenting the final selected remedy of hydraulic containment (via extraction), recovery, and groundwater treatment. In December 2000, an Explanation of Significant Differences (ESD) for the Eastern Plume altered the original GWETS to remove the ultraviolet oxidation system and replace it with an air stripping system with carbon polishing and to replace discharge to the Brunswick Sewer District with discharge to an infiltration gallery. The treatment system went on line in January 2001 and the infiltration gallery began operating in February 2002.

The RI process continued between 2000 and 2005 to resolve data gaps, with activities including an investigation of the southern boundary of the Eastern Plume and bedrock in the vicinity of MW-323 at Site 11 (2000 to 2003), investigation of Site 11 bedrock (2003 to 2005), and a monitored natural attenuation (MNA) assessment (2003 to 2005).

During the April 2004 long-term monitoring event, in addition to the standard sampling and analysis, samples from selecting monitoring wells were analyzed for 1,4-dioxane - an emerging contaminant. During the April 2004 event, 1,4-dioxane concentrations exceeded its Maine Maximum Exposure Guideline (MEG) of 32 µg/L in the southeastern area of the plume, and 1,4-dioxane was subsequently added to the long-term groundwater monitoring plan analytical list of contaminants of concern (COCs) for the Eastern Plume.

In April 2005, a pore water sampling event was conducted in the southern area of the plume along Mere Brook and Merriconeag Stream that indicated the presence of 1,4-dioxane and VOCs in shallow groundwater near these streams.

In July 2006, the Navy collected monthly influent and effluent concentration data from the GWETS for 1,4-dioxane. GWETS air stripping and carbon adsorption units are not effective for treating 1,4-dioxane. Although the effluent was less than the Maine MEG of 32 µg/L, in effect at that time, the Maine Department of Environmental Protection (MEDEP) requested that the effluent be treated for 1,4-dioxane prior to discharge. Necessary comprehensive GWETS modifications could not be evaluated until the extent of 1,4-dioxane in the southeastern area of the plume was defined and additional information required for treatment system redesign was defined. Therefore, the Navy installed additional monitoring wells to enhance understanding of the conceptual site model to better assess remediation options and tasked TtNUS to conduct the supplemental groundwater investigation.

A Sampling and Analysis Plan (SAP) was prepared by TtNUS (draft dated October 2007) to define the extent of 1,4-dioxane in the southeastern localized area of the plume. However, shortly after submittal of the draft SAP of October 2007, new data became available that dramatically expanded the scope of the planned investigation. Results from the Navy's 2007 additional groundwater investigation in the vicinity of Mere Brook indicated upward flow of contaminated groundwater from the deeper overburden to the shallow overburden meaning that Mere Brook in this vicinity is a groundwater discharge area. Moreover, groundwater pumped from extraction well EW-05B, located in the northern portion of the Eastern Plume, had elevated levels of 1,4-dioxane and CVOCs, as expected, since it was completed in a residual hot spot area. EW-05B was installed to target elevated concentrations of CVOCs, as expected; however, elevated concentrations of 1,4-dioxane that were encountered were not expected. In addition, groundwater from one bedrock well MW-308, also located in the vicinity of EW-05B, had low concentrations of several CVOCs and 1,4-dioxane. An expanded scope of investigation to include the central and northern areas of the plume and to investigate the bedrock knob at well MW-308 was agreed upon among the Navy, United States Environmental Protection Agency (EPA), and MEDEP during a planning meeting in February 2008 that is the basis of the Supplemental RI.

Also in 2008, the Navy's Long-Term Monitoring Plan (LTMP) for the Eastern Plume was finalized. As of the April 2009 event, 34 monitoring events have been completed at the Eastern Plume.

SUPPLEMENTAL REMEDIAL INVESTIGATION FIELD ACTIVITIES

The Supplemental RI included a pore water/seep investigation conducted in August 2008 and was intended to refine understanding of Eastern Plume contaminant concentrations in shallow groundwater and groundwater seeps along the western bank of Merriconeag Stream, including Picnic Pond. A total of 68 pore water samples and 15 seep samples were collected for a total of 83 samples, all analyzed for CVOCs, with 58 additionally analyzed for 1,4-dioxane, to determine the potential for upwelling of Eastern Plume groundwater to surface water.

The pore water/seep information was also used to refine the locations of EC groundwater profiling transects to better define the top of the clay confining unit. Thirty EC borings were advanced for this purpose. Definition of the clay surface is important because depressions in clay "bowls" present for the Eastern Plume contain more contaminant mass, and the contaminant migration pathway to the Lower Sand from the overlying Upper Sand and Transition Unit generally occurs along the top of this clay surface. Based on the EC results, groundwater sampling intervals at up to three depth intervals per profiling point were established. However, many sampling intervals did not yield groundwater; ultimately, 24 discrete-interval groundwater samples were collected and analyzed for CVOCs and 1,4-dioxane to better define the extent of 1,4-dioxane and CVOCs exceeding MCLs and MEGs .

The profiling discrete-interval sampling results also aided in establishing locations of permanent monitoring wells to fill data gaps and serve long-term monitoring purposes. EC results were used to determine the location of 13 overburden monitoring wells installed during the Supplemental RI.

Contaminant migration pathways into the bedrock knob in the vicinity of contaminated bedrock well MW-308 located approximately 150 feet southwest of extraction well EW-05B, were also investigated. The bedrock investigation included borehole geophysical surveys to accurately identify the locations of transmissive fractures for locating nested monitoring wells. Three monitoring well clusters (each consisting of one overburden well, one upper bedrock well, and one lower bedrock well) were installed as part of the bedrock investigation.

Of the 22 monitoring wells (13 overburden wells plus 9 bedrock cluster wells), 20 hydraulic conductivity tests were conducted to aid in refining groundwater velocities in each lithological unit. Water levels were measured from more than 110 new and existing monitoring wells plus four existing stream gauges established as part of the long-term monitoring program to evaluate groundwater flow directions in the Eastern Plume. Groundwater sampling and analysis was conducted at 31 wells for CVOC and 1,4-dioxane analysis (22 new wells plus nine existing wells not routinely included in the long-term monitoring program). All new pore water/seep, EC profiling point, and new monitoring well locations were surveyed.

SUPPLEMENTAL REMEDIAL INVESTIGATION FINDINGS

Vertical gradients measured at well clusters completed in the overburden and/or bedrock confirmed that groundwater moves downward in recharge areas from the Upper Sand into the Transition Unit and Lower Sand over most of the Eastern Plume, then shifts upward in the vicinity of Merriconeag Stream and Mere Brook (Mere Brook flows through a culvert in an easterly direction and then shifts to the south at its confluence with Merriconeag Stream), which confirm that these streams are groundwater discharge areas, with most wells in the vicinity under artesian pressure with upward gradients. The Lower Sand is confined or semi-confined by overlying silt and clay layers within the Transition Unit. Groundwater in the Lower Sand migrates in a southerly direction and shifts to the southeast as it approaches the confluence from the north. Groundwater flow through the Lower Sand is confined laterally by the steeply sloping clay unit surface that effects flow in a southerly direction. Hydraulic conductivity estimates from slug tests in the Upper Sand, Transition Unit, and Lower Sand are consistent with fine sands and silty fine sands. The calculated average groundwater flow velocities across the Eastern Plume in the Upper Sand, Transition Unit, and Lower Sand are approximately 69, 55, and 15 feet per year, respectively. The relatively low average groundwater flow velocity in the Lower Sand is a result of the relatively low hydraulic gradient in the Lower Sand.

Source removals in the early 1990s and subsequent natural attenuation appear to have effectively depleted nearly all the residual fuel and solvents in the source areas at Sites 4, 11, and 13. Therefore, these areas no longer act as sources for the Eastern Plume. Supplemental RI analytical data indicate that hydraulic conductivity in the Transition Unit and Lower Sand is similar and residual contamination within the fine-grained strata of the Transition Unit remains at the Eastern Plume.

1,4-Dioxane exceedances occurred mainly in the northern portion of the Eastern Plume in the vicinity of extraction well EW-05B, and also near and south of the Mere Brook-Merriconeag Stream confluence, with concentrations increasing toward Mere Brook. Exceedances of the CVOC trichloroethene (TCE) were distributed through the plume. Maximum concentrations of 1,4-dioxane (350 µg/L) and TCE (860 µg/L) both occurred at the same location, MW-EP-347. Generally, exceedances of other CVOC contaminants were co-located with TCE and were below 200 µg/L. Current-day exceedances of criteria for TCE and 1,4-dioxane are relevant indicators representative of the residual plume.

One of the objectives of this supplemental RI was to determine how contaminants were entering the bedrock via the overburden. The bedrock investigation results indicate that common contaminants are present at higher concentrations upgradient of the MW-308 vicinity, and are present at lower concentrations in the fractured bedrock. Lateral and vertical hydraulic gradients and decreasing contaminant concentrations in the direction of groundwater flow indicate that the source of contaminated groundwater in fractured bedrock is from the overburden upgradient (north-northwest) of the bedrock knob feature rather than from the bedrock itself. Hydraulic conductivity values for the bedrock at this location and sandy zones in the overburden are similar, indicating no impediment to groundwater flow into the bedrock in the vicinity of MW-308. Vertical hydraulic gradients are upward at the well cluster closest to MW-308 (MW-EP-342B1/B2), which limits the vertical migration of contamination deeper into bedrock. Hydraulic gradients indicate that contaminated groundwater moving in a southerly direction in the overburden has the potential to migrate into the bedrock in the MW-308 vicinity, then flow upward and laterally in a southeasterly direction, where it has the potential to re-enter the overburden.

The bedrock investigation in the vicinity of MW-308, confirmed the presence of CVOCs in the bedrock at low concentrations slightly greater than the MCLs and/or MEGs, although 1,4-dioxane was not detected. Bedrock investigation results indicated that low concentrations of contaminated groundwater are entering the upper fractured bedrock at the bedrock knob in the vicinity of MW-308. Lateral and vertical hydraulic gradients and decreasing contaminant concentrations in the direction of groundwater flow from north to south indicate that the source of contaminated groundwater in fractured bedrock is in the overburden north of the bedrock knob feature rather than in bedrock. Contaminated groundwater moving in a southerly direction in the overburden has the potential to migrate into bedrock in the MW-308 vicinity, flow upward, and laterally in a southeasterly direction, where it has the potential to re-enter the overburden. Vertical hydraulic gradients are upward at the well cluster closest to MW-308 (MW-EP-342B), which limits the vertical downward migration of contamination at this location. However, hydraulic containment of any contaminated groundwater in the vicinity of MW-308 should be achieved with the activation of EW-05B to the north. The calculated average groundwater flow velocity through bedrock fractures in the vicinity of MW-308 is approximately 39 feet per year.

In 2010, the EPA established an interim cleanup goal (ICG) for 1,4-dioxane at a concentration of 3.5 µg/L. Also in 2010, the State of Maine reduced their 1,4-dioxane drinking water MEG slightly from 32 µg/L to 30 µg/L. The Maine MEGs also changed for other Eastern Plume contaminants of concern (COCs): tetrachloroethene (PCE) decreased from 7 to 0.6 µg/L, vinyl chloride decreased slightly from 0.2 to

0.15 µg/L, and 1,1-dichloroethene (1,1-DCE) increased from 0.6 to 40 µg/L. The net effect of these changes relative to the groundwater data collected in April – June 2009 including the LTM results was a slight enlargement of the extent of the Eastern Plume to the south and east. A current update of the Eastern Plume data can be obtained in the LTM program, which includes groundwater, surface water, and sediment data collected in April and September.

For comparison purposes, the extent of the Eastern Plume is depicted both historically (based on VOC concentrations through September 2007 that exceeded MCLs/MEGs in effect at that time) and based on the Supplemental RI Report results (last evaluated in 2010); more recent monitoring data are provided in the LTM reports for the Eastern Plume and a separate effort is pending to establish a LUC boundary using the Supplemental RI report, the most recent groundwater monitoring results, and the most recent criteria for all constituents.

RECOMMENDATIONS

The Supplemental RI results have already been incorporated into the groundwater model used to select locations for additional groundwater extraction wells to support ongoing groundwater remediation and to enhance containment of the Eastern Plume. As a result, new extraction wells EW-8 and EW-9 were installed in October 2009. The Supplemental RI results were also used to determine requirements for upgrading the existing treatment system for CVOC removal to additionally remove 1,4-dioxane. Therefore, the NAS Brunswick environmental restoration team has implemented and incorporated the information from the investigative efforts outlined in this Supplemental RI Report to optimize the effectiveness of the Eastern Plume remedy, meeting the Remedial Action Objectives set forth in the Record of Decision (ABB Environmental Services, Inc.1998).

Based on the Supplemental RI, recommendations are summarized as follows:

1) The results show two small 1,4-dioxane plumes and limited upwelling into the streams; no additional investigation appears necessary to delineate the plumes. The LTMP is currently under review to determine if any of the new wells should be included in the monitoring program.

2) No further bedrock investigation appears necessary. The low level contaminants of concern detected at bedrock monitoring well MW-308 are localized. Although additional bedrock monitoring well installation is not recommended, bedrock groundwater monitoring will be considered in the optimized Eastern Plume LTMP.

1.0 INTRODUCTION

This report presents the results of a Supplemental Remedial Investigation (RI) for 1,4-Dioxane in the Eastern Plume and Bedrock conducted at Naval Air Station (NAS) Brunswick, Maine. The investigation was performed by Tetra Tech NUS, Inc. (TtNUS) on behalf of the Base Realignment and Closure (BRAC) Program Management Office Northeast (PMO NE) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract Number N62472-03-D-0057, Contract Task Order (CTO) 069.

1.1 OBJECTIVES AND SCOPE

The objective of the Supplemental RI was to characterize the extent of 1,4-dioxane and chlorinated volatile organic compounds (CVOCs) in the overburden of the Eastern Plume and in underlying bedrock in the vicinity of a bedrock knob. During a Data Quality Objective (DQO) meeting with NAS Brunswick stakeholders in February 2008, including Maine Department of Environmental Protection (MEDEP) and United States Environmental Protection Agency (EPA), the scope and objective were developed. It was agreed that a new Sampling and Analysis Plan (SAP) was needed to replace the draft October 2007 SAP that focused on 1,4-dioxane in overburden only at the southern area of the Eastern Plume. Much of the information in the 2007 draft SAP had been superseded by the Mere Brook investigation of 2008 (and analytical results from extraction well EW-05B) conducted by ECC, Inc., indicating that 1,4-dioxane was also present in the central and northern portions of the Eastern Plume. Moreover, there was a concern that surficial groundwater contamination may be migrating through bedrock at a knob near existing bedrock monitoring wells MW-308 and MW-323. The Navy undertook the Supplemental RI to obtain information ultimately supporting evaluation of remedial alternatives to address 1,4-dioxane contamination in the Eastern Plume, which was not addressed previously.

Supplemental RI activities were initiated by TtNUS in August 2008 and completed in January 2010. For the overburden, a phased sequential approach to the Supplemental RI field work was agreed on at the DQO meeting, beginning with pore water sampling, followed by groundwater profiling of lithology and contamination, followed by permanent monitoring well installation and sampling. The pore water task included TtNUS assistance to MEDEP and EPA with pore water sampling and analysis. Based on pore water results, locations for electrical conductivity (EC) groundwater profiling of lithology (and confirmatory soil borings) and discrete-interval groundwater sampling were established and installation implemented by TtNUS. Based on pore water and EC profiling results, permanent overburden monitoring wells were then installed and sampled. Concurrently, a bedrock investigation in the vicinity of well MW-308 was conducted including borehole geophysics to establish well screen depth intervals and monitoring well cluster installation and sampling. Other supporting tasks included surveying, well development, water-level gauging, hydraulic conductivity testing, and investigation-derived waste (IDW) disposal. To provide a comprehensive round of groundwater data, analytical results from new and select existing wells sampled during the Supplemental RI were combined with analytical results from the April 2009 ECC long-term monitoring event, which was most closely matched with the Supplemental RI sampling event. This combined data set is evaluated in Section 4.3.

1.2 SITE LOCATION AND DESCRIPTION

NAS Brunswick is located in Brunswick, Cumberland County, in the mid-coastal region of Maine (Figure 1-1), south of the Androscoggin River and north of several coves (Harpswell, Buttermilk, and Woodward) that connect with Casco Bay. The facility was first commissioned on April 15, 1943, and is an active military base that is owned and operated by the federal government through the Department of the Navy. In 1987, NASB was placed on the National Priorities List (NPL) by EPA. In 2005, NAS Brunswick was designated for closure under the Defense BRAC Act established in 1990. BRAC legislation requires that base closure be in full compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The operational closure date for NAS Brunswick was September 15, 2011.

Historically, the Eastern Plume in the overburden was an area of CVOC groundwater contamination approximately 3,500 feet long and up to 1,400 feet wide located in the eastern portion of NAS Brunswick (Figures 1-1 and 1-2). It is oriented approximately north-south along Weapons Compound Road for approximately 0.6 mile and is located slightly west of Merriconeag Stream and north of Old Gurnet Road. According to the United States Geological Survey (USGS) Brunswick, Maine, 7.5-minute Quadrangle (1980), elevations of the Eastern Plume area range from approximately 10 to 50 feet above mean sea level (msl) referencing the National Geodetic Vertical Datum (NGVD) of 1929. The ground surface slopes gently in the eastern and southern directions toward Merriconeag Stream and Mere Brook.

Approximately 90 percent of land overlying the Eastern Plume is covered by vegetation, and several areas contain forested wetland. A ball field and cemetery are located in the northern portion of the Eastern Plume, just south of Picnic Pond. An ancient cemetery is located immediately north of the confluence of Merriconeag Stream and Mere Brook. Merriconeag Stream is located east of the northern and central portions of the Eastern Plume. Mere Brook flows from west to east bisecting the Eastern Plume and then continues south of its confluence with Merriconeag Stream near the eastern boundary of the Eastern Plume.

Previous data from the Eastern Plume indicate that the site is underlain by fine to coarse sand (Upper Sand), interbedded fine sand, silt, and clay (Transition Unit), fine to medium sand (Lower Sand), and silt/clay (Presumpscot Clay). Previous data indicates the groundwater elevations range from 0 to 38 feet below ground surface (bgs) based on review of groundwater-level and boring log data. Based on review of groundwater-elevation data, the direction of groundwater flow across the Eastern Plume is interpreted to be generally east and south toward Merriconeag Stream and Mere Brook.

1.3 SITE HISTORY AND PREVIOUS ON-BASE INVESTIGATIONS

In the mid-to late 1980s, environmental contamination was identified at several areas on the base, and in July 1987, NAS Brunswick became an NPL site. The RI process began in 1987 for the Eastern Plume area when groundwater results at presumed source areas Site 4 (Acid/Caustic Pit), Site 11 (Former Fire Training Area), and Site 13 (Defense Reutilization and Marketing Office Area) indicated the presence of volatile organic compound (VOC) contamination leaching to groundwater as a result of past improper solvent disposal practices (historical Figure 1-2). The dissolved-phase plume associated with these disposal activities consisted primarily of CVOCs including tetrachloroethene (PCE), 1,1,1-trichloroethane (TCA), and trichloroethene (TCE) and degradation products of these compounds, primarily 1,1- and 1,2-dichloroethene (DCE) and dichloroethane (DCA), at concentrations that exceeded Maine Maximum Exposure Guidelines (MEGs) and/or federal Maximum Contaminant Levels (MCLs) (E.C. Jordan, 1990 and 1991).

In June 1992, an interim Record of Decision (ROD) was signed that identified a groundwater extraction and treatment system (GWETS) as the interim remedy for the Eastern Plume. The GWETS objective was to achieve hydraulic control and to reduce hot-spot concentrations and total concentrations of VOCs in the Eastern Plume. The Navy has since been performing long-term monitoring, maintenance, and corrective measures as required by the interim ROD.

The GWETS, which began operating in June 1995, originally consisted of a groundwater extraction system addressing the northern and southern lobes of the plume, treatment of extracted groundwater via ultraviolet oxidation, and discharge of treated water to the Brunswick Sewer District. The original extraction system consisted of seven extraction wells (EW-01 through EW-07) and underwent subsequent changes to improve operational efficiency. Extraction wells EW-06 and EW-07, installed at the Sites 1 and 3 landfills, were deactivated in November 1997 due to continued decreasing yields and stabilized water levels within the confines of the slurry wall for Sites 1 and 3.

In 1998, the final ROD for No Further Action at Sites 4, 11, and 13 and Remedial Action for the Eastern Plume (ABB-ES, 1998) was signed documenting hydraulic containment (via extraction), recovery, and groundwater treatment as the remedy for the Eastern Plume. The ROD identified the following Remedial Action Objectives (RAOs) for the Eastern Plume:

- Minimize future migration of the Eastern Plume.
- Minimize any further negative impact to surface water resulting from discharge of contaminated groundwater.
- Reduce the potential risk associated with ingestion of contaminated groundwater to acceptable levels.
- Restore the aquifer.

Extraction wells EW-02 and EW-03 of the GWETS were decommissioned in September 2000, and EW-05 was similarly decommissioned in January 2001. Two deeper extraction wells were added to the system, EW-02A in April 1998 and EW-05A in September 2000. These replacement wells were necessary because the original EW-02 and EW-05 wells were not removing significant VOC contamination at their installed depth. Extraction well EW-3 was removed from service due to well collapse and was not replaced.

In December 2000, an Explanation of Significant Differences (ESD) for the Eastern Plume altered the original GWETS to remove the ultraviolet oxidation system and replace it with an air stripping system with carbon polishing and to replace discharge to the Brunswick Sewer District with discharge to an infiltration gallery. The updated treatment system went on line in January 2001, and the infiltration gallery began operating in February 2002.

The southern boundary of the Eastern Plume and the bedrock knob area in the vicinity of MW-323 at Site 11 were investigated from 2000 through 2003. Site 11 is located northwest of the Eastern Plume and is a potential source area for the plume. The *Summary Report of the Direct-Push Investigation of the Southern Boundary of the Eastern Plume and Site 11* (EA, 2004) documents direct-push technology (DPT) activities including the use of in-situ downhole logging techniques such as EC and a membrane interface probe, groundwater sampling for VOC analysis, and the installation of four piezometers (EA, 2004).

Site 11 bedrock was subsequently investigated from 2003 through 2005. The objectives of the follow-up investigation were to obtain additional subsurface geological data to augment the existing data for the southern boundary of the plume, to assess whether preferential migration pathways are located along the southern boundary of the Eastern Plume, and to determine the lateral and vertical distribution of VOC contaminants in the study area. In September 2003, as a follow-up to the direct-push investigations at Site 11, Hager GeoScience, Inc., was contracted by EPA to perform a geophysical investigation at the NAS Brunswick. The primary objectives were to map the bedrock surface, ground-truth photo-lineaments that had been identified underlying the base, and to identify other possible fracture zones. A secondary objective included mapping key stratigraphic horizons in the study area. The purpose of the study was to further evaluate possible migration pathways in bedrock fractures and deeper stratigraphic zones that may be controlled by bedrock structure (Hager GeoScience, Inc., 2004).

Based on results of fracture trace analysis and geophysical investigation, one bedrock well (MW-NASB-11BR), was installed at Site 11 in 2004 (ECC, 2005) investigating the bedrock knob in the vicinity of bedrock monitoring wells MW-323 and MW-308. Boring log information and geophysical data indicate that clay material that elsewhere is present and prevents migration of groundwater is thin or not present in the vicinity. Moreover, one VOC, 1,1-DCA, was detected, albeit at concentrations significantly less than the MEG.

The Navy conducted a monitored natural attenuation (MNA) assessment from 2003 to 2005 using data from selected wells over four long-term groundwater monitoring events conducted semiannually between October 2003 and April 2005. The assessment was conducted to determine any evidence of CVOC degradation by reductive dechlorination in the Eastern Plume (EA/ECC, 2006). The assessment indicated inadequate evidence for biodegradation of chlorinated hydrocarbons and concluded that the Eastern Plume lacks strongly reducing conditions, resulting in limited reductive dechlorination activity.

The Navy has been performing long-term monitoring, maintenance, and corrective measures as part of the remedial action as required by the final ROD. The Navy's Long-Term Monitoring Plan (LTMP) for the Eastern Plume includes water-level monitoring and sampling of groundwater, surface water, and sediment twice per year (some locations are monitored less frequently). Groundwater and surface water samples are analyzed for VOCs, and sediment samples are analyzed for VOCs, pesticides, total organic carbon (TOC), and grain size. During the April 2004 long-term monitoring event, in addition to the standard Target Compound List (TCL) VOCs samples from five monitoring wells were analyzed for 1,4-dioxane, an emerging contaminant [identified as being present at the site after the 1998 final ROD and so not included as a contaminant of concern (COC) at that time]. 1,4-Dioxane is associated with solutions of 1,1,1-TCA, which is an Eastern Plume COC. 1,4-Dioxane concentrations exceeded its MEG in the southeastern portion of the plume and subsequently was added to the groundwater monitoring analytical list of COCs for the Eastern Plume.

Based on the detection of 1,4-dioxane in groundwater during the April 2004 monitoring event, additional investigations from 2005 to 2007 focused on potential migration of 1,4-dioxane upwelling from Eastern Plum groundwater to Mere Brook and Merriconeag Stream. A pore water sampling event was conducted by MEDEP, EPA, and the Navy between August and September 2005 in the southern area of the plume along Mere Brook and Merriconeag Stream to determine if Eastern Plume contaminants within the Lower Sand Unit were discharging into Mere Brook and its floodplain. VOCs, including 1,4-dioxane, were present in pore water at shallow depths near these streams, and it was concluded that these contaminants were migrating into Mere Brook, Merriconeag Stream, and the associated floodplain areas at concentrations exceeding MEDEP MEGs and/or MCLs (MEDEP, 2005). However, surface water samples indicate that VOCs have not impacted the stream. Note that the surficial interstitial pore water within sediment was not sampled but shallow groundwater was collected. Data for the GWETS combined effluent resulted in a concern about the potential for untreated discharge of 1,4-dioxane to the aquifer via the infiltration system; therefore, the Navy increased by two the number of monitoring wells in the Eastern Plume sampled for 1,4-dioxane.

In June 2005, five soil borings were installed using rotosonic drilling, and DPT groundwater samples were collected to provide data to support the placement of additional extraction wells in the Eastern Plume. Extraction well EW-05B was installed in July 2007 and first sampled in September 2007. Extraction well EW-05B was constructed to reduce concentrations of VOCs in the vicinity of P-106 in the northern area of the Eastern plume and to limit migration of the Eastern Plume toward surface water.

In July 2006, the Navy collected monthly influent and effluent concentration data from the GWETS for 1,4-dioxane. Although 1,4-dioxane in the GWETS effluent was less than its MEG, it did exceed its MEG in the plume and was passing through the GWETS untreated and returned to the aquifer via the infiltration system; therefore, expansion and modification of the GWETS would be required to reduce 1,4-dioxane concentrations. However, a comprehensive treatment system could not be evaluated until the concentrations and extent of 1,4-dioxane were defined throughout the plume and additional information required for treatment system design (e.g., siting of new extraction wells and flow rates) was determined.

In 2007, the Navy increased the number of wells for 1,4-dioxane sampling to better define its extent in the Eastern Plume. During the April 2007 long-term monitoring event, groundwater samples from seven shallow and 15 deep monitoring wells, one deep piezometer, and the four extraction wells were analyzed for 1,4-dioxane. 1,4-Dioxane concentrations in only two wells, both in the southeastern portion of the Eastern Plume, exceeded the MEG, a SAP was prepared by TtNUS (draft dated October 2007) to define the extent of 1,4-dioxane in this localized area. Shortly after submittal of the draft SAP, however, new data became available that dramatically expanded the scope of the planned investigation. Specifically, preliminary results from a groundwater investigation in the vicinity of the confluence of Mere Brook and Merriconeag Stream between February and September 2007 to fill data gaps associated with previous investigations confirmed that VOCs, including 1,4-dioxane, from the Eastern Plume are present in both pore water and groundwater within Mere Brook and Merriconeag Stream and associated floodplain areas in the vicinity of the confluence identified as a groundwater discharge area (ECC, 2008a). Furthermore, even further to the north within the Eastern Plume, preliminary analytical results from extraction well EW-05B, installed in July 2007 and first sampled in September 2007, became available (ECC, 2009a).

This extraction well was installed to extract groundwater contaminated with VOCs but unexpectedly also showed elevated 1,4-dioxane concentrations (exceeding the MEG) at that location. Finally, low levels of CVOCs, similar to those found in the Eastern Plume, were detected in one bedrock well (MW-308) located in the northern portion of the Eastern Plume; therefore, the overburden and bedrock contamination appeared to be linked and so a localized bedrock investigation was added to the project scope. The primary objectives of the bedrock investigation were to determine the migration pathways into bedrock in the vicinity of MW-308; potential pathways included leakage around the well annulus, migration through bedrock, and/or migration from the overburden into fractured bedrock. An expanded scope of investigation was subsequently planned during a meeting in February 2008. Representatives from the Navy, EPA, MEDEP and Brunswick Area Citizens for a Safe Environment (BACSE) attended the meeting. Discussions at the meeting resulted in agreement on scope of the subject Supplemental RI.

As of the September 2009 event, 35 monitoring events have been completed for the Eastern Plume. Two additional new GWETS extraction wells, EW-8 and EW-9, located in the vicinity of the Mere Brook-Merriconeag confluence, were installed in October 2009 based on preliminary results from this Supplemental RI and on the results of groundwater modeling by ECC. For comparison purposes, the extent of the Eastern Plume is depicted both historically (based on VOC concentrations through September 2007 that exceeded MCLs/MEGs in effect at that time) and based on the Supplemental RI Report results (last evaluated in 2010); more recent monitoring data are provided in the LTM reports for the Eastern Plume and a separate effort is pending to establish a LUC boundary using the Supplemental RI report, most recent groundwater monitoring results, and most recent criteria for all constituents.

In October 2010, an ESD documented changes to the Eastern Plume groundwater treatment technology from air stripping to an advanced chemical oxidation treatment process that uses hydrogen peroxide and oxone to breakdown VOCs and 1,4-dioxane into non-hazardous end products. Also, this ESD documents the addition of 1,4-dioxane and vinyl chloride as COCs for the Eastern Plume and establishes cleanup goals of 3.5 µg/L and 0.15 µg/L respectively for these COCs.

The porewater/shallow groundwater surface water sampling event conducted during November 2010 provided valuable data from which to update the site conceptual model related to the fate and transport of VOCs and 1,4-dioxane discharge into Mere Brook and Merriconeag Stream. Because of the heavy rains during that time period, the Navy agreed to conduct another round of samples at select locations in September 2011 when conditions were much drier. In addition, samples were collected from the surface water in September 2011 and analyzed for 1,4-dioxane as per the MEDEP's request. The results and conclusions from both the November 2010 and September 2011 will be summarized in a report and used to determine any additional long term monitoring requirements for the Eastern Plume in the near future as well as support any land use control strategies for this area.

1.4 PREVIOUS RESIDENTIAL WELL SAMPLING

Following the 1990 RI, off-site private wells located along Gurnet Road, Purinton Road, and Coombs Road were sampled by either the Navy or MEDEP in 1990. It was concluded based on the absence of contamination in these wells that the eastern boundary of the plume is Mere Brook, approximately 500 feet west of the private wells (E.C. Jordan, 1991).

Because of concerns associated with the presence in bedrock of 1,1-DCE (7.5 to 29 µg/L) and TCE (13.7 and 49 µg/L) in groundwater collected from on-base well MW-308 over three sampling events, a list of available information about 20 nearby residential wells was compiled in 2006 by MEDEP (ECC, 2008). The residential wells were then sampled by either MEDEP or the Navy.

Samples from the nearest residential well (Purinton Road), located approximately 675 feet east of well MW-308, were analyzed for VOCs in 2004, 2005, and 2007, and results indicated that no VOCs were present. Samples from two residential wells along Coombs Road were analyzed for VOCs in 2006; no VOCs were present at one of the wells, and at the other well, TCE was detected at very low levels (0.4 to 0.74 µg/L), less than the MEG and MCL (5 µg/L), and no other VOCs were detected.

1.5 REPORT ORGANIZATION

The information presented in this report is organized as follows:

- Section 1.0 summarizes background information about the site including site description and history, discusses data gaps, and presents the objectives of the investigation.

- Section 2.0 presents a description of the field work performed during the 2008-2010 field investigation. Sample collection procedures and the analytical program are also described in this section.

- Section 3.0 presents a summary of the results of the 2008-2010 investigation including an evaluation of geology and hydrogeology.

- Section 4.0 presents analytical results and discusses nature and extent of contamination.

- Section 5.0 summarizes findings of the investigation and conclusions drawn from the data assessment.

- Appendices include:

  - Appendix A, Field Results-Supplemental RI, includes field data sheets and calculations.

  - Appendix B, Analytical Results, contains analytical data and data validation reports and is provided on CD.

  - Appendix D, Data Validation Process and Data Quality Review, provides an assessment of data quality and usability.

  - Appendix C, Potential Sources of Groundwater Contamination of the Eastern Plume, summarizes pertinent information concerning evaluation of potential sources including Sites 4, 11, and 13.

  - Appendix E, Supporting ECC Groundwater Monitoring Results, provides the April 2009 analytical data supporting the comprehensive data set for nature and extent of contamination.

  - Appendix F, Response to Stakeholder Comments on the Draft Supplemental RI Report.

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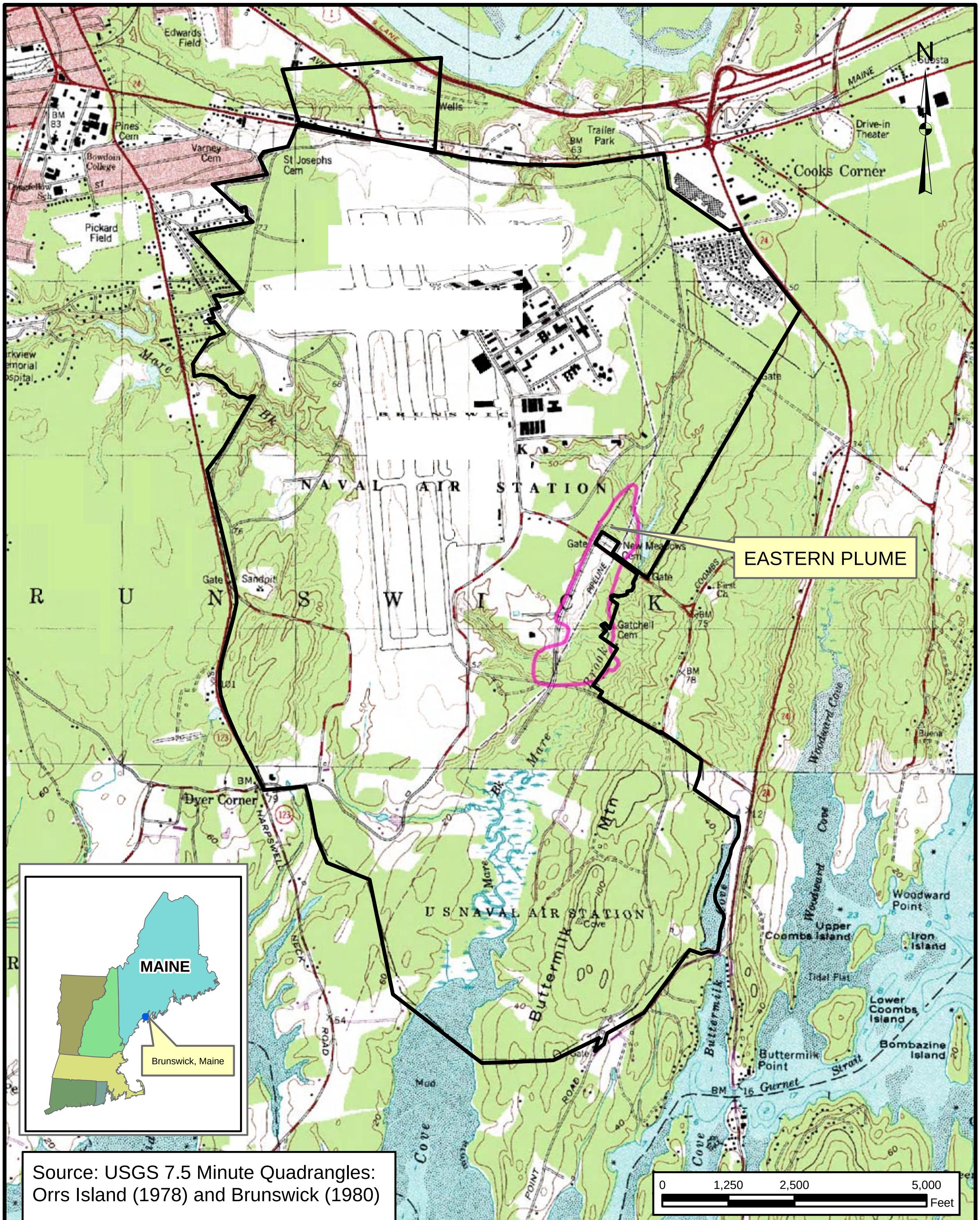

Tetra Tech NUS, Inc.

SITE LOCATION MAP
EASTERN PLUME
NAVAL AIR STATION
BRUNSWICK, MAINE

SCALE	AS NOTED
FILE	\..\EAST_PLUME_LOCUS.MXD
REV	0
DATE	02/01/12
FIGURE NUMBER	1-1

DRAWN BY D.W. MACDOUGALL	DATE 02/28/11	Tetra Tech NUS, Inc.	CONTRACT NUMBER CTO 0069
CHECKED BY C. RACE	DATE 02/28/11	EASTERN PLUME MAP NAVAL AIR STATION BRUNSWICK, MAINE	APPROVED BY / DATE
CHECKED BY	DATE		APPROVED BY / DATE
SCALE AS NOTED			FIGURE NO. FIGURE 1-2 / REV 0

2.0 SUPPLEMENTAL RI ACTIVITIES

This section provides a summary of the field activities conducted during the Supplemental RI of 1,4-Dioxane in the Eastern Plume and Bedrock. Investigation activities were completed in accordance with the Final SAP (TtNUS, 2008), unless otherwise noted. The green shading on Figure 2-1 represents the extent of the Eastern Plume VOCs exceedances of MCLs/MEGs based on data through September 2007.

2.1 STREAM PORE WATER AND SEEP SAMPLING

A pore water investigation conducted in August and September 2005 focused on the reach of Merriconeag Stream south of Mere Brook, the westernmost portion of Mere Brook, and a small area of Merriconeag Stream north of Mere Brook. The 2005 investigation was performed by the Navy, the Navy's subcontractor (ECC), MEDEP, and EPA; these locations and are shown on Figure 2-1. Results indicated 1,4-dioxane and CVOCs at elevated levels (greater than MCLs or MEGs) in samples collected near the Mere Brook and Merriconeag Stream confluence, with lower concentrations in samples collected upstream and downstream of the confluence. The August 2008 pore water/seep investigation conducted as part of the Supplemental RI serves as a continuation of the 2005 investigation. The 2008 data set was intended to refine understanding of Eastern Plume contaminant concentrations in shallow pore water and groundwater seeps along the western bank of Merriconeag Stream, including Picnic Pond, particularly, to determine if the Eastern Plume was upwelling to the northern reach of Merriconeag Stream. The information was also used to refine the locations of EC groundwater profiling transects for the subsequent task.

The scope of work for the 2008 pore water investigation consisted of pore water and seep sample collection along the banks of an approximate 2,600-foot portion of Merriconeag Stream including the western "fork" of Picnic Pond. Pore water sampling was completed August 11-12, 2008. Samples were collected by MEDEP with assistance from TtNUS and analyzed by EPA's Investigations and Analysis Unit (EIA). A total of 68 pore water samples (PW-83 through PW-150) (plus nine duplicate samples) and 15 seep samples (PW-SP-01 through PW-SP-15) were collected for a total of 83 aqueous samples (excluding duplicates). All samples were analyzed by EPA's mobile laboratory for TCA, TCE, PCE, cis-1,2-DCE, and 1,1-DCE. In addition, a total of 58 select pore water and seep samples (plus 9 duplicates) were submitted to EPA-New England's Regional Laboratory (NERL) located in Chelmsford, Massachusetts, for 1,4-dioxane analysis. Water quality data were also collected. All 2008 pore water sample locations are depicted on Figure 2-1.

The 2008 samples were collected from a pore water sampler approximately every 50 feet along the western banks of Merriconeag Stream and Picnic Pond. The pore water sampler consisted of a stainless steel sampler and strengthening rod. The sampler was a hollow tube with small holes in the tip to allow groundwater to enter. The strengthening rod slid into the pore water sampler and blocked water from entering the sampler until sampling. Both pieces of equipment were placed in a polyvinyl chloride (PVC) sheath for protection. A 6-foot-long sampler was used to collect deeper samples in Picnic Pond and in the stream channel. A 3-foot-long sampler was used to collect shallower samples at locations more distal from the immediate stream channel/pond bank where an area of standing water and groundwater upwelling in the Merriconeag floodplain was observed by EPA and MEDEP during the May 23, 2008, field reconnaissance. The pore water sampling protocol is described in the associated work plan (EPA, 2008).

Initially, at each sampling location, surface water depth and water quality measurements, including temperature and dissolved oxygen (DO), were recorded. After the initial measurements were collected, the sampler was inserted into the streambed/pond sediments to the maximum practical depth (a minimum of at least 8 inches). Samples were typically collected from 1 to 5 feet or more into the sediment. Efforts were made to collect samples in the sandy transmissive zone. If sufficient sample volume was not retrievable from the transmissive zone, the sampler was gently advanced or pulled up to find a more transmissive zone. After the sampler was advanced to the desired depth, the sampler was purged of two pore water sample volumes. The sample volumes for the 3-foot and 6-foot samplers were 10 and 96 milliliters, respectively. After each location was purged, water quality measurements were taken for comparison to surface water quality data. If the water quality parameters were similar to the initial results, the probe was advanced deeper or the sample location was modified to ensure the presence of pore water rather than surface water.

After all water quality measurements were collected, five 40-milliliter vials (one unpreserved, four preserved with hydrochloric acid [HCL]) were collected and immediately cooled to 4 degrees Celsius (˚C) before being transported to the mobile and EPA-NERL laboratories. Sampling equipment was decontaminated after each sample location in accordance with the decontamination procedures described in the work plan.

Pore water sample summary logs/field notations are provided in Appendix A-1 and evaluated in Section 3.0. Analytical results are provided in Appendix B-1 and discussed in Section 4.0.

2.2 EC PROFILING AND CONFIRMATORY SOIL BORINGS

To identify discrete depths for groundwater sampling, EC profiling was first conducted between October 27 and November 7, 2008, with follow-up EC profiling from December 5 to December 9, 2008. EC profiling logs were interpreted to identify three groundwater sample depths – shallow and intermediate within the Transition Unit and deep within the Lower Sand. The EC results were evaluated together with historical existing data to determine locations and screened intervals for subsequent permanent monitoring wells to better define concentrations of 1,4-dioxane and CVOCs that exceeded MEGs and EPA MCLs.

The initial EC profiling event consisted of 23 profiling locations, and the second event consisting of seven additional profiling locations based on review of the initial profiling results. Several proposed EC profile locations were relocated from their originally planned locations in the SAP (TtNUS, 2008), in consultation with MEDEP and EPA, based on pore water results and physical access constraints. Table 2-1 summarizes the rationale for the final EC profiling locations, shown on Figure 2-1. The initial profile locations were staked and flagged in the field using a Trimble Geo XT Global Positioning System (GPS). The subsequent profile locations were documented by calculating their distances and directions from nearby GPS locations.

EC profiling was performed with a Direct Image Field Instrument FC5000 and EC Probe SC500 in accordance with the TtNUS SOP S3 (TtNUS, 2008). The EC probe was driven via DPT using a track-mounted Geoprobe® Model 6620DT. At each EC profiling location, the EC probe was driven into the Presumpscot Clay or refusal, whichever was encountered first. A calibration check for the EC probe was completed at every EC profiling location in accordance with the SAP.

To verify EC profile interpretations, soil borings were advanced at 6 of the 30 EC profiling locations (PL-01, PL-06, PL-11, PL-17, PL-20, and PL-23) to confirm EC profiling interpretations. Lithology samples were collected using a Geoprobe® Dual Tube sampler. EC profiling results were confirmed by direct examination of soil samples collected from soil borings. In general, EC logging was effective in identifying the Upper Sand, sandy interbeds in the Transition Unit, and Lower Sand. Table 2-2 provides a comparison of depth information between EC profiling results and confirmatory soil borings. Typically, the EC measured for the Upper Sand was less than approximately 2 milliSiemens per meter (mS/m) and was relatively consistent throughout the unit. The contact with the Transition Unit was identified by an abrupt increase in EC readings varying from 2.5 and 10 mS/m. The variability of EC readings within the Transition Unit is consistent with soil boring logs, which describe the lithology as interbedded fine silty sands, silt, and silty clay. A sand interval was often identified near the base of the Transition Unit by EC readings less than 5 mS/m. The contact with the underlying Presumpscot Clay was identified by a continuous increase in EC measurements. For example, the depth to clay identified on the PL-6 soil boring log is 60 feet bgs, and the EC log indicates a clear increase in EC values at approximately the same depth (Table 2-2).

Each EC graph was reviewed by a Maine Certified Geologist (CG), and the information was used to determine the depths of discrete interval groundwater samples (see Section 2.3). EC graphs and confirmation soil lithology borings are provided in Appendix A-2 and Appendix A-4, respectively.

2.3 DISCRETE-INTERVAL GROUNDWATER SAMPLING FROM EC PROFILING LOCATIONS

Discrete interval groundwater samples were collected from November 10 to December 15, 2008, at locations selected based on interpretation of EC profiles, as discussed in Section 2.2. At each EC profile location, as applicable, sample location depths targeted interpreted sand lenses within the upper and middle portions of the Transition Unit and Lower Sand. In total, 24 discrete interval groundwater samples plus two duplicate samples were collected from profile locations at various depths. Of the 30 planned profile locations, 15 did not yield water at any of the targeted depth intervals and so no samples were collected. Moreover, of the 15 profile locations that were able to be sampled, not all depth intervals yielded groundwater.

Sampling was performed following the SAP (TtNUS, 2008) and EPA's Standard Operating Procedure (SOP) titled Low-Stress Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells provided in the SAP. Discrete interval groundwater samples were collected using a Solinst Model 660 Drive-Point Profiler® (profiler) advanced using the Geoprobe® 6620DT rig. The profiler consists of a 1.75-inch-diameter AW stainless steel tip with one row of screened inlet holes positioned on the circumference of the tip; each inlet hole was approximately 3/16 inch in diameter. The inlet holes were connected to a single sample line (either polypropylene [PPE] ¼-inch outside diameter [OD] or PPE micro-tubing 4-mm OD) that was connected to the pump head of a peristaltic pump and flow-through cell.

Operation of the drive-point profiler began at the ground surface. To avoid potential cross contamination, the profiler system was flushed with potable water using a peristaltic pump while it was advanced to the selected sample depth. The volume of potable water pumped into the formation while advancing the profiler varied depending on the subsurface stratigraphy. Sandy material was capable of assimilating potable water at a higher rate (approximately 200 to 400 ml per minute) than material consisting of silt and clay (approximately 0 to 20 ml per minute).

A dual-tube sampler was used for soil sampling in accordance with the SAP. For groundwater, the Solinst profiler was selected because the dual-tube sampling equipment originally planned was ineffective at obtaining representative groundwater samples at the site. Repeated attempts were not consistently successful in obtaining representative samples. The Solinst profiler was selected because of successful application at a different site with similar hydrostratigraphy (artesian conditions, interbedded sands/silt).

This equipment change was approved by EPA and MEDEP. The field task modification request (FTMR) form can be found in Appendix A-11.

Background readings for potable water were used to distinguish potable water being purged from the formation and formation water. Potable water field parameters were measured and recorded each day, and results are summarized on purge data sheets. When the desired sample depth was achieved, the pump flow was reversed. If the zone yielded water, the volume of potable water pumped into the subsurface during advancement was purged. When stabilization criteria for field parameters were met, a sample was collected. To assess groundwater stabilization criteria, field parameters of temperature, specific conductivity, pH, oxidation reduction potential (ORP), and dissolved oxygen (DO) were measured using a YSI 556 MPS downhole meter, and turbidity was measured using a LaMotte 2020e turbidity meter. If water flow was insufficient (less than 10 ml per minute) or became insufficient after several minutes of purging, an average of three attempts were made (at surrounding depths based on EC data/graphs) to target a water yielding zone. As previously discussed, many of the sample depths did not exhibit any water flow, as indicated in Table 2-1 and the purge data sheets.

The 24 discrete interval groundwater samples collected were analyzed for 1,4-dioxane and CVOCs including 1,1,1-TCA, 1,1,2-TCA, 1,1-DCA, 1,2-DCA, DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE and vinyl chloride (VC). Samples collected from 13 of the profile locations were selected for expedited analysis (PL-2, PL-4, PL-5, PL-7, PL-8, PL-10, PL-14, PL-15, PL-16, PL-17, PL-18, PL-19 and PL-23) to determine follow-up EC profile locations. Analytical results are included in Table 2-1.

Refer to Appendix A-3 for groundwater profiling sample logs and purge data sheets; results are evaluated in Section 3.0. Analytical results are provided in Appendix B-2 and discussed in Section 4.0.

2.4 WELL INSTALLATION AND DEVELOPMENT

Both overburden and bedrock monitoring wells were installed during the Supplemental RI. Monitoring well locations are shown on Figure 2-1. Rationale for the locations of overburden wells is provided in Table 2-3, and rationale for the locations of bedrock wells is described in Section 2.4.2. Well completion details are included in Table 2-4; monitoring wells installed in 2008 and 2009 during the Supplemental RI can be differentiated from previously installed existing wells by the date of installation. Monitoring well logs are included in Appendix A-4. Evaluation of results is discussed in Section 3.0.

2.4.1 Overburden Well Drilling

Based on groundwater profiling results, 13 overburden monitoring wells (MW-EP-343 through MW-EP-355) were completed across the Eastern Plume to better define the core of the plume.

Monitoring well MW-EP-355 could not be installed during the same field event as the other 12 overburden wells (May 2009) because the area where it was to be installed was covered by surface water; well MW-EP-355 was installed in August 2009.

Soil Sampling

Soil samples were collected to confirm the lithology at the termination depth of each boring using a GeoProbe® Macro-Core® piston rod soil sampling system or dual-tube soil sampling system. The Macro-Core® samples consisted of a 1.5-inch-Inside Diameter (ID), 5-foot-long core barrel with a clear plastic liner, and the dual-tube samples consisted of a 1-inch-ID, 5-foot-long core barrel with a clear plastic liner. Soil stratigraphy was logged to confirm the results of EC logging and to target water-bearing zones for well installation. As each sampler was opened, the soil was monitored for organic vapors using a photoionization detector (PID) equipped with a 10.2 electron-volt (eV) lamp, and an aliquot was collected for jar headspace screening. Soil samples collected from each of the borings were screened in accordance with headspace screening methods specified in the SAP (TtNUS, 2008). Headspace screening results are presented on the soil boring logs in Appendix A-4. At each location, the borehole and breathing zone of the field crew were periodically monitored for organic vapors for health and safety reasons. Collection of TOC data from uncontaminated areas was included in the SAP in the event aquifer conditions indicated dissolved-phase contaminants that adsorb to aquifer materials were migrating beyond the historical boundary of the Eastern Plume. Because the initial data from the profiling and subsequent groundwater monitoring data indicated the dissolved-phase plume is stable, the collection of TOC data was not recommended.

Well Screen Installation and Placement

Manufactured pre-packed well screens consisting of 2.5-inch-OD, 1-inch-ID, Schedule 40 PVC, flush-threaded, machine-slotted well screen (0.010 inch slot openings) were utilized for overburden well installations. Two 5-foot-long pre-packed well screens were threaded together for each of the wells to create 10-foot-long well screens. Each monitoring well was fitted with a bottom plug. Silica sand was placed in the annulus opposite each pre-packed well screen up to approximately 2 feet above the screened interval. Bentonite was placed in the annular space above the sand pack to approximately 3.5 feet bgs. A silica sand drainage layer was placed above the bentonite seal, a steel outer protective casing (4-inch ID by 5 feet long) was installed around the PVC riser pipe, and silica sand was placed in the annulus of the protective casing. A surface seal consisting of Quikrete® and potable water was formed around each protective casing, flush with ground surface. New monitoring wells were locked with keyed-alike locks.

Well Development

Wells were developed to remove sediments from inside the casings and from within the sand filter pack that surrounds the well screens. Each newly installed monitoring well was developed in accordance with the procedures described in the SAP (TtNUS, 2008) a minimum of 48 hours after well completion, as shown on the logs provided in Appendix A-5. Overburden wells were developed by using a Waterra® pump and polyethylene tubing equipped with a foot valve. Overburden wells associated with new bedrock clusters were developed using a peristaltic pump or Waterra® pump.

Water Quality Measurements

Measurements of temperature, specific conductance, pH, ORP, and DO were collected using an YSI 556 MPS downhole meter, and turbidity was measured using a LaMotte 2020e turbidity meter to assess stabilization criteria. Water quality measurements are provided in Appendix A-5.

2.4.2 Bedrock Well Cluster Drilling

In October and November 2008, three monitoring well clusters (three wells each at locations MW-EP-340, MW-EP-341, and MW-EP-342) totaling nine monitoring wells (MW-EP-340S/B1/B2, MW-EP-341S/B1/B2, and MW-EP-342S/B1/B2) were installed to evaluate potential contaminant migration pathways into bedrock monitoring well MW-308. The well clusters were located in the vicinity of MW-308, which is south of Purinton Road and approximately 150 feet southwest of new extraction well EW-05B as shown on Figure 2-1 where groundwater contamination was encountered. Each of the three locations consists of an overburden well (designated with an “S” suffix) in the Transition Unit, a shallow bedrock well (designated with “B1” suffix), and a deeper bedrock well (designated with a “B2” suffix). All borehole drilling and monitoring well construction and development activities were completed in accordance with the SAP (TtNUS, 2008).

The six bedrock wells were advanced through the overburden and a few feet into competent bedrock using air rotary drilling techniques. A 6-inch-ID steel casing was installed in the 8-inch-diameter borehole and grouted, and the grout was allowed to set up prior to advancing the borehole into bedrock. Geophysical logging information (see Section 2.5) was used to determine screen intervals for the two nested bedrock wells at each of the three locations. The deepest well screen bottom was at MW-EP-341B2 at -56.38 feet above mean sea level. Monitoring well construction details are provided in Table 2-4.

The three overburden wells associated with the bedrock clusters were installed using drive and wash drilling methods. Split spoon soil samples were collected for visual soil classification and soil jar headspace field screening. Boring logs are included in Appendix A-4.

2.5 BEDROCK BOREHOLE GEOPHYSICS

A total of six bedrock borings were completed at three planned well cluster locations (MW-EP-340, MW-EP-341, and MW-EP-341) for installation of monitoring wells with each cluster location consisting of an overburden well, a shallow bedrock well, and a deeper bedrock well. Each of the three locations consists of an overburden well (designated with an “S” suffix), a shallow bedrock well (designated with “B1” suffix), and a deeper bedrock well (designated with a “B2” suffix). In support of this effort, downhole geophysical logging was conducted in three open boreholes (MW-EP-340B, MW-EP-341B, and MW-EP-342B) in November 2008 to identify bedrock characteristics including lithology, fracture orientation, fracture spacing, and fracture aperture and to assess potential transmissive zones and potential vertical flow conditions within the boreholes. In accordance with the SAP, fluid temperature, fluid resistivity, caliper, natural gamma, acoustical televiewer (ATV), optical televiewer (OTV), and flowmeter measurements were logged for the bedrock boreholes. A natural gamma log was not performed in borehole MW-EP-341B because of time constraints; however, the caliper, temperature, fluid resistivity, ambient and stressed flow meter and acoustical televiewer geophysical logs were completed and provided sufficient information to identify the depth of transmissive (water-bearing) fractures and to recommend well screen depth intervals.

Geophysical logging was used to help identify the locations of potential water-bearing fractures in the bedrock boreholes. Several different types of geophysical logging techniques were employed in the three open boreholes to identify features that could be conductive to groundwater flow and contaminant migration. Natural gamma logging measures the gamma radiation emitted from geologic materials and can be used to distinguish between different bedrock lithologies and water-bearing fractures. Lithologic changes and fracture zones can be identified by differing percentages of radioactive materials (mainly potassium-40 and to a lesser extent uranium-238 and thorium-232). Fractures often contain weathered clay minerals, which can have higher amounts of potassium or uranium than unfractured rock.

Caliper logs were performed in each of the locations as a method of measuring borehole diameter. Abrupt widening of the borehole can be related to the presence of fractures or other zones of enhanced permeability. In-well temperature logging was also performed in each of the boreholes. Generally, temperature rises uniformly with depth at a rate of about 1.0º C per 100 feet. Abrupt temperature changes in the borehole could be caused by water entering or exiting. Other factors that can affect temperature include variations in the thermal resistivity of the rock, surface climatic changes, thermal effects of drilling activity, and localized heat sources such as radionuclides in the rock or well cement.

Fluid resistivity measurements can be useful in identifying transmissive fractures because water entering the borehole through fractures can vary from the water that is already in the borehole.

The ATV log provides an acoustical image of the borehole walls. Planar features such as fractures, bedding surfaces, and joints can be identified with the ATV tool, and the strike, dip direction, and dip angle of these features can often be determined. The OTV log provides a digital image of the borehole walls that is oriented to magnetic north and can identify and determine the same features as those described for ATV. The ATV and OTV logs are somewhat duplicative in that they both can provide similar information; however, there are advantages and disadvantages to both tools. For instance, OTV results can be obscured by high turbidity levels, as was the case in some of the boreholes.

As an initial step, temperature, caliper, fluid resistivity, and televiewer logs for each borehole were examined, and possible bedrock fractures were identified. This information was used to select measurement locations for flowmeter logging. Generally, flowmeter measurements were taken in the zone above and below locations where potential fractures might exist in the boreholes. The flowmeter instrument is capable of measuring flow direction in a borehole (up or down) and has a calibrated measurement range of 0.03 to 1.0 gallon per minute (gpm). Vertical flow in a borehole is caused when two or more transmissive fractures in the borehole are at hydraulic disequilibrium with one another. When this occurs, a hydraulic gradient is developed, and water will flow toward the fracture with the lower hydraulic head. When no vertical flow is measured, it can mean that there are less than two transmissive fractures in the borehole or that water in all the fractures in the borehole is at equilibrium.

Geophysical logging was subcontracted to Northeast Geophysical Services of Bangor, Maine. The geophysical logging results are provided in the subcontractor report of Appendix A-6 and further discussed in Section 3.0.

2.6 WATER-LEVEL GAUGING

On June 12, 2009, a comprehensive synoptic water-level measurement round was performed prior to groundwater sampling for evaluation of groundwater flow directions and hydraulic gradients. Groundwater and surface water gauging stations included in the Final Long-Term Monitoring Plan, Eastern Plume, Naval Air Station Brunswick, Maine (ECC, 2008b) and all newly installed monitoring wells were measured. Stream gauge and monitoring well locations are shown on Figure 2-1. Groundwater measurements were obtained using an electronic water-level indicator with a weighted cord that is accurate to 0.01 foot. Water-level measurements in wells were recorded from the highest point of the top of the PVC riser (marked in black). Water-level measurements for stream gauges were recorded from a previously surveyed reference point marker (see Appendix A-8). Staff gauges were included in the SAP in the event the project team identified key areas where staff gauges were needed; however no additional staff gauges were installed because existing staff gauges included in the Long Term Monitoring Plan for the Eastern Plume were adequate.

A summary of groundwater elevations is also included in Table 2-4. As noted in the table, some wells were omitted if they could not be unlocked; however, over 110 wells were measured and provided a good distribution of water levels in the Upper Sand, Transition Unit, Lower Sand, and Bedrock in the vicinity of the Eastern Plume. Water-level data field log sheets and surface water elevation calculations are presented in Appendix A-8 and evaluated in Section 3.0. Note that monitoring well MW-EP-355 was not included in the synoptic water-level measurements because it was not installed and surveyed until later (August 2009 and January 2010, respectively) based on site conditions.

2.7 HYDRAULIC CONDUCTIVITY TESTING

Instantaneous hydraulic conductivity ("slug") tests were conducted at the 8 of the 9 wells associated with the three newly installed bedrock monitoring well clusters (MW-EP-340S/B1, MW-EP-341S/B1/B2, and MW-EP-342S/B1/B2), and at 12 of the 13 newly installed overburden wells (MW-EP-343 through MW-EP-354). Wells for slug testing were distributed across the core of the 1,4-dioxane plume and along downgradient migration pathways identified from the EC profiling. Slug tests were not performed at MW-EP-340B2 due to extremely slow recovery and at MW-EP-355 because a sufficient hydraulic conductivity data set was collected during earlier Supplemental RI activities. Hydraulic conductivity testing methodology was conducted in accordance with the SAP (TtNUS, 2008).

Prior to initiation of slug testing at each well, the groundwater level was measured to the nearest 0.01 foot using an electronic water-level indicator. An electronic water-level/pressure transducer was then lowered into the well to either 1 foot above the bottom of the well (in shallow wells) or at least 10 feet below groundwater level (in deep wells), and the static water level was re-established. Rising-head tests were performed in each of the monitoring wells by inserting a 5-foot-by-1¼-inch slug into the well and then withdrawing the slug from the well when the water level had returned to static conditions. Due to artesian conditions at MW-EP-350, a 3-foot slug was attached to the 5-foot-by-1¼-inch slug for optimal displacement. The slug tests continued until water levels recovered to at least 9 percent of the static level. Water-level measurements were collected using the pressure transducer.

The data collected during slug testing from the initial set of wells tested (bedrock wells MW-EP-340B1, -341B1, -341B2, -342B1, and -342B2) were analyzed using both the Bouwer and Rice (Fetter, 1994) and Hvorslev (Hvorslev, 1951) methods. The hydraulic conductivity estimates using both methods were similar (within a factor of two); therefore, one method Bouwer and Rice, was retained to maintain consistency in the data analysis method for the remainder of the wells tested. Hydraulic conductivity test results are presented included in Appendix A-7 and evaluated in Section 3.0.

2.8 GROUNDWATER SAMPLING

Groundwater samples were collected from the Eastern Plume area on several occasions during the Supplemental RI. Groundwater samples were first collected from the profiling effort between November 10 and December 15, 2008, based on the results of EC profiling, as discussed in Section 2.3. The three newly installed well clusters (MW-EP-340S/B1/B2, MW-EP-341S/B1/B2, and MW-EP-342S/B1/B2) were sampled from April 13 through 15, 2009. Groundwater samples were also collected from newly installed and select existing monitoring wells. Twelve of the 13 new overburden monitoring wells (MW-EP-343 through MW-EP-354), and nine select existing wells not part of the long-term monitoring program for the Eastern Plume (MW-MB-03C, PZ-MB-B4B, MW-MB-01C, MW-MB-02C, MW-MB-04B, PZ-MB-B6B, PZ-MB-C4B, MW-MB-06A, and MW-MB-06C) were sampled from June 8 through 15, 2009. As discussed above, the remaining new overburden well (MW-EP-355) was sampled in September 2009. Sampling was performed following the SAP (TtNUS, 2008) and including EPA's SOP titled Low-Stress Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells.

Submersible bladder pumps with Teflon™ bladders were used to collect groundwater samples. Sampling equipment was decontaminated between sample locations in accordance with the SAP (TtNUS, 2008). Dedicated tubing was used for each monitoring well to minimize cross-contamination. Low-flow sampling methods were used and emphasized the need to minimize water-level drawdown and groundwater pumping rates to collect samples with minimal alterations to groundwater chemistry.

Groundwater was pumped through a flow-through cell where pH, conductivity, temperature, DO, and ORP were measured with an YSI 556 MPS meter and a LaMotte 2020 turbidimeter measured the turbidity to assess stabilization criteria.

Water levels, flow rates, and water quality field measurements were recorded on water sampling logs provided in Appendix A-9 along with other supporting field documentation. Groundwater samples were analyzed for 1,4-dioxane and CVOCs of concern identified in the SAP. Analytical results from groundwater profiling and permanent monitoring well sampling are provided in Appendix B-2 and Appendix B-3, respectively. Analytical results are discussed in Section 4.0.

2.9 SURVEYING

Following the field investigation, a survey was performed in accordance with the SAP to document the horizontal locations and elevations of all sample locations and significant site features. Surveyed features included locations and elevations of pore water sample locations, groundwater EC profiling locations, and new monitoring wells. For each monitoring well, a black mark was drawn on the highest point of the PVC well riser to serve as a reference point for well survey and groundwater depth measurements upon completion of each well.

Horizontal coordinates were referenced to the North America Datum (NAD) of 1983, Maine State Plane West Coordinate System (SPCS), Universal Transverse Mercator (UTM) Zone 19, in units of feet and meters. Elevations were referenced to the NGVDs of 1929 and 1988. Survey data are provided in Appendix A-10.

2.10 INVESTIGATION-DERIVED WASTE

IDW generated during Supplemental RI field events consisted of groundwater, soil, and rock cuttings from drilling and groundwater purging/sampling activities. IDW solids and liquids were containerized in 55-gallon open-head steel drums, sealed and labeled according to the Navy's procedures. Drums were temporarily stored within the Base at a staging area designated by the Navy. ENPRO (TtNUS subcontractor) sampled the drums for waste characterization and transported the drums off site for proper disposal based on the results of characterization sampling.

TABLE 2-1

EC PROFILING AND DISCRETE-INTERVAL GROUNDWATER SAMPLE RESULTS SUMMARY
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

Transect Line No.	Profiling Location	General Location	Rationale[1]	Groundwater Sample Depth Intervals (ft-bgs) 1,4-Dioxane Results (ug/L) and Total Chlorinated VOC Results (ug/L)														
				Upper Target Depth	Upper Actual Depth	Sample Date	1,4-Dioxane	Total CVOCs[2]	Middle Target Depth	Middle Actual Depth	Sample Date	1,4-Dioxane	Total CVOCs[2]	Lower Target Depth	Lower Actual Depth	Sample Date	1,4-Dioxane	Total CVOCs[2]
1	PL-1	Northern portion of Eastern Plume.	North of 5 ug/L 1,4-dioxane contour. Target area between pore water sample PW-130 and PW-131 where VOCs were detected. Also address data gap in depth to clay layer.	39	44.3	11/10/2008	ND	ND	61	no water	12/1/2008	NA	NA	73	71	12/1/2008	**4.4**	**4.88**
1	PL-2	Northern portion of Eastern Plume, Upgradient of Picnic Pond and porewater sample PW-131 (4.93 ug/L total VOC)	In northern extension of clay bowl.	26	26.3	11/11/2008	ND	ND	44.3	45	11/12/2008	ND	ND	70	69.7	11/12/2008	**51**	**145.4**
2	PL-3	Northern portion of Eastern Plume, outside 5 ug/L contour.	Outside 5 ug/L 1,4-dioxane contour	31	31	12/1/2008	ND	ND	54	no water	12/2/2008	NA	NA	75	no water	12/2/2008	NA	NA
2	PL-4	Northern portion of Eastern Plume, outside 5 ug/L contour.	Near 32 ug/L 1,4-dioxane contour.	28.5	no water	11/13/2008	NA	NA	46	no water	11/13/2008	NA	NA	67	67	11/13/2008	**74**	**557.4**
2	PL-5	Northern portion of Eastern Plume, near Merriconeag Stream outside 5 ug/L contour.	Between EW-05B (~100 ug/L 1,4-dioxane), and Merriconeag Stream.1,4-Dioxane concentrations may be elevated based on sampling results from pore water location PW-SP-14.	19.5	20	11/12/2008	ND	ND	30	30	11/12/2008	ND	ND	39.5	no water	11/13/2008	NA	NA
3	PL-6	Central portion of Eastern Plume near 32 ug/L 1,4-dioxane contour	Near 32 ug/L 1,4-dioxane contour.	24	no water	12/2/2008	NA	NA	41	41	12/2/2008	ND	**1**	63.8	no water	12/2/2008	NA	NA
3	PL-7	Central portion of Eastern Plume outside 5 ug/L 1,4-dioxane contour	Limited 1,4-dioxane data nearby (MW-330)	21	no water	11/14/2008	NA	NA	36.5	no water	11/14/2008	NA	NA	49.2	no water	11/14/2008	NA	NA
3	PL-8	Central portion of Eastern Plume, outside 5 ug/L 1,4-dioxane contour near Merriconeag Stream	Near pore water sample location PW-SP-02 (10 ug/L 1,4-dioxane)	21	20	11/14/2008	ND	ND	34.5	no water	11/14/2008	NA	NA	43.5	no water	11/14/2008	NA	NA
4	PL-9	Central portion of Eastern Plume outside 5 ug/L 1,4-dioxane contour	Outside 5 ug/L 1,4-dioxane contour	40	40	12/2/2008	ND	ND	60	60	12/3/2008	ND	**3.4**	78	no water	12/3/2008	NA	NA
4	PL-10	Central portion of Eastern Plume	In vicinity of pore water sample location PW-SP-05 (0.02 J ug/L total VOCs, 1,4-dioxane) and PW-106 (1,4-dioxane), plus PW-SP-03 (VOCs).	21	no water	11/17/2008	NA	NA	27.2	no water	11/17/2008	NA	NA	34.3	no water	11/17/2008	NA	NA
4	PL-11	Central portion of Eastern Plume near Merriconeag Stream	In vicinity of porewater sample location PW-106 (4.04 ug/L 1,4-dioxane) and PW-SP02.	7.5	no water	12/4/2008	NA	NA	17	no water	12/4/2008	NA	NA	23.3	no water	12/4/2008	NA	NA
5	PL-12	Central portion of Eastern Plume, upgradient of 5 ppb 1,4-dioxane contour.	Outside 5 ug/L 1,4-dioxane contour at a point between existing CP-110 and CP-114	22.5	22.5	12/3/2008	ND	ND	39	40	12/3/2008	ND	ND	52 & 68	no water	12/3/2008	NA	NA
5	PL-13	Central portion of Eastern Plume, in vicinity of 32 ug/L 1,4-dioxane contour	In vicinity of 32 ug/L 1,4-dioxane contour.	23	no water	12/4/2008	NA	NA	41	no water	12/4/2008	NA	NA	59 & 86	no water	12/4/2008	NA	NA
5	PL-14	Central portion of Eastern Plume, in vicinity of 100 ug/L 1,4-dioxane contour	In vicinity of 100 ugL 1,4-dioxane contour to target pore water sample PW-SP-09 (VOCs) where unique cold-water discharge and preferential pathways present. Nearby DP-EP-01S/D (therefore no EC profiling necessary since lithology information is available).	23	no water	11/17/08	NA	NA	48	48	11/17/08	**5.1 (sample) 5.7 (dup)**	**81 (sample) 87 (dup)**	63 & 71	no water	11/17/08	NA	NA
5	PL-15	Central portion of Eastern Plume, in vicinity of 100 ug/L 1,4-dioxane contour	In vicinity of 100 ugL narrow band 1,4-dioxane contour.	22	no water	11/18/2008	NA	NA	31	no water	11/18/2008	NA	NA	42	no water	11/18/2008	NA	NA
6	PL-16	Southern portion of Eastern Plume, in vicinity of 32 ug/L 1,4-dioxane contour.	In vicinity of 32 ug/L 1,4-dioxane contour.	35	no water	11/20/2008	NA	NA	55	no water	11/20/2008	NA	NA	70	69	11/19/2008	ND	**0.52**
6	PL-17	Southern portion of Eastern Plume, between 32 and 100 ug/L 1,4-dioxane contours.	Located between 32 and 100 ug/L 1,4-dioxane contours.	35	no water	11/20/2008	NA	NA	56	no water	11/20/2008	NA	NA	65	64	11/19/2008	**64**	**292.5**
6	PL-18	Southern portion of Eastern Plume, between 32 and 100 ug/L 1,4-dioxane contours.	Located between 32 and 100 ug/L 1,4-dioxane contours.	22	no water	11/18/2008	NA	NA	29	no water	11/18/2008	NA	NA	41	no water	11/18/2008	NA	NA
6	PL-19	Southern portion of Eastern Plume, in vicinity of 32 ug/L 1,4-dioxane contour.	In vicinity of 32 ug/L 1,4-dioxane contour to target leading edge of most contaminated portion of the plume (greater than 100 ug/L).	17	no water	11/20/2008	NA	NA	NA	no water	11/20/2008	NA	NA	31	no water	11/20/2008	NA	NA

TABLE 2-1

EC PROFILING AND DISCRETE-INTERVAL GROUNDWATER SAMPLE RESULTS SUMMARY
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

Transect Line No.	Profiling Location	General Location	Rationale[1]	Groundwater Sample Depth Intervals (ft-bgs) 1,4-Dioxane Results (ug/L) and Total Chlorinated VOC Results (ug/L)														
				Upper Target Depth	Upper Actual Depth	Sample Date	1,4-Dioxane	Total CVOCs[2]	Middle Target Depth	Middle Actual Depth	Sample Date	1,4-Dioxane	Total CVOCs[2]	Lower Target Depth	Lower Actual Depth	Sample Date	1,4-Dioxane	Total CVOCs[2]
6	PL-20	South of Eastern Plume outside 5 ug/L 1,4-dioxane contour on opposite side of Merriconeag Stream.	Outside 5 ug/L 1,4-dioxane contour	24	no water	12/1/2008	NA	NA	33.5	no water	12/1/2008	NA	NA	43.5	no water	12/1/2008	NA	NA
7	PL-21	Southern portion of Eastern Plume, in vicinity of 5 ug/L 1,4-dioxane contour.	Outside 5 ug/L 1,4-dioxane contour	22	no water	11/21/2008	NA	NA	31	no water	11/21/2008	NA	NA	42	no water	11/21/2008	NA	NA
7	PL-22	Southern portion of Eastern Plume, in vicinity of 32 ug/L 1,4-dioxane contour.	In vicinity of 32 ug/L 1,4-dioxane contour between MW-334 and MW-335 to obtain additional vertical data (MW-334 at 47 feet while PL22 indicates a change to clay at 77 feet).	26	no water	11/21/2008	NA	NA	50	no water	11/21/2008	NA	NA	60	no water	11/21/2008	NA	NA
7	PL-23	Southern portion of Eastern Plume, in vicinity of 32 ug/L 1,4-dioxane contour.	In vicinity of 32 ug/L 1,4-dioxane contour to target floodplain area downgradient of leading edge of plume.	12	no water	11/20/2008	NA	NA	18	no water	11/20/2008	NA	NA	27	no water	11/20/2008	NA	NA
NA	PL-24	North of Line 1 and west of Picnic Pond.	To delineate the extent of 1,4-dioxane to target plume discharge zone at leading edge of plume and define the northern edge of clay that rises sharply in the area.	27	no water	12/15/2008	NA	NA	54.5	no water	12/15/2008	NA	NA	66 & 79	66 & 79	12/15/2008	ND/ND	ND/ND
NA	PL-25	North of Line 1 and east of Picnic Pond.	To delineate the extent of 1,4-dioxane. Target area between pore water samples PW-SP-14 and PW-SP-02/PW-106 cluster where 1,4-dioxane was detected.	21	21	12/11/2008	ND	ND	60	62	12/15/2008	ND (sample) ND (dup)	**3.78 (sample) 4.86 (dup)**	81	71	12/15/2008	**1.7 J**	**4.08**
1	PL-26	East of Picnic Pond	To delineate the extent of 1,4-dioxane to target the other side of stream (in floodplain).	6	no water	12/11/2008	NA	NA	NA	no water	12/11/2008	NA	NA	12.5	no water	12/11/2008	NA	NA
4	PL-27	On line 4 midway between PL-09 and PL-10	To evaluate the extent of the 100 ug/L 1,4-dioxane contour to target the other side of stream (in floodplain).	13.5	no water	12/11/2008	NA	NA	29	no water	12/11/2008	NA	NA	39	no water	12/11/2008	NA	NA
NA	PL-28	Between Lines 4 and 5 in vicinity of the 100 ug/L 1,4-dioxane contour.	To evaluate the extent of the 100 ug/L 1,4-dioxane contour.	17	no water	12/10/2008	NA	NA	32	no water	12/10/2008	NA	NA	46	45.5	12/10/2008	ND	**59.3**
NA	PL-29	Between Lines 6 and 7 in vicinity of the 32 ug/L contour.	To evaluate the extent of the 32 ug/L 1,4-dioxane contour.	28	no water	12/10/2008	NA	NA	47	no water	12/10/2008	NA	NA	60	no water	12/10/2008	NA	NA
NA	PL-30	East of Line 7 in vicinity of the 100 ug/L contour.	To evaluate the extent of the 100 ug/L 1,4-dioxane contour.	16.5	no water	12/10/2008	NA	NA	35	no water	12/10/2008	NA	NA	49.5	no water	12/10/2008	NA	NA

J - Estimated
NA - Not applicable.
ND - Non-detect.
NS - No sample collected due to the presence of fines in target zone.
Shaded cell indicates sample collected.
Bolded cell indicates concentration detected.

1 Rationale based on available information at the time of investigation.

2 Total chlorinated volatile organic compounds (CVOCs) is a summation of the following compounds: 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethane, cis-1,2-dichloroethene, tetrachloroethene, trans-1,2-dichloroethene, trichloroethene, and vinyl chloride.

TABLE 2-2

COMPARISON OF DEPTH INFORMATION FROM EC PROFILING AND CONFIRMATORY SOIL BORINGS
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

EC Profile Location	Source of Depth Information	Depth to Transition Unit (feet bgs)	Depth to Lower Sand (feet bgs)	Depth to Lower Transition Unit (feet bgs)	Depth to Lower Sand (feet bgs)	Depth to Clay (feet bgs)	End of Boring (feet bgs)
PL-1	EC LOG	19	59	64	70	78	103
	SOIL BORING LOG	--	47-62	65	66-77	77.8	81
PL-6	EC LOG	6	39	48	--	59	96.25
	SOIL BORING LOG	--	36.55	39-55	--	60.4	67
PL11	EC LOG	8	--	--	--	24	59
	SOIL BORING LOG	8.8	--	--	--	24	24
PL17	EC LOG	16	61	--	--	68	103
	SOIL BORING LOG	--	54	57.7	58-66	68	70
PL20	EC LOG	2.5	--	--	--	--	47.25
	SOIL BORING LOG	<16	--	--	--	--	34.5
PL23	EC LOG	4	26	29	--	31	66.5
	SOIL BORING LOG	10.2	--	--	--	--	30

-- Not encountered.
feet bgs Feet below ground surface.

TABLE 2-3

NEW OVERBURDEN MONITORING WELL LOCATION RATIONALE
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

Well ID[(1)]	Location	Approximate Top of Clay Depth (ft bgs)	Estimated Depth of Lower Sand (ft bgs)	Start of Soil Sampling Depth (ft bgs)	Rationale/Comments	Installed Well Screen Zone (ft bgs)	Comments
MW-EP-343	Previous PL02 location	78	68-78	NA	Estimated lower sand depth based on EC data from PL02.	68-78	Completed in May 2009.
MW-EP-344	Previous PL04 location	68	63-68	NA	Estimated lower sand depth based on EC data from PL04.	63-68	Completed in May 2009.
MW-EP-345	Along southern side of Puriton Rd	26	Not Present	25	Soil boring indicated Transition Unit to 26 ft underlain by clay to at least 41 ft.	18-23	Well screened across sand bed in Transition Unit. Completed in May 2009.
MW-EP-346	165 ft south of EP-12 and 150 ft northwest of previous PL06 location	73	64-74	25	Depth of clay based on soil lithology samples.	60-70	Flowing sands present made soil lithology sampling difficult. Completed in May 2009.
MW-EP-347	Previous PL07 location	51	46-51	NA	Estimated lower sand based on EC data from PL07.	46-51	Completed in May 2009.
MW-EP-348	50ft northwest of previous PL15 location	48	43-48	EC profiling	Estimated lower sand depth based upon EC data at MW-EP-348.	43-48	EC profiling conducted at 348. Well screen installed opposite Lower Sand. Completed in May 2009.
MW-EP-349	95 ft southeast of previous PL13 location	65	46-51	EC profiling	Estimated lower sand depth based upon EC data at MW-EP-349.	46-51	EC profiling conducted at 349. Well screen installed opposite Lower Sand. Completed in May 2009.
MW-EP-350	Directly adjacent to DP-EP-07 location	72	Unknown prior to EC profiling	EC profiling	Estimated lower sand depth based on EC data from DP-EP-07.	48-58	Initial well decommissioned. Replaced with 2-inch diameter PVC well. Completed in May 2009.
MW-EP-351	80 ft east of MW-MB-02 cluster	38	Not present	EC profiling	Top of clay based on EC data.	23-33	EC profiling performed. Well completion 23-33 ft bgs in sand above silt. Completed in May 2009.
MW-EP-352	Previous PL30 location	54	47-52	NA	No lower sand observed/noted in EC graph but 46-51 is interpreted to be interbedded sand and silt above clay.	47-52	Completed in May 2009.
MW-EP-354	Previous PL19 location	34	29-34	NA	Estimated lower sand depth based on EC data from PL19.	29-34	Completed in May 2009.
MW-EP-353	Previous PL22 location	62	56-61	NA	Estimated lower sand based on EC data from PL22.	56-61	Completed in May 2009.
MW-EP-355	Directly adjacent to MW-105A/B location	80	Unknown prior to EC profiling	EC profiling	Approximate top of clay depth based on top of clay elevation map. Closest well cluster with boring data is MW-105A/B but no data deeper than 47 ft bgs.	46-56	Not installed in same May 2009 event as other overburden wells due to flooding in the area. Later installed in August 2009.

1 Excludes overburden wells associated with new monitoring well clusters.
NA - Not applicable.
ft - Feet.
bgs - Below ground surface.

TABLE 2-4

WELL CONSTRUCTION AND JUNE 2009 GROUNDWATER ELEVATION SUMMARY
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE
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Well Identification	Date of Installation	Water-Bearing Unit Screened	Well Inside Diameter (in)	Ground Elevation[1] (ft above msl)	PVC Riser Elevation[1] (ft above msl)	PVC Riser Extension Elevation (ft above msl) (if applicable)	Depth to Top of Well Screen (ft bgs)	Depth to Bottom of Well Screen (ft bgs)	Elevation of Top of Well Screen[1] (ft above msl)	Elevation of Bottom of Well Screen[1] (ft above msl)	Depth to Groundwater (ft from TPVC or TPVC Extension if applicable)	Groundwater Elevation[1] - June 12, 2009 (ft above msl)
EP-01	11/17/1994	Transition/Lower Sand	1.5	29.12	31.67	N/A	68.00	98.00	-38.88	-68.88	Lock Did Not Open[4]	N/A
EP-02	11/16/1994	Transition/Lower Sand	1.5	27.10	29.74	N/A	67.00	97.00	-39.90	-69.90	NM[5]	N/A
EP-03	11/18/1994	Transition/Lower Sand	1.5	25.40	27.91	N/A	58.00	88.00	-32.60	-62.60	NM[5]	N/A
EP-04	11/22/1994	Transition/Lower Sand	1.5	30.20	32.59	N/A	58.00	88.00	-27.80	-57.80	Lock Did Not Open[4]	N/A
EP-05	11/22/1994	Transition/Lower Sand	1.5	32.00	34.61	N/A	48.00	78.00	-16.00	-46.00	2.80	31.81
EP-06	11/21/1994	Transition/Lower Sand	1.5	37.40	40.14	N/A	51.00	81.00	-13.60	-43.60	8.56	31.58
EP-07	11/7/1994	NL	NL	45.10	48.49	N/A	NL	NL	NL	NL	13.74	34.75
EP-08	11/14/1994	Transition/Lower Sand	1.5	44.70	47.31	N/A	47.00	77.00	-2.30	-32.30	Lock Did Not Open[4]	N/A
EP-09	11/9/1994	Transition/Lower Sand	1.5	35.20	37.84	N/A	30.00	60.00	5.20	-24.80	2.03	35.81
EP-10	11/6/1994	NL	NL	34.60	37.78	N/A	NL	NL	NL	NL	2.09	35.69
EP-11	11/8/1994	NL	NL	39.70	41.59	N/A	NL	NL	NL	NL	4.67	36.92
EP-12	11/7/1994	NL	NL	47.10	49.38	N/A	NL	NL	NL	NL	12.13	37.25
EP-13	11/1/1994	NL	NL	36.70	38.96	N/A	NL	NL	NL	NL	1.28	37.68
EP-14	11/3/1994	NL	NL	41.30	43.46	N/A	NL	NL	NL	NL	5.88	37.58
EP-15	NI	NL	NL	43.00	45.37	N/A	NL	NL	NL	NL	7.90	37.47
EW-01	10/28/1994	Transition/Lower Sand	6	27.20	25.34	N/A	16.00	94.00	11.20	-66.80	NM[3]	N/A
EW-02A	4/14/1998	Transition/Lower Sand	6	25.30	22.27	N/A	48.00	63.00	-22.70	-37.70	NM[3]	N/A
EW-04	10/28/1994	Upper Sand/Transition	6	42.80	37.13	N/A	9.00	65.00	33.80	-22.20	NM[3]	N/A
EW-05A	NL	NL	NL	NL	37.63	N/A	NL	NL	NL	NL	NM[3]	N/A
EW-05B	NL	Lower Sand	NL	NL	36.82	N/A	65.00	75.00	NL	NL	0.96	35.86
EW-05B-PZ-01	8/7/2009	Lower Sand	4	34.48	36.30	N/A	65.00	75.00	-30.52	-40.52	0.33	35.97
EW-05B-PZ-02	8/6/2009	Lower Sand	4	35.45	37.46	N/A	65.00	75.00	-29.55	-39.55	1.43	36.03
EW-05B-PZ-03	8/8/2009	Transition	4	33.06	35.46	N/A	52.00	62.00	-18.94	-28.94	3.74	31.72
EW-05B-PZ-04A	8/14/2009	Lower Sand	4	34.94	37.26	N/A	68.00	78.00	-33.06	-43.06	0.84	36.42
MW-105A	11/19/1984	Transition	2	20.90	24.19	N/A	34.00	44.00	-13.10	-23.10	0	24.19
MW-105B	11/20/1984	Upper Sand	2	21.10	24.55	N/A	9.00	19.00	12.10	2.10	5.20	19.35
MW-106	11/21/1984	Transition	2	47.70	51.26	N/A	24.00	34.00	23.70	13.70	17.13	34.13
MW-205	8/3/1988	Lower Sand	2	44.00	45.99	N/A	62.20	72.20	-18.20	-28.20	21.02	24.97
MW-206A	8/13/1988	Transition/Lower Sand	2	40.60	43.02	N/A	62.00	72.00	-21.40	-31.40	14.95	28.07
MW-206B	7/30/1988	Upper Sand	2	40.50	42.77	N/A	15.00	25.00	25.50	15.50	14.93	27.84
MW-207A	8/1/1988	Lower Sand	2	21.60	Abandoned and replaced with MW-207AR							
MW-207AR	NL	NL	2	NL	23.42	29.82	NL	NL	NL	NL	3.11	26.71
MW207B	7/31/1988	Upper Sand	2	21.10	22.90	N/A	5.00	7.00	16.10	14.10	5.78	17.12
MW-208	8/11/1988	Lower Sand	2	47.40	49.40	N/A	91.00	101.00	-43.60	-53.60	15.02	34.38
MW-209	7/20/1988	Upper Sand	2	52.90	54.84	N/A	25.80	30.80	27.10	22.10	19.55	35.29
MW-222	9/8/1989	Transition	2	54.10	57.43	N/A	31.00	41.00	23.10	13.10	21.21	36.22
MW-223	9/8/1989	Transition	2	51.10	53.71	N/A	30.00	40.00	21.10	11.10	18.98	34.73

TABLE 2-4

WELL CONSTRUCTION AND JUNE 2009 GROUNDWATER ELEVATION SUMMARY
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

Well Identification	Date of Installation	Water-Bearing Unit Screened	Well Inside Diameter (in)	Ground Elevation[1] (ft above msl)	PVC Riser Elevation[1] (ft above msl)	PVC Riser Extension Elevation (ft above msl) (if applicable)	Depth to Top of Well Screen (ft bgs)	Depth to Bottom of Well Screen (ft bgs)	Elevation of Top of Well Screen[1] (ft above msl)	Elevation of Bottom of Well Screen[1] (ft above msl)	Depth to Groundwater (ft from TPVC or TPVC Extension if applicable)	Groundwater Elevation[1] - June 12, 2009 (ft above msl)
MW-224	9/7/1989	Transition	2	54.70	57.63	N/A	34.00	44.00	20.70	10.70	20.35	37.28
MW-225A	8/28/1989	Lower Sand	2	43.00	45.95	N/A	64.00	74.00	-21.00	-31.00	14.10	31.85
MW-225B	8/24/1989	Transition	2	43.30	46.25	N/A	29.00	39.00	14.30	4.30	15.36	30.89
MW-229A	9/5/1989	Transition	2	30.60	33.83	N/A	52.00	62.00	-21.40	-31.40	9.96	23.87
MW-229B	9/5/1989	Upper Sand	2	30.30	30.08	N/A	20.00	30.00	10.30	0.30	14.38	15.70
MW-230A	9/5/1989	Lower Sand	2	33.70	36.32	N/A	70.00	80.00	-36.30	-46.30	12.30	24.02
MW-230B	9/6/1989	Transition	2	33.60	36.00	N/A	49.00	59.00	-15.40	-25.40	15.24	20.76
MW-231A	9/14/1989	Lower Sand	2	42.50	45.41	N/A	50.00	60.00	-7.50	-17.50	18.38	27.03
MW-231B	9/19/1989	Transition	2	42.20	46.31	N/A	25.00	35.00	17.20	7.20	22.01	24.30
MW-303	10/1/1990	Transition	2	42.00	44.28	N/A	59.00	69.00	-17.00	-27.00	10.43	33.85
MW-305	10/17/1990	Transition	2	40.00	43.09	N/A	42.00	52.00	-2.00	-12.00	11.35	31.74
MW-306	9/19/1990	Upper Sand	2	49.30	52.12	N/A	45.00	55.00	4.30	-5.70	13.10	39.02
MW-307	9/18/1990	Upper Sand	2	59.80	62.70	N/A	10.00	20.00	49.80	39.80	14.62	48.08
MW-308	9/26/1990	Bedrock	2	34.90	37.70	N/A	60.00	70.00	-25.10	-35.10	NM[2]	N/A
MW-309A	9/20/1990	Bedrock	2	19.80	22.84	29.24	59.00	69.00	-39.20	-49.20	2	27.24
MW-309B	9/19/1990	Bedrock	2	19.40	22.32	N/A	52.30	57.30	-32.90	-37.90	0	22.32
MW-310	9/18/1990	Transition	2	50.30	53.39	N/A	61.00	71.00	-10.70	-20.70	23.72	29.67
MW-311	9/24/1990	Transition	2	23.60	21.48	N/A	45.00	55.00	-21.40	-31.40	11.83	9.65
MW-312	9/27/1990	Transition	2	33.50	35.97	N/A	63.40	68.40	-29.90	-34.90	Could Not Locate	
MW-313	10/18/1990	Transition	2	18.50	21.39	N/A	25.00	35.00	-6.50	-16.50	7.39	14.00
MW-315A	9/20/1990	Lower Sand	2	20.60	22.86	N/A	64.50	74.50	-43.90	-53.90	0	22.86
MW-316A	10/15/1990	Bedrock	2	51.10	53.71	N/A	89.50	99.50	-38.40	-48.40	20.66	33.05
MW-316B	10/16/1990	Bedrock	2	51.90	54.40	N/A	45.00	55.00	6.90	-3.10	10.57	43.83
MW-317A	10/9/1990	Bedrock	2	67.70	71.35	N/A	108.00	118.00	-40.30	-50.30	13.41	57.94
MW-317B	10/15/1990	Bedrock	2	67.50	70.10	N/A	84.50	94.50	-17.00	-27.00	12.16	57.94
MW-318	9/21/1990	Upper Sand	2	21.10	24.28	N/A	12.00	22.00	9.10	-0.90	5.04	19.24
MW-319	10/2/1990	Lower Sand	2	37.00	40.16	N/A	59.50	69.50	-22.50	-32.50	7.89	32.27
MW-323	10/19/1990	Bedrock	2	55.90	55.90	N/A	29.00	39.00	26.90	16.90	14.9	41.00
MW-330	10/19/1998	Transition	2	32.80	35.71	N/A	24.00	34.00	8.80	-1.20	1.24	34.47
MW-331	10/16/1998	Lower Sand	2	27.70	30.54	36.94	44.00	54.00	-16.30	-26.30	2.63	34.31
MW-332	10/28/1998	Upper Sand	2	22.30	25.33	N/A	8.00	18.00	14.30	4.30	9.27	16.06
MW-333	10/28/1998	Transition	2	24.30	27.25	N/A	30.00	40.00	-5.70	-15.70	9.02	18.23
MW-334	10/29/1998	Transition	2	28.00	30.93	N/A	35.00	45.00	-7.00	-17.00	8.72	22.21
MW-335	8/13/2003	Lower Sand	2	38.15	40.91	N/A	76.00	86.00	-37.85	-47.85	16.77	24.14
MW-336	8/19/2003	Upper Sand	2	26.85	29.62	N/A	16.00	26.00	10.85	0.85	10.3	19.32
MW-337	8/14/2003	Lower Sand	2	34.50	37.19	N/A	75.00	85.00	-40.50	-50.50	13.3	23.89
MW-338A	8/15/2003	Lower Sand	2	18.70	21.37	N/A	81.00	91.00	-62.30	-72.30	0	21.37
MW-338B	8/18/2003	Transition	2	18.64	21.48	N/A	60.00	70.00	-41.36	-51.36	0	21.48

TABLE 2-4

WELL CONSTRUCTION AND JUNE 2009 GROUNDWATER ELEVATION SUMMARY
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NAS BRUNSWICK
BRUNSWICK, MAINE

Well Identification	Date of Installation	Water-Bearing Unit Screened	Well Inside Diameter (in)	Ground Elevation[1] (ft above msl)	PVC Riser Elevation[1] (ft above msl)	PVC Riser Extension Elevation (ft above msl) (if applicable)	Depth to Top of Well Screen (ft bgs)	Depth to Bottom of Well Screen (ft bgs)	Elevation of Top of Well Screen[1] (ft above msl)	Elevation of Bottom of Well Screen[1] (ft above msl)	Depth to Groundwater (ft from TPVC or TPVC Extension if applicable)	Groundwater Elevation[1] - June 12, 2009 (ft above msl)
MW-338C	8/19/2003	Transition	2	18.91	21.65	N/A	42.00	52.00	-23.09	-33.09	0.67	20.98
MW-339	8/20/2003	Transition/Lower Sand	2	20.00	22.54	N/A	62.00	72.00	-42.00	-52.00	0.76	21.78
MW-1104	8/24/1989	Upper Sand	2	57.6	60.09	N/A	15.00	25.00	42.60	32.60	7.87	52.22
MW-EP-340S	11/5/2008	Transition	1	36.75	39.53	N/A	48.00	58.00	-11.25	-21.25	2.88	36.65
MW-EP-340B1	11/25/2008	Upper Bedrock	1	36.69	39.13	N/A	68.30	73.30	-31.61	-36.61	4.10	35.03
MW-EP-340B2	11/25/2008	Lower Bedrock	1	36.69	39.10	N/A	85.70	90.70	-49.01	-54.01	4.15	34.95
MW-EP-341S	11/3/2008	Transition	1	36.43	38.76	N/A	42.00	52.00	-5.57	-15.57	2.39	36.37
MW-EP-341B1	11/17/2008	Upper Bedrock	1	36.62	38.48	N/A	73.00	78.00	-36.38	-41.38	3.17	35.31
MW-EP-341B2	11/17/2008	Lower Bedrock	1	36.62	38.50	N/A	88.00	93.00	-51.38	-56.38	3.13	35.37
MW-EP-342S	10/29/2008	Transition	1	34.13	35.66	N/A	30.00	40.00	4.13	-5.87	1.34	34.32
MW-EP-342B1	11/25/2008	Upper Bedrock	1	34.34	35.94	N/A	63.20	68.20	-28.86	-33.86	1.18	34.76
MW-EP-342B2	11/25/2008	Lower Bedrock	1	34.34	35.88	N/A	76.20	81.20	-41.86	-46.86	0.94	34.94
MW-EP-343	5/29/2009	Lower Sand	1	35.20	38.04	N/A	68.00	78.00	-32.80	-42.80	2.63	35.41
MW-EP-344	5/29/2009	Lower Sand	1	35.21	37.74	N/A	63.00	68.00	-27.79	-32.79	1.27	36.47
MW-EP-345	5/28/2009	Upper Sand	1	33.45	36.36	N/A	18.00	23.00	15.45	10.45	10.28	26.08
MW-EP-346	5/19/2009	Lower Sand	1	52.47	55.15	N/A	60.00	70.00	-7.53	-17.53	19.08	36.07
MW-EP-347	5/18/2009	Lower Sand	1	29.35	31.31	33.91	46.00	51.00	-16.65	-21.65	0.75	33.16
MW-EP-348	5/20/2009	Lower Sand	1	21.07	23.61	28.61	43.00	48.00	-21.93	-26.93	0.40	28.21
MW-EP-349	5/20/2009	Lower Sand	1	23.38	25.74	30.74	46.00	51.00	-22.62	-27.62	1.84	28.90
MW-EP-350	5/29/2009	Lower Sand	2	11.05	13.28	23.38	48.00	58.00	-36.95	-46.95	3.00	20.38
MW-EP-351	5/26/2009	Lower Sand	1	8.30	10.99	15.99	23.00	33.00	-14.70	-24.70	0.00	15.99
MW-EP-352	5/27/2009	Transition	1	22.47	24.73	N/A	47.00	52.00	-24.53	-29.53	3.63	21.10
MW-EP-353	5/27/2009	Lower Sand	1	14.09	16.67	21.92	56.00	61.00	-41.91	-46.91	0.00	21.92
MW-EP-354	5/28/2009	Lower Sand	1	16.80	19.63	N/A	29.00	34.00	-12.20	-17.20	6.15	13.48
MW-EP-355	8/26/2009	Lower Sand	1	18.99	22.09	N/A	46.00	56.00	-23.91	-33.91	2.65	N/A
MW-MB-01C	6/13/2007	Lower Sand	2	17.16	20.15	22.75	48.00	58.00	-30.84	-40.84	1.85	20.90
MW-MB-02C	6/15/2007	Lower Sand	2	11.68	14.52	24.62	52.00	62.00	-40.32	-50.32	0.70	23.92
MW-MB-03C	6/6/2007	Lower Sand	2	23.76	26.64	N/A	46.00	56.00	-22.24	-32.24	0.50	26.14
MW-MB-04B	6/11/2007	Transition	2	17.84	20.69	N/A	24.00	34.00	-6.16	-16.16	6.11	14.58
MW-MB-06A	6/3/2007	Upper Sand/Transition	2	22.11	24.81	N/A	5.00	15.00	17.11	7.11	12.18	12.63
MW-MB-06C	6/3/2007	Lower Sand/Transition	2	21.83	24.88	N/A	40.00	50.00	-18.17	-28.17	6.11	18.77
MW-NASB-090	10/3/1990	NL	2	56.50	59.70	N/A	20.00	25.00	36.50	31.50	18.50	41.20
MW-NASB-11BR	NL	Bedrock	2	NL	59.01	N/A	NL	NL	NL	NL	20.05	38.96
MW-NASB-212	9/30/1988	Upper Sand	2	39.60	41.64	N/A	11.00	16.00	28.60	23.60	7.15	34.49
P-103	10/3/1990	NL	2	58.00	60.35	N/A	20.00	25.00	38.00	33.00	19.64	40.71
P-105	10/3/1990	NL	2	40.10	42.08	N/A	65.00	70.00	-24.90	-29.90	5.54	36.54
P-106	9/28/1990	NL	2	36.00	38.83	N/A	65.50	70.50	-29.50	-34.50	5.28	33.55
P-111	10/2/1990	NL	2	28.40	31.48	N/A	2.50	7.50	25.90	20.90	4.35	27.13

TABLE 2-4

WELL CONSTRUCTION AND JUNE 2009 GROUNDWATER ELEVATION SUMMARY
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

Well Identification	Date of Installation	Water-Bearing Unit Screened	Well Inside Diameter (in)	Ground Elevation[1] (ft above msl)	PVC Riser Elevation[1] (ft above msl)	PVC Riser Extension Elevation (ft above msl) (if applicable)	Depth to Top of Well Screen (ft bgs)	Depth to Bottom of Well Screen (ft bgs)	Elevation of Top of Well Screen[1] (ft above msl)	Elevation of Bottom of Well Screen[1] (ft above msl)	Depth to Groundwater (ft from TPVC or TPVC Extension if applicable)	Groundwater Elevation[1] - June 12, 2009 (ft above msl)
P-121	9/28/1990	NL	2	47.80	50.78	N/A	10.00	15.00	37.80	32.80	15.11	35.67
P-123	9/26/1990	NL	2	51.70	Ice damage to PVC; cannot gauge							
P-132	10/2/1990	NL	2	42.45	42.95	N/A	20.00	30.00	22.45	12.45	17.56	25.39
PZ-1	NL	NL	NL	NL	47.88	N/A	NL	NL	NL	NL	22.9	24.98
PZ-11	NL	NL	NL	NL	53.66	N/A	NL	NL	NL	NL	21.65	32.01
PZ-2	NL	NL	NL	NL	39.66	N/A	NL	NL	NL	NL	16.17	23.49
PZ-6	NL	NL	NL	NL	33.14	N/A	NL	NL	NL	NL	11.45	21.69
PZ-MB-B4B	2/27/2007	Upper Sand	1	8.77	12.36	N/A	8.00	12.00	0.77	-3.23	0	12.36
PZ-MB-B6B	3/8/2007	Transition	1	8.24	11.14	N/A	9.00	14.00	-0.76	-5.76	0	11.14
PZ-MB-C4B	2/28/2007	Transition	1	9.04	12.12	N/A	9.00	14.00	0.04	-4.96	0	12.12

1 Elevations are based on feet above mean sea level (NAVD of 1988).
2 New wells MW-342B1 and MW-342B2 in the immediate vicinity were measured instead of MW-308.
3 Extraction well in locked vault and key not available. Moreover, confined space entry not included in health and safety plan (HASP).
4 Wells were not pre-inspected because it was presumed that the wells could be unlocked considering their inclusion in the ongoing groundwater monitoring program.
5 No key available. It was presumed that the keys provided would unlock the wells.

bgs - Below ground surface.
ft - Feet.
in - Inches.
NL - No well construction and or boring log available.
NI - No information on log.
NA - Not applicable.
NM - Not measured.
NAVD - North American Vertical Datum
PVC - Polyvinyl chloride.
TPVC - Top of PVC riser.

DRAWN BY	DATE	Tetra Tech NUS, Inc.	CONTRACT NUMBER
D.W. MACDOUGALL	02/28/11		CTO 0069
CHECKED BY	DATE	PORE WATER, EC PROFILING, AND WELL LOCATION MAP NAVAL AIR STATION BRUNSWICK, MAINE	APPROVED BY DATE
C. RACE	02/28/11		APPROVED BY DATE
SCALE AS NOTED			FIGURE NO. FIGURE 2-1 REV 1

3.0 SITE GEOLOGY AND HYDROGEOLOGY

This section summarizes and evaluates results obtained during Supplemental RI activities including pore water sampling, EC profiling and confirmatory soil boring, borehole geophysical investigation, groundwater elevations, hydraulic conductivity (K) testing, and bedrock investigation.

3.1 SITE GEOLOGY

The geology of the Eastern Plume site generally consists of glacial outwash sand, silt, and clay deposits underlain by glacial till and bedrock.

Eight cross sections, one oriented in a north-south direction through the mid-portion of the Eastern Plume (Figure 3-1) and seven oriented in a generally east-west direction (Figures 3-2 and 3-3), and a clay surface map (Figure 3-4) were prepared to illustrate geologic conditions at the Eastern Plume site.

3.1.1 Overburden Geology

The overburden geology of the Eastern Plume and surrounding areas consists of unconsolidated sands and silt and clay layers overlying an undulating bedrock surface. Glacial till is also present in the subsurface directly overlying bedrock in a few areas. The majority of the surficial units at the Eastern Plume, with the exception of the glacial till, are interpreted to be part of the Presumpscot Formation, which are comprised of water-laid clay, silt, and sand with some minor gravel units. The formation exhibits a general coarsening upward sequence. Three major overburden layers are present: Upper Sand, Transition Unit (interbedded sand, silt, and clay layers), and several thin and/or relatively thick sand layers referred to as the Lower Sand. The Presumpscot Clay underlies the Transition Unit and/or Lower Sand. The sand zones can act as preferred contaminant migration pathways if they are hydraulically connected to a contaminant source. The clay unit is relatively impermeable and restricts the vertical downward movement of groundwater and contaminants dissolved in groundwater.

Upper Sand

The Upper Sand consists of brown and tan fine to coarse sand that readily transmits groundwater. The unit is approximately 5 to 20 feet thick across the Eastern Plume area, as depicted on Cross Section A-A’ (Figure 3-1). In the vicinity of Sites 1 and 3 (west of the Eastern Plume) and north of Purinton Road, the Upper Sand is greater than 40 feet thick.

Transition Unit

The Transition Unit consists of interbedded sands, silts, and clays. Cross Section A-A' (Figure 3-1) illustrates the thickness of this unit from north to south beneath the Eastern Plume. Thicknesses range from about 10 feet near Mere Brook (PZ-MB-B4) to approximately 80 feet (MW-313) south of Mere Brook (MW-313). East-west cross sections B-B', D-D' (Figure 3-2), and H-H' (Figure 3-3) show the Transition Unit pinching out east of Merriconeag Stream. The previous Eastern Plume RI (E.C. Jordan, 1990, 1991) also indicated that the Transition Unit pinches out west of Merriconeag Road. In that area, the Upper Sand is in contact with the Lower Sand. Cross sections C-C', E-E' (Figure 3-2), F-F', and G-G' (Figure 3-3) show Transition Unit thicknesses ranging from 20 to 50 feet.

The upper portion of the Transition Unit exhibits unconfined groundwater conditions, and deeper intervals exhibit confined conditions due to the presence of low permeability zones within this unit. The majority of the Transition Unit is silt and clay, although sand layers are present with thickness ranging from inches to several feet. The Transition Unit contains relatively thin and possibly continuous sand layers that may act as preferential pathways for groundwater movement within this unit. Vertical movement of groundwater is restricted by interbedded sands and silts of the Transition Unit, and vertical hydraulic conductivity is at least one order of magnitude lower than horizontal hydraulic conductivity. The Transition Unit may act as an aquitard between the Upper Sand and Lower Sand. The lateral continuity of Transition Unit sand layers appears highly variable. That is, some sand layers may provide conduits for contaminant migration, but others may be isolated and therefore may not transmit significant amounts of groundwater.

Lower Sand

A sandy interval identified near the base of the Transition Unit and in some portions of the Eastern Plume is referred to as the Lower Sand. The Lower Sand consists of fine to medium sand ranging in thickness from 0 to 30 feet. Cross section A-A' (Figure 3-1) shows that, north of Purinton Road, relatively thicker zones occur within depressions in the Presumpscot Clay surface. The Lower Sand occurs within the middle to lower portions of the Transition Unit on cross sections B-B', C-C', E-E' (Figure 3-2), F-F', G-G', and H-H' (Figure 3-3). The Lower Sand is in contact with the Upper Sand west of Merriconeag Road (E.C. Jordan, 1990, 1991). Very little to no silt or clay interbeds are present in this area, which makes the Transition Unit unidentifiable as a separate unit in the stratigraphy. The sand intervals within the Transition Unit become thinner and finer-grained to the south, and this change is believed to further increase groundwater confining conditions in deeper portions of the Transition Unit and the Lower Sand. The Lower Sand becomes thin and pinches out in an easterly direction in the vicinity of Merriconeag Stream, but is thicker to the west of Merriconeag Road where it is described as being in contact with the Upper Sand.

Sandy intervals within the Transition Unit are confined by interbedded fine-grained sand, silt, and clay. Vertical differences in hydraulic head suggest that groundwater movement from above the Transition Unit to underlying units is restricted. The sand intervals within the Transition Unit become thinner and finer-grained to the south, and this change is believed to further increase groundwater confining conditions in deeper portions of the Transition Unit and the Lower Sands. Thinning and less conductive sand intervals near the present terminus of the plume are thought to slow or restrict to some degree groundwater movement in these layers. The Lower Sand becomes thin and pinches out in an easterly direction in the vicinity of Merriconeag Stream, but is thicker to the west of Merriconeag Road where it is described as being in contact with the Upper Sand. Thin overburden that is insufficient to transmit significant quantities of groundwater covers bedrock on the west-facing ridge flank east of Merriconeag Stream and Mere Brook.

Presumpscot Clay

The Presumpscot Clay was deposited on the ocean floor during a submergence of the area during the last period of glaciation. Sediments were deposited over till or directly over bedrock (E.C. Jordan, 1990, 1991). The Presumpscot Clay and Transition Unit are comprised of marine deposits (deposited under low-energy conditions), which resulted in the generally fine-grained nature of overburden material in these units. Clay thickness is variable and may have a relationship to the bedrock surface topography upon which it is deposited (E.C. Jordan, 1990, 1991).

The Presumpscot Clay underlies the Transition Unit and Lower Sand and blankets the bedrock or till surface as a nearly continuous layer. The clay has a low permeability that ranges form 10^{-6} to 10^{-8} cm/sec (3×10^{-3} to 3×10^{-5} ft/day) (E.C. Jordan, 1990, 1991). The clay thickness has been measured at up to 80 feet, although the thickness of the clay may be greater in some areas (EA, 2000). A clay surface elevation map (Figure 3-4) was prepared based on available geologic, EC, and cone penetrometer logs; supporting clay surface elevations are presented in Table 3-1. As shown, two elongated depressions within the clay surface are shown separated by a bedrock “saddle.” The northern depression or “bowl” is bounded by bedrock highs east of Picnic Pond, to the west toward Sites 11 and 13, and to the south by the bedrock saddle. The southern bowl is located south of the saddle and is bounded to the east by clay covering a west-sloping bedrock surface that forms a ridge east of Mere Brook. The southern bowl rises to the west beneath the Weapons Compound Area and extends south beyond the southern limit of the Eastern Plume. The clay surface slopes upward toward Mere Brook in the vicinity of the Mere Brook-Merriconeag Stream confluence. Because the clay is relatively impermeable, it acts as a barrier for lateral flow in an easterly direction toward Mere Brook in the vicinity of the Mere Brook-Merriconeag Stream confluence.

The saddle between the northern and southern bowls coincides with a bedrock high in the vicinity of MW-308. The clay surface elevation in the saddle ranges from -10 to -30 feet above mean sea level. The clay is absent in the vicinity of MW-308 and thins out to the west toward Sites 1 and 3 and Sites 11 and 13. The clay also thins out east of Merriconeag Stream and Mere Brook near the NAS Brunswick boundary to the north. The remaining portions of the Eastern Plume appear to be underlain by several feet or tens of feet of clay. This clay forms the base of the overburden flow system and prevents significant groundwater flow between the overburden and bedrock in the Eastern Plume vicinity.

The topography of the top of the clay unit is similar to the top of bedrock surface, exhibiting an easterly slope from high elevations near Site 11 and decreasing eastward. However, the thickness of the clay also shows considerable variation over the entire plume. Minimal clay thickness was interpreted east of Site 11 (0 to 10 feet thick), with much greater thicknesses (up to approximately 110 feet) reported further east in the vicinity of a bedrock depression parallel with Weapons Area Road (Figure 3-4). The clay thins further east toward Picnic Pond, with thicknesses varying from near 0 to 25 feet. The top elevation and thickness of the Transition Unit generally mimic the clay, showing an eastward slope with greatest thickness noted where bedrock depressions are present.

Glacial Till

Glacial till consists of a compact heterogeneous mixture of gravel, sand, silt, and clay that occurs beneath the Presumpscot Clay as a discontinuous layer mantling the bedrock surface. Thicknesses of glacial till range from 0 to approximately 5 feet. Glacial till has been previously noted in boring logs from the northern (CP-135), central (CP-115), and southern (CP-122) areas of the Eastern Plume. Glacial till was also previously noted in wells to the north (CP-154 and CP-155) and west (MW-210A/B and MW-211A/B) of the Eastern Plume.

Summary

The Supplemental RI confirmed and refined the results of the previous investigations, specifically, that the Upper Sand Unit, Transition Unit, and Presumpscot Clay extend east to the vicinity of Merriconeag Stream and Mere Brook. The Lower Sand thins out in the vicinity of Merriconeag Stream and extends beneath Mere Brook in a southerly direction, then thins out further to the south and west. The hydraulic conductivity of the Lower Sand and Transition Units are more similar than previously thought based on slug-test data.

3.1.2 Bedrock Geology in the Area of MW-308

The scope of the Supplemental RI for Bedrock included installation of three well clusters, each consisting of a shallow well completed in the Transition Unit and two bedrock wells nested in a single borehole. Clusters at MW-EP-340 (MW-EP-340S/B1/B2) and -341 (MW-EP-341S/B1/B2) were placed in each of two upgradient directions from MW-308 cluster, and the remaining cluster (MW-EP-342S/B1/B2) was placed near MW-308 (see Figure 2-1). After advancing each bedrock borehole 50 feet into rock, borehole geophysical logging was performed to locate transmissive fractures and characterize the identified fractures. Based on the results of the borehole logging the well screen depth intervals were properly established in each of the three boreholes. Each bedrock well was completed with 6-inch steel casing grouted into the upper few feet of bedrock and two 1-inch-diameter Schedule 40 PVC wells, each with 5-foot-long well screens (0.010-inch slot size) and bentonite seals placed above the well screens to avoid potential cross connection in the annulus.

Bedrock Core

Bedrock coring was conducted from 40.5 to 70.5 feet bgs in the MW-EP-342S boring, which is located in the vicinity of MW-308. The geologic log indicated that bedrock consisted of a muscovite-biotite schist, which is consistent with the Cape Elizabeth Formation. Rock quality designation (RQD) values ranged from 50 percent (at 40.5 to 45.5 feet bgs) to approximately 70 to 90 percent (50.5 to 70.5 feet). The rock hardness was described as very strong over the entire cored interval, except between 42 and 44.8 feet bgs where the rock core was very broken. Most planar features were observed to be aligned with schistosity (foliation planes) and were healed or mineralized.

Borehole Geophysics

Downhole geophysical logging was conducted in November 2008 in three open boreholes (MW-EP-340B, -341B, and -342B) cased in the upper few feet of bedrock. Fluid resistivity, caliper, natural gamma, and ATV and/or OTV logging results were used to identify bedrock lithology and fracture orientation. Temperature, fluid resistivity, and flowmeter measurements were also taken to assess potential transmissive zones and potential vertical flow conditions within the boreholes. Composite logs, including data from each of the geophysical logging methods, for each of the boreholes are presented in Appendix A-6. Composite logs show one or a combination of anomalous geophysical responses identifying physical discontinuities that may represent fractures. These included abrupt widenings in the caliper log and planar images on the televiewer logs. Possible transmissive fractures in MW-EP-340B, -341B, and -342B are shown on the composite logs in Appendix A-6. Note that the depths on the geophysical logs provided in Appendix A-6 are relative to top of casing while the monitoring well and boring logs provided in Appendix A-4 have depths relative to the ground surface. The correction difference between top of casing and ground surface is approximately 2.5 feet (MW-EP-340B), 2.0 feet (MW-EP-341B), and 1.5 feet (MW-EP-342B). The results of the borehole logging are summarized below for each of the three bedrock boreholes. The depth intervals for nested well completions are also noted. The depths presented below for MW-EP-340B, -341B, and -342B have been corrected using the values stated previously, so that they are relative to the ground surface and therefore easily compared to the boring and monitoring well logs.

<u>MW-EP-340B</u>

Three likely transmissive zones are shown on the composite log for MW-EP-340B at approximately 71.5 feet, 79 feet, and between 83.5 and 90.5 feet below ground surface (bgs). All three zones are associated with caliper spikes, and changes in water flow, and gamma inflections. The natural gamma log for MW-EP-340B indicates numerous zones of higher or lower gamma readings likely indicative of changes in lithology. Higher gamma readings were measured from approximately 85.5 to 93.5 feet bgs and may indicate that the rock is more felsic (feldspar rich), granitic, (granite gneiss, pegmatite rock), or clay-rich weathered zones. Intervals with lower gamma counts (i.e., 54.5 to 60.5 feet bgs) are likely to be indicative of more mafic rock such as gabbro or schist.

Measurable downward flow was identified under static conditions at 73.5 to 85.5 feet bgs. According to static flowmeter measurements, water exits the borehole through fractures located between 85.5 feet and 91.5 feet bgs. Below 91.5 feet bgs, no flow was measured. Flowmeter measurements were not collected during pumping conditions at this well due to time constraints; however, sufficient data were collected to determine the depths of transmissive fractures. Well MW-EP-340B1 was completed with the screened interval from 68.3 to 73.3 feet bgs, which intersects the transmissive fracture at approximately 71.5 feet bgs. The well screen for MW-EP-340B2 was installed at 85.7 to 90.7 feet bgs and intersects the fracture identified between approximately 85.55 and 91.5 feet bgs.

<u>MW-EP-341B</u>

Four likely transmissive zones are shown on the composite log for MW-EP-341B between approximately 61 and 63 feet between 75 and 77 feet, between 92 and 94 feet, and between 103 and 106 feet bgs. All four zones are associated with caliper spikes, and changes in water flow. Possible fractures are shown on the composite log and rose diagram presented in Appendix A-6. High turbidity obscured the OTV log in MW-EP-341; therefore, conclusions could not be drawn with this method. The ATV logs for MW-EP-341B indicate that planar features (possible fractures, bedding planes, joints, or cleavages) generally strike to the northeast (25 degrees true) and have a median dip of 50 degrees to the southeast.

Flowmeter results for MW-EP-341B identified five zones that exhibited flow at approximately 76, 78, 90, 95 and 100 feet bgs; no flow was measured below 107 feet. All flow was downward based on the flowmeter readings. Flowmeter measurements under static conditions indicate that water is likely entering the borehole just below the casing at approximately 61 to 63 feet and between 76 and 78 feet bgs. Most of the water exits the borehole through fractures located at 103.8 and 105 feet bgs; groundwater may also be exiting the borehole through fractures located at approximately 86.2 and 93 feet bgs. Under pumping conditions (1 gpm), there was no measurable flow at the bottom of the borehole until 101 feet bgs. Upward flow was detected above 101 feet and generally increased with successive shallower measurements in the borehole. Based on the caliper and flowmeter measurements under pumping conditions, it appeared that the casing for MW-EP-341B was not seated at 61 feet and that the zone between 61 and 63 feet bgs is transmissive; this was considered when determining the depth intervals for placement of nested well screens.

Well MW-EP-341B1 was completed with the screened interval from 73 to 78 feet bgs, which intersects a transmissive zone at approximately 75 to 77 feet bgs. The well screen for MW-341B2 was installed at 88 to 93 feet bgs and intersects three features that strike an average of approximately 35 degrees and dip approximately 50 degrees to the southeast.

<u>MW-EP-342B</u>

Three likely transmissive zones are shown on the composite log for MW-EP-342B between approximately 64 to 67 feet, between 76 and 81 feet, and between 81 and 83 feet bgs. All three zones are associated with caliper spikes, and changes in water flow, and gamma inflections. The natural gamma log for MW-EP-342B showed that the median decay rate for the uncased portion of the borehole was 105 counts per second (cps). Numerous zones of higher or lower gamma readings, such as the higher gamma readings (142 cps) from approximately 83.5 to 84.5 feet bgs, may indicate changes in lithology.

The ATV log for MW-EP-342 indicated possible fractures on the composite log and rose diagram presented in Appendix A-6. The largest anomaly identified with caliper logging was observed at approximately 82.5 feet in this location bgs, which coincided with a feature identified in the ATV log. Other anomalously wide zones are shown on the composite log in Appendix A-6.

The OTV logs for MW-EP-342B indicate that planar features (possible fractures, bedding planes, joints, or cleavages) have varied strike and dip directions. The majority of features identified generally strike to the northeast and dip of an average of 50 degrees to the southeast. The strike and dip of possible transmissive fractures for MW-EP-342B are shown on the composite log and tabulated in Appendix A-6.

Fluid resistivity logging suggests that there are two distinct zones within the MW-EP-342 borehole, the upper 41.5 to 58 feet bgs and the lower portion of the borehole (below 58 feet). An abrupt change in fluid resistivity accompanied by an increase in turbidity was measured at approximately 58 feet bgs and may be related to cement grout in the borehole. However, the lack of flow on the geophysics log at that depth and the pH range in this well is similar to nearby well MW-308 and does not support infiltration of grout at this location.

Flowmeter measurements for MW-EP-342B under ambient conditions did not indicate vertical flow within the borehole. Under pumping conditions, no flow was identified from the bottom of the borehole to 80.5 feet bgs. At approximately 80.5 feet, a slight upflow was measured that increased at approximately 76.5 (0.12 gpm) and 65.5 feet (0.8 gpm).

The most likely transmissive fracture is at 66 feet (feature #11 in Appendix A-6), which strikes north 30 degrees east (N30E) or northeast and dips 43 degrees to the southeast. Other possible transmissive fractures are between approximately 76 and 82 feet bgs (including feature #18 in Appendix A-6) which strikes northeast (N27E) and dips 56 degrees to the southeast, and feature #19, which strikes north N2W and dips 44 degrees to the east based on ATV logs. Well MW-342B1 was completed with the screened interval from 63.2 to 68.2 feet, which intersects the transmissive fracture at 66 feet. The well screen for MW-342B2 was installed at 76.2 to 81.2 feet to intersect the fractures identified between approximately 76 and 81 feet.

Summary

The rock coring log for MW-EP-342S confirmed the historical coring log for MW-308 and provided additional observations. Most planar features coincide with foliation planes. The borehole geophysical logging determined the locations and orientations of fractures and other planar features. Most planar features strike to the northeast and dip moderately (40 to 60 degrees) to the southeast.

3.2 SITE HYDROGEOLOGY

This section describes groundwater occurrence, flow directions, and estimated groundwater flow rates within the geologic units at the Eastern Plume.

3.2.1 Groundwater Occurrence

Groundwater occurs within the Upper Sand, Transition Unit, and Lower Sand and within transmissive bedrock fractures. The overburden is partially saturated in upland areas and fully saturated in wetland areas. The depth to groundwater ranges from 0 to approximately 10 feet or more bgs in upland areas.

Groundwater in the Upper Sand is unconfined and flows laterally from recharge areas to discharge areas. Flow within the Transition Unit is expected to be more complex because of the varying hydraulic conductivities of the interbedded sands, silts and clays within this unit. Deep sand units in the Transition Unit are generally confined east of Merriconeag Road but to the west the Transition Unit is dominated by sand and there are no artesian wells to suggest confined conditions in this area.. The underlying Presumpscot Clay acts as an aquitard limiting downward movement of groundwater into the bedrock. The direction of bulk groundwater flow in interconnected transmissive bedrock fractures is expected to be generally in a southeast direction and is confined by the solid rock matrix and by the overlying Presumpscot Clay, or by silt/clay interbeds of the Transition Unit where the Presumpscot Clay is absent (e.g., MW-308/bedrock saddle vicinity, MW-323, and MW-342).

3.2.2 Groundwater Flow Directions and Velocities

A synoptic round of groundwater level measurements was performed on June 12, 2009, to estimate groundwater flow directions across the site. The groundwater elevations for wells complete in the Upper Sand (Figure 3-5), Transition Unit (Figure 3-6), and Lower Sand (Figure 3-7) were contoured, and the directions of groundwater flow interpreted from the configuration of the groundwater contours. Similarly, groundwater flow in bedrock in the area of MW-308 was evaluated (Figure 3-8 Transition Unit and Figure 3-9 Upper Bedrock). A groundwater contour map for the Lower Bedrock was not prepared because the primary groundwater contaminant migration pathway is in the upper bedrock in the vicinity of MW-308.

Not all of the more than 110 measured water levels shown in Table 2-4 were used in preparing the groundwater contour maps. EP-05 through EP-14 were not contoured because these wells have long (30-feet) well screens that intersect both the transition and lower sand units. Additionally, no geologic logs were available for the following wells, and so were not included in the contouring: EP-15, MW-208, MW-NASB-090, P-103, P-105, P-111, P-121, PZ-1, PZ-2, PZ-6, and PZ-11. Other reasons for not including a well in the contouring effort included: Well EW-05B-PZ-03 was completed in clay; therefore, the water level is not likely to be representative of transition unit, Well MW-339 was screened across the Transition Unit and Lower Sand and therefore could not be assigned to either, and Well PZ-MB-B4B was flowing and so an accurate measurement could not be obtained. Regardless, an adequate number of data points were collected for the given purpose.

Average groundwater flow velocities were estimated based on slug test results, groundwater elevations measured on June 12, 2008, and representative effective porosities and are summarized in Table 3-2. The geometric mean K values for each unit presented in Table 3-3 were used in the groundwater velocity calculations. Groundwater flow velocities were estimated using the modified Darcy equation ($V=Ki/n_e$) for each unit for the northern and southern portions of the Eastern Plume area.

Slug tests were conducted in December 2008 in eight of the nine wells (except MW-EP-340B2) associated with the three newly installed bedrock monitoring well clusters (MW-EP-340S/B1, MW-EP-341S/B1/B2, and MW-EP-342S/B1/B2) and in 12 of the 13 newly installed overburden wells (MW-EP-343 through MW-EP-354, excluding MW-EP-355). Of the 20 wells in which rising-head in-situ slug tests were performed, as discussed in Section 2.7, 1 well was completed in the Upper Sand, 4 wells were completed in the Transition Unit, 10 wells were completed in the Lower Sand unit, and 5 wells were completed in upper and lower bedrock to provide estimates of K. K estimates are summarized in Table 3-3, and K test calculations are presented in Appendix A-7.

Upper Sand

The direction of groundwater flow inferred from the groundwater contours is generally southeast toward Merriconeag Stream (Figure 3-5).

A slug test was performed in one new well MW-EP-345 to provide additional information in the estimate of the K for the Upper Sand, and resulting data were analyzed under unconfined conditions using the Bouwer and Rice (1976) method. The calculated K value for this well was 2.45 ft/day (8.64×10^{-4} cm/sec) (see Table 3-3), which is consistent with silty sands and fine sands.

For the Upper Sand complete data set (new and old K data), based on data collected from two sets of wells in the north (MW-1104 and MW-EP-345) and south (MW-209 and MW-332), a geometric mean K of 3.91 ft/day (see Table 3-3), a gradient (i) of approximately 0.018 (northern) and 0.008 (southern), and effective porosity (n_e) of 0.26, the calculated groundwater flow velocities are 0.265 and 0.115 ft/day for the northern and southern portions of the site, respectively. The average groundwater flow velocity was estimated as 0.190 ft/day or 69 ft/year for the Upper Sand (Table 3-2).

Transition Unit

North of Mere Brook, groundwater flow in the Transition Unit is in a southeastern direction (Figure 3-6). Pumping from extraction well EW-2A has caused a depression in the groundwater surface as indicated by the groundwater level (9.7 feet above msl) at MW-311 located near EW-2A. In the southern area of the site, south of Mere Brook, the groundwater flow direction in this unit shifts to the east toward Mere Brook Further south, at the Merriconeag Stream confluence, shallow groundwater has easterly and southeasterly components; deep groundwater flow in this area is predominantly to the southeast and east toward Mere Brook. Pore water evidence of contamination indicate upward gradients in the Transition Unit near Merriconeag Stream and Mere Brook, which confirms that these are groundwater discharge areas.

Slug tests were performed in four of the new monitoring wells, as shown in Table 3-3, to provide additional information in the estimates of K for the Transition Unit. The slug test data were analyzed with the Bouwer and Rice (1976) method and assumed confined conditions. For each of the wells, the saturated zone was assumed to be the length of the screen interval, and the aquitard above the screened zone was calculated by subtracting the depth to the top of the Transition Unit from the depth to the top of the screened interval of the well. The lower aquitard was assumed to be a minimum of 1 foot thick. Based on several iterations using varying values of this parameter, it was determined that resulting K values were insensitive to this parameter.

The calculated K values for the new wells screened in the Transition Unit ranged from 4.31 x 10^{-2} ft/day (1.52 x 10^{-5} cm/sec) in well MW-EP-342S to 1.87 ft/day (6.60 x 10^{-4} cm/sec) in MW-EP-341S. K values estimated from slug tests are consistent with the silt, silty sands, fine sands, and clayey sands of the Transition Unit.

For the Transition Unit complete data set (new and old K data), based on data collected from new wells in the north (MW-224 and MW-311) and south (MW-EP-225B and MW-EP-352), a geometric mean K of 1.67 ft/day (see Table 3-2), gradient (i) of approximately 0.024 (northern) and 0.009 (southern), and effective porosity (n_e) of 0.18, the calculated groundwater flow velocities are 0.219 and 0.081 ft/day for the northern and southern portions of the site, respectively. The average groundwater flow velocity was estimated as 0.150 ft/day or 55 ft/year for the Transition Unit (Table 3-2).

Lower Sand

The configuration of the groundwater surface for the Lower Sand (Figure 3-7) is similar to the Upper Sand and Transition Unit except that groundwater contours are bounded by the extent of the Lower Sand. North of Purinton Road, the groundwater surface slopes gently toward Picnic Pond. South of Purinton Road, groundwater flow is in a southerly direction toward Mere Brook. Similar to the Upper Sand and Transition Unit, groundwater flow south of Mere Brook shifts eastward toward Mere Brook.

Slug tests were performed in 10 of the new monitoring wells, as shown in Table 3-3, to provide additional information in the estimates of K for the Lower Sand. The slug test data were analyzed using the Bouwer and Rice (1976) method and assuming confined conditions. For each of the wells, the saturated zone was assumed to be the length of the screen interval, and the aquitard above was assumed to be equal to the thickness of the Transition Unit (24 feet) above the Lower Sand at each location. The lower aquitard was assumed to be a minimum of 35 feet thick based on the results of bedrock borehole geophysical logging and bedrock core inspection. Several iterations were tested for varying values of this parameter, and the results were found to be insensitive to this parameter.

The calculated K values for the new wells screened in the Lower Sand ranged from 2.35 x 10^{-1} ft/day (8.30 x 10^{-5} cm/sec) in well MW-EP-354 to 13.8 ft/day (4.86 x 10^{-3} cm/sec) in MW-EP-349, with an estimated geometric mean of 0.967 ft/day (3.41E^{-4} cm/sec). K values estimated from slug tests are consistent with silt, silty sands, fine sands, and clayey sands, as shown in Table 3-3. The mean K values for the Transition Unit and Lower Sand are similar, although the geologic descriptions are different for the two units. This could suggest that the sandier interbeds within the Transition Unit are dominating the flow mechanisms within this unit, resulting in K values similar to those of the Lower Sand.

For the Lower Sand complete data set (new and old K data), based on data collected from wells in the north (MW-EP-346 and MW-EP-348) and south (MW-205 and MW-EP-351) were used to calculate the groundwater flow velocity. A geometric mean for K of 1.00 ft/day calculated for the Lower Sand (see Table 3-3), gradient (i) of approximately 0.009 (northern) and 0.008 (southern), and effective porosity (n_e) of 0.21 yielded calculated groundwater flow velocities of 0.045 and 0.036 ft/day for the northern and southern portions of the site, respectively. The average groundwater flow velocity was estimated at 0.041 ft/day or 15 ft/year for the Lower Sand (Table 3-2).

Bedrock in MW-308 Vicinity

Figures 3-8 and 3-9 depict groundwater contours and flow directions in the Transition Unit and Bedrock, respectively in the vicinity of MW-308. Overburden geologic logs indicate a bedrock high overlain directly by the Transition Unit and in turn by the Upper Sand (Figure 3-1). As shown on Figure 3-8, groundwater flow in the overburden is in a southwesterly direction. After groundwater enters the fractured bedrock in the vicinity of MW-308, groundwater flow shifts to the east in the direction of Merriconeag Stream. Groundwater migrates in the direction of least resistance from relative high head to low head through interconnected fractures. Borehole geophysical logging indicated that some fractures strike in a southeasterly direction.

Slug tests were performed in five of the new bedrock monitoring wells completed in the vicinity of MW-308, as shown in Table 3-3, to provide additional information in the estimate of K for the upper and deeper bedrock. A slug test was not completed at new well EP-MW-340B2 due to extremely slow recovery. The slug test data were analyzed with the Bouwer and Rice (1976) method and assuming confined conditions. For each of the wells, the saturated zone was assumed to be the length of the screened interval, and the aquitard above was assumed to be equal to the depth to the top of the well screen from the depth at which bedrock was first encountered. The lower aquitard was assumed to be a minimum of 1 foot thick. Several iterations were tested for varying values of this parameter, and the results were found to be insensitive to this parameter. The calculated K values for the new wells screened in the upper bedrock ranged from 0.168 ft/day (5.94 x 10^{-5} cm/sec) in well MW-EP-341B1 to

3.78 ft/day (1.33 x 10^{-3} cm/sec) in MW-EP-342B1. The calculated K values for the wells screened in deeper bedrock ranged from 0.537 ft/day (1.89 x 10^{-4} cm/sec) in well MW-EP-342B2 to 0.561 ft/day (1.98 x 10^{-4} cm/sec) in MW-EP-341B2.

For bedrock investigated in the vicinity of MW-308, data collected from upper bedrock wells MW-EP-341B1 and MW-EP-342B1 and deeper bedrock wells MW-EP-341B2 and MW-EP-342B2 were used to calculate groundwater flow velocity. Calculated geometric mean K values of 0.598 ft/day for upper bedrock and 0.458 for deeper bedrock in the vicinity of MW-308 (Table 3-3), a gradient (i) of approximately 0.003, and effective porosity (n_e) of 0.015 yielded calculated groundwater flow velocities of approximately 0.133 ft/day (49 ft/year) and 0.080 ft/day (29 ft/year) for upper and deeper bedrock, respectively in the vicinity of MW-308. The average groundwater flow velocity was estimated at 0.106 ft/day for bedrock or 39 ft/year (Table 3-2).

Summary

Supplemental RI results indicate that K values for fine sand interbeds within the Transition Unit, Upper Sand, and upper portion of the fractured bedrock at the bedrock knob well MW-EP-342B1 (nearest well to MW-308) are similar. The hydraulic conductivity of the Lower Sand and Transition Units are more similar than previously thought based on slug-test data. In addition, the results refined estimates for groundwater flow velocities across the Eastern Plume in the Upper Sand, Transition Unit, Lower Sand, and in the bedrock high in the vicinity of MW-308.

3.2.3 Vertical Hydraulic Gradients

A comprehensive round of synoptic water-level measurements was collected in June 2009 also provided data for an evaluation of overburden and bedrock hydraulic gradients. A summary of hydraulic gradient calculations is presented in Table 3-4. Upward vertical gradients were calculated for 12 of 17 available well pairs, and downward vertical gradients were calculated for 4 of 17 available well pairs. No vertical hydraulic gradient was measured for one overburden well pair (MW-317A/MW-317B).

Overburden Wells

Hydraulic gradients between overburden well pairs were upward, with the exception of the MW-338A/B well pair. Upward gradients ranged from 0.005 for the MW-206A/B well pair to 0.258 for the MW-229A/B well pair. Slightly downward vertical gradients were calculated for the overburden well pair MW-338A/B (-0.005) screened across the Transition Unit (MW-338B) and Lower Sand (MW-338A). However, an upward gradient of 0.027 was calculated for the MW-338B/C well pair screened across shallower portions of the subsurface (Upper Sand and Transition Unit). These wells are located in the southernmost portion of the Eastern Plume area along the western bank of Merriconeag Stream. Maximum upward vertical gradients were calculated for well pairs MW-229A/B (0.258) and MW-105A/B (0.192) located north of the MW-338 well pairs, also in the southern part of the Eastern Plume area. These wells are adjacent to Merriconeag Road.

Vertical gradients measured at well clusters completed in the overburden and/or bedrock confirmed that groundwater moves downward in recharge areas from the Upper Sand into the Transition Unit and Lower Sand over most of the Eastern Plume, then shifts upward in the vicinity of Merriconeag Stream and Mere Brook, which confirm these streams are groundwater discharge areas. Artesian conditions occur at Lower Sand monitoring well MW-EP-347, located approximately 300 feet northwest (upgradient) of Merriconeag Stream. This is probably because the Lower Sand is relatively thin (less than 4 feet thick) at the MW-EP-347 location and pinches out before reaching Merriconeag Stream, which causes head to build up affecting groundwater flow as it moves downgradient. In addition, several other wells in the northern and southern lobes of the plume are artesian, including MW-EP-348, MW-EP-349, MW-EP-353, MW-331, and MW-MB-02C. These locations are also an indicator of the areas where the Lower Sand is more confined.

Bedrock Well Clusters in Vicinity of MW-308

Hydraulic gradients for several of the bedrock well pairs near MW-308 were either upward from the deeper bedrock to overburden or upward within bedrock. In only one case, the MW-EP-340S/B1/B2 well cluster, were vertical gradients downward from the overburden to shallow bedrock and from shallow bedrock to deeper bedrock. However, the vertical gradient in the deeper well pairing (MW-EP-340B1/B2) at this location was lower (-0.005) than from the overburden to bedrock (-0.089). Vertical downward flow was also measured in MW-EP-340 during the geophysical logging discussed in Section 3.3.

Hydraulic gradients between overburden and shallow bedrock wells were downward in two of the three well pairs, as shown in Table 3-4. The downward gradients ranged from -0.037 (MW-EP-341S/B1) to -0.089 (MW-EP-340S/B1). An upward gradient of 0.014 was measured in the MW-EP-342S/B1 well pair. However, vertical gradients measured between shallow and deeper bedrock were generally upward, with the exception of the MW-340B1/B2 well pair. No vertical gradient was calculated for the MW-317A/B well pairing, as shown in Table 3-4. Upward vertical gradients calculated for overburden wells ranged from 0.005 (MW-EP-206A/B well pair) to 0.258 for the MW-EP-229A/B well pair. Maximum vertical upward gradients for shallow to deep bedrock well pairings ranged from 0.004 (MW-EP-341B1/B2) to 0.559 (MW-EP-309A/B).

In summary, vertical gradients are downward from the overburden into the bedrock at both the MW-EP-340 and MW-EP-341 clusters upgradient of MW-308, in contrast to a vertical upward gradient at the MW-EP-342 cluster (nearest MW-308). Lateral and vertical hydraulic gradients indicate groundwater has the potential to move from the overburden into fractured bedrock in the localized vicinity of the MW-308 bedrock knob, and in turn from the bedrock back to the overburden in a southeasterly direction from the bedrock high.

3.2.4 Groundwater Recharge and Discharge

As previously determined, groundwater discharge from the confined Lower Sand may occur largely by upward diffusive flow through fine-grained units of the overlying Transition Unit, and through several small springs and seeps observed near MW-207AlB (E.C. Jordan, 1990) and to the north near Picnic Pond (EPA, 2003). Relatively high potentiometric head and artesian conditions in the Lower Sand have been noted, reflecting groundwater confinement within the Lower Sand caused by: (a) underlying and overlying clay and silt, (b) reductions in the transmissivity of the overall Transition Unit south of the east-west reach of Mere Brook, and (c) a pronounced shallowing of the Presumpscot Clay along the western side of the north-south reach of Mere Brook.

Hydrogeological data obtained during the 2007 Mere Brook and Merriconeag Stream Investigation (ECC, 2008a), which was focused on the floodplain and upland areas near the confluence of Mere Brook and Merriconeag Stream, suggested that deep groundwater within the Lower Sand and Transition Unit in the upland areas is under confined or semi-confined conditions at some locations. The groundwater gauging data indicate artesian well conditions in the Lower Sand in monitoring wells near the Mere Brook and Merriconeag confluence, confirming the confined/semi-confined conditions.

Groundwater flows from recharge areas to discharge areas. The surface of the site slopes gently across the site toward the south and east and steepens in the vicinity of Mere Brook and Merriconeag Stream. Boring logs indicate that the Upper Sand is present throughout the Eastern Plume. Sand has high infiltration capacity and is readily recharged by precipitation and snow melt. Recharge continues to move downward into the underlying geologic units and upward to discharge areas. The vertical gradients indicate well clusters with positive (downward) gradients (recharge areas) in many areas across the Eastern Plume, and negative (upward) gradients mostly in the vicinity of Mere Brook and Merriconeag Stream indicating it is a discharge area. Artesian conditions (upward gradients) also occur at MW-EP-347, located approximately 300 feet northwest of Merriconeag Stream. The Supplemental RI confirmed previous results indicating that groundwater moves laterally in a southeasterly direction and downward from the Upper Sand into the Transition Unit and Lower Sand and then upward in the vicinity of Merriconeag Stream and Mere Brook. Artesian conditions in the vicinity of these streams are affected by silt/clay interbeds within the Transition Unit under confined (semi-confined leaky) conditions.

3.2.5 Influence of GWETS on Hydrogeology

Groundwater extraction has been occurring since 1995 to reduce VOC concentrations and maintain hydraulic control of the Eastern Plume to minimize contamination migration. Deep overburden groundwater flow patterns have been locally altered by pumping at extraction wells, but only small changes in groundwater flow patterns have been noted away from the immediate vicinity of most extraction wells. The largest changes in groundwater flow patterns are seen at extraction well EW-2A, which was installed to intersect only the Lower Sand interval. Potentiometric head at this location has been approximately 12 feet lower than noted in the shallow flow system (EA, 2000). A reversal of shallow and deep heads near the confluence of Mere Brook and Merriconeag Stream has persisted since 1998. Extraction well EW-5 has been replaced by EW-5A and EW-5B, which are both screened only across the Lower Sand. Other operating extraction wells (EW-1 and EW-4) are screened across the Upper Sand and Transition Unit. Effects on the deep flow system due to extraction well pumping at these two wells are limited by shallow groundwater preferentially moving into extraction wells (ECC, 2009a). Overall, the groundwater extraction system has not established hydraulic control of the Eastern Plume, although natural geologic conditions appear to have helped contain groundwater contamination (ECC, 2009a). Two additional extraction wells (EW-8 and EW-9) were constructed near the confluence of Mere Brook and Merriconeag Stream in October/November 2009. These additional extraction wells were located based on capture zone modeling (ECC, 2009b), including interim data from the subject Supplemental RI, and were located to reduce contaminant mass and enhance containment of Eastern Plume COCs in areas of elevated concentrations.

TABLE 3-1

TOP OF CLAY ELEVATION
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK MAINE

Well ID	Elevation Ground Surface (feet below msl)	Depth Top silt/clay (feet below ground surface)	Elevation of Clay (feet below msl)
CP-101	61.80	32.0	29.8
CP-102	57.90	38.0	19.9
CP-103	60.90	59.0	1.9
CP-104	54.40	51.0	3.4
CP-105	51.00	61.0	-10.0
CP-106	48.60	61.0	-12.4
CP-107	48.00	65.0	-17.0
CP-109	41.00	80.0	-39.0
CP-110	41.50	78.0	-36.5
CP-112	24.60	69.0	-44.4
CP-113	23.40	59.0	-35.6
CP-114	33.00	70.0	-37.0
CP-115	29.20	56.0	-26.8
CP-117	42.40	78.0	-35.6
CP-118	39.50	90.0	-50.5
CP-119	35.90	100.0	-64.1
CP-120	30.00	101.0	-71.0
CP-121	28.30	57.0	-28.7
CP-122	21.00	28.0	-7.0
CP-123	41.70	78.0	-36.3
CP-124	42.90	83.0	-40.1
CP-125	39.00	79.0	-40.0
CP-127	28.30	40.0	-11.7
CP-128	32.40	33.0	-0.6
CP-129	34.90	--	--
CP-130	34.60	70.0	-35.4
CP-131	35.70	87.0	-51.3
CP-132	37.60	84.0	-46.4
CP-133	38.90	84.0	-45.1
CP-134	22.40	8.0	14.4
CP-135	23.50	10.0	13.5
CP-138	45.10	10.0	35.1
CP-139	47.80	12.0	35.8
CP-140	37.30	53.0	-15.7
CP-141	23.70	65.0	-41.3
CP-142	18.50	90.0	-71.5
CP-143	20.70	78.0	-57.3
CP-144	20.80	22.0	-1.2
CP-145	20.30	26.0	-5.7
CP-147	50.80	38.0	12.8

TABLE 3-1

TOP OF CLAY ELEVATION
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK MAINE

Well ID	Elevation Ground Surface (feet below msl)	Depth Top silt/clay (feet below ground surface)	Elevation of Clay (feet below msl)
CP-148	50.40	73.0	-22.6
CP-149	41.10	85.0	-43.9
CP-151	54.00	41.0	13.0
CP-152	54.40	24.0	30.4
CP-153	53.50	15.0	38.5
CP-154	55.00	19.0	36.0
CP-155	57.50	19.0	38.5
CP-156	57.00	20.0	37.0
CP-157	43.30	79.0	-35.7
CP-158	42.60	68.0	-25.4
CP-159	31.70	24.0	7.7
CP-160	40.50	92.0	-51.5
EP-01	29.12	100.0	-70.9
EP-02	27.10	95.0	-67.9
EP-03	25.40	90.0	-64.6
EP-04	30.20	90.0	-59.8
EP-05	32.00	80.0	-48.0
EP-06	37.40	82.0	-44.6
EP-07	45.10	70.0	-24.9
EP-08	44.70	82.0	-37.3
EP-09	35.20	60.0	-24.8
EP-10	34.60	55.0	-20.4
EP-11	39.70	65.0	-25.3
EP-12	47.10	~68	-20.9
EP-17	69.70	>44	<23.7
EP-18	68.60	39.0	29.6
EP-19	68.20	>44	<24.2
EP-20	69.60	>44.5	<25.1
EP-DP-02	38.20	93.0	-55.0
EP-DP-03	40.00	73.0	-33.0
EP-DP-04	28.00	88.0	-50.0
EP-DP-06	30.00	88.0	-58.0
EP-DP-10	25.00	90.0	-65.0
EP-DP-11	50.20	40.0	10.2
EP-DP-12	32.50	100.0	-67.5
EP-DP-13	35.00	115.0	-70.0
EP-DP-15	45.00	82.0	-37.0
EP-DP-16	52.00	59.0	-7.0
EP-DP-18	18.00	30.0	-12.0
EW-01	27.20	90.0	-62.8

TABLE 3-1

TOP OF CLAY ELEVATION
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK MAINE

Well ID	Elevation Ground Surface (feet below msl)	Depth Top silt/clay (feet below ground surface)	Elevation of Clay (feet below msl)
EW-02A	25.30	65.0	-39.7
EW-03	45.70	80.0	-34.3
EW-04	42.80	>42	<0.8
EW-05	41.40	85.0	-43.6
EW-05B PZ-1	34.48	80.0	-45.5
EW-05B PZ-2	35.45	>78	<42.55
EW-05B PZ-3	33.06	52.0	-18.9
EW-05B PZ-4	--	52.0	--
EW-05B PZ-4A	34.94	>80	<-45.06
MW-205	44.00	98.0	-54.0
MW-206A	40.60	75.0	-34.4
MW-207A	21.60	80.0	-58.4
MW-208	47.40	105.0	-57.6
MW-210B	35.80	55.0	-19.2
MW-211A	58.80	55.5	3.8
MW-211B	58.80	55.5	3.8
MW-241	25.70	>12	<13.7
MW-302	48.80	55.0	-6.2
MW-303	42.00	>72	<-30
MW-306	49.30	<55	<-5.7
MW-307	59.80	>32	<27.8
MW-309A	19.80	27.0	-7.2
MW-309B	19.40	27.0	-7.6
MW-310	50.30	>72	<-21.7
MW-311	23.60	>57	<-33.7
MW-312	33.50	--	--
MW-313	18.50	55.0	-36.5
MW-314A	24.30	>62	<-37.7
MW-314B	23.90	>62	<-38.1
MW-315A	20.60	>77	<-56.4
MW-315B	20.50	--	--
MW-320	50.70	>32	<18.7
MW-321	48.40	55.0	-6.6
MW-322	34.70	>30	<4.7
MW-330	32.80	34.0	-1.2
MW-331	27.70	53.0	-25.3
MW-332	22.30	16.0	6.3
MW-333	24.30	36.0	-22.7
MW-334	28.00	48.0	-20.0
MW-EP-343	35.20	78.0	-42.8

TABLE 3-1

TOP OF CLAY ELEVATION
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK MAINE

Well ID	Elevation Ground Surface (feet below msl)	Depth Top silt/clay (feet below ground surface)	Elevation of Clay (feet below msl)
MW-EP-344	35.21	68.0	-32.79
MW-EP-345	33.45	26.0	7.5
MW-EP-346	52.47	73.0	-20.5
MW-EP-347	29.35	51.0	-21.65
MW-EP-348	21.07	49.0	-27.9
MW-EP-349	23.38	52.0	-28.6
MW-EP-350	11.05	58.0	-47.0
MW-EP-351	8.30	39.0	-30.7
MW-EP-352	22.47	54.0	-31.35
MW-EP-353	14.09	62.0	-47.91
MW-EP-354	16.80	34.0	-17.2
MW-EP-355	approx 20	57.0	-37.0
MW-MB-O1-C/G	17.16	58	-40.84
MW-MB-O2-C/G	11.68	62	-50.32
MW-MB-O3-C/G	23.76	56	-32.24
MW-MB-O4-C/G	17.52	34	-16.48
MW-MB-O5-C/G	21.80	55.5	-33.7
MW-MB-O6-C/G	21.83	49	-27.17
MW-NASB-090	56.50	>32	<24.5
PL-01	41.25	78.0	-36.8
PL-02	34.98	78.0	-43.0
PL-03	43.07	81.0	-37.9
PL-04	35.33	68.0	-32.7
PL-05	32.16	45.5	-13.3
PL-06	35.10	59.0	-23.9
PL-07	30.15	51.0	-20.9
PL-08	29.40	52.0	-22.6
PL-09	45.30	80.0	-34.7
PL-10	29.02	41.0	-12.0
PL-11	12.60	24.0	-11.4
PL-12	36.40	70.0	-33.6
PL-13	23.60	62.0	-38.4
PL-14	20.80	65.0	-44.2
PL-15	17.00	46.5	-29.5
PL-16	19.10	76.0	-56.9
PL-17	16.60	68.0	-51.4
PL-18	23.90	44.0	-20.1
PL-19	17.60	34.0	-16.4
PL-21	18.80	47.0	-28.2
PL-22	14.10	62.0	-47.9

TABLE 3-1

TOP OF CLAY ELEVATION
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK MAINE

Well ID	Elevation Ground Surface (feet below msl)	Depth Top silt/clay (feet below ground surface)	Elevation of Clay (feet below msl)
PL-23	16.00	31.0	-15.0
PL-24	37.79	83.0	-45.2
PL-25	40.61	93.0	-52.4
PL-26	44.70	15.5	29.2
PL-27	25.10	42.0	-16.9
PL-28	23.10	56.0	-32.9
PL-29	12.40	70.0	-57.6
PL-30	22.40	54.0	-31.6
PZ-MB-A1-C/G	9.91	>32	-<22.9
PZ-MB-A2-C/G	9.09	24.1	-15.01
PZ-MB-A3-C/G	9.68	13	-3.32
PZ-MB-B1-C/G	19.39	>16	<3.39
PZ-MB-B2-C/G	9.63	4.5	5.13
PZ-MB-B3-C/G	9.33	2.3	7
PZ-MB-B4-C/G	8.84	20	-11.16
PZ-MB-B5-C/G	9.36	16	-6.64
PZ-MB-B6-C/G	8.35	16	-7.65
PZ-MB-B7-C/G	8.12	12.3	-4.18
PZ-MB-C1-C/G	8.87	14.3	-5.43
PZ-MB-C2-C/G	9.35	14.4	-5.05
PZ-MB-C3-C/G	8.58	14	-5.52
PZ-MB-C4-C/G	8.87	14.2	-5.33
PZ-MB-O1-C/G	9.25	7.5	1.75
PZ-MB-O2-C/G	8.77	6	2.77

TABLE 3-2

GROUNDWATER FLOW VELOCITY CALCULATIONS
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

Hydrostratigraphic Unit	Location of Gradient	Flow Direction	Head (ft)	Head (ft)	Distance (ft)	Gradient	Geometric Mean K (ft/day)[1]	Porosity[2,3] (n_e)	Velocity		
									m/day	ft/day	ft/year
Upper Sand Unit											
MW-1104/MW-EP-345	Northern portion of site	Southeast	52.22	26.1	1485	0.018	3.91	0.26	0.081	0.265	97
MW-209/MW-332	Southern portion of site	Southeast	26.08	16.1	1305	0.008	3.91	0.26	0.035	0.115	42
								Average	**0.058**	**0.190**	**69**
Transition Unit											
MW-224/MW-311	Northern portion of site	Southeast	37.28	9.65	1170	0.024	1.67	0.18	0.067	0.219	80
MW-225B/MW-EP-352	Southern portion of site	Southeast	30.89	21.1	1125	0.009	1.67	0.18	0.025	0.081	29
								Average	**0.046**	**0.150**	**55**
Lower Sand Unit											
MW-EP-346/MW-EP-348	Northern portion of site	South-southeast	36.07	28.21	830	0.009	1.00	0.21	0.014	0.045	16
MW-205/MW-EP-351	Southern portion of site	East	24.97	15.99	1190	0.008	1.00	0.21	0.011	0.036	13
								Average	**0.012**	**0.041**	**15**
Bedrock											
MW-341B1/MW-342B1	MW-308 Vicinity - Upper Bedrock	Southeast	35.31	34.76	165	0.003	0.598	0.015	0.041	0.133	49
MW-341B2/MW-342B2	MW-308 Vicinity - Deeper Bedrock	Southeast	35.37	34.94	165	0.003	0.458	0.015	0.024	0.080	29
								Average	**0.032**	**0.106**	**39**

m - Meters

ft - Feet

K -Geometric mean hydraulic conductivity from Table 3-3.

1 The geometric mean results are presented in Table 3-3.

2 0.26, 0.18, and 0.21, are average specific yield values for medium sand, silt, and fine sand (Fetter, 1994), which are reasonable estimates of the effective porosity for estimating the average groundwater flow velocity in the Upper Sand, Transition Unit, and Lower Sand.

3 Effective porosity for fractured bedrock (granite and schist) ranges from 0.01 to 0.02 (Wood et al., 1996); 0.15 was used for calculating the average groundwater flow velocity in the bedrock high in the vicinity of MW-308.

TABLE 3-3

HYDRAULIC CONDUCTIVITY RESULTS
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

Well Identification[1]	Unit Screened	Hydraulic Conductivity Estimates[2] (cm/s)	Hydraulic Conductivity Estimates[2] (ft/day)	Geologic Materials[3]
Hydraulic Conductivity Results - Upper Sand Unit Wells				
MW-105B	Upper Sand	5.20E-04	1.47E+00	Silt, sandy silts clayey sands
MW-207B		4.70E-04	1.33E+00	Silt, sandy silts clayey sands
MW-209		9.00E-03	2.55E+01	Silty sands, fine sands
MW-229B		3.20E-04	9.07E-01	Silt, sandy silts clayey sands
MW-306		2.00E-03	5.67E+00	Silty sands, fine sands
MW-307		9.90E-03	2.81E+01	Silty sands, fine sands
MW-318		1.10E-03	3.12E+00	Silty sands, fine sands
MW-EP-345*		8.64E-04	2.45E+00	Silt, sandy silts clayey sands
Minimum	**Upper Sand**	**3.20E-04**	**9.07E-01**	---
Maximum	**Upper Sand**	**9.90E-03**	**2.81E+01**	
Geometric Mean	**Upper Sand**	**1.38E-03**	**3.91E+00**	
Hydraulic Conductivity Results - Transition Unit Wells				
MW-106	Transition	2.80E-03	7.94E+00	Silty sands, fine sands
MW-222		4.50E-03	1.28E+01	Silty sands, fine sands
MW-223		2.40E-03	6.80E+00	Silty sands, fine sands
MW-224		3.70E-03	1.05E+01	Silty sands, fine sands
MW-225B		4.50E-03	1.28E+01	Silty sands, fine sands
MW-229A		6.30E-05	1.79E-01	Silty sands, fine sands
MW-230B		5.60E-05	1.59E-01	Silty sands, fine sands
MW-231B		6.00E-05	1.70E-01	Silty sands, fine sands
MW-305		7.60E-03	2.15E+01	Silty sands, fine sands
MW-310		7.50E-03	2.13E+01	Silty sands, fine sands
MW-312		3.14E-04	8.90E-01	Silt, sandy silts clayey sands
MW-EP-340S*		9.68E-05	2.74E-01	Silty sands, fine sands
MW-EP-341S*		6.60E-04	1.87E+00	Silt, sandy silts clayey sands
MW-EP-342S*		1.52E-05	4.31E-02	Silty sands, fine sands
MW-EP-352*		1.93E-04	5.48E-01	Silt, sandy silts clayey sands
Minimum	**Transition**	**1.52E-05**	**4.31E-02**	---
Maximum	**Transition**	**7.60E-03**	**2.15E+01**	
Geometric Mean	**Transition**	**5.89E-04**	**1.67E+00**	

TABLE 3-3

HYDRAULIC CONDUCTIVITY RESULTS
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

Well Identification(1)	Unit Screened	Hydraulic Conductivity Estimates(2)		Geologic Materials(3)
		(cm/s)	(ft/day)	
Hydraulic Conductivity Results - Lower Sand Unit Wells				
MW-205	Lower Sand	6.50E-04	1.84E+00	Silt, sandy silts clayey sands
MW-225A		1.30E-03	3.69E+00	Silty sands, fine sands
MW-230A		4.50E-05	1.28E-01	Silty sands, fine sands
MW-231A		2.70E-04	7.65E-01	Silt, sandy silts clayey sands
MW-315A		4.00E-05	1.13E-01	Silty sands, fine sands
MW-319		6.70E-03	1.90E+01	Silty sands, fine sands
MW-EP-343*		2.77E-04	7.86E-01	Silt, sandy silts clayey sands
MW-EP-344*		8.38E-04	2.37E+00	Silt, sandy silts clayey sands
MW-EP-346*		2.61E-04	7.41E-01	Silt, sandy silts clayey sands
MW-EP-347*		3.47E-04	9.82E-01	Silt, sandy silts clayey sands
MW-EP-348*		4.17E-04	1.18E+00	Silt, sandy silts clayey sands
MW-EP-349*		4.86E-03	1.38E+01	Silty sands, fine sands
MW-EP-350*		1.88E-04	5.33E-01	Silt, sandy silts clayey sands
MW-EP-351*		9.19E-05	2.60E-01	Silty sands, fine sands
MW-EP-353*		3.50E-04	9.92E-01	Silt, sandy silts clayey sands
MW-EP-354*		8.30E-05	2.35E-01	Silty sands, fine sands
Minimum	**Lower Sand**	**4.00E-05**	**1.13E-01**	---
Maximum	**Lower Sand**	**6.70E-03**	**1.90E+01**	
Geometric Mean	**Lower Sand**	**3.53E-04**	**1.00E+00**	
Hydraulic Conductivity Results - Bedrock Wells				
MW-308	Upper Bedrock	7.50E-04	2.13E+00	Fractured rock
MW-316A	Lower Bedrock	3.80E-05	1.08E-01	Fractured rock
MW-316B	Upper Bedrock	2.70E-04	7.65E-01	Fractured rock
MW-317A	Lower Bedrock	4.80E-04	1.36E+00	Fractured rock
MW-317B	Upper Bedrock	9.20E-05	2.61E-01	Fractured rock
MW-EP-340B1*		5.98E-05	1.69E-01	Fractured rock
MW-EP-341B1*		5.94E-05	1.68E-01	Fractured rock
MW-EP-341B2*	Lower Bedrock	1.98E-04	5.61E-01	Fractured rock
MW-EP-342B1*	Upper Bedrock	1.33E-03	3.78E+00	Fractured rock
MW-EP-342B2*	Lower Bedrock	1.89E-04	5.37E-01	Fractured rock

TABLE 3-3

HYDRAULIC CONDUCTIVITY RESULTS
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

Well Identification[1]	Unit Screened	Hydraulic Conductivity Estimates[2] (cm/s)	Hydraulic Conductivity Estimates[2] (ft/day)	Geologic Materials[3]
Minimum	Upper Bedrock	5.94E-05	1.68E-01	---
Maximum	Upper Bedrock	1.33E-03	3.78E+00	
Geometric Mean	Bouwer and Rice (Upper Bedrock)	2.11E-04	5.98E-01	
Minimum	Lower Bedrock	3.80E-05	1.08E-01	
Maximum	Lower Bedrock	4.80E-04	1.36E+00	
Geometric Mean	Bouwer and Rice (Lower Bedrock)	1.62E-04	4.58E-01	

cm/s - Centimeters per second.

ft/d - Feet per day.

1 Hydraulic conductivity estimates at all MW EP-series wells performed by TtNUS as part of the Supplemental RI (designated by *) and remaining estimates documented in Draft Final RI (E.C. Jordan, 1991).

2 Bouwer, H. and R.C. Rice, 1976. A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, Water Resources Research, vol. 12, no. 3, pp. 423-428.

3 Interpretation for overburden materials is based on range of hydraulic conductivity values (Fetter 1994, p.98).

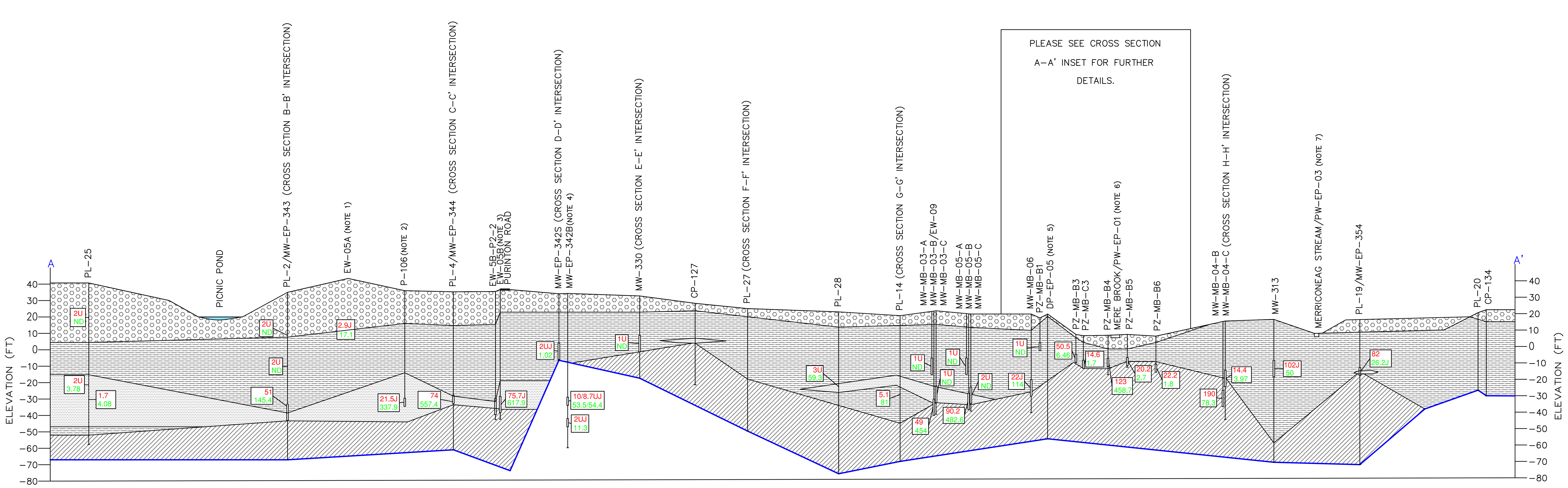
TABLE 3-4

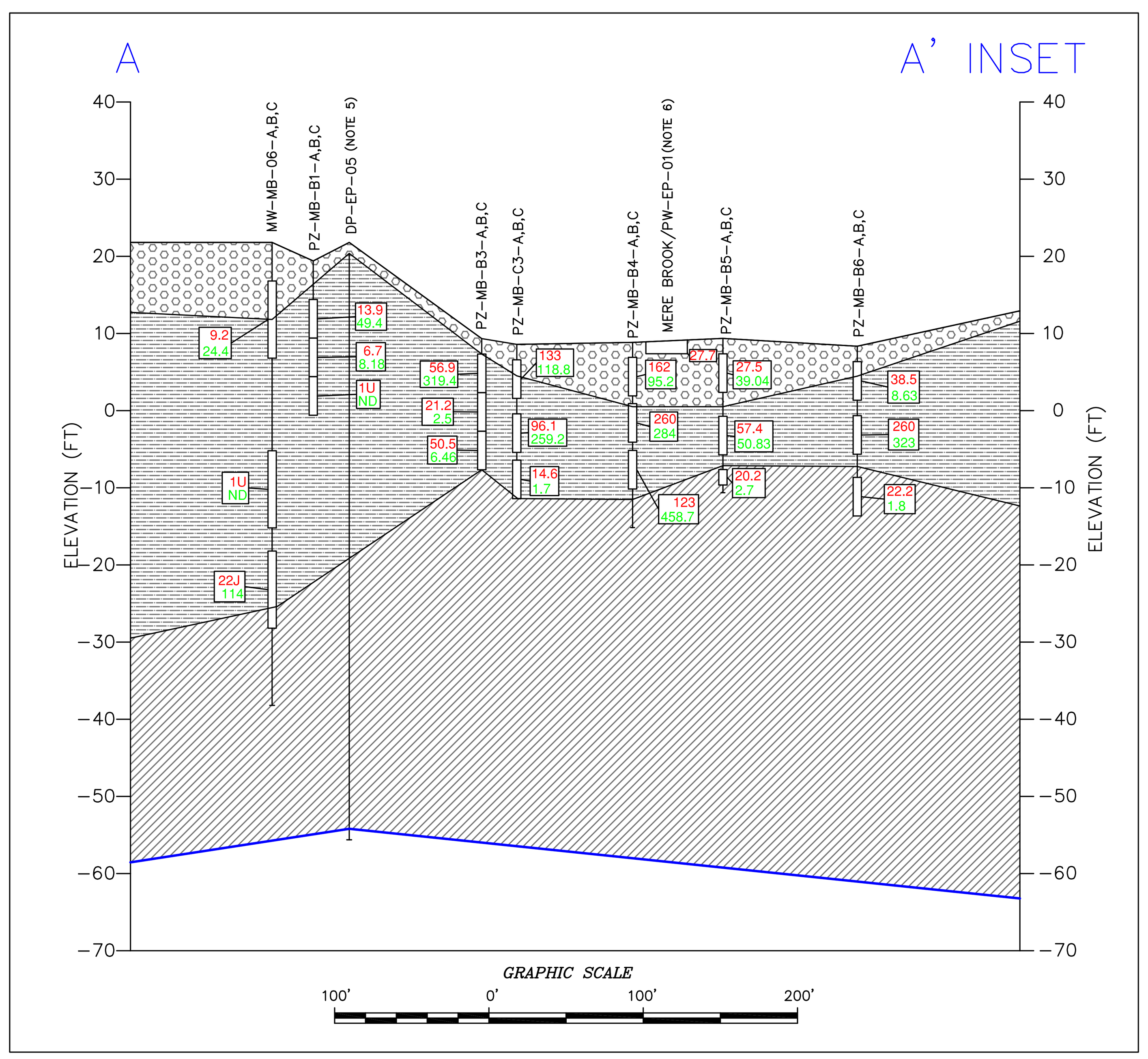
VERTICAL HYDRAULIC GRADIENTS
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

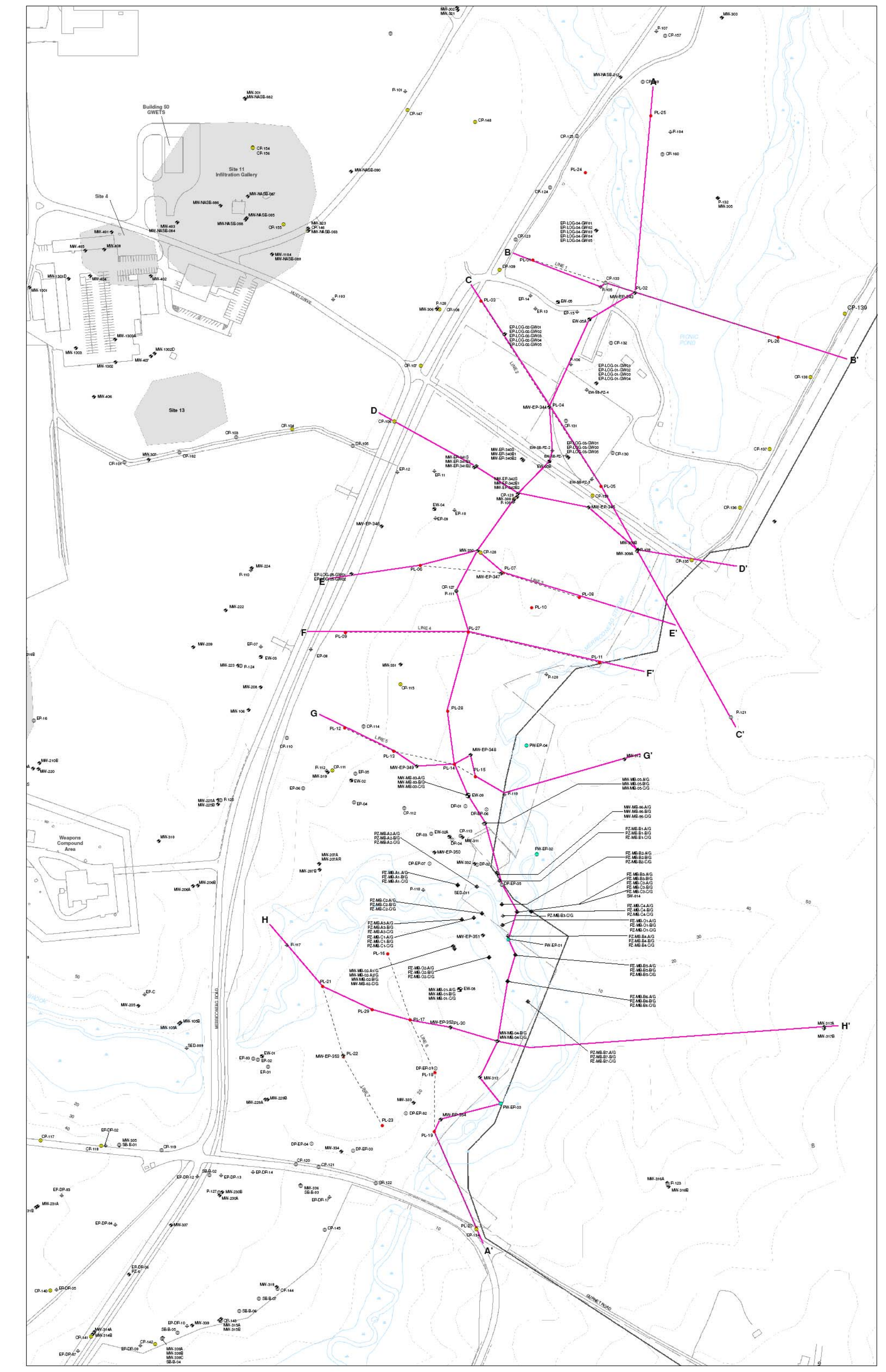
Monitoring Well ID	Unit Screened	Midpoint of Screen (feet)	Vertical Distance(1) (feet)	Head Measurement (feet bgs)	Head Difference(2) (feet)	Vertical Gradient
Overburden Wells						
MW-105B	Upper Sand/Transition	7.10	25.20	19.35	4.84	0.192
MW-105A	Transition/Lower Sand	-18.10		24.19		
MW-206B	Transition	20.50	46.90	27.84	0.23	0.005
MW-206A	Transition/Lower Sand	-26.40		28.07		
MW-225B	Transition	9.30	35.30	30.89	0.96	0.027
MW-225A	Transition	-26.00		31.85		
MW-229B	Upper Sand	5.30	31.70	15.70	8.17	0.258
MW-229A	Transition	-26.40		23.87		
MW-230B	Transition	-20.40	20.90	20.76	3.26	0.156
MW-230A	Transition	-41.30		24.02		
MW-231B	Transition	12.20	24.70	24.30	2.73	0.111
MW-231A	Transition	-12.50		27.03		
MW-338B	Transition	-46.36	20.94	21.48	-0.11	-0.005
MW-338A	Lower Sand	-67.30		21.37		
MW-338C	Transition	-28.09	18.27	20.98	0.50	0.027
MW-338B	Transition	-46.36		21.48		
Overburden/Bedrock Wells						
MW-EP-340S	Transition	-15.93	18.18	36.65	-1.62	-0.089
MW-EP-340B1	Upper Bedrock	-34.11		35.03		
MW-EP-341S	Transition	-10.57	28.31	36.37	-1.06	-0.037
MW-EP-341B1	Upper Bedrock	-38.88		35.31		
MW-EP-342S	Transition	-0.87	30.49	34.32	0.44	0.014
MW-EP-342B1	Upper Bedrock	-31.36		34.76		
Bedrock Wells						
MW-309B	Bedrock	-35.40	8.80	22.32	4.92	0.559
MW-309A	Bedrock	-44.20		27.24		
MW-316A	Bedrock	1.90	45.30	33.05	10.78	0.238
MW-316B	Bedrock	-43.40		43.83		
MW-317B	Bedrock	-22.00	23.30	57.94	0.00	0.00
MW-317A	Bedrock	-45.30		57.94		
MW-EP-340B1	Upper Bedrock	-34.11	17.40	35.03	-0.08	-0.005
MW-EP-340B2	Lower Bedrock	-51.51		34.95		
MW-EP-341B1	Upper Bedrock	-38.88	15.00	35.31	0.06	0.004
MW-EP-341B2	Lower Bedrock	-53.88		35.37		
MW-EP-342B1	Upper Bedrock	-31.36	13.04	34.76	0.18	0.014
MW-EP-342B2	Lower Bedrock	-44.40		34.94		

1 Vertical distance = distance between the midpoints of the shallow and deep saturated well screens.

2 Negative values indicate the potential for downward groundwater, and positive values indicate the potential for upward groundwater flow.
All measurements reported in feet. Elevations are based on the North American Vertical Datum of 1988.







NOTES

1.) NO SOIL BORING OR WELL CONSTRUCTION DATA. NO ELEVATION DATA. ELEVATION ESTIMATED BASED ON NEAREST SURVEYED POINT EP-15. 1,4 DIOXANE SAMPLE RESULT OF 2.9 UG/L (APRIL 2009) AND CVOC SAMPLE RESULT OF 17.1 UG/L (APRIL 2009) DETECTED AT EW-05A BUT NO SAMPLE DEPTH OR WELL SCREEN DATA.

2.) NO SOIL BORING DATA. GEOLOGIC UNITS INFERRED FROM EP-14 BORING LOG.

3.) NO ELEVATION DATA. ELEVATION ESTIMATED BASED ON NEAREST SURVEYED POINT MW-EP-340B.

4.) NO ELEVATION DATA. ELEVATION ESTIMATED BASED ON NEAREST SURVEYED POINT PZ-MB-B1.

5.) MERE BROOK CONFLUENCE WITH MERRICONEAG STREAM APPROXIMATELY 10 FEET EAST OF A-A' CROSS SECTION.

6.) PW-EP-03 LOCATED APPROXIMATELY 65 FEET EAST OF A-A' CROSS SECTION.

7.) FLOODPLAIN DEPOSITS ALONG STREAMS NOT DEPICTED.

8.) HORIZONTAL DATUM IS BASED ON THE MAINE STATE PLANE COORDINATE SYSTEM NAD 1983. VERTICAL DATUM IS BASED ON NGVD 1988. VERTICAL EXAGGERATION IS 5 TIMES THE HORIZONTAL.

9.) SCALE FOR INSET IS AS INDICATED AND VERTICAL EXAGGERATION IS ALSO 5 TIMES THE HORIZONTAL.

10.8 UG/L – 1,4 DIOXANE SAMPLE RESULT (MOST RECENT VALUE SHOWN THROUGH JULY 2009)

25.2 UG/L – CVOC SAMPLE RESULT (MOST RECENT VALUE SHOWN THROUGH JULY 2009)

*CVOC RESULTS ARE A SUMMATION OF THE FOLLOWING COMPOUNDS: 1,1,1-TRICHLOROETHANE, 1,1,2-TRICHLOROETHANE, 1,1-DICHLOROETHANE, 1,1 DICHLOROETHENE, 1,2-DICHLOROETHANE, CIS-1,2-DICHLOROETHENE, TETRACHLOROETHENE, TRANS-1,2-DICHLOROETHENE, TRICHLOROETHENE AND VINYL CHLORIDE.

U – NOT DETECTED
ND – NOT DETECTED
UJ – QUANTITATION APPROXIMATE
J – RESULT APPROXIMATE

LEGEND

ASPHALT OR CONCRETE SURFACE (PURINTON ROAD)
UPPER SAND UNIT
TRANSITION UNIT
LOWER SAND UNIT
CLAY UNIT
TOP OF ROCK (DASHED WHERE INFERRED)

MW-313
SOIL BORING / WELL LOCATION ID
GROUND SURFACE
TOP OF WELL SCREEN
BOTTOM OF WELL SCREEN
BOTTOM OF BORING

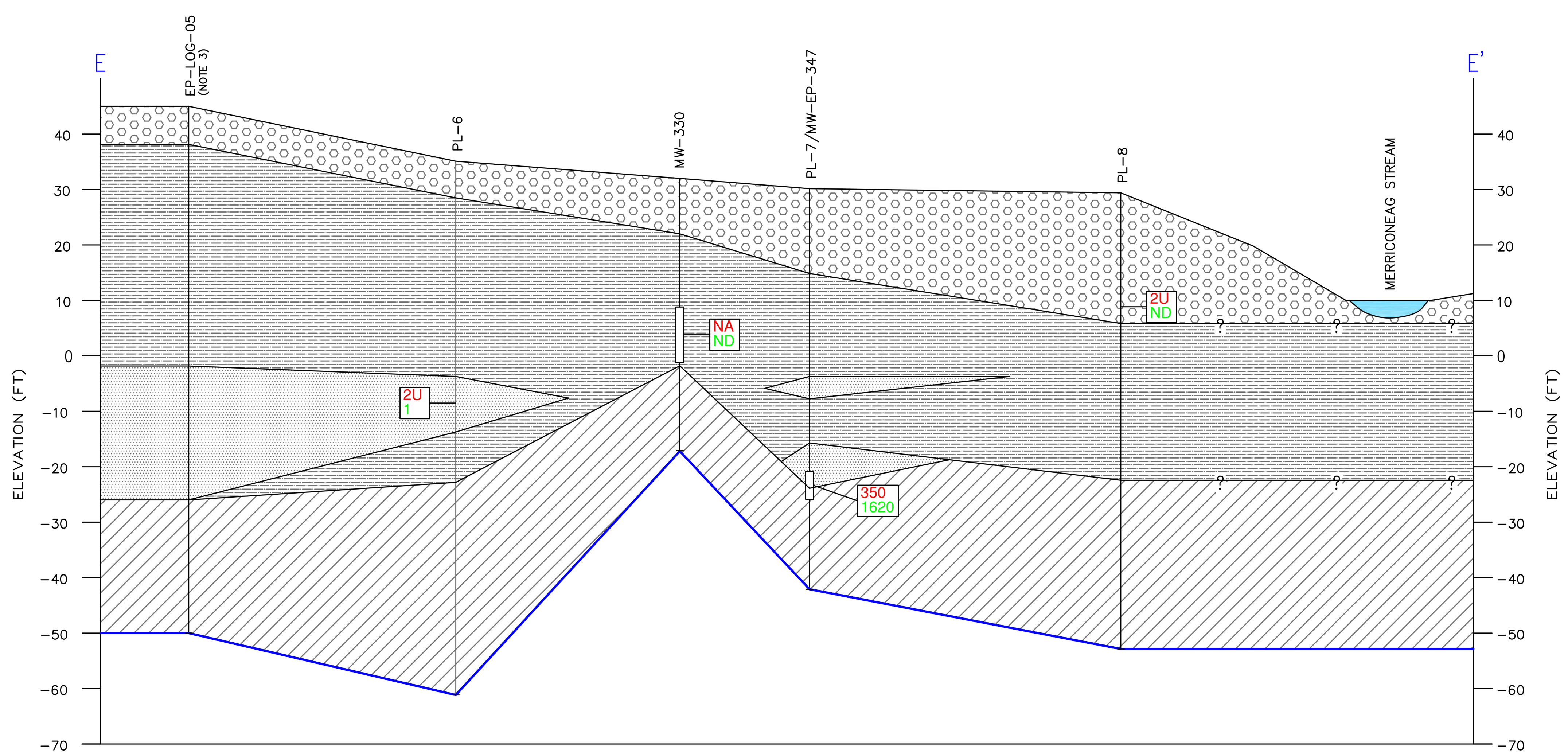
GRAPHIC SCALE
0' 200' 400'

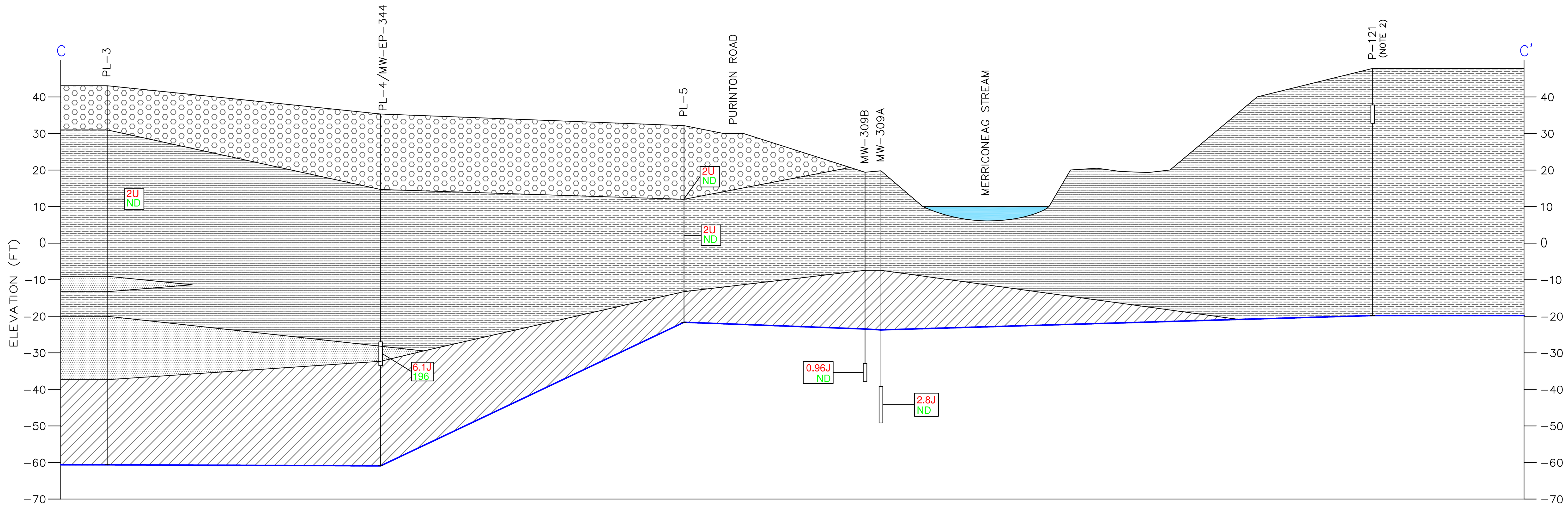
TETRA TECH NUS, INC.

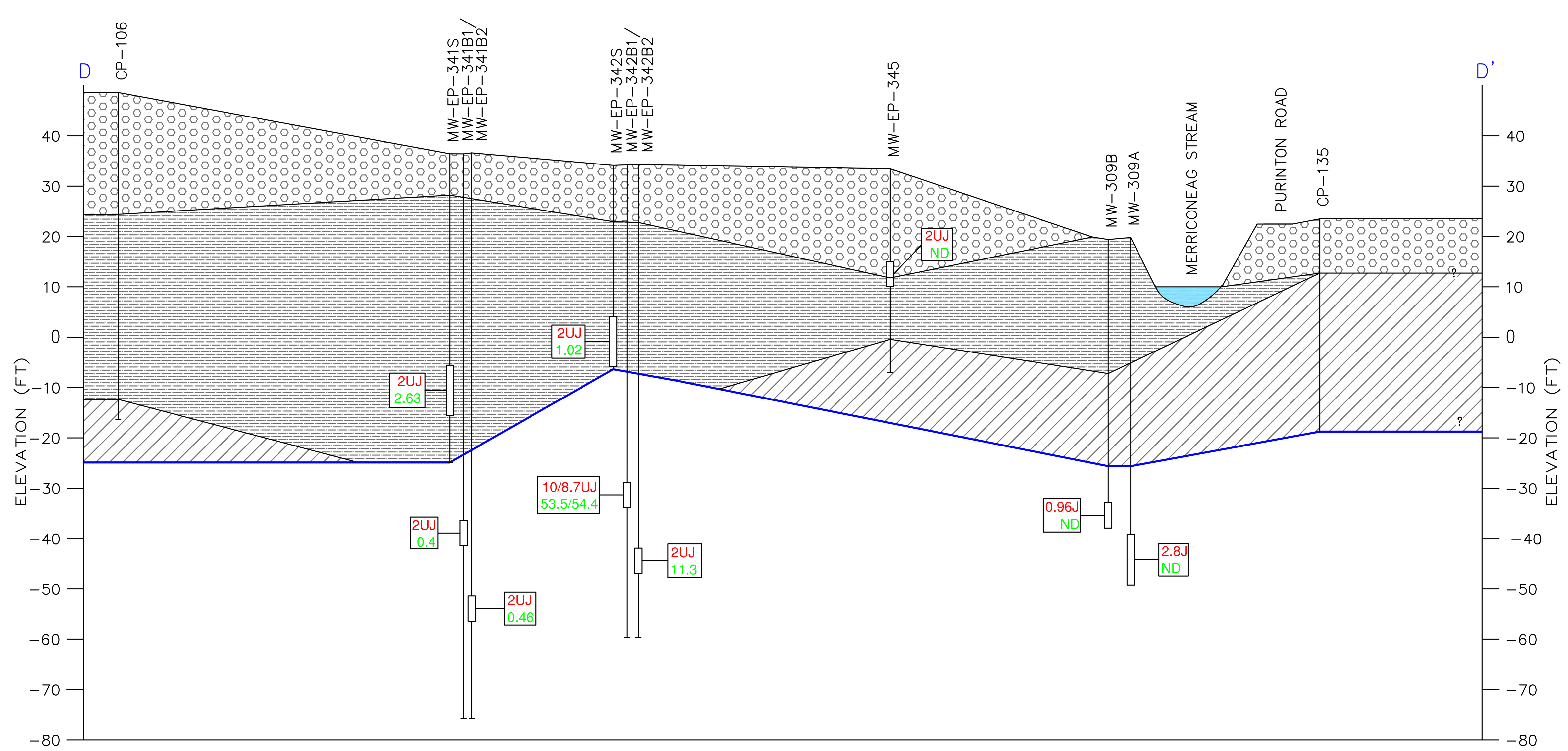
GEOLOGICAL CROSS-SECTION A-A'
SUPPLEMENTAL REMEDIAL INVESTIGATION
OF 1,4 DIOXANE AND BEDROCK IN THE
EASTERN PLUME
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, ME

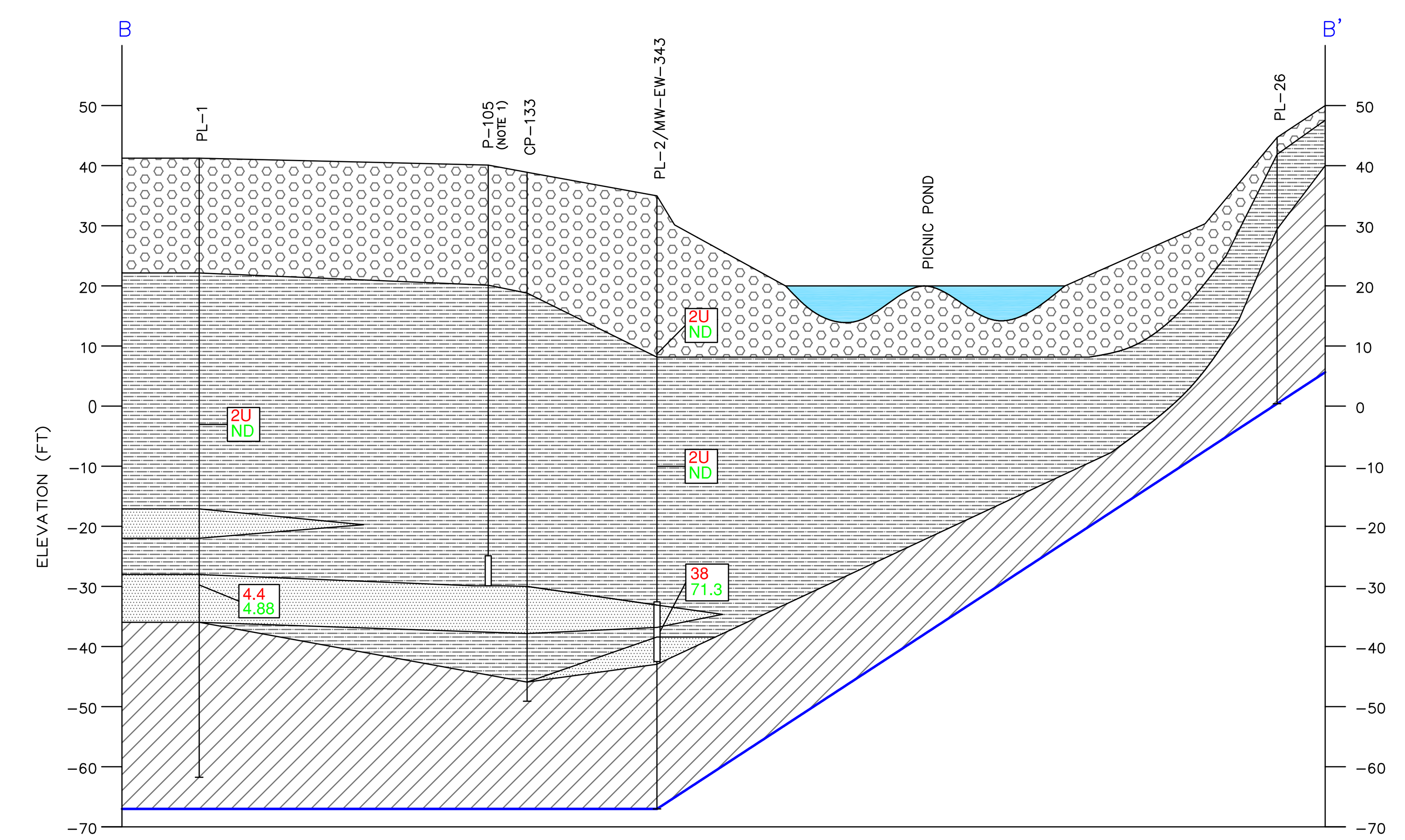
FILE	SCALE
\..\EPLUME_X-SECTION_A-A'.DWG	AS NOTED
FIGURE NUMBER 3-1	REV 0 / DATE 02/26/11

ACAD: \00645\1404\EPLUME_X-SECTION_A-A'.DWG 02/26/11 DWM BOS









NOTES
1.) NO SOIL BORING DATA. GEOLOGIC UNITS INFERRED FROM EP-15 BORING LOG. P-105 20 FT SOUTH OF X-SECTION B-B'.

2.) NO SOIL BORING DATA. GEOLOGIC UNITS INFERRED FROM MW-213 BORING LOG.

3.) NO SURFACE ELEVATION DATA. SURFACE ELEVATION ESTIMATED FROM SURFACE ELEVATION CONTOUR MAP.

4.) FLOODPLAIN DEPOSITS ALONG STREAMS NOT DEPICTED.

5.) HORIZONTAL DATUM IS BASED ON THE MAINE STATE PLANE COORDINATE SYSTEM NAD 1983. VERTICAL DATUM IS BASED ON NGVD 1988. VERTICAL EXAGGERATION IS 5 TIMES THE HORIZONTAL.

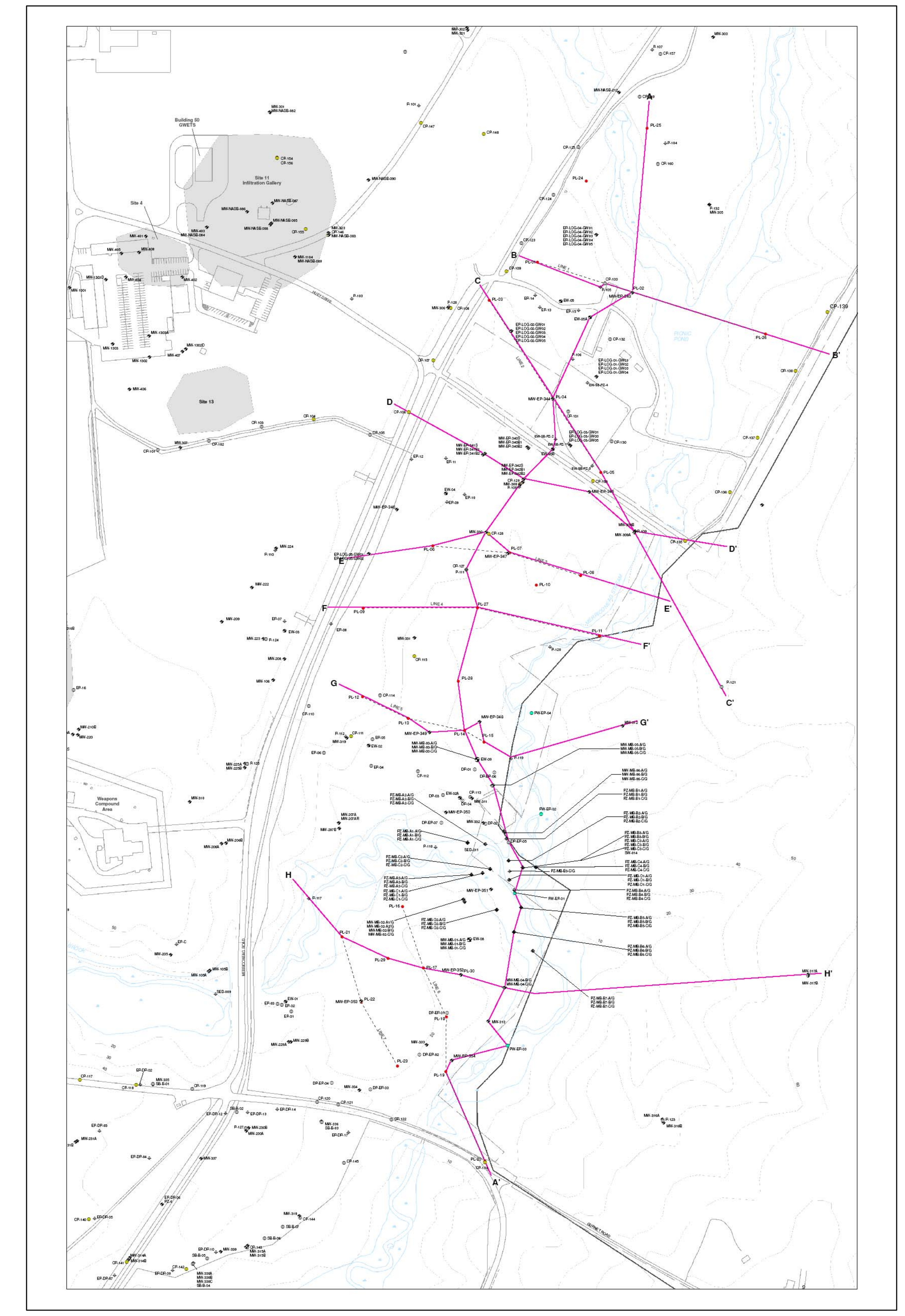
10.8 UG/L – 1,4 DIOXANE SAMPLE RESULT (MOST RECENT VALUE SHOWN THROUGH JULY 2009)

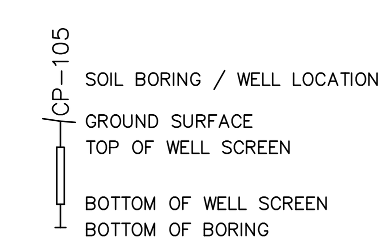
25.2 UG/L – CVOC SAMPLE RESULT (MOST RECENT VALUE SHOWN THROUGH JULY 2009)

*CVOC RESULTS ARE A SUMMATION OF THE FOLLOWING COMPOUNDS: 1,1,1–TRICHLOROETHANE, 1,1,2–TRICHLOROETHANE, 1,1–DICHLOROETHANE, 1,1 DICHLOROETHENE, 1,2–DICHLOROETHANE, CIS–1,2–DICHLOROETHENE, TETRACHLOROETHENE, TRANS–1,2–DICHLOROETHENE, TRICHLOROETHENE AND VINYL CHLORIDE.

LEGEND

- ASPHALT OR CONCRETE SURFACE (PURINTON ROAD)
- UPPER SAND UNIT
- TRANSITION UNIT
- LOWER SAND UNIT
- CLAY UNIT
- TOP OF ROCK (DASHED WHERE INFERRED)





U – NOT DETECTED
ND – NOT DETECTED
UJ – QUANTITATION APPROXIMATE
J – RESULT APPROXIMATE

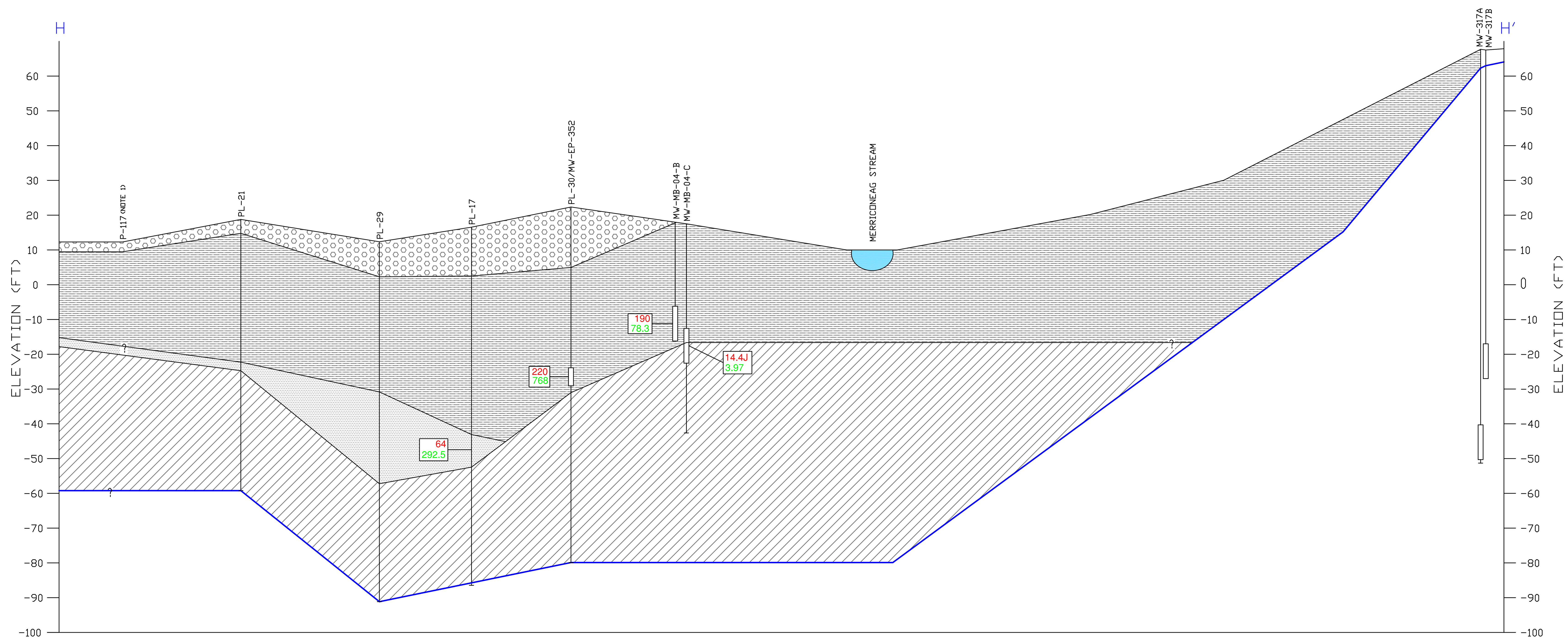
GRAPHIC SCALE
0' 100' 200'

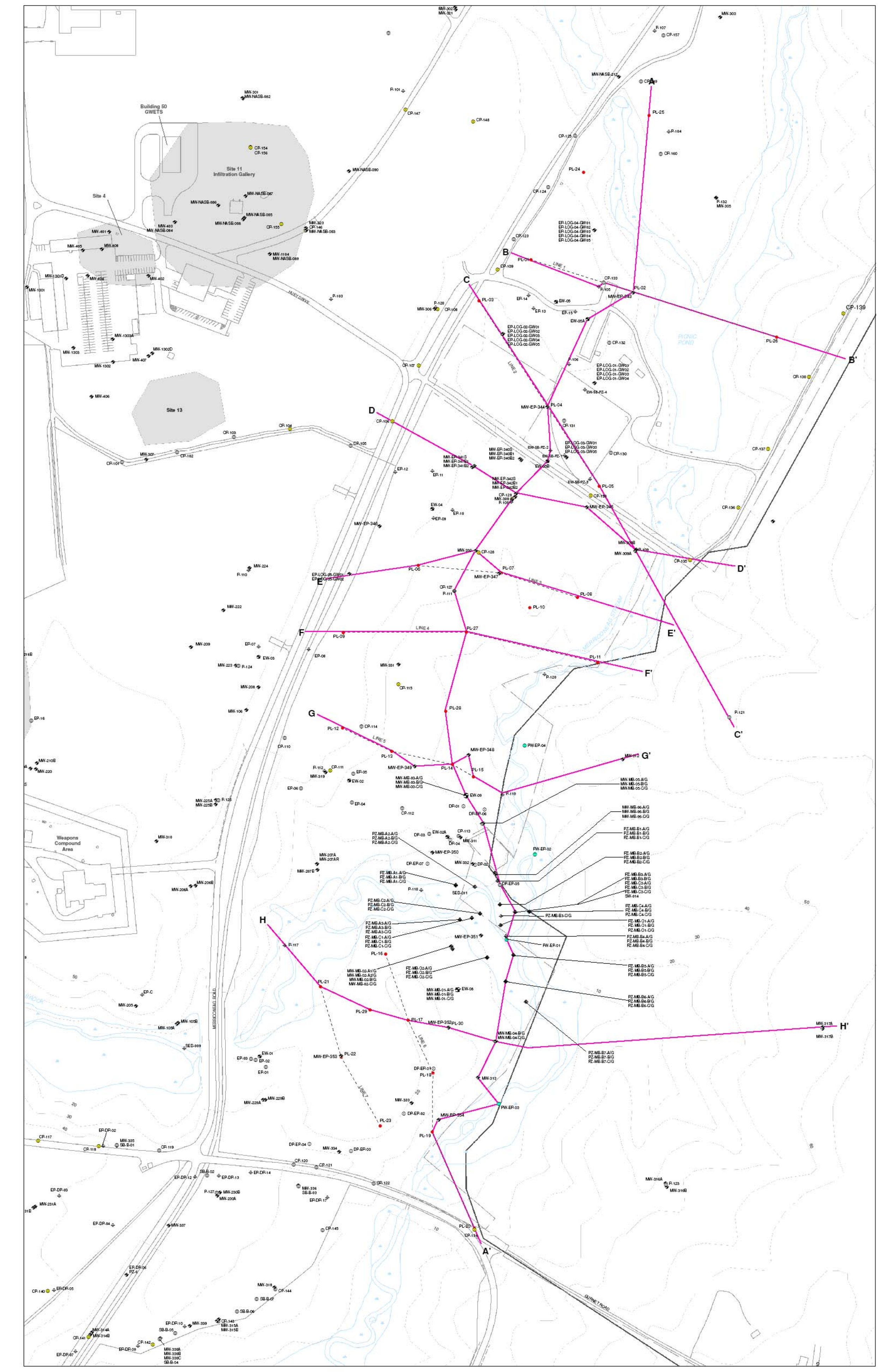
TETRA TECH NUS, INC.

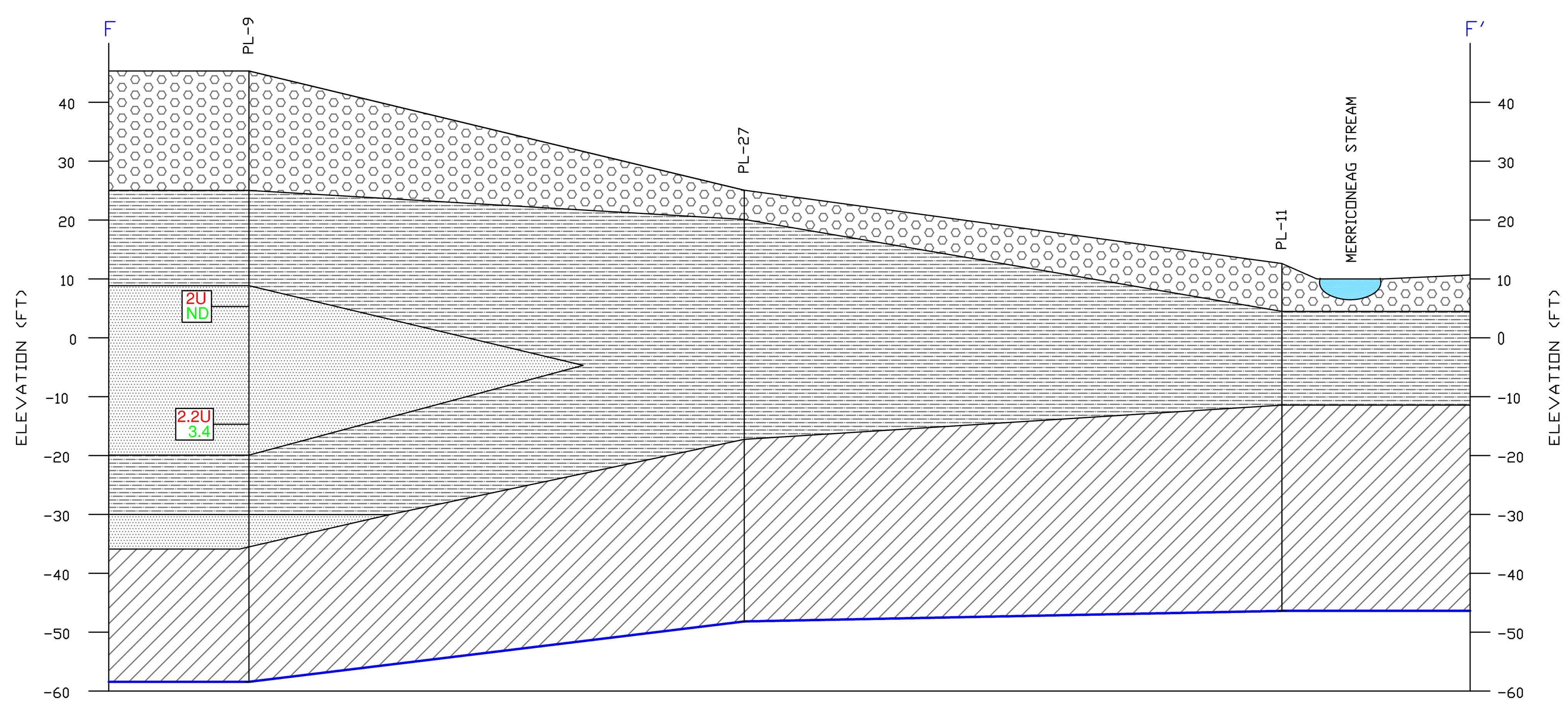
GEOLOGICAL CROSS-SECTIONS B-B' – E-E'
SUPPLEMENTAL REMEDIAL INVESTIGATION
OF 1,4 DIOXANE AND BEDROCK IN THE
EASTERN PLUME
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, ME

FILE	SCALE
\..\EPLUME_X-SECTION_B-B'-E-E'.DWG	AS NOTED
FIGURE NUMBER 3-2	REV 0 / DATE 02/26/11

ACAD: \00645\1404\EPLUME_X-SECTION_B-B'-E-E'.DWG 02/26/11 DWM BOS







LEGEND

UPPER SAND UNIT

TRANSITION UNIT

LOWER SAND UNIT

CLAY UNIT

TOP OF ROCK (DASHED WHERE INFERRED)

MW-312

SOIL BORING / WELL LOCATION ID

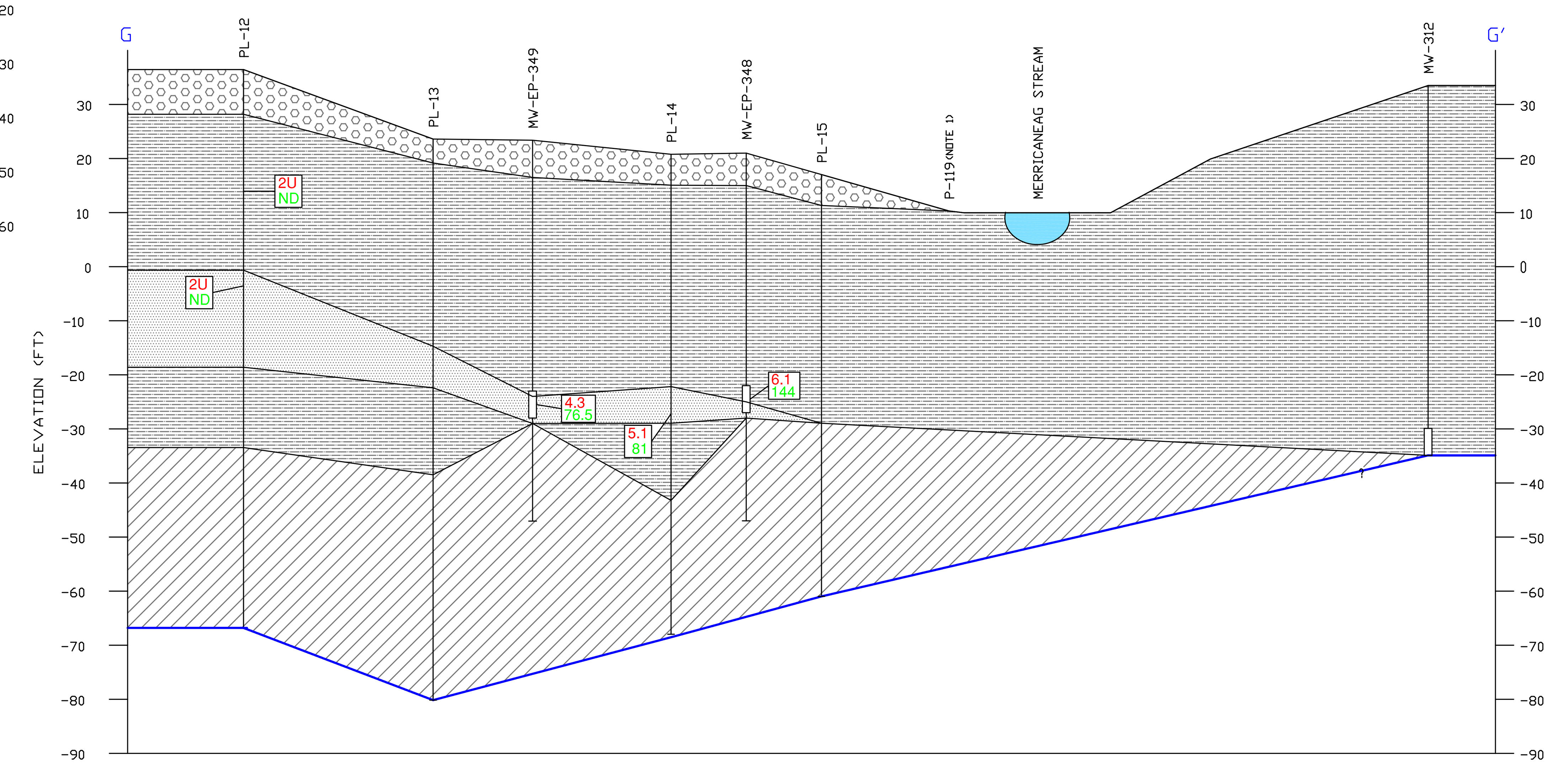
GROUND SURFACE

TOP OF WELL SCREEN

BOTTOM OF WELL SCREEN

BOTTOM OF BORING

U - NOT DETECTED
ND - NOT DETECTED
UJ - QUANTITATION APPROXIMATE
J - RESULT APPROXIMATE



GRAPHIC SCALE
0' 100' 200'

NOTES

1.) NO SOIL BORING OR WELL CONSTRUCTION DATA.

2.) FLOODPLAIN DEPOSITS ALONG STREAMS NOT DEPICTED.

3.) HORIZONTAL DATUM IS BASED ON THE MAINE STATE PLANE COORDINATE SYSTEM NAD 1983. VERTICAL DATUM IS BASED ON NGVD 1988. VERTICAL EXAGGERATION IS 5 TIMES THE HORIZONTAL.

10.8 UG/L - 1,4 DIOXANE SAMPLE RESULT (MOST RECENT VALUE SHOWN THROUGH JULY 2009)

25.2 UG/L - CVOC SAMPLE RESULT (MOST RECENT VALUE SHOWN THROUGH JULY 2009)

*CVOC RESULTS ARE A SUMMATION OF THE FOLLOWING COMPOUNDS: 1,1,1-TRICHLOROETHANE, 1,1,2-TRICHLOROETHANE, 1,1-DICHLOROETHANE, 1,1 DICHLOROETHENE, 1,2-DICHLOROETHANE, CIS-1,2-DICHLOROETHENE, TETRACHLOROETHENE, TRANS-1,2-DICHLOROETHENE, TRICHLOROETHENE AND VINYL CHLORIDE.

TETRA TECH NUS, INC.

GEOLOGICAL CROSS-SECTIONS F-F' - H-H'
SUPPLEMENTAL REMEDIAL INVESTIGATION
OF 1,4 DIOXANE AND BEDROCK IN THE
EASTERN PLUME
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, ME

FILE	SCALE
\..\EPLUME_X-SECTION_F-F'-H-H'.DWG	AS NOTED
FIGURE NUMBER 3-3	REV 0 / DATE 02/26/11

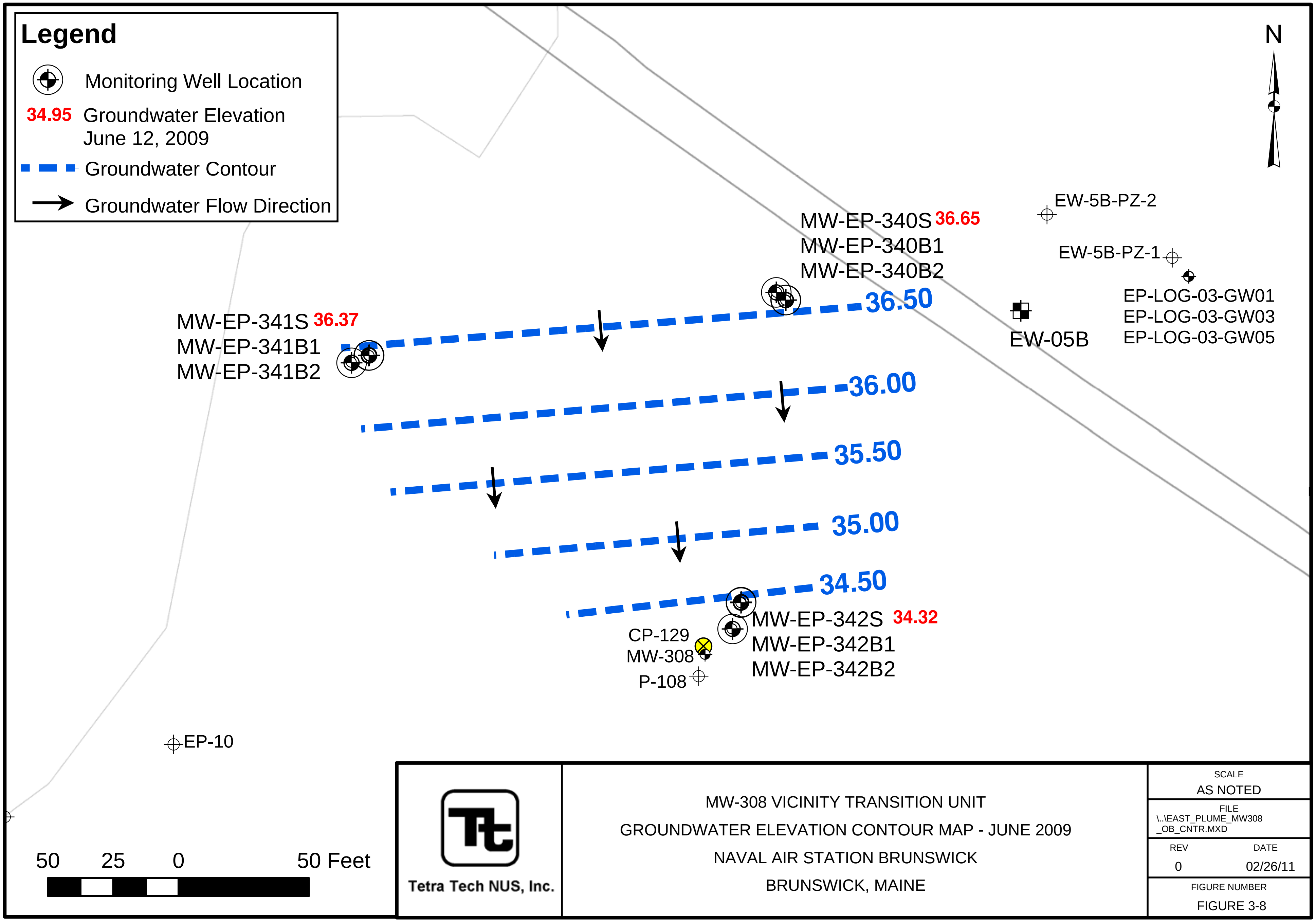
DRAWN BY D.W. MACDOUGALL	DATE 02/28/11	**Tetra Tech NUS, Inc.**	CONTRACT NUMBER CTO 0069
CHECKED BY C. RACE	DATE 02/28/11	TOP OF CLAY ELEVATION CONTOUR MAP EASTERN PLUME NAVAL AIR STATION BRUNSWICK, MAINE	APPROVED BY / DATE
REVISED BY	DATE		APPROVED BY / DATE
SCALE AS NOTED			FIGURE NO. FIGURE 3-4 / REV 1

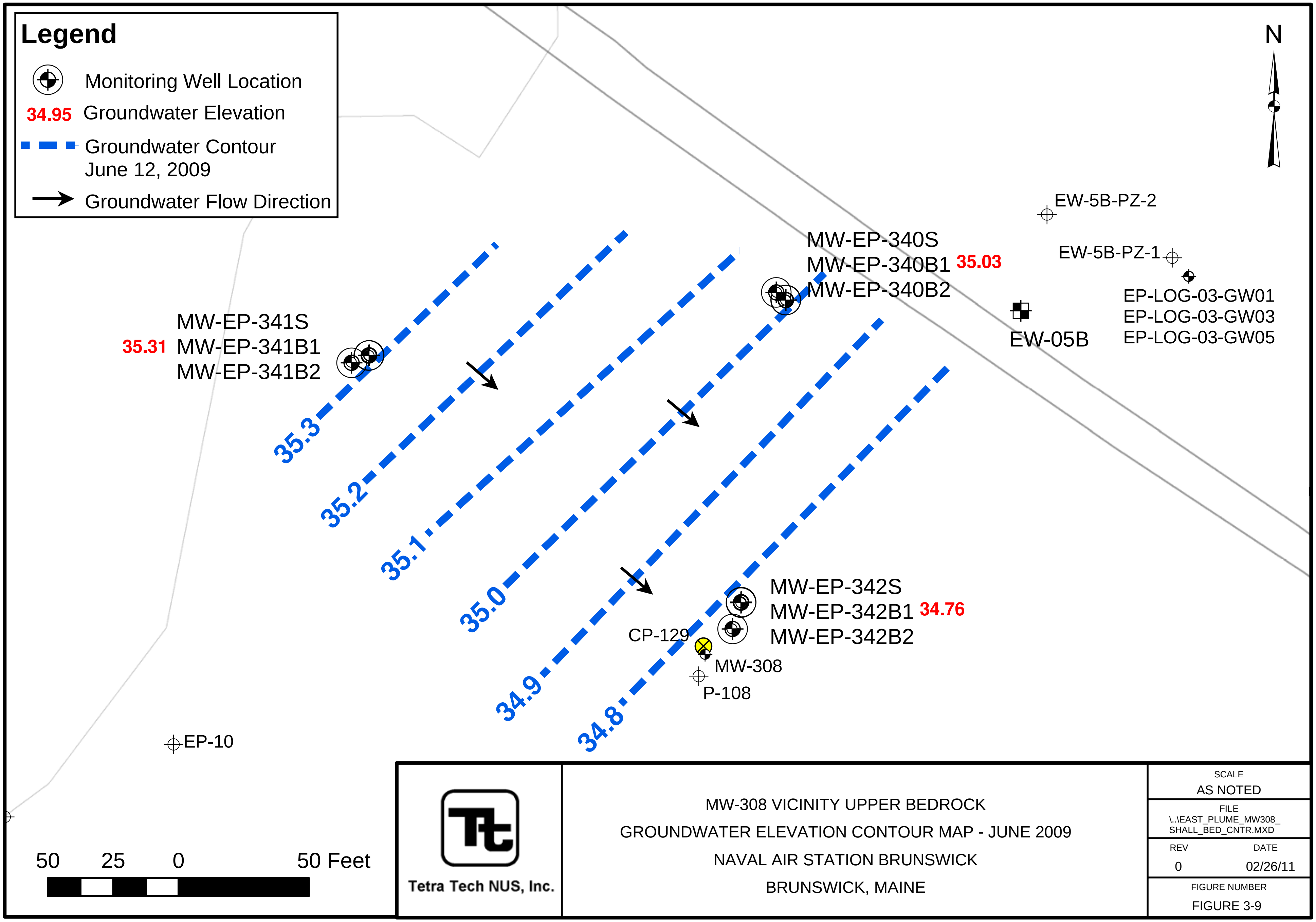
DRAWN BY D.W. MACDOUGALL	DATE 03/03/11	Tetra Tech NUS, Inc.	CONTRACT NUMBER CTO 0069
CHECKED BY A. CAREY	DATE 03/03/11	UPPER SAND GROUNDWATER ELEVATION CONTOUR MAP - JUNE 2009	APPROVED BY / DATE
CHECKED BY C. RACE	DATE 03/03/11	NAVAL AIR STATION	APPROVED BY / DATE
SCALE AS NOTED		BRUNSWICK, MAINE	FIGURE NO. FIGURE 3-5 / REV 0

DRAWN BY D.W. MACDOUGALL	DATE 02/28/11	Tetra Tech NUS, Inc.	CONTRACT NUMBER CTO 0069
CHECKED BY A. CAREY	DATE 02/28/11	TRANSITION UNIT GROUNDWATER ELEVATION CONTOUR MAP - JUNE 2009	APPROVED BY / DATE
CHECKED BY C. RACE	DATE 02/28/11	NAVAL AIR STATION	APPROVED BY / DATE
SCALE AS NOTED		BRUNSWICK, MAINE	FIGURE NO. FIGURE 3-6 / REV 0

DRAWN BY D.W. MACDOUGALL DATE 02/26/11	Tetra Tech NUS, Inc.		CONTRACT NUMBER CTO 0069
CHECKED BY A. CAREY DATE 02/26/11	LOWER SAND GROUNDWATER ELEVATION CONTOUR MAP - JUNE 2009		APPROVED BY DATE
CHECKED BY C. RACE DATE 02/26/11	NAVAL AIR STATION		APPROVED BY DATE
SCALE AS NOTED	BRUNSWICK, MAINE		FIGURE NO. FIGURE 3-7 REV 0

I:\00645\1404\EAST_PLUME_MW308_OB_CNTR.MXD DWM 02/26/11





Tetra Tech NUS, Inc.

MW-308 VICINITY UPPER BEDROCK
GROUNDWATER ELEVATION CONTOUR MAP - JUNE 2009
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

SCALE	AS NOTED
FILE	\..\EAST_PLUME_MW308_SHALL_BED_CNTR.MXD
REV	0
DATE	02/26/11
FIGURE NUMBER	FIGURE 3-9

4.0 NATURE AND EXTENT OF CONTAMINATION

Based on data collected during the Supplemental RI and in accordance with Eastern Plume LTMP in April 2009 (H&S, 2010), the following interpretations are made regarding contaminant sources, extent of contamination, and migration pathways.

4.1 CONTAMINANTS OF CONCERN

As indicated in the final LTMP (ECC, 2009b), Eastern Plume groundwater COCs include 1,4-dioxane and the following CVOCs: TCE, 1,1,1-TCA, PCE, 1,1-DCE, 1,1-DCA, cis-1,2-DCE, trans-1,2-DCE, and VC. As previously discussed, 1,4-dioxane was not included in the final ROD because its presence was unknown at the time.

4.2 SOURCES OF DISSOLVED CONTAMINANTS

Sites 4, 11, and 13, located northwest of the Eastern Plume, have been identified as source areas for Eastern Plume contamination. These sites have been investigated, and source removals were conducted in the early 1990s, and subsequently, natural attenuation has occurred (ECC, 2009b). These events appear to have effectively depleted nearly all the residual fuel and solvents in the source areas. Chlorinated solvents released at these sites entered the Upper Sand, migrated around or through upper Transition Unit, and eventually reached the Lower Sand deep within the Transition Unit. These primary sources have been remediated and no longer act as continuing sources for the Eastern Plume. Residual contamination within the fine-grained strata of the Transition Unit remains in the Eastern Plume. Potential sources of groundwater contamination in the Eastern Plume, provided in Appendix C, were developed by TtNUS to further evaluate Sites 4, 11, and 13 as historical and continuing sources of contamination.

4.3 OCCURRENCE OF CONTAMINANTS IN EASTERN PLUME

This section presents an overview of contamination in the Eastern Plume as a whole, considering previous investigations, Supplemental RI results, and groundwater monitoring conducted as part of the long-term monitoring program. Refer to Section 4.4 for detailed Supplemental RI results.

4.3.1 Distribution of CVOC and 1,4-Dioxane MCL and/or MEG Exceedances

The distribution of exceedances of Maine MEGs and EPA MCLs is presented on Figure 4-1. For comparison purposes, the extent of the Eastern Plume is depicted both historically (based on VOC concentrations through September 2007 that exceeded MCLs/MEGs in effect at that time) and based on the Supplemental RI Report results (last evaluated in 2010); more recent monitoring data are provided in the LTM reports for the Eastern Plume and a separate effort is pending to establish a LUC boundary using the Supplemental RI report, most recent groundwater monitoring results, and most recent criteria for all constituents.

In addition to the TtNUS samples collected in April, June, and September 2009 (MW-EP-355 only), the tag map includes groundwater samples collected by ECC in April and May 2009 during a scheduled groundwater monitoring event, Event 34 (H&S, 2010), to provide a comprehensive summary of regulatory exceedances in groundwater within the boundary of the Eastern Plume. Bolded results exceed MCLs, bolded and italicized results exceed MCLs and MEGs, and unbolded results exceed MEGs only. The supporting ECC groundwater monitoring results are included as Appendix E.

As shown on Figure 4-1,1,4-dioxane exceedances occurred mainly to the north, in the vicinity of extraction well EW-05B, and also near and south of the Mere Brook-Merriconeag Stream confluence with concentrations increasing toward Mere Brook.

TCE concentrations exceeded its MCL at locations distributed throughout the plume (Figure 4-1). Generally, exceedances of other contaminants were co-located with TCE exceedances. Other exceedances were more nominal in concentration compared to criteria and more sporadic for 1,1,1-TCA, PCE, 1,2-DCA, 1,1-DCA, cis-1,2-DCE, and VC.

Based on the aforementioned criteria, exceedances of TCE and 1,4-dioxane are relevant indicators representative of the residual plume and are discussed in greater detail below. Concentration maps for the Transition Unit, including pore water/seep sample concentrations are provided as Figures 4-2 (TCE) and 4-3 (1,4-dioxane), Upper Sand concentration maps are provided as Figures 4-4 (TCE) and 4-5 (1,4-dioxane), and Lower Sand as Figures 4-6 (TCE) and 4-7 (1,4-dioxane).

4.3.2 1,4-Dioxane in Groundwater

Figures 4-2, 4-3, and 4-4 depict 1,4-dioxane concentration contours in the Upper Sand, Transition Unit, and Lower Sand, respectively, based on 1,4-dioxane data collected by Tetra Tech and ECC in April - June 2009, and September 2009 (MW-EP-355 only), 1,4-dioxane pore water results were included with the Transition Unit data set rather than the Upper Sand because the latter has been eroded by the streams and believed to be relatively thin or missing along the Merriconeag floodplain. Also, groundwater movement is upward from the Transition Unit into the floodplain discharge area; therefore, the pore water results are comparable to the Transition Unit.

Upper Sand – As shown on Figure 4-2, the interpreted extent of the 1,4-dioxane plume, in the Upper Sand exceeding EPA's 3.5 µg/L Interim MCL and the 30 µg/L MEG (October 2010) which is limited to a small area in the vicinity of Mere Brook and Merriconeag Stream. All 1,4-dioxane concentrations were less than the 30 µg/L MEG except in a sample collected from PZ-MB-B4-B (74 µg/L).

Transition Unit – As shown on Figure 4-3, the extent of 1,4-dioxane concentrations exceeding EPA's 3.5 µg/L Interim MCL and the 30 µg/L MEG in the Transition Unit overlaps with that in the Upper Sand and extends in a southwesterly direction toward Old Gurnet Road. 1,4-Dioxane concentrations up to 260 µg/L occur in pore water near the confluence. North of the confluence, a small isolated area of 1,4-dioxane was detected in pore water in the vicinity of PW-EP-02. South of the confluence, 1,4-dioxane concentrations were less than 120 µg/L, except for areas where concentrations of 220 µg/L at MW-EP-352 and 190 µg/L at MW-MB-04B. These wells are approximately 150 feet apart.

Lower Sand – As depicted on Figure 4-4, the extent of 1,4-dioxane concentrations exceeding EPA's 3.5 µg/L Interim MCL extends through the central to eastern portion of the Eastern Plume to the vicinity of the Mere Brook confluence. 1. The maximum 1,4-dioxane value in the Lower Sand Unit is at MW-EP-347, located in the "saddle" of the clay surface. At this well, the Lower Sand is approximately 4-5 feet thick and its low K value (3.47 x 10^{-4} cm/sec) is representative of silty sands, fine sand, or clayey sands. 1,4-Dioxane was additionally measured south of Mere Brook at MW-MB-02-C (171 µg/L), which is mostly completed in fine sand. Further to the south, 1,4-dioxane was present at lesser concentrations.

Bedrock in Vicinity of MW-308: 1,4-Dioxane was not detected in the six new bedrock wells installed and sampled during the Supplemental RI (MW-EP-340B1, MW-EP-340B2, MW-EP-341B1, MW-EP-341B2, MW-EP-342B1, and MW-EP-342B2).

4.3.3 Trichloroethene in Groundwater

Figures 4-5, 4-6, and 4-7 depict TCE concentration contours in the Upper Sand, Transition Unit, and Lower Sand based on TCE data from the Supplemental RI and groundwater monitoring Event 34. TCE was selected for contouring because of its widespread presence in groundwater in the Eastern Plume. The TCE MCL and MEG are 5 and 30 µg/L, respectively.

Upper Sand: As shown on Figure 4-5, TCE slightly exceeded its MCL in five monitoring wells in the vicinity of the Mere Brook-Merriconeag Stream confluence. The maximum TCE concentration is 15 µg/L. TCE was detected at similar concentrations at MW-306 and at MW-NASB-212 north and west of extraction well EW-05B. TCE dissolved in groundwater is migrating toward the Mere Brook-Merriconeag Stream confluence.

Transition Unit: The extent of TCE in the Transition Unit is shown on Figure 4-6. TCE exceeds its MCL (5 µg/L) near the Mere Brook-Merriconeag Stream confluence and at five other locations. The maximum

TCE concentration near the confluence was at pore water location PW-51 (120 µg/L). Lower TCE concentrations were measured in monitoring wells near this pore water sample and at EW-02A (57 µg/L), south of the confluence, MW-EP-352 (110 µg/L), MW-EP-340S (77 µg/L), and EW-04 (14 µg/L).

In the vicinity of the saddle (vicinity of bedrock well MW-308), TCE exceeds its MCL at Transition Unit well MW-EP-340S, located upgradient and north of MW-308. TCE in MW-EP-341S northwest of MW-308 was less than the EPA MCL, and TCE was not detected at MW-EP-342S at the bedrock high near MW-308.

Lower Sand: As shown on Figure 4-7, the extent of TCE is largely dominated by the 5 µg/L footprint, with four distinct "hot spot" areas, two in the northern and two in the southern portion. The northern-most ‘hot spot’ occurs in the vicinity of EW-5B west of Picnic Pond, where TCE ranged from 5 µg/L to 135 µg/L. The highest detection for TCE and the second northern ‘hot spot’ was recorded at MW-EP-347 (860 µg/L). There are no other exceedances of TCE in the immediate vicinity of MW-EP-347North of the confluence area, in the vicinity of the MW-MB-03 cluster and extended toward the confluence, TCE ranged from 14 to 213 µg/L. TCE dissolved in groundwater in this area is moving toward the confluence. South of the confluence, the highest TCE concentration at MW-EP-351 was 120 µg/L. TCE dissolved in groundwater appears to be migrating in an easterly direction toward Mere Brook, with the southernmost portion extending in a southerly direction toward Old Gurnet Road. Overall, TCE is less than 220 µg/L in all areas except at MW-EP-347 (860 µg/L), which is screened in fine-grained materials based on the EC log and K value (approximately 1 ft/day). It should be noted that MW-330, located approximately 100 feet northwest of MW-347, had been monitored previously without any indication of TCE impacts in the area.

Bedrock in Vicinity of MW-308: TCE was detected in two bedrock monitoring wells (MW-EP-342B1 and MW-EP-342B2) slightly exceeding its MCL in the MW-308 vicinity at concentrations decreasing with depth. Lateral and vertical hydraulic gradients indicate groundwater within fractured bedrock is migrating in a southeasterly direction toward Mere Brook and Merriconeag Stream. Figure 4-8 provides an enlargement of the MW-308 vicinity, tags indicating exceedances of criteria that included TCE and other CVOCs.

4.4 SUPPLEMENTAL RI ANALYTICAL RESULTS

For documentation purposes, in contrast to the previous section that discussed the combined Supplemental RI and long-term monitoring events data set, this section presents only the Supplemental RI results that were included in the overall plume assessment in Section 4.3.

4.4.1 Stream Pore Water and Seep Sampling Analytical Results

Details of the pore water and seep sampling effort are provided in Section 2.1. During the Supplemental RI, a total of 68 pore water samples (PW-83 through PW-150), plus nine duplicate samples, were collected, as well as 15 seep samples (PW-SP-01 through PW-SP-15) for a total of 83 samples (excluding duplicates) and the samples were analyzed in EPA's on-site field laboratory for TCA, TCE, PCE, cis-1,2-DCE, and 1,1-DCE. 1,4-Dioxane samples were collected at 58 of the locations (plus duplicates at nine locations) and analyzed at EPA's NERL. Analytical results are summarized in Table 4-1 and depicted on the Transition Unit concentration maps for 1,4-dioxane and TCE, Figures 4-3 and 4-6, respectively. 1,4-Dioxane and TCE were detected at 13 of the 83 pore water/seep locations. The pore water sampling was completed on August 11-12, 2008. Between August 3 and August 12 the area received approximately 4 inches of rain based on data from Bath, Maine (COOP ID 170409), the nearest station to NAS Brunswick with data available for August 2008. Recharge of the shallow aquifer from heavy rainfall events (August 3-12, 2008) may have reduced shallow groundwater/porewater contaminant concentrations.

Water-quality measurements collected at each of the pore water and seep locations in 2008 are summarized in Appendix A-1 along with field observations. Analytical results are provided in Appendix B-1. Results of the pore water investigations were used to refine the locations of east-west direct-push groundwater transects planned for the next phase of the Supplemental RI (refer to Section 4.4.2). In particular, preliminary profiling point locations identified in the SAP were adjusted to determine the connection between pore water/seep contamination and groundwater contamination.

1,4-Dioxane

1,4-Dioxane was detected in three pore water samples in the northern portion of Merriconeag Stream, including PW-106 (4.04 µg/L), PW-SP-02 (10 µg/L), and PW-SP-14 (2.13 µg/L), all at concentrations less than the 30 µg/L MEG. One sample (PW-SP-02) exceeded EPA's Interim MCL for 1,4-dioxane (3.5 µg/L).

CVOCs

The only CVOC detected in the porewater samples at concentrations greater than applicable criteria was 1,1-DCE. The concentration of 1,1-DCE at PW-SP-09 (5.6 µg/L), collected in Merriconeag Stream just north of the confluence with Mere Brook, was less than both the Maine MEG (40 µg/L) and the EPA MCL (7 µg/L), as shown in Table 4-1.

4.4.2 Profiling Point Groundwater Sampling Analytical Results

As described in Section 2.2, graphs were generated for each of 30 EC profiling locations (see Appendix A-2) and these graphs and six confirmation soil borings were used to select discrete-interval groundwater sample intervals (see Section 2.3). In total, 24 discrete-interval groundwater samples (plus two duplicates) were collected from 15 profile locations at various depths. Of the 30 planned profile locations, 15 did not yield water at any of the targeted depth intervals, therefore, no samples could be collected at those locations. Further, of the 15 profile locations that were able to be sampled, not all depth intervals yielded groundwater. The porewater samples were analyzed for 1,4-dioxane and CVOCs including 1,1,1-TCA, 1,1,2-TCA, 1,1-DCA, 1,1-DCE, 1,2-DCA, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, and VC. The analytical results from the discrete-interval groundwater sampling effort were compared to MEGs and MCLs in Table 4-2, and summary statistics are presented in Table 4-3 and depicted on 1,4-dioxane concentration maps, Figures 4-2, 4-3, and 4-4, and TCE concentration maps, Figures 4-5, 4-6, and 4-7, for the Upper, Sand, Transition Unit, and Lower Sand, respectively. The EC profiling lines are also depicted on the figures. If a permanent well was later installed and sampled at the same location and interval as a discrete-interval groundwater sample (PL02, PL04, PL07, PL19, PL22, and PL30, per Table 2-3), the permanent well data are presented on the figures.

Water-quality measurements collected at each of the profiling locations are provided in Appendix A-3. The complete analytical results (non-detects and detects) are provided in Appendix B-2. Results of the profiling investigation were used to refine the locations of permanent monitoring wells planned for the next task of the Supplemental RI (see Section 4.4.3) to better target areas of data gaps.

1,4-Dioxane

1,4-Dioxane results for samples collected from five samples greater than EPA's Interim MCL (3.5 µg/L), at PL-01 (EPGW-PL01D-71, 4.4 µg/L), PL-02 (EPGW-PL02D-69.7, 51 µg/L), PL-04 (EPGW-PL04D-67, 74 µg/L), PL-14 (EPGW-PL14I-48, 5.1 µg/L), and at PL-17 (EPGW-PL17D-64, 64 µg/L). Three of the samples exceeded the Maine MEG (30 µg/L). The five samples are from the Lower Sand (Figure 4-7). The PL-02 and PL-04 data presented on the figures were superseded by subsequent permanent monitoring well results on the figure.

CVOCs

Applicable criteria were exceeded for CVOCs at five profiling locations including PL02 (Line 1), PL04 (Line 2), PL14 (Line 5), PL17 (Line 6), and PL28 (between Lines 4 and 5). Total CVOC detections ranged from 0.52 (EPGW-PL16D-69) to 557 µg/L (EPGW-PL04D-67). CVOCs exceedances are summarized as follows:

- Five samples from five locations exceeded the EPA MCL for TCE (5 µg/L), and the concentration of TCE in one of these samples also exceeded the Maine MEG of 30 µg/L. The maximum TCE concentration was detected in the sample collected from EPGW-PL04D-67 (100 µg/L) (Line 2). All of these locations were in the Lower Sand (Figure 4-6); the PL02 and PL04 data presented on the figure were superseded by subsequent permanent monitoring well results on the figure.

- The 1,1,1-TCA concentration in one sample (350 µg/L at EPGW-PL04D-67) (Line 2) exceeded the EPA MCL of 200 µg/L (see Section 4.7 concerning data quality for this sample). 1,1,1-TCA was also detected in one sample at a concentration equal to the MCL criterion (EPGW-PL17D-64) (Line 6). 1,1,1-TCA did not exceed its MEG (10000 µg/L).

- 1,1-DCE exceeded the EPA MCL (7 µg/L) in three samples and the Maine MEG (40 µg/L) in one sample. The maximum 1,1-DCE concentration was detected in the sample collected from PL-04 (EPGW-PL04D-67, 70 µg/L).

Vinyl Chloride was not detected in the porewater samples.

4.4.3 <u>Monitoring Well Groundwater Analytical Results</u>

Groundwater samples were collected from newly installed overburden and select existing monitoring wells and MW-308 vicinity bedrock cluster monitoring wells. During the Supplemental RI, 31 groundwater samples (plus three duplicates) were collected from 13 new overburden monitoring wells (MW-EP-343 through -355), nine new bedrock/Transition Unit monitoring well clusters (MW-EP-340B1, -340B2, -340S, -341B1, -341B2, -341S, -342B1, -342B2, and -342S), and nine existing wells (MW-MB-03C, PZ-MB-B4B, MW-MB-01C, MW-MB-02C, MW-MB-04B, PZ-MB-B6B, PZ-MB-C4B, MW-MB-06A, and MW-MB-06C).

Monitoring well locations are depicted on Figure 2-1, and Figures 4-1 through 4-7. Field parameters measured during groundwater sampling are presented on the sampling log sheets provided in Appendix A-9. Analytical results for groundwater samples collected by TtNUS in April and June 2009 (and September 2009 for MW-EP-355) as part of the Supplemental RI are summarized and compared to Maine MEG and EPA MCLs in Table 4-4. Analytical summary statistics for detected analytes in groundwater samples are presented in Table 4-5 and depicted on the concentration maps of Figures 4-2, 4-3, and 4-4 for 1,4-dioxane, and Figures 4-5, 4-6, and 4-7 for TCE for the Upper Sand, Transition Unit, and Lower Sand, respectively. Figure 4-8 provides an enlargement of the MW-308 vicinity with tags indicating contaminant exceedances of criteria that included TCE and other CVOCs. Groundwater sample log sheets are provided in Appendix A-9, and analytical results are provided in Appendix B-3.

1,4-Dioxane

Concentrations of 1.4-dioxane in samples collected from 19 wells exceeded EPA's 3.5 µg/L criteria and nine of those wells (MW-EP-343, MW-EP-347, MW-EP-351, MW-EP-352, MW-EP-354, MW-MB-03C, MW-MB-04B, PZ-MB-B4B, and PZ-MW-B6B) exceeded the Maine MEG (30 µg/L). The maximum concentration of 1,4-dioxane (350 µg/L) was detected in the groundwater sample collected from well MW-EP-347.

CVOCs

Concentrations of CVOCs exceeded Maine MEGs and/or EPA MCLs in 26 of the 31 wells sampled, as shown in Tables 4-4 and 4-5. CVOC exceedances of MEGs and/or MCLs are summarized as follows:

- The concentration of 1,1,1-TCA in one sample (500 µg/L at MW-EP-352) exceeded the EPA MCL (200 µg/L); the Maine MEG (10000 µg/L) was not exceeded.
- The concentration of 1,1-DCA in four samples) exceeded the Maine MEG of 60 µg/L. The maximum 1,1-DCA detection was at MW-EP-347 (210 µg/L).
- Concentrations of 1,1-DCE exceeded the Maine MEG (40 µg/L) in six samples and also exceeded the EPA MCL (7 µg/L) in 10 groundwater samples. The maximum concentration was detected in the sample collected from well MW-EP-347 (430 µg/L).
- The concentration of 1,2-DCA was detected exceeded the Maine MEG (4 µg/L) in one sample (5 µg/L at MW-EP-347). 1,2-DCA did not exceed its MCL (5 µg/L).
- The concentration of cis-1,2-DCE nominally exceeded the Maine MEG and EPA MCL of 70 µg/L in one groundwater sample collected from well MW-MB-03C (71 µg/L average).
- Concentrations of PCE exceeded the EPA MCL (5 µg/L) in five samples and also exceeded the Maine MEG (0.6 µg/L) in 15 samples. The maximum concentration was detected in the sample collected from well MW-MB-01C (15 µg/L).
- Concentrations of TCE in 21 groundwater samples exceeded the EPA MCL (5 µg/L) and also exceeded Maine MEG (30 µg/L) in 11 groundwater samples. The maximum concentration was detected in the sample collected from well MW-EP-347 (860 µg/L).

- VC concentrations detected in four groundwater samples exceeded the Maine MEG (0.15 µg/L). However, all concentrations were less than the EPA MCL (2 µg/L). Maximum concentrations were detected in groundwater samples collected from wells MW-EP-347 and PZ-MB-B4B.

4.5 MIGRATION PATHWAYS

Overburden

The groundwater contaminant migration pathways evaluated during the Supplemental RI are consistent with groundwater flow from recharge areas to discharge areas, as described in Section 3.0. Near the Site 4, Site 11, and Site 13 historical source areas, residual VOC concentrations have decreased, as the plume has migrated toward the east over time.

The associated contaminants have moved laterally in a southeasterly direction and downward from the Upper Sand, which has a high infiltration capacity and is readily recharged by precipitation and snow melt. Within the Eastern Plume historical footprint, the Upper Sand is nearly devoid of contaminants. In many areas across the Eastern Plume, groundwater continues to move downward into the Transition t and Lower Sand Units. Groundwater moves mainly through the sand lenses of the Transition Unit and Lower Sands and these sands become increasingly confined and pinch out near surface waters to the east. This forces flow into less permeable units where there is greater sorption of contaminants to fine-grained materials. Groundwater moves upward at discharge areas, particularly in the vicinity of Merriconeag Stream and Mere Brook. Artesian (upward gradient) conditions in the vicinity of these streams are affected by silt/clay interbeds within the Transition Unit under confined (semi-confined leaky) conditions. Artesian conditions also occur just north of Picnic Pond and in Picnic Pond. In the Transition Unit, residual contamination is consequently more extensive in the confluence area and extends further southward; in addition, elevated concentrations of VOCs to the north at the location of extraction well EW-5B is present. For the Lower Sand, the residual contamination is most extensive, spanning from north of extraction well EW-5B and south beyond the confluence. The elevated VOC concentrations at the EW-5B area are associated with a clay topography “bowl” where contamination accumulates. In 2009, extraction well EW-5B was connected to the GWETS and a HiPOX (ozone and peroxide advanced oxidation process) treatment unit was added to the GWETS to remove 1,4-dioxane.

Bedrock in Vicinity of MW-308

One of the objectives of this Supplemental RI was to determine how contaminants were entering the bedrock via the overburden. The bedrock investigation results indicate that common contaminants are present at higher concentrations upgradient of the MW-308 vicinity, and are present at lower concentrations in the fractured bedrock. Lateral and vertical hydraulic gradients and decreasing contaminant concentrations in the direction of groundwater flow indicate that the source of contaminated groundwater in fractured bedrock is from the overburden upgradient (north-northwest) of the bedrock knob feature rather than from the bedrock itself. Hydraulic conductivity values for the bedrock at this location and sandy zones in the overburden are similar, indicating no impediment to groundwater flow into the bedrock in the vicinity of MW-308. Vertical hydraulic gradients are upward at the well cluster closest to MW-308 (MW-EP-342B1/B2), which limits the vertical migration of contamination deeper into bedrock. Hydraulic gradients indicate that contaminated groundwater moving in a southerly direction in the overburden has the potential to migrate into the bedrock in the MW-308 vicinity, then flow upward and laterally in a southeasterly direction, where it has the potential to re-enter the overburden.

Historically, the seven monitoring wells located in bedrock prior to the Supplemental RI have not had concentrations of VOCs exceeding MEGs or MCLs, with the exception of monitoring well MW-308. Groundwater samples collected from MW-308 in 2006 had exceedances of TCE (49 µg/L) and 1,1-DCE (12.1 µg/L). Natural attenuation was indicated based on groundwater sample results collected from MW-308 in 2007, based on a decrease in the TCE concentration (to 26.7 µg/L) and an increase in the concentration of TCE degradation product 1,1-DCE (to 29 µg/L). 1,4-Dioxane (9.1 µg/L) and 1,1-DCA were also present in 2007; 1,4-dioxane was not sampled for in 2006. Samples collected from MW-308 in April 2008 had significantly lower concentrations of VOCs (1,1-DCE and TCE at concentrations of 0.44 and 0.84 µg/L, respectively); 1,4-dioxane was reported as non-detect. The LTMP event results of MW-308 in April 2009 show a rebound of 1,4-dioxane, returning to its 2008 concentration of 9.1 µg/L; TCE at 17 µg/L and 1,1-DCE at 8.1 µg/L also rebounded but to concentrations less than 2008 levels. During the Supplemental RI, monitoring well MW-EP-342B1 confirmed groundwater contamination at this bedrock knob location in the vicinity of MW-308, with TCE at 29.5 µg/L and 1,1-DCE at 15 µg/L; however 1,4-dioxane was non-detect (see Figure 4-8). Concentrations decreased with depth (at MW-EP-342B2 TCE at 6 µg/L and 1,1-DCE at 1.9 µg/L). VOC concentrations at nearby newly installed bedrock wells at clusters MW-EP-341 and MW-EP-340 (both located upgradient of MW-EP-342B1/B2) were lower and did not exceed criteria last reviewed in 2010. Therefore, bedrock groundwater contamination in the vicinity of the MW-308 bedrock appears to be localized.

Residential Wells

MEDEP has sampled residential wells that could have been potentially affected by the Eastern Plume and the Navy continues to sample a residential well that is closest to the Eastern Plume boundary. To date (April 2009), VOCs associated with the Eastern Plume have not been detected in residential wells, with exception of (1) low concentrations of carbon disulfide, which are not expected to be associated with the Eastern Plume, and (2) low concentrations of TCE (0.4 and 0.74 µg/L) detected in a well along Coombs Road in two samples collected in 2006 by MEDEP.

4.6 CONTAMINANT MIGRATION RATES

Because 1,4-dioxane is miscible in water and tends to stay in solution, the average groundwater flow velocities calculated in Table 3-3 may be used as a reasonable estimate of its migration rate in the geologic units associated with the Eastern Plume. In contrast, TCE, and other CVOCs present in the Eastern Plume tend to migrate at a fraction of the groundwater velocity and are influenced by a variety of physical, chemical, and biological processes that are difficult to estimate.

The reason that contaminant migration rates for individual CVOCs such as TCE are expected to be a fraction of the average groundwater velocity is because fine-grained materials are present in the Eastern Plume. Fine particle sizes have relatively high surface areas and result in relatively high porosity values. These materials tend to remove most of the CVOC mass from the dissolved phase into the solid phase through the adsorption process. After CVOCs are bound to geologic materials, especially in deep aquifers, they become very difficult to remove. The cleanup strategy at the Eastern Plume has been to remove as much contaminant mass as possible by targeting relatively thick contaminated zones; extraction well EW-5B is the most recent example of an extraction well installed in a thick contaminant zone. The desorption process occurs as the contaminant mass is removed by the groundwater cleanup remedy, such as groundwater extraction and treatment. However, the desorption process is slow for CVOCs, which in turn limits the dissolved mass available for extraction as the extractable dissolved mass becomes smaller. Groundwater extraction and treatment ultimately becomes ineffective at removing additional contaminant mass within the practical limits of time and costs.

4.7 DATA QUALITY

Data validation memoranda are provided as Appendix B-4. Appendix D presents a detailed evaluation of the data validation process and data quality for Supplemental RI collected data. In summary, the data were of high quality, and there is only one item of note in terms of data usability. The 1,1,1-TCA result for profiling point sample EPGWPL04D-67 (Line 2) exceeded the instrument calibration range. The reported result of 350 µg/L is likely biased low. However, the impact on attainment of DQOs is nominal. At this location, permanent monitoring well MW-EP-344 was subsequently installed at this location, and the 1,1,1-TCA result from the permanent well (screened from 63 to 68 feet bgs) was 84 µg/L.

TABLE 4-1

PORE WATER SAMPLING RESULTS - AUGUST 2008
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

Pore Water/Seep Sample ID	Maine MEG (1)	EPA MCL (2)	PW-83	PW-84	PW-85	PW-86	PW-86 Dup	PW-87	PW-88	PW-89	PW-90	PW-91	PW-92	PW-93	PW-94	PW-95	PW-96	PW-97	PW-98
1,1,1-TRICHLOROETHANE*	10000	200	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE*	30	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE*	0.6	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,2-DICHLOROETHENE*	70	70	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROETHENE*	40	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DIOXANE**	30	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA

TABLE 4-1

PORE WATER SAMPLING RESULTS - AUGUST 2008
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

Pore Water/Seep Sample ID	Maine MEG [1]	EPA MCL [2]	PW-99	PW-100	PW-101	PW-102	PW-103	PW-104	PW-105	PW-106	PW-107	PW-108	PW-109	PW-110	PW-110 Dup	PW-111	PW-112	PW-113
1,1,1-TCA*	**10000**	**200**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TCE*	**30**	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCE*	**0.6**	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2 DCE*	**70**	**70**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DCE*	**40**	**7**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane**	**30**	**3.5**	ND	ND	NA	ND	ND	NA	ND	**4.04**	NA	ND	ND	ND	ND	NA	ND	ND

TABLE 4-1

PORE WATER SAMPLING RESULTS - AUGUST 2008
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

Pore Water/Seep Sample ID	Maine MEG (1)	EPA MCL (2)	PW-114	PW-115	PW-116	PW-117	PW-118	PW-118 Dup	PW-119	PW-120	PW-121	PW-122	PW-123	PW-124	PW-125	PW-126	PW-127
1,1,1-TCA*	**10000**	**200**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.09 J**	ND	ND	ND	ND
TCE*	**30**	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCE*	**0.6**	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2 DCE*	**70**	**70**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DCE*	**40**	**7**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane**	**30**	**3.5**	NA	ND	NA	ND	ND	ND	ND	NA	NA	ND	NA	ND	ND	NA	ND

TABLE 4-1

PORE WATER SAMPLING RESULTS - AUGUST 2008
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

Pore Water/Seep Sample ID	Maine MEG [1]	EPA MCL [2]	PW-128	PW-128 Dup	PW-129	PW-130	PW-130 Dup	PW-131	PW-132	PW-133	PW-134	PW-135	PW-136	PW-137	PW-138	PW-138 Dup	PW-139
1,1,1-TCA*	**10000**	**200**	ND	ND	**0.26**	**0.34**	**0.29**	**1.6**	ND	ND	ND	ND	ND	ND	ND	ND	ND
TCE*	**30**	**5**	ND	ND	**0.08 J**	**0.23**	**0.19 J**	**2.3**	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCE*	**0.6**	**5**	ND	ND	ND	ND	ND	**0.03 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2 DCE*	**70**	**70**	ND	ND	ND	ND	ND	**0.5**	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DCE*	**40**	**7**	ND	ND	ND	ND	ND	**0.5**	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane**	**30**	**3.5**	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	NA

TABLE 4-1

PORE WATER SAMPLING RESULTS - AUGUST 2008
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

Pore Water/Seep Sample ID	Maine MEG (1)	EPA MCL (2)	PW-140	PW-140 Dup	PW-141	PW-142	PW-143	PW-144	PW-145	PW-146	PW-147	PW-148	PW-148 Dup	PW-149	PW-150	PW-150 Dup	PW-SP-01
1,1,1-TCA*	**10000**	**200**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**1.8**	**0.02 J**	**0.02 J**	ND
TCE*	**30**	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.6**	ND	ND	ND
PCE*	**0.6**	**5**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2 DCE*	**70**	**70**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DCE*	**40**	**7**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dioxane**	**30**	**3.5**	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND

TABLE 4-1

PORE WATER SAMPLING RESULTS - AUGUST 2008
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

Pore Water/Seep Sample ID	Maine MEG (1)	EPA MCL (2)	PW-SP-02	PW-SP-03	PW-SP-04	PW-SP-05	PW-SP-06	PW-SP-07	PW-SP-08	PW-SP-09	PW-SP-10	PW-SP-11	PW-SP-12
1,1,1-TCA*	10000	200	ND	**0.14**	ND	**0.02 J**	ND	ND	ND	**0.06 J**	ND	ND	ND
TCE*	30	5	ND	ND	ND	ND	ND	ND	ND	**4.3**	ND	ND	ND
PCE*	0.6	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2 DCE*	70	70	ND	ND	ND	ND	ND	ND	ND	**2.3**	ND	ND	ND
1,1-DCE*	40	7	ND	ND	ND	ND	ND	ND	ND	**5.6**	ND	ND	ND
1,4-Dioxane**	30	3.5	**10**	NA	NA	ND	ND	NA	NA	ND	NA	ND	ND

TABLE 4-1

PORE WATER SAMPLING RESULTS - AUGUST 2008
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

Pore Water/Se	Maine MEG (1)	EPA MCL (2)	PW-SP-13	PW-SP-14	PW-SP-15	PW-SP-16
1,1,1-TCA*	**10000**	**200**	ND	ND	ND	sample lost
TCE*	**30**	**5**	ND	ND	ND	sample lost
PCE*	**0.6**	**5**	ND	ND	ND	sample lost
cis-1,2 DCE*	**70**	**70**	ND	ND	ND	sample lost
1,1-DCE*	**40**	**7**	ND	ND	ND	sample lost
1,4-Dioxane**	**30**	**3.5**	NA	**2.13**	NA	NA

Concentrations in µg/L
*EPA New England Regional Laboratory (NERL) - Mobile Field Lab VOC Results.
**NERL Fixed Lab Results.
J - Estimated Concentration.
NA = Not Analyzed.
ND = Concentration Less Than EPA Field Laboratory Practical Quantitation Limit (PQL).

EPA Field Laboratory (PQL)

Analyte	PQL
1,1,1-TCA	0.1
TCE	0.2
PCE	0.1
cis-1,2-DCE	0.3
1,1-DCE	0.5

EPA NERL 1,4-Dioxane PQL 2

Pore water samples identified as PW-83 through PW-150; seep samples identified as
PW-SP-01 through PW-SP-15 (PW-SP-16 was lost).

Shaded cell indicates concentratoin greater than detection limit.
Black cells with white text indicate an excedance of screening criteria
1 Maximum Exposure Guidelines (MEGs) for Drinking Water (Maine CDC, October, 2010).
2 EPA, Maximum Contaminant Levels (www.epa.gov/safewater/contaminants/index.html) (September, 2009).

TABLE 4-2

GROUNDWATER PROFILING SAMPLING RESULTS - NOVEMBER/DECEMBER 2008
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

VOC ANALYTES/SAMPLE ID	MAINE MEG[2]	EPA MCL[3]		EPGWPL01D - 71	EPGWPL01S - 44.3	EPGWPL02D - 69.7	EPGWPL02I - 45	EPGWPL02S - 26.3	EPGWPL03S - 31	EPGWPL04D - 67	EPGWPL05I - 30	EPGWPL05S - 20	EPGWPL06I - 41
LOCATION ID				EPGWPL01	EPGWPL01	EPGWPL02	EPGWPL02	EPGWPL02	EPGWPL03	EPGWPL04	EPGWPL05	EPGWPL05	EPGWPL06
SAMPLE DATE				12/01/08	11/10/08	11/12/08	11/12/08	11/11/08	12/01/08	11/13/08	11/12/08	11/12/08	12/02/08
TOP DEPTH (FT)				71.0	44.3	69.7	45.0	26.3	31.0	67.0	30.0	20.0	41.0
BOTTOM DEPTH (FT)				71.0	44.3	69.7	45.0	26.3	31.0	67.0	30.0	20.0	41.0
1,1,1-TRICHLOROETHANE	10000	200	200	**2**	1 U	**70**	1 U	1 U	1 U	**350 J**	1 U	1 U	**1**
1,1,2-TRICHLOROETHANE	6	5	5	1 U	1 U	**0.4 J**	1 U	1 U	1 U	**1**	1 U	1 U	1 U
1,1-DICHLOROETHANE	60	NC	60	**0.8 J**	1 U	**29**	1 U	1 U	1 U	**25**	1 U	1 U	1 U
1,1-DICHLOROETHENE	40	7	7	**0.28**	0.2 U	**18**	0.2 U	0.2 U	0.2 U	**70**	0.2 U	0.2 U	0.2 U
1,2-DICHLOROETHANE	4	5	4	1 U	1 U	**1 J**	1 U	1 U	1 U	**2**	1 U	1 U	1 U
1,4-DIOXANE	30	3.5	3.5	**4.4**	2 U	**51**	2 U	2 U	2 U	**74**	2 U	2 U	2 U
CIS-1,2-DICHLOROETHENE	70	80	70	**0.8 J**	1 U	**7**	1 U	1 U	1 U	**9**	1 U	1 U	1 U
CHLOROFORM	70	70	70	**4**	3 U	**10**	6	31	1 U	**8**	**8**	**20**	1 U
METHYLENE CHLORIDE	50	5	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TETRACHLOROETHENE	0.6	5	0.6	1 U	1 U	1 U	1 U	1 U	1 U	**0.4 J**	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	100	100	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	30	5	2	**1**	1 U	**20**	1 U	1 U	1 U	**100**	1 U	1 U	1 U
VINYL CHLORIDE	0.15	2	0.15	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Total 1,2-Dichloroethene	NC	NC		**0.8 J**	1 U	**7**	1 U	1 U	1 U	**9**	1 U	1 U	1 U
Total Chlorinated Ethenes[4]	NC	NC		**2.08**	ND	**45**	ND	ND	ND	**179**	ND	ND	ND
Total Chlorinated VOCs[4]	NC	NC		**4.88**	ND	**145**	ND	ND	ND	**557**	ND	ND	**1**

TABLE 4-2

GROUNDWATER PROFILING SAMPLING RESULTS - NOVEMBER/DECEMBER 2008
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

VOC ANALYTES/SAMPLE ID	MAINE MEG[2]	EPA MCL[3]	EPGWPL08S - 20	EPGWPL09I - 60	EPGWPL09S - 40	EPGWPL12I - 40	EPGWPL12S - 22.5	EPGWPL14I - 48	EPGWPL14I - 48-AVG	EPGWPL14I - 48-D	EPGWPL16D - 69	EPGWPL17D - 64
LOCATION ID			EPGWPL08	EPGWPL09	EPGWPL09	EPGWPL12	EPGWPL12	EPGWPL14	EPGWPL14	EPGWPL14	EPGWPL16	EPGWPL17
SAMPLE DATE			11/14/08	12/03/08	12/02/08	12/03/08	12/03/08	11/17/08	11/17/08	11/17/08	11/19/08	11/19/08
TOP DEPTH (FT)			20.0	60.0	40.0	40.0	22.5	48.0	48.0	48.0	69.0	64.0
BOTTOM DEPTH (FT)			20.0	60.0	40.0	40.0	22.5	48.0	48.0	48.0	69.0	64.0
1,1,1-TRICHLOROETHANE	10000	200	1 U	**2**	1 U	1 U	1 U	**52**	**53.5**	**55**	**0.4 J**	**200**
1,1,2-TRICHLOROETHANE	6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.6 J**
1,1-DICHLOROETHANE	60	NC	1 U	1 U	1 U	1 U	1 U	**4**	**4**	**4**	1 U	**19**
1,1-DICHLOROETHENE	40	7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**4**	**4**	**4**	**0.12 J**	**39**
1,2-DICHLOROETHANE	4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1**
1,4-DIOXANE	30	3.5	2 U	2.2 U	2 U	2 U	2 U	**5.1**	**5.4**	**5.7**	2 U	**64**
CIS-1,2-DICHLOROETHENE	70	80	1 U	1 U	1 U	1 U	1 U	**9**	**9.5**	**10**	1 U	**1**
CHLOROFORM	70	70	**4**	**12**	1 U	1 U	1 U	1 U	1 U	1 U	18	3 U
METHYLENE CHLORIDE	50	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	6 U
TETRACHLOROETHENE	0.6	5	1 U	**1**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.9 J**
TRANS-1,2-DICHLOROETHENE	100	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	30	5	1 U	**0.4 J**	1 U	1 U	1 U	**12**	**13**	**14**	1 U	**31**
VINYL CHLORIDE	0.15	2	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Total 1,2-Dichloroethene	NC	NC	1 U	1 U	1 U	1 U	1 U	**9**	**9.5**	**10**	1 U	**1**
Total Chlorinated Ethenes[4]	NC	NC	ND	**1.4**	ND	ND	ND	**25**	**26.5**	**28**	**0.12**	**71.9**
Total Chlorinated VOCs[4]	NC	NC	ND	**3.4**	ND	ND	ND	**81**	**84**	**87**	**0.52**	**293**

TABLE 4-2

GROUNDWATER PROFILING SAMPLING RESULTS - NOVEMBER/DECEMBER 2008
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE
PAGE 3 OF 3

VOC ANALYTES/SAMPLE ID	MAINE MEG[2]	EPA MCL[3]	EPGWPL24D2 - 79	EPGWPL24D - 66	EPGWPL25D - 71	EPGWPL25I - 62	EPGWPL25I - 62-AVG	EPGWPL25I - 62-D	EPGWPL25S - 21	EPGWPL28D - 45.5
LOCATION ID			EPGWPL24	EPGWPL24	EPGWPL25	EPGWPL25	EPGWPL25	EPGWPL25	EPGWPL25	EPGWPL28
SAMPLE DATE			12/15/08	12/15/08	12/15/08	12/15/08	12/15/08	12/15/08	12/11/08	12/10/08
TOP DEPTH (FT)			79.0	66.0	71.0	62.0	62.0	62.0	21.0	45.5
BOTTOM DEPTH (FT)			79.0	66.0	71.0	62.0	62.0	62.0	21.0	45.5
1,1,1-TRICHLOROETHANE	10000	200	1 U	1 U	**2**	**2**	**2**	**2**	1 U	**36**
1,1,2-TRICHLOROETHANE	6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	60	NC	1 U	1 U	**0.4 J**	1 U	1 U	1 U	1 U	**2**
1,1-DICHLOROETHENE	40	7	0.2 U	0.2 U	**0.28**	**0.28**	**0.37**	**0.46**	0.2 U	**2.3**
1,2-DICHLOROETHANE	4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-DIOXANE	30	3.5	2 U	2 U	**1.7 J**	2 U	2 U	2 U	2 U	3 U
CIS-1,2-DICHLOROETHENE	70	80	1 U	1 U	**0.4 J**	**0.5 J**	**0.45 J**	**0.4 J**	1 U	**4**
CHLOROFORM	70	70	**34**	**34**	**16**	**10**	**9**	**8**	**38**	**3 U**
METHYLENE CHLORIDE	50	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TETRACHLOROETHENE	0.6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**3**
TRANS-1,2-DICHLOROETHENE	100	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	30	5	1 U	1 U	**1**	**1**	**1.5**	**2**	1 U	**12**
VINYL CHLORIDE	0.15	2	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Total 1,2-Dichloroethene	NC	NC	1 U	1 U	**0.4 J**	**0.5 J**	**0.45 J**	**0.4 J**	1 U	**4**
Total Chlorinated Ethenes[4]	NC	NC	ND	ND	**1.68**	**1.78**	**2.32**	**2.86**	ND	**21.3**
Total Chlorinated VOCs[4]	NC	NC	ND	ND	**4.08**	**3.78**	**4.32**	**4.86**	ND	**59.3**

1 This table contains the detect and non-detect results for all parameters detected in at least one sample in media subgroup. Complete results for all parameters are presented in Appendix B.

2 Maximum Exposure Guidelines (MEGs) for Drinking Water (Maine CDC, October, 2010).

3 EPA, Maximum Contaminant Levels (www.epa.gov/safewater/contaminants/index.html) (September, 2009).

4 Excludes chloroform and methylene chloride, which are common laboratory/field contaminants present in some blanks during the Supplemental RI (see Appendix D).

Note: EPA Interim Cleanup Goal for 1,4-Dioxane (3.5 ug/L) and MEDEP MEG for VINYL CHLORIDE (0.15 ug/L) are being used for criteria comparison.

NC - No criterion.

NA - Not analyzed.

Black shading indicates at least one criterion exceeded

Bold indicates analyte detected.

U - Not detected.

J - Quantitation approximate.

TABLE 4-3

SUMMARY OF DISCRETE-INTERVAL GROUNDWATER PROFILING RESULTS - NOVEMBER/DECEMBER 2008
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK MAINE

Analyte	Frequency of Detection	Minimum	Maximum	Sample with Maximum Detection	MEG(1)	MEG Exceedances	MCL(2)	MCL Exceedances
1,1,1-TRICHLOROETHANE	11/24	0.4	350	EPGW-PL04D-67	10000	0	200	1
1,1-DICHLOROETHENE	9/24	0.12	70	EPGW-PL04D-67	40	1	7	3
1,4-DIOXANE	6/24	1.7	74	EPGW-PL04D-67	30	3	3.5	5
TOTAL 1,2-DICHLOROETHENE	8/24	0.4	9	EPGWPL14I-48	NC	NC	NC	NC
TRICHLOROETHENE	9/24	0.4	100	EPGW-PL04D-67	30	2	5	5
TOTAL CHLORINATED VOCs	11/24	0.52	557	EPGW-PL04D-67	NC	NC	NC	NC

NC = No Criterion.
1 Maximum Exposure Guidelines (MEGs) for Drinking Water (Maine Center of Disease Control, October, 2010).
2 EPA, Maximum Contaminant Levels (MCL) (www.epa.gov/safewater/contaminants/index.html) (September, 2009).
Note: EPA Interim Cleanup Goal for 1,4-Dioxane (3.5 ug/L) is being used for criteria comparison.

TABLE 4-4

GROUNDWATER SAMPLING RESULTS - APRIL AND JUNE AND SEPTEMBER 2009
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

VOC ANALYTES/SAMPLE ID	MAINE MEG[3]	EPA MCL[2]	MWEP340B1-041409	MWEP340B2-041409	MWEP340S-041509	MWEP341B1-041509	MWEP341B2-041409	MWEP341S-041509	MWEP342B1-041409
LOCATION ID			MW-EP-340B1	MW-EP-340B2	MW-EP-340S	MW-EP-341B1	MW-EP-341B2	MW-EP-341S	MW-EP-342B1
SAMPLE DATE			04/14/09	04/14/09	04/15/09	04/15/09	04/14/09	04/15/09	04/14/09
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
1,1,1-TRICHLOROETHANE	10000	200	1 U	1 U	**88**	**0.4 J**	1 U	**0.5 J**	1 U
1,1,2-TRICHLOROETHANE	6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	60	NC	**0.7 J**	1 U	**7**	1 U	**0.3 J**	1 U	**8**
1,1-DICHLOROETHENE	40	7	**0.54 J**	0.2 U	**23**	0.2 U	**0.16 J**	**0.13 J**	**15**
1,2-DICHLOROETHANE	4	5	1 U	1 U	**0.3 J**	1 U	1 U	1 U	1 U
1,4-DIOXANE	30	3.5	2.2 UJ	2 UJ	9 UJ	2 UJ	2 UJ	2 UJ	8.7 UJ
CHLOROFORM	70	80	**2**	**4**	**2**	**6**	**11**	**2**	1 U
CIS-1,2-DICHLOROETHENE	70	70	1 U	1 U	**4**	1 U	1 U	1 U	**1**
METHYLENE CHLORIDE	50	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TETRACHLOROETHENE	0.6	5	1 U	1 U	**2**	1 U	1 U	1 U	**0.4 J**
TRANS-1,2-DICHLOROETHENE	100	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	30	5	1 U	1 U	**77**	1 U	1 U	**2**	**30**
VINYL CHLORIDE	0.15	2	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Total 1,2-Dichloroethene	NC	NC	1 U	1 U	**4**	1 U	1 U	1 U	**1**
Total Chlorinated Ethenes[4]	NC	NC	**0.54**	ND	**106**	ND	**0.16**	**2.13**	**46.4**
Total Chlorinated VOCs[4]	NC	NC	**1.24**	ND	**201**	**0.4 J**	**0.46**	**2.63**	**54.4**

TABLE 4-4

GROUNDWATER SAMPLING RESULTS - APRIL AND JUNE AND SEPTEMBER 2009
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

VOC ANALYTES/SAMPLE ID	MAINE MEG[3]	EPA MCL[2]	MWEP342B1-041409-AVG	MWEP342B1-041409-D	MWEP342B2-041309	MWEP342S-041409	EPGW-MWEP343-061509	EPGW-MWEP344-061509	EPGW-MWEP345-061509
LOCATION ID			MW-EP-342B1	MW-EP-342B1	MW-EP-342B2	MW-EP-342S	MW-EP-343	MW-EP-344	MW-EP-345
SAMPLE DATE			04/14/09	04/14/09	04/13/09	04/14/09	06/15/09	06/15/09	06/15/09
SAMPLE CODE			AVG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
1,1,1-TRICHLOROETHANE	10000	200	1 U	1 U	1 U	1 U	1 U	**84**	1 U
1,1,2-TRICHLOROETHANE	6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	60	NC	**8**	**8**	**3**	**0.7 J**	**24**	**4**	1 U
1,1-DICHLOROETHENE	40	7	**15**	**15**	**1.9**	**0.32 J**	**11**	**9**	0.2 U
1,2-DICHLOROETHANE	4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-DIOXANE	30	3.5	9.35 UJ	10 UJ	2 UJ	2 UJ	**38**	**6.1 J**	2 UJ
CHLOROFORM	70	80	1 U	1 U	1 U	1 U	1 U	**0.9 J**	1 U
CIS-1,2-DICHLOROETHENE	70	70	**1 J**	**1 J**	**0.4 J**	1 U	**13**	**4**	1 U
METHYLENE CHLORIDE	50	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TETRACHLOROETHENE	0.6	5	**0.45 J**	**0.5 J**	1 U	1 U	1 U	**3**	1 U
TRANS-1,2-DICHLOROETHENE	100	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	30	5	**29.5**	**29**	**6**	1 U	**23**	**92**	1 U
VINYL CHLORIDE	0.15	2	2 U	2 U	2 U	2 U	**0.3 J**	2 U	2 U
Total 1,2-Dichloroethene	NC	NC	**1 J**	**1 J**	**0.4 J**	1 U	**13**	**4**	1 U
Total Chlorinated Ethenes[4]	NC	NC	**46**	**45.5**	**8.3**	**0.32**	**47.3**	**108**	ND
Total Chlorinated VOCs[4]	NC	NC	**54**	**53.5**	**11.3**	**1.02**	**71.3J**	**196**	ND

TABLE 4-4

GROUNDWATER SAMPLING RESULTS - APRIL AND JUNE AND SEPTEMBER 2009
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

VOC ANALYTES/SAMPLE ID	MAINE MEG[3]	EPA MCL[2]	EPGW-MWEP346-061109	EPGW-MWEP347-061509	EPGW-MWEP348-060809	EPGW-MWEP349-060809	EPGW-MWEP350-061109	EPGW-MWEP350-061109-AVG
LOCATION ID			MW-EP-346	MW-EP-347	MW-EP-348	MW-EP-349	MW-EP-350	MW-EP-350
SAMPLE DATE			06/11/09	06/15/09	06/08/09	06/08/09	06/11/09	06/11/09
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL	ORIG	AVG
1,1,1-TRICHLOROETHANE	10000	200	**120**	**69**	**47**	**42**	**9**	**9**
1,1,2-TRICHLOROETHANE	6	5	1 U	**3**	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	60	NC	**16**	**210**	**7**	**2**	**6**	**6.5**
1,1-DICHLOROETHENE	40	7	**16**	**430**	**14**	**3.5**	**5**	**5**
1,2-DICHLOROETHANE	4	5	1 U	**5**	1 U	1 U	1 U	1 U
1,4-DIOXANE	30	3.5	**8.7 J**	**350**	**6.1**	**4.3**	**12**	**10.9 J**
CHLOROFORM	70	80	1 U	**1**	**0.2 J**	1 U	1 U	1 U
CIS-1,2-DICHLOROETHENE	70	70	**70**	**24**	**21**	**3**	**2**	**2**
METHYLENE CHLORIDE	50	5	5 U	12 U	**0.5 J**	5 U	5 U	5 U
TETRACHLOROETHENE	0.6	5	**2**	**13**	**2**	**10**	**5**	**5**
TRANS-1,2-DICHLOROETHENE	100	100	1 U	**0.4 J**	1 U	1 U	1 U	1 U
TRICHLOROETHENE	30	5	**47**	**860**	**53**	**16**	**11**	**11**
VINYL CHLORIDE	0.15	2	2 U	**0.8 J**	2 U	2 U	2 U	2 U
Total 1,2-Dichloroethene	NC	NC	**70**	**24.4 J**	**21**	**3**	**2**	**2**
Total Chlorinated Ethenes[4]	NC	NC	**135**	**1328**	**90**	**32.5**	**23**	**23**
Total Chlorinated VOCs[4]	NC	NC	**271**	**1615**	**144**	**76.5**	**38**	**38.5**

TABLE 4-4

GROUNDWATER SAMPLING RESULTS - APRIL AND JUNE AND SEPTEMBER 2009
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

VOC ANALYTES/SAMPLE ID	MAINE MEG[3]	EPA MCL[2]	EPGW-MWEP350-061109-D	EPGW-MWEP351-060909	EPGW-MWEP352-061009	EPGW-MWEP353-061009	EPGW-MWEP354-061109	EPGW-MWEP355-091609
LOCATION ID			MW-EP-350	MW-EP-351	MW-EP-352	MW-EP-353	MW-EP-354	MW-EP-355
SAMPLE DATE			06/11/09	06/09/09	06/10/09	06/10/09	06/11/09	9/16/2009
SAMPLE CODE			DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
1,1,1-TRICHLOROETHANE	10000	200	**9**	**160**	**500**	**0.3 J**	1 U	4
1,1,2-TRICHLOROETHANE	6	5	1 U	**0.3 J**	**1**	1 U	1 U	1 U
1,1-DICHLOROETHANE	60	NC	**7**	**11**	**24**	**4**	**12**	0.4 J
1,1-DICHLOROETHENE	40	7	**5**	**52**	**120**	**3.9**	**12**	**1 J**
1,2-DICHLOROETHANE	4	5	1 U	**0.9 J**	**3**	**0.3 J**	**0.8 J**	1 U
1,4-DIOXANE	30	3.5	**9.8 J**	**45 J**	**220**	**3.7**	**82**	0.8 J
CHLOROFORM	70	80	1 U	1 U	**0.6 J**	1 U	1 U	1 U
CIS-1,2-DICHLOROETHENE	70	70	**2**	**9**	**7**	**5**	**0.4 J**	6
METHYLENE CHLORIDE	50	5	5 U	**3 J**	9 U	5 U	5 U	5 U
TETRACHLOROETHENE	0.6	5	**5**	**7**	**3**	**5**	1 U	**2**
TRANS-1,2-DICHLOROETHENE	100	100	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	30	5	**11**	**120**	**110**	**23**	**1**	**13**
VINYL CHLORIDE	0.15	2	2 U	2 U	2 U	2 U	2 U	2 U
Total 1,2-Dichloroethene	NC	NC	**2**	**9**	**7**	**5**	**0.4 J**	6
Total Chlorinated Ethenes[4]	NC	NC	**23**	**188**	**240**	**36.9**	**13.4**	12
Total Chlorinated VOCs[4]	NC	NC	**39**	**360**	**768**	**41.5**	**26.2**	16.4

TABLE 4-4

GROUNDWATER SAMPLING RESULTS - APRIL AND JUNE AND SEPTEMBER 2009
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

VOC ANALYTES/SAMPLE ID	MAINE MEG[3]	EPA MCL[2]	EPGW-MWMB01C-060909	EPGW-MWMB02C-061009	EPGW-MWMB03C-060809	EPGW-MWMB03C-060809-AVG	EPGW-MWMB03C-060809-D	EPGW-MWMB04B-061109
LOCATION ID			MW-MB01C	MW-MB02C	MW-MB03C	MW-MB03C	MW-MB03C	MW-MB04B
SAMPLE DATE			06/09/09	06/10/09	06/08/09	06/08/09	06/08/09	06/11/09
SAMPLE CODE			NORMAL	NORMAL	ORIG	AVG	DUP	NORMAL
1,1,1-TRICHLOROETHANE	10000	200	**60**	**10**	**48**	**48**	**48**	**5**
1,1,2-TRICHLOROETHANE	6	5	1 U	1 U	**0.6 J**	**0.55 J**	**0.5 J**	**0.4 J**
1,1-DICHLOROETHANE	60	NC	**11**	**7**	**66**	**66**	**66**	**28**
1,1-DICHLOROETHENE	40	7	**24**	**5**	**61**	**61**	**61**	**36**
1,2-DICHLOROETHANE	4	5	**0.5 J**	1 U	**0.9 J**	**0.85 J**	**0.8 J**	**1**
1,4-DIOXANE	30	3.5	**29 J**	**8**	**49**	**46**	**43**	**190**
CHLOROFORM	70	80	1 U	1 U	**0.9 J**	**0.95 J**	**1 J**	1 U
CIS-1,2-DICHLOROETHENE	70	70	**14**	**4**	**70**	**71**	**72**	**0.9 J**
METHYLENE CHLORIDE	50	5	**2 J**	5 U	5 U	5 U	5 U	5 U
TETRACHLOROETHENE	0.6	5	**15**	**14**	**5**	**5**	**5**	1 U
TRANS-1,2-DICHLOROETHENE	100	100	1 U	1 U	**2**	**2**	**2**	1 U
TRICHLOROETHENE	30	5	**53**	**12**	**200**	**200**	**200**	**7**
VINYL CHLORIDE	0.15	2	2 U	2 U	2 U	2 U	2 U	2 U
Total 1,2-Dichloroethene	NC	NC	**14**	**4**	**72**	**73**	**74**	**0.9 J**
Total Chlorinated Ethenes[4]	NC	NC	**106**	**35**	**338**	**339**	**340**	**43.9**
Total Chlorinated VOCs[4]	NC	NC	**178**	**52**	**454**	**454**	**455**	**78.3**

TABLE 4-4

GROUNDWATER SAMPLING RESULTS - APRIL AND JUNE AND SEPTEMBER 2009
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE
PAGE 6 OF 6

VOC ANALYTES/SAMPLE ID	MAINE MEG[3]	EPA MCL[2]	EPGW-MWMB06A-061509	EPGW-MWMB06C-060809	EPGW-PZMBB4B-060909	EPGW-PZMBC4B-060909	EPGW-PZMBB6B-061009
LOCATION ID			MW-MB06A	MW-MB06C	P2-MBB4B	P2-MBC4B	P2-MWB6B
SAMPLE DATE			06/15/09	06/08/09	06/09/09	06/09/09	06/10/09
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
1,1,1-TRICHLOROETHANE	10000	200	**8**	**25**	**19**	1 U	**140**
1,1,2-TRICHLOROETHANE	6	5	1 U	1 U	**0.6 J**	1 U	**0.8 J**
1,1-DICHLOROETHANE	60	NC	**2**	**10**	**69**	1 U	**61**
1,1-DICHLOROETHENE	40	7	**4**	**18**	**110**	0.2 U	**84**
1,2-DICHLOROETHANE	4	5	1 U	**0.5 J**	**3**	1 U	**3**
1,4-DIOXANE	30	3.5	**9.2**	**22 J**	**260**	2 U	**260**
CHLOROFORM	70	80	1 U	1 U	1 U	1 U	1 U
CIS-1,2-DICHLOROETHENE	70	70	**0.8 J**	**6**	**6**	1 U	**3**
METHYLENE CHLORIDE	50	5	5 U	**0.4 J**	5 U	5 U	5 U
TETRACHLOROETHENE	0.6	5	**0.6 J**	**5**	**2**	1 U	**0.5 J**
TRANS-1,2-DICHLOROETHENE	100	100	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	30	5	**9**	**49**	**74**	**0.4 J**	**30**
VINYL CHLORIDE	0.15	2	2 U	2 U	**0.8 J**	2 U	**0.3 J**
Total 1,2-Dichloroethene	NC	NC	**0.8 J**	**6**	**6**	1 U	**3**
Total Chlorinated Ethenes[4]	NC	NC	**14.4**	**78**	**192.8**	**0.4**	**117.8**
Total Chlorinated VOCs[4]	NC	NC	**24.4**	**114**	**284**	**0.4**	**323**

1 This table contains the detect and non-detect results for all parameters detected in at least one sample in media subgroup. Concentrations are in µg/L. Complete results for all parameters are presented in Appendix B.
2 EPA, Maximum Contaminant Levels (www.epa.gov/safewater/contaminants/index.html) (September, 2009).
3 Maximum Exposure Guidelines (MEGs) for Drinking Water (Maine CDC, October, 2010).
4 Excludes chloroform and methylene chloride, which are common laboratory/field contaminants present in some blanks during the Supplemental RI (see Appendix D).
Note: EPA Interim Cleanup Goal for 1,4-Dioxane (3.5 ug/L) and MEDEP MEG for vinyl chloride (0.15 ug/L) are being used for criteria comparison.

TABLE 4-5

SUMMARY OF GROUNDWATER SAMPLING RESULTS - APRIL AND JUNE AND SEPTEMBER 2009
SUPPLEMENTAL RI REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

Analyte	Frequency of Detection	Minimum Concentration (µg/L)	Maximum Concentration (µg/L)	Sample Number of Maximum Detection	MEG(1)	MEG Exceedances	MCL(2)	MCL Exceedances
1,1,1-TRICHLOROETHANE	20/31	0.3	500	EPGW-MWEP352-061009	10000	0	200	1
1,1-DICHLOROETHANE	25/31	0.3	210	EPGW-MWEP347-061509	60	4	NA	NA
1,1-DICHLOROETHENE	26/31	0.13	430	EPGW-MWEP347-061509	40	6	7	10
1,2-DICHLOROETHANE	12/31	0.3	5	EPGW-MWEP347-061509	4	1	5	0
1,4-DIOXANE	19/31	0.8	350	EPGW-MWEP347-061509	30	9	3.5	19
CIS-1,2-DICHLOROETHENE	22/31	0.4	70	EPGW-MWMB03C-060809	70	0	70	0
TETRACHLOROETHENE	18/31	0.45	15	EPGW-MWMB01C-060909	0.6	15	5	5
TOTAL 1,2-DICHLOROETHENE	22/31	0.4	72	EPGW-MWMB03C-060809	NA	NA	NA	NA
TRICHLOROETHENE	24/31	0.4	860	EPGW-MWEP347-061509	30	11	5	21
VINYL CHLORIDE	4/31	0.3	0.8	EPGW-MWEP347-061509, EPGW-PZMBB4B-060909	0.15	4	2	0
Total Chlorinated VOCs[3]	28/31	0.4	1615	EPGW-MWEP347-061509	NA	NA	NA	NA

NA = Not applicable.

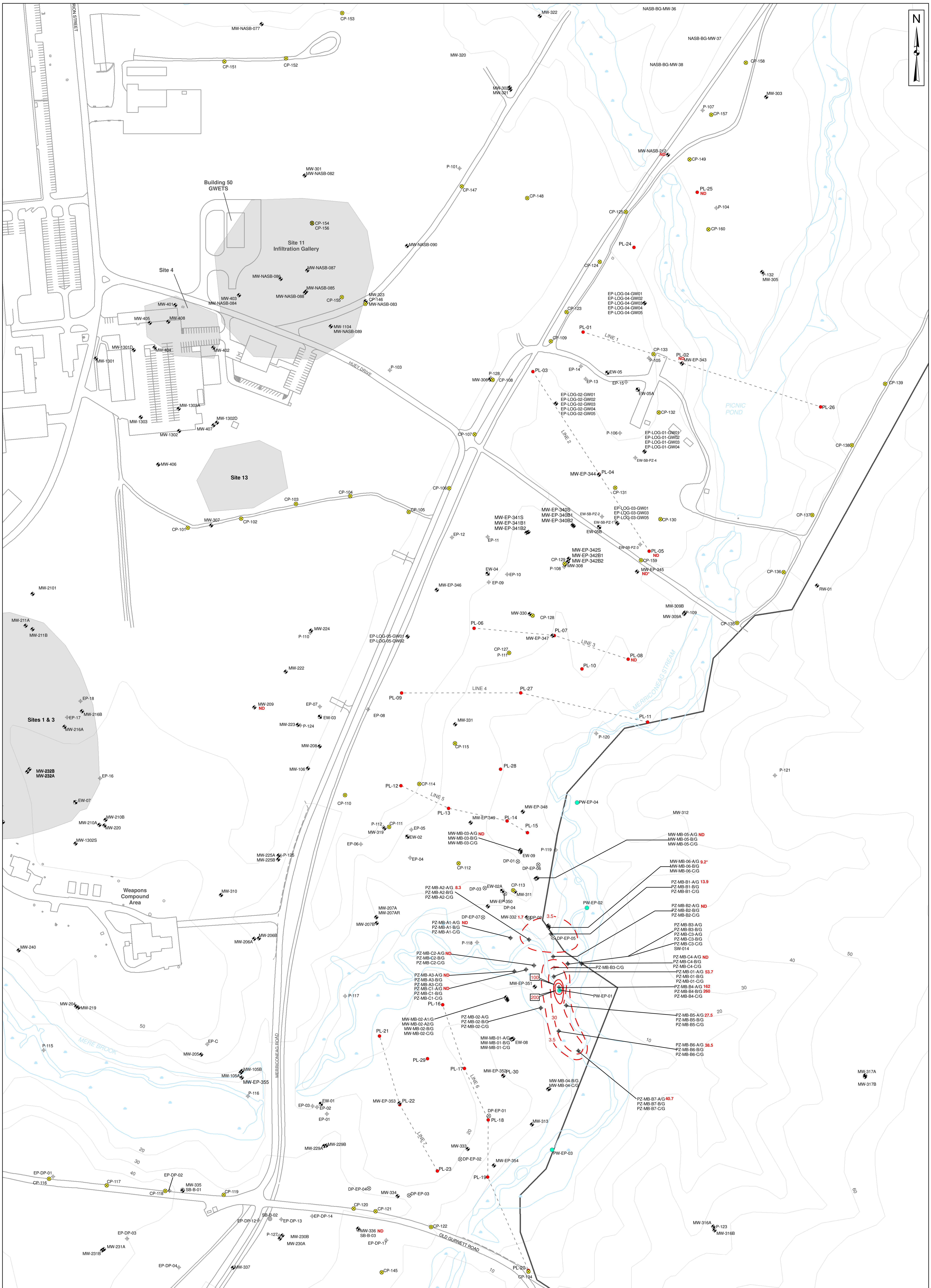
NC = No criterion.

1 Maximum Exposure Guidelines (MEGs) for Drinking Water (Maine Center for Disease Control, October, 2010).

2 EPA, Maximum Contaminant Levels (MCL) (www.epa.gov/safewater/contaminants/index.html) (September, 2009).

3 Excludes chloroform and methylene chloride, which are common laboratory/field contaminants present in some blanks during the Supplemental RI (see Appendix D). Minimum and Maximum concentrations from Table 4-4 for specific sample.

DRAWN BY D.W. MACDOUGALL — DATE 02/28/11	Tetra Tech NUS, Inc.	CONTRACT NUMBER CTO 0069
CHECKED BY C. RACE — DATE 02/28/11	EASTERN PLUME GROUNDWATER MCL AND/OR MEG EXCEEDANCES NAVAL AIR STATION BRUNSWICK, MAINE	APPROVED BY — DATE
		APPROVED BY — DATE
SCALE AS NOTED		FIGURE NO. FIGURE 4-1 — REV 0



Legend

- Cone Penetrator
- Direct Push Well
- Extraction Well
- Monitoring Well
- Piezometer
- Soil Boring
- Profiling Location
- Long-Term Pore Water Sample Location
- 1,4-Dioxane Contour (ug/L) (Dashed where estimated)
- Road
- Stream
- Base Boundary
- Topographic Contours (feet)

150 75 0 150 Feet

I:\00645\1404\EAST_PLUME_1,4_DIOXANE_EXTENT_UPPER_SAND.MXD
02/26/11 DWM

1,4-Dioxane Qualifier

ND - Not Detected

56.8 1,4-Dioxane Sample Result (ug/L)
- All PL data sampled November/December 2008.
- All Mere Brook (MB) data sampled July/August 2007.
- All other data sampled September 2006, September 2008, April 2009 and June 2009; most recent value shown

* Sampled June 2009

DRAWN BY D.W. MACDOUGALL	DATE 02/26/11	Tetra Tech NUS, Inc.	CONTRACT NUMBER CTO 0069
CHECKED BY A. CAREY	DATE 02/26/11	1,4-DIOXANE GROUNDWATER CONCENTRATION MAP - UPPER SAND UNIT NAVAL AIR STATION BRUNSWICK, MAINE	APPROVED BY DATE
CHECKED BY C. RACE	DATE 02/26/11		APPROVED BY DATE
SCALE AS NOTED			FIGURE NO. FIGURE 4-2 REV 0

DRAWN BY	DATE	Tetra Tech NUS, Inc.	CONTRACT NUMBER
D.W. MACDOUGALL	02/26/11		CTO 0069
CHECKED BY	DATE	EASTERN PLUME 1,4-DIOXANE GROUNDWATER CONCENTRATION RESULTS	APPROVED BY / DATE
A. CAREY	02/26/11	IN THE TRANSITION UNIT	
CHECKED BY	DATE	NAVAL AIR STATION	APPROVED BY / DATE
C. RACE	02/26/11	BRUNSWICK, MAINE	
SCALE			FIGURE NO. FIGURE 4-3 / REV 0
AS NOTED			

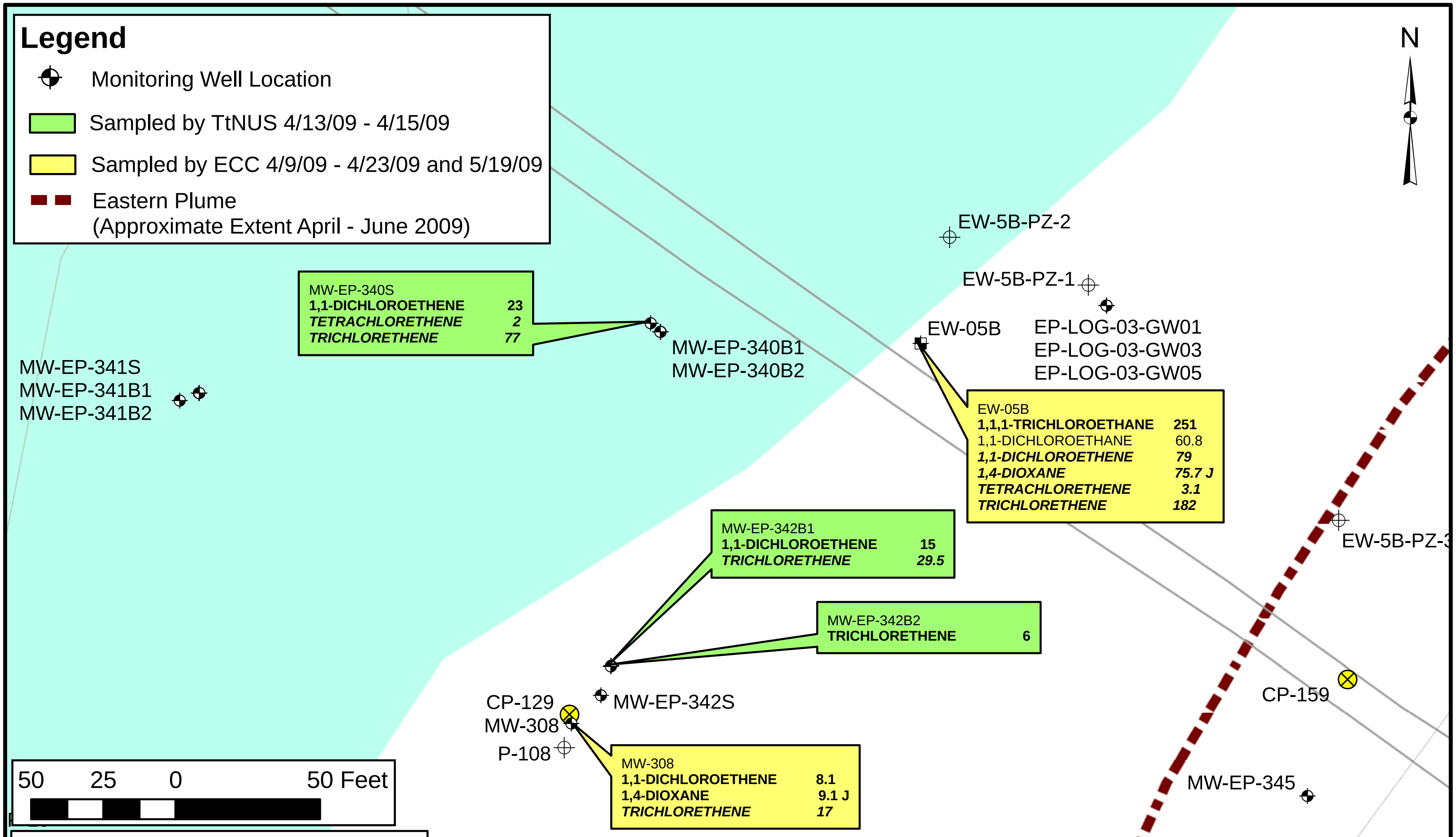
DRAWN BY D.W. MACDOUGALL	DATE 02/28/11	Tetra Tech NUS, Inc.	CONTRACT NUMBER CTO 0069
CHECKED BY A. CAREY	DATE 02/28/11	1,4-DIOXANE GROUNDWATER CONCENTRATION MAP - LOWER SAND NAVAL AIR STATION BRUNSWICK, MAINE	APPROVED BY / DATE
CHECKED BY C. RACE	DATE 02/28/11		APPROVED BY / DATE
SCALE AS NOTED			FIGURE NO. FIGURE 4-4 / REV 0

DRAWN BY D.W. MACDOUGALL	DATE 02/26/11	Tetra Tech NUS, Inc.	CONTRACT NUMBER CTO 0069
CHECKED BY A. CAREY	DATE 02/26/11	TRICHLOROETHENE GROUNDWATER CONCENTRATION MAP - UPPER SAND NAVAL AIR STATION BRUNSWICK, MAINE	APPROVED BY DATE
CHECKED BY C. RACE	DATE 02/26/11		APPROVED BY DATE
SCALE AS NOTED			FIGURE NO. FIGURE 4-5 · REV 0

DRAWN BY D.W. MACDOUGALL	DATE 02/26/11	Tetra Tech NUS, Inc.	CONTRACT NUMBER CTO 0069
CHECKED BY A. CAREY	DATE 02/26/11	EASTERN PLUME TRICHLOROETHENE GROUNDWATER CONCENTRATION RESULTS IN THE TRANSITION UNIT NAVAL AIR STATION BRUNSWICK, MAINE	APPROVED BY DATE
CHECKED BY C. RACE	DATE 02/26/11		APPROVED BY DATE
SCALE AS NOTED			FIGURE NO. FIGURE 4-6 — REV 0

DRAWN BY	DATE	Tetra Tech NUS, Inc.	CONTRACT NUMBER
D.W. MACDOUGALL	02/26/11		CTO 0069
CHECKED BY	DATE	TRICHLOROETHENE GROUNDWATER CONCENTRATION MAP - LOWER SAND	APPROVED BY / DATE
A. CAREY	02/26/11	NAVAL AIR STATION	
CHECKED BY	DATE	BRUNSWICK, MAINE	APPROVED BY / DATE
C. RACE	02/26/11		
SCALE			FIGURE NO. / REV
AS NOTED			FIGURE 4-7 / 0

I:\00645\1404\EAST_PLUME_MW308_GW_TAG.MXD DWM 02/26/11



Note:
Results in **BOLD** represent exceedance of MCL.
Results in ***BOLD and Italics*** represent exceedance of MCL and MEG.
Other results exceed MEG only.
The green shading represents the historical extent of the Eastern Plume volatile organic compound concentrations through September 2007 that exceeded MCLs/MEGs in effect at that time.

Tetra Tech NUS, Inc.

MW-308 VICINITY GROUNDWATER TAG MAP
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

SCALE	AS NOTED
FILE	\..\EAST_PLUME_MW308_GW_TAG.MXD
REV	0
DATE	02/26/11
FIGURE NUMBER	FIGURE 4-8

5.0 CONCLUSIONS AND RECOMMENDATIONS

This section summarizes the conclusions and recommendations of the Supplemental RI for 1,4-dioxane in the Eastern Plume and Bedrock. The conclusions take into account previously conducted investigations, summarized in the Conceptual Site Model (CSM), originally developed in 2000 and most recently updated as Revision 4 in July 2008 (ECC, 2009b). The foundation of the CSM was data collected and summarized in the RI (E.C. Jordan 1990 and 1991). The July 2008 update included subsurface data collected by direct-push soil and groundwater sampling in specific areas and integrated into the model, including the Site 11 bedrock investigations (2003-2005), Mere Brook and Merriconeag Stream Investigations (2005-2007), new extraction well siting and installation (2005 to present), Southern Boundary of Eastern Plume investigations (2000-2003), MNA investigation within the Eastern Plume (2003-2005), and residential well sampling (1990-to date). Data collected during the Long-Term Monitoring Program consisting of the April/May 2009 results that are most closely comparable in time to the Supplemental RI groundwater sampling were also used to refine the understanding of site conditions.

5.1 CONCLUSIONS

The primary objective of the Supplemental RI was to delineate the core and margins of the 1,4-dioxane and CVOC groundwater contaminant plume. This information was needed to optimize the location of pending (and now installed) extraction wells and to upgrade the 1,4-dioxane treatment system. Another important objective was to determine the migration pathways for contaminants in the vicinity of the bedrock knob at monitoring well MW-308 – a bedrock well with low levels of VOCs and 1,4-dioxane.

The investigation scope included collection and analysis of pore water and seep samples, collection of lithology data, discrete-interval groundwater sampling, monitoring well construction/development, bedrock drilling/coring/borehole geophysics/well installation, slug testing, sampling and analysis of groundwater from new and existing wells, water-level measurements, and surveying of sample locations.

In the area north of Mere Brook, lateral and vertical hydraulic gradients indicate that groundwater flow in the Upper Sand and Transition Unit is generally in a southeasterly direction toward Merriconeag Stream and Mere Brook. South of Mere Brook, groundwater flow is in an easterly direction toward Mere Brook (Mere Brook flows beneath the base through a culvert in an east direction and then shifts to the south at its confluence with Merriconeag Stream). The confluence is a significant groundwater discharge area, with most wells in the area under artesian pressure with upward gradients. The Lower Sand is confined or semi-confined by the overlying silt and clay layers of the Transition Unit. Groundwater in the Lower Sand migrates in a southerly direction and then shifts to the southeast as it approaches the confluence from the north. Groundwater flow through the Lower Sand is confined laterally by a steeply sloping clay surface that affects flow in a southerly direction. K value estimates from slug tests in the Upper Sand, Transition, and Lower Sand are consistent with fine sand and silty fine sands. The hydraulic conductivity of the Lower Sand and Transition Unit is more similar than previously thought based on slug-test data. The calculated average groundwater flow velocities across the site in the Upper Sand, Transition Unit, and Lower Sand are approximately 69, 55, and 15 ft/year, respectively. In comparison, the calculated average groundwater flow velocity through bedrock fractures in the vicinity of MW-308 is approximately 39 ft/year. The relatively low average groundwater flow velocity in the Lower Sand is a result of the relatively low hydraulic gradient in the Lower Sand.

Source removals in the 1990s and subsequent natural attenuation appear to have effectively depleted nearly all the residual fuel and solvents in the source areas at Sites 4, 11, and 13. Therefore, these areas no longer act as sources for the Eastern Plume. Supplemental RI data indicate that residual contamination within the fine-grained strata of the Transition Unit remains at the Eastern Plume.

1,4-Dioxane exceedances occurred mainly to the north in the vicinity of extraction well EW-05B, and also near and south of the Mere Brook-Merriconeag Stream confluence, with concentrations increasing toward Mere Brook. TCE exceedances were distributed through the plume. Maximum concentrations of 1,4-dioxane (350 µg/L) and TCE (860 µg/L) both occurred at the same location, MW-EP-347. Generally, exceedances of other CVOC contaminants were co-located with TCE with the exception of MW-305, where 1,1-DCE exceeded its MEG but was less than its MCL. Other exceedances were nominal and sporadic for 1,1,1-TCA, PCE, 1,2-DCA, 1,1-DCA, cis-1,2-DCE, and VC. Current-day exceedances of criteria for TCE and 1,4-dioxane are relevant indicators representative of the residual plume.

The bedrock investigation in the vicinity of MW-308 confirmed the presence of CVOCs, in particular TCE, in bedrock at concentrations decreasing with depth to non-detect or low levels compared with MCLs and/or MEGs at the deepest monitored interval. 1,4-Dioxane was not detected. The bedrock investigation results indicate that low concentrations of contaminated groundwater are entering the upper fractured bedrock in the vicinity of MW-308. Lateral and vertical hydraulic gradients and decreasing contaminant concentrations in the direction of groundwater flow from north to south indicate that the source of contaminated groundwater in fractured bedrock is from the overburden upgradient (north) of the bedrock knob feature rather than bedrock. K values for the bedrock at this location and sandy zones in the overburden are similar, indicating no impediment to groundwater flow into the bedrock in the knob area. Vertical hydraulic gradients are upward at the well cluster closest to MW-308 (MW-EP-342B), which limits the vertical migration of contamination deeper into bedrock. Hydraulic gradients indicate that contaminated groundwater moving in a southerly direction in the overburden has the potential to migrate into bedrock in the MW-308 vicinity, then flow upward and laterally in a southeasterly direction, where it has the potential to re-enter the overburden. However, hydraulic containment of any contaminated groundwater in the vicinity of MW-308 should be evaluated with the activation of EW-05B to the north.

5.2 RECOMMENDATIONS

The Supplemental RI results have already been incorporated into the groundwater model used to select locations for additional groundwater extraction wells to support ongoing groundwater remediation to enhance containment of the Eastern Plume. As a result, new extraction wells EW-8 and EW-9 were installed in October 2009. The Supplemental RI results were also used to determine requirements for upgrading the existing treatment system for CVOC removal to additionally remove 1,4-dioxane. Therefore, the NAS Brunswick environmental restoration team has implemented and incorporated the information from the investigative efforts outlined in this Supplemental RI Report to optimize the effectiveness of the Eastern Plume remedy, meeting the Remedial Action Objectives set forth in the Record of Decision (ABB Environmental Services, Inc., 1998).

Based on the Supplemental RI, recommendations are summarized as follows:

1) The results show two small 1,4-dioxane plumes and limited upwelling into the streams; no additional investigation appears necessary to delineate the plumes. The LTMP is currently under review to determine if any of the new wells should be included in the monitoring program.

2) No further bedrock investigation appears necessary. The low level contaminants of concern detected at bedrock monitoring well MW-308 are localized. Although additional bedrock monitoring well installation is not recommended, bedrock groundwater monitoring will be considered in the optimized Eastern Plume LTMP.

REFERENCES

ABB Environmental Services Inc., 1998. U.S. Department of the Navy Installation Restoration Program Naval Air Station Brunswick, Maine Record of Decision (ROD) for No Further Action at Sites 4, 11, and 13 and a Remedial Action for the Eastern Plume. February.

Bouwer, H., and Rice, J., 1976. A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells. Water Resources Research.

EA Engineering, Science, and Technology, Inc (EA), 2000. Final 1998 Annual Report, Monitoring Events 11 through 13, Sites 1 and 3 and Eastern Plume, Naval Air Station, Brunswick, Maine. February.

EA, 2004. Draft Final Summary Report of the Direct-Push Investigation of the Southern Boundary of the Eastern Plume and Site 11, Naval Air Station, Brunswick, Maine. December.

EA/ECC, 2006. Final Monitored Natural Attenuation Assessment of the Eastern Plume, Naval Air Station, Brunswick, Maine. October.

ECC, 2005. Groundwater Monitoring Report Site 11 – Bedrock Well. Naval Air Station Brunswick Maine. March.

ECC, 2006 Monitored Natural Attenuation Assessment of the Eastern Plume Naval Air Station, Brunswick, Maine. October.

ECC, 2008a. Final Summary Report for the Mere Brook and Merriconeag Stream Floodplain and Upland Area Investigation, Eastern Plume. Naval Air Station Brunswick, Maine. July.

ECC, 2008b, Final (Revision 1) Long-Term Monitoring Plan Eastern Plume, Naval Air Station Brunswick, Maine. July.

ECC, 2009a. Draft Letter Summary Report Performance Testing and Groundwater Sampling Extraction Well EW-05B Naval Air Station, Brunswick, Maine. March.

ECC, 2009b. Final Groundwater Modeling Summary Report Sites 1 and 3 and Eastern Plume, Naval Air Station Brunswick, Maine. April.

E.C. Jordan Company, 1990. Draft Final Remedial Investigation Report. Volume 1, Volume 2 (Appendixes A through J), Volume 3 (Appendixes K through P), and Volume 4 (Appendix Q – Risk Assessment), NAS Brunswick. Portland, Maine. August.

.

E.C. Jordan Company, 1991. Draft Final Supplemental Investigation Report NAS Brunswick, Portland, Maine. August.

Fetter, C.W., 1994. Applied Hydrogeology. Third Edition, pg. 91.

Gannett Fleming, 2003. Draft Results of the 1999 and 2000 Investigations on the Expression of Eastern Plume Groundwater into Surface Water, Naval Air Station Brunswick, Maine. March.

Hager GeoScience Inc., 2004. Geophysical Investigation of bedrock Fracture Zones at Site 11 and Areas Downgradient, Naval Air Station Brunswick, Maine. January.

H&S, 2010. Final Eastern Plume Monitoring Event 34 Report April 2009. Naval Air Station Brunswick. January.

Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground Water Observations. U.S. Army Corps of Engineers Waterways Experimentation Station Bulletin 36.

Hussey, A. M., II, and Marvinney, R. G., 2002. Bedrock geology of the Bath 1:100,000 quadrangle, Maine: Maine Geological Survey.

Maine Center for Disease Control and Prevention (Maine CDC), Department of Human Services, 2010. Maine CDC Maximum Exposure Guidelines (MEGs) for drinking water. October 21.

Maine Department of Environmental Protection Bureau of Remediation & Waste Management, 2005. Pore Water Sampling Data From Mere Brook & Merriconeag Stream Area Naval Air Station, Brunswick (August & September 2005). December.

Tetra Tech, NUS, Inc., 2008. Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) for Supplemental Remedial Investigation of 1,4-Dioxane in the Eastern Plume and Bedrock, Naval Air Station, Brunswick, Maine. October.

U.S. EPA, 2008. Revision 1 Sample Analysis Plan (SAP) Pore Water Sampling & Analysis at the Naval Air Station Brunswick (NAS Brunswick) Brunswick, ME Collection of Pore Water Samples along Picnic Pond/Merriconeag Stream for Analysis of Select Eastern Plume VOCs and 1,4-Dioxane. October.

U.S. EPA, 2009. Maximum Contaminant Levels (www.epa.gov/safewater/contaminants/index.html) Winter.

U.S. Navy, 2010. Explanation of Significant Differences Eastern Plume Naval Air Station Brunswick, Maine, September.

Supplemental Remedial Investigation Report

for

1,4-Dioxane in the Eastern Plume and Bedrock

Former Naval Air Station Brunswick
Brunswick, Maine

Volume II of II - Appendices

Naval Facilities Engineering Command Mid-Atlantic

Contract Number N62472-03-D-0057
Contract Task Order 69

February 2012

APPENDIX A
FIELD RESULTS – SUPPLEMENTAL RI

APPENDIX A-1

PORE WATER AND SEEP FIELD PARAMETERS/NOTES

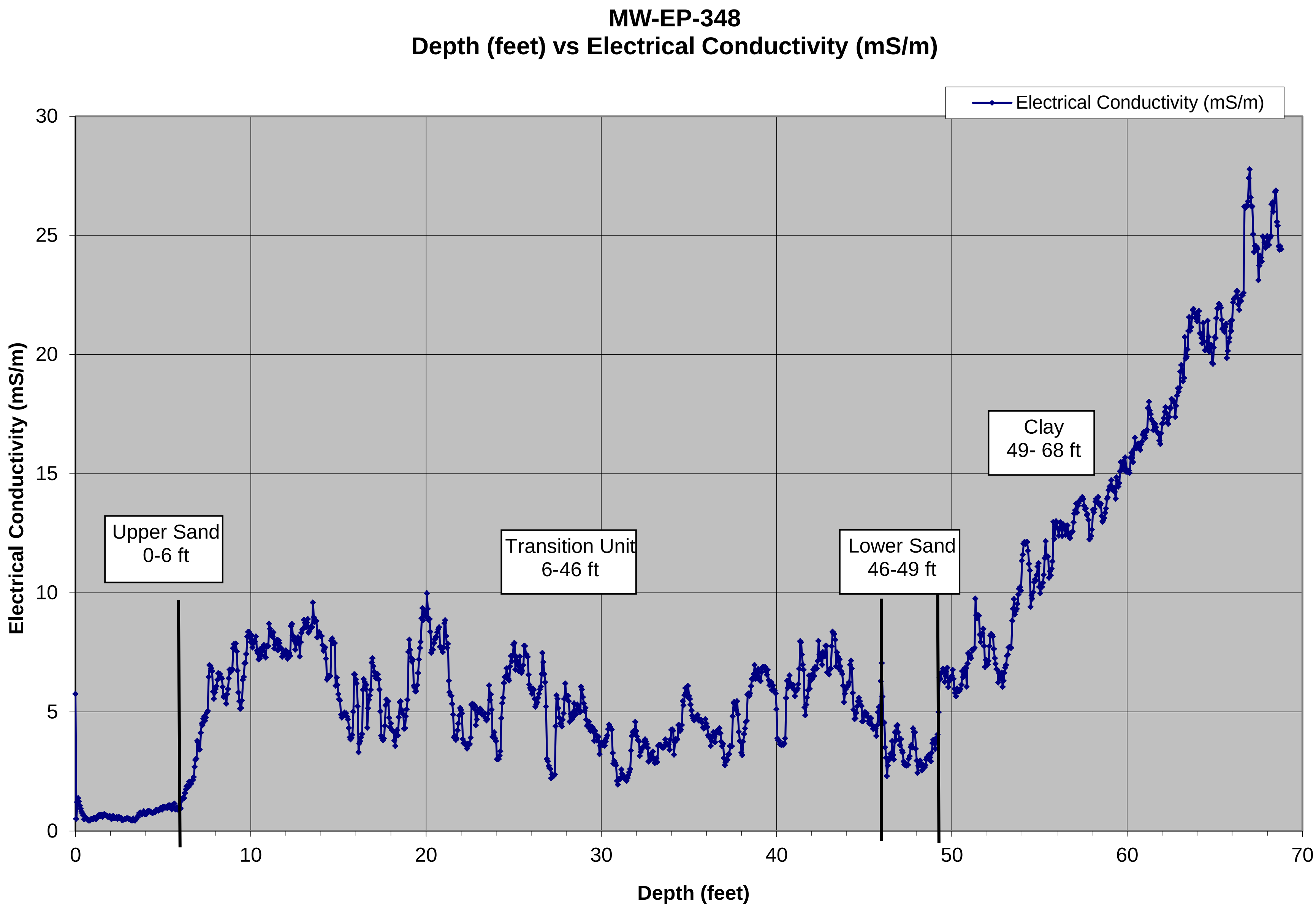
August 11 - 13, 2008 MEDEP/NAVY/EPA PORE WATER SAMPLING EVENT
PICNIC POND/MERRICONEAG STREAM, NAVAL AIR STATION BRUNSWICK, MAINE

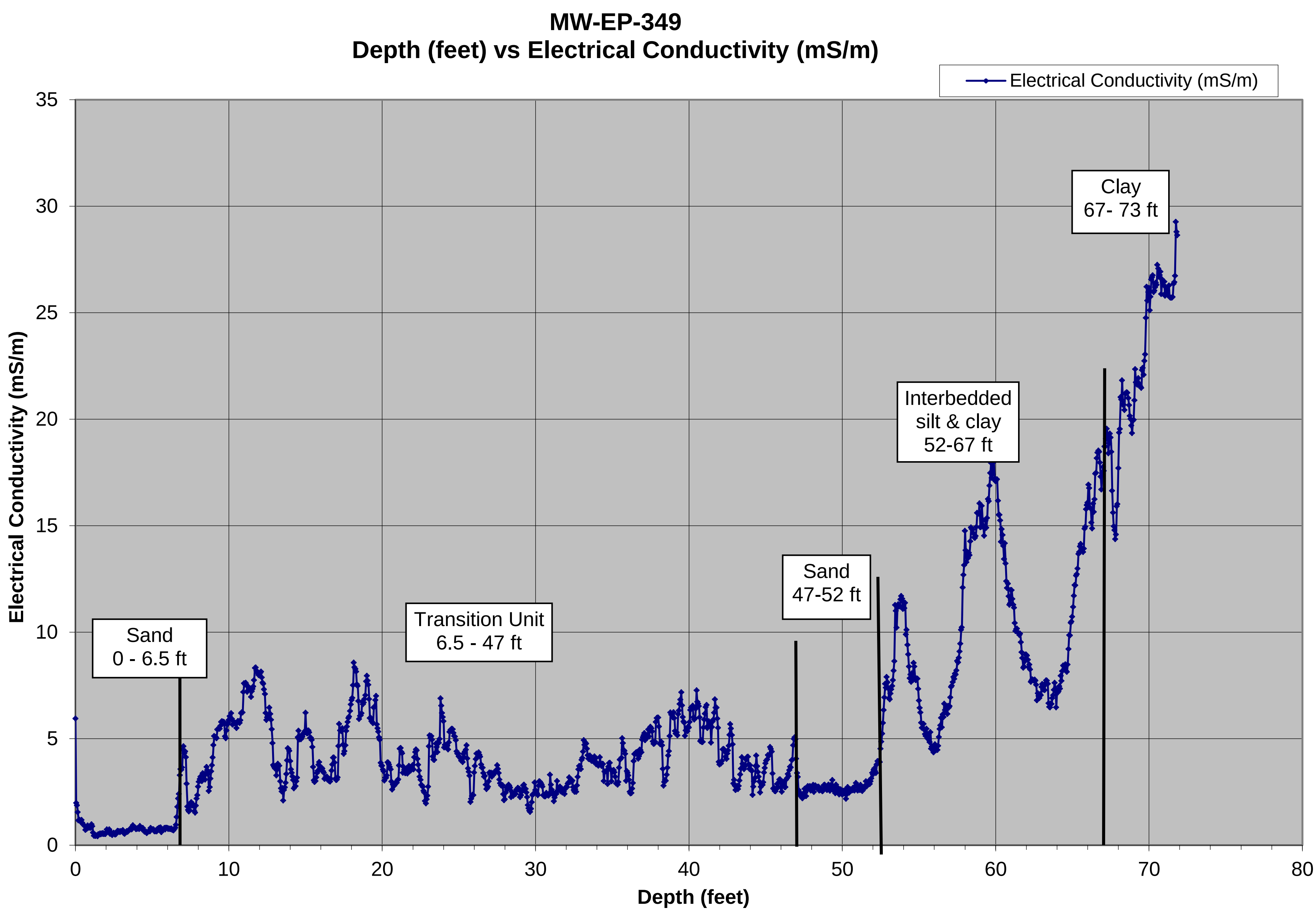
Field Parameters/Notes			
Porewater/Seep Station I.D.	**Temp (degrees C)**	**Dissolved O_2 (mg/l)**	**Notes**
PW-83	16.5	<1	very silty
PW-84	15.2	<1	turbid
PW-85	16.5	<1	fairly clear
PW-86	16.1	<1	fairly clear
PW-86 Dup	16.1	<1	
PW-87	17.3	<1	fairly clear
PW-88	17	<1	somewhat cloudy
PW-89	na	1	clear sample
PW-90	na	<1	turbid
PW-91	na	<1	turbid
PW-92	na	<1	slight turbidity
PW-93	na	<1	not turbid
PW-94	na	<1	not turbid
PW-95	na	<1	not turbid
PW-96	na	<1	sulfur odor/not turbid
PW-97	na	<1	sulfur odor/not turbid
PW-98	na	<1	not turbid
PW-99	na	<1	sulfur odor/not turbid
PW-100	na	<1	turbid
PW-101	na	<1	not turbid
PW-102	na	<1	not turbid
PW-103	na	<1	not turbid
PW-104	na	1	not turbid
PW-105	20.3	<1	clear sample
PW-106	19.4	<1	clear sample
PW-107	18	<1	very silty
PW-108	19	<1	not turbid
PW-109	17	<1	very silty
PW-110	17.2	<1	
PW-110 Dup	17.2	<1	
PW-111	17	1	clear sample
PW-112	17.9	1	clear sample
PW-113	17	<1	clear sample
PW-114	17.9	na	clear sample
PW-115	na	<1	turbid
PW-116	15.6	<1	not turbid
PW-117	17.1	<1	very slight turbidity
PW-118	16	<1	not turbid
PW-118 Dup	16	<1	
PW-119	15.9	<1	slight turbidity
PW-120	15.6	<1	slight turbidity
PW-121	na	<1	turbid
PW-122	na	<1	slight turbidity
PW-123	na	<1	not turbid
PW-124	na	<1	slight turbidity
PW-125	15.5	1	not turbid
PW-126	14.8	2	not turbid
PW-127	13.4	3	not turbid
PW-128	15.5	5	turbid
PW-128 Dup	15.5	5	
PW-129	14.5	4	not turbid
PW-130	14	4	turbid
PW-130 Dup	14	4	
PW-131	15.1	8	turbid

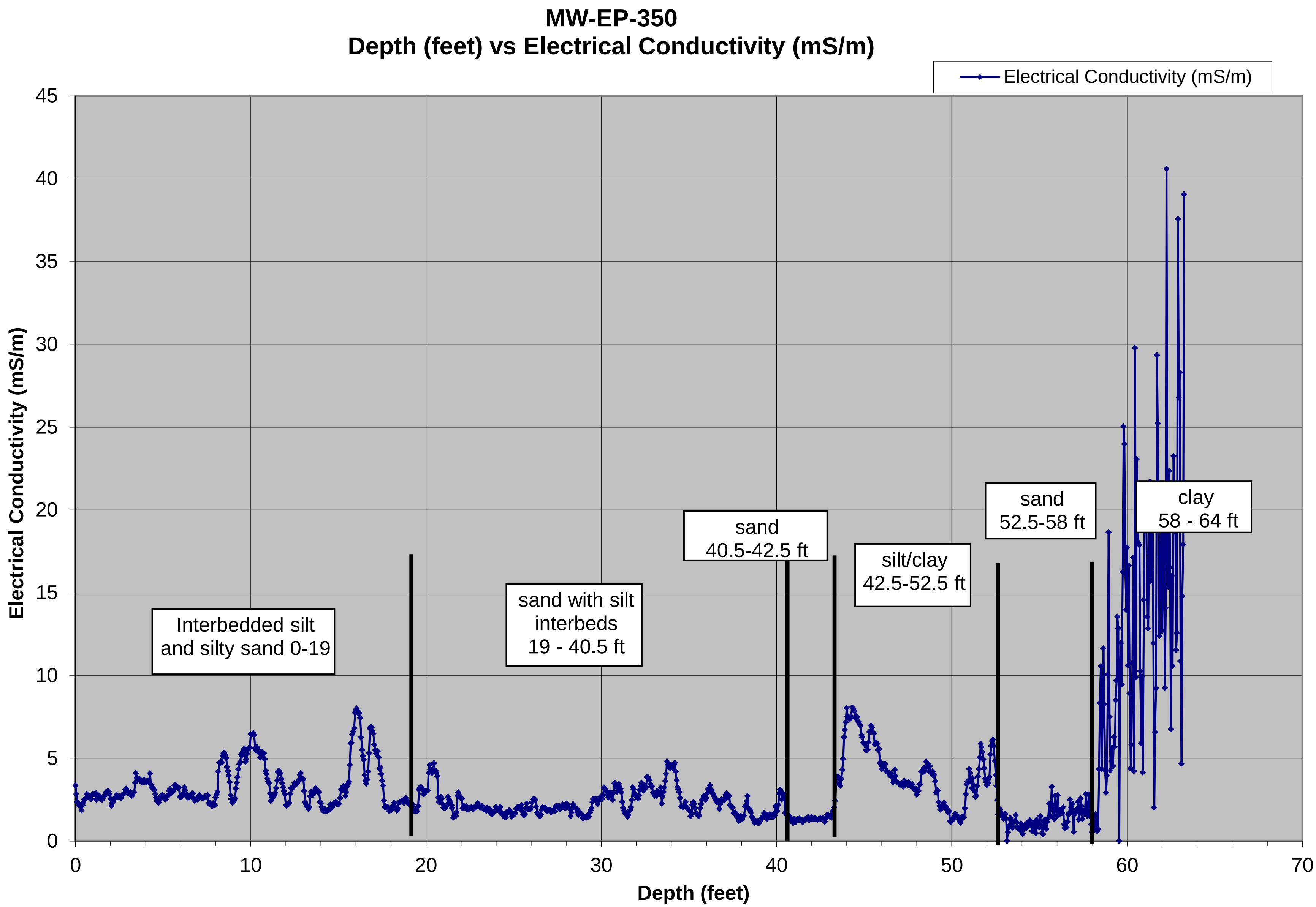
August 11 - 13, 2008 MEDEP/NAVY/EPA PORE WATER SAMPLING EVENT
PICNIC POND/MERRICONEAG STREAM, NAVAL AIR STATION BRUNSWICK, MAINE

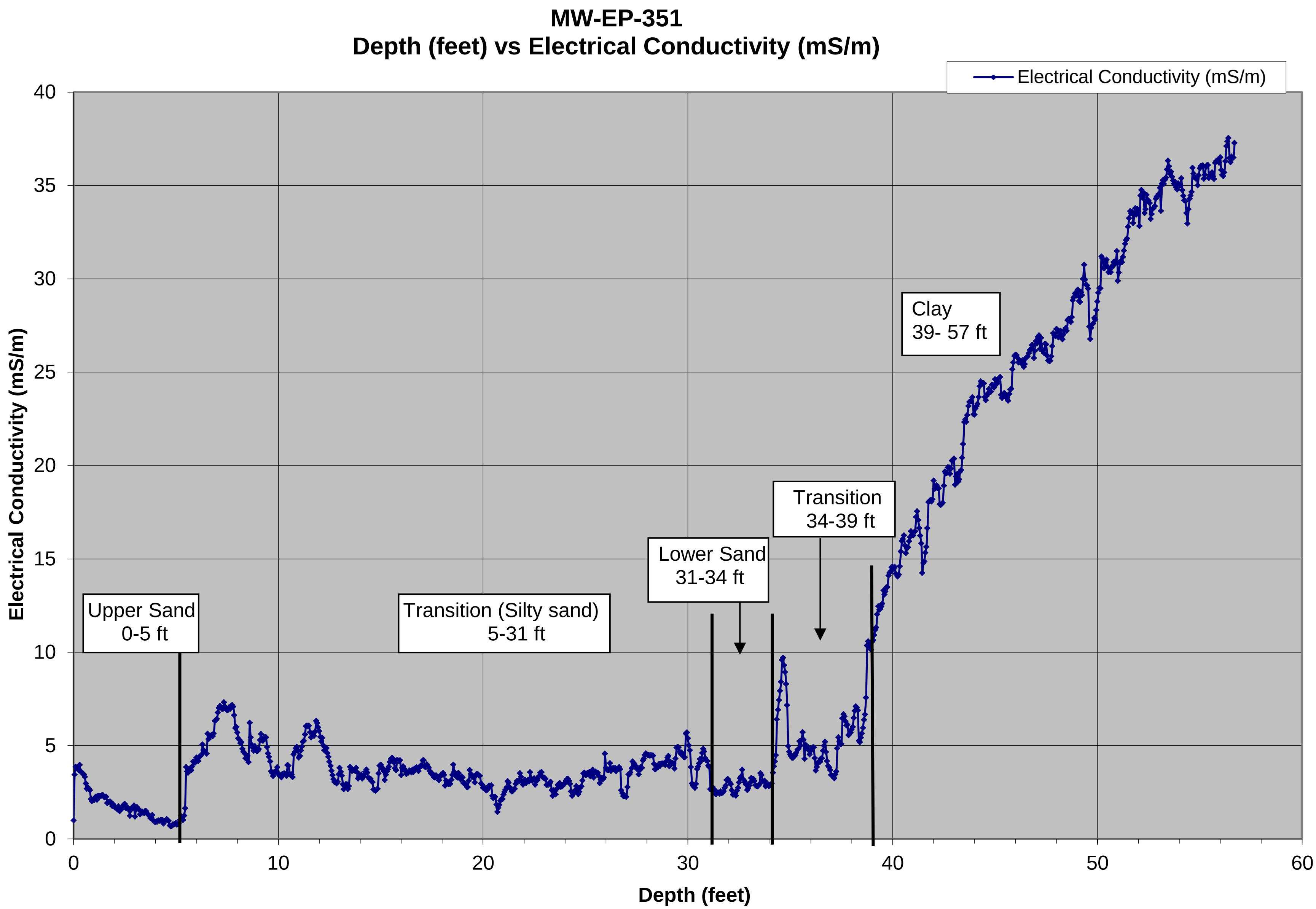
Field Parameters/Notes			
Porewater/Seep Station I.D.	Temp (degrees C)	Dissolved O_2 (mg/l)	Notes
PW-132	15	6	not turbid
PW-133	15.5	6	not turbid
PW-134	14.8	6	turbid
PW-135	13.7	5	not turbid
PW-136	17.8	<1	not turbid
PW-137	17	1	not turbid
PW-138	13.5	silt interference	turbid
PW-138 Dup	13.5	silt interference	
PW-139	13.8	6	not turbid
PW-140	14.9	7	not turbid
PW-140 Dup	14.9	7	
PW-141	13.3	4	turbid
PW-142	12.4	7	not turbid
PW-143	15.2	5	not turbid
PW-144	13.1	5	turbid
PW-145	14.8	5	artesian/turbid
PW-146	16	<1	not turbid
PW-147	15.7	5	turbid
PW-148	14.7	5	artesian/turbid
PW-148 Dup	14.7	5	
PW-149	15.1	5	turbid
PW-150	14.2	4	artesian/not turbid
PW-150 Dup	14.2	4	
PW-SP-01	12.5	2	artesian?/turbid
PW-SP-02	15.2	<1	turbid
PW-SP-03	12.5	2	turbid
PW-SP-04	13.2	4	sulfur odor/not turbid
PW-SP-05	13	5	slight turbidity
PW-SP-06	13	1	slight turbidity
PW-SP-07	15.3	1	
PW-SP-08	15.9	<1	turbid
PW-SP-09	13	<1	cold (9 C) H_20 mound
PW-SP-10	14.9	<1	not turbid
PW-SP-11	13.6	2	clear sample
PW-SP-12	13.1	3	slight turbidity
PW-SP-13	14.8	<1	slight turbidity
PW-SP-14	15	1	mod turbidity
PW-SP-15	13	7	slight turbidity
PW-SP-16	14	<1	slight turbidity

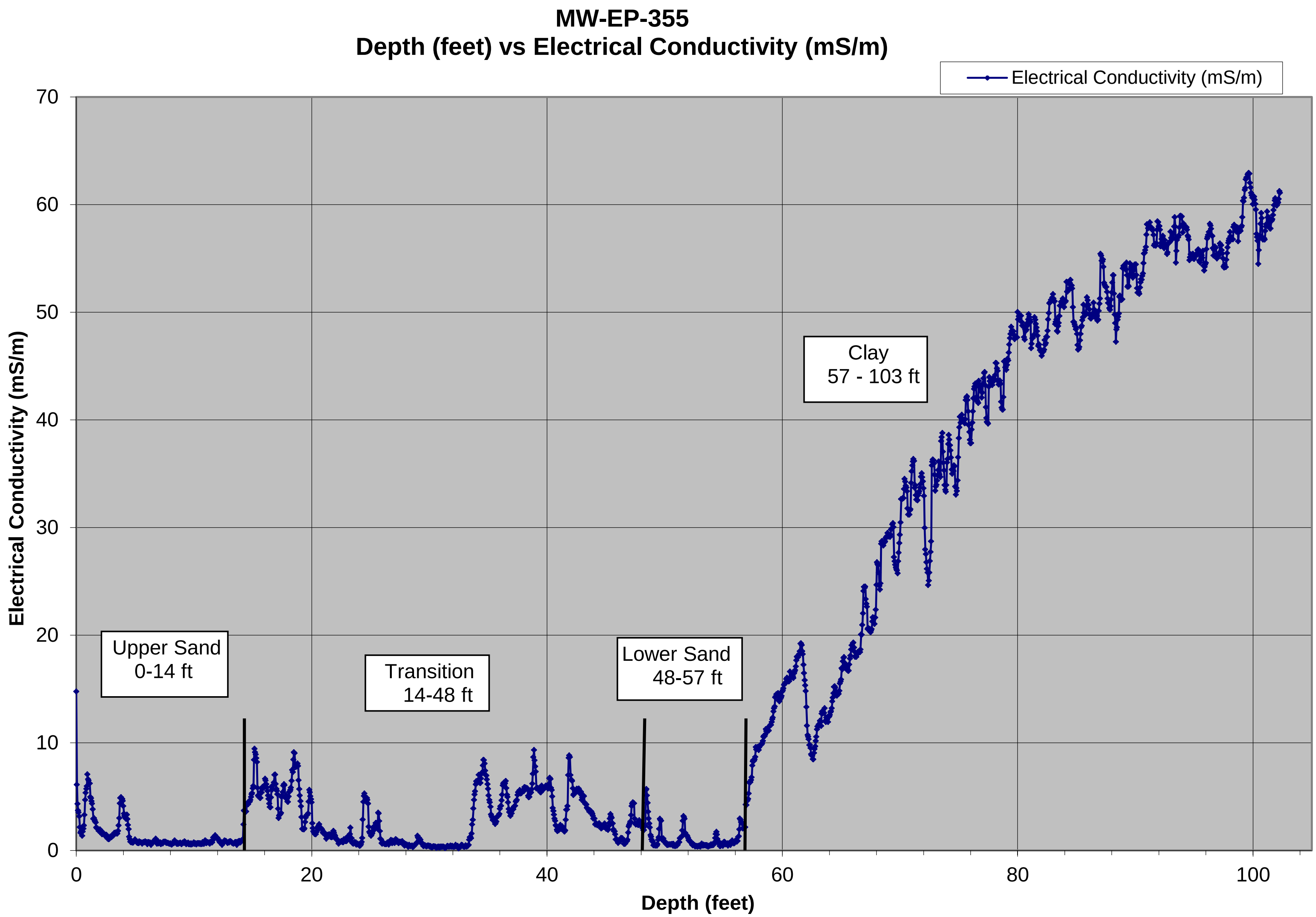
APPENDIX A-2
ELECTRIC CONDUCTIVITY GRAPHS

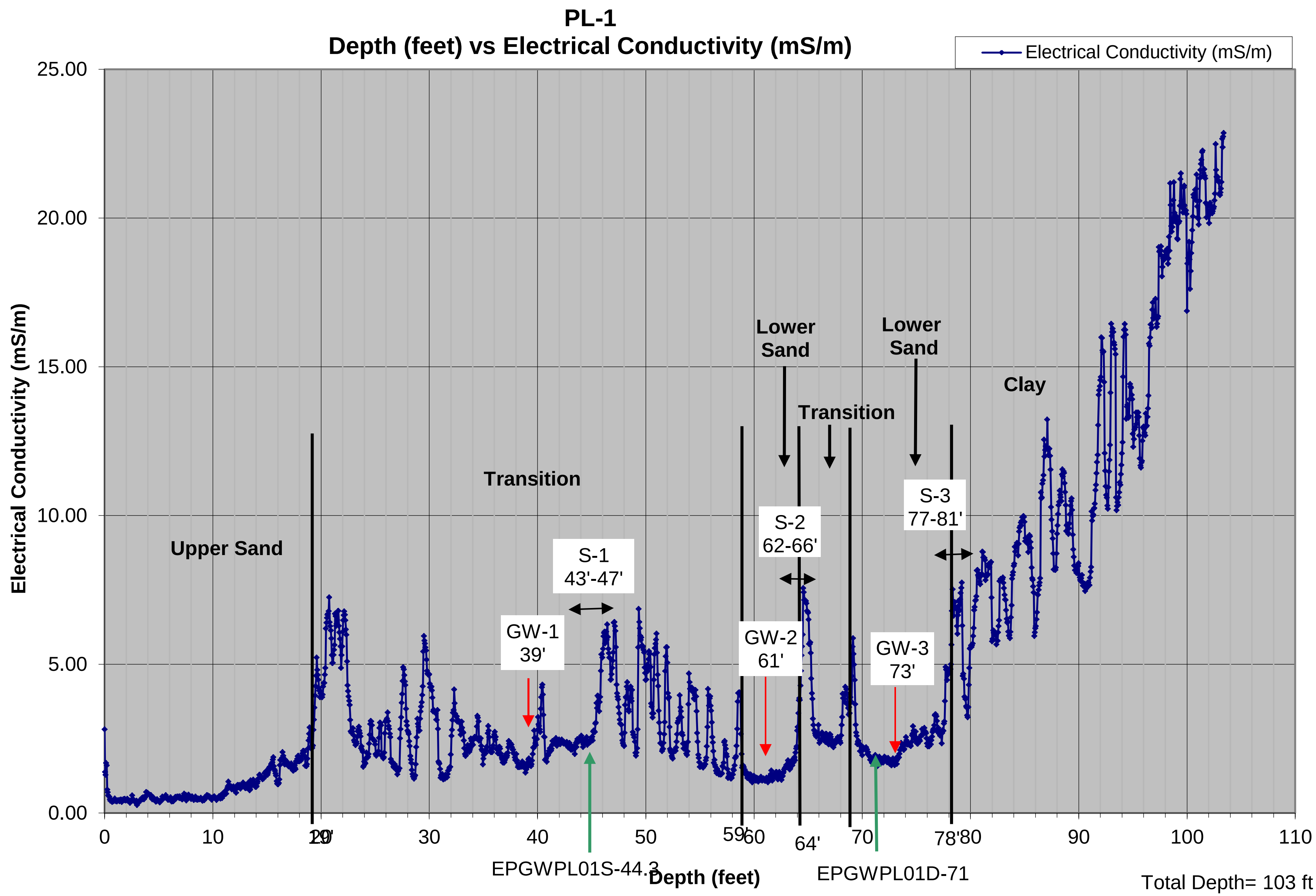

MW-EP-348
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Upper Sand
0-6 ft
Transition Unit
6-46 ft
Lower Sand
46-49 ft
Clay
49- 68 ft
0
5
10
15
20
25
30
0
10
20
30
40
50
60
70
Electrical Conductivity (mS/m)
Depth (feet)


MW-EP-349
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Sand
0 - 6.5 ft
Transition Unit
6.5 - 47 ft
Sand
47-52 ft
Interbedded
silt & clay
52-67 ft
Clay
67- 73 ft
Electrical Conductivity (mS/m)
Depth (feet)
0
5
10
15
20
25
30
35
0
10
20
30
40
50
60
70
80

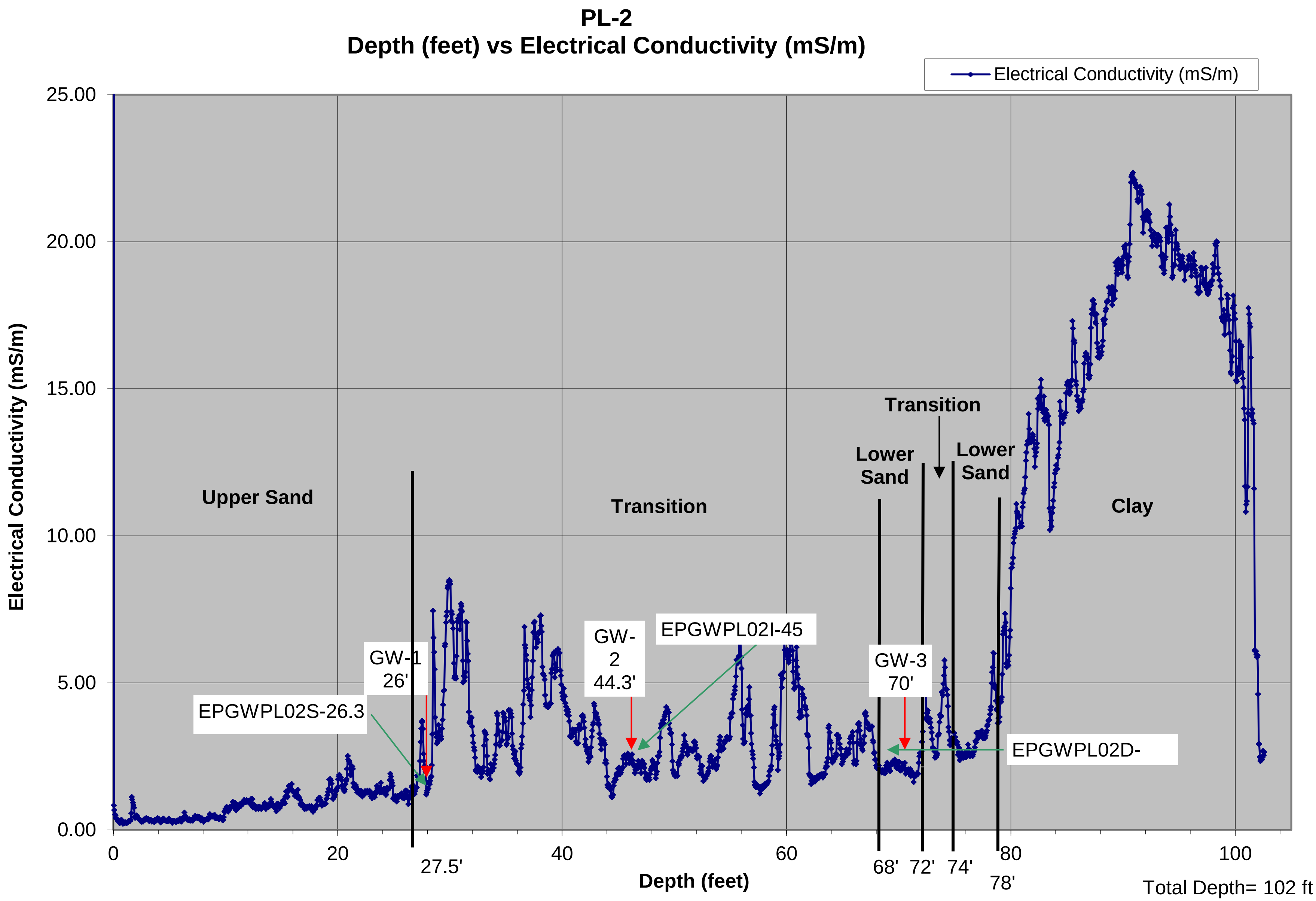

MW-EP-350
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Depth (feet)
0
5
10
15
20
25
30
35
40
45
0
10
20
30
40
50
60
70
Interbedded silt and silty sand 0-19
sand with silt interbeds 19 - 40.5 ft
sand 40.5-42.5 ft
silt/clay 42.5-52.5 ft
sand 52.5-58 ft
clay 58 - 64 ft

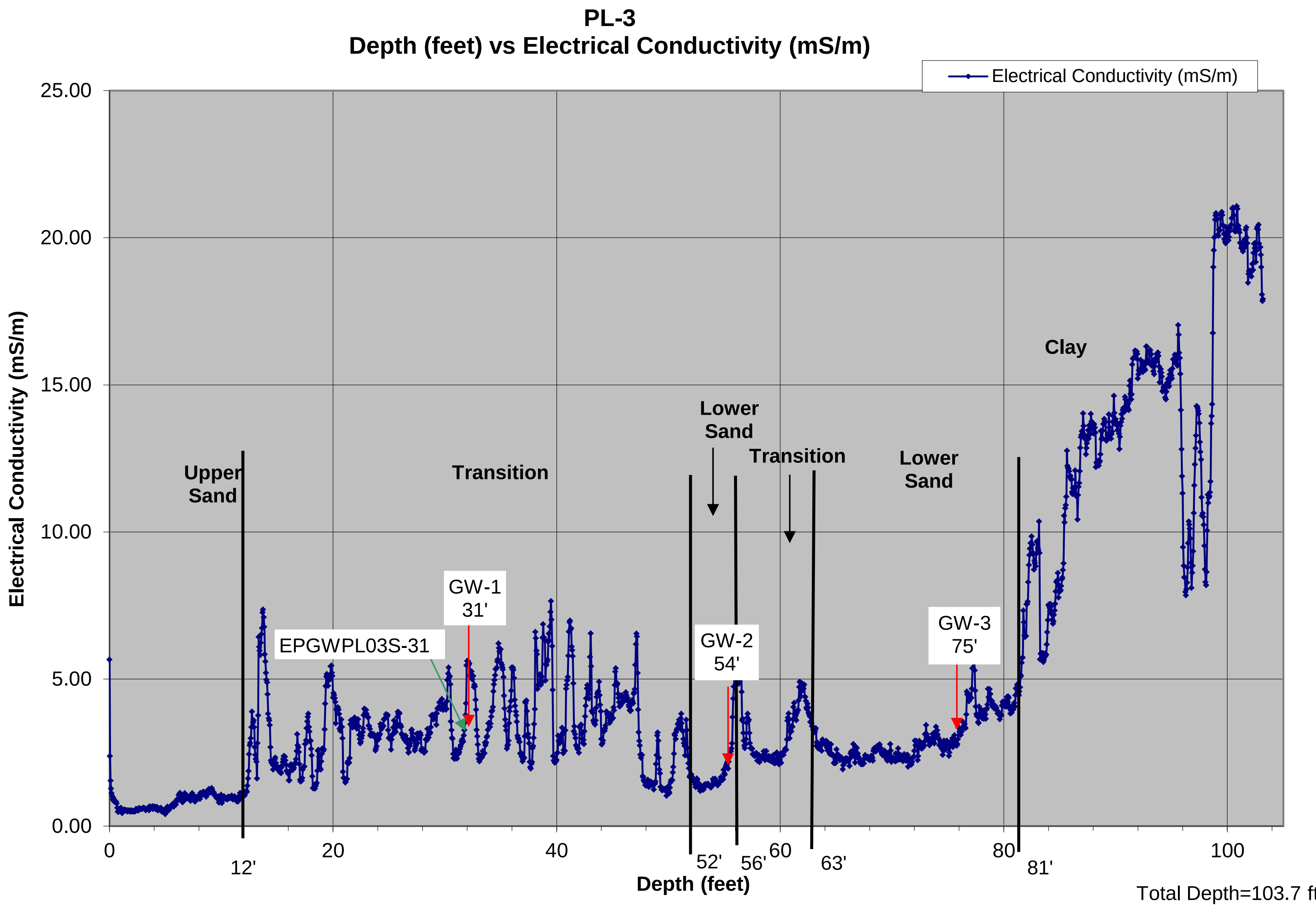

MW-EP-351
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Upper Sand
0-5 ft
Transition (Silty sand)
5-31 ft
Lower Sand
31-34 ft
Transition
34-39 ft
Clay
39- 57 ft
Electrical Conductivity (mS/m)
Depth (feet)
0
5
10
15
20
25
30
35
40
0
10
20
30
40
50
60


MW-EP-355
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Upper Sand
0-14 ft
Transition
14-48 ft
Lower Sand
48-57 ft
Clay
57 - 103 ft
Electrical Conductivity (mS/m)
Depth (feet)
0
10
20
30
40
50
60
70
0
20
40
60
80
100

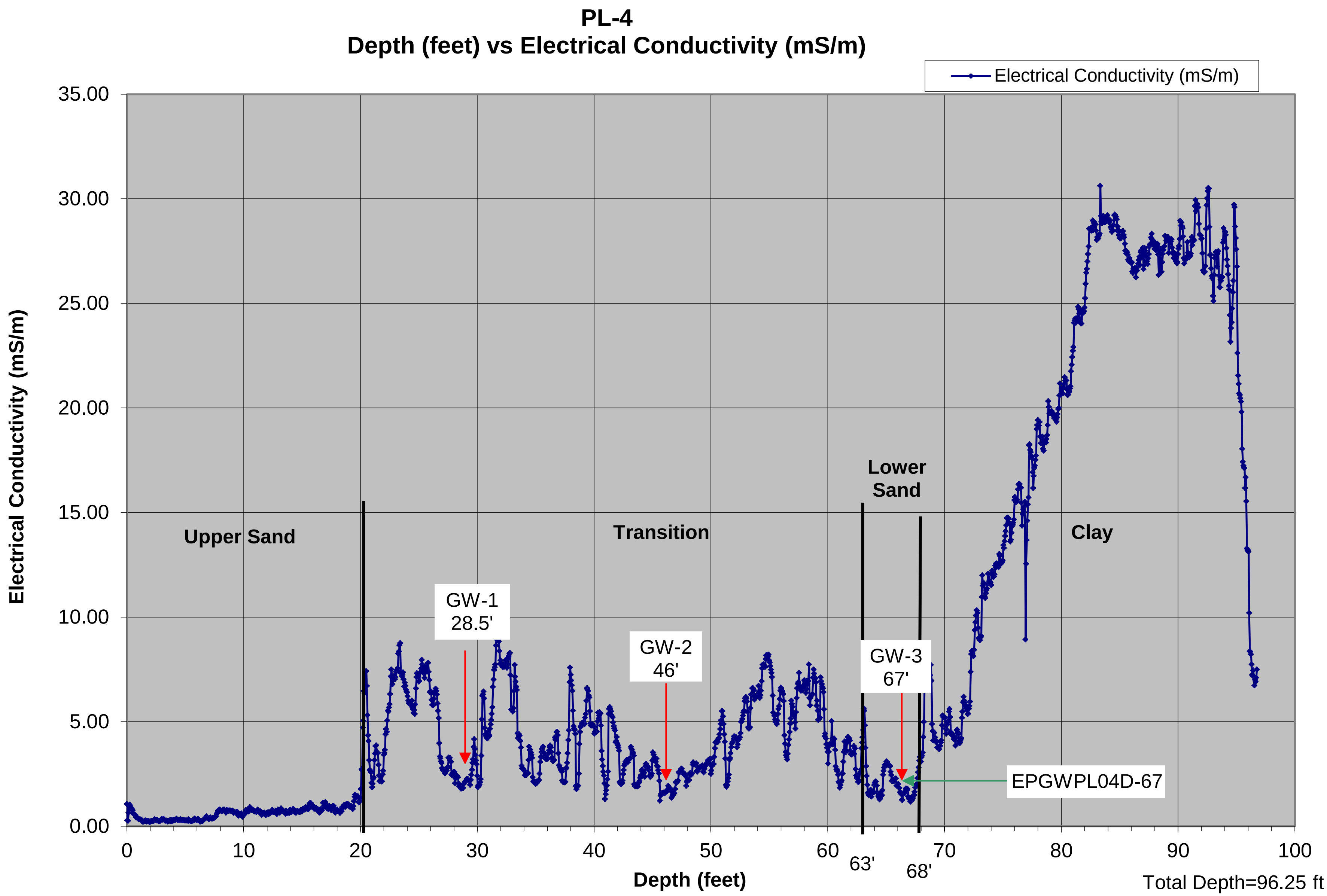


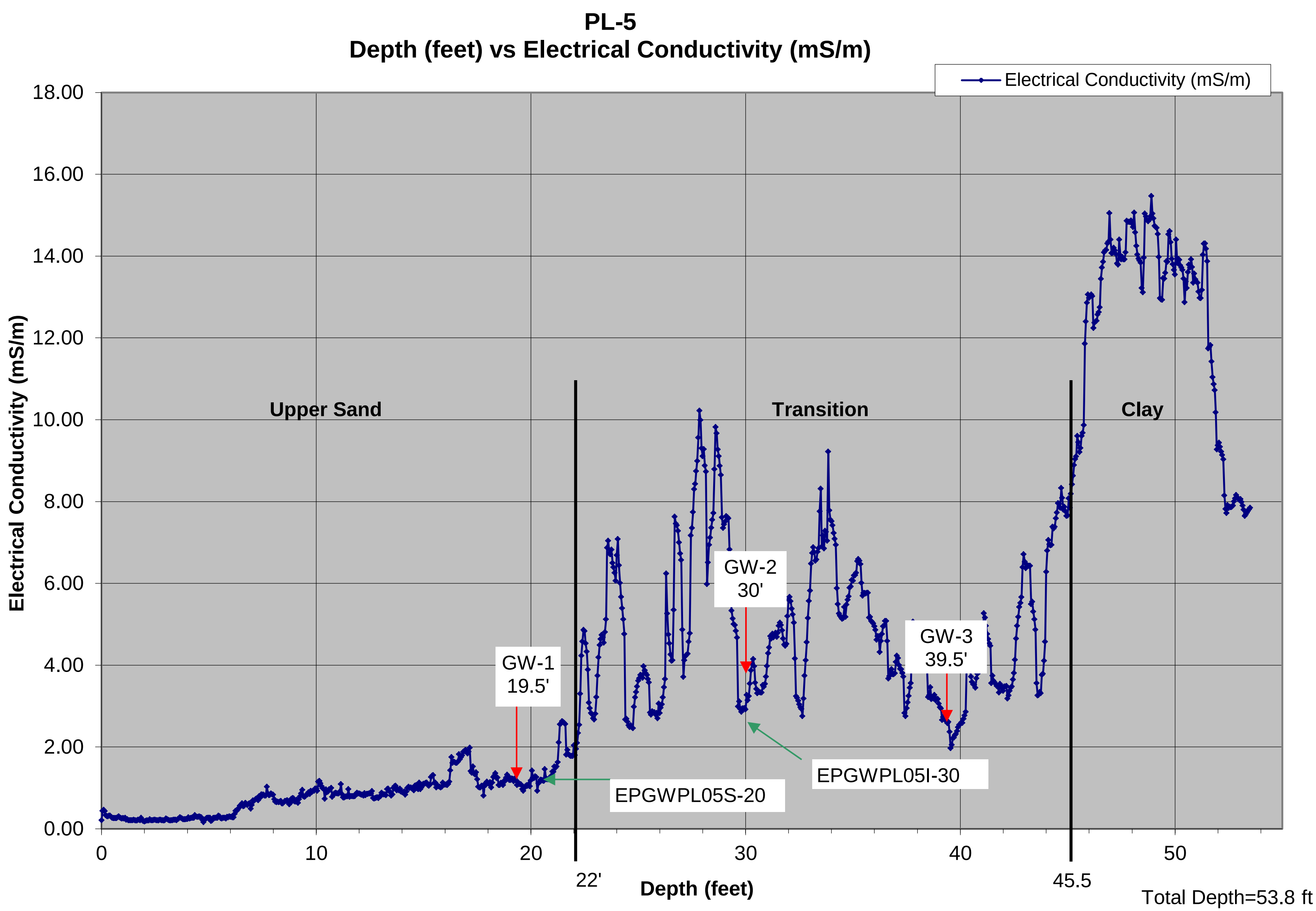
PL-1
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Depth (feet)
Upper Sand
Transition
Lower Sand
Transition
Lower Sand
Clay
S-1 43'-47'
S-2 62-66'
S-3 77-81'
GW-1 39'
GW-2 61'
GW-3 73'
19'
59'
64'
78'
EPGWPL01S-44.3
EPGWPL01D-71
Total Depth= 103 ft

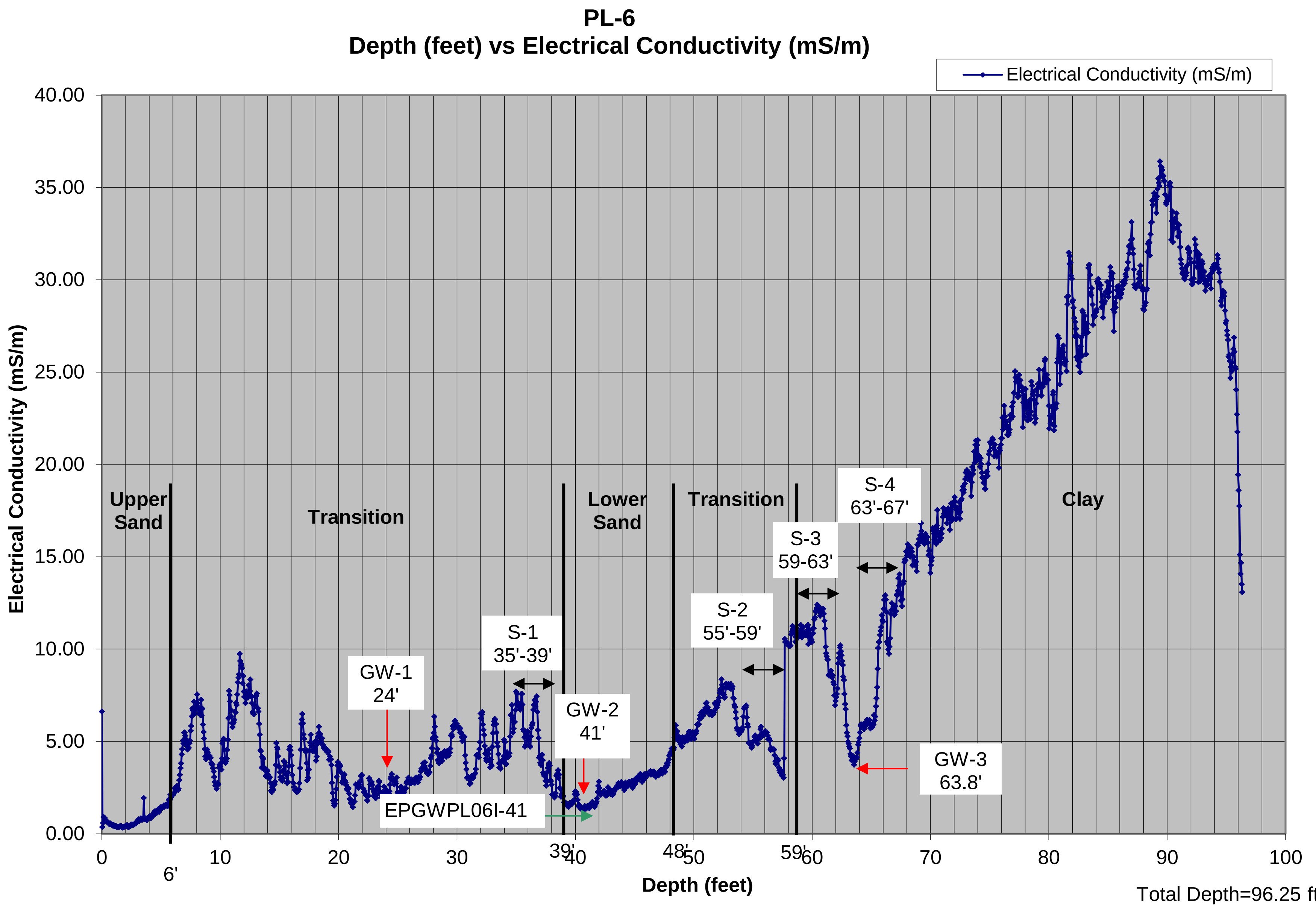

PL-2
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
25.00
20.00
15.00
10.00
5.00
0.00
Electrical Conductivity (mS/m)
0
20
40
60
80
100
Depth (feet)
Upper Sand
Transition
Lower Sand
Transition
Lower Sand
Clay
GW-1 26'
GW-2 44.3'
GW-3 70'
EPGWPL02S-26.3
EPGWPL02I-45
EPGWPL02D-
27.5'
68'
72'
74'
78'
Total Depth= 102 ft



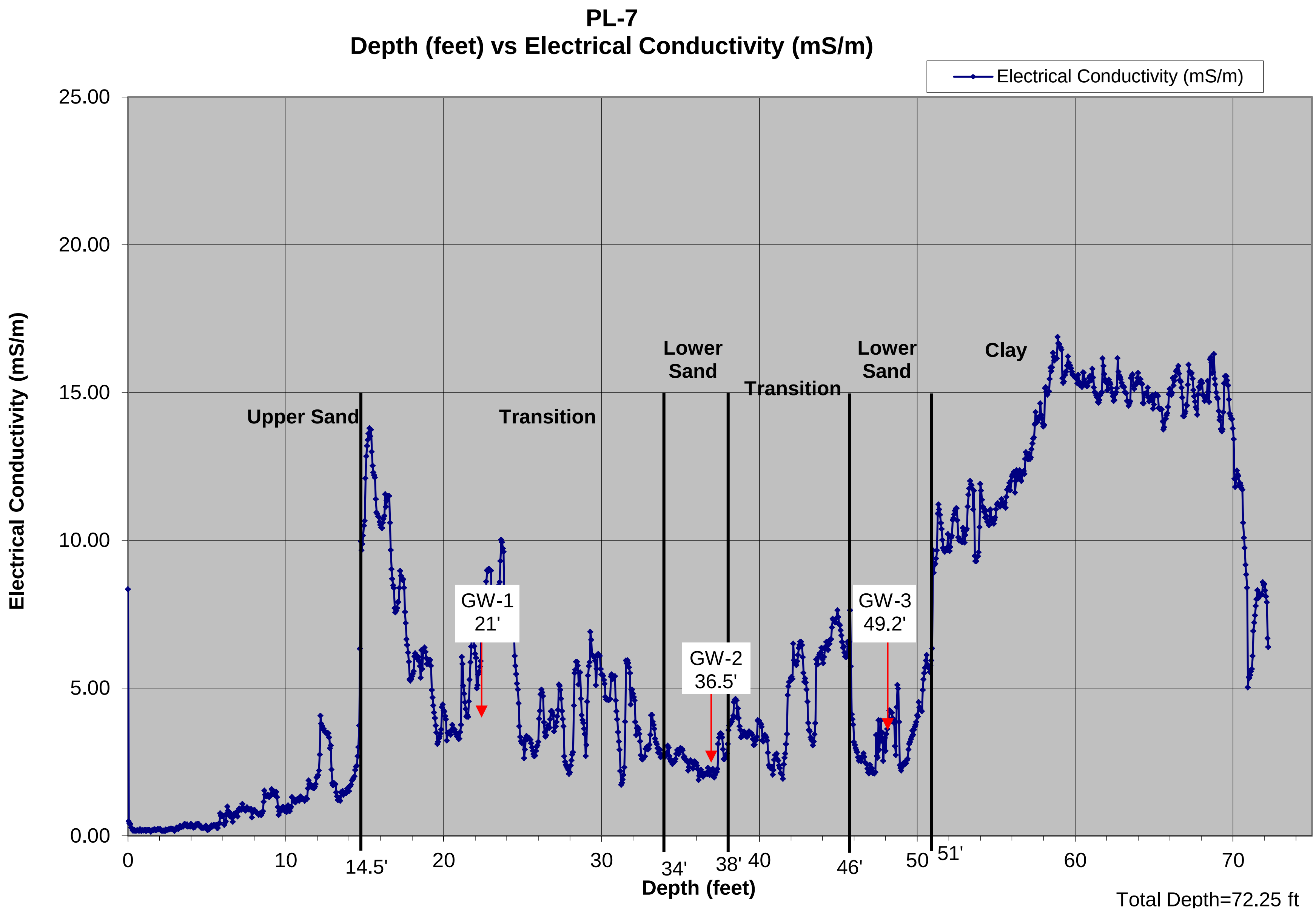
PL-3
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Depth (feet)
25.00
20.00
15.00
10.00
5.00
0.00
0
20
40
60
80
100
12'
52'
56'
63'
81'
Upper Sand
Transition
Lower Sand
Transition
Lower Sand
Clay
GW-1 31'
EPGWPL03S-31
GW-2 54'
GW-3 75'
Total Depth=103.7 ft


PL-4
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0
10
20
30
40
50
60
70
80
90
100
Depth (feet)
Upper Sand
Transition
Lower Sand
Clay
GW-1 28.5'
GW-2 46'
GW-3 67'
EPGWPL04D-67
63'
68'
Total Depth=96.25 ft

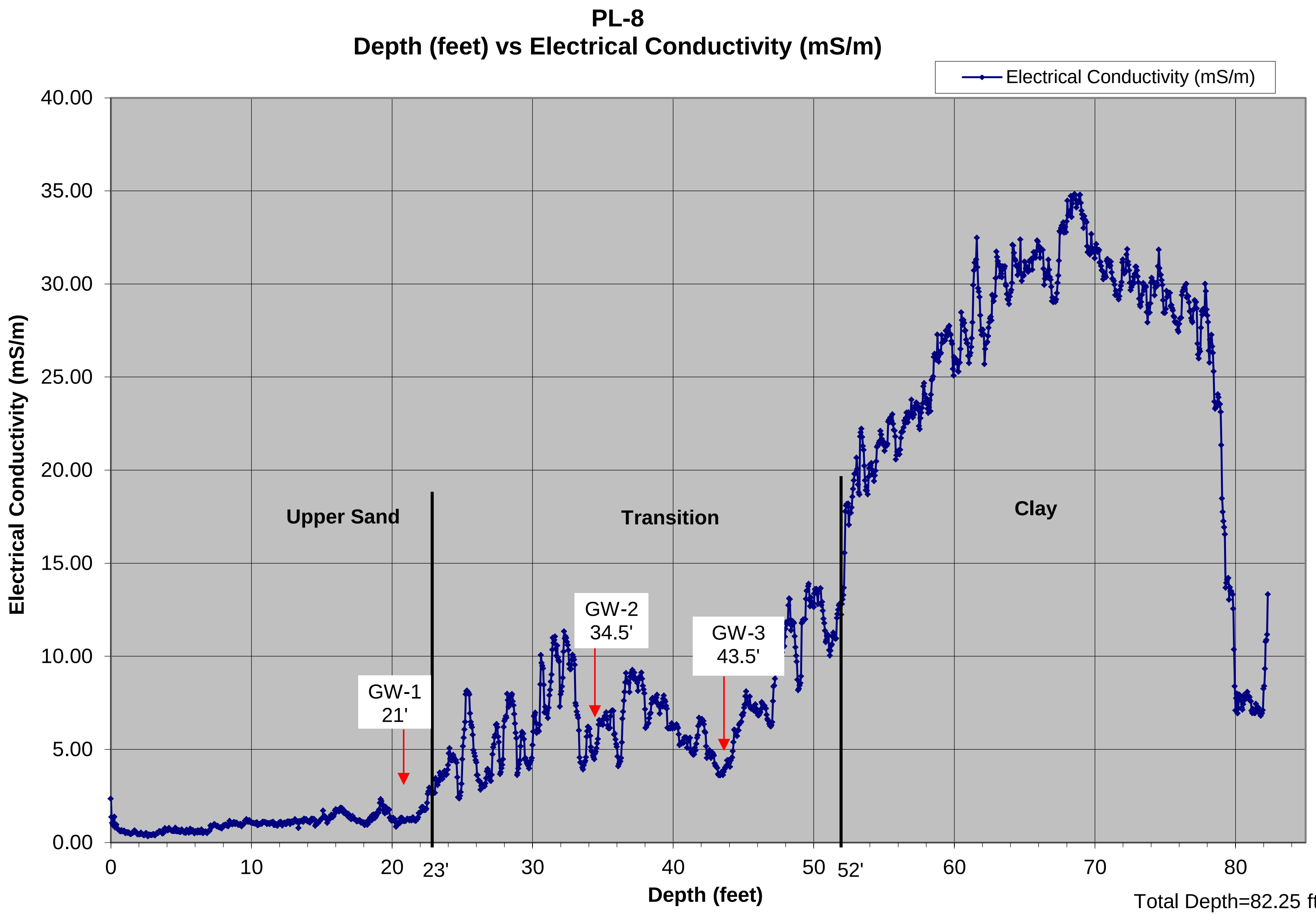

PL-5
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Electrical Conductivity (mS/m)
Upper Sand
Transition
Clay
GW-1
19.5'
GW-2
30'
GW-3
39.5'
EPGWPL05S-20
EPGWPL05I-30
0
10
20
30
40
50
22'
45.5
Depth (feet)
Total Depth=53.8 ft

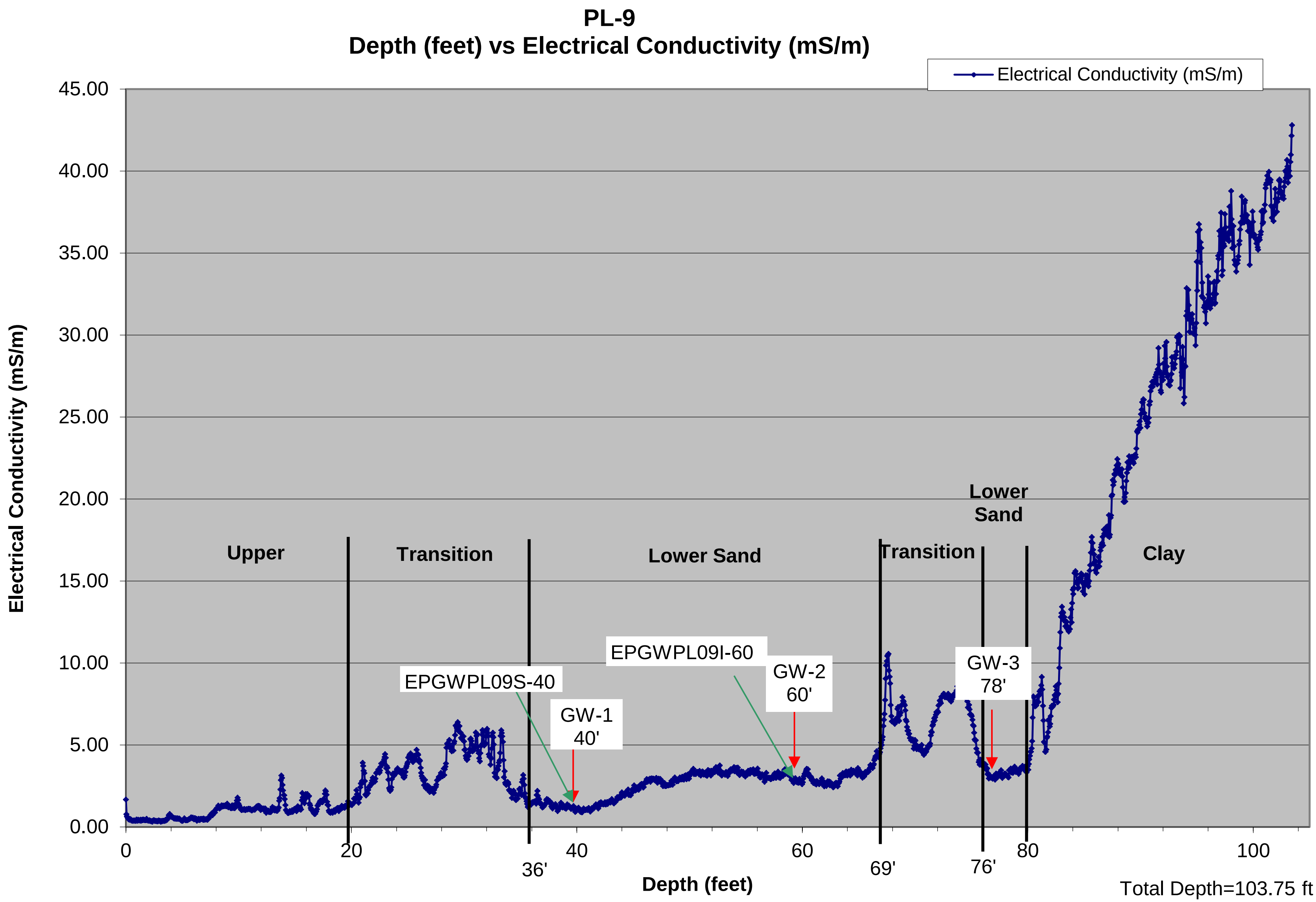


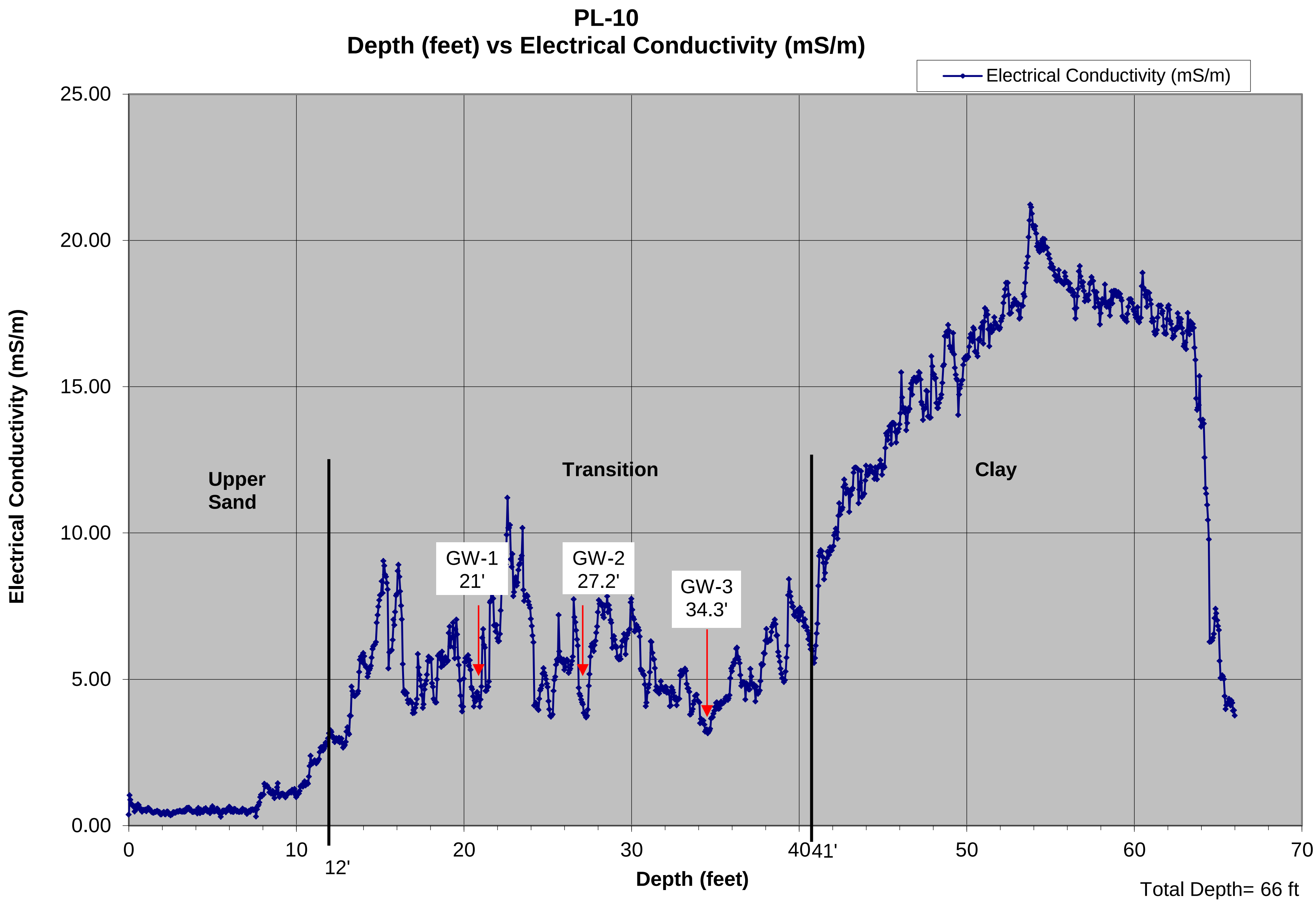
PL-6
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Depth (feet)
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0
10
20
30
40
50
60
70
80
90
100
6'
39'
48'
59'
Upper Sand
Transition
Lower Sand
Transition
Clay
GW-1 24'
GW-2 41'
GW-3 63.8'
S-1 35'-39'
S-2 55'-59'
S-3 59-63'
S-4 63'-67'
EPGWPL06I-41
Total Depth=96.25 ft

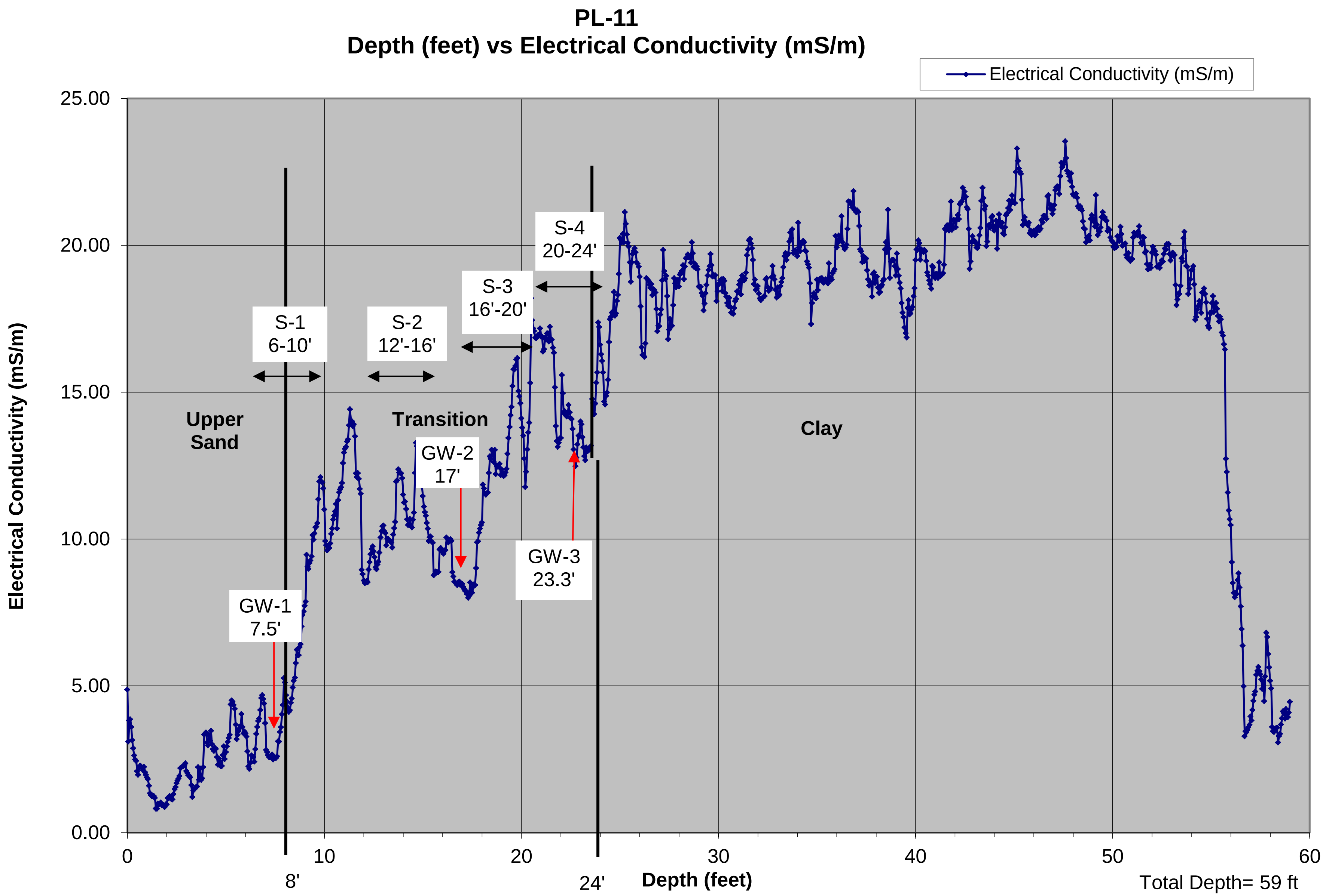


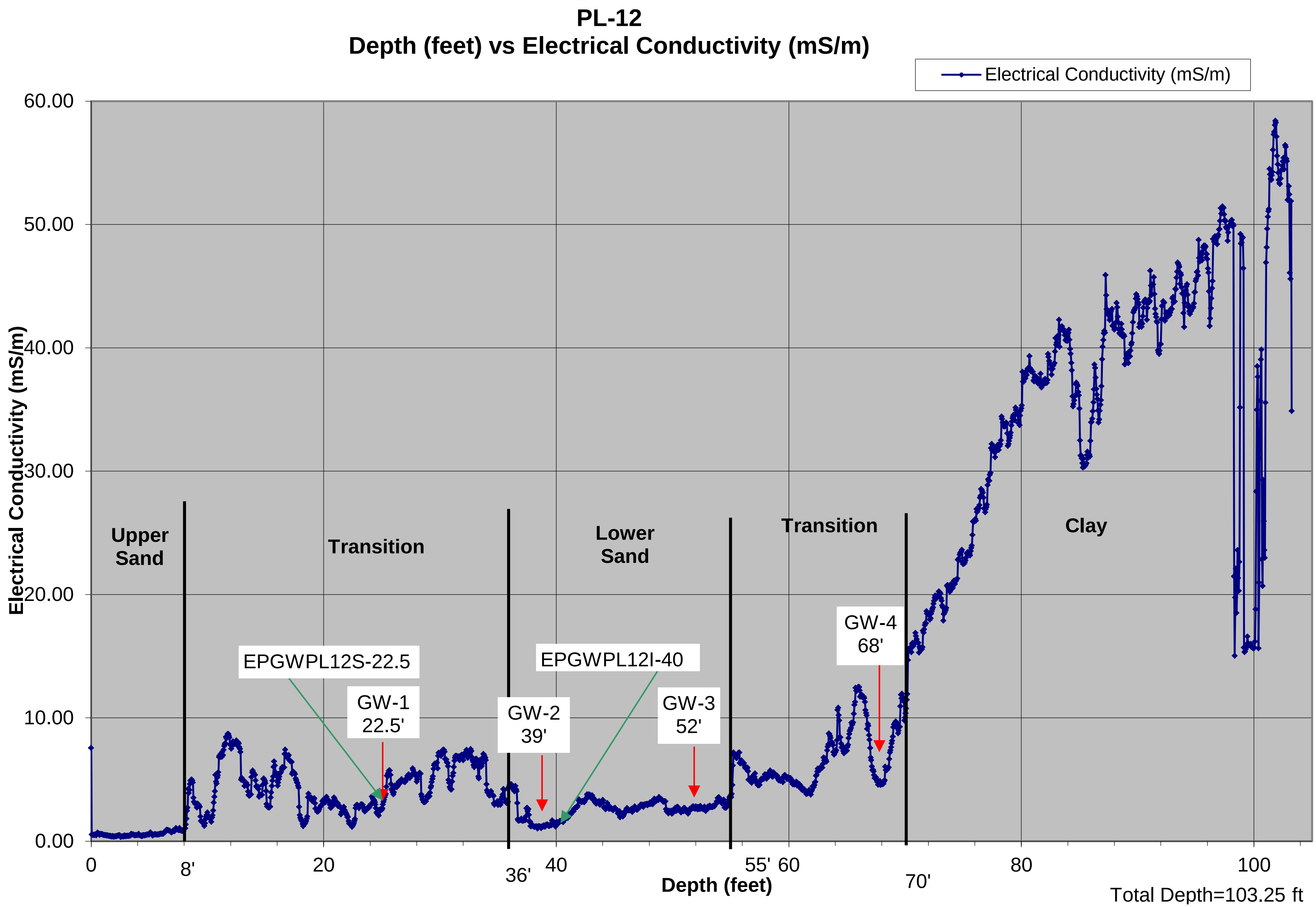
PL-7
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
25.00
20.00
15.00
10.00
5.00
0.00
Electrical Conductivity (mS/m)
Upper Sand
Transition
Lower Sand
Transition
Lower Sand
Clay
GW-1 21'
GW-2 36.5'
GW-3 49.2'
0
10
14.5'
20
30
34'
38'
40
46'
50
51'
60
70
Depth (feet)
Total Depth=72.25 ft


PL-8
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Electrical Conductivity (mS/m)
Upper Sand
Transition
Clay
GW-1
21'
GW-2
34.5'
GW-3
43.5'
0
10
20
23'
30
40
50
52'
60
70
80
Depth (feet)
Total Depth=82.25 ft

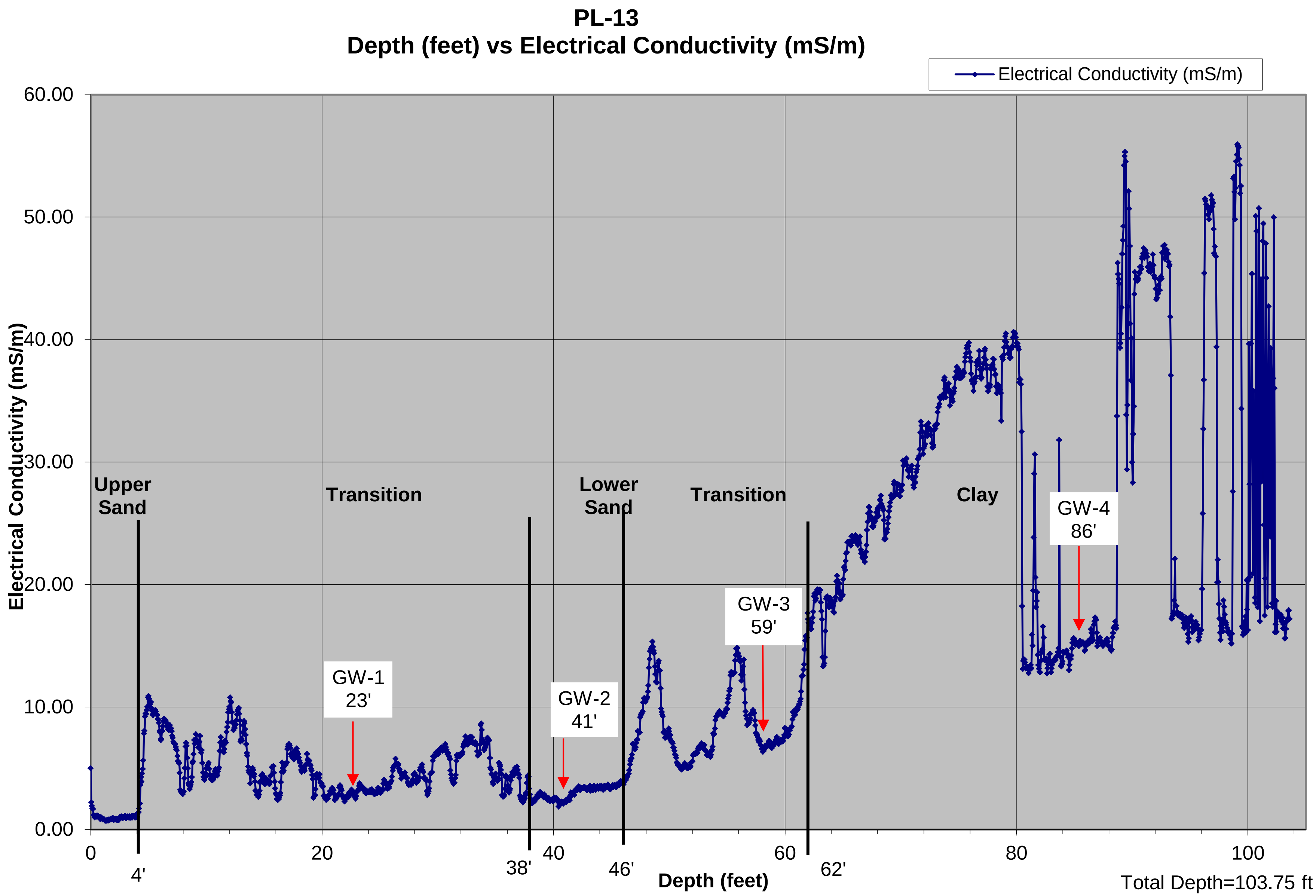

PL-9
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Upper
Transition
Lower Sand
Transition
Lower Sand
Clay
EPGWPL09S-40
GW-1 40'
EPGWPL09I-60
GW-2 60'
GW-3 78'
0
20
40
60
80
100
36'
69'
76'
Depth (feet)
Total Depth=103.75 ft

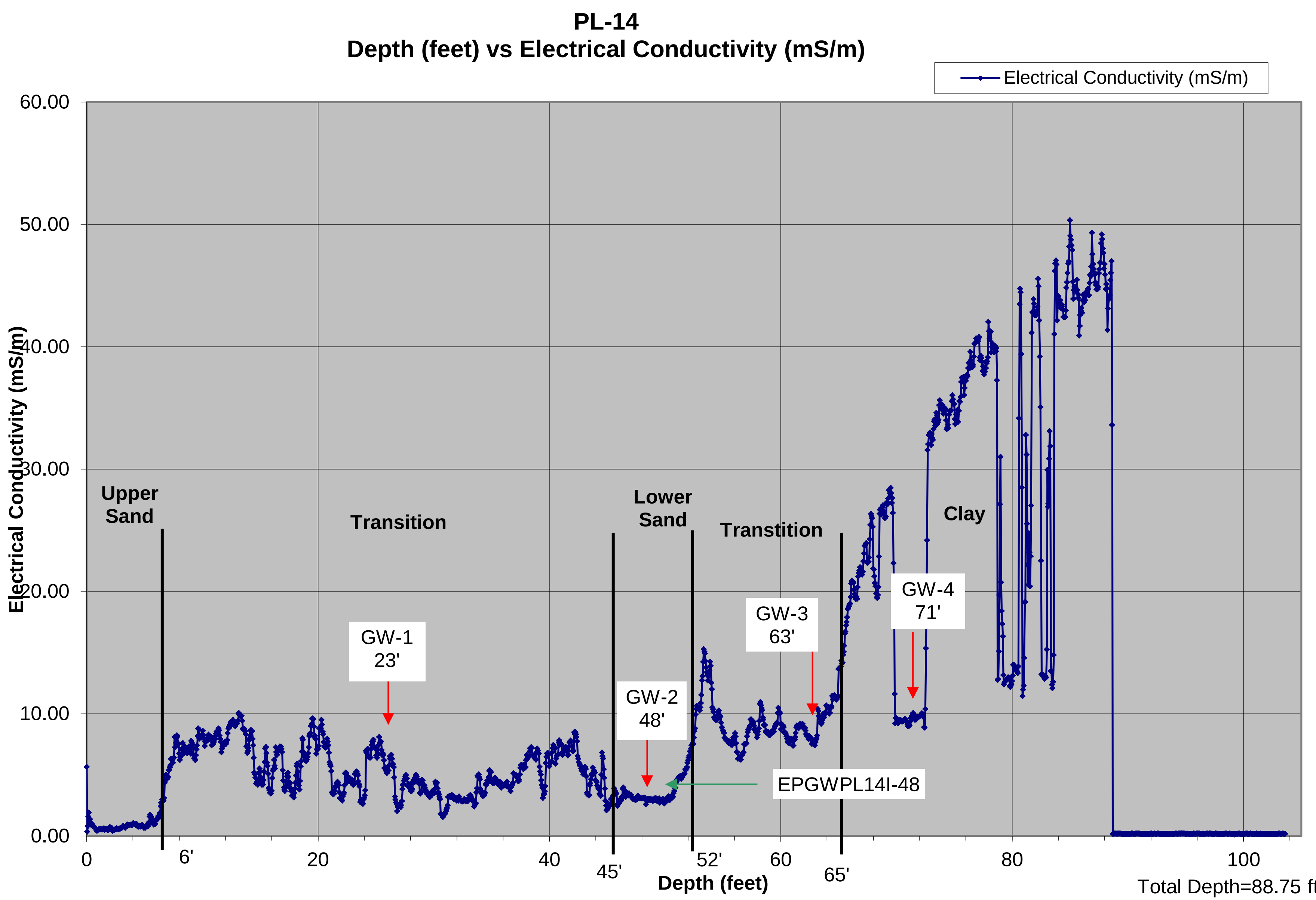

PL-10
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
25.00
20.00
15.00
10.00
5.00
0.00
Electrical Conductivity (mS/m)
Upper
Sand
Transition
Clay
GW-1
21'
GW-2
27.2'
GW-3
34.3'
0
10
12'
20
30
40
41'
50
60
70
Depth (feet)
Total Depth= 66 ft

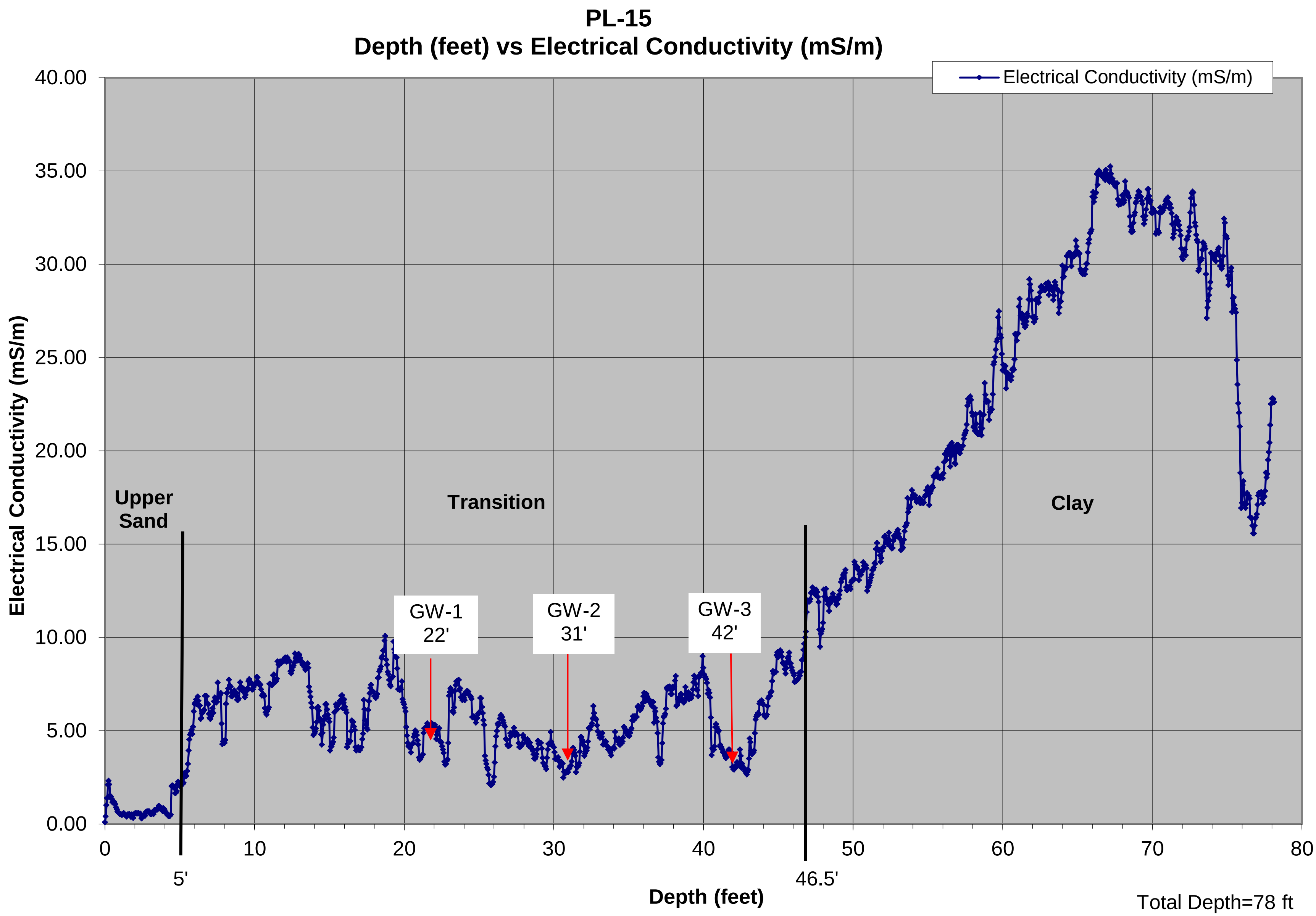

PL-11
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
25.00
20.00
15.00
10.00
5.00
0.00
Electrical Conductivity (mS/m)
0
10
20
30
40
50
60
8'
24'
Depth (feet)
Total Depth= 59 ft
Upper
Sand
Transition
Clay
S-1
6-10'
S-2
12'-16'
S-3
16'-20'
S-4
20-24'
GW-1
7.5'
GW-2
17'
GW-3
23.3'



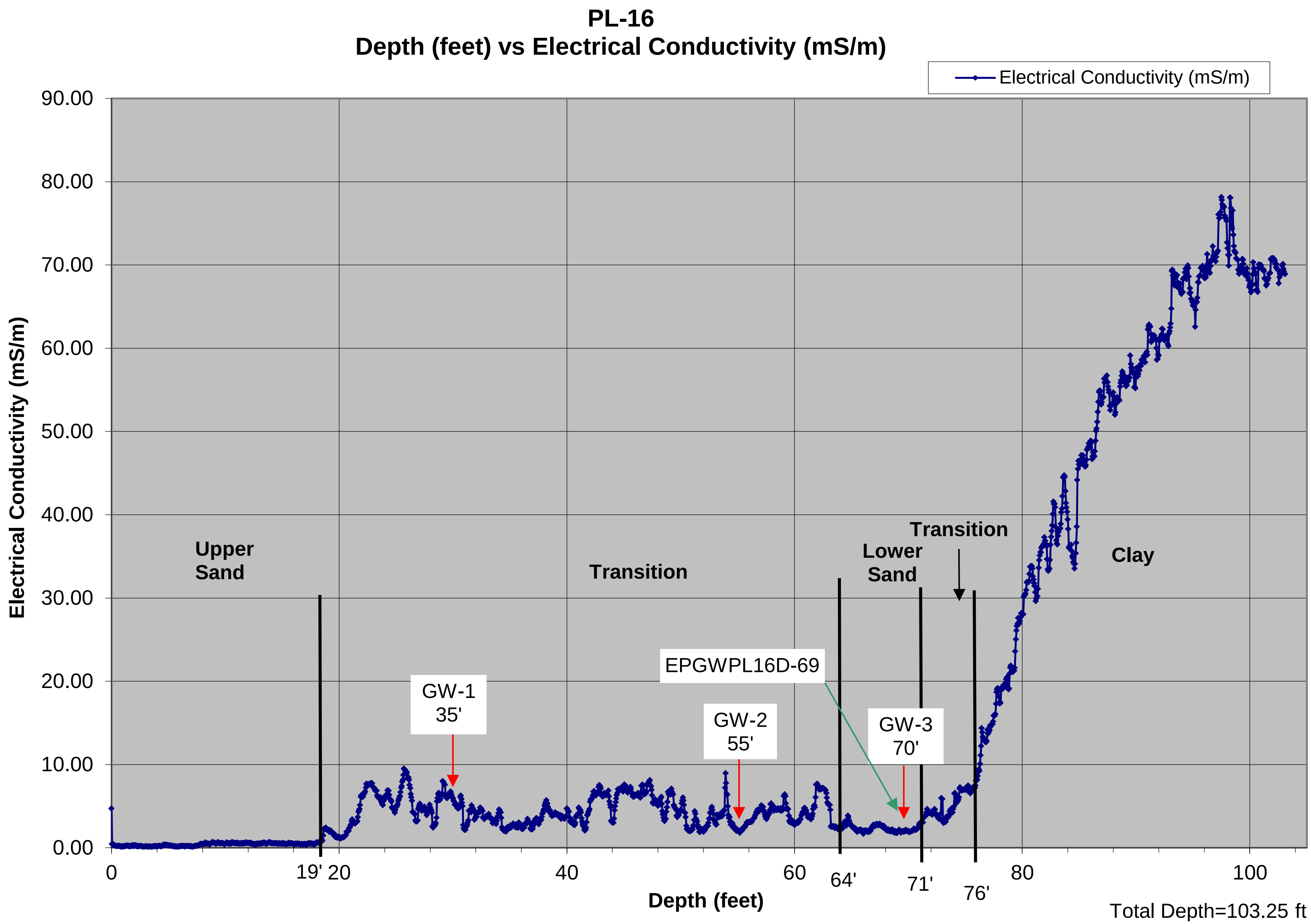
PL-12
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Electrical Conductivity (mS/m)
Upper Sand
Transition
Lower Sand
Transition
Clay
EPGWPL12S-22.5
GW-1 22.5'
GW-2 39'
EPGWPL12I-40
GW-3 52'
GW-4 68'
0
8'
20
36'
40
55'
60
70'
80
100
Depth (feet)
Total Depth=103.25 ft


PL-13
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Electrical Conductivity (mS/m)
Upper Sand
Transition
Lower Sand
Transition
Clay
GW-1 23'
GW-2 41'
GW-3 59'
GW-4 86'
0
4'
20
38'
40
46'
60
62'
80
100
Depth (feet)
Total Depth=103.75 ft


PL-14
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Electrical Conductivity (mS/m)
Upper Sand
Transition
Lower Sand
Transtition
Clay
GW-1 23'
GW-2 48'
GW-3 63'
GW-4 71'
EPGWPL14I-48
0
6'
20
40
45'
52'
60
65'
80
100
Depth (feet)
Total Depth=88.75 ft

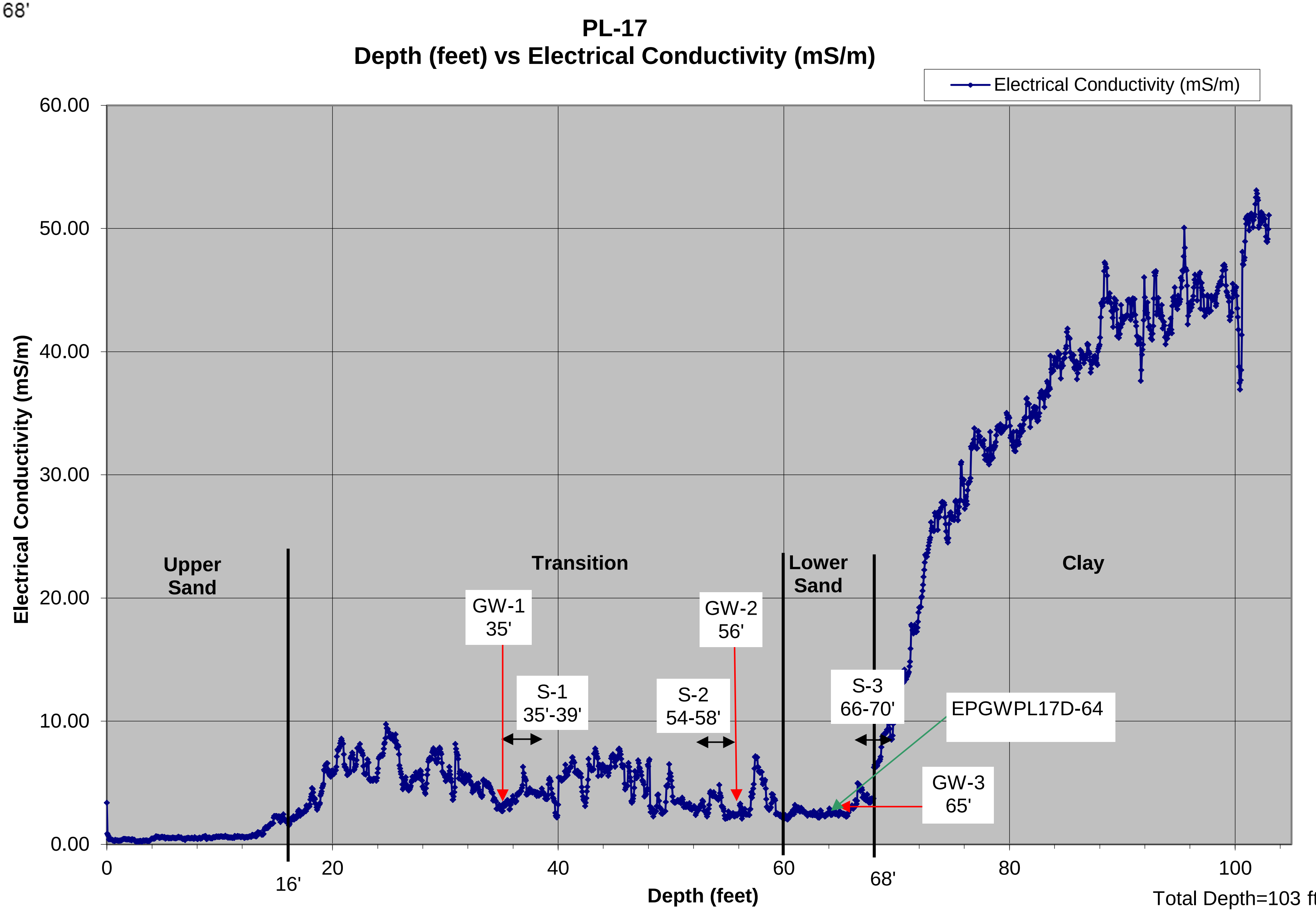


PL-15
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0
10
20
30
40
50
60
70
80
Upper Sand
Transition
Clay
GW-1 22'
GW-2 31'
GW-3 42'
5'
46.5'
Depth (feet)
Total Depth=78 ft

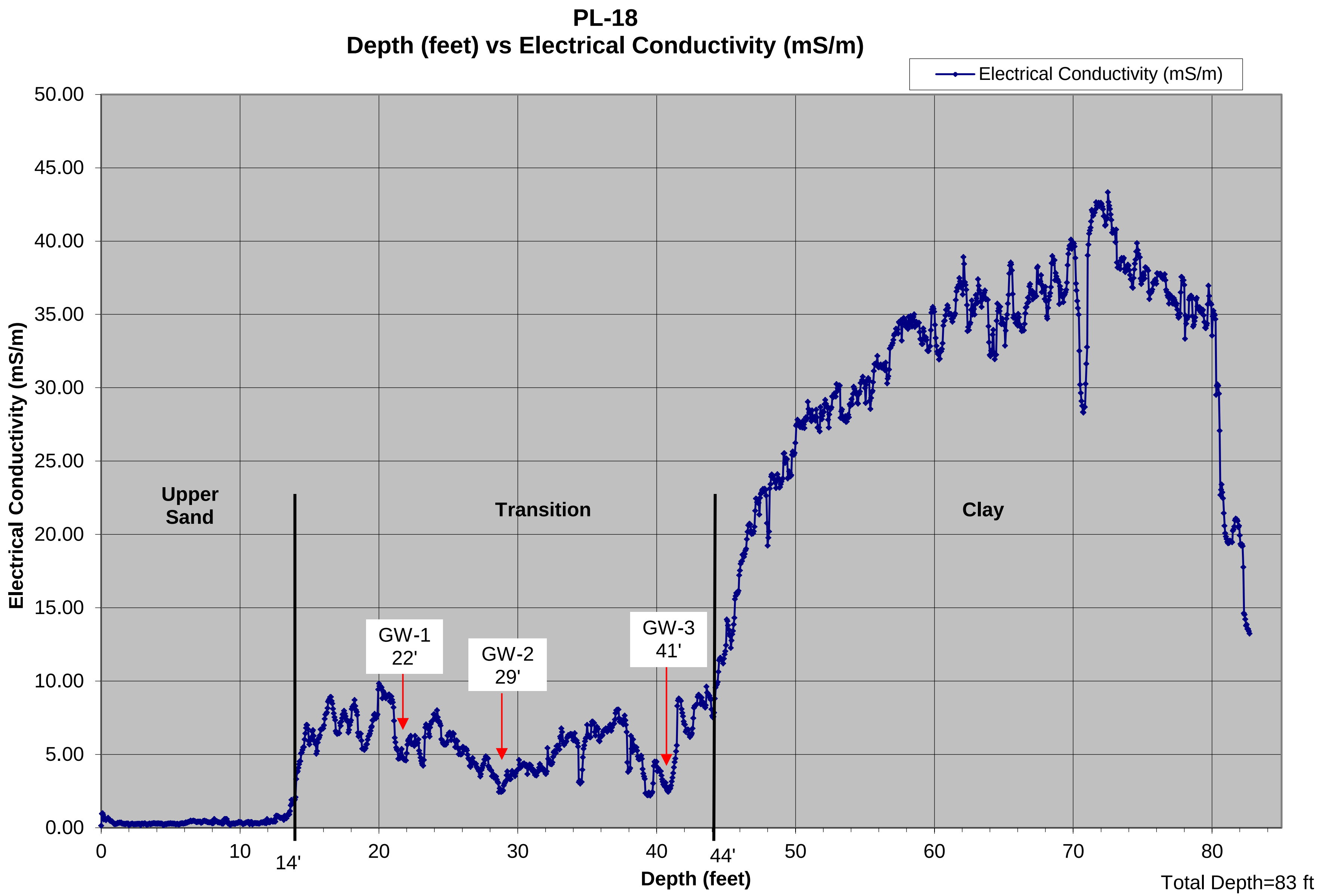


PL-16
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Electrical Conductivity (mS/m)
Upper Sand
Transition
Lower Sand
Transition
Clay
GW-1 35'
GW-2 55'
GW-3 70'
EPGWPL16D-69
0
19' 20
40
60
64'
71'
76'
80
100
Depth (feet)
Total Depth=103.25 ft

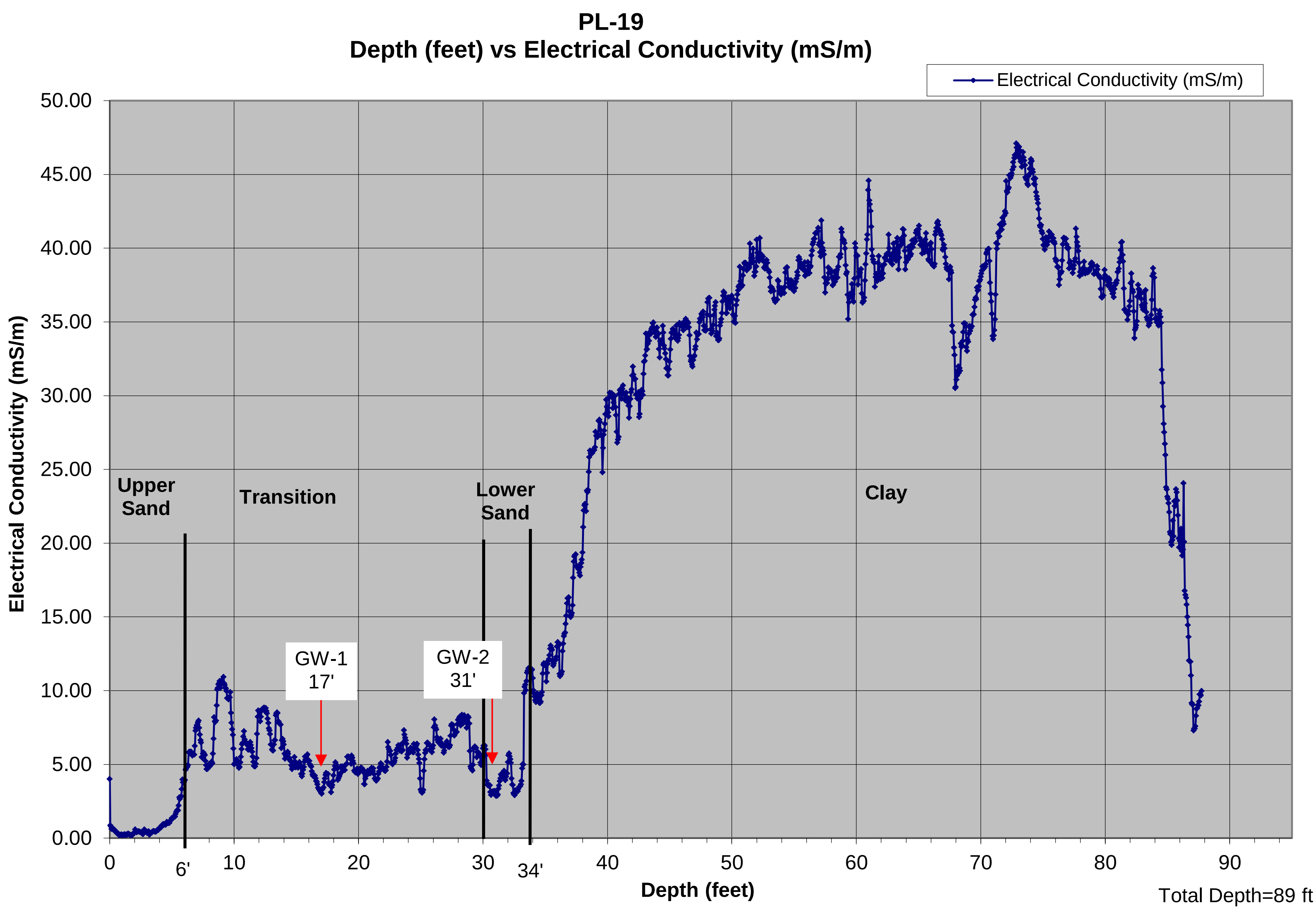
68'

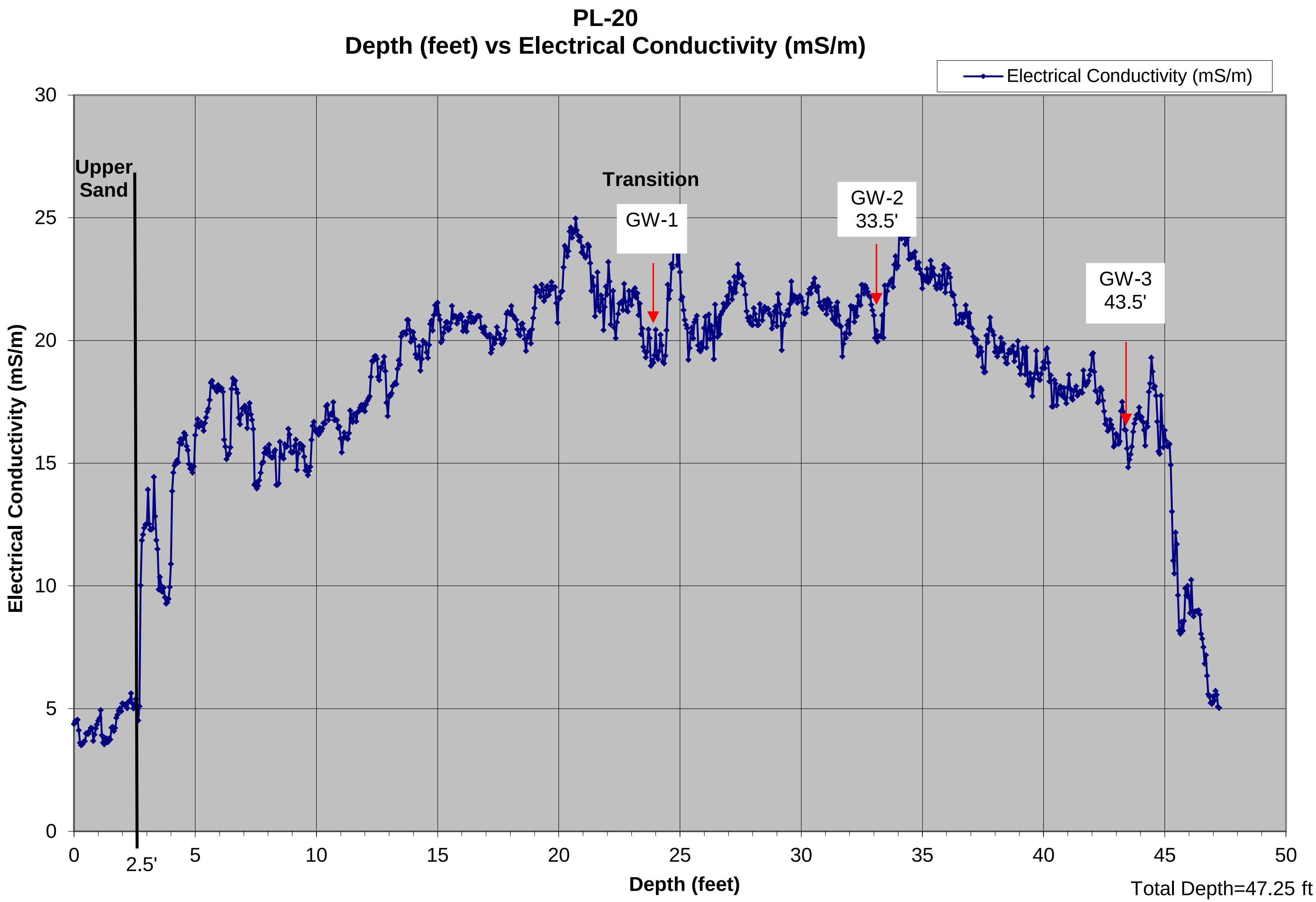


PL-17
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Electrical Conductivity (mS/m)
Upper Sand
Transition
Lower Sand
Clay
GW-1 35'
S-1 35'-39'
S-2 54-58'
GW-2 56'
S-3 66-70'
EPGWPL17D-64
GW-3 65'
0
20
40
60
80
100
16'
68'
Depth (feet)
Total Depth=103 ft

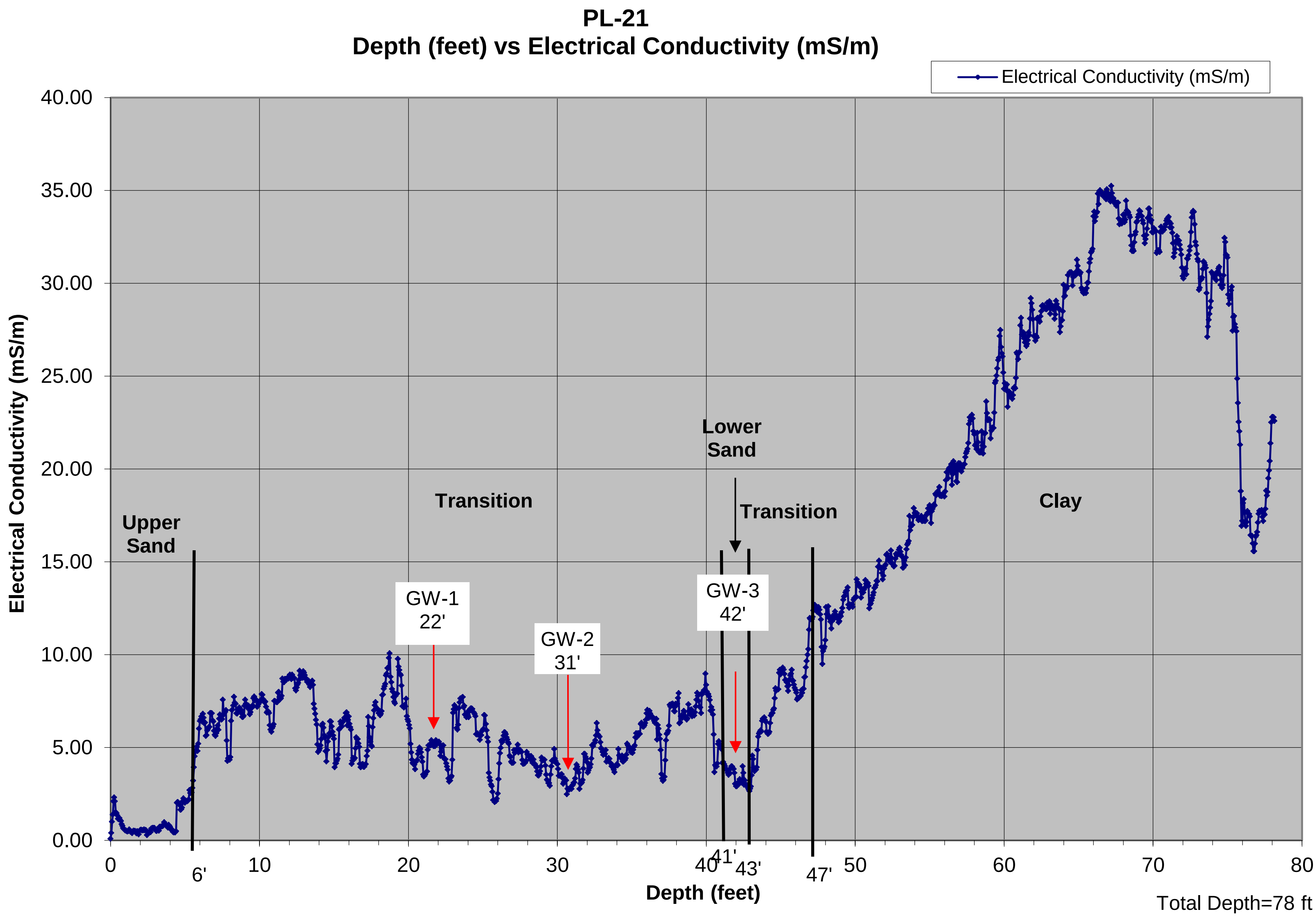


PL-18
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Electrical Conductivity (mS/m)
Upper Sand
Transition
Clay
GW-1 22'
GW-2 29'
GW-3 41'
0
10
14'
20
30
40
44'
50
60
70
80
Depth (feet)
Total Depth=83 ft

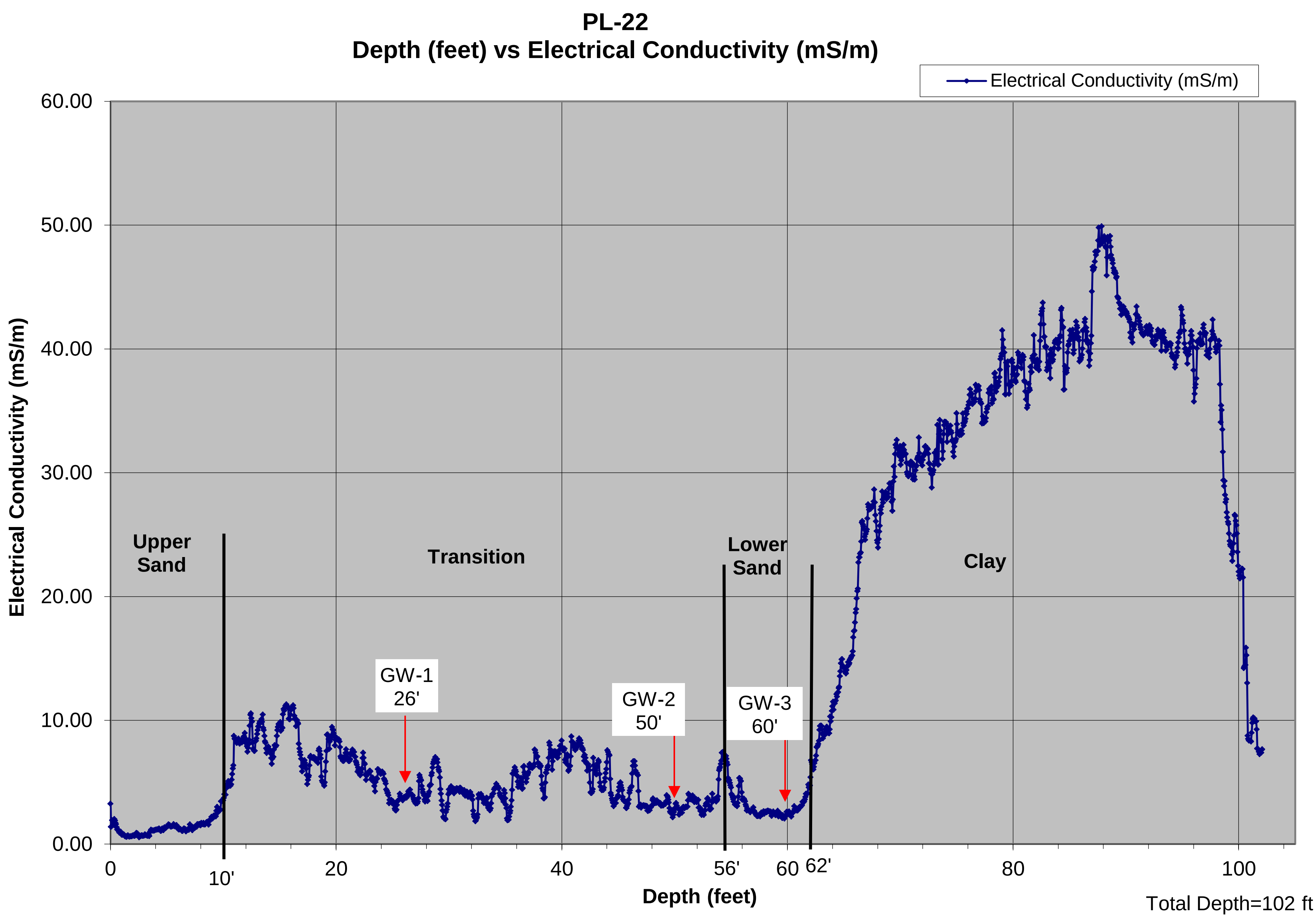

PL-19
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Electrical Conductivity (mS/m)
Upper Sand
Transition
Lower Sand
Clay
GW-1 17'
GW-2 31'
0
6'
10
20
30
34'
40
50
60
70
80
90
Depth (feet)
Total Depth=89 ft

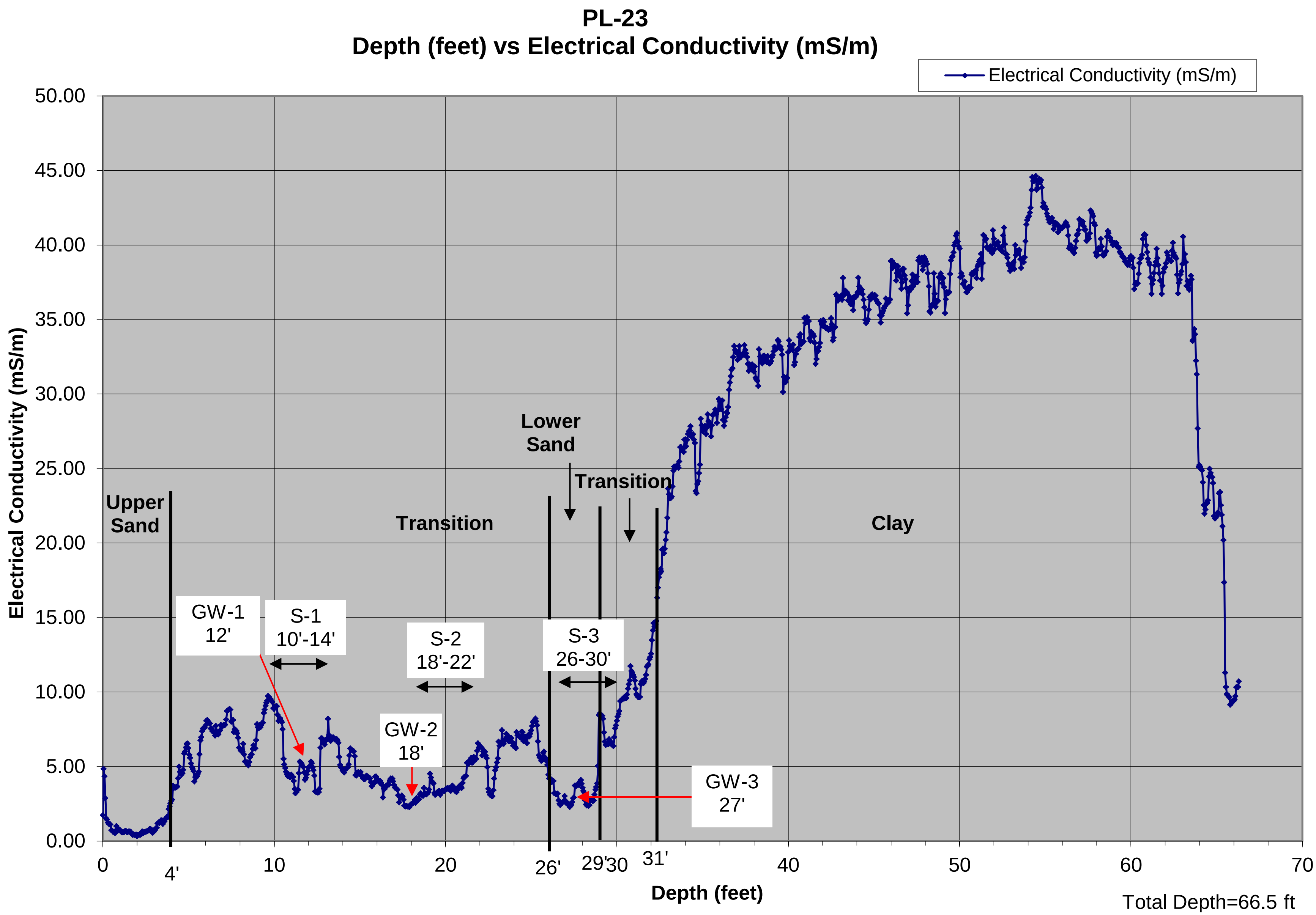


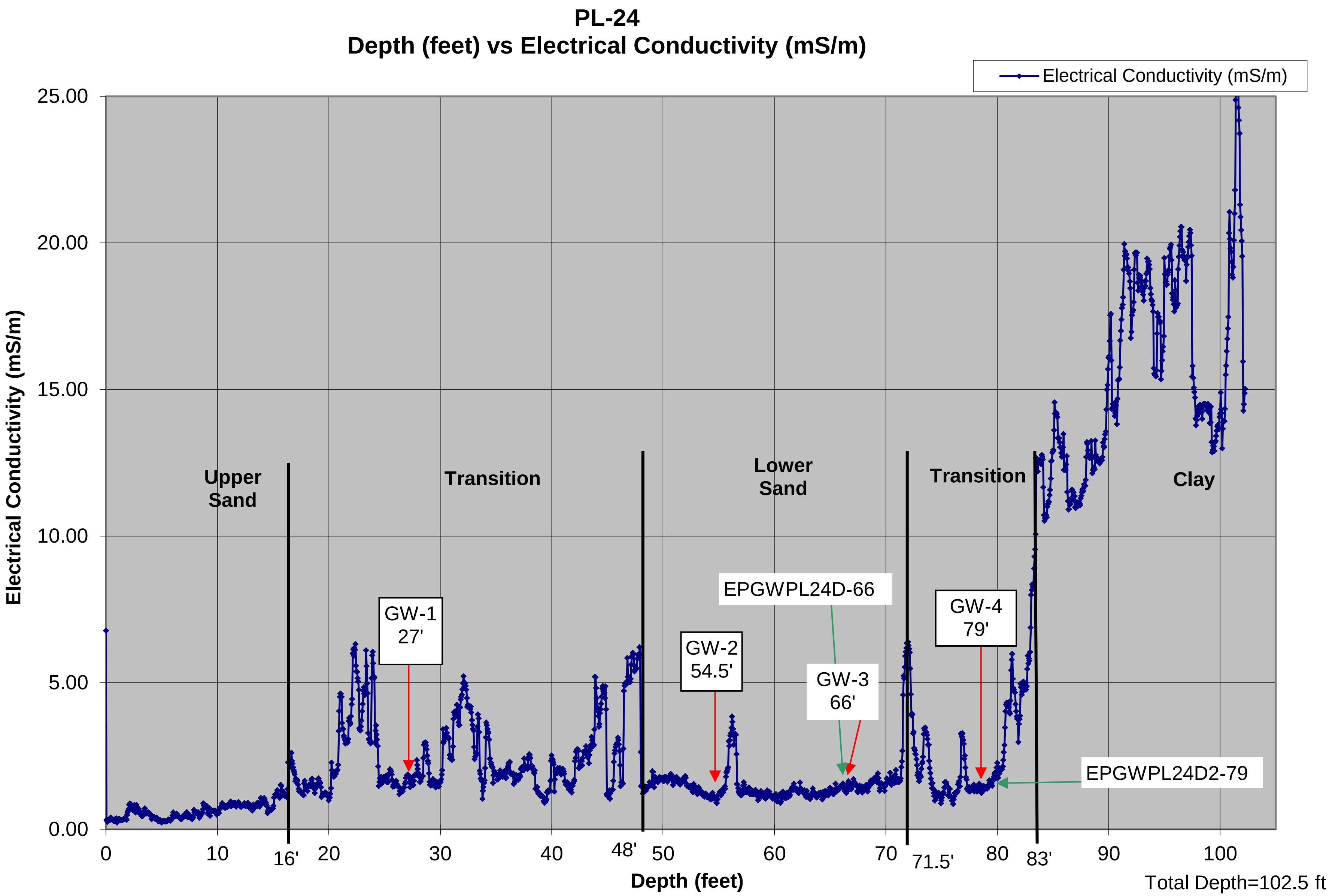
PL-20
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Upper Sand
Transition
GW-1
GW-2 33.5'
GW-3 43.5'
Electrical Conductivity (mS/m)
Depth (feet)
2.5'
Total Depth=47.25 ft
0
5
10
15
20
25
30
35
40
45
50



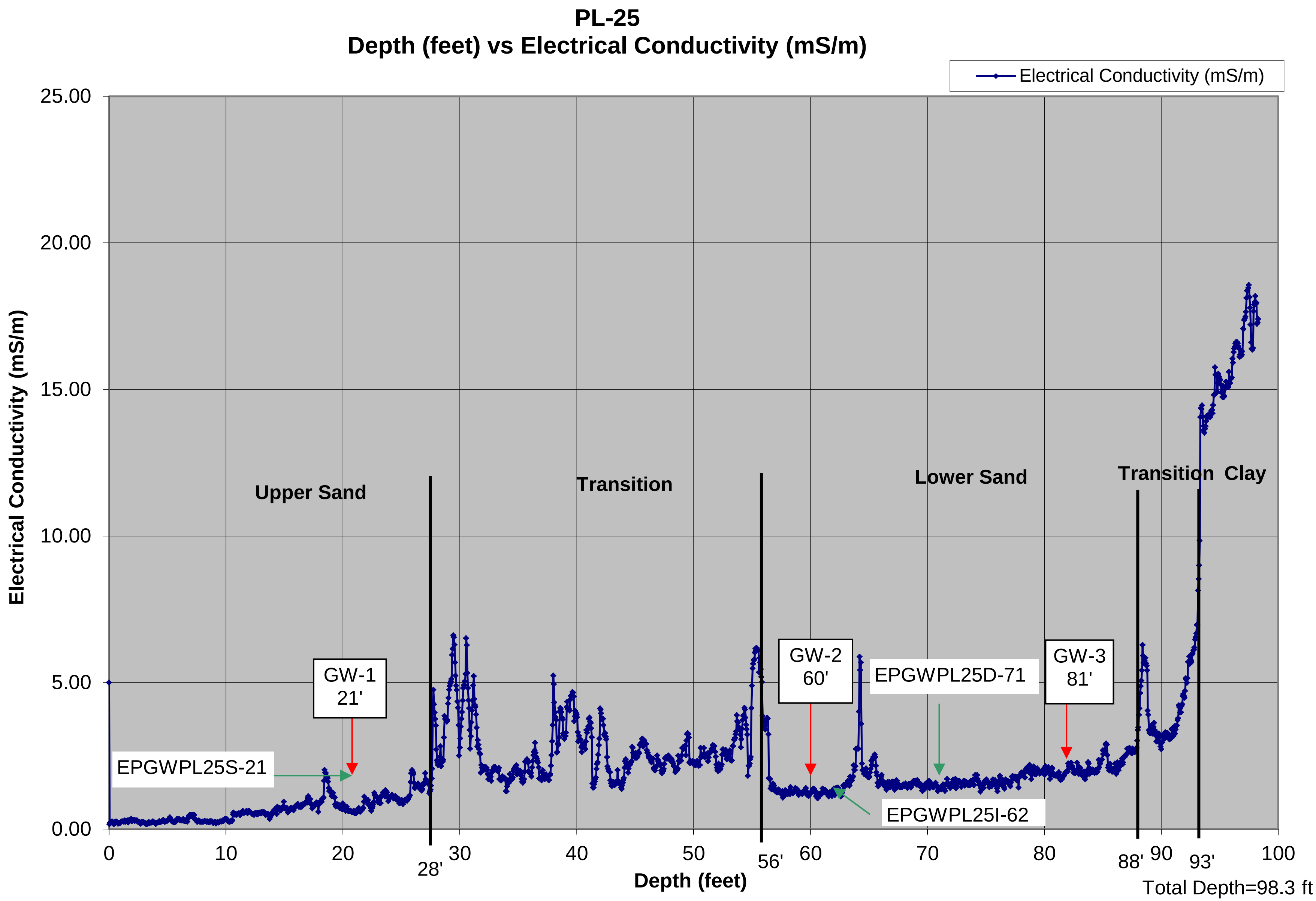
PL-21
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Electrical Conductivity (mS/m)
Upper Sand
Transition
Lower Sand
Transition
Clay
GW-1 22'
GW-2 31'
GW-3 42'
0
6'
10
20
30
40
41'
43'
47'
50
60
70
80
Depth (feet)
Total Depth=78 ft

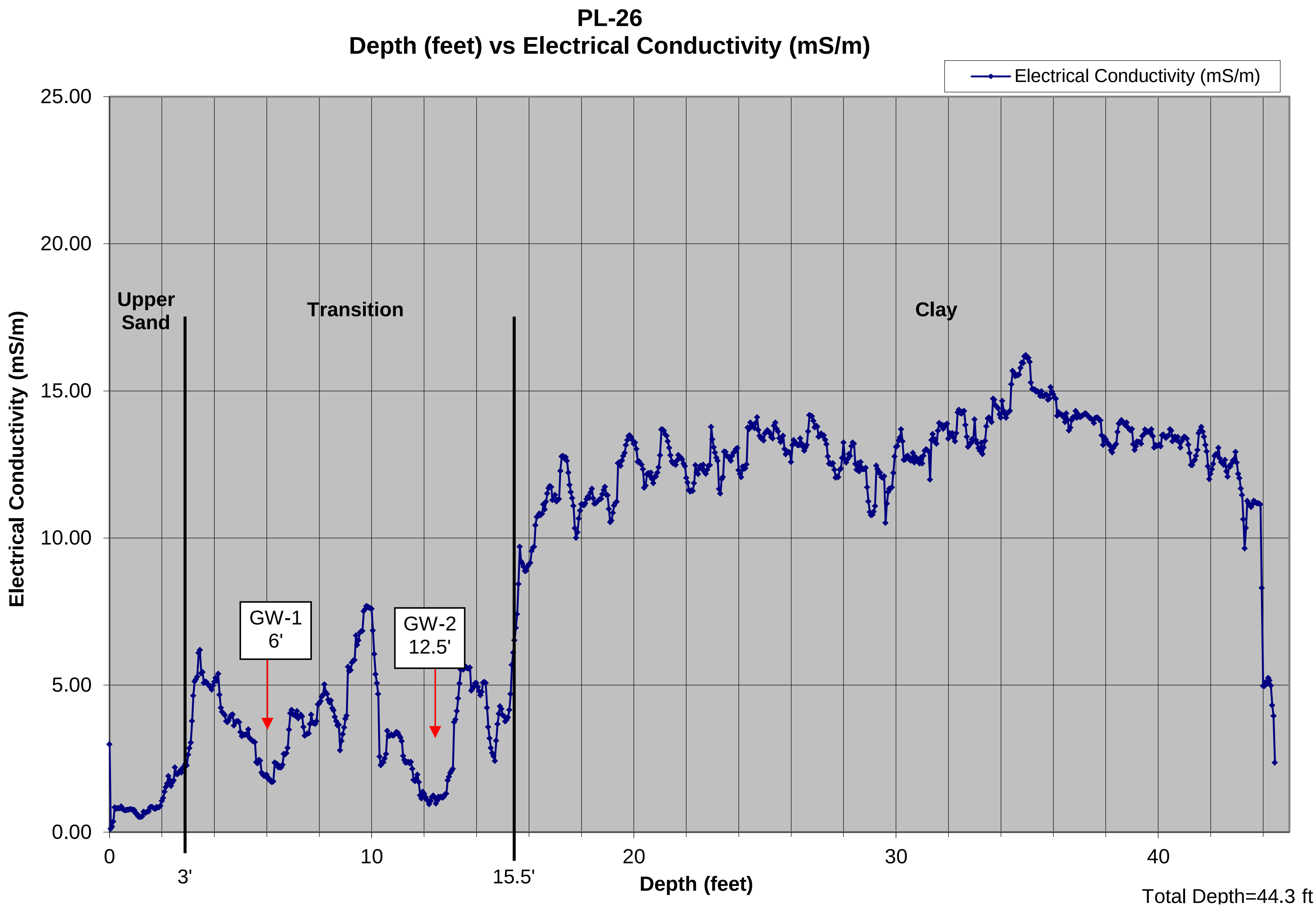

PL-22
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Upper Sand
Transition
Lower Sand
Clay
GW-1 26'
GW-2 50'
GW-3 60'
0
10'
20
40
56'
60
62'
80
100
Depth (feet)
Total Depth=102 ft


PL-23
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Depth (feet)
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0
10
20
30
40
50
60
70
4'
26'
29'
31'
Upper Sand
Transition
Lower Sand
Transition
Clay
GW-1 12'
S-1 10'-14'
S-2 18'-22'
S-3 26-30'
GW-2 18'
GW-3 27'
Total Depth=66.5 ft

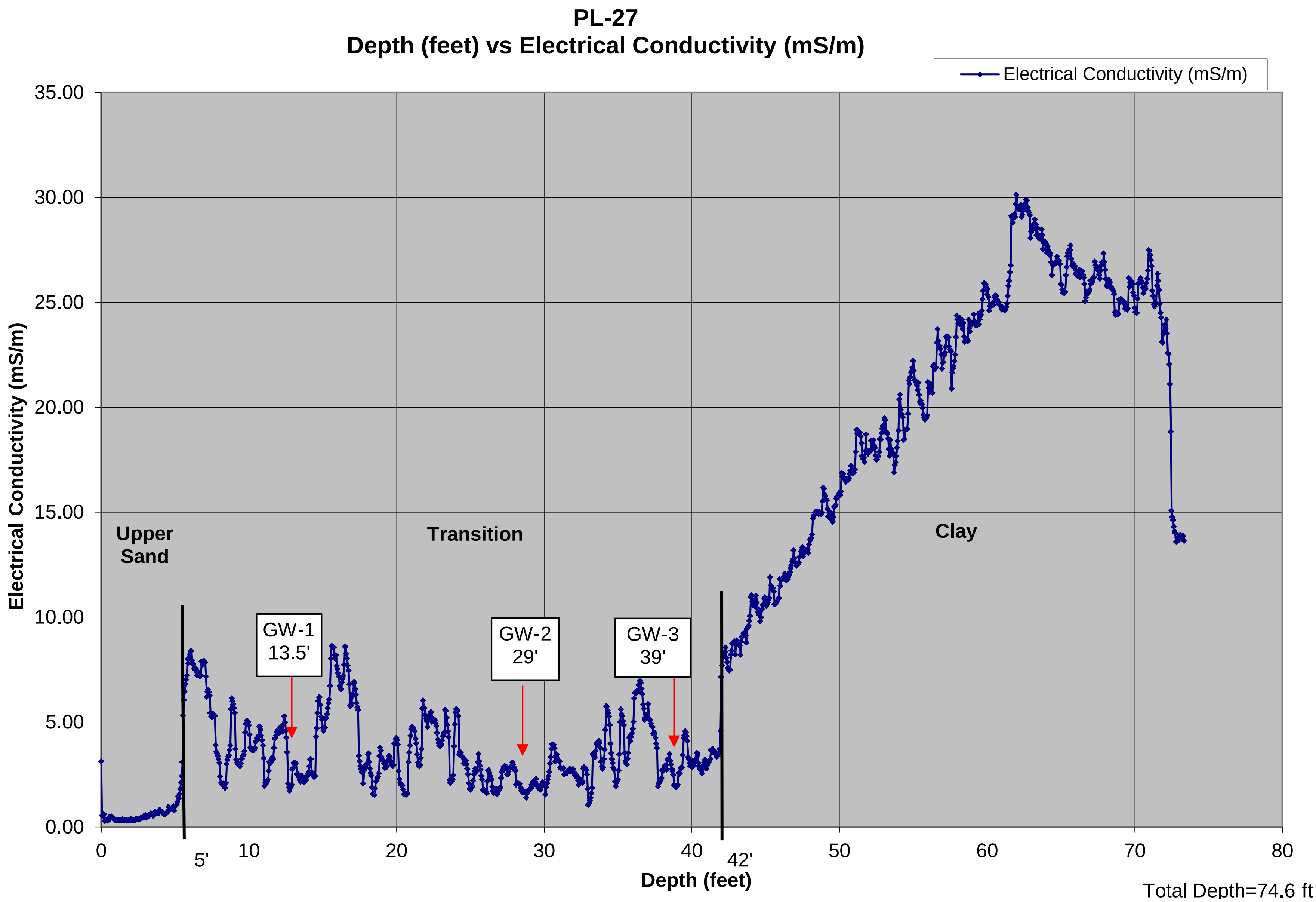


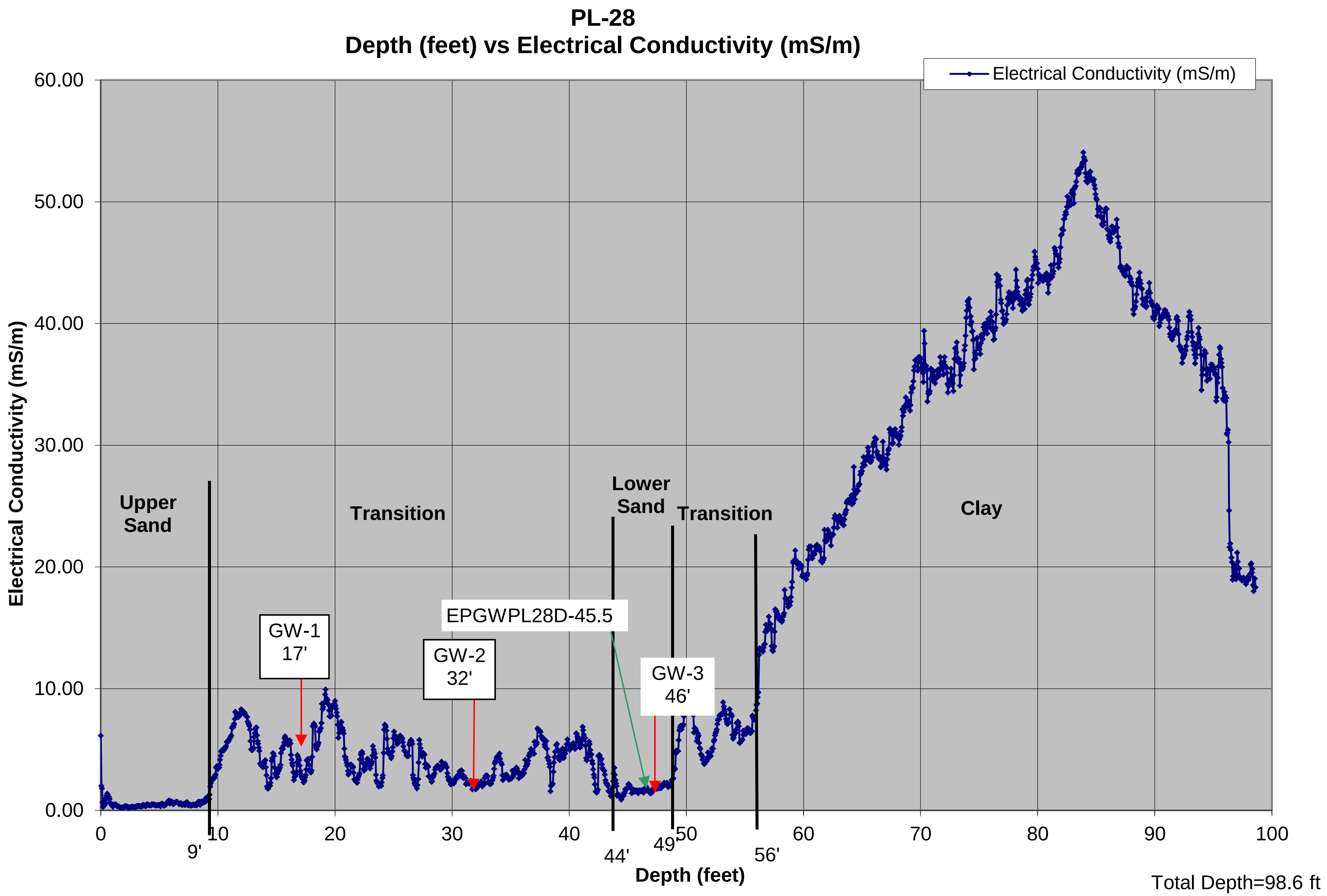
PL-24
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
25.00
20.00
15.00
10.00
5.00
0.00
Electrical Conductivity (mS/m)
Upper Sand
Transition
Lower Sand
Transition
Clay
GW-1 27'
GW-2 54.5'
EPGWPL24D-66
GW-3 66'
GW-4 79'
EPGWPL24D2-79
0
10
16'
20
30
40
48'
50
60
70
71.5'
80
83'
90
100
Depth (feet)
Total Depth=102.5 ft

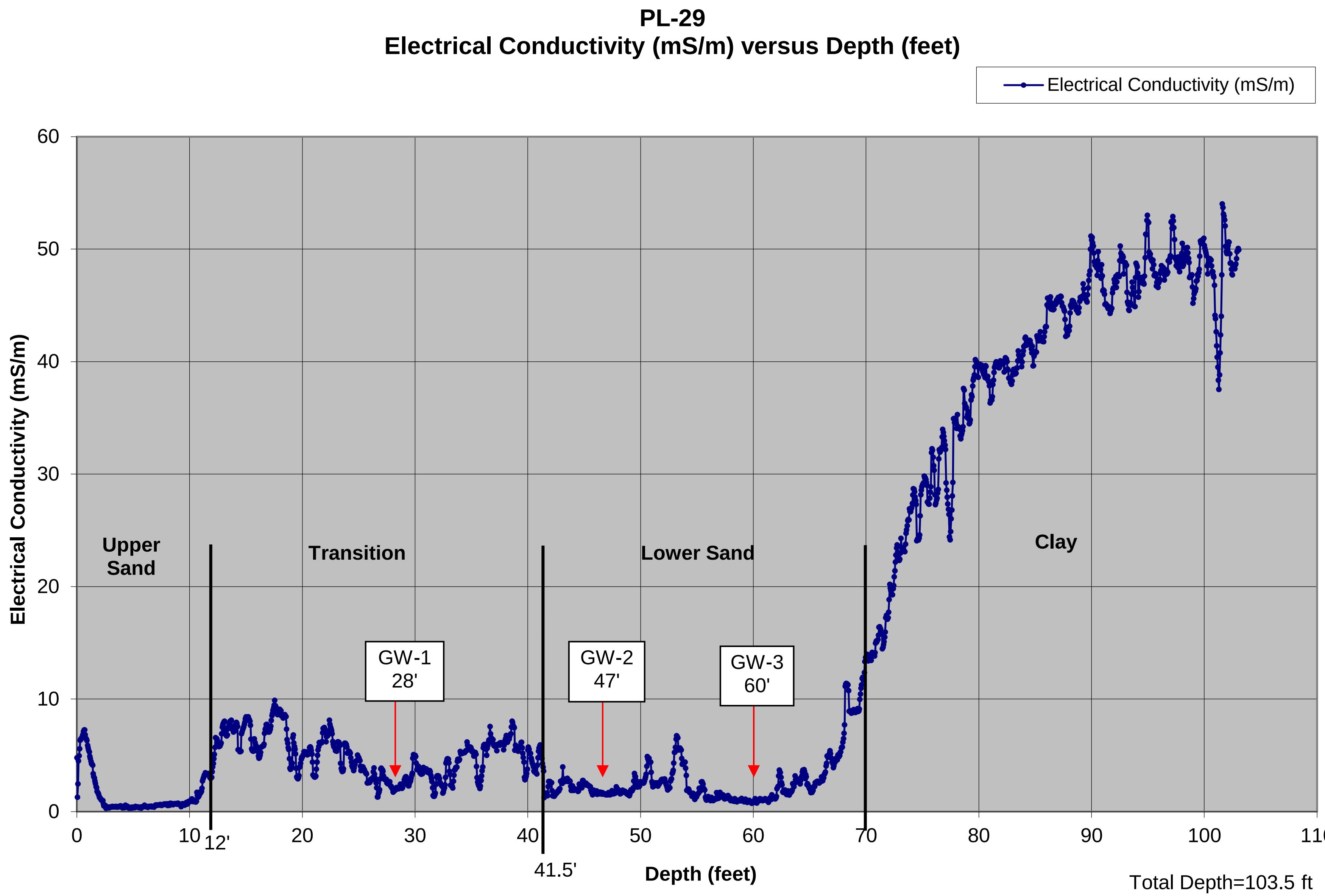

PL-25
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
25.00
20.00
15.00
10.00
5.00
0.00
Electrical Conductivity (mS/m)
Upper Sand
Transition
Lower Sand
Transition
Clay
GW-1
21'
GW-2
60'
GW-3
81'
EPGWPL25S-21
EPGWPL25D-71
EPGWPL25I-62
0
10
20
28'
30
40
50
56'
60
70
80
88'
90
93'
100
Depth (feet)
Total Depth=98.3 ft

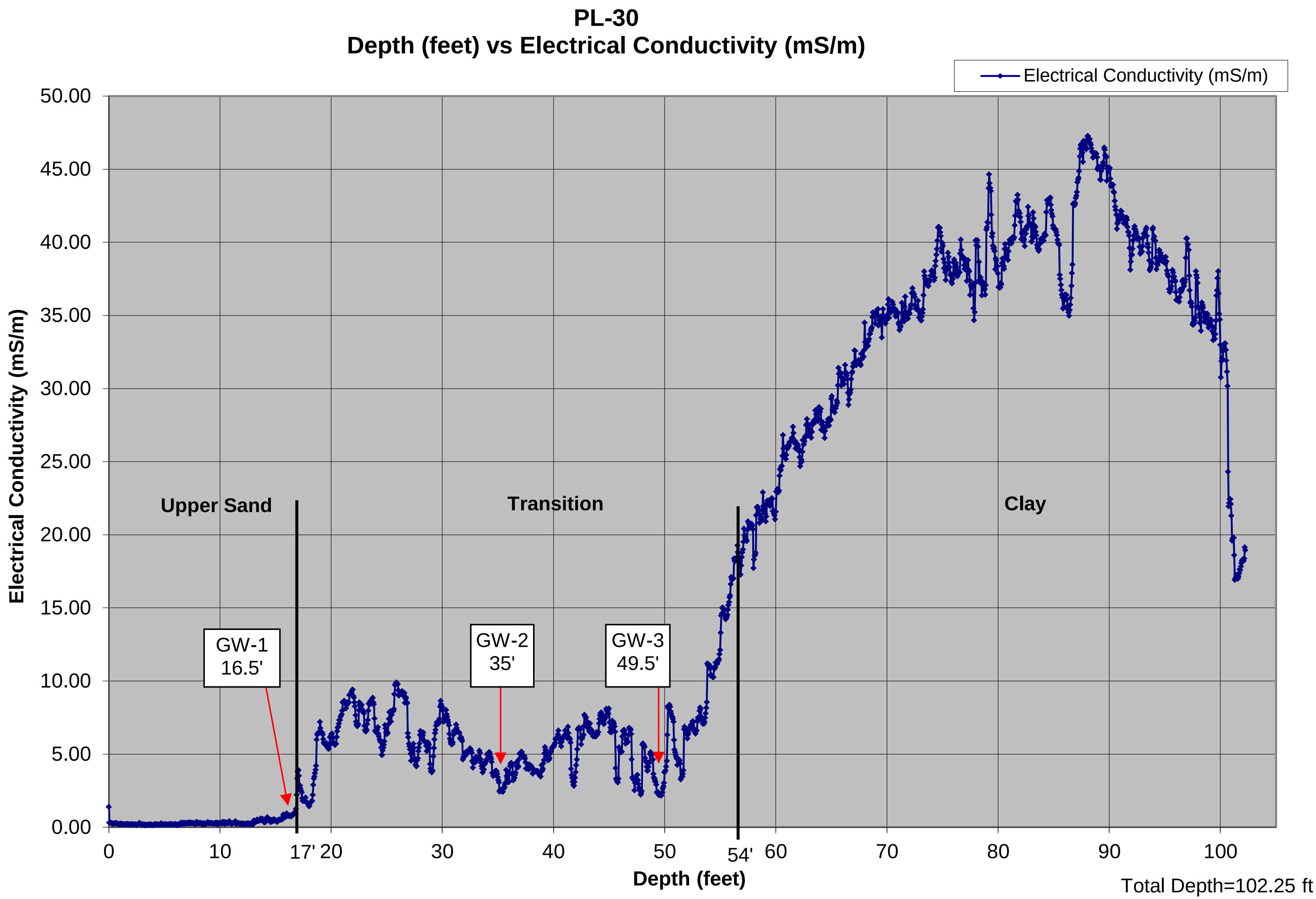


PL-26
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
25.00
20.00
15.00
10.00
5.00
0.00
0
10
20
30
40
3'
15.5'
Depth (feet)
Total Depth=44.3 ft
Upper Sand
Transition
Clay
GW-1 6'
GW-2 12.5'


PL-27
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Upper Sand
Transition
Clay
GW-1 13.5'
GW-2 29'
GW-3 39'
0
5'
10
20
30
40
42'
50
60
70
80
Depth (feet)
Total Depth=74.6 ft


PL-28
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0
10
20
30
40
50
60
70
80
90
100
Upper Sand
Transition
Lower Sand
Transition
Clay
GW-1 17'
GW-2 32'
EPGWPL28D-45.5
GW-3 46'
9'
44'
49'
56'
Depth (feet)
Total Depth=98.6 ft


PL-29
Electrical Conductivity (mS/m) versus Depth (feet)
Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Depth (feet)
Upper Sand
Transition
Lower Sand
Clay
GW-1 28'
GW-2 47'
GW-3 60'
12'
41.5'
Total Depth=103.5 ft
0
10
20
30
40
50
60
70
80
90
100
110


PL-30
Depth (feet) vs Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
Electrical Conductivity (mS/m)
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Upper Sand
Transition
Clay
GW-1
16.5'
GW-2
35'
GW-3
49.5'
0
10
17'
20
30
40
50
54'
60
70
80
90
100
Depth (feet)
Total Depth=102.25 ft

APPENDIX A-3
GROUNDWATER PROFILING SAMPLE LOGS
and PURGE DATA SHEETS

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- PL01S-44.3
Sample Location: PL01
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 11/10/08								
Time: 1210								
Method: Low Flow / Peri Pump	Clear/colorless	10.57	83	7.66	4.98	79.6	0.59	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 11/10/08								
Method: Low Flow / Peri Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1135								
End Purge (hrs): 1203								
Total Purge Time (min): 25								
Total Vol. Purged (gal/L): 1700ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL	3 X 40 mL vial with HCL	Yes / No
~~1,4 Dioxane~~ 1,1 DCE	HCL	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling point w/ peristaltic pump used in low flow sampling.

Circle If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PL 01S – 44.3

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)

Page 1 of 1

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 44.3 ft bgs Screen Int. Depth 44.3 ft bgs
Sample Date & Time: 11/10/2008 1210 hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C.Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (~~Yes/No~~); if yes, report depths/describe thickness _____; Visual Evidence of Sheen (Yes/No) _____;
Olfactory Evidence of Odor (Yes/No) _____;
Weather: Cloudy 50's

H&S Survey Meter _____ PPM
Field Instrument Group A/B/C/D
Pre-tubing insertion WL _____ ft btor; Post –tubing insertion WL _____ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane 3. 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0930	Trouble w/ tubing and Profile set up, water not pumping at @ 26 ft. Put in 1000 ml of water. No water flow.										
1120	Advance to 34 ft. Put in 600 ml. Flow rate = 20 ml/min.										
1130	Continue to 44.3 ft. Flow rate = 40 ml/min.										
1135	Begin purging.										
1140	NA	6:00/max	40	900 ml	10.29	326	5.35	158.8	6.97	1.64	Clear/odorless
1150	"	"	"	1100	10.37	800	5.07	94.0	7.03	0.44	
1155	"	"	50	1300	10.61	84	5.03	86.7	7.23	0.61	
1200	"	"	50	1500	10.58	82	4.97	80.0	7.04	0.61	
1205	"	"	"	1700	10.57	83	4.98	79.6	7.06	0.59	
1210	* End purge. Begin sampling at 44.3 ft.										
Background Reading 11/10/08					18.59	234	6.87	65.8	4.46	0.32	clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) _____ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME

Sample ID: EPGWPL~~02~~01D-70 X Abandon→Really @PL01

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of

QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump

Depth Sampled: 70 ft bgs Screen Int. Depth 70 ft bgs

Sample Date & Time: 11/10 /2008 NA hours ______(Dup Time)

Sampler(s): B. Geringer / C. Fellows / J. Traut

Data Recorded By: C. Fellows Signature: [signature];

Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;

Olfactory Evidence of Odor (Yes/No)______;

Weather: Cloudy 50's

H&S Survey Meter ______PPM Field Instrument Group A/B/C/D

Pre-tubing insertion WL ______ft btor; Post –tubing insertion WL ______ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane /DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ Liters	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1245	NA	6:00 /May	20 ml/min	* Put in 500 ml of potable water initially. Total 2 liters including clean water already in tubing.							
1300	"	"		* Purging out potable water from tubing. Must take at 2½ liters as advancing ~~(at 20 ml/min will take 3 hrs.)~~							
1400	"	"	20	1500	10.63	0.279	5.51	-55.0	5.78	1.47	Clear/colorless
1410	"	"	30	1700	10.54	0.116	5.34	-38.4	5.95	0.94	"
1415	"	"	"	1900	10.46	0.111	5.42	-50.0	6.80	0.91	"
1420	"	"	"	2100	10.30	0.152	5.26	-24.1	7.31	0.64	"
1425	"	"	"	23000	10.23	0.137	5.26	-20.3	7.31	0.64	"
1430	"	"	"	2500	10.20	0.122	5.22	-21.8	7.46	0.63	"
	* Abandon - Really PL01. → No sample collected.										
* Background reading 11/10/08					18.59	234	6.87	65.8	4.96	0.32	clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-PL01D-71
Sample Location: PL01
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 12/01/08								
Time: 1340								
Method: Low Flow/Peri Pump	Clear/colorless	4.94	62	8.40	5.73	-36.1	3.65	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 12/01/08								
Method: Low Flow/Peri Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1315								
End Purge (hrs): 1335								
Total Purge Time (min): 20								
Total Vol. Purged (gal/L): 750 ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL, 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane 1,1 DCE	~~HCL~~ 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1 DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

*GW Profiling point w/ peri. pump used for low flow sampling.

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW-PL01D-71

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 71 ft bgs Screen Int. Depth 71 ft bgs
Sample Date & Time: 12/01/2008 1340 hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Cloudy Showers, 50's

H&S Survey Meter ______ PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ ft btor; Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane 3. 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1200	Advance to PL01I @ 62 ft. Formation taking 100ml/min but no return. Put in 1000ml as advancing to 61 ft)										
1230	Advance to 62 ft. Formation taking 100ml/min. Reverse flow. Flow Rate = 20ml/min. Pump at 200ml, then										
1242	After 12 min flow rate stops. Try pump and surge. Try reverse flow again.										
1255	Pump at 200ml then after 13 min. Flow rate stops again. * NO PL01I sample.										
1300	Advance to PL01D. Start @ 73 ft. Formation taking 100ml/min. Reverse flow direction.										
1305	Water flow stops in both directions. Try pump and surge. Formation not taking or giving water.										
1310	Back up to 71 ft. Formation taking 100ml/min. Reverse flow. Flow Rate = 50ml/min.										
1315	Begin purging. Take at 300ml.										
1325	NA	9.00	50	350	4.05	113	6.14	45.0	11.33	26.74	Clear/odorless
1330	"	"	40	550	4.64	65	5.87	-32.8	8.67	6.04	"
1335	"	"	"	750	4.94	62	5.73	-36.1	8.40 ~~8.80~~	3.65	"
1340	*Begin Sampling.										
Background Reading 12/1/08					11.90	482	7.22	266.7	7.43	1.06	Clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

* (61, 73)
62 71

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-PL02S-26.3
Sample Location: PL02
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 11/11/08								
Time: 1000								
Method: Low Flow / Peri Pump	Sl. cloudy/clear	4.29	116	8.76	6.56	175.3	33.4	

PURGE DATA: NA

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 11/11/08								
Method: Low Flow / Peri Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 0900								
End Purge (hrs): 0950								
Total Purge Time (min): 50								
Total Vol. Purged (gal/L): 1150 ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane / 1,1 DCE	~~HCL~~ 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling Point and peri. pump used for low flow sampling.

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: BPGWPL02B-26.3

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)
Page 1 of 1

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 26.3 ft bgs Screen Int. Depth 26.3 ft bgs
Sample Date & Time: 11/11/2008 1000 hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: Chelsea Fellows Signature: Chelsea Fellows;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No) NA; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Sunny Low 30's

H&S Survey Meter ______ PPM
Pre-tubing insertion WL ______ ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane / DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0745	String casing and tubing. Using new micro tubing pump (Portable sampler - Masterflex E/S - Cole-Parmer Instrument Company.										
0750	Begin advancement to 26 ft. Pump 1000 ml in as advancing										
0800	Tubing pops out / disconnects from profile point. ~~Try again.~~ Teeth broken on profile point -> try to fix.										
Potable water	11/11/08	–			3.45	123	6.02	159.8	14.05	0.59	clear/colorless
0850	Re-String casing + tubing. Advance while pumping another 1000 ml of potable water.										
0855	Change pumping direction. Now pump out 1000 ml of potable water to get natural formation water.										
0900	Begin purging. Filling flow through cell. Measuring draw rate. Flow rate = 10 ml/min										
0930	NA	6 100/Max	10 ml/min	1000 ml	4.30	146	6.55	175.4	8.79	38.6	sl. cloudy/colorless
0935	"	"	"	1050	4.30	133	6.56	175.3	8.77	36.1	"
0940	"	"	"	1100	4.29	126	6.57	175.5	8.75	32.9	"
0945	"	"	"	1150	4.29	116	6.56	175.3	8.76	33.4	"
0950	~~End Purge~~ (No water pumping out. Pump of Surge -> still no water. Advance profile point 3 in down. Begin pumping again -> water flowing again. Decide to ~~take sample~~ end purge and begin sampling due to low flow and limited water.										
1000	Begin sampling										

Acceptance Criteria: <0.3 ft (drawdown)
TtNUS Form 0009

					3%	~~3%~~ 10%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- PL02I-45
Sample Location: PL02
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 11/12/08								
Time: 0825								
Method: Low Flow / Peri Pump	Sl. cloudy/colorless	3.93	130	5.10	6.71	-98.8	14.9	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 11/12/08								
Method: Low Flow / Peri Pump.								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 0755								
End Purge (hrs): 0820								
Total Purge Time (min): 25								
Total Vol. Purged (gal/L): 3300ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL, 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane / 1,1 DCE	~~HCL~~, 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling point and peri. pump used for low flow sampling.

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGWP102I-~~44.6~~ 45.0

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ~~44.6~~ 45.0 ft bgs Screen Int. Depth 44.6 ft bgs
Sample Date & Time: 11/12/2008 0915 hours NA (Dup Time)
Sampler(s): ~~B. Geringer~~ / C. Fellows / J. Traut
Data Recorded By: Chelsea Fellows Signature:
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No) NA; if yes, report depths/describe thickness ; Visual Evidence of Sheen (Yes/No) ;
Olfactory Evidence of Odor (Yes/No) ;
Weather: Sunny Low 30's

H&S Survey Meter PPM
Pre-tubing insertion WL ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane /PCE

(Also see separate sample logsheet for gw)

11/08

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1020	Advance profile to 44.3. Put in 200 ml of potable water. No water coming up. Advance 3 in. more.										
1030	Reverse direction and begin to purge. Very slow flow rate = 10 ml/min. Filling flow through cell.										
1115	Switch to smaller flow through cell.										
1120	NA	600/max	10 ml	350 ml	6.37	226	6.92	140.3	9.23	201	Cloudy/sl. brown
1130	Tubing disconnects from profile point when trying to advance 2 in more. Tried to advance b/c water stopped flowing up @ 44.6 ft. MAI leaves to go to get new part.										
1330	Restring casing and tubing after MAI returns from hardware store to get parts to fix tubing/profiler connection. Start @ 44.3 in new hole. Advance to 44.3, putting in 200 ml of potable water. Flow Rate = 10 ml/min										
1340	Begin purging out 200 ml/min @ 10 ml/min. Water stops pumping up so move down to 44.6 ft and begin purging again. Advanced w/ 80 ml of potable water										
1405	"	600/max	<10 ml/min	90 ml/liters	6.16	216	7.10	98.8	10.95	15.5	Clear/colorless
1420	No water pumping out. Advance to 45.0. → Still no water. Advance again to 45.5 ft.										
1445	No water @ 45.5 ft coming up. Try to pump and surge → Still no water. ~~Try pumping down~~										
1515	Try pumping potable water down casing to see if can pump out → no water pumping up.										
1530	End. Not getting any water. (?) End for day.										

Acceptance Criteria: <0.3 ft (drawdown) — Temp 3%; Spec. Cond. 3%; pH +/- 1.0 S.U.; ORP +/- 10mV; DO 10%; Turbidity 10%

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME.
Sample ID: EPGW PL02I -45.

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: ______________________ (If applicable)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals. / liters	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
11/12/08											
0720	Begin advancing slowly from 30ft to 40ft. Watching flow rate as advancing down. Flow Rate = 100ml / per 5ft Consistant flow rate as advance.										
0730	Stop at 42ft b/c flow rate increased slightly. Reverse flow direction and try to purge but < 10 ml / min then dry.										
0740	Advance to 45ft then pull up 3in. Put in total of 2.5 liters up to depth. Try purging but < 10 ml / min.										
0745	Let recharge but tubing freezing so reverse flow direction and pump another 200 ml of hot Potable water down.										
0755	Begin purging again. Flow Rate = 20 ml / min and consistant. At 0800 cloudy natural water coming up so again readings assume natural.										
0800	NA	600/Max	20 ml	2.7 ~~3~~ liters	1.70	252	6.75	154.3	8.70	9693	Cloudy / Brown
0810	"	"	"	2.9 liters	3.24	485	6.89	-73.1	5.75	28.7	sl. Cloudy / colorless
0815	"	"	"	3.1	3.77	522	6.73	-89.2	5.38	19.2	sl. cloudy / colorless
0820	"	"	"	3.3	3.93	130	6.71	-98.8	5.10	14.9	sl cloudy / colorless
0825	Begin sampling. Take sample now due to limited water available at depth. * Spec Conductivity jumping / not stabilization.										
Background Reading: 11/12/08					3.17	150	6.01	162.1	13.95	0.30	Clear / colorless
Acceptance Criteria: ≥0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) __________ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

(150 ml of water in tubing per 100 ft of tubing)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-PL02D-69.7
Sample Location: PL02
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 11/12/08								
Time: 1020								
Method: Low Flow / Peri Pump	Cloudy / colorless	5.47	103	7.51	6.55	103.6	185	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 11/12/08								
Method: Low Flow / Peri. Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 0925								
End Purge (hrs): 1020								
Total Purge Time (min): 55								
Total Vol. Purged (gal/L): 400ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane 1,1 DCE	~~HCL~~, 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

at GW Refilling point and peri-pump used for low flow sampling.

Circle If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME

Sample ID: EPGW PL02D- 69.7

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of

QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump

Depth Sampled: 69.7 ft bgs Screen Int. Depth 69.7 ft bgs

Sample Date & Time: 11/12/2008 1020 hours NA (Dup Time)

Sampler(s): B. Geringer / C. Fellows / J. Traut

Data Recorded By: C. Fellows Signature: [signature]

Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No) NA; if yes, report depths/describe thickness ; Visual Evidence of Sheen (Yes/No) ;

Olfactory Evidence of Odor (Yes/No) ;

Weather: Sunny Low 30's

H&S Survey Meter PPM Field Instrument Group A/B/C/D

Pre-tubing insertion WL ft btor; Post –tubing insertion WL ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane / DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0900	Begin advancing to 70ft, Put in 1000 ml as advancing										
0920	At 70ft pulled up to 69.7 ft. Add 300 ml of potable water at that depth.										
0925	Begin purging. Flow rate 10 to 20 ml/min. Purge at volume of tubing. Cloudy/Neutral water coming up, begin taking readings.										
~~1045~~ 0945	NA	6:00/may	10	200 ml	4.53	235	6.55	79.6	7.44	176	Cloudy/Colorless
1000	"	"	"	300 ml	5.37	313	6.60	109.2	7.19	139	"
1015	"	"	"	400 ml	5.47	103	6.55	103.6	7.51	185	"
1020	End purge. Begin Sampling.										
1110	End Sampling.										
Background Reading 11/12/08 →					3.17	150	6.01	162.1	13.95	0.30	Clear/colorless

Acceptance Criteria: <0.3 ft (drawdown) — Temp 3%, Spec. Cond. 3%, pH +/- 1.0 S.U., ORP +/- 10mV, DO 10%, Turbidity 10%

TtNUS Form 0009

Saturated Screen Volume (gallons) (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

* Readings 10 min / 15 min apart b/c takes 10/15 min to fill flow through cell.

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-PL03S-31
Sample Location: PL03
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

Date: 12/01/08	Color	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Time: 1630	(Visual)	(°C)	(µS/cm)	(mg/L)	(S.U.)	(mv)	(NTU)	
Method: Low Flow/Peri Pump	Clear/colorless	5.80	295	7.55	5.11	82.4	0.86	

PURGE DATA:

Date: 12/01/08	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Method: Low Flow/Peri Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1000								
End Purge (hrs): 1625								
Total Purge Time (min): 25								
Total Vol. Purged (gal/L): 1450ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane / 1,1 DCE	~~HCL~~ 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

GW Profiling point and peri. pump used for low flow sampling

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		Carla Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGWPL03S – 31

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 31 ft bgs Screen Int. Depth 31 ft bgs
Sample Date & Time: 12/01/2008 1630 hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Cloudy, Showers 40's

H&S Survey Meter ______ PPM
Pre-tubing insertion WL ______ ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane / 1,1 DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1530	Advance to PL03S @ 31 ft. Formation taking water. Reverse flow direction. Flow rate 50 ml/min. Push in 1000 ml as advancing										
1600	Begin purging. (Took out 1000 ml)										
1615	NA	2100	50	1000	5.82	174	5.39	90.9	8.51	7.30	Clear/colorless
1620	"	"	"	1200	5.64	356	5.20	93.9	8.33	1.31	"
1625	"	"	"	1450	5.80	295	5.11	82.4	7.55	6.86	"
1630	* Begin Sampling.										
Background Reading 12/01/08					11.90	482	7.22	266.7	7.43	1.06	Clear/colorless
					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Acceptance Criteria: <0.3 ft (drawdown)
TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

(31, 54, 75)
53

TETRA TECH NUS, INC.	**PURGE DATA SHEET - "LOW FLOW" GROUNDWATER**

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PL03I +D NO Samples

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ______ ft bgs Screen Int. Depth ______ ft bgs
Sample Date & Time: 12/02/2008 no sample hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: ______ Signature: ______;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Sunny 40's

H&S Survey Meter ______ PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ ft btor; Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:
1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane ~~3~~. 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ ml	Temp °C quickly	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0730	Advance to PL03I-54 ft. Formation taking water. (Put in 1000ml as advancing.) Reverse flow direction.										
0740	Pumps up 700ml then flow stops. Try pump and surge. Pumps at 350ml then flow stops again										
0745	Back up to 53 ft. Pumped at 400ml then flow slows then stops. * NO Sample collected.										
0750	Advance to PL03D-75 ft. Formation taking water @ 20ml/min. Reverse flow direction. Flow Rate = 140 ml/min										
0810	Begin purging. took at 1000ml.										
0815	NA	7.00	40	1300	560	201	5.83	-8.1	9.75	Error over limit	V.Cloudy/Brown
0820	Water flow stops. Appears clogged. Try pump and surge but clogs again.										
0825	No sample collected for PL03D-75.										
Background Reading 12/02/08					8.15	315	7.01	215.5	8.71	1.23	Clear/odorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

* 730 at 53

(54, 75) 53

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGWPL04S -

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)
Page 1 of

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ______ ft bgs Screen Int. Depth ______ ft bgs
Sample Date & Time: 11/13 /2008 No sample hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: Chelsea Fellows Signature: Chelsea Fellows
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~ NA; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Cloudy 30's

H&S Survey Meter ______ PPM
Pre-tubing insertion WL ______ ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

~~1. VOC~~ 2. ~~1,4 Dioxane~~ 1DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1030	Advance Profile to 28.5ft. Using 1ecoml of potable water as advancing. Put in 300ml at 28.5ft to flush screens.										
1105	No water pumping up @ 28.5ft. Advance to 29.5ft. based on Table 1 - Sand bed 27-30.5 ft.										
1120	NO water @ 29.5ft. Advance to 30 ft.										
1130	NO water @ 30 ft. Backed up to 27 ft. Reverse flow direction to pump up but flow stops. Try pump + surge.										
1140	No water @ 27 ft. Advance to 35ft.										
1150	NO water @ 35 ft.										
	Continue to next interval.* NO sample taken*										
*Background reading for 11/13/08 →					1.09	150	6.11	181.4	9.96	0.85	Clear/odorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

28.5, 46, 67 ft. Depths.

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-PLO4D-67
Sample Location: PLO4
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 11/13/08								
Time: 1400								
Method: Low Flow / Peri Pump	Clear/odorless	8.16	106	6.25	6.2[illegible]	-25.6	14.8	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 11/13/08								
Method: Low Flow / Peri Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 Inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1325								
End Purge (hrs): 1400								
Total Purge Time (min): 35								
Total Vol. Purged (gal/L): 700ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane 1,1 DCE	~~HCL~~ 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling point and peri. pump used for low flow sampling.

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EDGWPLOYD-67

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 67 ft bgs Screen Int. Depth 67 ft bgs
Sample Date & Time: 11/13/2008 1400 hours ______(Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C.Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No) NA; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Cloudy 30's

H&S Survey Meter ______PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ft btor; Post –tubing insertion WL ______ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane /PCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1220	Advance to 46 ft. Formation taking very little/no water. Pull up casing to unclog screens.										
1240	Advance back down to 46 ft. Pump up tubing water, then when natural/gray water starts to come up, flow stops. *										
1250	Advance to 48 ft. Clogged tubing. Pump & surge several times. Advanced w/ 1000 ml of water, 300 ml @ 48 ft. No water.										
1305 ~~1325~~	~~Begin Purging. Flow Rate = [illegible]~~ Advance to 67 ft. Pump & surge tubing.										
~~1325~~	Begin Purging. Flow Rate 20 ml/min consistent										
1330	NA	600/MAX	20 ml/min	300	8.57	96	6.33	128.3	6.34	158	cloudy/sl. brown
1340	"	"	"	500	8.12	86	6.27	-17.7	6.57	42.2	sl. cloudy/colorless
1350	"	"	"	700	8.16	106	6.24	-25.6	6.25	14.8	clear/colorless
1400	* End Purge. Begin Sampling										
1415	* End Sampling.										
*Background Readings 11/13/08 →					1.09	150	6.4	181.4	9.96	0.85	clear/colorless

Acceptance Criteria: <0.3 ft (drawdown) | Temp 3% | Spec. Cond. 3% | pH +/- 1.0 S.U. | ORP +/- 10mV | DO 10% | Turbidity 10%

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

* No sample taken @ 46 interval (PLOYI) *

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- PL05S-20
Sample Location: PL05
Sampled By: Traut, ~~Fellows~~, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

Date: 11/12/08	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Time: 1340								
Method: Low Flow Peri Pump	Sl. cloudy/colorless	6.68	188	9.38	5.93	73.5	24.6	

PURGE DATA:

Date: 11/12/08	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Method: Low Flow/Peri Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1305								
End Purge (hrs): 1335								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 400ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane 1,1 DCE	~~NONE~~ 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1 DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling point and peri, pump used for low flow sampling.

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGWDL05S-20

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)

Page 1 of 1

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 20 ft bgs Screen Int. Depth 20 ft bgs
Sample Date & Time: 11/12/2008 1340 hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No) NA; if yes, report depths/describe thickness ____; Visual Evidence of Sheen (Yes/No) ____;
Olfactory Evidence of Odor (Yes/No) ____;
Weather: Sunny 40's

H&S Survey Meter ____ PPM
Pre-tubing insertion WL ____ ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ____ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane 1DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals. ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
11/12/08											
1230	Advance to 19.5 ft. Put in 100ml as advance then additional 300ml at 19.5 to clear screens. Flow rate = < 10 ml/min										
1300	Advance to 20 ft. Put in 200ml as advance.										
1305	Begin purge. Consistent Flow Rate = 10 ml/min.										
1325	NA	600/max	10 ml	300 ml	6.74	86	6.24	94.8	9.35	35.1	sl cloudy/colorless
1335	"	"	"	400 ml	6.68	188	5.93	73.5	9.38	24.6	"
	* Due to limited water and low flow rate. Only take 2 readings.										
1340	Begin sampling.										
1420	End sampling										
Background Reading (Makeup water) 11/12/08 →					3.17	150	6.01	162.1	13.95	0.30	Clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ____ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-PL05I-30
Sample Location: PL05
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 11/12/08								
Time: 1505								
Method: Low Flow / Peri Pump	N. Cloudy/Gray	5.76	104	7.94	6.90	66.1	overlimit	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 11/12/08								
Method: Low Flow/Peri. Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1440								
End Purge (hrs): 1500								
Total Purge Time (min): 20 min								
Total Vol. Purged (gal/L): 200 ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	2 X 40 mL vial with HCL	Yes / No
1,4 Dioxane 1,1 DCE	~~HCL~~, 4°C w/ HCL	2 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

* Limited volume so only 2 x 40 ml collected for VOCs and 2 x 40 ml collected for 1,4 Dioxane / 1,1 DCE.

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling point and peri. pump used for low flow sampling

Circle If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGWPL05I-30

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 30 ft bgs Screen Int. Depth 30 ft bgs
Sample Date & Time: 11/12/2008 1505 hours NA (Dup Time)
Sampler(s): B. Geringer C. Fellows J. Traut
Data Recorded By: Christa Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ; Visual Evidence of Sheen (Yes/No) ;
Olfactory Evidence of Odor (Yes/No) ;
Weather: Sunny 40's

H&S Survey Meter PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ft btor; Post –tubing insertion WL ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane /DCE

*Limited water volume – Only 2 vials for VOCs and 2 for 1,4 & DCE.

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1430	Advance to 30ft. Putting in 1000 ml as advancing and 300 ml at 30ft.										
1440	Begin Purging @ Flow Rate of 10 ml/min. Gray/Natural water coming up so begin taking readings.										
1500	NA	6.00/max	10 ml	200	5.76	104	6.90	66.1	7.94	Err 4 (over limit)	V. Cloudy/Gray
1505	* End purge, Begin sampling. Due to limited water volume and low flow rate <10 ml/min take 1 reading and try to get sample.										
1600	* End sampling - Only fill 4 of 6 voa vials. water flow stops and must end to meet lab.										
Background Reading 11/12/08 →					3.17	150	6.01	162.1	13.95	0.30	Clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGWPL05D-39.5

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ______ ft bgs Screen Int. Depth ______ ft bgs
Sample Date & Time: 11/13/2008 NO Sample hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No) NA; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Cloudy, 30's

H&S Survey Meter ______ PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ ft btor; Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane 1 DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0730	Advance profile point to 39.5 using 1000 ml of potable water. Put in 200 ml at 39.5.										
0735	Reverse flow direction. Flow Rate < 5 ml/min. then flow stops.										
0745	Back up profile 0.5 ft. and try again @ 39 ft. → Reverse Flow Direction 0 ml/min = Flow Rate										
0755	Back up profile another 0.5 ft to 38.5 ft. → reverse flow direction and purge. Gray/natural formation water coming up but then slows down to < 10 ml/min. Try pump and surge w/ neutral water to clean screens.										
0820	Still no water. Back up to 38 ft. Purge out 300 ml then flow stops. Try pump + surge several times but flow still stops.										
0830	Advance to 40 ft. Reverse flow direction and < 10 ml/min then flow stops.										
0845	Back up to 36 ft. Still no flowing water.										
0900	NO Sample @ PL05D interval. Abandon hole.										
*Background reading →					1.09	150	6.11	181.4	9.96	0.85	clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

36-40 ft No flowing water

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- PLO6I-41
Sample Location: PLO6
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 12/02/08								
Time: 1345								
Method: Low Flow/Peri. Pump	Cloudy/Brown	7.53	1234	10.98	6.07	-38.1	212	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 12/02/08								
Method: Low Flow/Peri. Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1325								
End Purge (hrs): 1340								
Total Purge Time (min): 15								
Total Vol. Purged (gal/L): 2550 ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane 1,1 DCE	~~HCL~~ 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling point and peri. pump used for low flow sampling.

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW-PL06I-41

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 41 ft bgs Screen Int. Depth 41 ft bgs
Sample Date & Time: 12/02/2008 1345 hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: ;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ; Visual Evidence of Sheen (Yes/No) ;
Olfactory Evidence of Odor (Yes/No) ;
Weather: Sunny 40's

H&S Survey Meter PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ft btor; Post –tubing insertion WL ft btor

Sampling Hierarchy and Lab Analyses:
1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane 3. ~~1,1-DCE~~

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1250	Advance to PL06S @ 24 ft. Put in 1000 ml as advancing. Put in 100 ml at 24 ft. Formation not taking much water.										
1300	Reverse flow direction. Got Flow Rate = 10 ml/min but flow stops after 10 mins.										
1310	Advance to 25 ft. → No flowing water. * NO PL06S sample collected.										
1315	Advance to PL06I @ 41 ft. Put in 100 ml @ 41 ft. Reverse direction. Flow Rate = 10 ml/min but stops. Try plugs and surges.										
1320	Start pumping up at 41 ft. again. Normal looking water starts pumping out. Flow Rate = 200 ml/min.										
1325	Begin purging. (Take out 200 ml).										
1330	NA	8:00	200	700	7.62	1837	6.57	-32.8	10.70	676	Cloudy/brown
1335	"	"	"	1600	7.66	1363	6.15	-44.8	10.41	342	"
1340	"	"	"	2550	7.53	1234	6.07	-38.1	10.98	212	"
1345	Begin Sampling.										
Background Reading 12/02/08					8.15	315	7.01	215.5	8.71	1.23	Clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

(24, 41, 63.8)

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PLOG D - No sample

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)
Page 1 of 1

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ______ ft bgs Screen Int. Depth ______ ft bgs
Sample Date & Time: 12/02/2008 No Sample hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Sunny 40's

H&S Survey Meter ______ PPM
Pre-tubing insertion WL ______ ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:
1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane ~~3.~~ 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1355	Advance to PLOG D at 63.8 ft. Formation taking little water. Reverse flow direction → no flowing water										
1405	Advance to 65 ft. Formation taking little water. Reverse flow direction → no flowing water.										
1410	* No PLOG D sample collected.										
Background Reading 12/02/08					8.15	315	7.01	215.5	8.71	1.23	Clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGWPL07-

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: No Sample ft bgs Screen Int. Depth ______ ft bgs
Sample Date & Time: 11/14/2008 No Sample hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C Fellows Signature: Chris Fellows ;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Showers 50's

H&S Survey Meter ______ PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ ft btor; Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane / DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0830	Advance down to 20ft. Tubing leaking so pull up and fix. Advance down to 20 ft. again. Use 100 ml to advance.										
0845	No water @ 20ft. Advance to 21ft. Pump at Surge. < 10 ml/min Flow Rate. Gray/natural water comes up then stops. Put in 300 ml at 20ft.										
0855	No water @ 21ft. Advance to 21.5ft. Flow Rate < 10 ml/min. Gray/Natural water comes up										
	then stops flow. Try Pump at Surge but Still no water.										
0905	No Sample taken @ PL07S										
0910	Advance to PL07I. Start at 36ft. No water. < 5 ml/min. Put in 300 ml.										
0920	Advance to 36.5ft. No water.										
0935	Advance to 37.5ft. No water & Some gray/natural water in tubing then clogs.										
0945	No Sample taken @ PL07I										
0950	Advance to PL07D. Start at 49.5ft. Put in 300 ml. → No water at 49.5ft.										
1000	Advance to 50ft. Put in 300 ml @ Flow Rate of 220 ml/min. Water coming up < 5 ml/min then stops										
1015	Advance to 50.5ft. Put in 300 ml.										
1025	Begin Purging @ 10 ml/min.										
Background Reading 11/14/08					10.08	255	6.80	157.1	9.04	1.75	Clear/colorless

Acceptance Criteria: <0.3 ft (drawdown) 3% 3% +/- 1.0 S.U. +/- 10mV 10% 10%

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: ______________________

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: ______________________ (If applicable)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1055	* Filling small flow cell w/ 50ml of formation water took 35 mins										
1100	NA	600/max	<2ml/min	100 ml	11.39	139	7.29	184.2	9.11	10.76	clear/colorless
1105	Water flow stops altogether.										
	* NO sample taken at PLO7D. → Abandon hole.										

Acceptance Criteria: <0.3 ft (drawdown) — Temp 3%; Spec. Cond. 3%; pH +/- 1.0 S.U.; ORP +/- 10mV; DO 10%; Turbidity 10%
TtNUS Form 0009

Saturated Screen Volume (gallons) ____________ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EDGW PLC85-20

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)
Page 1 of

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 20 ft bgs Screen Int. Depth 20 ft bgs
Sample Date & Time: 11/14/2008 1300 hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [illegible]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (~~Yes~~/No); if yes, report depths/describe thickness ; Visual Evidence of Sheen (Yes/No) ;
Olfactory Evidence of Odor (Yes/No) ;
Weather: Sunny 50's

H&S Survey Meter PPM
Pre-tubing insertion WL ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane 1,4-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1205	Advance to PLC85 @ 20 ft. Put in 100ml as advancing, 300ml at 20ft.										
1215	Begin Purging. Try to purge 300ml purge at 20 ft depth.										
1245	NA	max	10	340 ml	11.71	208	6.31	37.8	7.42	171	cloudy/light brown
1250	"	max	10	380	11.50	135	5.96	-14.4	7.08	137	"
1255	"	max	10	420	11.49	57	5.74	-73.2	6.94	113	"
1300	Begin sampling / End Purge										
1335	End sampling										
Background Reading 11/14/08					10.08	255	6.80	157.1	9.04	1.75	Clear/odorless
					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Acceptance Criteria: <0.3 ft (drawdown)
TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- PL08S-20
Sample Location: PL08
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 11/14/08								
Time: 1300								
Method: Low Flow/Peri. Pump	Cloudy/Light Brown	11.49	57	6.94	5.74	-73.2	113	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 11/14/08								
Method: Low Flow/Peri Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1215								
End Purge (hrs): 1300								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): 420 ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane 1,1 DCE	~~HCL~~ 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1 DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling point and peri. pump used for low flow sampling.

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGW PL08 I and EPGW PL08 D - No samples

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: No Sample ft bgs Screen Int. Depth No Sample ft bgs
Sample Date & Time: 11/14/2008 ______ hours ______ (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Showers 50's

H&S Survey Meter ______ PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ ft btor; Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane 1DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1400	Advance to 34 ft. Put in 300ml. → No water flow. Formation yielding 200 ml/min.										
1405	Advance to 34.5 ft. → No water flow										
1415	Advance to 36 ft → No water flow. * No sample @ PL08S. *										
1420	Advance to PL08D. Put in 300ml. @ 43 ft. → No water flow.										
1430	Advance to 43.5 ft. → No water flow.										
1440	Advance to 44 ft → No water flow										
1450	* No sample taken at PL08D.										
	Abandon hole.										
Background Readings			11/14/08		10.08	255	6.80	157.1	2.04	1.75	clear/odorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	1,4 Dioxane, NASB - Brunswick, ME	Sample ID No.	EPGW- PL09S-40
Project No.:	112G00645 / CTO 069	Sample Location:	PL09
		Sampled By:	Traut, Fellows, Geringer
		C.O.C. No.:	

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 12/12/08								
Time: 1600								
Method: Low Flow/Peri. Pump	Clear/colorless	Ca 24	87	8.87	5.90	-69.9	3.75	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 12/2/08								
Method: Low Flow/Peri. Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1535								
End Purge (hrs): 1550								
Total Purge Time (min): 15								
Total Vol. Purged (gal/L): 800ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane 1,1 DCE	~~HCL~~, 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling point and peri. pump used for low flow sampling

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

Tt TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME.
Sample ID: EPGWDL09S-40.

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 40 ft bgs Screen Int. Depth 40 ft bgs
Sample Date & Time: 12/2/2008 1600 hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: ;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ; Visual Evidence of Sheen (Yes/No) ;
Olfactory Evidence of Odor (Yes/No) ;
Weather: Sunny 40's

H&S Survey Meter PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ft btor; Post –tubing insertion WL ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane 1,1,DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1515	Advance to DL09S at 40 ft. Put in 1000ml as advancing. Put in 300ml at 40 ft. Formation taking water.										
1530	Reverse flow direction. Flow Rate = 40ml/min										
1535	Begin purging (Took out 800ml)										
1540	NA	9:00	40	400	6.61	130	5.84	-58.1	9.58	17.7	Clear/colorless
1545	"	"	"	600	6.30	92	5.93	-18.6	9.49	5.81	"
1550	"	"	"	800	6.24	87	5.90	-69.9	8.87	3.75	"
1600	Begin Sampling.		"								
Background Reading 12/02/08					8.15	315	7.01	215.5	8.71	1.23	Clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

(40,60,78)

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- PL04I-60
Sample Location:
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 12/03/08								
Time: 0925								
Method: Low Flow / Peri. Pump	Clear/colorless	3.15	144	8.05	5.74	38.1	7.40	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 12/03/08								
Method: Low Flow / Peri. Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 0905								
End Purge (hrs): 0920								
Total Purge Time (min): 15								
Total Vol. Purged (gal/L): 800 ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane / 1,1 DCE	~~HCL~~ 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling point and peri. pump used for low flow sampling.

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGWPL09I-60

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 60 ft bgs Screen Int. Depth 60 ft bgs
Sample Date & Time: 12/03/2008 0925 hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Sunny 30's

H&S Survey Meter ______ PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ ft btor; Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane / 1,1 DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0850	Advance to PL09I at 60 ft. Put in 1000ml as advancing. Formation taking water quickly. Put in 200 ml at 60 ft										
0900	Reverse flow direction. Flow Rate = 20ml/min										
0905	Begin purging (took out 300ml)										
0910	NA	9:00	20	400	3.54	104	6.19	57.5	9.40	41.44	sl. cloudy/colorless
0915	"	"	"	600	3.25	137	6.06	31.0	9.23	32.8	"
0920	"	"	"	800	3.15	144	5.74	38.1	8.05	7.90	clear/colorless
0925	Begin sampling										
Background Reading 12/03/08					14.02	174	6.61	135.4	6.20	0.49	clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

(60, 78)

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PL09D- No sample

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ______ ft bgs Screen Int. Depth ______ ft bgs
Sample Date & Time: 12/03 /2008 no Sample hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C.Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No)______;
Weather: Sunny 30's

H&S Survey Meter ______PPM
Pre-tubing insertion WL ______ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ______ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC ~~2. EDB/DBCP~~ 1,4 Dioxane 3. 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0935	Advance to PL09D at 78 ft. Formation talking water.										
0940	Reverse flow direction → no flow. Try pump and surge → no flow										
0950	Advance to 79 ft → no flow. Try pump and surge, but still no flow.										
1000	→ No PL09D sample collected.										
Background Reading 12/03/08					10.02	174	6.61	135.4	6.20	0.99	Clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1.4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGW PL10 - *NO Samples

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: NO Samples ft bgs Screen Int. Depth ______ ft bgs
Sample Date & Time: 11/17/2008 No Samples hours NA (Dup Time)
Sampler(s): B. Geringer, C. Fellows, J. Traut
Data Recorded By: C. Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Sunny 40's

H&S Survey Meter ______ PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ ft btor; Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane PCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0830	Advance to PL10S @ 21 ft. Put in 1000ml as advancing. Put in <300ml at 21 ft. Formation not taking water.										
0840	No water flow. Advance to 27.2 ft. Put in <100ml. Formation not taking water.										
0850	No water flow. Advance to 34.3 ft. Put in <100ml. Formation not taking water.										
0900	No water flow. Advance to 35 ft. Put in <50ml. Formation not taking water.										
0930	*NO SAMPLES TAKEN* Abandon hole.										
*Background Reading 11/17/08					4.92	224	7.84	127.5	11.04	0.86	Clear/odorless

Acceptance Criteria: <0.3 ft (drawdown) — Temp 3%; Spec. Cond. 3%; pH +/- 1.0 S.U.; ORP +/- 10mV; DO 10%; Turbidity 10%

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

(... 272 243)

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PL11 NO Samples

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)

Page 1 of 1

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ______ ft bgs Screen Int. Depth ______ ft bgs
Sample Date & Time: 12/04 /2008 NO Sample hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C.Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Cloudy 40's

H&S Survey Meter ______PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ft btor; Post –tubing insertion WL ______ft btor

Sampling Hierarchy and Lab Analyses:
1. VOC 1,4 Dioxane 2. ~~EDB/DBCP~~ 3. 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1230	Advance to PL11S at 7.5 ft. Formation not taking or giving water → NO sample collected.										
1250	Advance to PL11I at 17 ft. → No water flow.										
1300	Advance to 17.5 ft. → NO water flow → to NO sample collected.										
1310	Advance to 23.3 ft. Formation taking in little water → Reverse flow direction → NO flow → No sample collected.										
Background Reading 12/4/08					18.15	150	6.31	125.8	7.10	1.31	Clear/odorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

(7.5, 17, 23.3)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-PL12S-22.5
Sample Location: PL12
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 12/03/08 Time: 1220 Method: Low Flow/Peri. Pump	V. Cloudy/Brown	6.02	73	9.63	6.35	-82.1	703	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 12/03/08								
Method: Low Flow/Peri. Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1200								
End Purge (hrs): 1215								
Total Purge Time (min): 15								
Total Vol. Purged (gal/L): 950ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane 1,1 DCE	~~HCL~~ 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	HCL	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling point and peri. pump used for low flow sampling

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PL12S-22.5

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ______ ft bgs Screen Int. Depth ______ ft bgs
Sample Date & Time: 12/03/2008 1220 hours NA (Dup Time)
Sampler(s): B. Geringer / ~~C. Fellows~~ / J. Traut
Data Recorded By: C Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Sunny 40's

H&S Survey Meter ______ PPM
Pre-tubing insertion WL ______ ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane 3. 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1140	Advance to PL12S @ 22.5 ft. Formation taking water. Put in 500ml as advancing. (200ml at 22.5 ft.)										
1150	Reverse flow direction. Flow Rate = 40 ml/min										
1200	Begin Purging (took at 500 ml)										
1205	NA	9:00	40	550	5.18	128	6.00	-9.1	10.83	3082	V. Cloudy/Brown
1210	"	"	"	750	5.40	120	6.39	-67.1	10.65	1536	"
1215	"	"	"	950	6.02	73	6.35	-82.1	9.63	703	"
1220	Begin Sampling.										
Background Reading 12/03/08					16.02	174	6.61	135.4	6.20	0.99	clear/colorless

Acceptance Criteria: ≤0.3 ft (drawdown) — Temp 3%; Spec. Cond. 3%; pH +/- 1.0 S.U.; ORP +/- 10mV; DO 10%; Turbidity 10%

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

(22.5, 39, 52, 68)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- PL12I-40
Sample Location: PL12
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 12/03/08								
Time: 1315								
Method: Low Flow/Peri. Pump	Cloudy/Light Brown	5.35	437	9.22	5.85	-43.1	211	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 12/03/08								
Method: Low Flow/Peri. Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1250								
End Purge (hrs): 1315								
Total Purge Time (min): 25								
Total Vol. Purged (gal/L): 400ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane 1,1 DCE	~~HCL~~ 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling point and peri. pump used for low flow sampling

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PL12I- 40

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)
Page 1 of 1

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 40 ft bgs Screen Int. Depth 40 ft bgs
Sample Date & Time: 12/03/2008 1315 hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ; Visual Evidence of Sheen (Yes/No) ;
Olfactory Evidence of Odor (Yes/No) ;
Weather: Sunny 40's

H&S Survey Meter ____ PPM
Pre-tubing insertion WL ____ ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ____ ft btor

Sampling Hierarchy and Lab Analyses:
1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane 3. 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1240	Advance to PL12I at 39 ft. Formation taking water. Put in 300 ml as advancing. Put in 100 ml @ 39 ft.										
1250	No flowing water at 39 ft. Advance to 40 ft. Reverse flow direction. Flow Rate = 20 ml/min Begin Purging										
1305	NA	9:00	20	200	5.45	81	5.90	-30.2	10.35	296	Cloudy / light Brown
1310	"	"	"	400	5.35	437	5.85	-43.1	9.22	211	"
1315	* Begin Sampling. (Only 2 readings due to limited volume) (Turbidity after sampling = 30.3 NTU.)										
Background Reading		12/03/08			10.02	174	6.61	135.4	6.20	0.99	Clear / colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ____ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

(39, 52, 68)

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PL12 D - ~~55~~ NO Samples for D + D2

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 55 ft bgs Screen Int. Depth 55 ft bgs
Sample Date & Time: 12/03/2008 NO Samples hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Sunny 40s

H&S Survey Meter ______PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ft btor; Post –tubing insertion WL ______ft btor

Sampling ~~Hierarchy~~ and Lab Analyses:

1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane 3. 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1345	Advance to PL12D at 52 ft. Formation taking water. Put in 300ml as advancing. Put in 100ml at 52 ft.										
1350	Reverse flow direction. Flow Rate <10ml/min.										
1355	Advance to 52.5 ft. Put in 100ml										
1400	Reverse flow direction. Flow Rate <10ml/min. → Advance to 53 ft.										
1405	~~Begin purging.~~ Flow Rate = 40ml/min. Take out 400ml then flow stops.										
1410	Advance to 53.5 ft. → No flow. → NO sample collected										
1415	Advance to PL12D2 at 68 ft.										
1425	→ No flow.										
1430	No Samples collected for PL12D and D2.										
Background Reading	12/03/08				19.02	174	6.61	135.4	6.20	0.99	clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

(52, 68)

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: ERGW-PL13 – No Samples

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ________ ft bgs Screen Int. Depth ________ ft bgs
Sample Date & Time: 12/04 /2008 No Samples hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ____________; Visual Evidence of Sheen (Yes/No) ____________;
Olfactory Evidence of Odor (Yes/No) ____________;
Weather: Cloudy 40's

H&S Survey Meter ________PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ft btor; Post –tubing insertion WL ________ft btor

Sampling Hierarchy and Lab Analyses:
1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane ~~3.~~ 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0745	Advance to PL13S at 23 ft. Formation taking water.										
0800	Reverse flow direction. Gray silty water comes up then stops (clogs). Try pump and surge but still no flow.										
0805	Advance to 24 ft. Gray/silty water comes up then stops again. → NO flow										
0810	→ NO PL13S sample collected. (EC Profile graph looks like it should be sandy but MPI says feels very soft and gray silt comes up in tubing.)										
0835	Advance to PL13I at 41 ft. Tubing is clogged, no flow up or down. Try pump and surge but still no flow.										
0845	Pull up tubing/casing to unclog.										
0920	Advance to PL13I at 41 ft. again. Formation takes water										
0930	Reverse flow direction. NO flowing water.										
0935	Advance to 42 ft. Formation taking water. Reverse flow direction. Flow Rate = <10 ml/min. then slows to <5 ml/min → NO PL13I sample collected.										
0950	Advance to PL13D at 59 ft.										
1005	No flow in or out of formation → NO Sample collected for PL13D at 59 ft.										
1010	Advance to PL13D2 at 86 ft. Formation taking ~~[illegible]~~ water										
1015	Reverse flow direction. Flow Rate = 200 ml/min										
1020	Begin purging (took at 1500 ml)										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) __________ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

480 at 30 sec

(~~23~~ 24, ~~41~~ 42, 59, 86)

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Sample ID: EPGW - PL13 - No samples

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: ____________ (If applicable)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min.	Cum. Volume Purged ~~Gals.~~ ml	Temp °C	Spec. Cond. 2 µS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1020	NA	9:00	200	2000	8.39	84	6.63	-58.5	7.97	1837	Cloudy/Brown
1025	"	"	100	2500	8.43	133	6.75	-62.3	9.15	862	"
1028	Water flow slows then stops. Get enough water for 1 reading then stops. Try pump and surge.									2573	V. Cloudy/Brown
	Get enough water for another reading then stops again.										
	→ No sample collected @ PL13-D2.										
Background Reading 12/04/08					18.15	150	6.31	125.8	7.10	1.51	clear colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ____________ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-PL14 I-48
Sample Location: PL14
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 11/17/08								
Time: 1230								
Method: Low Flow / Peri. Pump	Clear/Odorless	7.93	89	4.18	5.69	133.8	5.88	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 11/17/08								
Method: Low Flow / Peri. Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1150								
End Purge (hrs): 1230								
Total Purge Time (min): 40								
Total Vol. Purged (gal/L): 650ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane / 1,1 DCE	~~None~~ 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW profiling point and peri. pump used for low flow sampling.

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
	EPGW-FD-111708 1250	[signature]

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGW PL14I 48

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: ~~PA~~ EPGW-PD-111708 @ 1250 (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 48 ft bgs Screen Int. Depth 48 ft bgs
Sample Date & Time: 11/17/2008 1230 hours 1250 (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ____; Visual Evidence of Sheen (Yes/No) ____;
Olfactory Evidence of Odor (Yes/No) ____;
Weather: Sunny 40's

H&S Survey Meter ____ PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ____ ft btor; Post –tubing insertion WL ____ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane / DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1055	Advance to 23 ft. Put in ~~200 ml~~ 300 ml. Formation not taking in a lot of water. But Flow rate increases once we stop advancing and stop at 23 ft. Put in 200 ml @ 23 ft.										
1115	No water flow. Advance to 24 ft. Put in 200 ml at 100 ml/min. Put in 200 ml at 48 ft.										
1135	No water Flow. Advance to PL14I @ 48 ft. ✓ * No sample from PL14S. *										
1145	Put in 200 ml at 48 ft. Flow Rate ~ 50 ml/min. Reverse Flow direction and getting constant water.										
1150	Begin purging. Flow Rate = 20 ml/min. Take at 200 ml put in at 48 ft.										
1200	NA	800	20	~~250~~ 250	7.57	173	6.21	156.7	4.70	47.1	v.sl.cloudy/colorless
1210	"	"	20	450	7.61	96	5.81	140.2	4.82	16.8	clear/colorless
1220	"	"	20	650	7.93	89	5.69	133.8	4.18	5.8	clear/colorless
1230	Begin Sampling.	End Purge									
1250	End Sampling.										
* Background Reading 11/17/08					4.92	224	7.84	127.5	11.04	0.86	Clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ____ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

(23, 48, 71)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME

Sample ID: EPGWPL14D- No Sample

Tetra Tech NUS Charge No. 112G00645 / CTO 069

Page 1 of 1

QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump

Depth Sampled: — ft bgs Screen Int. Depth — ft bgs

Sample Date & Time: 11/17/2008 No Sample hours NA (Dup Time)

Sampler(s): B. Geringer / C. Fellows / J. Traut

Data Recorded By: C. Fellows Signature: [signature]

Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); If yes, report depths/describe thickness ____; Visual Evidence of Sheen (Yes/No) ____;

Olfactory Evidence of Odor (Yes/No) ____;

Weather: Sunny 40's

H&S Survey Meter ____ PPM

Pre-tubing insertion WL ____ ft btor;

Field Instrument Group A/B/C/D

Post –tubing insertion WL ____ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane 1DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1305	Advance to 71 ft. Put in 300ml. Formation not taking water. Let 550ml/min.										
1320	No flowing water. Advance to 71.5ft.										
1330	No flowing water @ 71.5ft. Throttle pump to allow recharge. (5-10 mins)										
1340	Still no flowing water.										
1345	Advance to 72 ft. No water flow.										
1400	Lift up casing to 63ft. (4th attempt @ PL14D) Original depth proposed by TEMS).										
1415	No water flow.										
1420	* No Sample Taken * Abandon hole.										
* Background Reading 11/17/08					4.92	224	7.84	127.5	11.04	0.80	Clear/odorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ____ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGWDL15 - No Samples.

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)
Page 1 of 1

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ____ ft bgs Screen Int. Depth ____ ft bgs
Sample Date & Time: 11/18/2008 ____ hours NA (Dup Time)
Sampler(s): B. Geringer C. Fellows J. Traut
Data Recorded By: C. Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No) NA; if yes, report depths/describe thickness ____; Visual Evidence of Sheen (Yes/No) ____;
Olfactory Evidence of Odor (Yes/No) ____;
Weather: Partly Cloudy, 30's

H&S Survey Meter ____ PPM
Pre-tubing insertion WL ____ ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ____ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane /DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0830	Advance to 21 ft. Using 1000 ml. (Using thicker tubing - 4in ID) (PL15S.) Put in <100 ml at 21 ft b/c formation not taking in water.										
0845	NO water flow. Advance to 22 ft.										
0900	No water flow. Advance to 23 ft.										
0910	No water flow. *No sample taken @ PL15S*, Advance to PL15I @ 32 ft.										
0920	No water flow at 32 ft. Advance to 32.5 ft.										
0930	NO water flow at 32.5 ft. *NO Sample taken @ PL15I* Advance to PL15D @ 42 ft.										
0940	No water flow at 42 ft. Advance to 42.8 ft. B/c formation appears to take more water at that depth.										
1000	NO water flow at 42.8 ft. *NO Sample taken @ PL15D* Abandon hole										
* Background Reading 11/18/08					1.89	139	6.77	116.2	13.46	1.39	clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ____ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-PL16D-09
Sample Location: PL16D
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 11/19/08								
Time: 1500								
Method: Low Flow / Peri. Pump	cloudy/colorless	0.86	199	11.92	6.78	101.7	231	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 11/19/08								
Method: Low Flow / Peri. Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1415								
End Purge (hrs): 1450								
Total Purge Time (min): 35								
Total Vol. Purged (gal/L): 700ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL	2 X 40 mL vial with HCL	Yes / No
1,4 Dioxane /1,1 DCE	~~HCL~~	2 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

* Due to limited volume & slow purge rate, only 2 x 40ml vial w/HCL were collected for VOCs and 2 x 40ml vial were collected for 1,4 Dioxane/1,1DCE. Water in tubing became gray and silty causing tubing to clog.

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling point and peri. pump used for low flow sampling.

Circle If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGWPL16D-69

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: N/A (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 69 ft bgs Screen Int. Depth 69 ft bgs
Sample Date & Time: 11/19/2008 1500 hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (~~Yes~~/No); if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Sunny 20's

H&S Survey Meter ______ PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ ft btor; Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane /PCE
(Only 2 vials each)

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1315	Advance to PL16S @ 35 ft. → No water flow. Put in 1000 ml on advancing. 300 ml @ 35 ft.										
1335	Advance to 35.5 ft. → No water flow. * No sample collected for PL16S.										
1345	Advance to PL16I. Start @ 55 ft. Flow Rate = <5 ml/min, then stops. Advance to 56.5 ft. → No flow * No sample @ PL16S										
1400	Advance to PL16D. Start @ 69 ft. Put in 300 ml										
1415	Begin purging. Flow Rate 20 ml/min (consistent) TWG at 300 ml										
1430	NA	6.00	20	300	0.50	119	6.78	109.6	14.70	2.52	Cloudy/colorless
1440	"	"	"	500	0.90	134	6.69	111.4	12.21	2.46	"
1450	"	"	"	700	0.86	199	6.78	101.7	11.62	2.31	"
1500	Begin sampling										
1525	End Sampling. Water became silty, clogged tubing and stopped flow. Collected only 2 vials each (4 Total)										
Background Reading 11/19/08					16.53	229	7.51	152.7	0.53	1.11	Clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

(35, 55, 70 ca)

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- PL17D-64
Sample Location: PL17
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 11/19/08								
Time: 1120								
Method: Low Flow / Peri. Pump	Cloudy/Light Brown	1.55	319	5.60	6.38	-13.9	71.2	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 11/19/08								
Method: Low Flow / Peri. Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1045								
End Purge (hrs): 1110								
Total Purge Time (min): 25								
Total Vol. Purged (gal/L): 1200 ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	9 X 40 mL vial with HCL	Yes / No
1,4 Dioxane / 1,1 DCE	~~HCL~~ 4°C	9 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1 DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling point and peri. pump used for low flow sampling

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
Lab QC		

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGWPL17D-64

Tetra Tech NUS Charge No. 112G00645 / CTO 069

QC: MSMSD / Lab QC (triple volume) (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 64 ft bgs Screen Int. Depth 64 ft bgs
Sample Date & Time: 11/19/2008 1120 hours NA (Dup Time)
Sampler(s): B. Geringer, C. Fellows, J. Traut
Data Recorded By: C. Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~ NA; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Sunny 20's

H&S Survey Meter ______ PPM
Pre-tubing insertion WL ______ ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane /DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
~~0930~~ 1000	Advance to 35 ft. Do not pump water down as advancing due to cold weather and trying to avoid water freezing in tubing.										
1015	2 attempts for PL17S @ 35 and 35.5 ft. No flowing water and formation not taking water. → No sample @ PL17S										
1020	Advance to PL17I start @ 55 ft. → No flowing water. Formation not taking water. Trying to thaw tubing. → No sample @ PL17I										
1035	Advance to PL17D @ 65 ft. (Depth looks most promising from EC graph). Formation taking water @ 64 ft. Put in 500 ml.										
1045	Began purging. Flow Rate = 20 ml/min (consistent) Took out 500 ml.										
1100	NA	600	20	800	2.01	174	6.53	191.1	12.17	150	cloudy/light brown
1105	"	"	"	1000	1.84	~~220~~ 106	6.43	122.1	7.67	122	"
1110	"	"	"	1200	1.55	319	6.38	-13.9	5.60	71.2	"
1120	Begin Sampling										
1145	End Sampling										
Background Reading 11/19/08 (hot potable water)					16.53	229	7.51	152.7	6.53	1.11	Clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

(35, 56, 65)
35.5 55 64

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGWPL18 – NO samples

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ______ ft bgs Screen Int. Depth ______ ft bgs
Sample Date & Time: 11/17/2008 ______ hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Partly Cloudy 30's

H&S Survey Meter ______ PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ ft btor; Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane /DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1250	Advance to PL18S @ 21.5 ft. → No flowing water (Put in 500 ml as advance, formation not taking water)										
1300	Advance to 22 ft. → No flowing water.										
1320	Advance to 22.5 ft → no flowing water										
1330	*No sample collected for PL18S. Advance to PL18I. @ 29 ft.										
1340	No flowing water at 29 ft. Advance to 29.5 ft.										
1350	No flowing water at 29.5 ft. Advance to 31 ft.										
1355	No flowing water at 31 ft. *No sample collected for PL18I. Advance to PL18D starting at 39.5 ft.										
1400	No flowing water @ 39.5 ft. Advance to 41 ft.										
1420	No flowing water @ 41 ft. Abandon hole. *No sample collected @ PL18D.										
Background Reading		11/18/08			1.89	139	6.77	116.2	13.46	1.39	clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

~~1 23, 16, 17~~ 16, 17, 23, 19

(22, 29, 41)

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGW PL19 - No samples

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ______ ft bgs Screen Int. Depth ______ ft bgs
Sample Date & Time: 11/20/2008 No samples hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: Chris Fellows
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Cloudy 20's

H&S Survey Meter ______ PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ ft btor; Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC **2.** 1,4 Dioxane 1PCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1030	Advance to PL19S @ 17 ft. Not using pumping water down as advancing b/c it will freeze in tubing.										
1045	Tubing disconnects from Profile. Pull up casing, re-string tubing and try again. Keep water running through tubing so doesn't freeze										
1130	Advance to PL19S @ 17 ft. (again) → NO flowing water. ∴ NO Sample Collected for PL19S.										
1145	Advance to PL19I @ 31 ft. → No water flow. Formation not taking any water.										
1150	Advance slowly to 35 ft. → Formation not taking water.										
1200	∴ NO sample collected. Abandon hole.										
Background Reading 11/20/08	not taken due to no samples collected.										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

17, 31

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME

Sample ID: EPGW-PL20 – No Samples

Tetra Tech NUS Charge No. 112G00645 / CTO 069

QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump

Depth Sampled: ________ ft bgs Screen Int. Depth ________ ft bgs

Sample Date & Time: 12/01/2008 No Samples hours NA (Dup Time)

Sampler(s): B. Geringer C. Fellows J. Traut

Data Recorded By: C. Fellows Signature: [signature]

Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ________; Visual Evidence of Sheen (Yes/No) ________;

Olfactory Evidence of Odor (Yes/No) ________;

Weather: Cloudy Showers 50's

H&S Survey Meter ________ PPM

Pre-tubing insertion WL ________ ft btor;

Field Instrument Group A/B/C/D

Post –tubing insertion WL ________ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane | 1,1 DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0910	Advance to PL20S @ 24 ft. Put in 300 ml as advancing. Formation not taking in much water.										
0925	→ No water flow. Formation not taking or giving water. Advance to PL20I @ 33.5 ft. * No PL20S sample collected. *										
0930	@ PL20I @ 33.5 ft. Formation not taking or giving water. * No PL20I sample collected *.										
0935	Advance to PL20D @ 43.5 ft. Formation not taking or giving water.										
0940	Advance to 45 ft. Formation not taking or giving water. * No PL20D sample collected.										
Background Reading 12/1/08					11.90	482	7.22	266.7	7.43	1.06	Clear / colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ________ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

(24, 33.5, 43.5
45)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME.
Sample ID: EPGWPL21 – No Samples.

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)
Page 1 of 1

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ______ ft bgs Screen Int. Depth ______ ft bgs
Sample Date & Time: 11/21/2008 ______ hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Sunny 15°C

H&S Survey Meter ______ PPM
Pre-tubing insertion WL ______ ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane / 1,1 DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1145	Advance to PL21S @ 22 ft. Do not pump [illegible] water as necessary to prevent tubing from freezing										
1155	→ No flow. Pull up to 21.5 ft.										
1200	→ no flow. Advance to 23 ft. → No flow * No sample collected.										
1205	Advance to PL21I @ 31 ft. Formation not taking water										
1210	Advance to 31.5 ft. Similar. Formation not taking water → * No sample collected.										
1215	Advance to PL21D @ 42 ft. → Formation not taking water.										
1225	Advance to 43 ft. → Formation not taking water * No sample collected.										
No Background reading due to no samples collected on 11/21/08											
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

(22, 31, 42)
21.5
23
43

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGWPL22 – No Samples

Tetra Tech NUS Charge No. 112G00645 / CTO 069

Page 1 of

QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ______ ft bgs Screen Int. Depth ______ ft bgs
Sample Date & Time: 11/21/2008 ______ hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Sunny 15°C

H&S Survey Meter ______ PPM
Pre-tubing insertion WL ______ ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. 1,4 Dioxane 1,1 DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0945	Advance to PL22S @ 26 ft. → NO flowing water. * NO Sample @ PL22S (Did not pump water as advancing to prevent tubing from freezing).										
0955	Advance to PL22I @ 49.5 ft. → No flow. +										
1005	Advance to 50 ft. → No flow. + NO Sample collected										
1015	Advance to PL22D @ 60 ft. Water flowing up at Flow Rate of 30 ml/min but after 10 min stops.										
1025	Pull up casing to 59.5 ft. Similar to above. Flow Rate = 30 ml/min then stops after 10 mins + NO Sample collected.										
1050	No Samples ; Abandon Hole.										
No background reading due to no samples collected on 11/21/08											
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

(26, 50, 60*)
27 49.5 59.5

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGWPL23 - NO Samples

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)
Page 1 of 1

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ________ ft bgs Screen Int. Depth ________ ft bgs
Sample Date & Time: 11/20/2008 NO Sample hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ________; Visual Evidence of Sheen (Yes/No) ________;
Olfactory Evidence of Odor (Yes/No) ________;
Weather: Partly Cloudy 20's

H&S Survey Meter ________ PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ________ ft btor; Post –tubing insertion WL ________ ft btor

Sampling Hierarchy and Lab Analyses: 1
1. VOC 2. 1,4 Dioxane 1DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1310	Advance to PL23S @ 12 ft. Formation taking little water. Reverse flow. NO flowing water. * NO Sample collected *										
1325	Advance to PL23I @ 18 ft. Pump down 500ml at 18 ft. Reverse flow and flow gradually stops. becomes brown.										
1335	Advance to 20 ft. → Same as above → NO flow. * NO Sample collected *										
1340	Advance to PL23D @ 26.5 ft to start. → NO flow										
1350	Advance to 27 ft → no flow										
1400	Advance to 29.5 ft. → NO flow										
1415	* NO Sample collected * Abandon hole										
	NO Samples collected so no background reading for 11/20/08.										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ________ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

(12, 18, 27)
11.5 20 26.5, 30.5

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- PL24D-66
Sample Location: PL24
Sampled By: Traut Fellows Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

Date: 12/15/08	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Time: 1440								
Method: Low Flow / Peri Pump	Cloudy/Brown	8.50	112	5.88	6.66	53.9	500	

PURGE DATA:

Date: 12/15/08	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Method: Low Flow / Peri. Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1423								
End Purge (hrs): 1440								
Total Purge Time (min): ~~200 ml~~ 17								
Total Vol. Purged (gal/L): 700 ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL	4 X 40 mL vial with HCL	Yes / No
1,4 Dioxane / 1,1 DCE	~~HCL~~	4 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling point and peri. pump used for low flow sampling.

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
Lab QC		

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PL24D 66

Tetra Tech NUS Charge No. 112G00645 / CTO 069
Page 1 of 2
QC: Lab QC (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 66 ft bgs Screen Int. Depth 66 ft bgs
Sample Date & Time: 12/15/2008 1440 hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No); if~~ yes, report depths/describe thickness ; Visual Evidence of Sheen (Yes/No)
Olfactory Evidence of Odor (Yes/No)
Weather: Partly Cloudy 40's

H&S Survey Meter PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ft btor; Post –tubing insertion WL ft btor

Sampling Hierarchy and Lab Analyses:
1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane ~~3.~~ 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1310	Advance to PL24S at 27 ft. Put in 1000ml as advancing. Put in 300ml at 27 ft.										
1320	Formation taking water but not giving. NO water flow. ∴ NO Sample collected for PL24S.										
1325	Advance to PL24I at 54.5 ft. → NO flow.										
1334	Advance to 55 ft. → NO flow										
1340	Advance to 56 ft. (Driller says material feels hard)										
1355	Formation taking water but not giving → NO flow. ∴ NO Sample collected for PL24I.										
1400	Advance to PL24D at 63 ft. (Driller says material feels compact / hard). Formation taking water.										
1405	Reverse flow direction. Flow Rate = 70 ml/min										
1406	Began purging (Take out 1000ml)										
1410	NA	3800	70	1000 ml	8.92	98	6.46	152.0	7.41	over limit Error 4	cloudy / light brown
1415	→ Water flow stops. Tubing ~~[illegible]~~ clogged.										
1420	Advance to 66 ft. Formation taking water. Reverse flow direction. Flow Rate = 100 ml/min										
Background	Reading	12/15/08			27.64	311	7.23	102.0	6.04	2.22	clear/colorless

Acceptance Criteria: <0.3 ft (drawdown) — Temp 3%; Spec. Cond. 3%; pH +/- 1.0 S.U.; ORP +/- 10mV; DO 10%; Turbidity 10%

TtNUS Form 0009

Saturated Screen Volume (gallons) (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

(~~27~~ 26*, 54.5*, 66*, 79*)

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick, ME
Sample ID: EPGW - PL24D - 66 .

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: Lab QC (If applicable)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals. ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1423	Begin purging										
1425	NM	7.00	150								
1430	"	"	"	800 ml	8.57	104	6.42	102.7	6.46	1131	cloudy/Brown
1435	"		"	1400	8.36	104	6.50	90.5	5.85	588	sl. cloudy/Brown
1440	Begin Sampling			2000	8.50	112	6.66	53.9	5.88	500	cloudy/Brown
1455	End Sampling										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ____________ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- PL24D2-79
Sample Location: PL24
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 12/15/08								
Time: 1520								
Method: Low Flow / Peri. Pump	Cloudy / Brown	8.19	120	8.59	6.55	65	50.3	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 12/15/08								
Method: Low Flow / Peri. Pump.								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1503								
End Purge (hrs): 1520								
Total Purge Time (min): 17								
Total Vol. Purged (gal/L): 2100 ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane / 1,1 DCE	~~HCL~~ 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no? If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling point and peri. pump used for low flow sampling.

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): [signature]

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PL24 D2-79

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 79 ft bgs Screen Int. Depth 79 ft bgs
Sample Date & Time: 12/15/2008 1520 hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C.Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Cloudy 40's

H&S Survey Meter ______PPM
Pre-tubing insertion WL ______ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ______ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane 3. 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals~~ ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1455	Advance to PL24D2 at 79 ft. Put in 100ml as advancing. Formation taking water										
1500	Reverse flow direction. Flow Rate = 100 ml/min.										
1503	Begin purging (700ml out 1000ml)										
1505	NM	3.00	100	1200	7.99	110	6.56	61.0	8.44	5124	Cloudy/Brown
1510	"	"	"	1700	8.13	104	6.54	62.2	8.53	5484	"
1515	"	"	"	2100	8.19	120	6.55	65.0	8.59	5013	"
1520	Begin Sampling										
1530	End Sampling										
Background Reading 12/15/08					27.64	311	7.23	102.0	6.04	2.22	clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- PL25S-21
Sample Location: PL25
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (μS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 12/11/08								
Time: 1440								
Method: Low Flow/Peri. Pump	Clear/colorless	0.19	188	11.40	6.29	68.2	6.55	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 12/11/08								
Method: Low Flow/Peri. Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1420								
End Purge (hrs): 1440								
Total Purge Time (min): 20								
Total Vol. Purged (gal/L): 150								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane / 1,1 DCE	~~HCL~~ 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

\# GW Profiling point and peri. pump used for low flow sampling.

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PL25S-21

Tetra Tech NUS Charge No. 112G00645 / CTO 069 — Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 21 ft bgs Screen Int. Depth 21 ft bgs
Sample Date & Time: 12/11 /2008 1440 hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature] ;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ____; Visual Evidence of Sheen (Yes/No) ____;
Olfactory Evidence of Odor ~~(Yes/No)~~ ____;
Weather: 40's Raining Sleet

H&S Survey Meter ____ PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ____ ft btor; Post –tubing insertion WL ____ ft btor

Sampling Hierarchy and Lab Analyses:
1. VOC 2. 1,4 Dioxane ~~EDB/DBCP~~ ~~3.~~ 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1400	Advance to PL25S at 21 ft. Formation taking water. Put in 100 ml as advancing										
1405	Generator runs out of gas. Refill.										
1410	Begin pumping again. Reverse flow direction. Constant flow rate of 10 ml/min										
1420	Begin Purging										
1425	NA	3:00	10	150	9.19	188	6.29	68.2	11.40	6.55	clear/colorless
	Take 1 reading due to slow flow rate / limited water volume.										
1440	Begin Sampling										
1500	End Sampling										
Background Reading 12/11/08					8.19	133	5.87	120.4	10.09	1.59	Clear/colorless
					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Acceptance Criteria: <0.3 ft (drawdown)
TtNUS Form 0009

Saturated Screen Volume (gallons) ____ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- PL25I-62
Sample Location: PL25
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 12/15/08								
Time: 0915								
Method: Low Flow/Peri Pump	sl. cloudy/colorless	6.89	403	9.17	6.01	14.2	96.5	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 12/15/08								
Method: Low Flow/Peri. Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 0840								
End Purge (hrs): 0910								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 800ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane 1,1 DCE	~~HCL~~ 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW profiling point and peri. pump used for low flow sampling.

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
	EPGW-FD-121508 0930	[signature]

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PL25I - 62

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: ~~[illegible]~~ EPGW-ED-121508 Time 0930 (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 62 ft bgs Screen Int. Depth 62 ft bgs
Sample Date & Time: 12/15 /2008 0915 hours 0930 (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C.Fellows Signature: [illegible];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ; Visual Evidence of Sheen (Yes/No) ;
Olfactory Evidence of Odor (Yes/No) ;
Weather: 30's Sleet / Rain

H&S Survey Meter ______ PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ ft btor; Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane ~~3.~~ 1,1-DCE

(Also see separate sample logsheet for gw)

	Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
12	1503	Advance to PL25I at 60 ft										
	1520	tubing freezes up. Use paint heater to thaw but water still not pumping down or up tubing										
13	1550	Decide to proceed tomorrow at 60 ft using hot water.										
	0820	Ice / freezing Rain Storm. Due to Safety reasons do not sample/work on Fri: 12/12/08.										
15	0800	Begin pumping at 60 ft again → NO water flow in or out of formation.										
	0830	Advance to 62 ft. Formation starts taking water. Put in 3000 ml at 62 ft.										
	0840	Begin purging.										
	0900	NA	[illegible] 1:00	20	400ml	8.31	108	6.10	95.0	8.31	14.8	clear/colorless
	0905	"	"	"	600ml	7.47	102	6.18	48.2	9.24	85.1	sl. cloudy/colorless
	0910	"	"	"	800ml	6.89	403	6.01	14.2	9.17	96.5	"
	0915	Begin Sampling.										
	Background Reading 12/15/08					22.04	311	7.23	102.0	6.04	2.22	Clear colorless
	Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- PL25D-71
Sample Location: PL25
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 12/15/08								
Time: 1005								
Method: Low Flow / Peri. Pump	Clear/Colorless	8.29	112	4.32	5.78	76.7	13.7	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 12/15/08								
Method: Low Flow / Peri. Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 0950								
End Purge (hrs): 1005								
Total Purge Time (min): 15								
Total Vol. Purged (gal/L): 100ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane 1,1 DCE	~~HCL~~ 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1 DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:
Olfactory evidence of contamination - yes or no If yes, describe:

AGW Profiling point and peri. pump used for low flow sampling

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW-PL25D-71

Tetra Tech NUS Charge No. 112G00645 / CTO 069 — Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 71 ft bgs Screen Int. Depth 71 ft bgs
Sample Date & Time: 12/15/2008 1005 hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Cloudy 40's

H&S Survey Meter ______ PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ ft btor; Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:
1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane ~~3.~~ 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0935	Advance to PL25D at 71 ft. Formation taking little water.										
0945	Reverse flow direction. Flow rate = 10 ml/min consistent.										
0950	Begin purging.										
1000	NA	9:00	20	100	8.29	112	5.78	76.7	9.32	13.7	clear/colorless
1005	Begin Sampling (due to slow flow rate only take 1 reading)										
1050	End Sampling.										
Background Reading 12/15/08					27.64	311	7.23	102.0	6.04	2.22	clear/colorless
					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Acceptance Criteria: <0.3 ft (drawdown)
TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME

Sample ID: EPGW- PC2S D2 - No Sample

Tetra Tech NUS Charge No. 112G00645 / CTO 069

QC: NA (If applicable)

Page 1 of 1

Sample Method: Low Stress (flow) with Peristaltic Pump

Depth Sampled: ______ ft bgs Screen Int. Depth ______ ft bgs

Sample Date & Time: 12/15/2008 No Sample hours NA (Dup Time)

Sampler(s): B. Geringer / C. Fellows / J. Traut

Data Recorded By: C. Fellows Signature: [signature]

Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;

Olfactory Evidence of Odor (Yes/No) ______;

Weather: Partly Cloudy 40's

H&S Survey Meter ______ PPM

Pre-tubing insertion WL ______ ft btor;

Field Instrument Group A/B/C/D

Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane ~~3~~. 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1055	Advance to PC2SD - 81 ft. Pit in 1000ml as advancing.										
1105	Begin purging. Flow rate = < 10ml/min and inconsistent.										
1115	Flow slows to < 5ml/min & no sample collected										
Background Reading 12/13/08					27.64	311	7.23	102.0	6.04	7.22	Clear / colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PL 26 - No Samples

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: ____ (If applicable)
Page 1 of 1

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ____ ft bgs   Screen Int. Depth ____ ft bgs
Sample Date & Time: 12/11/2008 No Sample hours ____ (Dup Time)
Sampler(s): B. Geringer ~~C. Fellows~~ J. Traut
Data Recorded By: C. Fellows   Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ____; Visual Evidence of Sheen (Yes/No) ____;
Olfactory Evidence of Odor (Yes/No) ____;
Weather: 40's Sleet/Rain

H&S Survey Meter ____ PPM   Field Instrument Group A/B/C/D
Pre-tubing insertion WL ____ ft btor;   Post –tubing insertion WL ____ ft btor

Sampling Hierarchy and Lab Analyses:
1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane ~~3.~~ 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1230	Advance to PL 26S at 6 ft. Formation not taking water. Reverse flow direction → No flow & No Sample collected										
1245	Advance to PL 26 T at 12.5 ft. Formation not taking water. Reverse flow direction → No flow.										
1250	Back up to 11 ft. (Driller said material felt harder at 11 ft)										
1300	Formation still not taking water. Reverse flow direction. → No flow. & No sample collected										
Background Reading		12/11/08			8.19	133	5.87	120.4	10.09	1.59	Clear/Colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ____ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

(6, 12.5)

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PL27 - No samples.

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ______ ft bgs Screen Int. Depth ______ ft bgs
Sample Date & Time: 12/11/2008 No samples hours ______ (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C. Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: Cloudy, Rain/Sleet 30's

H&S Survey Meter ______ PPM
Pre-tubing insertion WL ______ ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ______ ft btor

Sampling Hierarchy and Lab Analyses:
1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane ~~3.~~ 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0915	Advance to PL27S at 13.5 ft. Put in 100ml as advancing. Formation taking water. Put in 300ml at 13.5ft.										
0920	Reverse flow direction. Flow Rate = 10ml/min. Gray/silty water in tubing. Got turbidity = ERR 4 (over limit)										
0930	Flow stops due to clogging (v. silty). * No sample collected										
0935	Advance to PL27I at 29 ft. Formation taking 100ml/min. Put in 200ml at 29ft.										
0938	Reverse flow direction. → No flow. * No sample collected										
0945	Advance to PL27D at 39 ft. Formation taking 100ml/min. Put in 200ml at 39 ft.										
0950	Reverse flow direction. → No flow. * No sample collected										
	* Drillers (MAI) say material feels soft at all depths. *										
Background Reading 12/11/08					8.19	133	5.87	120.4	10.09	1.59	clear/colorless

Acceptance Criteria: <0.3 ft (drawdown) — Temp 3%; Spec. Cond. 3%; pH +/- 1.0 S.U.; ORP +/- 10mV; DO 10%; Turbidity 10%
TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

(13.5, 29, 39

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: 1,4 Dioxane, NASB - Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- PL28D-45S
Sample Location: PL28
Sampled By: Traut, Fellows, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 12/10/08								
Time: 1620								
Method: Low Flow/Peri. Pump	Clear/colorless	8.43	76	7.35	5.47	120.7	20	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 12/10/08								
Method: Low Flow/Peri. Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
Sat. Screen Volume(gal):								
Start Purge (hrs): 1600								
End Purge (hrs): 1615								
Total Purge Time (min): 15								
Total Vol. Purged (gal/L): 3000ml								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TLC VOCs	HCL 4°C	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane 1,1 DCE	~~HCL~~ 4°C	3 X 40 mL vial ~~with HCL~~	Yes / No
~~1,1-DCE~~	~~HCL~~	~~3 X 40 mL vial with HCL~~	~~Yes / No~~

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* GW Profiling point and peri. pump used for low flow sampling

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

TETRA TECH NUS, INC.	PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PL28D-45.5

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 45.5 ft bgs Screen Int. Depth 45.5 ft bgs
Sample Date & Time: 12/10/2008 1626 hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / D. Traut
Data Recorded By: C. Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ____; Visual Evidence of Sheen (Yes/No) ____;
Olfactory Evidence of Odor (Yes/No) ____;
Weather: 50's Raining

H&S Survey Meter ____ PPM
Pre-tubing insertion WL ____ ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ____ ft btor

Sampling Hierarchy and Lab Analyses:
1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane ~~3.~~ 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1515	Advance to PL28S at 17 ft. Formation taking little water. → No flow. (Put in 500 ml as advancing)										
1530	Advance to 24 ft. → No flow in or out of formation. → No sample collected										
1540	Advance to PL28I at 32 ft. Formation taking water (Approx 150 ml/min)										
	Reverse flow direction. Flow Rate < 5 ml/min then stops → No sample collected										
1550	Advance to PL28D at 46 ft. Stop at 45.5 ft. b/c formation taking more water. Flow Rate = 200 ml/min										
1600	Begin Purging										
1605	NA	5:00	200	1000	8.85	63	5.99	114.2	7.85	535	cloudy/brown
1610	"	"	"	2000	8.50	115	5.68	117.8	6.65	88	sl. cloudy/colorless
1615	"	"	"	3000	8.43	76	5.67	120.7	7.35	26	clear/colorless
1620	Begin Sampling.										
1626	End Sampling.										
Background Reading		12/10/08			16.15	100	6.17	135.7	7.39	0.46	clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ____ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

(17, 24, 32, 46)

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PL29 - NO samples

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ______ ft bgs Screen Int. Depth ______ ft bgs
Sample Date & Time: 12/10 /2008 No Sample hours NA (Dup Time)
Sampler(s): B. Geringer / C. Fellows / J. Traut
Data Recorded By: C.Fellows Signature: ______;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: 50's Raining

H&S Survey Meter ______PPM
Pre-tubing insertion WL ______ft btor;
Field Instrument Group A/B/C/D
Post –tubing insertion WL ______ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane 3. 1,1-DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ ml	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0910	Advance to PL29S at 28 ft. Put in 500 ml as advancing. At 28 ft formation not taking water. No sample collected										
0930	Advance to PL29I at 47 ft.										
	Geopump dies. M.A. calls Pine Environ. for replacement.										
1045	Start pumping at 47 ft again → No flowing water. No sample collected.										
1100	Advance to PL29D at 58 ft. Formation taking water, Pump flow. Flow Rate = 10 ml/[illegible]										
1110	Began pumping. Flow Rate slows over time.										
1125	NA	3:00	<10	200	11.72	270	6.42	138.2	9.02	30.5	sl. cloudy/colorless
1130	Flow stops. ~~→ [illegible]~~ Try pump and surge, but still no flow.										
1132	Advance to 60 ft.										
1135	Begin purging.										
1145	NA	3:00	10	500	11.31	301	6.19	123.8	9.39	9755	V.Cloudy/Brown
1148	Water flow stops. Try pump and surges, still no flow. Tube filled w/ silty brown water.										
1150	→ No samples collected										
Background Reading 12/10/08 →					16.15	1.00	6.17	135.7	7.39	0.96	Clear/colorless
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

28, 45, 60

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: 1,4 Dioxane, NASB – Brunswick,ME
Sample ID: EPGW- PL30 - No Samples

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ______ ft bgs Screen Int. Depth ______ ft bgs
Sample Date & Time: 12/10 /2008 No Sample hours NA (Dup Time)
Sampler(s): B. Geringer /C. Fellows / J. Traut
Data Recorded By: ______ Signature: ______;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start ~~(Yes/No)~~; if yes, report depths/describe thickness ______; Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
Weather: 50's Raining

H&S Survey Meter ______PPM Field Instrument Group A/B/C/D
Pre-tubing insertion WL ______ft btor; Post –tubing insertion WL ______ft btor

Sampling Hierarchy and Lab Analyses:

1. VOC 2. ~~EDB/DBCP~~ 1,4 Dioxane ~~3. 1,1-DCE~~

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1230	Advance to PL30S at 16.5 ft. No Formation taking water but no flow.										
1250	Back up to 16 ft. Flow Rate = 10 ml/min.										
1300	Flow Rate stops. → * NO sample collected										
1303	Advance to PL30I at 35 ft. Formation not taking Water → No water flow. * NO sample collected										
1315	Advance to PL30D at 49.5 ft → No flow - [illegible] out of formation. Driller says feels very soft.										
1320	Back up to 48 ft. Formation taking little water										
1335	→ No water flow. * No Sample collected										
Background Reading		12/10/08									

Acceptance Criteria: <0.3 ft (drawdown) — Temp 3%, Spec. Cond. 3%, pH +/- 1.0 S.U., ORP +/- 10mV, DO 10%, Turbidity 10%

TtNUS Form 0009

Saturated Screen Volume (gallons) ______ (2" screen = 0.163 gals/ft of depth; 4" = 0.653 gals/ft; 6" = 1.469gals/ft)

(16.5*, 35, 49.5)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

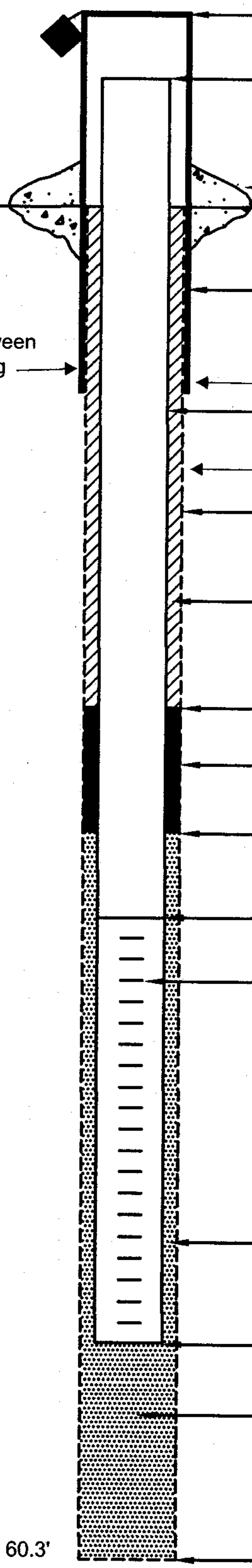
APPENDIX A-4
PERMANENT MONITORING WELL CONSTRUCTION LOGS
and BORING LOGS
and PROFILING CONFIRMATION BORING LOGS

WELL NO.: MW-EP-340S

Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET STICK-UP

PROJECT: NAS Brunswick	LOCATION: Eastern Plume Area	DRILLER: A. Martinelli/Drillex
PROJECT NO.: 112G00645	BORING:	DRILLING METHOD: Drive and Wash
DATE BEGUN: 11/5/08	DATE COMPLETED: 11/28/08	
FIELD GEOLOGIST: K. Jalkut, B. Geringer		DEVELOPMENT METHOD: Peristaltic
GROUND ELEVATION: 36.75	DATUM: FEET NAVD 1988	



Note - Sand between PVC & pro-casing

Pot. top of rock at 60.3'

ELEVATION/HEIGHT OF TOP OF SURFACE CASING: 39.79' / 3.04'

ELEVATION/HEIGHT OF TOP OF RISER PIPE: 39.53' / 2.78'

TYPE OF SURFACE SEAL: Cement (Quikrete)

I.D. OF SURFACE CASING: 4-inches

TYPE OF SURFACE CASING: Steel Guard Pipe

Depth Top of Sand Drain: 36.75' / 2.0'

RISER PIPE I.D.: 1-inch

TYPE OF RISER PIPE: Schedule 40 PVC

Depth Top of Grout: 33.75' / 3'

BOREHOLE DIAMETER: 4-inches

TYPE OF BACKFILL: Bentonite Grout

ELEVATION/DEPTH TOP OF SEAL: - 6.25' / 43'

TYPE OF SEAL: Bentonite Chips (med.)

DEPTH TOP OF SAND PACK: - 9.25' / 46'

ELEVATION/DEPTH TOP OF SCREEN: - 11.25' / 46'

TYPE OF SCREEN: Schedule 40 PVC

SLOT SIZE x LENGTH: 0.010 slots x 10'

I.D. OF SCREEN: 1-inch

TYPE OF SAND PACK: "00" sand (20-40 sieve size)

ELEVATION/DEPTH BOTTOM OF SCREEN: -21.25' / 58'

ELEVATION/DEPTH BOTTOM OF SAND PACK: -22.25' / 59'

BACKFILL MATERIAL BELOW SAND: Bentonite chips (med.), sand - below screen

ELEVATION/DEPTH OF HOLE: - 23.55' / 60.3'

BORING LOG FOR: NAS Brunswick - Supplemental RI Work
PROJECT NO: 112G00645
LOGGED BY: K. Jalkut
DRILLED BY (Company/Driller): A. Martinelli/Drillex
GRD. SURFACE ELEVATION: 36.75' MSL
* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

TRANSCRIBED BY: LH
ELEVATION FROM: NAVD 1988

BORING NO.: SB-EP-340S
START DATE: 11/5/2008
COMPLETION DATE: 11/5/2008
MON. WELL NO.: MW-EP-340S (by next to paved road)
CHECKED BY: CR

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
0							Ground Surface			
	4	2.0' / 2.0'		Topsoil	Loose	Dark Brown	S-1A (0-0.7') SAND (fine) - some organic roots	SP	Dry; topsoil; organic odor	PID = 4 ppm
	5			UPPER SAND		Tan-orange	S-1B (0.7'-1.2') SAND (fine), few iron oxide stains		Not stratified; upper sand unit below topsoil	JHS = 41.6 ppm (organic topsoil)
	4					Tan-Brown	S-1C (1.2'-2') SAND (fine), no iron oxide stains			
2	5		S-1 1010							
	4	2.0' / 2.0'				Tan-Orange	S-2 (0-2') SAND (fine), iron oxide stains		Stratified; dry	PID = 0 ppm
	5									JHS = 0 ppm
	5									
4	4		S-2 1015							
	4	1.3' / 2.0'			Medium Dense		S-3 (0-1.3') similar to S-2		Stratified; moist	PID = 1.3 ppm
	5									JHS = 2.2 ppm
	6									
6	7		S-3 1020							
	8	1.2' / 2.0'				Tan-Brown	S-4 (0-1.2') SAND (fine), no iron oxide stains		Not stratified; Wet	PID = 0.2 ppm
	8									JHS = 48.6 ppm
	7									(moisture - olfactory sense
8	8		S-4 1025							of odor)

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Drive and Wash
METHOD OF SOIL SAMPLING: Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING: N/A
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:: Note - No samples for analysis; JHS = jar head space reading (heated in car) PID reading taken when spoon opened.

Tetra Tech NUS, Inc.

BORING LOG FOR: NAS Brunswick - Supplemental RI Work
PROJECT NO: 112G00645
LOGGED BY: K. Jalkut
DRILLED BY (Company/Driller): A. Martinelli/Drillex
GRD. SURFACE ELEVATION: 36.75' MSL
TRANSCRIBED BY: LH
ELEVATION FROM: NAVD 1988
BORING NO.: SB-EP-340S
START DATE: 11/5/2008
COMPLETION DATE: 11/5/2008
MON. WELL NO.: MW-EP-340S (by next to paved road)
CHECKED BY: CR

* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
8	7	1.2' / 2.0'		UPPER SAND	Medium Dense	Tan-Brown	S-5A (0-1.2') SAND (fine-medium), no iron oxide stains	SP	Saturated	PID = 0 ppm
	9									JHS = 0.4 ppm
	9									
10	10		S-5 1030							
	7	0.6' / 2.0'					S-6A (0-0.6') Similar to S-5		Saturated	PID = 0 ppm
	8									JHS = 3 ppm
	7									
12	8		S-6 1035							
	5	1.4' / 2.0'				Tan-Brown-Red	S-7 (0'-1.4') SAND (fine) with 2x1/2" to 1"	SP and SM	Saturated; interbeds of silt - Potential top of transition unit	PID = 0 ppm
	3					Gray-Brown (silt)	Thick interbeds of silt; iron oxide stains in sand up to 1/2" thick			JHS = 0.3 ppm
	8									
14	8		S-7 1050							
	2	1.3' / 2.0'			Loose		S-8 (0-1.3') SAND (fine), no iron oxide stains	SP	Saturated; not stratified, no interbeds of silt	PID = 0.1 ppm
	3									JHS = 0.1 ppm
	3									
16	3		S-8 1055							

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Drive and Wash
METHOD OF SOIL SAMPLING: Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING: N/A
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:: Note - No samples for analysis; JHS = jar head space reading (heated in car) PID reading taken when spoon opened.

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-340S
PROJECT NO:	112G00645	START DATE:	11/5/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	11/5/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-340S (by next to paved road)
GRD. SURFACE ELEVATION:	36.75' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
16										
	2	1.5' / 2.0'		TRANSITION	Loose (sand)	Gray - Brown	S-9 (0-1.5') SAND (fine) with three layers of SILT up to 2" thick 1/4" - 1/2" thick iron oxide stains	SP and SM	Saturated; interbeds present	PID = 0 ppm
	2				Medium Stiff (silt)	Gray - Red Brown	in sand			JHS = 0.1 ppm
	3									
18	4		S-9 1100							
	1	1.8' / 2.0'			Soft		S-10A (0-0.3') SILT - trace (fine) sand (iron oxide stained)	ML and SP	Interbeds 1/8" thick (2 total). Start of SILT layer	PID = 0 ppm
	1					Dark Gray	S-10B (0.3-1.8') SILT - trace (fine) sand (1/4" thick interval)			JHS = 0.0 ppm
	1								iron oxide stains; not stratified	
20	2		S-10 1120							
	2	0.8' / 2.0'					S-11 (0-0.8') SILT - trace (fine) sand, no iron oxide stains	ML	not stratified; no interbeds; saturated	PID = 0 ppm
	2									JHS = 0.3 ppm
	2									
22	1		S-11 1125							
	2	0.8' / 2.0'					S-12 (0-0.8') SILT, no iron oxide stains		Saturated; not stratified	PID = 0 ppm
	1									JHS = 0.1 ppm
	2									
24	1		S-12 1130							

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash
METHOD OF SOIL SAMPLING:	Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Note - No samples for analysis; JHS = jar head space reading (heated in car) PID reading taken when spoon opened.

Tetra Tech NUS, Inc.

BORING NO.: SB-EP-340S

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-340S
PROJECT NO:	112G00645	START DATE:	11/5/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	11/5/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-340S (by next to paved road)
GRD. SURFACE ELEVATION:	36.75' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
24										
	1	1.3' / 2.0'		TRANSITION	Soft	Dark Gray	S-13 (0-1.3') CLAYEY SILT - trace (fine) sand; (slightly plastic; no iron oxide stains)	ML	Saturated. Can't roll out - not cohesive	PID = 0 ppm JHS = 0.1 ppm
	1									
	1									
26	1		S-13 1135							
	1	2.0' / 2.0'					S-14 (0-2') Similar to above ("soupier" in parts)		Saturated. No iron oxide stains, not stratified, slightly plastic	PID = 0.1 ppm JHS - accidently discarded prior to reading
	2									
	2									
28	1		S-14 1138							
	1	1.9' / 2.0'			Very SOFT		S-15 (0-1.9') Similar to S-14		Saturated; slightly plastic - can't roll; fist can go thru, thumb too	PID = 0 ppm JHS = 0.2 ppm
	1									
	1									
30	1		S-15 1145							
	1	1.6' / 2.0'					S-16 (0-1.6') Similar to S-15		Saturated, slightly plastic - can't roll - thumb and fist can go thru easily	PID = 0 ppm JHS = 0.5 ppm
	1									
	1									
32	1		S-16 1147							

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash
METHOD OF SOIL SAMPLING:	Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Note - No samples for analysis; JHS = jar head space reading (heated in car) PID reading taken when spoon opened.

Tetra Tech NUS, Inc.

BORING LOG FOR: NAS Brunswick - Supplemental RI Work
PROJECT NO: 112G00645
LOGGED BY: K. Jalkut
DRILLED BY (Company/Driller): A. Martinelli/Drillex
GRD. SURFACE ELEVATION: 36.75' MSL
* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

TRANSCRIBED BY: LH
ELEVATION FROM: NAVD 1988

BORING NO.: SB-EP-340S
START DATE: 11/5/2008
COMPLETION DATE: 11/5/2008
MON. WELL NO.: MW-EP-340S (by next to paved road)
CHECKED BY: CR

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
32	1	1.0' / 2.0'		TRANSITION	SOFT - Very Soft	Dark Gray	S-17 (0-2') CLAYEY SILT - trace FINE SAND (no slightly plastic, "soupy" in parts	ML	Saturated; can't roll out - not ochesive no iron stains, not stratified	PID = 0 ppm JHS = 1 ppm
	1									
	1									
34	1		S-17 1150							
	1	2.0' / 2.0'					S-18 (0-2') Similar to S-17			PID = 0.1 ppm JHS = 0.2 ppm
	1									
	1									
36	1		S-18 1155							
	1	2.0' / 2.0'					S-19 (0-2') Similar to S-18			PID = 0 ppm JHS = 1.5 ppm
	1									
	1									
38	1		S-19 1157							
	1	2.0' / 2.0'					S-20 (0-2') Similar to S-19			PID = 0.1 ppm JHS = 1.1 ppm
	1									
	1									
40	1		S-20 1203							

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Drive and Wash
METHOD OF SOIL SAMPLING: Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING: N/A
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:: Note - No samples for analysis; JHS = jar head space reading (heated in car) PID reading taken when spoon opened.

Tetra Tech NUS, Inc.

BORING LOG FOR: NAS Brunswick - Supplemental RI Work
PROJECT NO: 112G00645
LOGGED BY: K. Jalkut
DRILLED BY (Company/Driller): A. Martinelli/Drillex
GRD. SURFACE ELEVATION: 36.75' MSL
* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

TRANSCRIBED BY: LH
ELEVATION FROM: NAVD 1988

BORING NO.: SB-EP-340S
START DATE: 11/5/2008
COMPLETION DATE: 11/5/2008
MON. WELL NO.: MW-EP-340S (by next to paved road)
CHECKED BY: CR

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
40				TRANSITION	Soft - Very Soft	Dark Gray	S-21 (0-0.5') CLAYEY SILT - trace (fine) sand slightly plastic, no iron oxide stains, not stratified	ML	Saturated; can't roll out, not cohesive	PID = 0 ppm JHS = 2 ppm
	1	2.0' / 2.0'								
	1									
	1									
42	1		S-21 1205							
	1	2.0' / 2.0'					S-22 (0-2') Similar to S-21			PID = 0.2 ppm JHS = 0.5 ppm
	1									
	1									
44	1		S-22 1210							
	1	2.0' / 2.0'					S-23 (0-2') Similar to S-22, "soupy" in parts			PID = 1.4 ppm JHS = 2 ppm
	1									
	1									
46	1		S-23 1215							
	1	2.0' / 2.0'					S-24 (0-2') Similar S-23			PID = 0.2 ppm JHS = 3 ppm
	1									
	1									
48	1		S-24 1220							

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Drive and Wash
METHOD OF SOIL SAMPLING: Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING: N/A
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:: Note - No samples for analysis; JHS = jar head space reading (heated in car) PID reading taken when spoon opened.

Tetra Tech NUS, Inc.

BORING LOG FOR: NAS Brunswick - Supplemental RI Work
PROJECT NO: 112G00645
LOGGED BY: K. Jalkut
DRILLED BY (Company/Driller): A. Martinelli/Drillex
GRD. SURFACE ELEVATION: 36.75' MSL
* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

BORING NO.: SB-EP-340S
START DATE: 11/5/2008
COMPLETION DATE: 11/5/2008
MON. WELL NO.: MW-EP-340S (by next to paved road)
CHECKED BY: CR

DEPTH (FEET) 48	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
	1	2.0' / 2.0'		TRANSITION	Very Loose	Tan-Brown	S-25 (0-2') SAND (fine); 3 x 1/2" thick interbeds of silt	SP and SM	Saturated; interbeds of silt; iron oxide stain on sand above each silt interbed	PID = 0.2 ppm JHS = 4.2 ppm
	1					Brown				
	1									
50	2		S-25 1235							
	1	2.0' / 2.0'			Soft	Dark Gray	S-26A (0-0.9') CLAYEY SILT - trace (fine) SAND, slightly plastic	ML	Saturated; no iron oxide stains, not stratified; can't roll out	PID = 0.1 ppm JHS = 2 ppm
	1				Loose	Tan-Brown	S-26B (0.9-1.7') SAND (fine); no iron oxide stains, not stratified	SP		
	1				Medium Stiff (silt)	Gray-Brown	S-26C (1.7-2') SILT with 4 x 1/4" thick interbeds of (fine) SAND, iron oxide stains, not stratified	ML and SP	Saturated; silt with sand interbeds	
52	1		S-26 1240		Loose (sand)					
	1	2.0' / 2.0'			Soft	Dark Gray	S-27 (0-2') CLAYEY SILT - trace (fine) sand, slightly plastic	ML	Similar to S-26A; saturated; can't roll out - not cohesive	PID = 0.1 ppm JHS = 0.4 ppm
	1									
	1									
54	1		S-27 1250							
	1	2.0' / 2.0'					S-28 (0-2') Similar to S-27			PID = 0.1 ppm JHS = 0.6 ppm
	1									
	1									
56	1		S-28 1255							

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Drive and Wash
METHOD OF SOIL SAMPLING: Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING: N/A
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:: Note - No samples for analysis; JHS = jar head space reading (heated in car) PID reading taken when spoon opened.

Tetra Tech NUS, Inc.

BORING LOG FOR: NAS Brunswick - Supplemental RI Work
PROJECT NO: 112G00645
LOGGED BY: K. Jalkut
DRILLED BY (Company/Driller): A. Martinelli/Drillex
GRD. SURFACE ELEVATION: 36.75' MSL

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

BORING NO.: SB-EP-340S
START DATE: 11/5/2008
COMPLETION DATE: 11/5/2008
MON. WELL NO.: MW-EP-340S (by next to paved road)
CHECKED BY: CR

* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

DEPTH (FEET)	BLOWS PER 6" NA (Coring Ft./Min)	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
56	1	2.0' / 2.0'		TRANSITION	Soft	Dark Gray	S-29 (0-2') CLAYEY SILT - trace (fine) SAND; Slightly plastic, no iron oxide stains	ML	Saturated; not stratified; mottled in 2 places with dark gray to black mineral	PID = 0.3 ppm JHS = 3.2 ppm
	1									
	1									
58	1		S-29 1300							
	1	2.0' / 2.0'				Gray	S-30 (0-2') CLAYEY SILT - SOME (fine) SAND, slighty plastic, no iron oxide stains		Similar to S-29 above - dark mineral in silt smears on touch	PID = 0.4 ppm JHS = 3 ppm
	1									
	1									
60	100/0.3'		S-30 1305							
				Bedrock at 60.3' bgs End of Boring			Potential top of rock at 60.3' (refusal)			
							Backfill with bentonite chips to 59' - sand beneath screen (1') - install well - see separate well construction log for details.			
62										

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Drive and Wash
METHOD OF SOIL SAMPLING: Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING: N/A
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:: Selected screen interval based on sand layers with readings

Tetra Tech NUS, Inc.

BORING NO.: SB-EP-340S

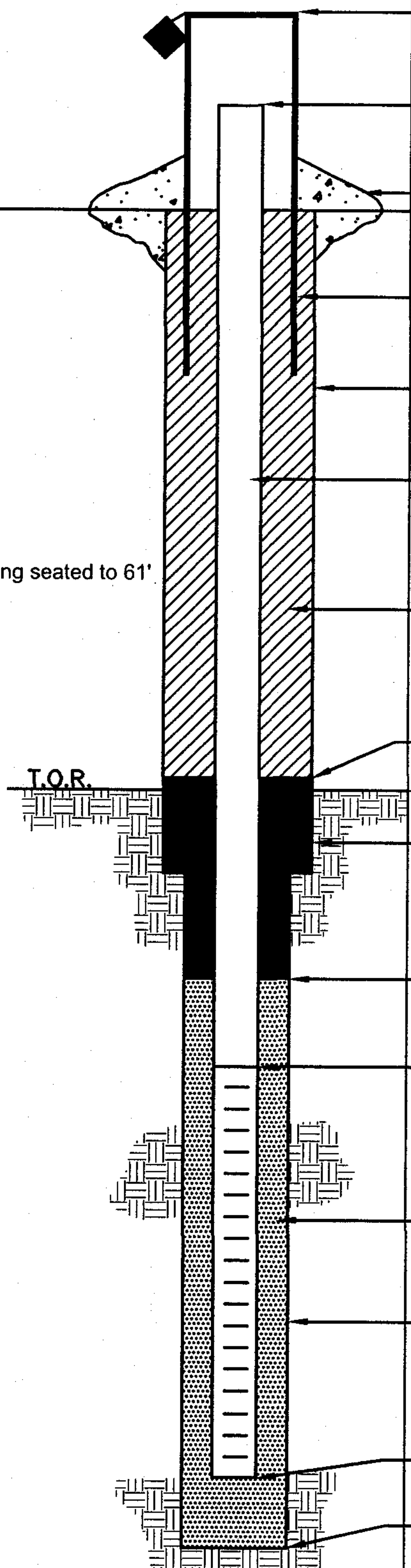
WELL NO.: MW-EP-340B1

Tetra Tech NUS, Inc.

BEDROCK
MONITORING WELL SHEET
WELL INSTALLED IN BEDROCK

PROJECT: EP - Bedrock Investigation
LOCATION: NASB
PROJECT NO.: 112G00645
BORING:
DATE BEGUN: 11/05/08
DATE COMPLETED: 11/28/08
FIELD GEOLOGIST: K. Jalkut/B. Geringer
GROUND ELEVATION: 36.69
DATUM: FEET NAVD 1988

DRILLER: Drillex
DRILLING METHOD: D&W/Air Rotary/RollerBit
DEVELOPMENT METHOD: Peristaltic



ELEVATION/HEIGHT OF TOP OF SURFACE CASING: 39.27' / 2.58'

ELEVATION/HEIGHT TOP OF RISER: 39.13' / 2.45'

TYPE OF SURFACE SEAL: Concrete

I.D. OF SURFACE CASING: 6"

DIAMETER OF HOLE: 8"

RISER PIPE I.D.: 1"
TYPE OF RISER PIPE: PVC

TYPE OF BACKFILL: Bentonite

ELEVATION/DEPTH TOP OF SEAL: 36.69' / Ground Surface

ELEVATION/DEPTH TOP OF BEDROCK: - 22.31' / 59'

TYPE OF SEAL: Bentonite/Concrete

ELEVATION/DEPTH TOP OF SAND: - 29.61' / 66.3'

ELEVATION/DEPTH TOP OF SCREEN: - 31.61' / 68.3'
TYPE OF SCREEN: Schedule 40
SLOT SIZE x LENGTH: 0.01" x 5'
I.D. SCREEN: 1"

TYPE OF SAND PACK: Type 00 (20-40 Sieve)

DIAMETER OF HOLE IN BEDROCK: 6"
CORE/REAM:

ELEVATION/DEPTH BOTTOM SCREEN: - 36.61' / 73.3'
ELEVATION/DEPTH BOTTOM OF SAND: - 39.61' / 76.3'
ELEVATION/DEPTH BOTTOM OF HOLE: - 74.31' / 111'
BACKFILL MATERIAL BELOW SAND: Bentonite

ACAD: FORM_MWINBR.dwg 07/20/99 INL

WELL NO.: MW-EP-340B2

Tetra Tech NUS, Inc.

BEDROCK
MONITORING WELL SHEET
WELL INSTALLED IN BEDROCK

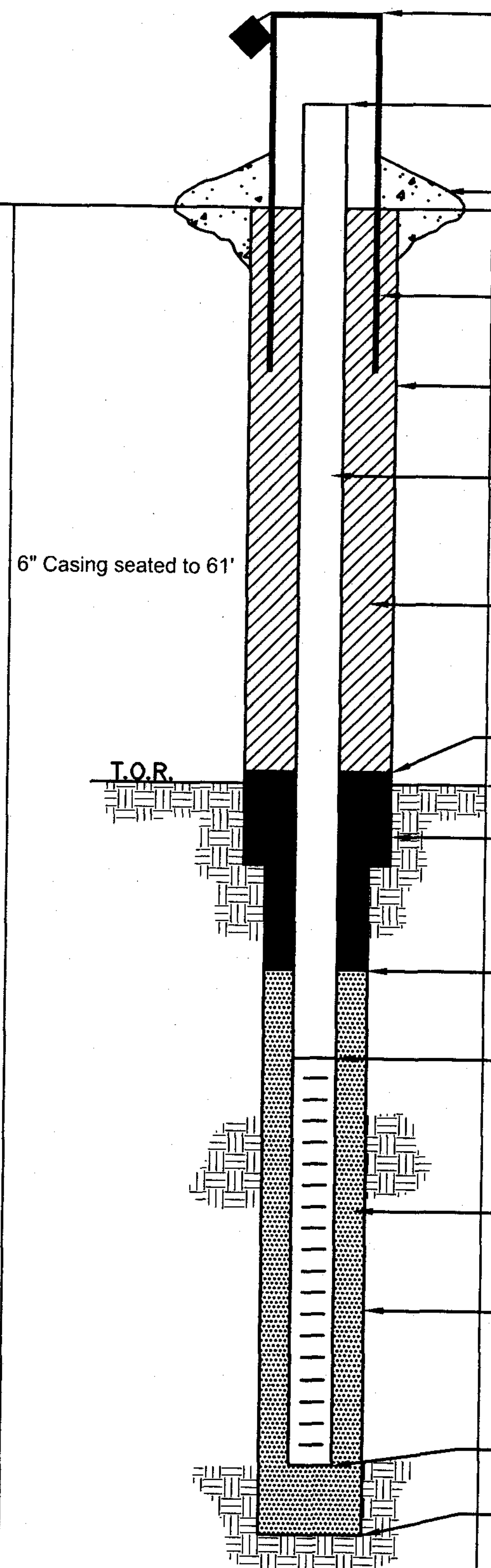
PROJECT: EP - Bedrock Investigation
LOCATION: NASB
DRILLER: Drillex

PROJECT NO.: 112G00645
BORING:
DRILLING METHOD: D&W/Air Rotary/RollerBit

DATE BEGUN: 11/05/08
DATE COMPLETED: 11/28/08

FIELD GEOLOGIST: K. Jalkut/B. Geringer
DEVELOPMENT METHOD: Peristaltic/Wyterm

GROUND ELEVATION: 36.69
DATUM: FEET NAVD 1988



ELEVATION/HEIGHT OF TOP OF SURFACE CASING: 39.27' / 2.58'

ELEVATION/HEIGHT TOP OF RISER: 39.10' / 2.42'

TYPE OF SURFACE SEAL: Concrete

I.D. OF SURFACE CASING: 6"

DIAMETER OF HOLE: 8"

RISER PIPE I.D.: 1"

TYPE OF RISER PIPE: PVC

TYPE OF BACKFILL: Bentonite

ELEVATION/DEPTH TOP OF SEAL: 36.69' / Ground Surface

ELEVATION/DEPTH TOP OF BEDROCK: - 22.31' / 59'

TYPE OF SEAL: Bentonite/Concrete

ELEVATION/DEPTH TOP OF SAND: - 47.01' / 83.7'

ELEVATION/DEPTH TOP OF SCREEN: - 49.01' / 85.7'

TYPE OF SCREEN: Schedule 40

SLOT SIZE x LENGTH: 0.01" x 5'

I.D. SCREEN: 1"

TYPE OF SAND PACK: Type 00 (20-40 Sieve)

DIAMETER OF HOLE IN BEDROCK: 6"

CORE/REAM:

ELEVATION/DEPTH BOTTOM SCREEN: - 54.01' / 90.7'

ELEVATION/DEPTH BOTTOM OF SAND: - 56.01' / 92.7'

ELEVATION/DEPTH BOTTOM OF HOLE: - 74.31 / 111'

BACKFILL MATERIAL BELOW SAND: Bentonite

ACAD: FORM_MWINBR.dwg 07/20/99 INL

BORING LOG FOR: NAS Brunswick - Supplemental RI Work
PROJECT NO: 112G00645
LOGGED BY: K. Jalkut
DRILLED BY (Company/Driller): A. Martinelli/Drillex
GRD. SURFACE ELEVATION: 36.69' MSL

TRANSCRIBED BY: LH
ELEVATION FROM: NAVD 1988

BORING NO.: SB-EP-340B
START DATE: 11/6/2008
COMPLETION DATE: 11/18/2008
MON. WELL NO.: MW-EP-340B
CHECKED BY: CR

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
							No split barrel samples collected - refer to boring log for MW-EP 341S for detailed soil descriptions			
0										
						Brown	Initially advance temp. 8" steel casing in overburden - Fine sand cuttings			PID = 0 ppm
5										(washwater)
10										
15							- Fine sand cuttings			PID = 0 ppm (washwater)
						Gray	- Silt and sand cuttings			
20							- Bottom of 8" casing - Advance with tricone roller bit thru clayey silt -			
							borehole stays open - Add Drilling mud at 45' (sand well encountered in		Drilling mud at 45' CEICO vari FloQD mud	
							shallow well at 48') Hole remains open; cuttings return - Refusal at 59' - potential rock surface			
59'							- Clean out borehole - Telescope 6" permanent steel casing, seat 2' into rock at 61'			
61'							- Grout casing in place; watch for return; allow congeal - Pull 8" casing at end of day.			

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Drive and Wash
METHOD OF SOIL SAMPLING: N/A
METHOD OF ROCK CORING: No coring. Start with air rotary using air hammer. Switch to roller bit with water
GROUNDWATER LEVELS:
OTHER OBSERVATIONS::

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-340B
PROJECT NO:	112G00645	START DATE:	11/6/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	11/18/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-340B
GRD. SURFACE ELEVATION:	36.69' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
11/16/2008		N/A	R-1 1630				Used air rotary - became too messy and switched to roller bit			
66						Gray	Schist - significant fractures encountered?			
			R-2 1745				very slow going			
71							stopped for the day			PID = 0.0 (washwater)
11/17/2008			R-3 1115				slow going - Drillers decide to switch to 3 7/8" roller bit will switch back to 5 7/8" bit after 50 of drills			
75										
			R-4 1320				No significant H_2O loss			
80										
			R-5 1415				No significant H_2O loss			
85										
			R-6 1510				No significant H_2O loss			
90										
			R7 1600				Encountered possible fracture at ~ 32' bgs - 75 gallons water lost			
95										PID = 0.0 (washwater)
			R8 1700				No significant H_2O loss			
100										

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash
METHOD OF SOIL SAMPLING:	N/A
METHOD OF ROCK CORING:	No coring. Start with air rotary using air hammer. Switch to roller bit with water
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-340B
PROJECT NO:	112G00645	START DATE:	11/6/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	11/18/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-340B
GRD. SURFACE ELEVATION:	36.69' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
11/17/2008			R-9 1800			Gray	No significant H20 Loss			
105										
			R-10 1820							
110							Switched to 57/8" roller bit			
			R11-14 1925				No significant H20 loss - Flushed out hole			PID = 0.0 (washwater)
81							Finished for the day			
11/18/2008			R-15 1005				No significant H20			
86										
			R-16 1030							
91										
			R-17 1055				Possible fractures - lost 50 gallons			
96										PID = 0.0 (washwater)
			R-18 1140				Possible fractures - lost 10 gallons			
101										
			R-19 0:00				No significant water lost			
106										

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash
METHOD OF SOIL SAMPLING:	N/A
METHOD OF ROCK CORING:	No coring. Start with air rotary using air hammer. Switch to roller bit with water
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-340B
PROJECT NO:	112G00645	START DATE:	11/6/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	11/18/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-340B
GRD. SURFACE ELEVATION:	36.69' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
			R-20 1230			Gray	Reached 50' into rock - stopped drilling - started to clean out hole			
111										
			1345				Finished cleaning out hole - used Approx. 300 gallons			

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash
METHOD OF SOIL SAMPLING:	N/A
METHOD OF ROCK CORING:	No coring. Start with air rotary using air hammer. Switch to roller bit with water
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	

Tetra Tech NUS, Inc.

BORING NO.: SB-EP-340B

WELL NO.: MW-EP-341S

Tetra Tech NUS, Inc.

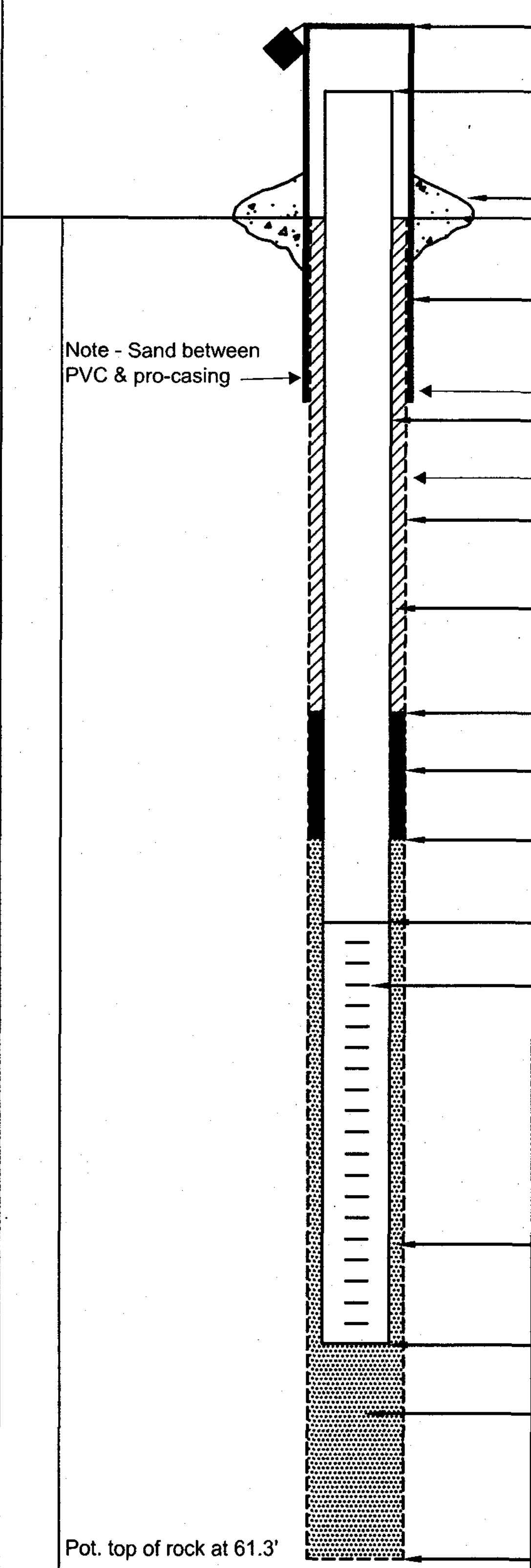
OVERBURDEN MONITORING WELL SHEET STICK-UP

PROJECT	NAS Brunswick	LOCATION	Eastern Plume Area
PROJECT NO.	112G00645	BORING	
DATE BEGUN	11/3/08	DATE COMPLETED	11/28/08
FIELD GEOLOGIST	K. Jalkut, B. Geringer		
GROUND ELEVATION	36.43	DATUM	FEET NAVD 1988

DRILLER A. Martinelli/Drillex

DRILLING METHOD Drive and Wash

DEVELOPMENT METHOD Peristaltic



ELEVATION/HEIGHT OF TOP OF SURFACE CASING: 38.86' / 2.43'

ELEVATION/HEIGHT OF TOP OF RISER PIPE: 38.76' / 2.33'

TYPE OF SURFACE SEAL: Cement (Quikrete)

I.D. OF SURFACE CASING: 4-inches

TYPE OF SURFACE CASING: Steel Guard Pipe

Depth Top of Sand Drain: 33.93' / 2.5'

RISER PIPE I.D.: 1-inch

TYPE OF RISER PIPE: Schedule 40 PVC

Depth Top of Grout: 33.43' / 3'

BOREHOLE DIAMETER: 4-inches

TYPE OF BACKFILL: Bentonite Grout

ELEVATION/DEPTH TOP OF SEAL: - 0.57' / 37'

TYPE OF SEAL: Bentonite Chips (med.)

DEPTH TOP OF SAND PACK: - 3.57' / 40'

ELEVATION/DEPTH TOP OF SCREEN: - 5.57' / 42'

TYPE OF SCREEN: Schedule 40 PVC

SLOT SIZE x LENGTH: 0.010 slots x 10'

I.D. OF SCREEN: 1-inch

TYPE OF SAND PACK: "00" sand (US sieve size = 20-40)

ELEVATION/DEPTH BOTTOM OF SCREEN: - 15.57' / 52'

ELEVATION/DEPTH BOTTOM OF SAND PACK: - 16.57' / 53'

BACKFILL MATERIAL BELOW SAND: Alternating lifts of bentonite chips (med.) and "00" sand

ELEVATION/DEPTH OF HOLE: - 25.57' / 62'

ACAD: FORM_MWSU.dwg 07/20/99 INL

BORING LOG FOR: NAS Brunswick - Supplemental RI Work
PROJECT NO: 112G00645
LOGGED BY: K. Jalkut
DRILLED BY (Company/Driller): A. Martinelli/Drillex
GRD. SURFACE ELEVATION: 36.43' MSL

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

BORING NO.: SB-EP-341S
START DATE: 10/31/2008
COMPLETION DATE: 11/3/2008
MON. WELL NO.: MW-EP-341S (in woods)
CHECKED BY: CR

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
0							Location in woods - ground surface			
	1			UPPER SAND	Loose	Dark Brown	S-1A (0-0.8') fine SAND - trace organic roots	SP	Dry; topsoil	PID = 0.4 ppm (topsoil)
	1	1.9' / 2.0'								
	3					Tan-Red	S-1B (0.8'-1.9') fine SAND (iron oxide staining)		Not stratified	PID = 0 ppm (sand)
2	4		S-1 0900						Upper Sand Unit	JHS = (mix) 1.8 ppm
	7				Medium Dense	Tan-Orange	S-2 (0-1.6') fine to medium SAND (mica flakes visible) iron oxide stains at top of interval (0-0.3')		Moist	PID = 0 ppm JHS = 0.3 ppm
	6	1.6' / 2.0'								
	6									
4	6		S-2 0905							
	3				Loose	Tan-Brown	S-3A (0-0.6') Similar to S-2, except no iron oxide stains		Moist	PID = 0.2 ppm
	4	1.5' / 2.0'				with Red	S-3B (0.6-1.5') Silty fine sand ($^1/_8$" thick intervals of iron oxide stains from 0.6-1'; no iron oxide stains 1-1.5')	SM	Saturated	PID = 0.1 ppm stained silty sand
	4					Gray				PID = 0 ppm (gray silty sand)
6	5		S-3 0915							JHS = (mix) 0 ppm
	2					Tan-Brown	S-4A (0-0.5') fine to medium SAND; no iron oxide stains	SP	Saturated	PID = 0 ppm
	1	1.4' / 2.0'				Gray-Brown	S-4B (0.5-1.4') Silty fine SAND, iron oxide stains on stratified intervals (<$^1/_8$" thick) in upper portion	SM	Slight Stratification	JHS = 2.3 ppm
	1									
8	2		S-4 0920							

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Drive and Wash
METHOD OF SOIL SAMPLING: Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), fixed 30" drop
METHOD OF ROCK CORING: N/A
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:: Note - No samples for analysis; JHS = jar head space reading (heated in car) PID reading taken when spoon opened.

BORING NO.: SB-EP-341S

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-341S
PROJECT NO:	112G00645	START DATE:	10/31/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	11/3/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-341S (in woods)
GRD. SURFACE ELEVATION:	36.43' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

DEPTH (FEET) 8	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
	2	2.0' / 2.0'		TRANSITION	Loose	Gray	S-5A (0-1') SILT - some fine SAND (no iron oxide stains, stratified)	SM	Saturated Potential top of Transition Unit	PID = 0 ppm JHS = 0 ppm
	2				Soft		S-5B (1-2') SILT - some clay - sized particles, trace sand (fine), slight plasticity	ML		
	2									
10	4		S-5 0930							
	WOR	2.0' / 2.0'			Very Soft		S-6 (0-2') clayey SILT - trace fine sand, slight plastic (can't roll out - not cohesive enough)		Saturated; very shiny; firmer material at bottom of spoon	PID = 0 ppm JHS = 0 ppm
	WOR						(no iron oxide stains - not stratified)			
	1								At top - exudes between thumb and fingers when squeezed	
12	1		S-6 0935							
	WOR	2.0' / 2.0'					S-7 (0-2') similar to S-6, except very soft through out recovery		Saturated	PID = 0 ppm JHS = 2.7 ppm
	WOR									
	WOR									
14	1		S-7 0945							
	WOH	2.0' / 2.0'					S-8 (0-2') clayey SILT - trace fine sand interbedded with four $^1/_4$" to $^1/_2$" thick layers of tan, fine silty sand		Interbeds are equally distributed - alternating layers	PID = 0 ppm JHS = 4.1 ppm
	WOH					(Tan-Brown)		SM		
	WOH					Gray			Saturated	
16	WOH		S-8 0950							

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash
METHOD OF SOIL SAMPLING:	Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), fixed 30" drop
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Note - No samples for analysis; JHS = jar head space reading (heated in can) PID reading taken when spoon opened.

Tetra Tech NUS, Inc.

BORING NO.: SB-EP-341S

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-341S
PROJECT NO:	112G00645	START DATE:	10/31/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	11/3/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-341S (in woods)
GRD. SURFACE ELEVATION:	36.43' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

DEPTH (FEET) 16	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
	WOR	2.0' / 2.0'		TRANSITION	Very Soft (silt)	Gray - Brown	S-9A (0-1.5') clayey SILT - trace fine sand interbedded with tan-brown fine sand, 1" thick, no	ML	Interbedded/ alternating layers (2	PID = 0 ppm
	WOR						iron oxide stains, stratified (slightly) silt	SP ML	intervals); saturated	JHS = 5.2 ppm (moisture result)
	1				Loose (sand)			SP	Saturated	
18	1		S-9 1000			Tan - Brown	S-9B (1.5-2') Silty fine SAND, no iron oxide stains, slightly stratified	SM		
	3	2.0' / 2.0'			Very Soft (silt)	Gray - Brown	S-10 (0-2') Similar to S-9A with 1/4" thick interbeds	ML SP	Saturated; 1 interbed	PID = 0.1 ppm
	1				Very loose (sand)	Tan - Brown		ML		JHS = 0 ppm
	1									
20	2		S-10 1010			Gray - Brown				
	2	2.0' / 2.0'			Soft (silt)		S-11 (0-2') Similar to S-10 with 0.2' thick, interbed of fine to medium sand (tan brown with visible mica		1 interbed 0.2' thick others 1/8" thick	PID = 0 ppm
	1						flakes) and several 1/8" thick interbeds (mostly fine sand, iron oxide stains)	SP ML		JHS = 2.5 ppm
	1				Very loose (sands)			SP	Saturated	
22	2		S-11 1035							
	2	2.0' / 2.0'			Loose	Tan - Brown	S-12A (0-0.6') fine to medium SAND, no iron oxide stains, not stratified		Saturated	PID = 0 ppm
	4				Medium Stiff (silt)	Gray - Brown	S-12B (0.6-1.3') SILT with fine to medium sand interbeds, iron stained, stratified	SM SP		(a,b,c)
	4				Loose (sand)	Gray	S-12C (1.3'-2') clayey SILT trace fine sand, no iron oxide stains, stratified	ML		JHS = 1.3 ppm (moisture)
24	5		S-12 1045		Medium Stiff (silt)					

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash
METHOD OF SOIL SAMPLING:	Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), fixed 30" drop
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Note - No samples for analysis; JHS = jar head space reading (heated in can) PID reading taken when spoon opened.

BORING NO.: SB-EP-341S

Tetra Tech NUS, Inc.

BORING LOG FOR: NAS Brunswick - Supplemental RI Work
PROJECT NO: 112G00645
LOGGED BY: K. Jalkut
DRILLED BY (Company/Driller): A. Martinelli/Drillex
GRD. SURFACE ELEVATION: 36.43' MSL

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

BORING NO.: SB-EP-341S
START DATE: 10/31/2008
COMPLETION DATE: 11/3/2008
MON. WELL NO.: MW-EP-341S (in woods)
CHECKED BY: CR

DEPTH (FEET) 24	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
	4	2.0' / 2.0'		TRANSITION	Medium Stiff	Gray-Brown	S-13A (0-0.5') SILT - some fine sand	SM	Interbedded material/ alternating layers	PID = 0 ppm
	4				Loose	Tan, Red	S-13B (0.5'-1'0) Fine to medium SAND, iron oxide stains, not stratified	SP		
	3				Stiff	Gray-Brown	S-13C (1'-1.5') Similar to S-13A, except firmer	SM		JHS = 0.1 ppm
26	4		S-13 1050			Gray - Tan with red	S-13D (1.5'-2') SILT with $^1/_8$"-$^1/_2$" thick interbeds of fine sand, iron stained	ML/SP	Stratified	
	WOR	2.0' / 2.0'			Soft	Gray-Brown	S-14A (0-1.2') SILT - some fine SAND interbedded with fine sand, iron stained	SM	Interbeds of fine sand	PID = 0 ppm
	WOR					Reddish		SP		JHS = 3.5 ppm
	2					Gray	S-14B (1.2'-2') SILT, no iron stains, stratified, soupy consistency at bottom (last 0.5")	ML	Saturated	
28	2		S-14 1100							
	2	2.0' / 2.0'					S-15 (0-2') clayey SILT - trace fine sand, no iron oxide stains, no stratification, soupy consistency		Saturated	PID = 0 ppm JHS = 0 ppm
	1									
	1									
30	2		S-15 1105							
	2	2.0' / 2.0'				Gray	S-16A (0-0.7') Similar to S-15		Saturated	PID = 0 ppm
	1					Tan-Brown	S-16B (0.7'-2') SILT stratified with thin (<$^1/_8$" thick) fine sand layers throughout sample	ML/SP	Silt interbedded with fine sand	JHS = 0.1 ppm
	2				Soft (silt)					
32	1		S-16 1115		Loose (sand)					

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Drive and Wash
METHOD OF SOIL SAMPLING: Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), fixed 30" drop
METHOD OF ROCK CORING: N/A
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:: Note - No samples for analysis; JHS = jar head space reading (heated in can) PID reading taken when spoon opened.

BORING NO.: SB-EP-341S

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work		BORING NO.:	SB-EP-341S
PROJECT NO:	112G00645		START DATE:	10/31/2008
LOGGED BY:	K. Jalkut	TRANSCRIBED BY: LH	COMPLETION DATE:	11/3/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex		MON. WELL NO.:	MW-EP-341S (in woods)
GRD. SURFACE ELEVATION:	36.43' MSL	ELEVATION FROM: NAVD 1988	CHECKED BY:	CR

DEPTH (FEET) 32	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
	4	1.8' / 2.0'		TRANSITION	Stiff	Gray	S-17A (0-0.3') SILT - trace fine sand, no iron oxide stains, not stratified	ML	Saturated	PID = 0 ppm
	4				Loose	Tan-Brown	S-17B (0.3-0.7') SAND (mostly fine with interval of fine to medium sand, iron oxide stains)	SP		
	5				Stiff (silt)	Gray-Brown w/ tan	S-17C (0.7-1.8') SILT - some fine sand interbeds (stratified layers < 1/8" thick; bottom has 1/2" thick	ML SP	Alternating layers of silt, sand	
34	5		S-17 1120		Loose (sand)	↓	layer fine sand with iron oxide stains	ML SP		
	2	2.0' / 2.0'			Loose Medium Stiff	Tan-Brown Gray	S-18A (0-0.4') fine SAND - some silt interbeds S-18B (0.4-0.6) SILT - some fine sand interbeds	SP/ML ML/SP	No iron oxide, not stratified	PID = 2 ppm
	3				Loose	Tan-Brown	S-18C (0.6-1.1') similar to S-18B, layers on 1/8" thick	ML/SP		at bottom of spoon
	3				↓	↓	S-18D (1.1-1.5') SAND (fine)	SP	No iron oxide stains, not stratified	JHS = 0.5 ppm
36	4		S-18 1130		Medium Stiff	Gray-Brown	S-18E (1.5-2') similar to S-18B except stratified	ML/SP	No iron oxide stains	
	3	2.0' / 2.0'			Loose (sands)	Tan-Brown	S-19A (0-0.3')SILT (stratified) with fine sand interbeds (<1/8" thick), iron stained	↓	Saturated, interbedded silts and sands	PID = 0 ppm
	2					↓	S-19B (0.3-0.6') SAND (fine), not stratified, no iron stains	SP		JHS = 0.1 ppm
	3					Gray-Brown	S-19C (0.6-1') SILT - trace fine sand, not stratified	ML		
38	4		S-19 1135		↓	↓	S-19D (1-1.2') fine SAND - some SILT, not stratified no iron stains	SM		
	WOR	2.0' / 2.0'			Soft	Gray	S-19E (1.2-2') clayey SILT - trace fine sand (no iron stains, not stratified, slightly plastic	ML		PID = 0 ppm
	WOR						S-20A (0-1.8') Similar to S-19E	↓		JHS = 0.1 ppm
	1				Loose	↓	S-20B (1.8-2') fine SAND interlayered with <1/8" thick layers of silt	SP ML		
40	1		S-20 1150	↓			↓		↓	

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash
METHOD OF SOIL SAMPLING:	Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), fixed 30" drop
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Note - No samples for analysis; JHS = jar head space reading (heated in can) PID reading taken when spoon opened.

BORING NO.: SB-EP-341S

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-341S
PROJECT NO:	112G00645	START DATE:	10/31/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	11/3/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-341S (in woods)
GRD. SURFACE ELEVATION:	36.43' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

DEPTH (FEET) 40	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
	3			TRANSITION	Medium Stiff	Gray	S-21A (0-0.6) clayey SILT, slightly plastic	ML	saturated; can't roll out well	PID = 0 ppm
11/3/2008	4	2.0' / 2.0'					S-21B (0.6-1.4') SILT - trace fine SAND (firmer than above interval)			JHS = 1 ppm
	5				Loose	Tan-Brown	S-21C (1.4-2') fine Sand mostly with 1 x 1/4" thick interval of silt (interbed)	SP	sand is stratified and iron stained	
42	7		S-21 1030							
	2						S-22A (0-1') Fine SAND mostly, several silt interbeds (thin)		saturated	PID = 0.2 ppm (sand)
	2	2.0' / 2.0'								JHS = 12 ppm*
	4				Medium Stiff		S-22B (1-1.3') Clayey SILT - trace fine SAND	ML	saturated	
44	5		S-22 1035		Loose		S-22C (1.3-2') SAND (fine), stratified and iron stained	SP		
	4				Loose + Stiff (silt)	Gray-Brown	S-23A (0-0.6') SAND (fine), occasional interval of gray silt	SP/ML	saturated	PID = 0.5 ppm (sand)
	3	2.0' / 2.0'			Stiff	Gray	S-23B (0.6-1') Similar to S-22B, slight plasticity	ML	can't roll out well - not cohesive	JHS = 0 ppm
	6				Loose	Tan-Red Brown	S-23C (1-2') SAND (fine) at top iron oxide stains, stratified	SP	saturated	
46	6		S-23 1045			Tan-Brown	(No iron bottom 6" or stratification visible)			
	2				Loose (sand)	Gray-Brown	S-24A (0-1.4') Similar to S-23A	SP/ML	saturated	PID = 2.9 ppm (sand near bottom)
	3	1.6' / 2.0'			Stiff (silt)	Tan Red-Brown	S-24B (1.4-2') SAND (fine), visible iron stains, mica flakes	SP		JHS = 0.5 ppm
	4				Loose (sand)					
48	5		S-24 1050							

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash
METHOD OF SOIL SAMPLING:	Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), fixed 30" drop
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Water in casing ~ 3.33' below top

BORING NO.: SB-EP-341S

Tetra Tech NUS, Inc.

BORING LOG FOR: NAS Brunswick - Supplemental RI Work
PROJECT NO: 112G00645
LOGGED BY: K. Jalkut
DRILLED BY (Company/Driller): A. Martinelli/Drillex
GRD. SURFACE ELEVATION: 36.43' MSL

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

BORING NO.: SB-EP-341S
START DATE: 10/31/2008
COMPLETION DATE: 11/3/2008
MON. WELL NO.: MW-EP-341S (in woods)
CHECKED BY: CR

DEPTH (FEET) 48	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
	4	2.0' / 2.0'		TRANSITION	Loose	Tan-Brown	S-25A (0-1.7') SAND (fine) mostly - some silt stringers (nearly vertical) (gray to brown)	SP	Saturated;	PID = 0.2 ppm
	4					Brown, Red	and stratified, horizontal brown silt layer at bottom of spoon	ML	iron oxide stains	JHS = 0.2 ppm
	4					Gray	S-25B (1.7-2') SAND (fine), stratified	SP	Dark mineral in sand can't identify	
50	4		S-25 1105							
	4	2.0' / 2.0'				Tan-Brown	S-26A (0-1') Similar to S-25B with iron oxide stains, more of a tan-brown color			PID = 1.3 ppm (top of spoon)
	4					Gray	S-26B (1-1.3') SAND (fine)		no iron oxide stains, not stratified	PID = 0.2 ppm JHS = 0.4 ppm
	5				Medium Stiff		S-26C (1.3-2') CLAYEY SILT - trace fine SAND	ML	no iron oxide stains, not stratified; saturated; can't roll into a ribbon	PID = 0 ppm (silt)
52	4		S-26 1110							
	WOR	2.0' / 2.0'			Soft		S-27 (0-2') CLAY with medium plasticity, increase in cohesiveness compared to S-26C	CL	Able to roll out into a thin ribbon; no iron stains, not stratified; saturated	PID = 0.1 ppm
	WOR									JHS = 0 ppm
	3									
54	3		S-27 1130							
	WOR	1.5' / 2.0'			Very Soft		S-28 (0-1.5') CLAYEY SILT - trace fine SAND slight plasticity only-not cohesive	ML	saturated; no iron oxide stains, not saturated; can't roll out	PID = 0.1 ppm
	WOR									JHS = 0 ppm
	WOR									
56	WOR		S-28 1300							

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Drive and Wash
METHOD OF SOIL SAMPLING: Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), fixed 30" drop
METHOD OF ROCK CORING: N/A
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:: Note - No samples for analysis; JHS = jar head space reading (heated in can) PID reading taken when spoon opened.

BORING NO.: SB-EP-341S

Tetra Tech NUS, Inc.

BORING LOG FOR: NAS Brunswick - Supplemental RI Work
PROJECT NO: 112G00645
LOGGED BY: K. Jalkut
DRILLED BY (Company/Driller): A. Martinelli/Drillex
GRD. SURFACE ELEVATION: 36.43' MSL

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

BORING NO.: SB-EP-341S
START DATE: 10/31/2008
COMPLETION DATE: 11/3/2008
MON. WELL NO.: MW-EP-341S (in woods)
CHECKED BY: CR

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
56										
	WOR	2.0' / 2.0'		TRANSITION	Very Soft	Gray	S-29 (0-2') SILTY CLAY - trace fine SAND medium plasticity	CL	Saturated; can roll out into a ribbon; no iron oxide stains, not stratified	PID = 0 ppm JHS = 0.2 ppm
	WOR									
	WOR									
58	WOR		S-29 1305							
	WOR	2.0' / 2.0'					S-30 (0-2') Similar to S-29			PID = 0 ppm JHS = 0.1 ppm
	WOR									
	WOR									
60	WOR		S-30 1315							
	WOR	1.0' / ~1.3'					S-31 (0-1') Similar to S-30 with pieces of schist fragments			PID = 0 ppm JHS = 0.2 ppm
	WOR									
	100/0"						Potential Top of bedrock at 61.3' (refusal)		rollerbit to 62' to even depth for backfill below screen	
62			S-31 1320	Bedrock at ~61.3' End of Boring at 62'						
							Backfill borehole with alternating lifts of bentonite chips (mech) and sand			
							Bentonite on bottom (1') 4' of sand; 4' bentonite; sand beneath screen -			
							See well construction log for details set screen 42'-52' bgs			
64										

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Drive and Wash
METHOD OF SOIL SAMPLING: Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), fixed 30" drop
METHOD OF ROCK CORING: N/A
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:: Select screen interval based on reading in sand units with materials of silt in Transition Unit

BORING NO.: SB-EP-341S

Tetra Tech NUS, Inc.

WELL NO.: MW-EP-341B1

Tetra Tech NUS, Inc.

BEDROCK
MONITORING WELL SHEET
WELL INSTALLED IN BEDROCK

PROJECT: EP - Bedrock Investigation	LOCATION: NASB	DRILLER: Drillex
PROJECT NO.: 112G00645	BORING: SB-341B	DRILLING METHOD: D&W/Air Rotary/RollerBit
DATE BEGUN: 11/04/08	DATE COMPLETED: 11/28/08	
FIELD GEOLOGIST: K. Jalkut/B. Geringer		DEVELOPMENT METHOD: Peristaltic
GROUND ELEVATION: 36.62	DATUM: FEET NAVD 1988	

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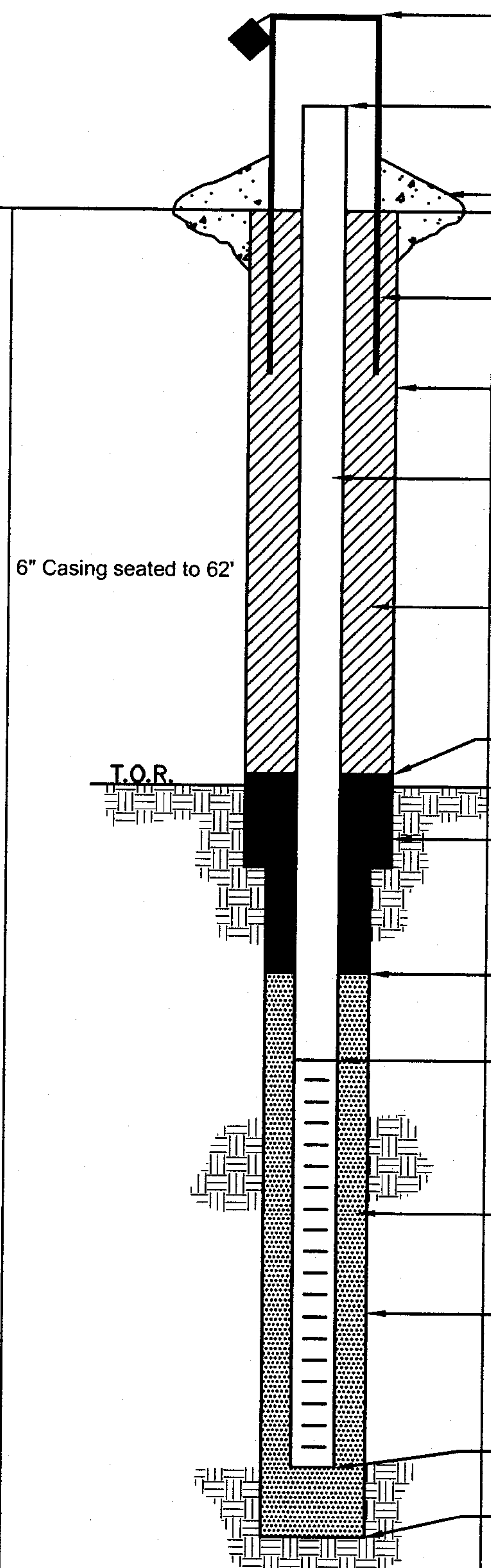


ELEVATION/HEIGHT OF TOP OF SURFACE CASING: 38.51' / 1.89'

ELEVATION/HEIGHT TOP OF RISER: 38.48' / 1.86'

TYPE OF SURFACE SEAL: Concrete

I.D. OF SURFACE CASING: 6"

DIAMETER OF HOLE: 8"

RISER PIPE I.D.: 1"

TYPE OF RISER PIPE: PVC

TYPE OF BACKFILL: Bentonite

ELEVATION/DEPTH TOP OF SEAL: 36.62' / Ground Surface

ELEVATION/DEPTH TOP OF BEDROCK: - 23.68' / 60.3'

TYPE OF SEAL: Bentonite/Concrete

ELEVATION/DEPTH TOP OF SAND: - 31.38' / 68'

ELEVATION/DEPTH TOP OF SCREEN: - 36.38' / 73'

TYPE OF SCREEN: Schedule 40

SLOT SIZE x LENGTH: 0.01" x 5'

I.D. SCREEN: 1"

TYPE OF SAND PACK: Type 00 (20-40 Sieve)

DIAMETER OF HOLE IN BEDROCK: 6"

CORE/REAM:

ELEVATION/DEPTH BOTTOM SCREEN: - 41.38' / 78'

ELEVATION/DEPTH BOTTOM OF SAND: - 43.38' / 80'

ELEVATION/DEPTH BOTTOM OF HOLE: - 75.68' / 112.3'

BACKFILL MATERIAL BELOW SAND: Bentonite

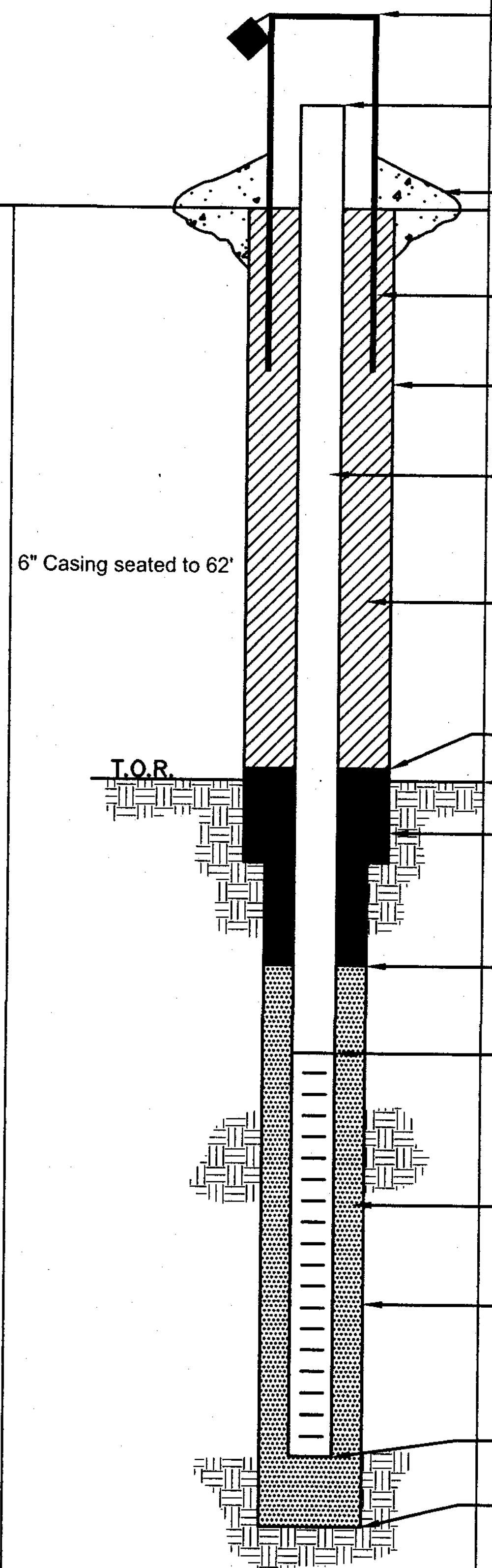
WELL NO.: MW-EP-341B2

Tetra Tech NUS, Inc.

BEDROCK
MONITORING WELL SHEET
WELL INSTALLED IN BEDROCK

PROJECT: EP - Bedrock Investigation	LOCATION: NASB	DRILLER: Drillex
PROJECT NO.: 112G00645	BORING: SB-341B	DRILLING METHOD: D&W/Air Rotary/RollerBit
DATE BEGUN: 11/04/08	DATE COMPLETED: 11/28/08	
FIELD GEOLOGIST: K. Jalkut/B. Geringer		DEVELOPMENT METHOD: Peristaltic
GROUND ELEVATION: 36.62	DATUM: FEET NAVD 1988	

ACAD: FORM_MWINBR.dwg 07/20/99 INL



ELEVATION/HEIGHT OF TOP OF SURFACE CASING: 38.51' / 1.89'

ELEVATION/HEIGHT TOP OF RISER: 38.50' / 1.88'

TYPE OF SURFACE SEAL: Concrete

I.D. OF SURFACE CASING: 6"

DIAMETER OF HOLE: 8"

RISER PIPE I.D.: 1"

TYPE OF RISER PIPE: PVC

TYPE OF BACKFILL: Bentonite

ELEVATION/DEPTH TOP OF SEAL: 36.62' / Ground Surface

ELEVATION/DEPTH TOP OF BEDROCK: - 23.68' / 60.3'

TYPE OF SEAL: Bentonite/Concrete

ELEVATION/DEPTH TOP OF SAND: - 49.38' / 86'

ELEVATION/DEPTH TOP OF SCREEN: - 51.38' / 88'

TYPE OF SCREEN: Schedule 40

SLOT SIZE x LENGTH: 0.01" x 5'

I.D. SCREEN: 1"

TYPE OF SAND PACK: Type 00 (20-40 Sieve)

DIAMETER OF HOLE IN BEDROCK: 6"

CORE/REAM:

ELEVATION/DEPTH BOTTOM SCREEN: - 56.38' / 93'

ELEVATION/DEPTH BOTTOM OF SAND: - 58.38' / 95'

ELEVATION/DEPTH BOTTOM OF HOLE: - 75.68' / 112.3'

BACKFILL MATERIAL BELOW SAND: Bentonite

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-341B
PROJECT NO:	112G00645	START DATE:	11/4/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	11/12/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-341B
GRD. SURFACE ELEVATION:	36.62' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

DEPTH (FEET) 11/10/08	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
							No split barrel samples used. Refer to boring log for MW-EP 341S for detailed soil descriptions			
0										
						Tan-Brown	- Initially advance temp. 8" steel casing in overburden - Fine to medium sand cuttings			PID = 0 ppm (washwater)
5										
10						Gray	- Silt and sand (fine) cuttings			PID = 0 ppm (washwater)
15										
20							- Bottom of 8" casing			
↓							- Add Drilling Mud (with TtNUS approval) to keep hole open for continued drilling and bring cuttings up.		Use CETCO Vari Flo QD mud (4x1202 cups)	
							- Roller bit to top of rock - Refusal at 60' - potential rock surface - clean out hole			
60							- Telescope permanant 6" steel casing and seat 2' into rock			
62							- 65.5' of pipe in ground - torch 1' so stick-up is ~2.5' above ground			

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash. Used mud below 20'
METHOD OF SOIL SAMPLING:	N/A
METHOD OF ROCK CORING:	Air rotary with air hammer (no coring)
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work
PROJECT NO:	112G00645
LOGGED BY:	K. Jalkut
DRILLED BY (Company/Driller):	A. Martinelli/Drillex
GRD. SURFACE ELEVATION:	36.62' MSL

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

BORING NO.:	SB-EP-341B
START DATE:	11/4/2008
COMPLETION DATE:	11/12/2008
MON. WELL NO.:	MW-EP-341B
CHECKED BY:	CR

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
11/10/2008							Install tremie pipe to bottom - pump water through until mud flushed out.			
↓							Prepare cement - bentonite grout per spec.			
							Add grout through tremie pipe Observe water and grout displacement through casing		Type III Portland cement (high early strength) used with CETCO Super.	
							Pull 8" casing later in day Empty mud tub. Containerize cuttings and water.		Gel-X bentonite	
11/11/2008										
62							Initiate air rotary drilling with air hammer			
							- Immediate water return, cuttings on ground even with rubber skirt			
67							- Color change to brown - grout, mud, or did we cross a potential seam?			
73							- Blow Test #1 (0840-0855)		Air only - no hammering.	PID = 1-1.5 ppm off water
							- Visible rock fragments		~10 gal/min return	1.8 ppm off cuttings on ground
95							- Blow Test #2 (0935-0950)		- return increases	PID = 1-1.5 ppm (water)
							- Visible shine to cuttings (schist-like)		↓	1.9 ppm - cuttings

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash. Used mud below 20'
METHOD OF SOIL SAMPLING:	N/A
METHOD OF ROCK CORING:	Air rotary with air hammer (no coring)
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-341B
PROJECT NO:	112G00645	START DATE:	11/4/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	11/12/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-341B
GRD. SURFACE ELEVATION:	36.62' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
95										
							Air rotary with air hammering continues			
100							- Hammer seizes (hammer too close to rock it is blasting - rock chips clog air vents.			
							Discuss using rollerbit to complete borehole with office and driller.		Hole open to 100' WL at ~20'	
							Drillers able to unclog hammer - all elect to use roller bit to avoid problem.			
									Within 1/2 hour - borehole fills in to 86', WL at 7'. Potentially crossed a fracture.	
							Rollerbit in - using air only to control unanticipated problem air with water return - improvement but air still			
							causing a lot of water to come out.			
113							- Advanced hole to 113' with rollerbit (100-113') - a lot slower than air hammer			
							- Blow Test #3 (15 min) Attempt to clean out hole (30min)		Initially open to 113' within 1 hr - hole open to 100', soft bottom	
									WL at ~14 bgs	
11/12/2008							- Hole open to 92' (21' of cuttings inside)			
							- Drillers wash out borehole (extra) with rollerbit, water for ~1 hour		WL at 1'bgs now	

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Drive and Wash. Used mud below 20'
METHOD OF SOIL SAMPLING: N/A
METHOD OF ROCK CORING: (60-100') Air rotary with air hammer (no coring)/Rollerbit with air at 100'-113'
GROUNDWATER LEVELS:
OTHER OBSERVATIONS::

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work		BORING NO.:	SB-EP-341B
PROJECT NO:	112G00645		START DATE:	11/4/2008
LOGGED BY:	K. Jalkut	TRANSCRIBED BY: LH	COMPLETION DATE:	11/12/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex		MON. WELL NO.:	MW-EP-341B
GRD. SURFACE ELEVATION:	36.62' MSL	ELEVATION FROM: NAVD 1988	CHECKED BY:	CR

DEPTH (FEET) 11/12/08	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
							Work at MW-EP-341B continues			
							- Apparent loss of water 92-95' - Driller estimated 250 gallons - No water loss below depth			
									Hole open again - to 112' of the 113' drilled	
							K. Jalkut replaced by B. Geringer following day			
							- Wells eventually installed - see appropraite well logs for nested wells		WL at 3-4' bgs and rising 11/12/08	

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Drive and Wash. Used mud below 20'
METHOD OF SOIL SAMPLING: N/A
METHOD OF ROCK CORING: Air rotary with air hammer (no coring)
GROUNDWATER LEVELS:
OTHER OBSERVATIONS::

Tetra Tech NUS, Inc.

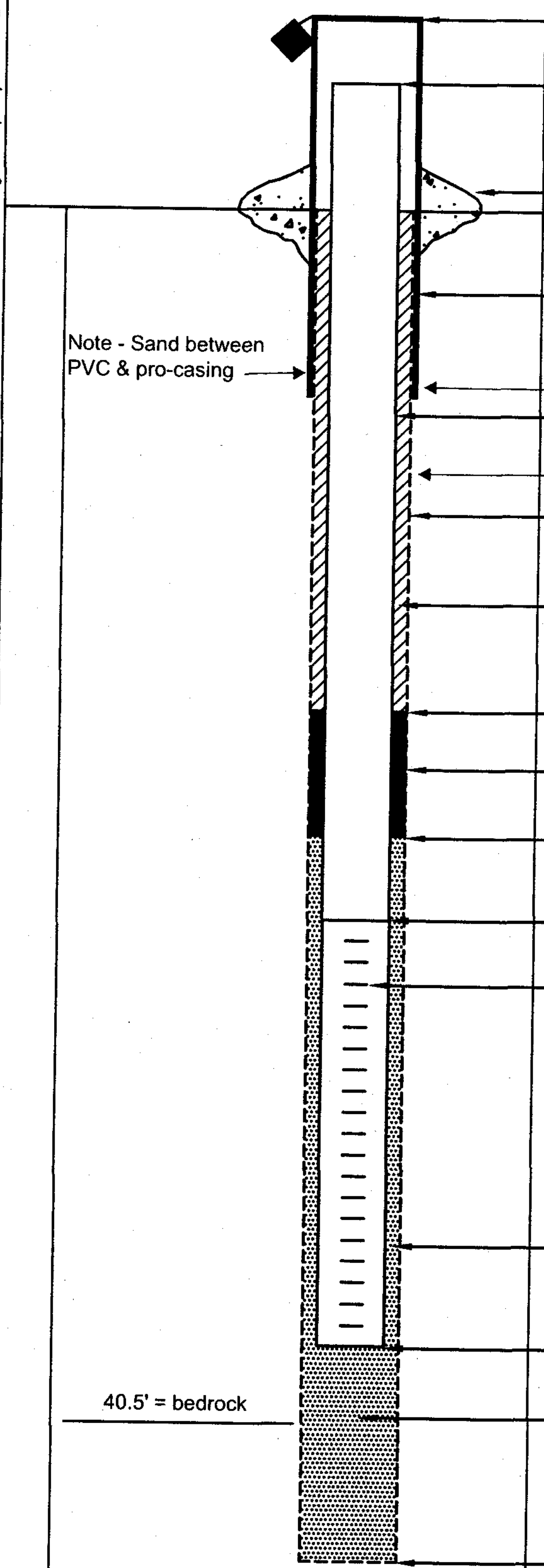
WELL NO.: MW-EP-342S

Tetra Tech NUS, Inc.

OVERBURDEN
MONITORING WELL SHEET
STICK-UP

PROJECT: NAS Brunswick	LOCATION: Eastern Plume Area	DRILLER: A. Martinelli
PROJECT NO.: 112G00645	BORING:	DRILLING METHOD: Drive and Wash/ HQ Wireline coring
DATE BEGUN: 10/29/08	DATE COMPLETED: 11/28/08	
FIELD GEOLOGIST: K. Jalkut, B. Geringer		DEVELOPMENT METHOD: Peristaltic
GROUND ELEVATION: 34.13	DATUM: FEET NAVD 1988	

ACAD: FORM_MWSU.dwg 07/20/99 INL



ELEVATION/HEIGHT OF TOP OF SURFACE CASING: 36.18' / 2.05'

ELEVATION/HEIGHT OF TOP OF RISER PIPE: 35.66' / 1.53'

TYPE OF SURFACE SEAL: Cement (Quikrete)

I.D. OF SURFACE CASING: 4-inches
TYPE OF SURFACE CASING: Steel Guard Pipe

Depth Top of Sand Drain: 31.63' / 2.5'
RISER PIPE I.D.: 1-inch
TYPE OF RISER PIPE: Schedule 40 PVC
Depth Top of Grout: 31.13' / 3'
BOREHOLE DIAMETER: 4-inches

TYPE OF BACKFILL: Bentonite Grout

ELEVATION/DEPTH TOP OF SEAL: 9.13' / 25'

TYPE OF SEAL: Bentonite Chips (med.)

DEPTH TOP OF SAND PACK: 6.13' / 28'

ELEVATION/DEPTH TOP OF SCREEN: 4.13' / 30'

TYPE OF SCREEN: Schedule 40 PVC

SLOT SIZE x LENGTH: 0.010 slots x 10'

I.D. OF SCREEN: 1-inch

TYPE OF SAND PACK: "00" sand (US sieve size = 20-40)

ELEVATION/DEPTH BOTTOM OF SCREEN: - 5.87' / 40'

ELEVATION/DEPTH BOTTOM OF SAND PACK: - 6.37' / 40.5'
BACKFILL MATERIAL BELOW SAND: Alternating lifts of bentonite chips (med.) and sand

ELEVATION/DEPTH OF HOLE: - 36.37' / 70.5'

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-342S
PROJECT NO:	112G00645	START DATE:	10/28/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	10/29/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-342S (by former pipeline)
GRD. SURFACE ELEVATION:	34.13' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

DEPTH (FEET) 10/28/08	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
0							Ground Surface			
	3	1.9' / 2.0'		UPPER SAND	Medium Dense	Brown	S-1A (0-0.2') fine SAND - trace organic roots	SP	Dry	PID = 0 ppm
	4					Tan - Brown	S-1B (0.2'-1.7') fine SAND		Upper Sand Unit	JHS = 0 ppm
	7					Tan-Brown, Dark red	S-1C (1.7'-1.9') fine SAND (iron oxide stains visible)			
2	7		S-1 0825hr							
	3	1.5' / 2.0'			Loose		S-2 (0-1.5') fine SAND, iron oxide stains (dark red vertical stringers), some stratification at bottom of spoon (thin laminations < $^{1}/_{8}$ thick)			PID = 0 ppm
	4									JHS = 0 ppm
	4									
4	5		S-2 0830hr							
	6	1.1' / 2.0'			Medium Dense		S-3 (0-1.1') fine SAND, iron oxide stains, stratified, 2 silty-sand interbeds (each 0.3' thick)	SP/SM	Moist (photo taken)	PID = 0 ppm
	6									JHS = 0 ppm
	6									
6	6		S-3 0840hr							
	4	1.0' / 2.0'			Loose	Tan - Gray	S-4 (0-1') fine SAND, some micaceous minerals (thin flaky sheets)	SP	Not stratified; No intervals; Wet	PID = 0 ppm
	5									JHS = 3.1 ppm
	5									
8	8		S-4 0845hr							

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash
METHOD OF SOIL SAMPLING:	Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING:	HQ wireline, yields 3 $^{7}/_{8}$" core
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS:	Note - No samples for analysis; JHS = jar head space reading (heated in car) PID reading taken when spoon opened.

BORING NO.: SB-EP-342S

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-342S
PROJECT NO:	112G00645	START DATE:	10/28/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	10/29/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-342S (by former pipeline)
GRD. SURFACE ELEVATION:	34.13' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

DEPTH (FEET) 8	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
	6	1.1' / 2.0'		UPPER SAND	Loose	Tan with red	S-5A (0-0.3') fine SILTY SAND, iron oxide stains	SM	Wet	PID = 0 ppm
	5						S-5B (0.3'-0.8') fine SAND, iron oxide stains stratified	SP		JHS = 0 ppm
	3								Not stratified; No iron oxide stains	
10	6		S-5 0908hr			Gray	S-5C (0.8'-1.1') fine SAND			
	6	1.4' / 2.0'					S-6A (0-0.6') Similar to S-5C		Top of Transition Unit; 10.5 feet	PID = 0 ppm
	3			TRANSITION	Medium Stiff	Gray Brown & Dark red	S-6B (0.6'-1.4') CLAYEY SILT - trace fine SAND (iron oxide stains, sands); silt with slight plasticity	ML		JHS = 0 ppm
	3									
12	6		S-6 0912hr							
	5	1.4' / 2.0'			Stiff		S-7A (0-0.2') CLAYEY SILT - trace fine SAND (iron oxide stains stratified (sands) slight plasticity		Wet	PID = 0 ppm
	5				Medium Dense		S-7B (0.2'-0.4') fine SAND (iron ozide stains)	SP	(Not stratifiied)	JHS = 0.1 ppm
	7				Stiff		S-7C (0.4'-0.6') Similar to S-7A	ML	Alternating Layers	
14	6		S-7 0920hr		Medium Dense		S-7D (0.6'-1.4') Similar to S-7B	SP		
	3	1.3' / 2.0'			Loose	Gray-Brown	S-8A (0-0.4') fine SAND		Not stratified; No iron oxide stains; saturated	PID = 0 ppm
	3				Medium Stiff		S-8B (0.4-1') CLAYEY SILT - trace fine SAND (iron oxide stains, stratified sands, slight plasticity silts or fines)	ML		JHS = 0.2 ppm
	4					Gray	S-8C (1'-1.3') SILT (slight plasticity)		Can't roll out into ribbon	
16	3		S-8 0930hr							

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash
METHOD OF SOIL SAMPLING:	Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING:	HQ wireline, yields 3 $^{7}/_{8}$" core
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Note - No samples for analysis; JHS = jar head space reading (heated in car) PID reading taken when spoon opened.

BORING NO.: SB-EP-342S

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-342S
PROJECT NO:	112G00645	START DATE:	10/28/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	10/29/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-342S (by former pipeline)
GRD. SURFACE ELEVATION:	34.13' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
16										
	1	1.6' / 2.0'		TRANSITION	SOFT	Dark Gray	S-9 (0-1.6') CLAYEY SILT - trace fine SAND (no iron oxide stains, not stratified, fines, slight plasticity)	ML	Saturated; thumb goes thru material	PID = 0 ppm JHS = 0.1 ppm
	2									
	2									
18	1		S-9 1000hr							
	WOH	2.0' / 2.0'			Very SOFT		S-10 (0-2') Similar to S-9		Saturated; fist penetrates material on table	PID = 0 ppm JHS = 0.1 ppm
	WOH									
	1									
20	1		S-10 1005hr							
	WOH	2.0' / 2.0'					S-11 (0-2') Similar to S-10		Saturated	PID = 0 ppm JHS = 0.2 ppm
	WOH									
	WOH									
22	WOH		S-11 1020hr							
	1	2.0' / 2.0'			SOFT		S-12 (0-2') Similar to S-11		Saturated; thumb goes thru material	No reading - PID drying in truck from rain
	1									
	1									
24	1		S-12 1025hr							

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash
METHOD OF SOIL SAMPLING:	Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING:	HQ wireline, yields 3 $^{7}/_{8}$" core
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Note - No samples for analysis; JHS = jar head space reading (heated in car) PID reading taken when spoon opened.

Tetra Tech NUS, Inc.

BORING LOG FOR: NAS Brunswick - Supplemental RI Work
PROJECT NO: 112G00645
LOGGED BY: K. Jalkut
DRILLED BY (Company/Driller): A. Martinelli/Drillex
GRD. SURFACE ELEVATION: 34.13' MSL
* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

BORING NO.: SB-EP-342S
START DATE: 10/28/2008
COMPLETION DATE: 10/29/2008
MON. WELL NO.: MW-EP-342S (by former pipeline)
CHECKED BY: CR

DEPTH (FEET) 24	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
	WOH	2.0' / 2.0'		TRANSITION	Very SOFT	Dark Gray	S-13 (0-2') Similar to S-12	ML	Saturated	PID = 0 ppm JHS = 0.3 ppm
	WOH									
	WOH									
26	WOH		S-13 1035hr							
	1	2.0' / 2.0'			SOFT		S-14 (0-2') Similar to S-13			PID = 0 ppm JHS = 0.3 ppm
	1									
	1									
28	1		S-14 1040hr							
	WOH	2.0' / 2.0'			Very SOFT		S-15 (0-2') Similar to S-14			PID = 0 ppm JHS = 0.3 ppm
	WOH									
	WOH									
30	WOH		S-15 1055hr							
	WOH	2.0' / 2.0'					S-16 (0-2') Similar to S-15			PID = 0 ppm JHS = 0.4 ppm
	WOH									
	WOH									
32	WOH		S-16 1058hr							

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Drive and Wash
METHOD OF SOIL SAMPLING: Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING: HQ wireline, yields 3 $^{7}/_{8}$" core
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:: Note - No samples for analysis; JHS = jar head space reading (heated in car) PID reading taken when spoon opened.

Tetra Tech NUS, Inc.

BORING LOG FOR: NAS Brunswick - Supplemental RI Work
PROJECT NO: 112G00645
LOGGED BY: K. Jalkut
DRILLED BY (Company/Driller): A. Martinelli/Drillex
GRD. SURFACE ELEVATION: 34.13' MSL
* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

TRANSCRIBED BY: LH
ELEVATION FROM: NAVD 1988

BORING NO.: SB-EP-342S
START DATE: 10/28/2008
COMPLETION DATE: 10/29/2008
MON. WELL NO.: MW-EP-342S (by former pipeline)
CHECKED BY: CR

DEPTH (FEET) 32	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
	WOH	2.0' / 2.0'		TRANSITION	Very SOFT	Dark Gray	S-17 (0-2') CLAYEY SILT - trace FINE SAND (no iron oxide stains, not stratified, fines are slightly plastic)	ML	Saturated	PID = 0 ppm
	WOH									JHS = 0.5 ppm
	WOH									
34	WOH		S-17 1100hr							
	WOH	2.0' / 2.0'					S-18 (0-1.7') Similar to S-17		Saturated	PID = 0 ppm
	WOH									
	WOH				Loose	Gray	S-18B (1.7'-2') fine Sand	SP	No iron oxide stains Not stratified	JHS = 0 ppm
36	WOH		S-18 1105hr							
	WOH	2.0' / 2.0'			Very SOFT	Dark Gray	S-19 (0-2') Similar to S-17	ML	Saturated	PID = 0 ppm
	WOH									JHS = 0 ppm
	WOH									
38	WOH		S-19 1120hr							
	WOH	2.0' / 2.0'					S-20 (0-2') Similar to S-19		Saturated Photo taken	PID = 0 ppm
	WOH									JHS = 0 ppm
	WOH									
40	WOH		S-20 1130hr							

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Drive and Wash
METHOD OF SOIL SAMPLING: Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING: HQ wireline, yields 3 $^{7}/_{8}$" core
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:: Note - No samples for analysis; JHS = jar head space reading (heated in car) PID reading taken when spoon opened.

BORING NO.: SB-EP-342S

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-342S
PROJECT NO:	112G00645	START DATE:	10/28/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	10/29/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-342S (by former pipeline)
GRD. SURFACE ELEVATION:	34.13' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

DEPTH (FEET) 40	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
				TRANSITION	Very Soft	Dark Gray	S-21 (0-0.5') CLAYEY SILT - trace FINE SAND (no iron oxide stains, not stratified, pieces of broken mica schist at bottom of spoon	ML	Saturated	PID = 0 ppm JHS = 0 ppm
	100/6"	0.5' / 0.5'								
40.5			S-21 1140hr							
	Coring Ft/ Min		Run 1: 40.5-45.5' Recovery = 5' Pentration = 5'	Bedrock	Very Strong	Med to Dark Gray	Muscovite Biotite Schist (foliated med to coarse grained metamorphic rock with minor chlorit, garnet nodules. Silky metallic luster, visible folds (undulations on outside of core), quartz veins (secondary mineralization)	Blocky	1st piece = 18.5" before break (only slighty fractured)	PID = 0 ppm
41.5	3 min									
			RQD = ~50% for entire 5' interval (poor)							
42.5	4 min				Weak		~42'-42.4' Break-close to horizontal, No staining but rock appears weak, soft. Multiple pieces that fit together. Large quartz nodule below break			
	1 min		Core barrel jam @ 43' stop coring for the day Resume 10/29/08 Able to core							
10/29/08 43.5							43'-44.2' - Break - Can't tell angle above horizontal, Multiple jumbled pieces that do not fit together - weathered zone - soft rock - can gauge with fingernail. No visible staining. Softest interval at 43.8-44.1 (dark green mineral, biotite present)	Very Broken	Potential fracture for water to move through - decomposed or disintegraded rock Recovered core in non-intact fragments at 43'	
	3 min		last 2.5 ft on 10/29/08 No Jams		Very Weak					
44.5										
							44.1-44.8 - Break along foliation plane (schistosity) 45° from horizontal some iron staining on surface	Blocky		
45.5	4 min				Very Strong					
			Run 2: 45.5-50.5' Recovery = 5' Penetration = 5'						No staining. Top piece in Run 2 = 2.1' in length	
46.5	2 min									

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash
METHOD OF SOIL SAMPLING:	Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING:	HQ wireline, yields 3 7/8" core
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Note - No samples for analysis; JHS = jar head space reading (heated in car) PID reading taken when spoon opened.

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-342S
PROJECT NO:	112G00645	START DATE:	10/28/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	10/29/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-342S (by former pipeline)
GRD. SURFACE ELEVATION:	34.13' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

DEPTH (FEET) 46.5	BLOWS PER 6" NA Coring Ft./Min	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
			Run 2 continued: RQD for entire run = 43"/60" = 71.6%	Bedrock	Strong to Very Strong	Medium Gray	Muscovite Biotite Schist continues	Blocky		PID = 0 ppm
47.5	2.5 min									
			(Fair) Appears to be competent rock			Dark Gray - blackish	47.6-47.7' Horizontal break, few crenulations, no visible staining	Slightly Broken	No discoloration - fresh	
48.5	3 min						48.1-48.2' - Low angle fracture - close to horizontal			
						Medium Gray	48.7' - Low angle fracture - close to horizontal		Only slightly fractured. Remainder of breaks are mechanical and fall along plane of foliation or schistosity	
49.5	3 min						~49.1-49.2' secondary mineralization on outside of core-quartz (swirl)			
							(water flow does not appear likely in these fractures)			
50.5	3 min									
			Run 3: 50.5-55.5' Recovery = 5'		Moderate		50.5-51.0' - Broken in top 6"-possibly associated with a quartz nodule	Broken	Maybe broken due to weathering vs. fracture. Water flow not likely.	
51.5	2 min							Blocky		
			Penetration = 5' RQD for run 52"/60" = 87% (Good) Competant rock		Strong to Very Strong		- Similar rock type as in previous runs. No more chlorite garnet visible.			
52.5	2 min									
							- Quartz stringers 53-53.7' 1 mm thick		All mechanical break along schistosity	
53.5	2 min									
54.5	2 min									

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash
METHOD OF SOIL SAMPLING:	Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING:	HQ wireline, yields 3 $^7/_8$" core
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Note - No samples for analysis; JHS = jar head space reading (heated in car) PID reading taken when spoon opened.

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-342S
PROJECT NO:	112G00645	START DATE:	10/28/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	10/29/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-342S (by former pipeline)
GRD. SURFACE ELEVATION:	34.13' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

DEPTH (FEET) 54.5	BLOWS PER 6" NA Coring Ft./Min	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
			Run 3 continued	Bedrock	Strong to Very Strong	Dark Gray	Muscovite Biotite Schist continues (visible crenulations, folds, garnet, chlorite, silky luster)	Blocky	Recover 5" piece; Minor break; Recover 5.5" piece	PID = 0 ppm
55.5	2 min		↓		↓	↓	- 55" to 55.1' - minor fracture, ~45° above horizontal	↓		↓
			Run 4; 55.5-60.5' Recovery - 5' Penetration - 5'		Strong		2 broken pieces at top of recovered core	Broken	Shiny surface	
56.5	2 min				↓		- Visible crenulations on core in top 3.3'. Few crenulations below 3.3' from top of run (58.8')			
			RQD for run = 55"/60" = 91% (Excellent)				smooth, shiny - Small, low angle fracture at ~57' (not likely water bearing) Quartz stringers.	Blocky	Most visible breaks are mechanical breaks along schistosity (8 or 9 of them) - All pieces fit together	
57.5	2.5 min							↓		
			Competant Rock		Very Strong		↓			
58.5	2 min		↓		↓				- No surface staining observed	
59.5	2.5 min									
							- Small, low angle fracture at ~ 60.2 - 60.4'. Quartz swirl		Not likely water bearing	
60.5	2 min		↓			↓				
			Run 5: 60.5-65.5' Recovery - 5' Penetration - 5'			Dark Gray	- Similar rock as above. Distinct bands of darker mineral in C5 run		Most visible breaks are mechanical breaks along schistosity	
61.5	3 min					↓				
			RQD for entire run = 48"/60" = 80% (less than above) (Good)						No surface stain inside but surface is soft (weathered?)	
62.5	2.5 min				↓	↓	- Small fracture, near horizontal at 62.5'	↓		↓

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash
METHOD OF SOIL SAMPLING:	Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING:	HQ wireline, yields 3 $^{7}/_{8}$" core
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Note - No samples for analysis; JHS = jar head space reading (heated in car) PID reading taken when spoon opened.

BORING NO.: SB-EP-342S

Tetra Tech NUS, Inc.

BORING LOG FOR: NAS Brunswick - Supplemental RI Work
PROJECT NO: 112G00645
LOGGED BY: K. Jalkut
DRILLED BY (Company/Driller): A. Martinelli/Drillex
GRD. SURFACE ELEVATION: 34.13' MSL
* NOTE - CHANGED DESIGNATION OF WELL TO MW-EP-342S (after well installed).

TRANSCRIBED BY: LH
ELEVATION FROM: NAVD 1988

BORING NO.: SB-EP-342S
START DATE: 10/28/2008
COMPLETION DATE: 10/29/2008
MON. WELL NO.: MW-EP-342S (by former pipeline)
CHECKED BY: CR

DEPTH (FEET) 62.5	BLOWS PER 6" NA Coring Ft./Min	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
			Run 5 continued	Bedrock	Strong to Very Strong	Dark Gray	Muscovite Biotite Schist continues	Blocky	Several breaks are mechanical - along schistosity	PID = 0 ppm
63.5	2.5 min		Still competent rock							
							- Small fracture, approx. 45° above horizontal at 64.1'		Water flow not apparent - does not appear possible or likely	
64.5	2.5 min						- Secondary mineralization - quartz or calcite			
							- Small fracture, similar to above at 64.6'			
65.5	2.5 min									
			Start run 6: 65.5 - 70.5		Very Strong		Similar rock type as above		Majority of visible breaks are mechanical along schistosity	
66.5	2.5 min		Recovery = 4.6' Penetration = 5'				- Visible quartz stringers			
			RQD for entire run = 54"/60" = 90% (Good)							
67.5	2 min						- Quartz nodule			
			Competent Rock							
68.5	2.5 min									
69.5	2 min						- 1 small low angle break at 69-69.2' some crenulations visible, oxidized along fracture surface or face, slighly decomposed	Broken	Fracture is dry - water flow may be possible	
								Blocky		
70.5	2 min			End of Boring at 70.5 bgs						

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Drive and Wash
METHOD OF SOIL SAMPLING: Continuous in 2' intervals with 2" OD split barrel (24"); 140 lb hammer (automatic), 30" drop
METHOD OF ROCK CORING: HQ wireline, yields 3 $^{7}/_{8}$" core
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:: Select screen interval in silt on top of rock. Backfill borehole and set overburden well just above top of rock
Set screen 30-40 bgs. See well construction log for details. Backfill in rock alternating lifts of bentonite and sand.

Tetra Tech NUS, Inc.

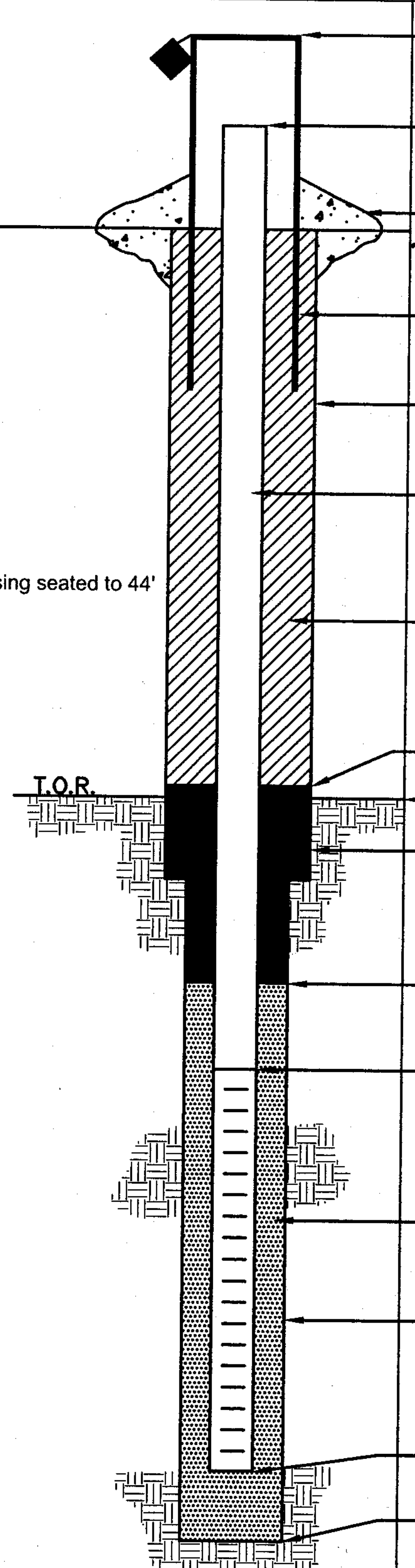
WELL NO.: MW-EP-342B1

Tetra Tech NUS, Inc.

BEDROCK
MONITORING WELL SHEET
WELL INSTALLED IN BEDROCK

PROJECT EP - Bedrock Investigation	LOCATION NASB	DRILLER Drillex
PROJECT NO. 112G00645	BORING	DRILLING METHOD D&W/Air Rotary/RollerBit
DATE BEGUN 11/18/08	DATE COMPLETED 11/28/08	
FIELD GEOLOGIST K. Jalkut/B. Geringer		DEVELOPMENT METHOD Peristaltic
GROUND ELEVATION 34.34	DATUM FEET NAVD 1988	

6" Casing seated to 44'



ELEVATION/HEIGHT OF TOP OF SURFACE CASING: 36.03' / 2.32'

ELEVATION/HEIGHT TOP OF RISER: 35.94' / 1.58'

TYPE OF SURFACE SEAL: Concrete

I.D. OF SURFACE CASING: 6"

DIAMETER OF HOLE: 8"

RISER PIPE I.D.: 1"

TYPE OF RISER PIPE: PVC

TYPE OF BACKFILL: Bentonite

ELEVATION/DEPTH TOP OF SEAL: 34.34' / Ground Surface

ELEVATION/DEPTH TOP OF BEDROCK: - 6.96' / 41.3'

TYPE OF SEAL: Bentonite/Concrete

ELEVATION/DEPTH TOP OF SAND: - 25.86' / 60.2'

ELEVATION/DEPTH TOP OF SCREEN: - 28.86' / 63.2'

TYPE OF SCREEN: Schedule 40

SLOT SIZE x LENGTH: 0.01" x 5'

I.D. SCREEN: 1"

TYPE OF SAND PACK: Type 00

DIAMETER OF HOLE IN BEDROCK: 6" (20-40 Sieve)

CORE/REAM:

ELEVATION/DEPTH BOTTOM SCREEN: - 33.86' / 68.2'

ELEVATION/DEPTH BOTTOM OF SAND: - 34.86' / 69.2'

ELEVATION/DEPTH BOTTOM OF HOLE: - 59.66' / 94'

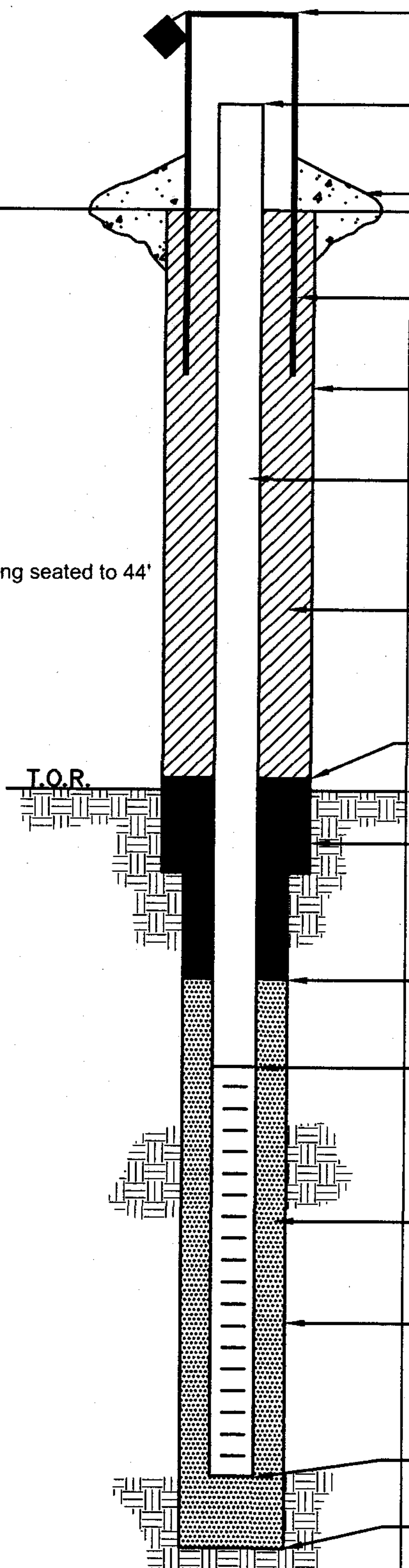
BACKFILL MATERIAL BELOW SAND: Bentonite

WELL NO.: MW-EP-342B2

Tetra Tech NUS, Inc.

BEDROCK
MONITORING WELL SHEET
WELL INSTALLED IN BEDROCK

PROJECT: EP - Bedrock Investigation	LOCATION: NASB	DRILLER: Drillex
PROJECT NO.: 112G00645	BORING: SB-342B	DRILLING METHOD: D&W/Air Rotary/RollerBit
DATE BEGUN: 11/18/08	DATE COMPLETED: 11/28/08	
FIELD GEOLOGIST: K. Jalkut/B. Geringer		DEVELOPMENT METHOD: Peristaltic
GROUND ELEVATION: 34.34	DATUM: FEET NAVD 1988	



ELEVATION/HEIGHT OF TOP OF SURFACE CASING: 36.68' / 2.32'

ELEVATION/HEIGHT TOP OF RISER: 35.88' / 1.54'

TYPE OF SURFACE SEAL: Concrete

I.D. OF SURFACE CASING: 6"

DIAMETER OF HOLE: 8"

RISER PIPE I.D.: 1"

TYPE OF RISER PIPE: PVC

TYPE OF BACKFILL: Bentonite

ELEVATION/DEPTH TOP OF SEAL: 34.34' / Ground Surface

ELEVATION/DEPTH TOP OF BEDROCK: - 6.96' / 41.3'

TYPE OF SEAL: Bentonite/Concrete

ELEVATION/DEPTH TOP OF SAND: - 39.86' / 74.2'

ELEVATION/DEPTH TOP OF SCREEN: - 41.86' / 76.2'

TYPE OF SCREEN: Schedule 40

SLOT SIZE x LENGTH: 0.01" x 5'

I.D. SCREEN: 1"

TYPE OF SAND PACK: Type 00 (20-40 sieve)

DIAMETER OF HOLE IN BEDROCK: 6"

CORE/REAM:

ELEVATION/DEPTH BOTTOM SCREEN: - 46.86' / 81.2'

ELEVATION/DEPTH BOTTOM OF SAND: - 49.86' / 84.2'

ELEVATION/DEPTH BOTTOM OF HOLE: - 59.66' / 94'

BACKFILL MATERIAL BELOW SAND: Bentonite

ACAD: FORM_MWINBR.dwg 07/20/99 INL

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work
PROJECT NO:	112G00645
LOGGED BY:	K. Jalkut
DRILLED BY (Company/Driller):	A. Martinelli/Drillex
GRD. SURFACE ELEVATION:	34.34' MSL
* NOTE - CHANGED DESIGNATION	

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

BORING NO.:	SB-EP-342B
START DATE:	10/30/2008
COMPLETION DATE:	11/21/2008
MON. WELL NO.:	MW-EP-342B
CHECKED BY:	CR

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
0							Ground Surface			
							No split barrel samples collected - refer to boring logs for MW-EP 342S soil descriptions		Advance 8" casing through overburden	
									Cuttings in wash are mostly fine sand tan-brown color	PID = 0 ppm from wash water
5										
10										
									Cuttings are both silt and sand size, tan - brown color	PID = 0 ppm from wash water
15										
									wash water color change to gray at ~17' - silt size cuttings	PID = 0 ppm from wash water
20										

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash with tricone roller bit, drive shoe thru OB
METHOD OF SOIL SAMPLING:	N/A
METHOD OF ROCK CORING:	
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-342B
PROJECT NO:	112G00645	START DATE:	10/30/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	11/21/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-342B
GRD. SURFACE ELEVATION:	34.34' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

* NOTE - CHANGED DESIGNATION

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
20							No split barrel samples collected - refer to boring logs for MW-EP 342S soil descriptions			
25										
									End of 8" casing Hole stays open in silt - continue with rollerbit to top of rock	
30										
35										
40										

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash with tricone roller bit, drive shoe thru OB
METHOD OF SOIL SAMPLING:	N/A
METHOD OF ROCK CORING:	
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-342B
PROJECT NO:	112G00645	START DATE:	10/30/2008
LOGGED BY:	K. Jalkut	COMPLETION DATE:	11/21/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-342B
GRD. SURFACE ELEVATION:	34.34' MSL	CHECKED BY:	CR
* NOTE - CHANGED DESIGNATION			

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
40										
							Top of rock potentially at 41' bgs - refusal. Roller bit 2' socket in rock. Telescope 6" casing thru 8"			
							casing and seat in socket. 6" casing to ~43' bgs			
							Grout casing with tremie pipe - observe water and grout displacement thru the 8" casing.			
45							Pull 8" casing later in day. Moved on to other work areas.			
									Grout - Bentonite + Portland III	
							Returned 11/10/08 - found sand in 6" casing at 20' casing potentially compromised. Driller washes out			
							to 25' - running sands - driller thinks casing sheared off at 25' - integrity of casing questioned.		45.5 ' of 6" casing used including 2.5'	
							Downhole camera activity on 11/13/08.		s/u for permanent steel casing	

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Drive and Wash with tricone roller bit, drive shoe thru OB
METHOD OF SOIL SAMPLING:	N/A
METHOD OF ROCK CORING:	
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	

Tetra Tech NUS, Inc.

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work			BORING NO.:	SB-EP-342B
PROJECT NO:	112G00645			START DATE:	10/30/2008
LOGGED BY:	B. Geringer	TRANSCRIBED BY: LH		COMPLETION DATE:	11/21/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex			MON. WELL NO.:	MW-EP-342B
GRD. SURFACE ELEVATION:	34.34' MSL	ELEVATION FROM: NAVD 1988		CHECKED BY:	CR

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
11/13/2008			0730				Advanced $3^{7}/_{8}$" roller bit past blockage in casing - Started to clean the hole out.			
↓							Water was not reaching the top of Casing - Drillex placed 4" casing in hole - was able to clear blockage.			
			0815 ↓				Drillex off Site to get more water.			
							Drillex started to clean the hole out - encountered grout at 28'bgs			
							Reached rock - discussed possibility of grouting 4" casing with Kayleen Jalkut.			
			0830				Decided to abandon hole - moved rig to 340.			
			0930				Drillex advanced $7^{7}/_{8}$" roller bit at new 342B location.			
							Encountered bedrock at 40', started to drill into rock.			
			1045							
↓			1120							
11/18/2008			1430							
↓			1530							

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Roller Bit/Air Rotary
METHOD OF SOIL SAMPLING:	N/A
METHOD OF ROCK CORING:	N/A - Air Rotary
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	

Tetra Tech NUS, Inc.

BORING NO.: SB-EP-342B

BORING LOG FOR:	NAS Brunswick - Supplemental RI Work	BORING NO.:	SB-EP-342B
PROJECT NO:	112G00645	START DATE:	10/30/2008
LOGGED BY:	B. Geringer	COMPLETION DATE:	11/21/2008
DRILLED BY (Company/Driller):	A. Martinelli/Drillex	MON. WELL NO.:	MW-EP-342B
GRD. SURFACE ELEVATION:	34.34' MSL	CHECKED BY:	CR

TRANSCRIBED BY: LH

ELEVATION FROM: NAVD 1988

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
11/18/2008			1600				Drill bit came off in hole. Had to pull rods and 8" casing - moved location -		Advance 8" casing	
							Hole collapsed and drilling backfilled hole.			
			↓				Started to advance new $7^{7}/_{8}$" roller bit at new location			
			1700				Reached rock at 41.3' bgs - Continued to drill			
							Reached 3' into rock - Inserted 6" casing in borehole			
			1830				Finished installing 6" casing - pulled 8" casing and started to mix grout			
							Finished mixing grout - pumped grout between wall of hole and casing using tremie pipe			
			1915				Finished grouting - Allowed to congeal off Site			
			2015							
			2030							
			2115							

TYPE OF DRILLING RIG:	Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING:	Roller Bit/Air Rotary
METHOD OF SOIL SAMPLING:	N/A
METHOD OF ROCK CORING:	N/A - Air Rotary
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	

Tetra Tech NUS, Inc.

BORING LOG FOR: NAS Brunswick - Supplemental RI Work
PROJECT NO: 112G00645
LOGGED BY: B. Geringer
DRILLED BY (Company/Driller): A. Martinelli/Drillex
GRD. SURFACE ELEVATION: 34.34' MSL

TRANSCRIBED BY: LH
ELEVATION FROM: NAVD 1988

BORING NO.: SB-EP-342B
START DATE: 10/30/2008
COMPLETION DATE: 11/21/2008
MON. WELL NO.: MW-EP-342B
CHECKED BY: CR

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION Ground Surface	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, (PPM)]
11/20/2008			1130			Gray	Started to drill via Air Rotary		Dry powdery rock chips	
44							↓			
			1300				Encountered possible Fracture - some water coming up		Wet slurry	
59										
			1320				Performed blow test for 15 min		Slurry/mud coming up from hole	
64							Performed second blow test for 15 min			
			1410				↓		Increased mud/ slurry coming up	
79							Reached 50' into rock - Drillex blew hole out for 30 minutes - Pulled rods cleaned up for the day.			
			1530							
94										
11/21/2008			0900				Cleaned out hole with roller bit 9' water little water lost -			
			1000				Finished cleaning out hole - cleaned up rig			

TYPE OF DRILLING RIG: Diedrich D120 ATV track mounted (rental rig)
METHOD OF ADVANCING BORING: Roller Bit/Air Rotary
METHOD OF SOIL SAMPLING: N/A
METHOD OF ROCK CORING: N/A - Air Rotary
GROUNDWATER LEVELS:
OTHER OBSERVATIONS::

Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: Eastern Plume – 1,4 Dioxane Investigation
PROJECT NO: 112G00645/CTO 069

PROJECT LOCATION: NASB, Brunswick, ME
WELL NO: MW-EP-343

CLIENT: U.S. Navy
BORING NO: MW-EP-343

CONTRACTOR: Tetra Tech NUS, Inc.
DRILLER: MAI

BORING LOCATION:
4859811.49' - Northing
425986.90' - Easting

LOGGED BY: C. Fellows-Swenson
DATE: 5/29/09

CHECKED BY: B. Geringer
DATE: 8/11/09

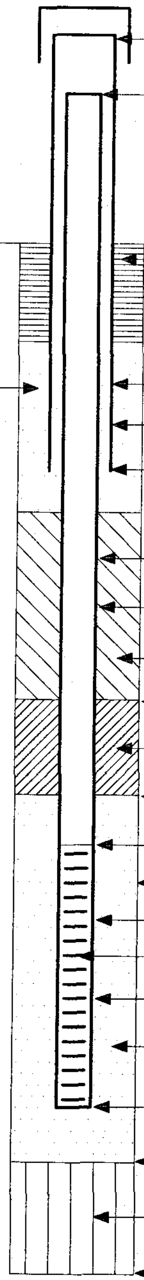
ELEVATION TOP OF PROTECTIVE CASING: 38.07'

ELEVATION TOP OF RISER PIPE: 38.04'

GROUND ELEVATION: 35.20'

SAND DRAIN LAYER

Premium Play sand No. 1113



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.87'
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	2.84'
TYPE OF SURFACE SEAL	Cement Quikrete
DIA. SURFACE SEAL BGS (In.)	6"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2'
I.D. OF PROTECTIVE CASING (In.)	4.25" (4 7/16")
TYPE OF PROTECTIVE CASING	Steel Guard Pipe
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.13'
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	3'
RISER PIPE (In.) I.D.: 1"	O.D.: 1.25"
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite Chips (med.)
DEPTH TOP OF SEAL (Ft.)	3'
TYPE OF SEAL	Bentonite Chips (med.)
DEPTH BOTTOM OF SEAL (Ft.)	66'
DEPTH TOP OF PERVIOUS SECTION (Ft.)	68'
DIAMETER OF BOREHOLE (In.)	3.25"
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.010 slots x 10
PERVIOUS SECTION (In.) I.D.: 1"	O.D.: 2.4"
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	"00" sand (20-40 sieve size)
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	78'
DEPTH BOTTOM OF FILTER PACK (Ft.)	78'
TYPE OF BACKFILL BELOW FILTER PACK	*No sand below screen
END OF BORING (Ft.)	78'

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG — **TETRA TECH NUS, INC.**

PROJECT NAME: Eastern Plume – 1,4 Dioxane Investigation
PROJECT NO: 112G00645/CTO 069
PROJECT LOCATION: NASB, Brunswick, ME
WELL NO: MW-EP-344
CLIENT: U.S. Navy
BORING NO: MW-EP-344
CONTRACTOR: Tetra Tech NUS, Inc.
DRILLER: MAI
BORING LOCATION:
4859693.39' - Northing
425896.11' - Easting
LOGGED BY: C. Fellows-Swenson
DATE: 5/29/09
CHECKED BY: B. Geringer
DATE: 8/11/09

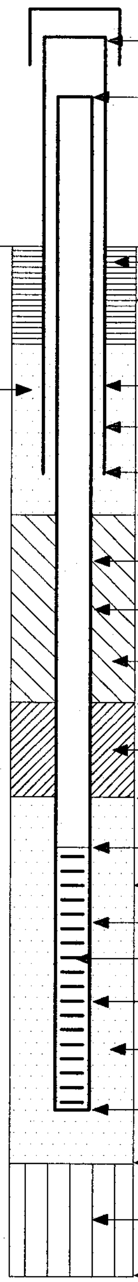
ELEVATION TOP OF PROTECTIVE CASING: 37.82'

ELEVATION TOP OF RISER PIPE: 37.74'

GROUND ELEVATION: 35.21'

SAND DRAIN LAYER

Premium Play sand
No. 1113



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.61'
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	2.53'
TYPE OF SURFACE SEAL	Cement Quikrete
DIA. SURFACE SEAL BGS (In.)	6"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2'
I.D. OF PROTECTIVE CASING (In.)	4.5" (4 7/16")
TYPE OF PROTECTIVE CASING	Steel Guard Pipe
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.39'
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	3'
RISER PIPE (In.) I.D.: 1"	O.D.: 1.25"
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite Chips (med.)
DEPTH TOP OF SEAL (Ft.)	3'
TYPE OF SEAL	Bentonite Chips (med.)
DEPTH BOTTOM OF SEAL (Ft.)	61'
DEPTH TOP OF PERVIOUS SECTION (Ft.)	63'
DIAMETER OF BOREHOLE (In.)	3.25"
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.010 slots x 10
PERVIOUS SECTION (In.) I.D.: 1"	O.D.: 2.4"
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	"00" sand (20-40 sieve size)
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	68'
DEPTH BOTTOM OF FILTER PACK (Ft.)	68'
TYPE OF BACKFILL BELOW FILTER PACK	*No sand below screen
END OF BORING (Ft.)	68'

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

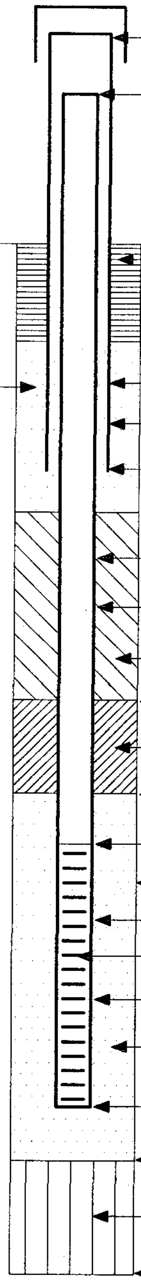
PROJECT NAME: Eastern Plume – 1,4 Dioxane Investigation	PROJECT NO: 112G00645/CTO 069
PROJECT LOCATION: NASB, Brunswick, ME	WELL NO: MW-EP-345
CLIENT: U.S. Navy	BORING NO: MW-EP-345
CONTRACTOR: Tetra Tech NUS, Inc. DRILLER: MAI	BORING LOCATION:
LOGGED BY: C. Fellows-Swenson DATE: 5/28/09	4859588.78' - Northing
CHECKED BY: B. Geringer DATE: 8/11/09	425935.64 - Easting

ELEVATION TOP OF PROTECTIVE CASING 36.43'

ELEVATION TOP OF RISER PIPE 36.36'

GROUND ELEVATION 33.45'

SAND DRAIN LAYER



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.48'
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	2.91'
TYPE OF SURFACE SEAL	Cement Quikrete
DIA. SURFACE SEAL BGS (In.)	6"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2'
I.D. OF PROTECTIVE CASING (In.)	4.5" (4 7/16")
TYPE OF PROTECTIVE CASING	Steel Guard Pipe
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.02'
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	3'
RISER PIPE (In.) I.D.: 1"	O.D.: 1.25"
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite Chips (med.)
DEPTH TOP OF SEAL (Ft.)	3'
TYPE OF SEAL	Bentonite Chips (med.)
DEPTH BOTTOM OF SEAL (Ft.)	16'
DEPTH TOP OF PERVIOUS SECTION (Ft.)	18'
DIAMETER OF BOREHOLE (In.)	3.25"
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.010 slots x 10
PERVIOUS SECTION (In.) I.D.: 1"	O.D.: 2.4"
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	"00" sand (20-40 sieve size)
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	23'
DEPTH BOTTOM OF FILTER PACK (Ft.)	23'
TYPE OF BACKFILL BELOW FILTER PACK	*No sand below screen
END OF BORING (Ft.)	23'

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

BORING LOG FOR: Eastern Plume - NASB Brunswick, ME
PROJECT NO: 112G00645/CTO - 69
LOGGED BY: C. Fellows-Swenson
DRILLED BY (Company/Driller): MAI
GRD. SURFACE ELEVATION: 33.45

TRANSCRIBED BY: L. Homoleski

BORING NO.: MW-EP-345
START DATE: 5/18/2009
COMPLETION DATE: 5/18/2009
MON. WELL NO.: MW-EP-345
CHECKED BY: CR

DEPTH (FEET) 0	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
							* Began soil sampling at 25 ft.			
25										
		4.0 / 4.0	0905		Soft	Gray	0.0-0.3 - Silt and Sand (fine)	SM	Wet	0.0
							3.0-4.0 - Clay with silt	CL		
29										
		4.0 / 4.0	0915	Presumpscot Clay			0.0-4.0 - Clay some silt			0.0
33										
		4.0 / 4.0	0920				0.0-4.0 - Clay some silt			0.0
37										
		4.0 / 4.0	0925				0.0-4.0 - Clay trace silt			0.0

TYPE OF DRILLING RIG: Geoprobe 6620 DT
METHOD OF ADVANCING BORING: DPT
METHOD OF SOIL SAMPLING: Dual Tube
METHOD OF ROCK CORING: NA
GROUNDWATER LEVELS:
OTHER OBSERVATIONS::

BORING NO.: MW-EP-345

Tetra Tech NUS, Inc.

BORING LOG FOR:	Eastern Plume - NASB Brunswick, ME
PROJECT NO:	112G00645/CTO - 69
LOGGED BY:	C. Fellows-Swenson
DRILLED BY (Company/Driller):	MAI
GRD. SURFACE ELEVATION:	33.45

TRANSCRIBED BY: L. Homoleski

BORING NO.:	MW-EP-345
START DATE:	5/18/2009
COMPLETION DATE:	5/18/2009
MON. WELL NO.:	MW-EP-345
CHECKED BY:	CR

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
				↓			↓			
41									End of First Boring	
				End of Boring at 41 feet			* Lower sand not observed from 25-41 ft. Advance from 15-23 ft in adjacent hole (MW-EP-345 to locate top of clay.			

TYPE OF DRILLING RIG:	Geoprobe 6620 DT
METHOD OF ADVANCING BORING:	DPT
METHOD OF SOIL SAMPLING:	Dual Tube
METHOD OF ROCK CORING:	NA
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	No well installed. No Lower Sand observed from 15 to 41 ft bgs. Back fill both holes with Bentonite.

BORING NO.: MW-EP-345

Tetra Tech NUS, Inc.

BORING LOG FOR:	Eastern Plume - NASB Brunswick, ME	BORING NO.:	MW-EP-345 A
PROJECT NO:	112G00645/CTO - 69	START DATE:	5/18/2009
LOGGED BY:	C. Fellows-Swenson	COMPLETION DATE:	5/18/2009
DRILLED BY (Company/Driller):	MAI	MON. WELL NO.:	MW-EP-345 A
GRD. SURFACE ELEVATION:	33.45	CHECKED BY:	CR

TRANSCRIBED BY: L. Homoleski

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
15										
		4.0/4.0	0945	Upper Sand	Loose	Brown	0.0-3.5 - sand (fine to medium)	SP	Wet	
					Slightly Dense		3.5-4.0 - sand (fine) and silt trace clay	SM		
19										
		4.0/4.0	0948		Loose		0.0-3.6 - sand (fine to medium)			
				Transition Unit	Slightly Dense		3.6-4.0 - silt some sand (fine) trace clay			
23										
				End of Boring at 23 feet						

TYPE OF DRILLING RIG:	Geoprobe 6620 DT
METHOD OF ADVANCING BORING:	DPT
METHOD OF SOIL SAMPLING:	Dual Tube
METHOD OF ROCK CORING:	NA
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS:	No Lower Sand observed from 15 to 41 ft bgs. Back fill both holes with Bentonite. MW-EP-345 installed in separate borehole, approximately 1-foot from boring.

Tetra Tech NUS, Inc.

BORING NO.: MW-EP-345A

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: Eastern Plume – 1,4 Dioxane

PROJECT NO: 112G00645/CTO 069

PROJECT LOCATION: NASB, Brunswick, ME

WELL NO: MW-EP-346

CLIENT: U.S. Navy

BORING NO: MW-EP-346

CONTRACTOR: Tetra Tech NUS, Inc.

DRILLER: MAI

BORING LOCATION:

LOGGED BY: C. Fellows-Swenson

DATE: 5/19/09

CHECKED BY: B. Geringer

DATE: 8/11/09

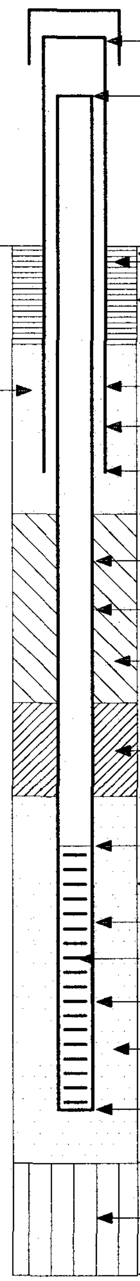
PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING 55.42

ELEVATION TOP OF RISER PIPE 55.15

GROUND ELEVATION 52.47

SAND DRAIN LAYER



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.) 2.95'

LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.) 2.68'

TYPE OF SURFACE SEAL Cement Quikrete

DIA. SURFACE SEAL BGS (In.) 6"

DEPTH TO BOTTOM OF SURFACE SEAL (Ft.) 2'

I.D. OF PROTECTIVE CASING (In.) 4.5in (4 7/16")

TYPE OF PROTECTIVE CASING Steel Guard Pipe

DEPTH BOTTOM OF PROTECTIVE CASING (Ft.) 2.05'

DEPTH BOTTOM OF DRAIN LAYER (Ft.) 3'

RISER PIPE (In.) I.D. 1 - in O.D.: 1.25in

TYPE OF RISER PIPE Schedule 40 PVC

TYPE OF BACKFILL AROUND RISER PIPE Bentonite Chips (med.)

DEPTH TOP OF SEAL (Ft.) 3'

TYPE OF SEAL Bentonite Chips (med.)

DEPTH BOTTOM OF SEAL (Ft.) 58'

DEPTH TOP OF PERVIOUS SECTION (Ft.) 60'

DIAMETER OF BOREHOLE (In.) 3.25"

TYPE OF PERVIOUS SECTION Schedule 40 PVC

TYPE OF OPENINGS 0.010 slots x 10

PERVIOUS SECTION (In.) I.D.: 1-in O.D.: 2.4 in

TYPE OF FILTER PACK AROUND PERVIOUS SECTION "00" sand (20-40 sieve size)

DEPTH BOTTOM OF PERVIOUS SECTION (Ft.) 70'

DEPTH BOTTOM OF FILTER PACK (Ft.) 70'

*No sand below screen due to flowing sand

TYPE OF BACKFILL BELOW FILTER PACK

END OF BORING (Ft.) 70'

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

BORING LOG FOR: Eastern Plume - NASB Brunswick, ME
PROJECT NO: 112G00645/CTO - 69
LOGGED BY: C. Fellows-Swenson
DRILLED BY (Company/Driller): MAI
GRD. SURFACE ELEVATION: 52.47

TRANSCRIBED BY: L. Homoleski

BORING NO.: MW-EP-346
START DATE: 5/18/2009
COMPLETION DATE: 5/19/2009
MON. WELL NO.: MW-EP-346
CHECKED BY: CR

DEPTH (FEET) 0	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
							* Began soil sampling at 25 feet			
25										
		4.0 / 4.0	1615	Transition Unit	Loose	Brown	0.0-1.5 - sand (fine to medium)	SP	Wet	0.0
							1.5-4.0 - sand (fine to medium) with layers of sand (fine) and silt. Sand and silt interbeds	SP/SM		
							~ 2 inches each			
29										
		4.0 / 4.0	1620				0.0-1.0 - sand (fine) and silt	SM		0.0
							1.0-3.0 - silt some clay trace sand (fine)			
							3.0-4.0 - sand (fine to medium) some silt			
33										
		3.5 / 4.0	1625				0.0-3.5 - sand (fine to medium) layer of sand (fine) and silt from 1.0-1.4	SP		0.0
37										
		4.0 / 4.0	1636		Slightly Dense		0.0-0.8 - sand (fine to medium)			0.0
					Soft		0.8-3.0 - silt with clay trace sand (fine)	SM		

TYPE OF DRILLING RIG: Geoprobe 6620 DT
METHOD OF ADVANCING BORING: DPT
METHOD OF SOIL SAMPLING: Dual Tube
METHOD OF ROCK CORING: NA
GROUNDWATER LEVELS:
OTHER OBSERVATIONS::

Tetra Tech NUS, Inc.

BORING LOG FOR:	Eastern Plume - NASB Brunswick, ME	BORING NO.:	MW-EP-346
PROJECT NO:	112G00645/CTO - 69	START DATE:	5/18/2009
LOGGED BY:	C. Fellows-Swenson	COMPLETION DATE:	5/19/2009
DRILLED BY (Company/Driller):	MAI	MON. WELL NO.:	MW-EP-346
GRD. SURFACE ELEVATION:	52.47	CHECKED BY:	CDR

TRANSCRIBED BY: L. Homoleski

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
		/		Transition Unit	Soft	Brown	3.0-4.0 - Clay with silty clay layers at 3.2 and	CL	Wet	
41										
		4.0 / 4.0	1642				0.0-3.0 - interbedded layers of silt and sand (fine) and silt and clay	SM		0.0
							3.0-4.0 - sand (fine) with silt			
		/								
45										
		4.0 / 4.0	1700		Loose		0.0-3.0 - sand (fine to medium)	SP		
							3.0-4.0 - sand (fine to medium) with interbeds of sand (fine) and silt	SP/SM		
		/								
49										
		3.0 / 3.0	0829 (5/19/09)	Lower Sand			0.0-3.0 - sand (fine to medium)	SP		0.0
52		/								
							0.0-3.0 - sand (fine to medium)			0.0
		3.0 / 3.0	1000							
55										

TYPE OF DRILLING RIG:	Geoprobe 6620 DT
METHOD OF ADVANCING BORING:	DPT
METHOD OF SOIL SAMPLING:	Dual Tube
METHOD OF ROCK CORING:	NA
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	* Flowing sands from 45 ft on, decide to push rods past 59-63ft interval to try to get into clay. Once in clay sands will/ should stop flowing into rods and cause to get jammed.

Tetra Tech NUS, Inc.

BORING LOG FOR: Eastern Plume - NASB Brunswick, ME
PROJECT NO: 112G00645/CTO - 69
LOGGED BY: C. Fellows-Swenson
DRILLED BY (Company/Driller): MAI
GRD. SURFACE ELEVATION: 52.47

TRANSCRIBED BY: L. Homoleski

BORING NO.: MW-EP-346
START DATE: 5/18/2009
COMPLETION DATE: 5/19/2009
MON. WELL NO.: MW-EP-346
CHECKED BY: CDR

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
56		4.0/4.0	1030	Lower Sand	Loose	Brown	0.0-4.0 - sand (fine to medium)	SP	Wet	0.0
59										
							* Due to flowing sands, decide to push past 59-63 ft. interval			
							No sample			
63										
							* No sample due to flowing sands push past 63-66 ft. interval			
66		4.0/4.0								
			1200		Soft	Brown	0.0-4.0 - sand (fine to medium) some silt			0.0
70		4.0/4.0	1230							
						Gray	0.0-3.0 - sand (fine) some silt			0.0

TYPE OF DRILLING RIG: Geoprobe 6620 DT
METHOD OF ADVANCING BORING: DPT
METHOD OF SOIL SAMPLING: Dual Tube
METHOD OF ROCK CORING: NA
GROUNDWATER LEVELS:
OTHER OBSERVATIONS::

Tetra Tech NUS, Inc.

BORING LOG FOR: Eastern Plume - NASB Brunswick, ME
PROJECT NO: 112G00645/CTO - 69
LOGGED BY: C. Fellows-Swenson
DRILLED BY (Company/Driller): MAI
GRD. SURFACE ELEVATION: 52.47

TRANSCRIBED BY: L. Homoleski

BORING NO.: MW-EP-346
START DATE: 5/18/2009
COMPLETION DATE: 5/19/2009
MON. WELL NO.: MW-EP-346
CHECKED BY: CDR

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
72		/		Lower Sand	Soft	Gray		SP	Wet	
73										
74		/		Clay			3.0-4.0 - Clay trace silt, trace fine sand	CL		
				End of Boring at 74 feet						
		/								
		/								
		/								
		/								
		/								
		/								

TYPE OF DRILLING RIG: Geoprobe 6620 DT
METHOD OF ADVANCING BORING: DPT
METHOD OF SOIL SAMPLING: Dual Tube
METHOD OF ROCK CORING: NA
GROUNDWATER LEVELS:
OTHER OBSERVATIONS::

Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG — **TETRA TECH NUS, INC.**

PROJECT NAME: Eastern Plume – 1,4 Dioxane Investigation
PROJECT NO: 112G00645/CTO 069
PROJECT LOCATION: NASB, Brunswick, ME
WELL NO: MW-EP-347
CLIENT: U.S. Navy
BORING NO: MW-EP-347
CONTRACTOR: Tetra Tech NUS, Inc.
DRILLER: MAI
BORING LOCATION: 4859521.30 - Northing; 425843.80 - Easting
LOGGED BY: C. Fellows-Swenson
DATE: 5/18/09
CHECKED BY: B. Geringer
DATE: 8/11/09

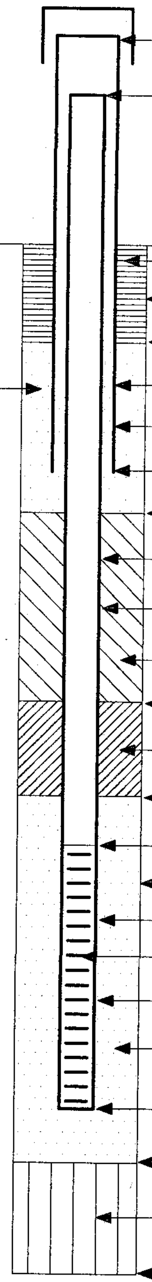
ELEVATION TOP OF PROTECTIVE CASING: 31.42'

ELEVATION TOP OF RISER PIPE: 31.31'

GROUND ELEVATION: 29.35'

SAND DRAIN LAYER

Quikrete Premium Play Sand (No. 1113)



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.07'
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	1.96'
TYPE OF SURFACE SEAL	Cement Quikrete
DIA. SURFACE SEAL BGS (In.)	6"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2'
I.D. OF PROTECTIVE CASING (In.)	4.5" (4 7/16")
TYPE OF PROTECTIVE CASING	Steel Guard Pipe
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.83'
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	3.5'
RISER PIPE (In.) I.D. 1"	O.D.: 1.25"
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite Chips (med.)
DEPTH TOP OF SEAL (Ft.)	3.5'
TYPE OF SEAL	Bentonite Chips (med.)
DEPTH BOTTOM OF SEAL (Ft.)	44.5'
DEPTH TOP OF PERVIOUS SECTION (Ft.)	46'
DIAMETER OF BOREHOLE (In.)	3.25"
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.010 slots x 10
PERVIOUS SECTION (In.) I.D.: 1"	O.D.: 2.4"
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	"00" sand (20-40 sieve size)
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	51'
DEPTH BOTTOM OF FILTER PACK (Ft.)	51'
TYPE OF BACKFILL BELOW FILTER PACK	*No sand below screen due to flowing sand
END OF BORING (Ft.)	51'

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: Eastern Plume – 1,4 Dioxane Investigation
PROJECT NO: 112G00645/CTO 069
PROJECT LOCATION: NASB, Brunswick, ME
WELL NO: MW-EP-348
CLIENT: U.S. Navy
BORING NO: MW-EP-348
CONTRACTOR: Tetra Tech NUS, Inc.
DRILLER: MAI
BORING LOCATION:
LOGGED BY: C. Fellows-Swenson
DATE: 5/20/09
4859332.70 - Northing
CHECKED BY: B. Geringer
DATE: 8/11/09
425809.23 - Easting

PAGE: 1 OF 1

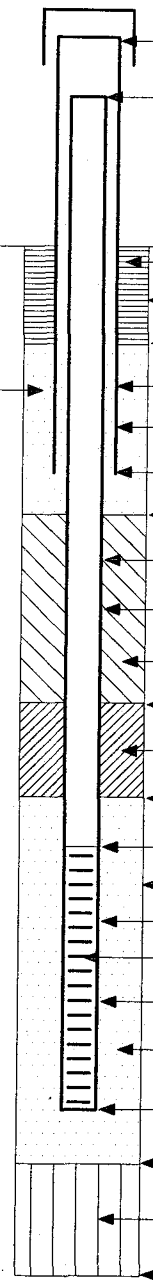
ELEVATION TOP OF PROTECTIVE CASING 23.71'

ELEVATION TOP OF RISER PIPE 23.61'

GROUND ELEVATION 21.07'

SAND DRAIN LAYER

Quikrete Premium Play Sand (No. 1113)



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.) 2.64'
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.) 2.54'
TYPE OF SURFACE SEAL Cement Quikrete
DIA. SURFACE SEAL BGS (In.) 6"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.) 2'
I.D. OF PROTECTIVE CASING (In.) 4.5" (4 7/16")
TYPE OF PROTECTIVE CASING Steel Guard Pipe
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.) 2.36'
DEPTH BOTTOM OF DRAIN LAYER (Ft.) 3'
RISER PIPE (In.) I.D.: 1" O.D.: 1.25"
TYPE OF RISER PIPE Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE Bentonite Chips (med.)
DEPTH TOP OF SEAL (Ft.) 3'
TYPE OF SEAL Bentonite Chips (med.)
DEPTH BOTTOM OF SEAL (Ft.) 41'
DEPTH TOP OF PERVIOUS SECTION (Ft.) 43'
DIAMETER OF BOREHOLE (In.) 3.25"
TYPE OF PERVIOUS SECTION Schedule 40 PVC
TYPE OF OPENINGS 0.010 slots x 10
PERVIOUS SECTION (In.) I.D.: 1" O.D.: 2.4"
TYPE OF FILTER PACK AROUND PERVIOUS SECTION "00" sand (20-40 sieve size)
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.) 48'
DEPTH BOTTOM OF FILTER PACK (Ft.) 48'
TYPE OF BACKFILL BELOW FILTER PACK *No sand below screen
END OF BORING (Ft.) 48'

* Pre-packed filter screen 1x2.4in O.D.

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: Eastern Plume – 1,4 Dioxane Investigation

PROJECT NO: 112G00645/CTO 069

PROJECT LOCATION: NASB, Brunswick, ME

WELL NO: MW-EP-349

CLIENT: U.S. Navy

BORING NO: MW-EP-349

CONTRACTOR: Tetra Tech NUS, Inc.

DRILLER: MAI

BORING LOCATION:
4589321.72 - Northing
425752.96 - Easting

LOGGED BY: C. Fellows-Swenson

DATE: 5/20/09

CHECKED BY: B. Geringer

DATE: 8/11/09

PAGE: 1 OF 1

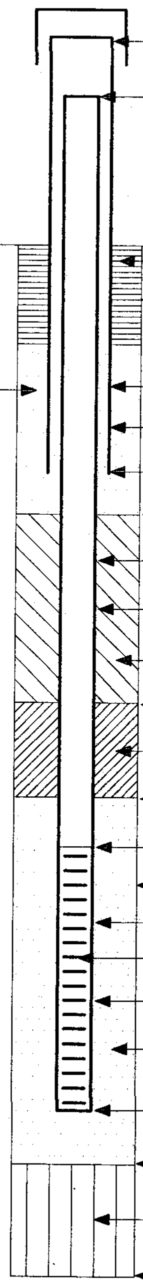
ELEVATION TOP OF PROTECTIVE CASING: 26.15'

ELEVATION TOP OF RISER PIPE: 25.74'

GROUND ELEVATION: 23.38'

SAND DRAIN LAYER

Premium Play Sand (No. 1113)



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.): 2.77'

LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.): 2.36'

TYPE OF SURFACE SEAL: Cement Quikrete

DIA. SURFACE SEAL BGS (In.): 6"

DEPTH TO BOTTOM OF SURFACE SEAL (Ft.): 2'

I.D. OF PROTECTIVE CASING (In.): 4.5" (4 7/16")

TYPE OF PROTECTIVE CASING: Steel Guard Pipe

DEPTH BOTTOM OF PROTECTIVE CASING (Ft.): 2.23'

DEPTH BOTTOM OF DRAIN LAYER (Ft.): 3'

RISER PIPE (In.) I.D.: 1" O.D.: 1.25"

TYPE OF RISER PIPE: Schedule 40 PVC

TYPE OF BACKFILL AROUND RISER PIPE: Bentonite Chips (med.)

DEPTH TOP OF SEAL (Ft.): 3'

TYPE OF SEAL: Bentonite Chips (med.)

DEPTH BOTTOM OF SEAL (Ft.): 44'

DEPTH TOP OF PERVIOUS SECTION (Ft.): 46'

DIAMETER OF BOREHOLE (In.): 3.25"

TYPE OF PERVIOUS SECTION: Schedule 40 PVC

TYPE OF OPENINGS: 0.010 slots x 10

PERVIOUS SECTION (In.) I.D.: 1" O.D.: 2.4"

TYPE OF FILTER PACK AROUND PERVIOUS SECTION: "00" sand (20-40 sieve size)

DEPTH BOTTOM OF PERVIOUS SECTION (Ft.): 51'

DEPTH BOTTOM OF FILTER PACK (Ft.): 51'

TYPE OF BACKFILL BELOW FILTER PACK: *No sand below screen

END OF BORING (Ft.): 51'

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG — TETRA TECH NUS, INC.

PROJECT NAME: Eastern Plume – 1,4 Dioxane Investigation
PROJECT NO: 112G00645/CTO 069
PROJECT LOCATION: NASB, Brunswick, ME
WELL NO: MW-EP-350
CLIENT: U.S. Navy
BORING NO: MW-EP-350
CONTRACTOR: Tetra Tech NUS, Inc.
DRILLER: MAI
BORING LOCATION:
LOGGED BY: C. Fellows-Swenson
DATE: 5/22/09
CHECKED BY: B. Geringer
DATE: 8/11/09

ELEVATION TOP OF PROTECTIVE CASING

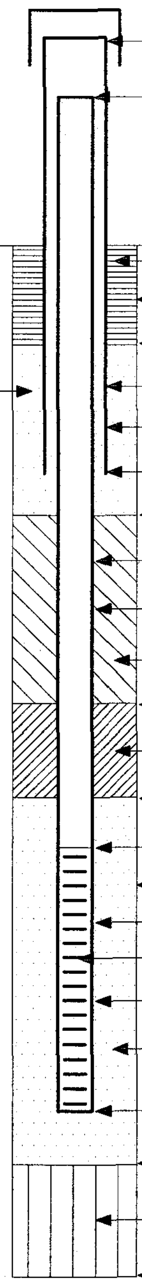
ELEVATION TOP OF RISER PIPE

GROUND ELEVATION

SAND DRAIN LAYER

* Premuim Play sand No. 1113 No Sand Drain layer due to water flowing up. Bentonite up to top to try to seal hole.

** Wait to put protective casing and surface seal due to flowing water and silt/sand (fine) in close proximity.



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.): No pro-casing as on 5/22
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.): ** 11ft. 5/22/09
TYPE OF SURFACE SEAL: Cement Quikrete
DIA. SURFACE SEAL BGS (In.): 6"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.): 2'
I.D. OF PROTECTIVE CASING (In.): 4.5in (4 7/16")
TYPE OF PROTECTIVE CASING: Steel Guard Pipe
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.): **
DEPTH BOTTOM OF DRAIN LAYER (Ft.): * No drain sand layer
RISER PIPE (In.) I.D.: 1" O.D.: 1.25"
TYPE OF RISER PIPE: Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE: Bentonite Chips (med.)
DEPTH TOP OF SEAL (Ft.): 3'
TYPE OF SEAL: Bentonite Chips (med.)
DEPTH BOTTOM OF SEAL (Ft.): 46'
DEPTH TOP OF PERVIOUS SECTION (Ft.): 48'
DIAMETER OF BOREHOLE (In.): 3.25"
TYPE OF PERVIOUS SECTION: Schedule 40 PVC
TYPE OF OPENINGS: 0.010 slots x 10
PERVIOUS SECTION (In.) I.D.: 1" O.D.: 2.4"
TYPE OF FILTER PACK AROUND PERVIOUS SECTION: "00" sand (20-40 sieve size)
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.): 58'
DEPTH BOTTOM OF FILTER PACK (Ft.): 58'
TYPE OF BACKFILL BELOW FILTER PACK: *No sand below screen
END OF BORING (Ft.): 58'

* One inch well installed on 5/22/09 destroyed/abandoned 2-in well installed as replacement see additional well log completed by C. Race/C. Fellows-Swenson.

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: Eastern Plume – 1,4 Dioxane	PROJECT NO: 112G00645/CTO 069
PROJECT LOCATION: NASB, Brunswick, ME	WELL NO: MW-EP-351
CLIENT: U.S. Navy	BORING NO: MW-EP-351
CONTRACTOR: Tetra Tech NUS, Inc. DRILLER: MAI	BORING LOCATION:
LOGGED BY: C. Fellows-Swenson DATE: 5/26/09	4859144.58 - Northing
CHECKED BY: B. Geringer DATE: 8/11/09	425819.41 - Easting

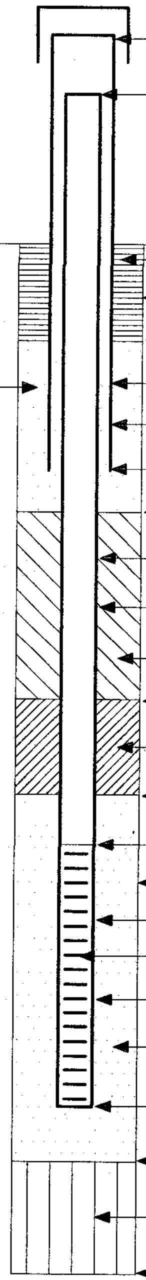
ELEVATION TOP OF PROTECTIVE CASING: 11.21'

ELEVATION TOP OF RISER PIPE: 10.99'

GROUND ELEVATION: 8.30'

SAND DRAIN LAYER

Premium Play Sand (No. 1113)



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.91'
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	2.69'
TYPE OF SURFACE SEAL	Cement Quikrete
DIA. SURFACE SEAL BGS (In.)	6"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2'
I.D. OF PROTECTIVE CASING (In.)	4.5in (4 7/16")
TYPE OF PROTECTIVE CASING	Steel Guard Pipe
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.09'
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	2.1'
RISER PIPE (In.) I.D.: 1"	O.D.: 1.25"
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite Chips (med.)
DEPTH TOP OF SEAL (Ft.)	2.1'
TYPE OF SEAL	Bentonite Chips (med.)
DEPTH BOTTOM OF SEAL (Ft.)	21'
DEPTH TOP OF PERVIOUS SECTION (Ft.)	23'
DIAMETER OF BOREHOLE (In.)	3.25"
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.010 slots x 10
PERVIOUS SECTION (In.) I.D.: 1"	O.D.: 2.4"
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	"00" sand (20-40 sieve size)
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	33'
DEPTH BOTTOM OF FILTER PACK (Ft.)	33'
TYPE OF BACKFILL BELOW FILTER PACK	*No sand below screen
END OF BORING (Ft.)	33'

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG — TETRA TECH NUS, INC.

PROJECT NAME: Eastern Plume – 1,4 Dioxane Investigation	PROJECT NO: 112G00645/CTO 069
PROJECT LOCATION: NASB, Brunswick, ME	WELL NO: MW-EP-352
CLIENT: U.S. Navy	BORING NO: MW-EP-352
CONTRACTOR: Tetra Tech NUS, Inc. DRILLER: MAI	BORING LOCATION: 4859049.39 - Northing
LOGGED BY: C. Fellows-Swenson DATE: 5/27/09	425784.28 - Easting
CHECKED BY: B. Geringer DATE: 8/11/09	PAGE: 1 OF 1

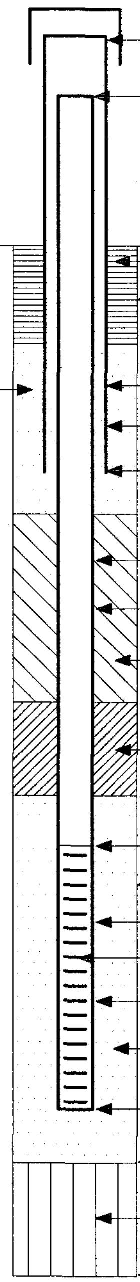
ELEVATION TOP OF PROTECTIVE CASING 25.17'

ELEVATION TOP OF RISER PIPE 24.73'

GROUND ELEVATION 22.47'

SAND DRAIN LAYER

Premium Play Sand (No. 1113)



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.70'
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	2.26'
TYPE OF SURFACE SEAL	Cement Quikrete
DIA. SURFACE SEAL BGS (In.)	6"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2'
I.D. OF PROTECTIVE CASING (In.)	4.5" (4 7/16")
TYPE OF PROTECTIVE CASING	Steel Guard Pipe
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.30'
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	3'
RISER PIPE (In.) I.D. 1"	O.D.: 1.25"
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite Chips (med.)
DEPTH TOP OF SEAL (Ft.)	3'
TYPE OF SEAL	Bentonite Chips (med.)
DEPTH BOTTOM OF SEAL (Ft.)	45'
DEPTH TOP OF PERVIOUS SECTION (Ft.)	47'
DIAMETER OF BOREHOLE (In.)	3.25"
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.010 slots x 10
PERVIOUS SECTION (In.) I.D.: 1"	O.D.: 2.4"
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	"00" sand (20-40 sieve size)
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	52'
DEPTH BOTTOM OF FILTER PACK (Ft.)	52'
TYPE OF BACKFILL BELOW FILTER PACK	*No sand below screen
END OF BORING (Ft.)	52'

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: Eastern Plume – 1,4 Dioxane
PROJECT NO: 112G00645/CTO 069
PROJECT LOCATION: NASB, Brunswick, ME
WELL NO: MW-EP-353
CLIENT: U.S. Navy
BORING NO: MW-EP-353
CONTRACTOR: Tetra Tech NUS, Inc.
DRILLER: MAI
BORING LOCATION:
LOGGED BY: C. Fellows-Swenson
DATE: 5/26/09 (start) 5/27/09 (complete)
CHECKED BY: B. Geringer
DATE: 8/11/09

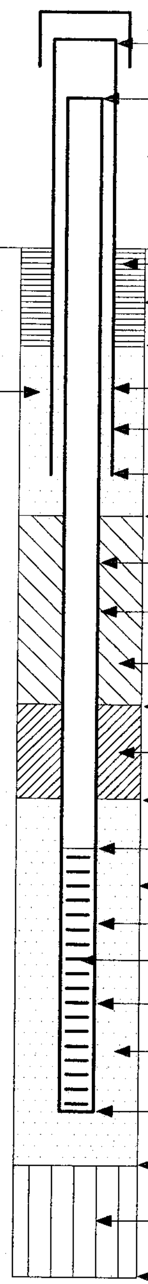
ELEVATION TOP OF PROTECTIVE CASING 16.82

ELEVATION TOP OF RISER PIPE 16.67

GROUND ELEVATION 14.09

SAND DRAIN LAYER

Premium Play Sand (No. 1113)



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.) 2.73'
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.) 2.58'
TYPE OF SURFACE SEAL Cement Quikrete
DIA. SURFACE SEAL BGS (In.) 6"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.) 2'
I.D. OF PROTECTIVE CASING (In.) 4.5in (4 7/16")
TYPE OF PROTECTIVE CASING Steel Guard Pipe
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.) 2.27'
DEPTH BOTTOM OF DRAIN LAYER (Ft.) 3'
RISER PIPE (In.) I.D. 1 - in O.D.: 1.25in
TYPE OF RISER PIPE Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE Bentonite Chips (med.)
DEPTH TOP OF SEAL (Ft.) 3'
TYPE OF SEAL Bentonite Chips (med.)
DEPTH BOTTOM OF SEAL (Ft.) 54'
DEPTH TOP OF PERVIOUS SECTION (Ft.) 56'
DIAMETER OF BOREHOLE (In.) 3.25"
TYPE OF PERVIOUS SECTION Schedule 40 PVC
TYPE OF OPENINGS 0.010 slots x 10
PERVIOUS SECTION (In.) I.D.: 1-in O.D.: 2.4 in
TYPE OF FILTER PACK AROUND PERVIOUS SECTION "00" sand (20-40 sieve size)
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.) 61'
DEPTH BOTTOM OF FILTER PACK (Ft.) 61'
TYPE OF BACKFILL BELOW FILTER PACK *No sand below screen
END OF BORING (Ft.) 61'

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: Eastern Plume – 1,4 Dioxane Investigation
PROJECT NO: 112G00645/CTO 069
PROJECT LOCATION: NASB, Brunswick, ME
WELL NO: MW-EP-354
CLIENT: U.S. Navy
BORING NO: MW-EP-354
CONTRACTOR: Tetra Tech NUS, Inc.
DRILLER: MAI
BORING LOCATION:
4859021.60 - Northing
425772.75 - Easting
LOGGED BY: C. Fellows-Swenson
DATE: 5/28/09
CHECKED BY: B. Geringer
DATE: 8/11/09

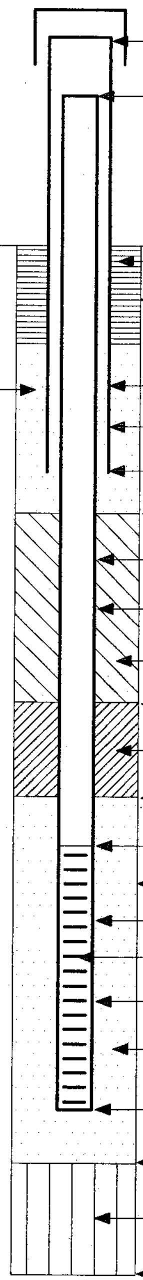
PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING: 19.79'

ELEVATION TOP OF RISER PIPE: 19.63'

GROUND ELEVATION: 16.08'

SAND DRAIN LAYER: Premium Play Sand (No. 1113)



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	2.99'
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	2.83'
TYPE OF SURFACE SEAL	Cement Quikrete
DIA. SURFACE SEAL BGS (In.)	6"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2'
I.D. OF PROTECTIVE CASING (In.)	4.5" (4 7/16")
TYPE OF PROTECTIVE CASING	Steel Guard Pipe
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	2.01'
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	3'
RISER PIPE (In.) I.D. 1"	O.D.: 1.25"
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite Chips (med.)
DEPTH TOP OF SEAL (Ft.)	3'
TYPE OF SEAL	Bentonite Chips (med.)
DEPTH BOTTOM OF SEAL (Ft.)	27'
DEPTH TOP OF PERVIOUS SECTION (Ft.)	29'
DIAMETER OF BOREHOLE (In.)	3.25"
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.010 slots x 10
PERVIOUS SECTION (In.) I.D.: 1"	O.D.: 2.4"
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	"00" sand (20-40 sieve size)
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	34'
DEPTH BOTTOM OF FILTER PACK (Ft.)	34'
TYPE OF BACKFILL BELOW FILTER PACK	*No sand below screen
END OF BORING (Ft.)	34'

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

OVERBURDEN MONITORING WELL CONSTRUCTION LOG

TETRA TECH NUS, INC.

PROJECT NAME: Eastern Plume – 1,4 Dioxane Investigation	PROJECT NO: 112G00645/CTO 069
PROJECT LOCATION: NASB, Brunswick, ME	WELL NO: MW-EP-355
CLIENT: U.S. Navy	BORING NO: MW-EP-355
CONTRACTOR: Tetra Tech NUS, Inc. DRILLER: MAI	BORING LOCATION:
LOGGED BY: C. Fellows-Swenson DATE: 08/26/09	
CHECKED BY: B. Geringer DATE: 09/23/09	

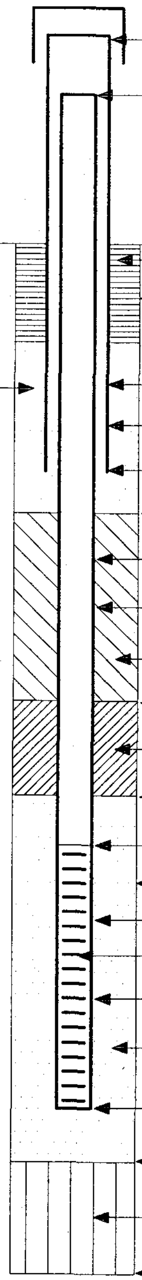
PAGE: 1 OF 1

ELEVATION TOP OF PROTECTIVE CASING ______

ELEVATION TOP OF RISER PIPE ______

GROUND ELEVATION ______

SAND DRAIN LAYER



LENGTH OF PROTECTIVE CASING ABOVE GROUND SURFACE (Ft.)	3.24'
LENGTH OF RISER PIPE ABOVE GROUND SURFACE (Ft.)	3.14'
TYPE OF SURFACE SEAL	Bentonite Chips (med.)
DIA. SURFACE SEAL BGS (In.)	6"
DEPTH TO BOTTOM OF SURFACE SEAL (Ft.)	2'
I.D. OF PROTECTIVE CASING (In.)	4.5" (4 7/16")
TYPE OF PROTECTIVE CASING	Steel Guard Pipe
DEPTH BOTTOM OF PROTECTIVE CASING (Ft.)	1.76'
DEPTH BOTTOM OF DRAIN LAYER (Ft.)	3'
RISER PIPE (In.) I.D. 1"	O.D.: 1.25"
TYPE OF RISER PIPE	Schedule 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Bentonite Chips (med.)
DEPTH TOP OF SEAL (Ft.)	44'
TYPE OF SEAL	Bentonite Chips (med.)
DEPTH BOTTOM OF SEAL (Ft.)	46'
DEPTH TOP OF PERVIOUS SECTION (Ft.)	46'
DIAMETER OF BOREHOLE (In.)	3.25"
TYPE OF PERVIOUS SECTION	Schedule 40 PVC
TYPE OF OPENINGS	0.010 slots x 10
PERVIOUS SECTION (In.) I.D.: 1"	O.D.: 2.4"
TYPE OF FILTER PACK AROUND PERVIOUS SECTION	"00" sand (20-40 sieve size)
DEPTH BOTTOM OF PERVIOUS SECTION (Ft.)	56'
DEPTH BOTTOM OF FILTER PACK (Ft.)	56'
TYPE OF BACKFILL BELOW FILTER PACK	*No sand below screen
END OF BORING (Ft.)	56'

GENERAL NOTE:

1. Entry of 0.00 for Ground Elevation, Elev. Top of Riser Pipe & Elev. Top of Protective Casing Indicates that Surveyed Ground Elevation Not Available.

BORING LOG FOR:	Eastern Plume - NASB Brunswick, ME		BORING NO.: PL-01
PROJECT NO:	112G00645/CTO - 69		START DATE: 10/29/2008
LOGGED BY:	M. Alroy	TRANSCRIBED BY: B. Geringer	COMPLETION DATE: 10/30/2008
DRILLED BY (Company/Driller):	MAI / P. Prescott		MON. WELL NO.: N/A
GRD. SURFACE ELEVATION:	41.25' NGVD		CHECKED BY: JT

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering: etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
43		4.0 / 4.0	S-1 43.0' - 45.0'	LOWER SAND	Medium Dense	light Brown	0.0 - 2.0 SAND (fine to medium), little silt	SM	Wet	
44										
45			45.0' - 47.0'	TRANSITION			2.0 - 4.0 SILT, little sand (fine to medium)	ML		
46							Sand bedded at thicknesses of 0.1' at fiollowing depths: 45.4' to 45.5' 45.8' to 45.9'			
47							46.9' to 47.0'			
							Advance to 62' for discrete interval confirmation			
62		4.0 / 4.0	S-2 62.0' - 65.2	LOWER SAND	Medium Dense	light Brown	0.0 - 3.2 SAND (fine to medium), little silt	SM	Wet	
63										
64										
65										

TYPE OF DRILLING RIG:	Geoprobe 6620 DT
METHOD OF ADVANCING BORING:	DPT
METHOD OF SOIL SAMPLING:	Dual Tube
METHOD OF ROCK CORING:	NA
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Not a complete boring, a confirmation or "proof" boring

Tetra Tech NUS, Inc.

BORING NO.: PL-01

BORING LOG FOR:	Eastern Plume - NASB Brunswick, ME	BORING NO.:	PL-01
PROJECT NO:	112G00645/CTO - 69	START DATE:	10/29/2008
LOGGED BY:	M. Alroy	COMPLETION DATE:	10/30/2008
DRILLED BY (Company/Driller):	MAI / P. Prescott	MON. WELL NO.:	N/A
GRD. SURFACE ELEVATION:	41.25' NGVD	CHECKED BY:	JT

TRANSCRIBED BY: B. Geringer

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
66			65.2' - 65.8' 65.8' - 66.0'	TRANSITION	Medium Dense	light brown Gray	3.2 - 3.8 SILT, little sand (fine to medium) 3.8 - 4.0 SILT, trace sand (fine to medium)	ML	Wet	
							Advance to 77' for discrete interval confirmation			
77										
		4.0 / 4.0	S-3 77.0' - 77.8'	TRANSITION	Medium Dense	Gray	0.0 - 0.8 SAND (fine to medium), little silt	SM	Wet	
78										
			77.8' - 78.5				0.8-1.5 - Clayey SILT, trace sand (fine to medium)	ML		
79			78.5' - 80.5'		Soft		1.5 - 3.5 - CLAY, trace silt	CL		
80										
81			80.5' - 81.0'		Medium Dense		3.5 -4.0 Clayey SILT. trace sand (fine to medium)	ML		
				End of Boring						

TYPE OF DRILLING RIG:	Geoprobe 6620 DT
METHOD OF ADVANCING BORING:	DPT
METHOD OF SOIL SAMPLING:	Dual Tube
METHOD OF ROCK CORING:	NA
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Not a complete boring, a confirmation or "proof" boring

Tetra Tech NUS, Inc.

BORING NO.: PL-01

BORING LOG FOR:	Eastern Plume - NASB Brunswick, ME	BORING NO.:	PL-06
PROJECT NO:	112G00645/CTO - 69	START DATE:	10/28/2008
LOGGED BY:	M. Alroy	COMPLETION DATE:	10/28/2008
DRILLED BY (Company/Driller):	MAI / S. Brown	MON. WELL NO.:	N/A
GRD. SURFACE ELEVATION:	35.09' NGVD	CHECKED BY:	JT

TRANSCRIBED BY: B. Geringer

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
35		4.0 / 4.0	S-1 35.0' - 36.55	TRANSITION	Soft	Gray	0.0 - 1.55 SILT, trace sand (fine)	ML	Wet	
36										
37			36.55' - 38.2'	LOWER SAND	Medium Dense		1.55 - 3.2 SAND (fine), little silt	SM		
38			38.2' - 39.0			Light Brown	3.2 -4.0 SAND (fine), some silt			
39							Advance to 55' for discrete interval confirmation			
55		4.0 / 4.0	S-2 55.0' - 56.8'	LOWER SAND	Soft	Gray	0.0 - 1.8 Clayey SILT, trace sand (fine)	ML	Wet	
56										
57			56.8' - 57.6'	LOWER SAND	Loose		1.8 - 2.6 SAND (fine), little silt			
58			57.6' - 59.0'	TRANSITION	Soft		2.6 - 4.0 Clayey SILT, trace sand (fine)			

TYPE OF DRILLING RIG:	Geoprobe 6620 DT
METHOD OF ADVANCING BORING:	DPT
METHOD OF SOIL SAMPLING:	Dual Tube
METHOD OF ROCK CORING:	NA
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Not a complete boring, a confirmation or "proof" boring

BORING NO.: PL-06

Tetra Tech NUS, Inc.

BORING LOG FOR:	Eastern Plume - NASB Brunswick, ME	BORING NO.:	PL-06
PROJECT NO:	112G00645/CTO - 69	START DATE:	10/28/2008
LOGGED BY:	M. Alroy	COMPLETION DATE:	10/28/2008
DRILLED BY (Company/Driller):	MAI / S. Brown	MON. WELL NO.:	N/A
GRD. SURFACE ELEVATION:	35.09' NGVD	CHECKED BY:	JT

TRANSCRIBED BY: B. Geringer

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
		4.0 / 4.0		TRANSITION	Soft	Gray		ML	Wet	
59			S-3 59.0' - 60.4				0.0 - 1.4 Clayey SILT			
60										
			60.4' - 63.0	CLAY			1.4 - 4.0 CLAY, trace silt	CL	Moist	
61										
62										
		4.0 / 4.0	S-4 63.0' -67.0'							
63							0.0 - 4.0 CLAY, trace silt		Wet	
64										
65										
66										

TYPE OF DRILLING RIG:	Geoprobe 6620 DT
METHOD OF ADVANCING BORING:	DPT
METHOD OF SOIL SAMPLING:	Dual Tube
METHOD OF ROCK CORING:	NA
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Not a complete boring, a confirmation or "proof" boring

Tetra Tech NUS, Inc.

BORING LOG FOR: Eastern Plume - NASB Brunswick, ME
PROJECT NO: 112G00645/CTO - 69
LOGGED BY: M. Alroy
DRILLED BY (Company/Driller): MAI / S. Brown
GRD. SURFACE ELEVATION: 35.09' NGVD

TRANSCRIBED BY: B. Geringer

BORING NO.: PL-06
START DATE: 10/28/2008
COMPLETION DATE: 10/28/2008
MON. WELL NO.: N/A
CHECKED BY: JT

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
67				TRANSITION	Soft	Gray	↓	ML	Wet	
				End of Boring						

TYPE OF DRILLING RIG: Geoprobe 6620 DT
METHOD OF ADVANCING BORING: DPT
METHOD OF SOIL SAMPLING: Dual Tube
METHOD OF ROCK CORING: NA
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:: Not a complete boring, a confirmation or "proof" boring

Tetra Tech NUS, Inc.

BORING LOG FOR:	Eastern Plume - NASB Brunswick, ME	BORING NO.:	PL-11
PROJECT NO:	112G00645/CTO - 69	START DATE:	11/4/2008
LOGGED BY:	M. Alroy	COMPLETION DATE:	11/4/2008
DRILLED BY (Company/Driller):	MAI / S. Brown	MON. WELL NO.:	N/A
GRD. SURFACE ELEVATION:	12.62' NGVD	CHECKED BY:	JT

TRANSCRIBED BY: B. Geringer

DEPTH (FEET) 6	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
		4.0 / 4.0	S-1 6.0' - 7.0'	UPPER SAND	Medium Dense	Gray	0.0 - 1.0 SAND (fine), little silt	SP	Wet	
7										
			7.0' - 7.6'	TRANSITION		Gray/Brown	1.0 - 1.6 SILT, little sand (fine)	ML		
8			7.6' - 8.8'	UPPER SAND		Gray	1.6 - 2.8 SAND (fine to medium), little silt	SP		
9			8.8' - 9.1'			Gray/Brown	2.8 - 3.1 SILT, little sand (fine to medium)	ML		
			9.1' - 10.0	TRANSITION		Gray	3.1 -4.0 SILT, little sand (fine to medium)			
10										
							Advance to 12' for discrete interval confirmation			
12										
		4.0 / 4.0	S-2 12.0' - 13.5'	TRANSITION	Medium Dense	Gray	0.0 - 1.5 SILT, little sand (fine)	ML	Wet	
13										
14			13.5' - 16.0'		Soft		1.5 - 4.0 SILT, trace sand (fine)			
15										

TYPE OF DRILLING RIG:	Geoprobe 6620 DT
METHOD OF ADVANCING BORING:	DPT
METHOD OF SOIL SAMPLING:	Dual Tube
METHOD OF ROCK CORING:	NA
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Not a complete boring, a confirmation or "proof" boring

BORING NO.: PL-11

Tetra Tech NUS, Inc.

BORING LOG FOR:	Eastern Plume - NASB Brunswick, ME
PROJECT NO:	112G00645/CTO - 69
LOGGED BY:	M. Alroy
DRILLED BY (Company/Driller):	MAI / S. Brown
GRD. SURFACE ELEVATION:	12.62' NGVD

TRANSCRIBED BY: B. Geringer

BORING NO.:	PL-11
START DATE:	11/4/2008
COMPLETION DATE:	11/4/2008
MON. WELL NO.:	N/A
CHECKED BY:	JT

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
16			S-3 16.0' - 18.0	TRANSITION	Soft	Gray	0.0 - 2.0 SILT, little sand (fine)	ML	Wet	
17		4.0/4.0			Medium Dense					
18			18.0' - 20.0'		Soft		2.0 - 4.0 SILT, trace sand (fine)			
19										
20		4.0/4.0	S-4 20.0' - 20.55' 20.55' - 23.0'		Medium Dense		0.0 - 0.55 SILT, little sand (fine) 0.55 - 3.0 SILT, trace sand (fine)			
21										
22										
23			23.0' - 24.0'		Soft		3.0 - 4.0 SILT	MH		

TYPE OF DRILLING RIG:	Geoprobe 6620 DT
METHOD OF ADVANCING BORING:	DPT
METHOD OF SOIL SAMPLING:	Dual Tube
METHOD OF ROCK CORING:	NA
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Not a complete boring, a confirmation or "proof" boring

Tetra Tech NUS, Inc.

BORING LOG FOR:	Eastern Plume - NASB Brunswick, ME	BORING NO.:	PL-11
PROJECT NO:	112G00645/CTO - 69	START DATE:	11/4/2008
LOGGED BY:	M. Alroy	COMPLETION DATE:	11/4/2008
DRILLED BY (Company/Driller):	MAI / S. Brown	MON. WELL NO.:	N/A
GRD. SURFACE ELEVATION:	12.62' NGVD	CHECKED BY:	JT

TRANSCRIBED BY: B. Geringer

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
24		/		TRANSITION	Soft	Gray		MH	Wet	
				End of Boring						

TYPE OF DRILLING RIG:	Geoprobe 6620 DT
METHOD OF ADVANCING BORING:	DPT
METHOD OF SOIL SAMPLING:	Dual Tube
METHOD OF ROCK CORING:	NA
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Not a complete boring, a confirmation or "proof" boring

Tetra Tech NUS, Inc.

BORING LOG FOR:	Eastern Plume - NASB Brunswick, ME
PROJECT NO:	112G00645/CTO - 69
LOGGED BY:	M. Alroy
DRILLED BY (Company/Driller):	MAI / S. Brown
GRD. SURFACE ELEVATION:	16.55' NGVD

TRANSCRIBED BY: B. Geringer

BORING NO.:	PL-17
START DATE:	11/6/2008
COMPLETION DATE:	11/6/2008
MON. WELL NO.:	N/A
CHECKED BY:	JT

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
35		4.0 / 4.0	S-1 35.0' - 35.5'	TRANSITION	Medium Dense	Gray	0.0 - 0.5 SILT, little sand (fine)	ML	Wet	
36			35.5' - 39.0'		Soft		0.5 - 4.0 SILT, trace sand (fine)			
37										
38										
39										
							Advanced to 54' for discrete interval confirmation			
54		4.0 / 4.0	S-2 54.0' - 57.7'	LOWER SAND	Medium Dense	Light Brown/Tan	0.0 - 3.7 SAND (fine to medium), little silt	SP	Wet	
55										
56										
57										

TYPE OF DRILLING RIG:	Geoprobe 6620 DT
METHOD OF ADVANCING BORING:	DPT
METHOD OF SOIL SAMPLING:	Dual Tube
METHOD OF ROCK CORING:	NA
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Not a complete boring, a confirmation or "proof" boring

Tetra Tech NUS, Inc.

BORING NO.: PL-17

BORING LOG FOR:	Eastern Plume - NASB Brunswick, ME	BORING NO.:	PL-17
PROJECT NO:	112G00645/CTO - 69	START DATE:	11/6/2008
LOGGED BY:	M. Alroy	COMPLETION DATE:	11/6/2008
DRILLED BY (Company/Driller):	MAI / S. Brown	MON. WELL NO.:	N/A
GRD. SURFACE ELEVATION:	16.55' NGVD	CHECKED BY:	JT

TRANSCRIBED BY: B. Geringer

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
			57.7' - 57.8' 57.8' - 58.0'	LOWER SAND	Medium Dense	Light Brown/Tan		SP	Wet	
58				TRANSITION	M. Stiff M. Dense	Gray/ lt. brown Tan	3.7 - 3.8 CLAY 3.8 - 4.0 SAND (fine), little silt	CL SW	Moist Wet	
66							Advanced to 66' for discrete interval confirmation			
67		4.0 / 4.0	S-3 66.0' - 68.2	LOWER SAND	Medium Dense	Tan	0.0 - 2.2 SAND (fine), little silt	SP	Wet	
68										
69			68.2' - 68.4' 68.4' - 70.0'	TRANSITION LOWER SAND	Medium Stiff Dense	Gray	2.2 - 2.4 Silty CLAY 2.4 - 4.0 SAND (fine to medium), little silt	CL SP		
70				End of Boring						

TYPE OF DRILLING RIG:	Geoprobe 6620 DT
METHOD OF ADVANCING BORING:	DPT
METHOD OF SOIL SAMPLING:	Dual Tube
METHOD OF ROCK CORING:	NA
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Not a complete boring, a confirmation or "proof" boring

Tetra Tech NUS, Inc.

BORING LOG FOR:	Eastern Plume - NASB Brunswick, ME	BORING NO.:	PL-20
PROJECT NO:	112G00645/CTO - 69	START DATE:	11/7/2008
LOGGED BY:	B. Geringer	COMPLETION DATE:	11/7/2008
DRILLED BY (Company/Driller):	MAI / S. Brown	MON. WELL NO.:	N/A
GRD. SURFACE ELEVATION:	20.59' NGVD	CHECKED BY:	JT

TRANSCRIBED BY: L. Homoleski

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
16		4.0 / 4.0	S-1 16.0' - 19.2'	TRANSITION	Medium Dense	Gray	0.0 - 3.2 SILT, little clay	OL	Moist	
17		/								
18		/								
19		/	19.2' - 19.3' 19.3' -20.0'		Soft Medium Dense	Gray/Black Gray	3.2 - 3.3 SAND (fine), little silt 3.3 - 4.0 SILT, little clay	ML OL	Wet Moist	
20		/					Advance to 31' for discrete interval confirmation			
31		2.0 / 4.0	S-2 31.0' - 33.0'	TRANSITION	Soft	Gray	0.0 - 2.0 SILT, trace sand (fine)	ML	Wet	
32		/								
33		/								
34										

TYPE OF DRILLING RIG:	Geoprobe 6620 DT
METHOD OF ADVANCING BORING:	DPT
METHOD OF SOIL SAMPLING:	Dual Tube
METHOD OF ROCK CORING:	NA
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Not a complete boring, a confirmation or "proof" boring

Tetra Tech NUS, Inc.

BORING NO.: PL-20

BORING LOG FOR:	Eastern Plume - NASB Brunswick, ME		BORING NO.: PL-20
PROJECT NO:	112G00645/CTO - 69		START DATE: 11/7/2008
LOGGED BY:	B. Geringer	TRANSCRIBED BY: L. Homoleski	COMPLETION DATE: 11/7/2008
DRILLED BY (Company/Driller):	MAI / S. Brown		MON. WELL NO.: N/A
GRD. SURFACE ELEVATION:	20.59' NGVD		CHECKED BY: JT

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
				TRANSITION	Soft	Gray		ML	Wet	
35				End of Boring						

TYPE OF DRILLING RIG:	Geoprobe 6620 DT
METHOD OF ADVANCING BORING:	DPT
METHOD OF SOIL SAMPLING:	Dual Tube
METHOD OF ROCK CORING:	NA
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Not a complete boring, a confirmation or "proof" boring

BORING NO.: PL-20

Tetra Tech NUS, Inc.

BORING LOG FOR:	Eastern Plume - NASB Brunswick, ME
PROJECT NO:	112G00645/CTO - 69
LOGGED BY:	B. Geringer
DRILLED BY (Company/Driller):	MAI / S. Brown
GRD. SURFACE ELEVATION:	16.03' NGVD

TRANSCRIBED BY: L. Homoleski

BORING NO.:	PL-23
START DATE:	11/6/2008
COMPLETION DATE:	11/6/2008
MON. WELL NO.:	N/A
CHECKED BY:	JT

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
10		4.0 / 4.0	S-1 10.0' - 10.2' 10.2' - 12.8'	UPPER SAND TRANSITION	Medium Dense	Gray	0.0 - 0.2 SAND (fine), little silt 0.2 - 2.8 SILT, little sand	SP ML	Wet	
11		/								
12		/								
13		/	12.8' - 13.0' 13.0' - 14.0'				2.8 - 3.0 SAND (fine), little silt 3.0 - 4.0 SILT, trace sand	SP ML		
14		/					Advance to 18' for discrete interval confirmation			
18		4.0 / 4.0	S-2 18.0' - 20.0'	TRANSITION	Medium Dense	Gray	0.0 - 2.0 SILT, little sand (fine)	ML	Wet	
19		/								
20		/	20.0' - 22.0				0.0 - 2.0 SILT, trace sand			
21										

TYPE OF DRILLING RIG:	Geoprobe 6620 DT
METHOD OF ADVANCING BORING:	DPT
METHOD OF SOIL SAMPLING:	Dual Tube
METHOD OF ROCK CORING:	NA
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS::	Not a complete boring, a confirmation or "proof" boring

Tetra Tech NUS, Inc.

BORING NO.: PL-23

BORING LOG FOR: Eastern Plume - NASB Brunswick, ME
PROJECT NO: 112G00645/CTO - 69
LOGGED BY: B. Geringer
DRILLED BY (Company/Driller): MAI / S. Brown
GRD. SURFACE ELEVATION: 16.03' NGVD

TRANSCRIBED BY: L. Homoleski

BORING NO.: PL-23
START DATE: 11/6/2008
COMPLETION DATE: 11/6/2008
MON. WELL NO.: N/A
CHECKED BY: JT

DEPTH (FEET)	BLOWS PER 6" NA	SAMP REC./ SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG/WELL PROF'L	SOIL DENSITY/ CONSIS. OR ROCK HARD	CLR	MATERIAL CLASSIFICATION	USCS OR ROCK BRKN	REMARKS (moisture condition;odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [PID, FID, (PPM)]
22				TRANSITION	Medium Dense	Gray		ML	Wet	
26							Advance to 26' for discrete interval confirmation			
27		4.0 / 4.0	S- 3 26.0' - 28.8'	TRANSITION	Soft	Gray	0.0 - 2.8 SILT, little sand	ML	Wet	
28										
29			28.8' - 29.7'		Medium Dense		2.8 - 3.7 SAND, trace silt	SP		
30			29.7' - 30.0'				3.7 - 4.0 SILT, little sand	ML		

TYPE OF DRILLING RIG: Geoprobe 6620 DT
METHOD OF ADVANCING BORING: DPT
METHOD OF SOIL SAMPLING: Dual Tube
METHOD OF ROCK CORING: NA
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:: Not a complete boring, a confirmation or "proof" boring

Tetra Tech NUS, Inc.

BORING NO.: PL-23

APPENDIX A-5
WELL DEVELOPMENT LOGS

TETRA TECH NUS, INC. | **WELL DEVELOPMENT DATA SHEET** | **Well No.:** MW340S

PROJECT: 1,4-Dixoane in the Eastern Plume and Bedrocl
PROJECT NO.: 112G00645
SAMPLE ID: —

DATE: 12/3/08
WEATHER: 45° sunny
PERSONNEL: J. Traut, M Pernath

End Total Depth 59.5 tPVC Stick Up ~3'

Well Screen Depth: 48 / 58 ft. bgs
H&S Monitoring Instrument Reading: 0.1

Pump Type/Material: Peristaltic
Pump Intake Depth: moved throughout screen

Total Purge Volume = ~25 (gal)
Data Recorded By: J Traut

Time	Water Level ft below top PVC	Volume mL	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
0800	5.8 Begin development very silty bottom soft								
0835	18.39			6.15	4.96	0.321	16.31	ERR4	4 gal
0920	14.2			6.80	5.18	0.187	16.48	9527	9 gal
0950				7.27	5.24	0.174	13.74	320	bottom hard
1020	11.15			7.22	5.30	0.151	3.66	7177	
1040				6.97	5.17	0.152	14.89	454	
1115				7.27	~~5.09~~ 5.13	0.141	12.54	1308	20 gal
1130				7.76	5.29	0.144	8.16	127	
1150				7.97	5.30	0.143	9.11	112	
1200	8.7			7.97	5.31	0.141	8.93	93.3	30 gal
1205	End development / parameters stable								

TtNUS Form 0013

TETRA TECH NUS, INC.	WELL DEVELOPMENT DATA SHEET	Well No.: MW 340B1

PROJECT: 1,4-Dixoane in the Eastern Plume and Bedrocl

PROJECT NO.: 112G00645

SAMPLE ID: N/A

DTB 75.3' TOC

DATE: 12/2/08 + 12/3/08

WEATHER: 45 cool

PERSONNEL: J Trault + M Pirovotti

Well Screen Depth: ______ / ______ ft. bgs

H&S Monitoring Instrument Reading 0.0

Pump Type/Material: Peristaltic

Pump Intake Depth: Variable

Total Purge Volume = 24 (gal)

Data Recorded By: J Trault

Time	Water Level ft below top PVC	Volume mL	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
12/2 1440	4' Begin development								
1450	~24'			7.62	5.09	0.632	14.26	911	silty
1500	27.5			8.00	5.24	0.659	8.92	833	
1520		~7 gals		7.94	5.34	0.686	7.04	879	silty
12/3 0805	4.48	restart pump							
0810		~1 gal		6.72	10.02	0.413	7.60	228	silty
0820				7.18	10.57	0.397	6.66	119	cloudy
0840		~4 gals		7.04	10.53	0.396	7.74	45	cloudy
0930		~8 gals		7.52	10.45	0.391	7.43	29	Surge
0940				6.68	10.26	0.397	7.24	65	replace Tube
0950		~10 gals		7.92	10.13	0.395	6.79	40	cloudy
1010		~~[illegible]~~ 12/3/08		7.44	10.07	0.398	6.47	30	cloudy
1020				7.91	10.03	0.395	7.03	18	
1030		~12 gals		7.87	10.02	0.399	7.37	17	
1040				7.91	10.03	0.398	7.27	22	
12/4/08 1140	Begin again to drop pH			–	9.99				+4+4+4
1245					9.77	(YSI)			
1300					9.98	(Horiba)			

TtNUS Form 0013

12/3/08 - purged water has ~~[illegible]~~, cloudy color.

TETRA TECH NUS, INC. | **WELL DEVELOPMENT DATA SHEET** | **Well No.:** MW-340B2

PROJECT: 1,4-Dixoane in the Eastern Plume and Bedrocl
PROJECT NO.: 112G00645
SAMPLE ID: —

DATE: 12/2/08
WEATHER: 45° sunny
PERSONNEL: J. Traut, M. Perrotti

Well Screen Depth: 88 / 93 ft. bgs
H&S Monitoring Instrument Reading 0.0

Pump Type/Material: Peristaltic/wattera
Pump Intake Depth: variable throughout screen

Total Purge Volume = ____ (gal)
Data Recorded By: J Traut

Time	Water Level ft below top PVC	Volume ~~mL~~ gal	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
1340		Begin development							
1400	29	water level dropped to 29' ~ 0.5 gal							will switch to wattera
12/3/08 1100	22	Begin hand surging							
	83'	Water level too low ~ 1 gal							
12/4/08		surged dry again ~ 1 gal							
12/10/08		Hand surge ~ 2 gallons - went from grey to clear							
1/15/08	78'	Hand surge ~ 2.5 gallons - stayed clear							

TtNUS Form 0013

Tt	TETRA TECH NUS, INC.	WELL DEVELOPMENT DATA SHEET	Well No.: MW-34/S

PROJECT: 1,4-Dixoane in the Eastern Plume and Bedrocl
PROJECT NO.: 112G00645
SAMPLE ID: NA
Total Depth 55.1 StickUp ~2.3

DATE: 12/3/08
WEATHER: 45
PERSONNEL: J Traut, M. Perrotti

Well Screen Depth: 42 / 52 ft. bgs
H&S Monitoring Instrument Reading 0.0
▽ initial 4.03

Pump Type/Material: Peristaltic
Pump Intake Depth: Variable throughout screen

Total Purge Volume = 25 (gal)
Data Recorded By: J Traut

Time	Water Level ft below top PVC	Volume mL	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
1300	4.03	Begin development - bottom 5 ft							
1325	4.2			6.25	4.54	0.162	18.85	2538	Bottom hard
1340				7.45	4.66	0.155	16.30	730	
1355	4.25			7.55	4.84	0.147	10.13	153	
1410	4.29			7.69	~~4.64~~ 4.74	0.146	16.13	183	
1425				7.70	4.70	0.142	10.63	34.9	
1440				7.49	4.63	0.141	10.46	35.6	
1500	4.25			7.57	4.62	0.140	10.0	39	
~~1520~~	~~4.26~~				~~4.59~~	~~0.143~~	~~9.59~~	or	
1520	4.26			7.61	4.63	0.139	9.91	38.1	
1525	Parameters stable (End purge)								

TtNUS Form 0013

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TETRA TECH NUS, INC.

WELL DEVELOPMENT DATA SHEET

Well No.: 341 B1

PROJECT: 1,4-Dixoane in the Eastern Plume and Bedrocl

PROJECT NO.: 112G00645

SAMPLE ID: NA

DATE: 12/3/08

WEATHER: 30°F, Sun

PERSONNEL: M. Pirolli J. Travers

Stick Up ~1.8'

Well Screen Depth: 75 / 80 ft. bgs

H&S Monitoring Instrument Reading 0.0

Pump Type/Material: Peristaltic Geo pump

Pump Intake Depth:

Total Purge Volume = ~80 (gal)

Data Recorded By: MP

Time	Water Level ft below top PVC	Volume ~~mL~~ gal	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
1100			–	–	–	–	–	–	Silty - Begin Purg
1130	26.70	~3 Gal	–	–	–	–	–	–	Not running very sil
		Stop purge Low recharge							
1145	22.75								
1511	4.02		Begin purging again						
1530	17.23			7.87	8.25	0.229	6.67	3277	very silty.
1535	31.0	~5 gals							very silty
12/4/08 0745	17.45		Begin purging						
0800	25.7			6.74	5.68	0.005	12.03	4926	
0815		Switch to waterra - down to 38' need different foot valve							
0900	20.7	Peristaltic							
0920	~30	~8 gal		6.35	7.18	.249	11.17	off scale	TD 81.3
			End purge with hand surge						
2/10/08		Hand surge ~ 4 gallons - grey silty							
2/15/08		Hand surge ~ 4.5 gallons - grey silty - sandy							

TtNUS Form 0013

TETRA TECH NUS, INC.	WELL DEVELOPMENT DATA SHEET	Well No.: MW341B2

PROJECT: 1,4-Dixoane in the Eastern Plume and Bedrocl
PROJECT NO.: 112G00645
SAMPLE ID: —
Total Depth 94.75 tpvc Stickup ~ 1.4' 1.8

DATE: 12/3/08
WEATHER: 45° sunny
PERSONNEL: J. Traut, M. Parrith

Well Screen Depth: 90 / 95 ft. bgs
H&S Monitoring Instrument Reading 0.0

Pump Type/Material: Peristaltic
Pump Intake Depth: Variable throughout screen

Total Purge Volume = 45 (gal)
Data Recorded By: J Traut

Time	Water Level ft below top PVC	Volume mL	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
1140	4.2 ~~5~~		Begin development						
~~1250~~ 1150	10.7			10.99	9.37	0.257	9.28	ERR1	
1305	6.41			7.04	8.50	0.233	9.00	~~ERR1~~	~15 gal
1320				7.81	8.38	0.232	6.17	~~ERR~~ 317	~~[illegible]~~
1335	6.7			7.86	8.34	0.235	7.58	228	
1405	6.78			7.22	8.46	0.239	6.92	204	
1415	6.9			7.63	8.40	0.239	5.82	195	~~[illegible]~~ 30 gal
1430				7.98	8.40	0.240	6.58	131	
1445				8.05	8.37	0.240	7.41	107.6	
1500	5.25			8.00	8.39	0.242	7.54	121	45 ga
1505	End development; Parameters stable								

TtNUS Form 0013

TETRA TECH NUS, INC.

WELL DEVELOPMENT DATA SHEET

Well No.: ~~MW-308S~~ MW-342S

PROJECT: 1,4-Dixoane in the Eastern Plume and Bedrocl
PROJECT NO.: 112G00645
SAMPLE ID: ~
Total Depth 91.25 TPVC Stick Up ~1.4'

DATE: 12/2/08
WEATHER: 40° cool
PERSONNEL: J. Traut / M. Perrotti

Well Screen Depth: 30 / 40 ft. bgs
H&S Monitoring Instrument Reading 0.0

Pump Type/Material: Peristaltic
Pump Intake Depth: variable throughout screen

Total Purge Volume = 24 (gal)
Data Recorded By: [signature]

Time	Water Level ft below top PVC	Volume mL	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
0910		Begin development							
1025				8.69	4.69	0.222	15.18	1143	Silty
1115				8.25	4.96	0.167	13.60	1184	
1145				9.78	5.31	0.160	12.91	4699	
1205	27.8			11.07	5.36	0.156	17.15	1256	
1225				~~10.04~~ 10.44	5.88	0.157	11.60	824	
1245				9.03	5.34	0.158	7.85	184	
~~1305~~ 1255				8.52	5.31	0.158	7.21	60	
~~1319~~ 1305				8.46	5.23	0.157	7.38	43	
1315				8.60	5.26	0.155	7.42	27	
1320		End development / Parameters stable							

TtNUS Form 0013

TETRA TECH NUS, INC.

WELL DEVELOPMENT DATA SHEET

Well No.: MW-~~308B1~~ 342B1

PROJECT: 1,4-Dixoane in the Eastern Plume and Bedrocl

PROJECT NO.: 112G00645

SAMPLE ID: —

Total Depth 71.1 +PK Stick Up ~1.5'

DATE: 12/2/08

WEATHER: 40° Sun

PERSONNEL: J. Traut, M. Perrotti

Well Screen Depth: 65 / 70 ft. bgs

H&S Monitoring Instrument Reading 0.0

Pump Type/Material: Peristaltic

Pump Intake Depth: Variable throughout screen

Total Purge Volume = ~~20~~ 30 (gal)

Data Recorded By: [signature]

Time	Water Level ft below top PVC	Volume mL	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
0935		Begin development							
1000				7.20	7.52	0.533	6.19	130	
1010				8.28	8.63	0.530	8.14	61.5	
1020				8.92	8.70	0.530	8.54	24.8	
1030				8.90	8.81	0.531	8.49	19.1	
1050				8.96	8.75	0.535	8.67	17.9	
12/2/08 1100				9.52	8.72	0.547	6.34	136.0	
1120				9.12	8.77	0.537	8.47	50.6	
1140	2.41			9.68	8.73	0.537	7.27	185	
1200	2.41			9.45	8.76	0.536	8.11	128	
1215				10.17	8.78	0.536	7.45	67.7	
1225	2.41			9.42	8.76	0.537	8.14	53.1	
1230			End development	Parameters Stable					
12/4/08 1015		Begin again to drop pH			8.91				
1130		End pH value			8.90				

TtNUS Form 0013

TETRA TECH NUS, INC.

WELL DEVELOPMENT DATA SHEET

Well No.: MW-~~308B2~~ 342B2

PROJECT: 1,4-Dixoane in the Eastern Plume and Bedrocl

PROJECT NO.: 112G00645

SAMPLE ID: —

DATE: 12/2/08

WEATHER: 45° cool

PERSONNEL: J. Traut, M. Perrotti

Total depth 85.3 Stickup ~1.5'

Well Screen Depth: 78 / 83 ft. bgs

H&S Monitoring Instrument Reading 0.0

Pump Type/Material: Peristaltic

Pump Intake Depth: variable throughout screen

Total Purge Volume = ~17 (gal)

Data Recorded By: J Traut

Time	Water Level ft below top PVC	Volume mL	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
1240	2.80		Begin development						
1250				8.81	9.40	0.480	10.19	896	silty ~2gal
1300	4.39			8.83	~~9.59~~ 9.49	0.452	6.93	264	4gal
1320	3.80			8.75	9.16	0.443	8.12	210	
1340				8.54	9.02	0.446	8.18	98.3	10gal
1400				8.46	8.97	0.446	7.19	66.6	
1425				8.40	8.91	0.446	7.14	60.4	15gal
1445	3.65			8.52	8.88	0.447	7.36	45.1	
1450			End development / Parameters Stable						
2/4/08 1015		Begin again to drop pH			~9.04				+515rs
1215			End pH value		8.98				

TtNUS Form 0013

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Initial Water level: 2.57

TETRA TECH NUS, INC.

WELL DEVELOPMENT DATA SHEET

Well No.: MW-EP-343

PROJECT: Eastern Plume - NASB Brunswick, ME
PROJECT NO.: 112G00645 / CTO-069
SAMPLE ID:

DATE: 6/3/09
WEATHER: Sunny / 70
PERSONNEL: C. Fellows / B. Geringer

Well Screen Depth: 68-78 / ______ ft. bgs
H&S Monitoring Instrument Reading 0.0

Pump Type/Material: Peristaltic / Teflon Tubing
Pump Intake Depth: *

Total Purge Volume = 48 Liters ~~(gal)~~
Data Recorded By: Brian Geringer

Time START: 1150	Water Level ft below top PVC	Volume mL	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments	Bottom
1200	3.62	4000	400	9.60	7.71	177	0.40	800	Cloudy	Initially
1205	3.58	6000	400	9.55	7.90	173	0.40	150	Little Cloudy	2' From
1210	3.58	8000	400	9.58	7.96	172	0.38	95	" "	3'
1215	3.58	10000	400	9.69	7.96	171	0.36	70	Slightly Cloudy	4'
1220	3.58	12000	400	9.65	7.90	171	0.37	50	Clear	5'
1225	3.58	14000	400	9.85	7.86	173	0.32	50	" "	6'
1230	3.58	16000	400	9.86	7.81	174	0.32	38		7'
1235	3.58	18000	400	10.02	7.96	173	0.31	26		8'
1240	3.58	20000	400	10.37	8.00	173	0.27	22		9'
1245	3.58	22000	400	10.68	8.02	174	0.28	23		10'
1250	3.54	24000	400	9.66	8.24	182	0.16	170	little cloudy	Bottom
1255	3.60	26000	400	9.68	8.17	173	0.20	50	Clear	Bottom
1300	3.55	28000	400	9.58	8.13	172	0.24	55	" "	Bottom
1305	3.58	30000	400	9.69	8.13	171	0.23	17		1' From
1310	3.58	32000	400	9.75	8.10	170	0.23	19.5		2'
1315	3.58	34000	400	9.83	8.12	170	0.23	15.4		3'
1320	3.58	36000	400	9.75	8.11	169	0.23	14.2		4'
1325	3.58	38000	400	9.98	8.08	171	0.23	10.76		5'

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* Started at bottom, pulled up 1' after each reading for entire length of Screen.

TETRA TECH NUS, INC.

WELL DEVELOPMENT DATA SHEET

Well No.: MW-EP-343

PROJECT: Eastern Plume - NASB Brunswick, ME
PROJECT NO.: 112G00645 / CTO-069
SAMPLE ID:

DATE: 6/3/09
WEATHER: Sunny / 70
PERSONNEL: C. Fellows / B. Geringer

Well Screen Depth: 68-78 / ______ ft. bgs
H&S Monitoring Instrument Reading 0.0

Pump Type/Material: Peristaltic / Teflon Tubing
Pump Intake Depth: See Page 1

Total Purge Volume = 48 liters ~~(gal)~~
Data Recorded By: Brian Geringer

Time	Water Level ft below top PVC	Volume mL	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments	
1330	3.58	40000	400	9.47	8.17	179	0.19	20.6	Clear/odorless	Bottom
1335	3.58	42000	400	9.45	8.13	172	0.21	19.2	" "	Bottom
1340	3.58	44000	400	9.69	8.14	170	0.20	8.70		1'
1345	3.58	46000	400	9.74	8.12	170	0.21	7.66		2'
1350	3.58	48000	400	9.91	8.04	168	0.21	7.50		3'
	Finished development, turbidity less than 10 NTUs, Parameters Stable									

Initial Water Level: 1.20

TETRA TECH NUS, INC. | **WELL DEVELOPMENT DATA SHEET** | **Well No.:** MW-EP-344

PROJECT: Eastern Plume - NASB Brunswick, ME
PROJECT NO.: 112G00645 / CTO-069
SAMPLE ID:

DATE: 6/3/09
WEATHER: Ptly Cloudy / 70's
PERSONNEL: C. Fellows / B. Geringer

Well Screen Depth: 63-68 / ______ ft. bgs
H&S Monitoring Instrument Reading: 0.0

Pump Type/Material: Peristaltic / Teflon tubing
Pump Intake Depth: *

Total Purge Volume = 28 Liters ~~(gal)~~
Data Recorded By: Brian Geringer

Time Start: 1445	Water Level ft below top PVC	Volume mL	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments (Initially)	
1455	1.75	4K	400	10.89	4.20	85	9.07	116	Turbid/Brown	Bottom
1505	1.75	8K	400	10.61	5.63	87	8.64	29.5	Clear	1'
1515	1.75	12K	400	10.56	4.84	87	8.14	11.3	" "	2'
1520	1.75	14K	400	10.59	4.80	88	8.01	7.88		3'
1525 ~~1535~~	1.75	16K	400	10.58	4.82	87	8.06	6.19		4'
1530 ~~1545~~	1.75	18K	400	10.68	4.92	86	8.14	6.01		5'
1535 ~~1555~~	1.75	20K	400	10.32	5.01	87	8.30	16.4		Bottom
1540	1.75	22K	400	10.28	4.78	88	8.55	5.06		1'
1545	1.75	24K	400	10.34	5.02	85	8.03	3.62		2'
1550	1.75	26K	400	10.34	4.90	89	8.18	2.43		2'
1555	1.75	28K	400	10.40	4.95	87	8.21	1.73		2'
	Turbidity below 10 NTU and Stable - Finished Well development									

TtNUS Form 0013

* Started at bottom of Screen, moved 1' up after each reading for entire length of Screen.

Initial Water level: 10.18 TD = 25.22'

TETRA TECH NUS, INC. | **WELL DEVELOPMENT DATA SHEET** | **Well No.:** MW-EP-345

PROJECT: Eastern Plume - NASB Brunswick, ME
PROJECT NO.: 112G00645 / CTO-069
SAMPLE ID:

DATE: 06/01/09
WEATHER: Sunny / 60's
PERSONNEL: C. Fellows / B. Geringer

Well Screen Depth: 18-23 / ______ ft. bgs
H&S Monitoring Instrument Reading 0.0

Pump Type/Material: Peristaltic / Teflon Tubing
Pump Intake Depth: *

Total Purge Volume = 45.0 Liters ~~(gal)~~
Data Recorded By: Brian Geringer

Time Start: 1410	Water Level ft below top PVC	Volume mL	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
1420	11.23	5000	500	8.71	6.45	71	3.25	354	Cloudy / initially brown
1430	11.23	10000	500	8.67	6.18	69	3.07	10.28	Clear / colorless
1440	11.23	15000	500	8.62	6.18	69	3.09	2.01	" "
1450	11.23	20000	500	8.68	6.12	71	3.15	1.35	
1500	11.23	25000	500	8.60	6.10	74	3.20	1.27	
1510	11.23	30000	500	8.57	6.13	73	3.23	3.01	
1520	11.23	35000	500	8.53	6.01	74	3.28	1.03	
1530	11.23	40000	500	8.55	6.00	75	3.42	0.68	
1540	11.23	45000	500	8.59	6.04	76	3.47	0.72	
	Finished Well -	Turbidity <	10 NTUs, all						
	Development	Parameters	Stable						

At bottom

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* Started at bottom of Screen, pulled up 1' every 10 minutes the length of Screen

TETRA TECH NUS, INC.

WELL DEVELOPMENT DATA SHEET

Well No.: MW-EP-346

PROJECT: Eastern Plume - NASB Brunswick, ME
PROJECT NO.: 112G00645 / CTO-069
SAMPLE ID: NA

DATE: 6/3/09
WEATHER: Sunny 60's
PERSONNEL: C. Fellows

Well Screen Depth: 60 / 70 ft. bgs
H&S Monitoring Instrument Reading 0.0 / 0.0 (well / BW)

Pump Type/Material: Peri-Pump
Pump Intake Depth: 60-70

Total Purge Volume = ______ (gal)
Data Recorded By: C. Fellows

Time	Water Level ft below top PVC	Volume ~~mL~~ gal	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments	
0915	Initial WL =	18.94 ft								
0920	19.10							Offscale	V. Cloudy / Brown	Bottom
0930	19.15	1	350	9.90	6.63	235	1.00	offscale	V. Cloudy / Brown	Bottom
0940	19.15		300	9.79	6.58	215	0.26	↓		Bottom
0950	19.15	2	300	9.80	6.58	215	0.24			Bottom
	* Let pump sit on bottom for 50 min due to high turbidity.									
1030	19.10	7	300	9.88	6.53	214	0.27	38	sl cloudy/colorless	Bottom
1040	19.10	7½	"	9.82	6.50	208	0.18	350	cloudy/colorless	
1050	19.05	8	250	10.02	6.49	211	0.23	65	Sl. cloudy/colorless	
1100	19.03	8½	250	10.15	6.51	212	0.26	55	"	
1110	19.05	9	"	10.40	6.49	207	0.33	29	Clear/colorless	
1120	19.05	9½	"	10.25	6.50	206	0.30	23	"	
1130	19.03	10	"	10.45	6.47	202	0.34	18	"	
1140	19.03	10½	"	10.68	6.48	200	0.30	20	"	~~Top~~
1150	19.05	11	"	10.58	6.50	199	0.30	13	"	
1200	19.03	11½	"	10.90	6.43	202	0.33	~~10~~ 11	"	
1210	19.03	12	"	10.99	6.43	202	0.31	10	"	Top
1220	19.03	12½	"	10.51	6.49	217	0.23	28		Bottom

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* Move pump intake up 1 ft every 10 min. After develop length of screen move pump to mid-point of screen and take 3 readings (at least) 5 min apart.

TETRA TECH NUS, INC.

WELL DEVELOPMENT DATA SHEET

Well No.: MW-EP-346

PROJECT: Eastern Plume - NASB Brunswick, ME
PROJECT NO.: 112G00645 / CTO-069
SAMPLE ID:

DATE: 6/3/09
WEATHER: Sunny 60's
PERSONNEL: C. Fellows

Well Screen Depth: 60 / 70 ft. bgs
H&S Monitoring Instrument Reading 0.0 / 0.0
well pw

Pump Type/Material: Peri-Pump
Pump Intake Depth: 60-70

Total Purge Volume = ____ (gal)
Data Recorded By: C. Fellows

Time	Water Level ft below top PVC	Volume mL	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
1225	19.03	13	250	10.53	6.51	214	0.28	25	Clear/colorless
1230	↓	13½	↓	10.56	6.52	214	0.27	24	"
1235		14		10.57	6.53	213	0.27	25	"
	* End development. Readings are stable and turbidity w/in 10%.								

Mid-Turn ↓

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TETRA TECH NUS, INC.

WELL DEVELOPMENT DATA SHEET

Well No.: MW-EP-347

PROJECT: Eastern Plume - NASB Brunswick, ME
PROJECT NO.: 112G00645 / CTO-069
SAMPLE ID: NA

DATE: 6/1/09
WEATHER: 60's Sunny
PERSONNEL: C. Fellows

Well Screen Depth: 46 / 51 ft. bgs
H&S Monitoring Instrument Reading 0.0 / 0.0 well

Pump Type/Material: Peri-Pump
Pump Intake Depth: 46-51

Total Purge Volume = 7 1/2 (gal)
Data Recorded By: C. Fellows

	Time	Water Level ft below top PVC	Volume ~~mL~~ gal	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
	1405	* WL @ TOPVC not flowing out. Start pump intake at bottom (51 ft bgs).								
	1410	1.30	1/2 ~~250 ccs~~	250	8.87	7.65	119	1.27	Off Scale Error 3	Cloudy / Gray
	1415	1.25	1	250	8.78	7.49	118	0.55	450	"
	1420	1.51	1 1/2	250	8.71	7.45	118	0.49	170	"
	1425	1.58	2	"	8.68	7.39	118	0.45	65	sl. Cloudy / Colorless
	1430	1.52	2 1/2	"	8.72	7.34	115	0.40	23	Clear / colorless
Moved Pump 1 ft.	1435	1.46	3	"	8.70	7.62	119	0.33	Off Scale	Cloudy / Gray
	1440	1.49	3 1/2	"	8.71	7.49	118	0.32	230	"
Moved Pump 2 ft.	1445	1.51	4	"	8.69	7.42	117	0.33	34	Clear / colorless
	1450	1.55	4 1/2	"	8.78	7.37	117	0.32	11	"
Moved Pump 3 ft	1455	1.12	5	"	8.84	7.55	119	0.27	off Scale	Cloudy / Gray
	1500	1.15	5 1/2	"	8.93	7.37	118	0.28	21	Clear / colorless
Moved Pump up 4 ft	1505	1.16	6	"	8.93	7.36	117	0.29	7.5	"
	1510	1.16	6 1/4	"	8.91	7.35	117	0.29	6.2	"
Moved Pump up 5 ft	1515	1.12	6 1/2	"	8.86	7.32	117	0.29	230	Cloudy / colorless
	1520	1.16	6 3/4	"	8.85	7.31	117	0.28	16.1	Clear / colorless
Moved Pump to mid Screen	1525	1.16	7	"	8.83	7.29	117	0.27	2.63	"
	1530	1.16	7 1/4	"	8.81	7.28	117	0.27	2.41	"
	1535	1.16	7 1/2	"	8.82	7.27	117	0.27	2.38	

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* End Development - readings are stable and turbidity below 10 NTU.

TETRA TECH NUS, INC.

WELL DEVELOPMENT DATA SHEET

Well No.: MW-EP-348

PROJECT: Eastern Plume - NASB Brunswick, ME

PROJECT NO.: 112G00645 / CTO-069

SAMPLE ID: NA

DATE: 6/1/09

WEATHER: Sunny 60's

PERSONNEL: C. Fellows

Well Screen Depth: 43 / 48 ft. bgs

H&S Monitoring Instrument Reading 0.2 / 0.0 (well / BW)

Pump Type/Material: Peristaltic Pump

Pump Intake Depth: 43-48 ft bgs

Total Purge Volume = 7 (gal)

Data Recorded By: C. Fellows

Time	Water Level ft below top PVC	Volume ~~mL~~ gal.	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
1120	* WL at TPVC and flowing out. Water fills up inside of casing and water flowing out of PVC/casing. → Artesian well.								
1140	@ TPVC/casing	~~500 cc~~	500	9.06	7.58	106	4.00	6.75	Clear/odorless
1145	"	1	500	8.94	7.42	106	3.74	0.70	"
1150	"	1½	500	8.86	7.17	103	3.56	0.30	"
	* Move pump intake 1½ ft off bottom.								
1155	"	2	"	8.82	6.96	102	3.55	0.35	"
1200	"	2½	"	8.92	6.93	102	3.53	0.30	"
	* Move pump intake 2½ ft off bottom.				6.95	101	3.56	0.30	
1205	"	3	"	8.97	↓	↓	↓	↓	"
1210	"	3½	"	8.97	6.95	101	3.57	0.10	"
	* Move pump intake 3½ ft off bottom.								
1215	"	4	"	9.09	6.98	101	3.50	0.00	"
1220	"	4½	"	9.07	6.97	101	3.41	0.00	"
	* Move pump intake 4½ ft off bottom.								
1225	"	5	"	9.48	6.99	102	3.29	0.00	"
1230	"	5½	"	9.72	7.00	102	3.28	0.00	"
	* Move pump back to mid-screen (2½ ft) off bottom.								
1235	"	6	"	9.75	7.01	105	3.27	0.00	"

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WELL DEVELOPMENT DATA SHEET

Well No.: MW-EP-348

PROJECT: Eastern Plume - NASB Brunswick, ME
PROJECT NO.: 112G00645 / CTO-069
SAMPLE ID: NA

DATE: 6/1/09
WEATHER: Sunny 60's
PERSONNEL: C. Fellows

Well Screen Depth: 43 / 48 ft. bgs
H&S Monitoring Instrument Reading 0.0 / 0.0 (well / PW)

Pump Type/Material: Peri Pump
Pump Intake Depth: 43-48

Total Purge Volume = 7 (gal)
Data Recorded By: C. Fellows

Time	Water Level ft below top PVC	Volume mL	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
1240	@ TPVC / casing	6 1/2	500	9.79	7.00	105	3.25	0.00	"
1245	"	7	500	9.83	6.99	105	3.21	0.00	"
	* End development. Readings stable and Turbidity 0.00 NTU.								

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TETRA TECH NUS, INC.

WELL DEVELOPMENT DATA SHEET

Well No.: MW-EP-349

PROJECT: Eastern Plume - NASB Brunswick, ME
PROJECT NO.: 112G00645 / CTO-069
SAMPLE ID:

DATE: 06/01/09
WEATHER: Sunny / 60's
PERSONNEL: ~~C. Fellows~~ BG B. Geringer

Well Screen Depth: 46 - 51 / ft. bgs
H&S Monitoring Instrument Reading 0.0

Pump Type/Material: Peristaltic / Teflon
Pump Intake Depth: *

Total Purge Volume = 22.5 Liters ~~(gal)~~ BG
Data Recorded By: Brian Geringer

Time	Water Level ft below top PVC	Volume mL	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
1145	Flowing out of PVC	2500	250	9.47	6.73	389	1.65	34.2	little cloudy
1155	" "	5000	250	9.34	6.51	358	1.64	2.54	Clear/colorless
1205		7500	250	9.23	6.21	267	2.59	1.10	" "
1215		10000	250	9.17	6.09	230	2.58	0.41	
1225		12500	250	9.34	6.11	210	3.19	0.30	
1235		15000	250	9.13	6.09	267	2.92	1.06	- At bottom of Screen
1245		17500	250	9.22	6.10	247	2.70	0.44	**
1255		20000	250	9.32	6.04	235	2.74	0.25	
1305		22500	250	9.30	6.00	233	2.62	0.16	
	- Completed Well Development	- Turbidity Parameters	<10 NTUS, Stable	all					

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Page 1 of 1

* Started at bottom, pulled tubing up 1' every 10 minutes in the Screened zone.

** - At midpoint of the Screen

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WELL DEVELOPMENT DATA SHEET **Well No.:** MWEP-350

PROJECT: Eastern Plume - NASB Brunswick, ME
PROJECT NO.: 112G00645 / CTO-069
SAMPLE ID:

DATE: 6/3/09
WEATHER: Sunny 70's
PERSONNEL: C. Fellows

Well Screen Depth: 48 / 58 ft. bgs
H&S Monitoring Instrument Reading 0.0 / 0.0
Well BW

Pump Type/Material: Peri - Pump
Pump Intake Depth: 48-58

Total Purge Volume = 20 (gal)
Data Recorded By: C. Fellows

Time	Water Level ft below top PVC	Volume ~~mL~~ gal	Flow Rate ~~mL/min~~ gal/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
1650	WL is artesian. Extended PVC 9 ft above ground surface and water still flowing								
1652	above ground surface	25	5 gal.	8.78	7.22	217	1.86	40	Clear/colorless
	* End development due to high flow rate.								

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WELL DEVELOPMENT DATA SHEET

Well No.: MW-EP-351

PROJECT: Eastern Plume - NASB Brunswick, ME
PROJECT NO.: 112G00645 / CTO-069
SAMPLE ID: NA

DATE: 6/2/09
WEATHER: 60's Sunny
PERSONNEL: C. Fellows

Well Screen Depth: 23 / 33 ft. bgs
H&S Monitoring Instrument Reading 0.0 / 0.0 (well / BW)

Pump Type/Material: Peri-Pump
Pump Intake Depth: 23-33

Total Purge Volume = 11 (gal)
Data Recorded By: C. Fellows

Time	Water Level ft below top PVC	Volume ~~mL~~ gal	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
0830	@ TPVC (initial WL)								
0840	0.3	1/2	300	8.97	7.93	120	11.36	242	Sl. cloudy/colorless Bottom
0850	1.33	1	300	8.73	7.41	112	4.88	62.8	sl. cloudy/colorless
0900	1.98	2	300	8.70	7.20	111	4.71	57.7	"
0910	1.85	3	300	8.72	7.11	110	4.41	18.4	Clear/colorless
0920	1.91	4	300	8.74	7.09	110	4.40	26	"
0930	1.98	5	"	8.95	6.98	111	4.43	26	"
0940	2.00	6	"	9.02	7.06	110	4.46	35	"
0950	2.03	6 3/4	"	9.09	7.04	111	4.39	35	"
1000	2.00	7 1/2	"	9.12	7.03	111	4.41	40	"
1010	1.91	8 1/2	"	9.15	7.03	111	4.38	33	"
1020	1.95	9 1/2	"	9.07	7.02	111	4.24	45	" Top
1025	1.91	10	"	8.95	7.02	110	4.34	4.3	" Mid-pt
1030	1.95	10 1/2	"	8.93	7.02	110	4.38	1.2	"
1035	1.98	11	"	8.90	7.02	110	4.41	0.80	"

* End Development. Readings stable and turbidity below 10 NTU.

dtb

De-Pump up 1 ft

De-Pump 2 ft

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* Move pump intake up 1 ft every 10 min. from bottom. After develop length of screen put pump intake at mid-point of screen and take 3 readings 5 min apart.

Initial Water level: 3.14

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WELL DEVELOPMENT DATA SHEET

Well No.: MW-EP-352

PROJECT: Eastern Plume - NASB Brunswick, ME
PROJECT NO.: 112G00645 / CTO-069
SAMPLE ID:

DATE: 06/02/09
WEATHER: Ptly Cloudy / 50's
PERSONNEL: C. Fellows / B. Geringer

Well Screen Depth: 47-52 / ________ ft. bgs
H&S Monitoring Instrument Reading: 0.0

Pump Type/Material: Peristaltic / Teflon Tubing
Pump Intake Depth: *

Total Purge Volume = 85 Liters ~~(gal)~~
Data Recorded By: Brian Geringer

Time Start: 830	Water Level ft below top PVC	Volume mL	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments	
840	8.13	5K	500	8.02	6.77	134	2.52	Er3	Cloudy / Gray	Bottom
850	8.45	10K	500	8.04	7.05	130	2.62	538	Cloudy	1'
900	8.45	15K	500	8.12	6.91	132	2.51	521	" "	2'
910	8.45	20K	500	8.14	7.04	132	2.34	231	little cloudy	3'
920	8.45	25K	500	8.24	7.05	132	2.41	184	" "	4'
930	8.45	30K	500	8.28	7.07	133	2.46	102.9	Slightly Cloudy	~~At bottom~~
940	8.45	35K	500	8.04	7.00	135	2.48	92.3	" "	Bottom
950	8.45	40K	500	8.13	7.02	130	2.46	44.4	Clear / Colorless	1'
1000	8.45	45K	500	8.15	7.05	131	2.42	36.8	" "	2'
1010	8.45	50K	500	8.18	7.03	132	2.42	25.4	" "	3'
1020	8.45	55K	500	8.16	7.12	134	2.44	25.7	" "	2'
1030	8.45	60K	500	8.11	7.10	134	2.28	25.1	" "	1'
1040	8.45	65K	500	8.04	7.10	135	2.41	22.6	" "	Bottom
1050	8.45	70K	500	8.10	7.08	132	2.44	20.4	" "	1'
1100	8.45	75K	500	8.13	7.02	132	2.43	17.5		2'
1110	8.45	80K	500	8.20	7.08	133	2.37	12.3		2'
1120	8.45	85K	500	8.29	7.03	132	2.32	8.8	" "	2'
	Finished well	Development -	Turbidity less	than 10 NTU's,	Parameters	Stable				

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* Started development at bottom of Screen; pulled up 1' every 10 minutes for the entire length of Screen.

Er3 = Off Scale

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WELL DEVELOPMENT DATA SHEET **Well No.:** MW-EP-353

PROJECT: Eastern Plume - NASB Brunswick, ME
PROJECT NO.: 112G00645 / CTO-069
SAMPLE ID:

DATE: 6/2/09
WEATHER: Ptly Cloudy / 60's
PERSONNEL: C. Fellows / B. Geringer

Well Screen Depth: 56-61 / ft. bgs
H&S Monitoring Instrument Reading 0.0

Pump Type/Material: Peristaltic / Teflon Tubing
Pump Intake Depth: ∅

Total Purge Volume = ~~∅~~ 32.5 Liters ~~(gal)~~
Data Recorded By: Brian Geringer

Time Start: 1300	Water Level ft below top PVC	Volume mL	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments
1310	* Flowing over PVC	5000	500	8.53	7.52	162	0.38	40	Clear - initially Gray
1315			500	8.66	7.41	161	0.27	35	Clear/colorless
1320		10K	500	8.72	7.39	155	0.22	15	" "
1325			500	8.72	7.30	152	0.26	14	
1330		15K	500	8.78	7.22	150	0.24	6.3	
1335			500	8.81	7.19	149	0.34	5.8	
1340		20K	500	8.51	7.21	163	0.26	55	Clear - Initially gray Bottom
1345			500	8.48	7.23	163	0.24	31	Clear/colorless Bottom
1350		25K	500	8.61	7.22	163	0.28	9.0	" " Bottom
1355			500	8.67	7.30	166	0.27	4.3	1'
1400		30K	500	8.65	7.27	157	0.25	3.3	2'
1405		32500K	500	8.70	7.26	159	0.25	2.3	2'
	Finished development - Turbidity less than 10 NTUS								
	all Parameters Stable								

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Artesian Conditions while pumping, Collected Water flowing out of PVC at weephole

15 Gallons produced

* Started development at bottom of Screen, pulled up 1' every 5 minutes for entire length of Screen

TETRA TECH NUS, INC.	WELL DEVELOPMENT DATA SHEET	Well No.: MW-EP-354

PROJECT: Eastern Plume - NASB Brunswick, ME
PROJECT NO.: 112G00645 / CTO-069
SAMPLE ID: NA

DATE: 6/2/09
WEATHER: 60's Sunny
PERSONNEL: C. Fellows

Well Screen Depth: 29 / 34 ft. bgs
H&S Monitoring Instrument Reading 0.0 / 0.0
well pw

Pump Type/Material: Peri-Pump
Pump Intake Depth: 29-34

Total Purge Volume = 6 (gal)
Data Recorded By: C. Fellows

Time	Water Level ft below top PVC	Volume ~~ml~~ gal.	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments	
1100	Initial WL @	6.00 ft								
1110	7.95		160	9.25	7.66	130	5.05	Offscale	cloudy/brown	Bottom
1120	8.71		150	9.25	7.65	130	3.41	"	"	
1130	9.8	1	150	9.26	7.64	130	0.96	900	"	
1140	9.58		160	9.41	7.63	129	0.52	160	Sl. Cloudy / colorless	
1150	9.6	2	160	9.53	7.64	130	0.53	110	"	
1200	9.6		160	9.58	7.62	129	0.46	40	"	
1210	9.5		"	9.74	7.63	129	0.40	30	clear/colorless	Top
1220	9.45	3	"	9.75	7.63	129	0.37	21	"	
1230	9.45		"	9.70	7.62	129	0.37	21	"	
1240	8.95		"	9.87	7.62	129	0.37	19	"	
1250	9.39	4	"	9.32	7.62	130	0.32 ~~0.48~~	220 ~~290~~	cloudy / colorless	Bottom
1255	9.50		"	9.43	7.63	126	0.29	75	Sl. Cloudy / colorless	Mid Point
1300	9.31		"	9.47	7.63	126	0.29	55	"	
1305	9.42	5	"	9.39	7.64	126	0.27	45	"	
1310	9.53		"	9.10	7.63	125	0.29	33	Clear/colorless	
1315	9.50		"	9.11	7.62	125	0.29	33	"	
1320	9.46	6	"	9.14	7.62	125	0.28	35	"	

TtNUS Form 0013 * End development. Readings stable and turbidity w/in 10%.

* Move pump intake up 1 ft every 10 min. After develop length of screen, move pump to mid-point of screen and take 3 readings 5 min apart.

TETRA TECH NUS, INC.

WELL DEVELOPMENT DATA SHEET

Well No.: MW-EP-355

PROJECT: NASB - Background Study
PROJECT NO.: CTO 432 - 112G00958 / 0510
SAMPLE ID:
TD=58.9

DATE: 8/27/09
WEATHER: Sunny 70's
PERSONNEL: Glennon

Well Screen Depth: 46 / 56 ft. bgs
H&S Monitoring Instrument Reading

Pump Type/Material: Peri/Teflon
Pump Intake Depth: Various

Total Purge Volume = 3.5 (gal)
Data Recorded By: Glennon

Time	Water Level ft below top PVC +5' extender	Volume ~~mL~~ gal	Flow Rate mL/min	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Comments	ORP
1107	~~3.58~~ ~~GSL~~								artesian	
1121	3.58	start	pump						~~wl~~ stable	
1126	2.90		170	13.41	7.29	184	1.13	138.7	@bottom	-369.
1140	2.90			13.04	7.17	169	1.37	35.7	@bottom	-349.
1145	2.90			13.19	7.20	169	1.50	28.3	@ bottom	
1155	2.90			13.16	7.23	169	1.59	4.55	bottom+2'	-376.
1205				13.36	7.25	166	1.88	2.46	bottom+4'	-347
1212				13.32	7.25	129	2.00	7.17	bottom+6'	
1217	2.88	2.5	200	13.35	7.24	165	2.02	3.70	bottom+8'	
1227				13.08	7.26	174	1.16	32.2	@bottom	-333.
1237	2.92			13.10	7.26	168	1.45	28.9	@ bottom	-330.
1247	2.90	3.5		13.38	7.25	167	1.54	6.08	bottom+6"	-348.
1248	stop pump - well is developed									

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@1100 - open well, water flowing over ~3' stickup, 5' extender pipe added

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APPENDIX A-6
BOREHOLE GEOPHYSICAL LOGS

**BOREHOLE GEOPHYSICAL LOGGING
OF THREE BOREHOLES
AT THE
NASB EASTERN PLUME SITE
BRUNSWICK, MAINE
For
Tetra Tech NUS, Inc.**

Northeast Geophysical Services
4 Union Street, Suite 3
Bangor, Maine 04401
December, 2008

BOREHOLE GEOPHYSICAL LOGGING
OF THREE BOREHOLES
AT THE
NASB EASTERN PLUME SITE
BRUNSWICK, MAINE

Introduction

At the request of Tetra Tech NUS, Inc., three bedrock boreholes located in the Naval Air Station (NAS) Eastern Plume Site (Project # G00695) in Brunswick, Maine were geophysically logged. The boreholes are designated as MW-EP-340B, MW-EP-341B, and MW-EP-342B. MW-EP-340B was logged on November 19th, MW-EP-341B was logged on November 13th and MW-EP-342B was logged on November 24th, 2008 by Rudy Rawcliffe of Northeast Geophysical Services (NGS). Geophysical logging was used as one of the means to identify the location of potential water-bearing fractures in the bedrock boreholes. Fluid temperature, fluid resistivity, caliper, natural gamma, acoustical televiewer (ATV), optical televiewer (OTV) and flowmeter measurements were collected from each of the boreholes. An exception to this was that natural gamma was not collected from MW-EP-341B because of time constraints.

Summary of Results

Composite geophysical logs of the three boreholes are appended to this report. Each log shows the results of the caliper, temperature, fluid resistivity and televiewer logging. Heat pulse flowmeter measurements for ambient and pumping conditions are shown adjacent to the caliper log for each borehole.

The composite geophysical logs show the possible locations of potential fractures in each borehole. The flowmeter results and, to a lesser degree, the fluid temperature and fluid resistivity provide indications of which of these potential fractures are transmissive.

The natural gamma logs for MW-EP-340B and MW-EP-342B shows that the median decay rate in counts per second for the uncased portion of the boreholes is 106 cps. There are numerous zones of higher or lower gamma readings in both boreholes such as the higher gamma readings (165 cps) in the broad zone from 88 to 96 feet in MW-EP-340B that may indicate changes in lithology with the higher count areas being more felsic (feldspar rich) rock such as granitic or pegmatite rock and the areas with lower gamma counts being more mafic (feldspar poor) rock such as gabbro. The gamma log can be compared to the rock core from the borehole (if it is available) to determine whether there is a correlation between lithology and gamma count rate.

The televiewer logs provide the strike and dip of planar features that intersect the boreholes. These planar features may be fractures, or may represent cleavage or bedding planes. The results have been color-coded on the logs to provide an interpretative range of the likelihood that the associated feature signifies a transmissive fracture as follows:

- Dark blue symbol (Category 107) - multiple distinct borehole geophysical logging responses indicating borehole enlargement (caliper and televiewer) and flowmeter evidence that provides the strongest data that the indicated bedrock feature represents a likely transmissive water-bearing fracture.
- Light blue symbol (Category 108) - less amount of corroborating flowmeter data to support that the indicated feature will transmit groundwater compared to the dark blue symbol. However, the televiewer logs show a fairly distinct acoustic signal and/or optical image that perhaps under a higher stress condition (e.g. increased pumping rate), vertical flow could be induced in the borehole. Less degree of confidence that the feature represents a transmissive feature
- Black symbol (Category 100) - bedrock feature not interpreted to transmit water; more likely to represent planes of foliation, bedding planes, healed or filled fractures, or mechanical breaks in the rock matrix due to drilling advancement.

Figure 1 (on the following page) is a rose plot of the strike and dip angle of all the interpreted features for MW-EP-341B and MW-EP-342B. Borehole conditions in MW-EP-340B precluded getting identifiable features with either the OTV or ATV. Figure 1 shows that the strike and dip direction of the identified features in the boreholes generally strike northeast with the dip direction to the southeast. The median dip of the features is 46°. The interpreted results of the televiewer logs are summarized on the composite logs for MW-EP-341B and MW-EP-342B and in tables that provide the depth and calculated strike and dip of each identified feature. The televiewer image logs and rose plots for each of these boreholes are also presented in the appendix.

Methods and Instrumentation

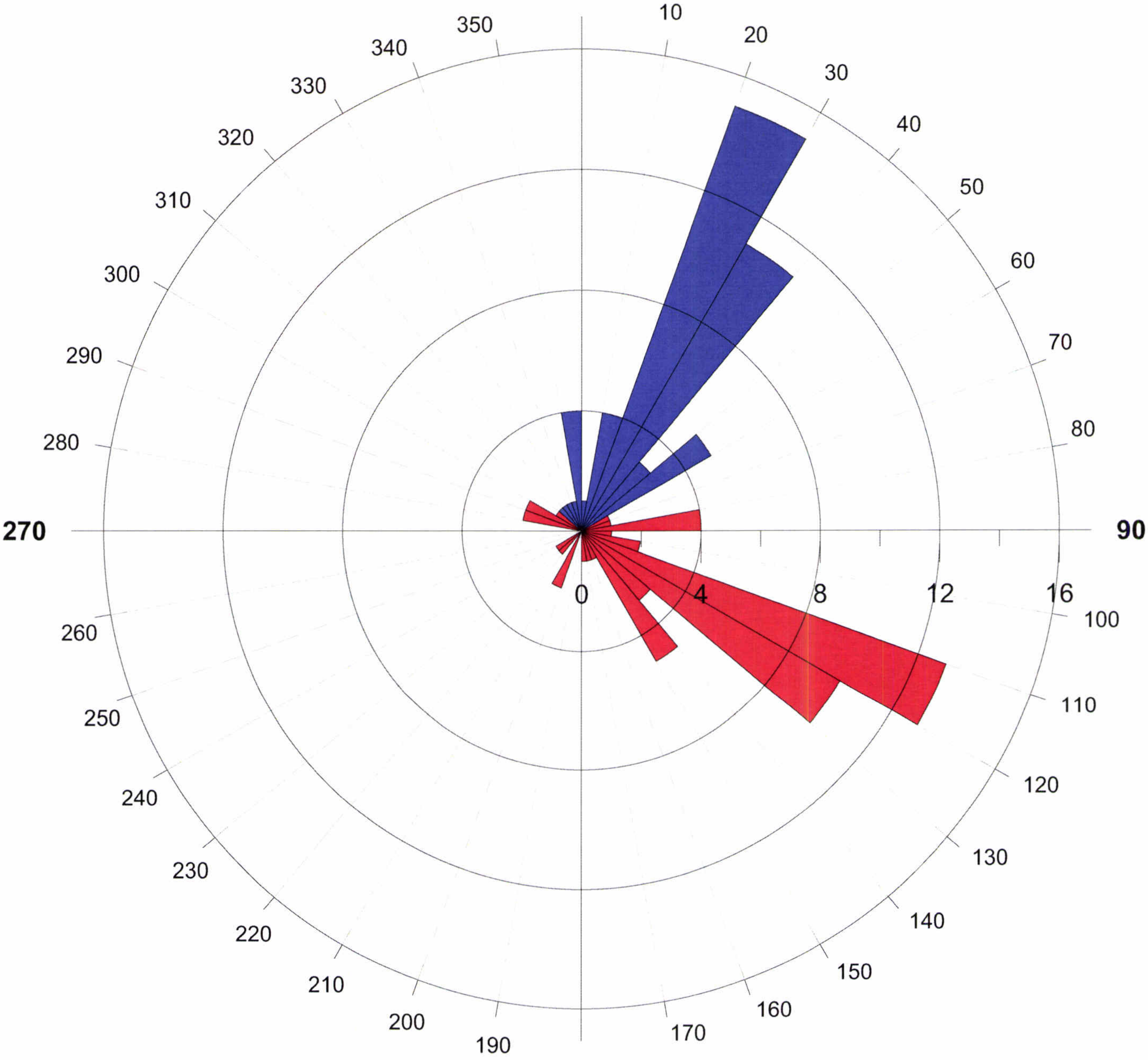
The boreholes were logged with a Mount Sopris Matrix digital logger. The boreholes were initially logged with a temperature/fluid resistivity tool and then a caliper tool, a natural gamma tool and then the televiewer tools. The final log on each borehole was the flowmeter measurements. Following is a brief description of each parameter that was measured:

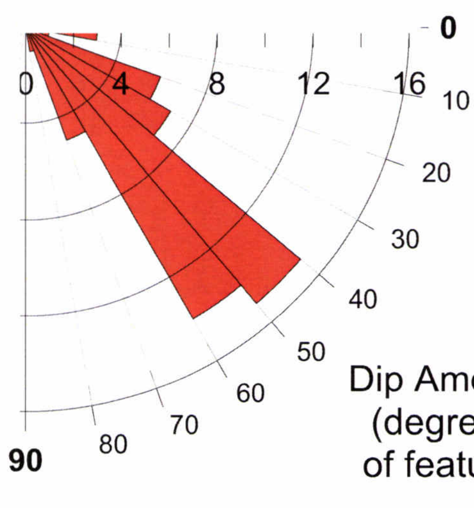
<u>Caliper</u> measures the borehole diameter. Fractures are often revealed on the caliper log as abrupt widenings of the borehole.

<u>Temperature</u> (in degrees Centigrade [°C]) is measured with the probe going down each hole. Generally, temperature rises smoothly with depth at a rate of about 1.0° C per 100 feet due to the local geothermal gradient. Areas where water may be entering or exiting the borehole are sometimes revealed on the temperature log as abrupt temperature changes or sometimes as temperature gradient changes. Other factors that can affect the temperature log besides transmissive fractures include variations in the thermal resistivity of the rock with depth along the borehole, surface climatic changes, thermal effects of drilling activity, and localized heat sources such as radionuclides in the rock or cement setting outside the casing.

NASB Eastern Plume Site
Brunswick, Maine

FIGURE 1
Strike and Dip Direction of all features





Dip Amount (degrees) of features

Explanation
- Dip direction of feature
- Strike of feature
- Dip Amount (Tilt)

Graph based on 52 measurements

Fluid resistivity measures the resistivity (in ohmmeters) of the water in the borehole. Fluid resistivity can be useful in identifying transmissive fractures because water entering the borehole through fractures sometimes has a different resistivity than the water that is already in the borehole.

Natural gamma log measures the gamma radiation in counts per second (cps) that is being emitted from the materials located next to the tool. Natural gamma is generally used as a way to distinguish between different lithologies or soil types. This is because different materials often have different percentages of radioactive elements (mainly potassium-40 and to a lesser extent uranium-238 and thorium-232). Bedrock fractures or fracture zones are sometimes distinguished by the gamma log because fractures often contain weathered clay minerals which can have higher amounts of potassium or uranium than the unfractured rock.

The acoustical televiewer (ATV) log provides an acoustical image of the borehole walls. The ATV works by scanning the borehole wall with an acoustic beam that is produced by a rapidly rotating piezoelectric source. Planar features such as fractures, bedding surfaces, and joints can be identified with the ATV tool and the strike, dip direction and dip angle of these features can often be determined.

The optical televiewer (OTV) log provides a digital image of the borehole walls that is oriented to magnetic north. Planar features such as fractures, bedding surfaces, and joints can be identified with the optical tool and the strike, dip direction and dip angle of these features can often be determined.

The optical and acoustical televiewer logs are somewhat duplicative in that they both can provide similar information. However, there are advantages and disadvantages to both tools. The ATV requires the borehole to be water filled and will not provide information above the water level. The OTV can work in air or water but is not effective in cloudy, turbid water whereas the ATV will work fine in cloudy water. The ATV can be better at discerning voids, cracks and fractures whereas the OTV can be better at discerning lithology. Also, sometimes water-bearing fractures are rust stained, which can be seen by the OTV. The water in the boreholes at the NAS site was turbid (cloudy), especially near the bottom of the boreholes. Because of this the OTV logs were not as useful as they would be if the water had been clear.

The temperature, caliper, fluid resistivity and televiewer logs for each borehole were examined and possible bedrock fractures were identified. This information was used to select measurement locations for the flowmeter instrument. Generally, flowmeter measurements were taken in the zone above and below locations where potential fractures might exist in the boreholes.

Flowmeter Measurements

Flowmeter measurements of the vertical water flow were made in the boreholes using a Mount Sopris Heat Pulse Flowmeter. This instrument is capable of measuring flow direction in a borehole (up or down) and has a calibrated measurement range of 1.0 to 0.03 gallons per minute (gpm).

Vertical flow in a borehole is caused when two or more transmissive fractures in the borehole are at hydraulic disequilibrium with one another. When this occurs there is a hydraulic gradient developed and water will flow toward the fracture with the lower hydraulic head. When no vertical flow is measured it can mean that there are less than two transmissive fractures in the borehole or that all the fractures in the borehole are at equilibrium with each other.

Results

Composite geophysical logs of the boreholes are appended to this report. One or a combination of anomalous geophysical responses identified physical discontinuities that may represent possible fractures. These included abrupt widenings in the caliper log and planar images on the televiewer logs. The heat-pulse flowmeter results are also shown. All of the depths on these logs are referenced from the top of the casing (toc). Following is a descriptive summary of the geophysical logging results for each borehole:

MW-EP-340B:

Total Depth (TOC):	111.2 feet
Casing Depth:	63 feet
Water Level:	6.95 feet

A composite geophysical log of MW-EP-340B containing caliper, flowmeter, temperature fluid conductivity and natural gamma logs is shown in Figure A-1 in the appendix.

The caliper log for MW-EP-340B shows an average borehole diameter for the uncased portion of the borehole is 5.93 inches. The caliper log shows that the borehole walls in MW-EP-340B are quite smooth. The largest anomalously wide zone on the caliper log is at 73.5 to 75 feet. Smaller caliper anomalies occur at 81 to 82 feet and from about 86 to 93 feet.

The temperature log for MW-EP-340B shows an ambient water temperature for the uncased portion of the borehole averages 9.14° C. The temperature drops rapidly from just below the casing at 63 feet until about 68 feet where it levels off. From here until the bottom of the borehole the temperature slowly decreases with subtle deflections at about 71 feet, 75 feet and 82.5 feet. Although they are very subtle it is possible that these temperature deflections or gradient changes might indicate a transmissive fracture in the log at these locations.

The fluid resistivity log for MW-EP-340B shows that the median resistivity for the uncased portion of the borehole is 11 ohmmeters, which is the equivalent of about 910 µS/cm. The fluid resistivity log shows deflections at about 71 feet, 75.5 feet and slightly over 82 feet that may indicate transmissive fractures in these areas of the borehole.

The natural gamma log for MW-EP-340B shows that the median decay rate in counts per second for the uncased portion of the borehole is 121 cps. There are numerous zones of higher or lower gamma readings such as the higher gamma readings from 88 to 96 feet (median 165 cps) that may indicate changes in lithology with the higher count areas being more felsic (feldspar rich) rock such as granitic or pegmatite rock and the areas with lower gamma counts being more mafic (feldspar poor) rock such as gabbro. The gamma log can be compared to the rock core from the borehole (if it is available) to determine whether there is a correlation between lithology and gamma count rate.

Neither the optical (OTV) nor the acoustical televiewer (ATV) logs for MW-EP-340B produced interpretable images. The turbidity was too high in well MW-EP-340B to obtain useful information with the OTV logging method. The ATV is not affected by water clarity, however, it did not produce a clear image either. It is suspected that drilling mud or clay had coated the borehole walls and attenuated to acoustical signal. Because of this, strike, dip and dip directions were not measured in MW-EP-340B.

The flowmeter measurements for MW-EP-340B under ambient conditions show no measurable flow in the upper part of the borehole until 76 feet where a slight downflow of 0.01 gpm was measured. At 82 feet downflow increased to 0.02 gpm and at 88 feet downflow measured 0.04 gpm. At 94 feet there was no measurable flow.

Because of time constraints flowmeter measurements under pumping conditions were not made.

The results of the flowmeter measurements indicate that under ambient conditions water is entering the borehole most likely through a fracture located at 74 feet and moving downwards. Additional water enters the borehole at 81 to 82 feet. The water exits the borehole through fractures located between 88 feet and 94 feet. These possible transmissive fractures are shown on the composite log (Figure A-1) in the appendix.

MW-EP-341B:

Total Depth (TOC):	113.4 feet
Casing Depth:	63 feet
Water Level:	4.10 feet

A composite geophysical log of MW-EP-341B containing caliper, flowmeter, temperature, fluid conductivity and structural information interpreted from the televiewer logs is shown in Figure B-1 in the appendix.

The caliper log for MW-EP-341B shows the average borehole diameter for the uncased portion of the borehole is 6.05 inches. The caliper log shows that the borehole walls in MW-EP-341B are quite smooth with the exception of a zone just below the casing from about 63 to 65 feet where the borehole diameter increases to over 8 inches. This gap is probably because the steel casing was not completely inserted into the bedrock. Besides this wide zone there are six, much smaller, anomalously wide zones on the caliper log that may represent bedrock fractures. They are at approximately 83 feet, 88.2 feet, 95 feet, 99.5 feet, 105.8 feet and 107 feet.

The temperature log for MW-EP-341B shows an ambient water temperature for the uncased portion of the borehole averages 8.54° C. In general the temperature rises gradually with increasing depth. There is a deflection in the temperature log in the wide zone just below the casing from 63 to 65 feet. This may indicate that water is entering the borehole just below the casing. Besides this deflection there are some very subtle temperature deflections or gradient changes that may indicate transmissive fractures in the log. The largest of these are at 100 feet, 103 feet and 107 feet.

The fluid resistivity log for MW-EP-341B shows that the median resistivity for the uncased portion of the borehole is 77 ohmmeters, which is the equivalent of about 129 µS/cm. The fluid resistivity is fairly constant in the borehole. There is an abrupt deflection in the fluid resistivity just below the casing at 63 to 65 feet. Besides this deflection there are no obvious deflections or gradient changes in the fluid resistivity log that would indicate transmissive fractures. The abrupt increase in fluid resistivity at the bottom of the borehole below 111 feet is most likely caused by sediment at the bottom of the borehole.

A natural gamma log was not collected from MW-EP-341B because of time constraints.

The optical televiewer (OTV) log for MW-EP-341B did not produce interpretable images because of high turbidity. However, the acoustical televiewer (ATV) did work in this borehole. The ATV logs for MW-EP-341B indicates that the planar features (possible fractures, bedding planes, joints or cleavages) generally strike to the northeast (25° true) and have a median dip of 50° to the southeast. This is illustrated by Figure B-2 in the appendix, which is a Rose plot of the strike and dip direction of the interpreted planar features in MW-EP-341B. The dip and dip direction of interpreted planar features including possible transmissive fractures for MW-EP-341B are shown on the composite log (Figure B-1) and tabulated (Table B-1) in the appendix.

The flowmeter measurements for MW-EP-341B under ambient conditions generally show downflow in the borehole. At 76 feet downflow measured 0.04 gpm and at 80 feet downflow increased to 0.09 gpm. At 92 feet downflow measured 0.07 gpm and at 97 and 102 feet downflow measured 0.04 gpm. At 109 feet there was no measurable flow.

The flowmeter results under ambient conditions suggest that water is entering the borehole near the top of the borehole. Probably some water is entering through the gap just below the casing at 63 to 65 feet. This water moves downward in the borehole. Additional water enters the borehole between 76 and 80 feet. Some water may be exiting the borehole through fractures located at 88.2 feet and 95 feet but most of the water exits the borehole through the fractures located at 105.8 and 107 feet.

Measurements were then repeated while pumping the borehole at about 1 gpm. Under pumping conditions, flowmeter measurements indicate no measurable flow at the bottom of the borehole until 103 feet where an upflow (0.05 gpm) was detected. At 97 feet the upflow increased slightly to 0.07 gpm. At 92 feet upflow increased dramatically to 0.24 gpm. Upflow generally increased with successive measurements at shallower depths in the borehole. Between 69 feet and 60 feet, which is within the casing, the upflow increased by about 1 gpm. This indicates that the gap just below the casing at 63 to 65 feet is transmissive.

The results of the flowmeter measurements indicate several possible transmissive fractures in MW-EP-341B which are shown on the composite log (Figure B-1) and tabulated (Table B-1) in the appendix.

MW-EP-342B:

Total Depth (TOC):	96.4 feet
Casing Depth:	43.5 feet
Water Level:	1.95 feet

The caliper log for MW-EP-342B shows the average borehole diameter for the uncased portion of the borehole is 6.05 inches. The caliper log shows that the borehole walls in MW-EP-342B are quite smooth. There are some anomalously wide zones on the caliper log that may represent bedrock fractures. The largest caliper anomaly is at about 84 feet. MW-EP-342B is peculiar in that the casing walls are very irregular. It is suspected that this is because cement grout has adhered to the casing walls.

The temperature log for MW-EP-342B shows an ambient water temperature for the uncased portion of the borehole averages 8.81° C. There are no obvious temperature deflections or gradient changes that would indicate a transmissive fracture in the log.

The fluid resistivity log for MW-EP-342B shows that the resistivity for the uncased portion of the borehole has two zones with distinct resistivities. There is an upper zone from 43.5 feet to 59.5 feet that has a median fluid resistivity of 3 ohmmeters, which is the equivalent of over 3,000 μS/cm. There is also a lower zone from 59.5 feet to the bottom of the borehole at that has a median fluid resistivity of 27 ohmmeters, which is the equivalent of 370 μS/cm.

The abrupt change in fluid resistivity at 59.5 feet is coincident with an abrupt change in turbidity that can be seen in the optical televiewer log. This is probably due to cement grout that has escaped into the borehole.

The natural gamma log for MW-EP-342B shows that the median decay rate in counts per second for the uncased portion of the borehole is 105 cps. There are numerous zones of higher or lower gamma readings such as the higher gamma readings (142 cps) in the narrow zone from 85 to 86 feet that may indicate changes in lithology with the higher count areas being more felsic (feldspar rich) rock such as granitic or pegmatite rock and the areas with lower gamma counts being more mafic (feldspar poor) rock such as gabbro. The gamma log can be compared to the rock core from the borehole (if it is available) to determine whether there is a correlation between lithology and gamma count rate.

The televiewer logs for MW-EP-342B indicate that the planar features (possible fractures, bedding planes, joints or cleavages) have varied strike and dip directions. A majority of features generally strike to the northeast and have a median dip of 50° to the southeast. There are a smaller number of fractures that strike north and dip to the east. This is illustrated by Figure C-2 in the appendix, which is a Rose plot of the strike and dip direction of the interpreted planar features in MW-EP-342B. The dip and dip direction of interpreted planar features including possible transmissive fractures for MW-EP-342B are shown on the composite log (Figure C-1) and tabulated (Table C-1) in the appendix.

The flowmeter measurements for MW-EP-342B under ambient conditions did not reveal any measurable flow. Measurements were then repeated while pumping the borehole at about 1 gpm. Under pumping conditions, flowmeter measurements indicate no measurable flow at the bottom of the borehole until 82 feet where a slight upflow (0.02 gpm) was detected. At 78 feet upflow increased to 0.12 gpm. At 67 feet upflow increased dramatically to 0.8 gpm.

The results of the flowmeter measurements under pumping conditions indicate a few possible transmissive fractures in MW-EP-342B. The most likely transmissive fracture is at 67.5 feet (feature #11), which strikes 30° and dips 43° to the southeast. Other possible transmissive fractures are between 80 and 85 feet; (feature #18), which strikes 27° and dips 56° to the southeast and (feature #19), which strikes 358° and dips 44° to the east. These and other possible transmissive fractures are shown on the composite log (Figure C-1) and tabulated (Table C-1) in the appendix.

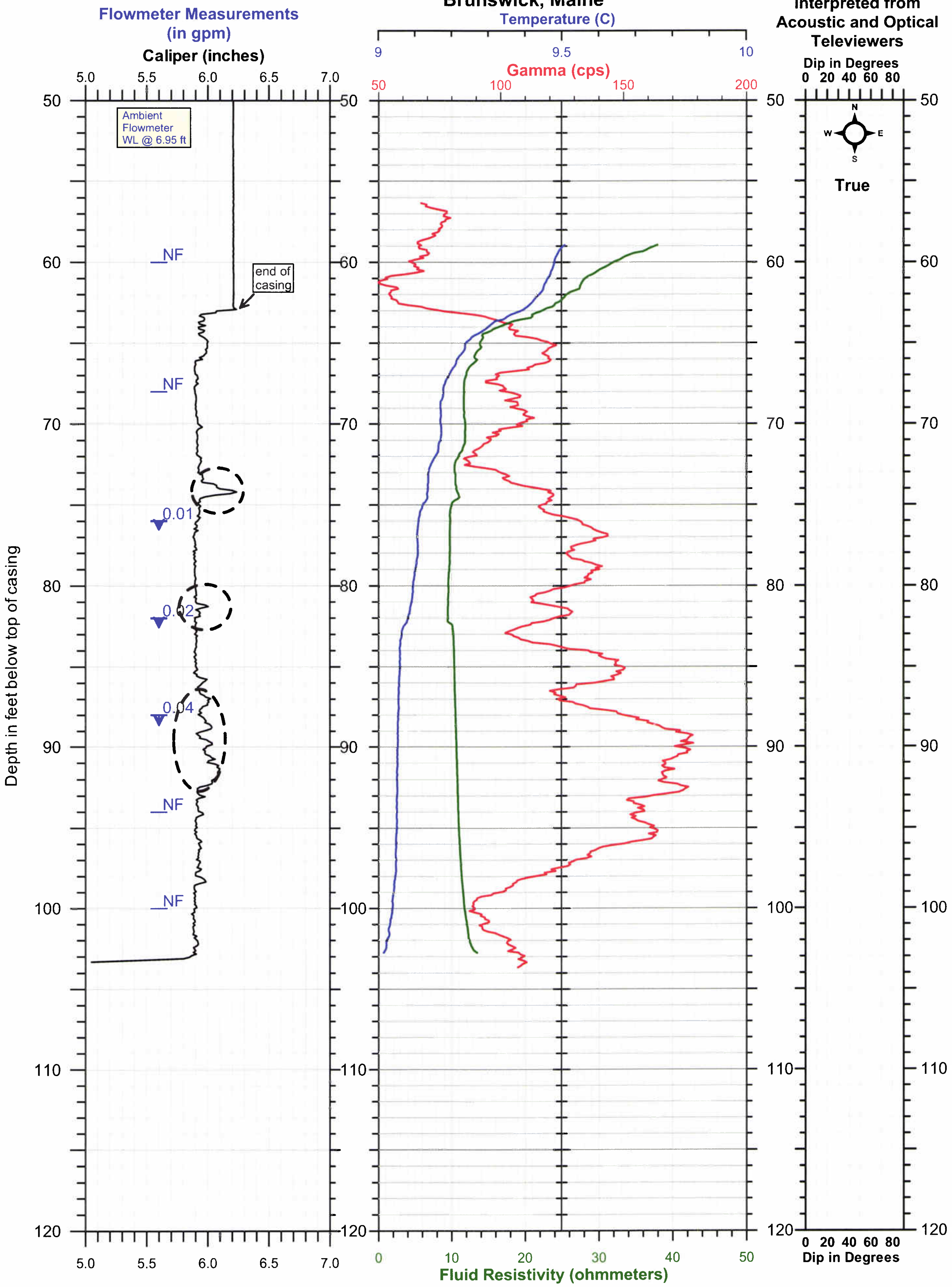
APPENDIX

BOREHOLE GEOPHYSCIAL LOGS

Northeast Geophysical Services

FIGURE A-1
Borehole Geophysical Log
MW-EP-340B
Brunswick NASB
Brunswick, Maine

Date logged: 11/19/08



= Likely transmissive zone

= Possible transmissive zone

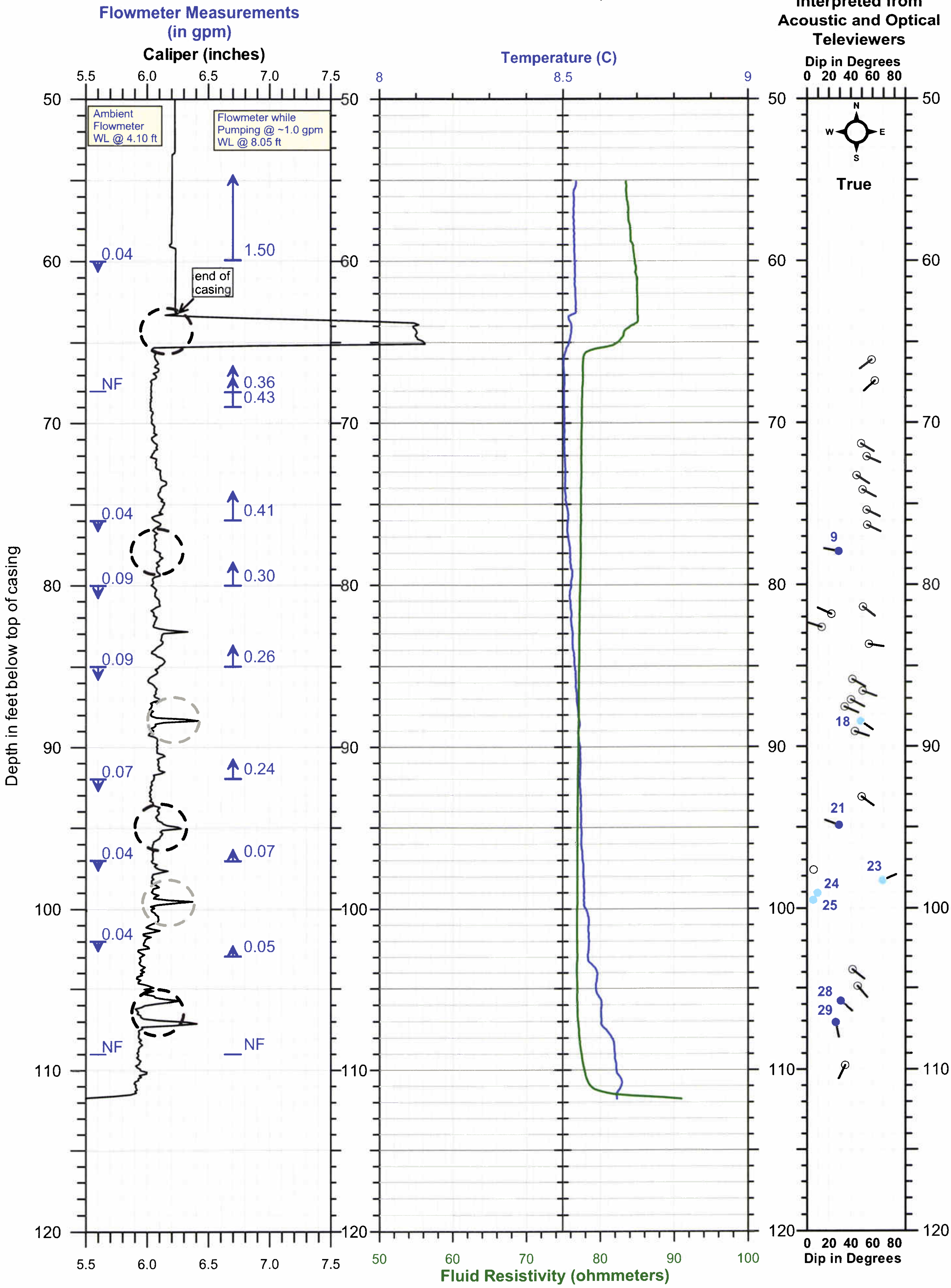
Borehole Geophysical Log
MW-EP-340B
Brunswick NASB
Brunswick, Maine

Tadpole tail indicates dip direction.
The solid tadpoles with a feature number are the ones interpreted to be likely or possibly transmissive.

Northeast Geophysical Services

FIGURE B-1
Borehole Geophysical Log
MW-EP-341B
NASB Site Brunswick, Maine

Date logged: 11/13/08



= Likely transmissive zone

= Possible transmissive zone

Borehole Geophysical Log
MW-EP-341B
NASB Site Brunswick, Maine

Tadpole tail indicates dip direction.
The solid tadpoles with a feature number are the ones interpreted to be likely or possibly transmissive.

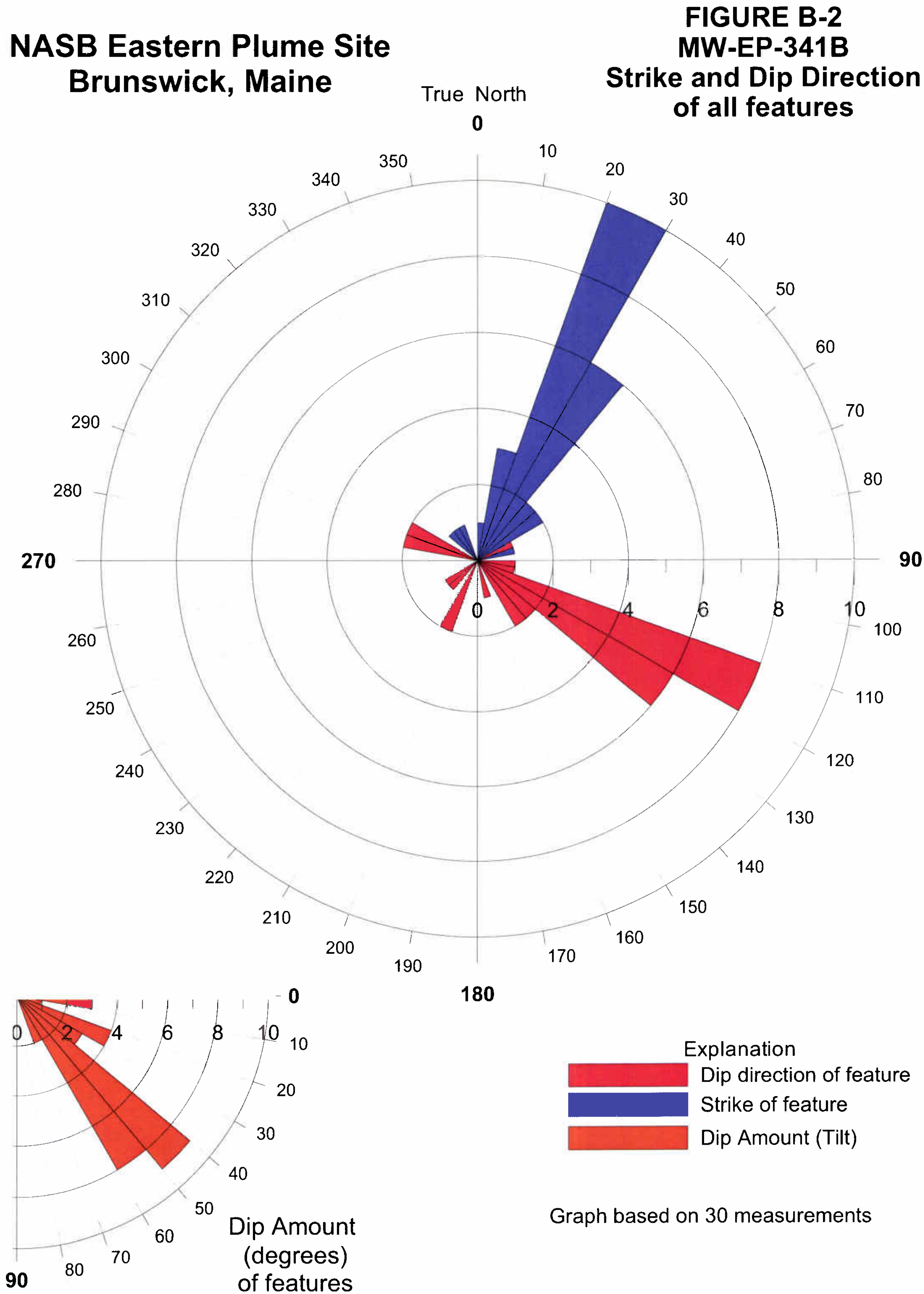

NASB Eastern Plume Site
Brunswick, Maine
FIGURE B-2
MW-EP-341B
Strike and Dip Direction
of all features
True North
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
0
2
4
6
8
10
0
2
4
6
8
10
0
10
20
30
40
50
60
70
80
90
Dip Amount
(degrees)
of features
Explanation
Dip direction of feature
Strike of feature
Dip Amount (Tilt)
Graph based on 30 measurements

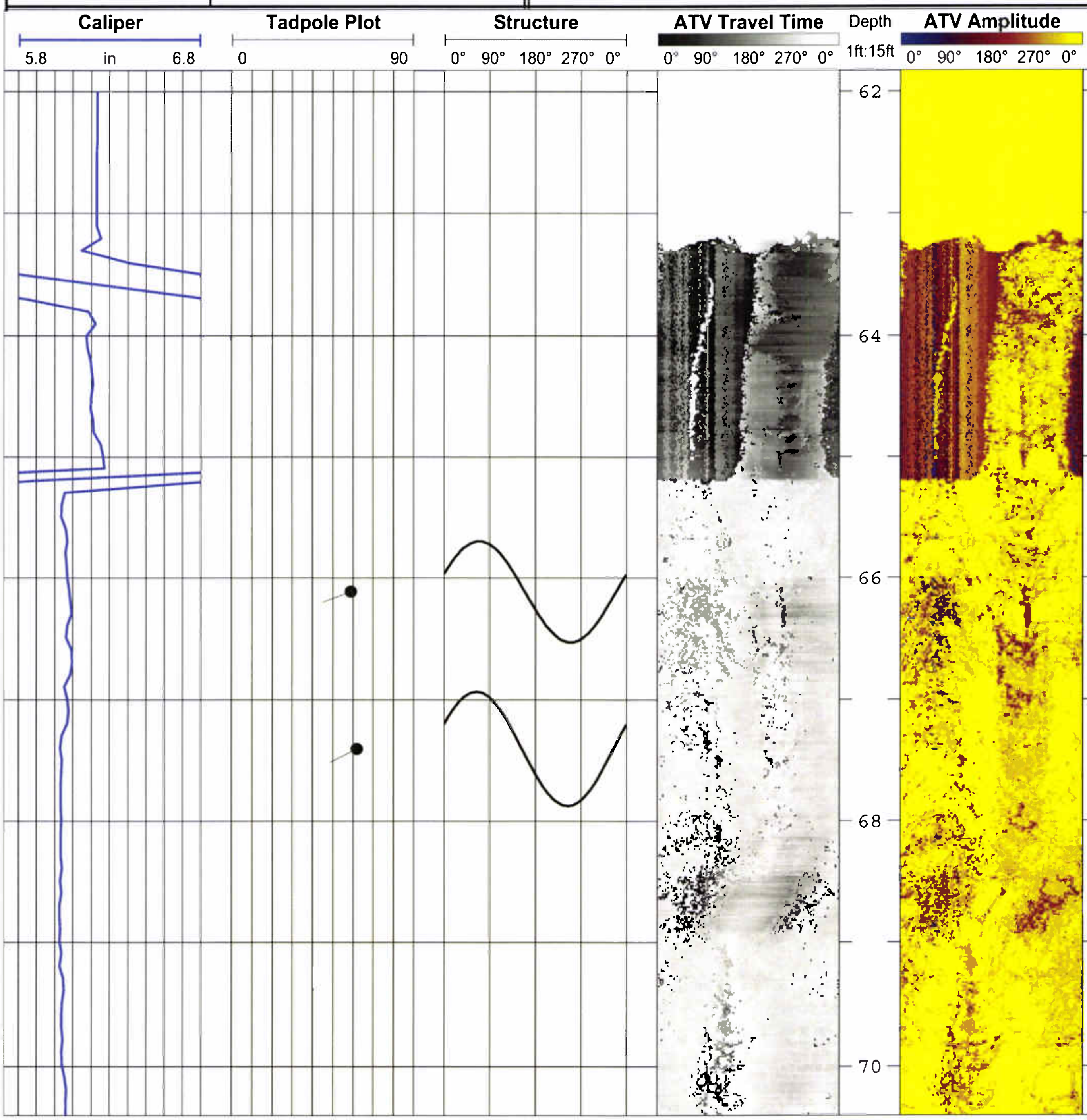
TABLE B-1
Planar features interpreted from acoustical and optical televiewers
MW-EP-341B - NAS Eatern Plume Site - Brunswick, Maine **Logged: 11/13/08**

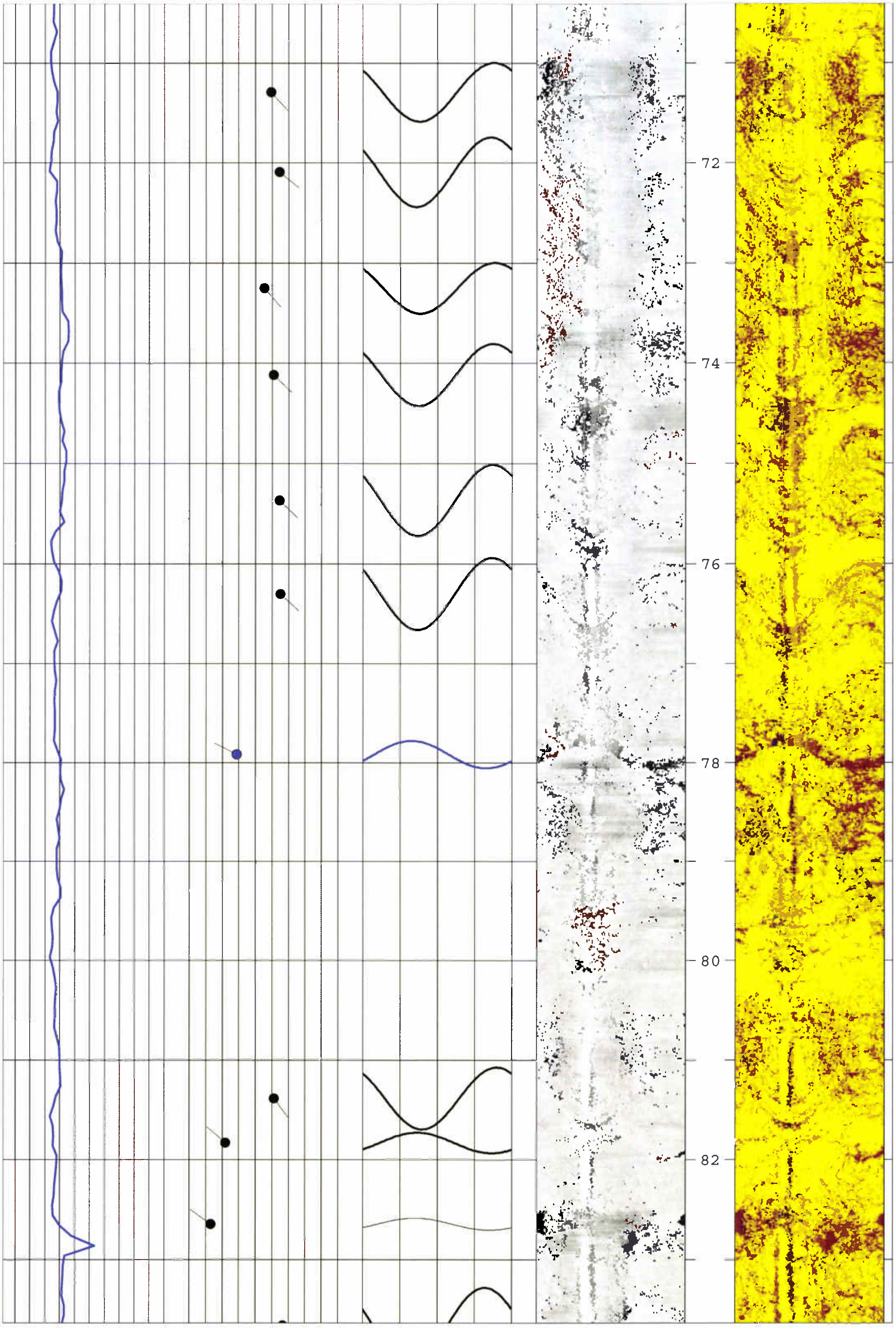
Borehole	Feature # Number	Feature depth Feet	Dip Degrees	Dip Azimuth magnetic	Strike magnetic	Dip Azimuth True	Strike True	Category Type
MW-EP-341	1	66.1	59	249	339	233	323	100
MW-EP-341	2	67.4	62	244	334	228	318	100
MW-EP-341	3	71.3	50	137	47	121	31	100
MW-EP-341	4	72.1	55	129	39	113	23	100
MW-EP-341	5	73.3	46	138	48	122	32	100
MW-EP-341	6	74.1	51	134	44	118	28	100
MW-EP-341	7	75.4	55	133	43	117	27	100
MW-EP-341	8	76.3	55	132	42	116	26	100
MW-EP-341	9	77.9	29	297	27	281	11	107
MW-EP-341	10	81.4	51	143	53	127	37	100
MW-EP-341	11	81.8	22	311	41	294	24	100
MW-EP-341	12	82.6	13	305	35	289	19	100
MW-EP-341	13	83.7	57	115	25	99	9	100
MW-EP-341	14	85.8	41	135	45	119	29	100
MW-EP-341	15	86.5	51	127	37	111	21	100
MW-EP-341	16	87.1	40	134	44	118	28	100
MW-EP-341	17	87.5	34	129	39	113	23	100
MW-EP-341	18	88.4	49	142	52	125	35	108
MW-EP-341	19	89.1	44	125	35	109	19	100
MW-EP-341	20	93.2	50	142	52	126	36	100
MW-EP-341	21	94.9	29	306	36	290	20	107
MW-EP-341	22	97.6	6	161	71	145	55	100
MW-EP-341	23	98.3	69	83	353	66	336	108
MW-EP-341	24	99.1	10	163	73	147	57	108
MW-EP-341	25	99.5	6	220	310	204	294	108
MW-EP-341	26	103.9	42	144	54	127	37	100
MW-EP-341	27	104.9	46	155	65	139	49	100
MW-EP-341	28	105.8	31	147	57	131	41	107
MW-EP-341	29	107.1	26	185	275	169	79	107
MW-EP-341	30	109.7	35	222	312	206	296	100

Explanation (from page 1 of report):

Category 100 = planar feature (possible fracture, joint, foliation, bedding, etc.)
Category 107 = Likely water bearing fracture based upon flowmeter and other geophysical logs
Category 108 = Possible water bearing fracture but less amount of corroborating flowmeter data than 107

Northeast Geophysical Services 4 Union Street Bangor, Maine 04401 Tel: 207-942-2700 email: ngsinc@adelphia.net		**Log:**	**Televiewer and Caliper Logs**
		Well:	**MW-EP-341B**
		Site:	Brunswick NAS
Date:	11/13/08	**Location:**	Brunswick, Maine
Casing Depth:	63 ft	**For:**	Tetra Tech
Casing Type:	6 in steel	**Logged by:**	R Rawcliffe
Boring Depth:	113 ft	**Orientation:**	Magnetic
Meas. From:	top of casing	**Comments:**	Structure & Tadpole Plots: black = planar features (faults, bedding, foliation, etc.) light blue = possibly transmissive fracture dark blue = likely transmissive fracture
Stickup:	1.9 ft		
Water Level:	4.1 ft		

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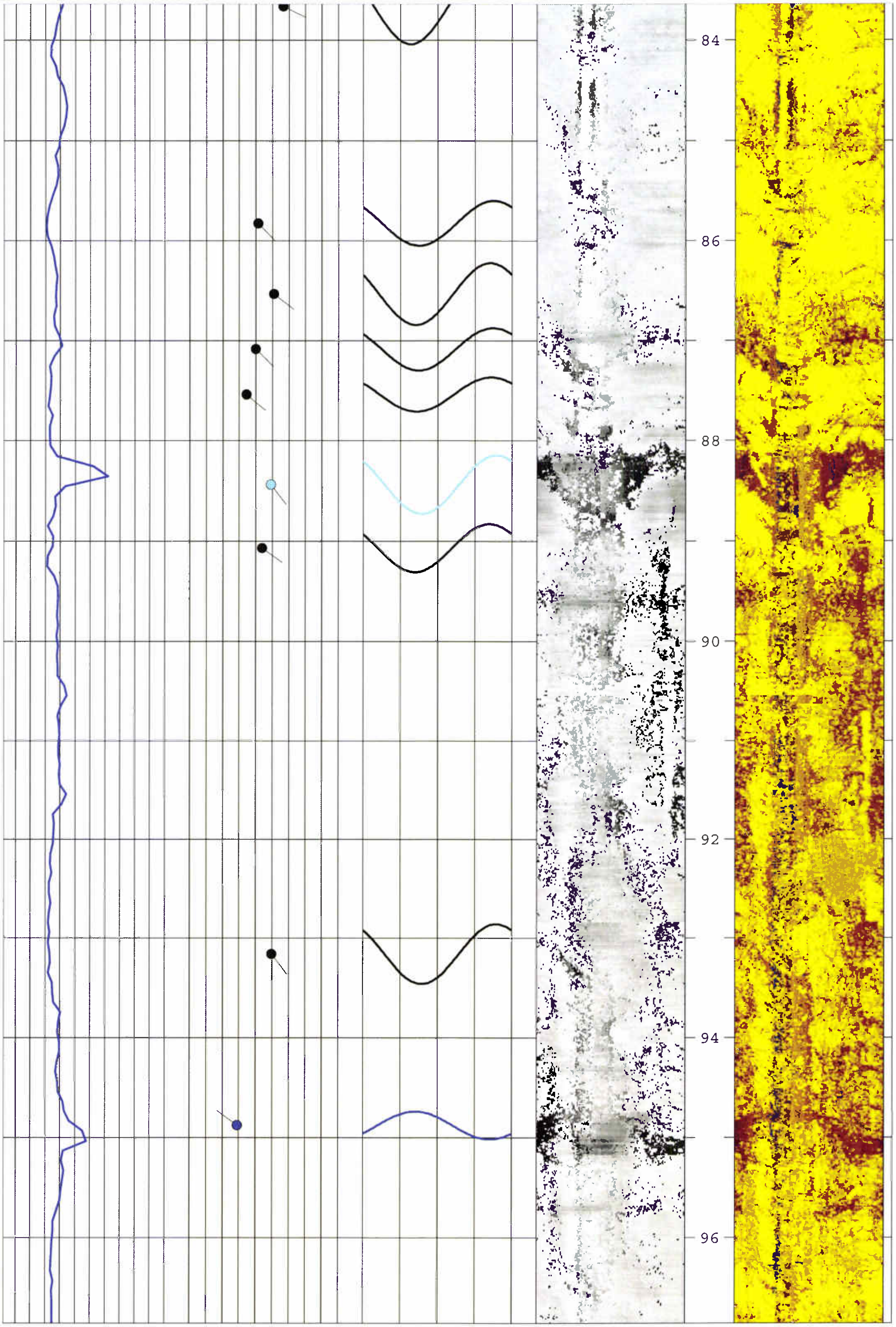
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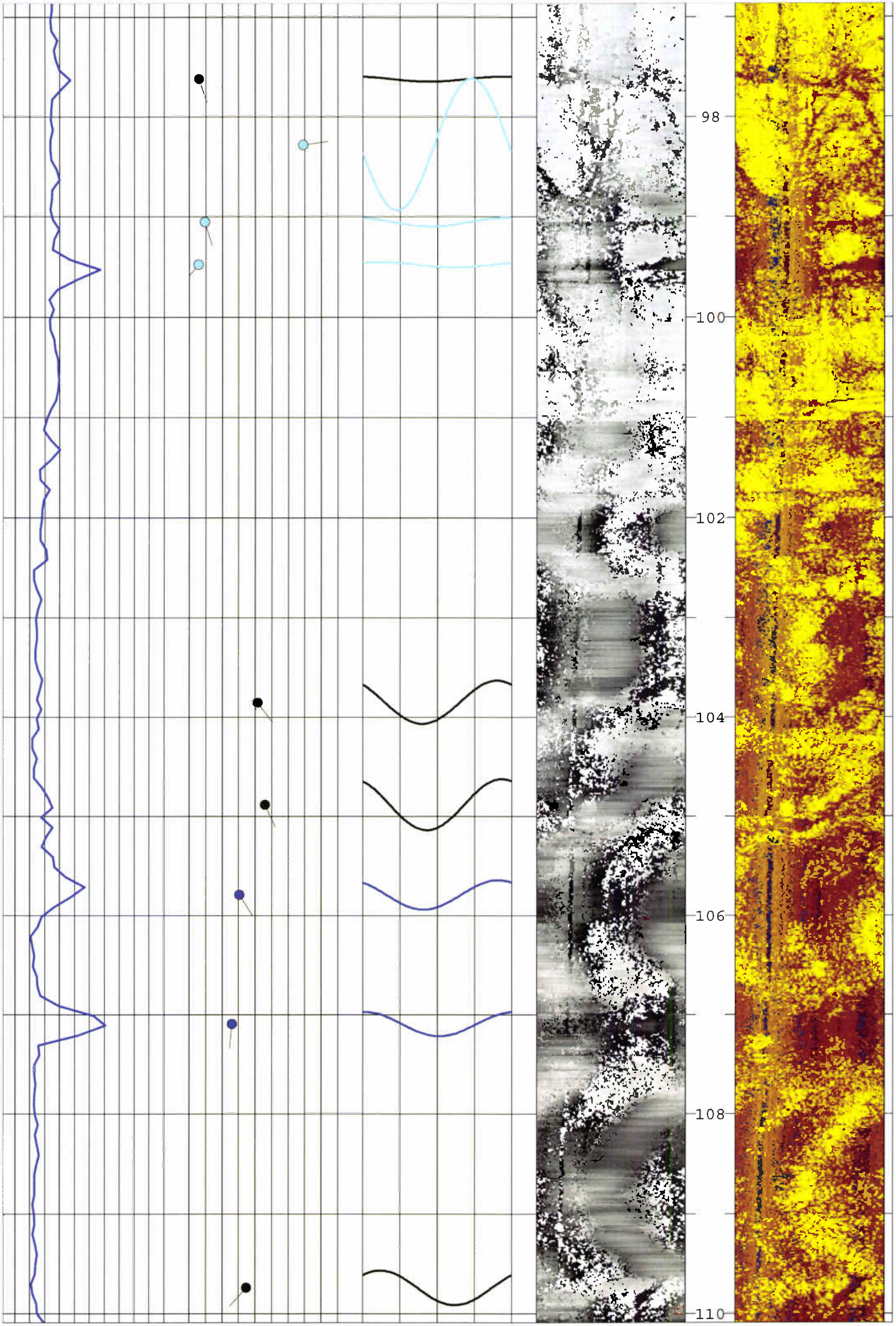
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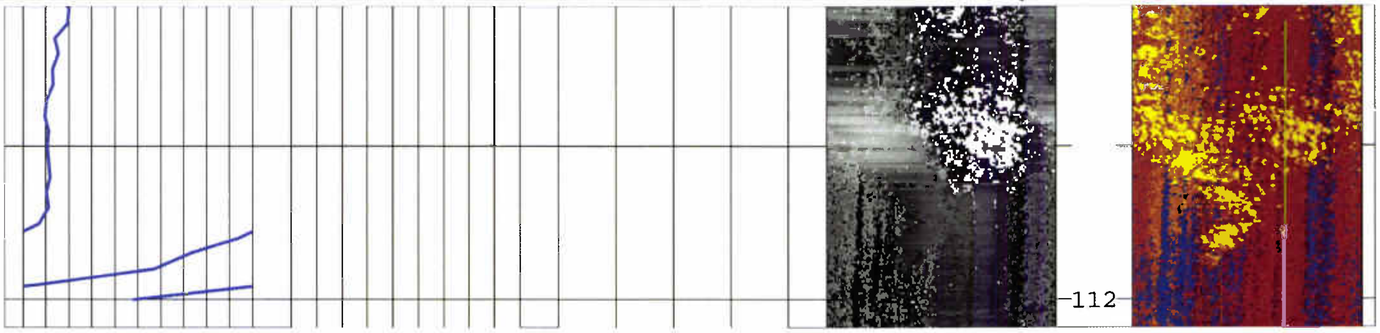
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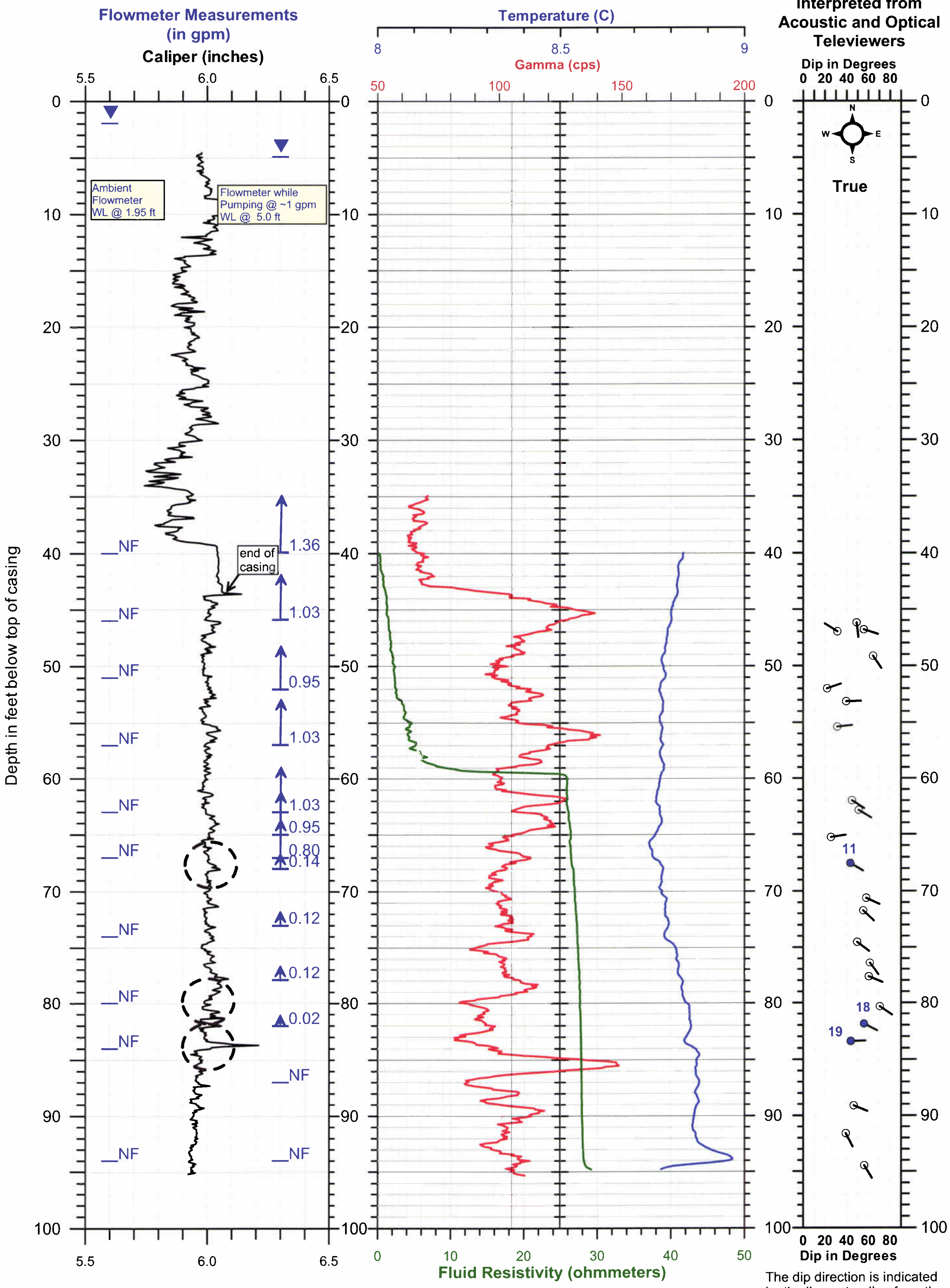
Northeast Geophysical Services

FIGURE C-1
Borehole Geophysical Log
MW-EP-342B
NASB Site Brunswick, Maine

Date logged: 11/24/08



= Likely transmissive zone

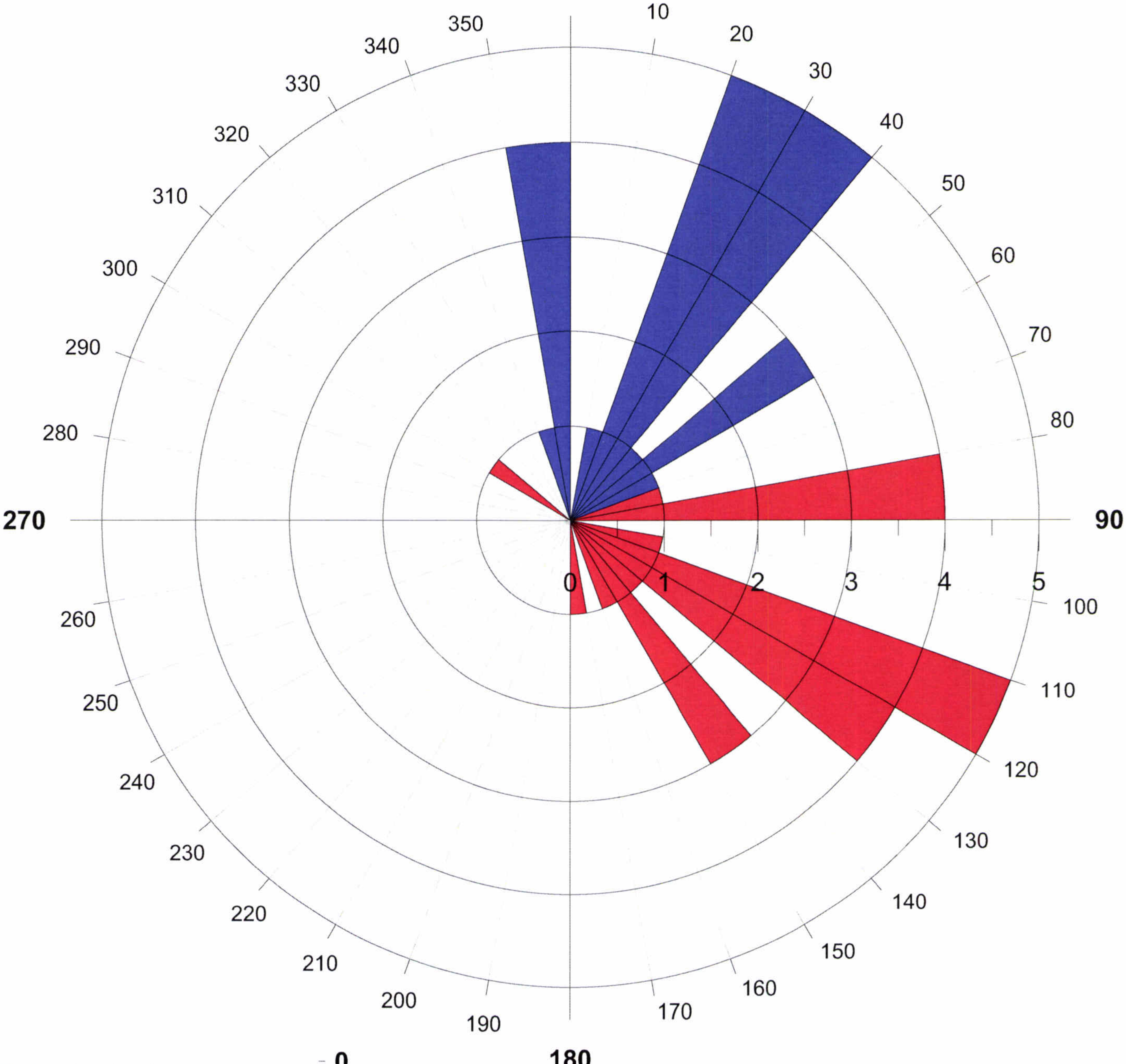
= Possible transmissive zone

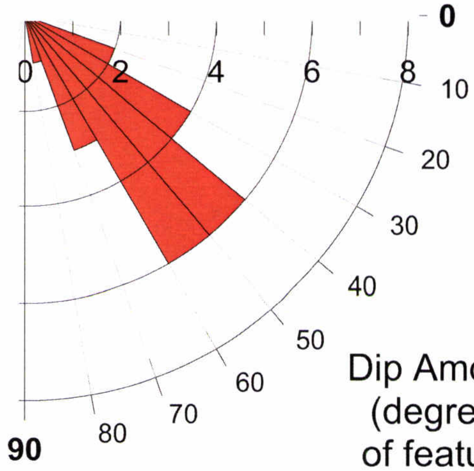
The dip direction is indicated by the line extending from the circle. The strike of the feature is 90 degrees from this.

Borehole Geophysical Log
MW-EP-342B
NASB Site Brunswick, Maine

BNAS Eastern Plume Site
Brunswick, Maine

FIGURE C-2
MW-EP-342
Strike and Dip Direction of all features





Dip Amount (degrees) of features

Explanation
- Dip direction of feature
- Strike of feature
- Dip Amount (Tilt)

Graph based on 22 measurements

TABLE C-1
Planar features interpreted from acoustical and optical televiewers
MW-EP-342B - NAS Eatern Plume Site - Brunswick, Maine **Logged: 11/24/08**

Borehole	Feature # Number	Feature depth Feet	Dip Degrees	Dip Azimuth magnetic	Strike magnetic	Dip Azimuth True	Strike True	Category Type
MW-EP-342	1	46.2	49	189	279	173	83	100
MW-EP-342	2	46.8	56	124	34	108	18	100
MW-EP-342	3	47.0	31	318	48	302	32	100
MW-EP-342	4	49.1	64	163	73	146	56	100
MW-EP-342	5	52.0	22	88	358	71	341	100
MW-EP-342	6	53.1	40	104	14	88	358	100
MW-EP-342	7	55.4	31	100	10	84	354	100
MW-EP-342	8	62.0	45	140	50	123	33	100
MW-EP-342	9	62.9	51	138	48	121	31	100
MW-EP-342	10	65.3	26	97	7	81	351	100
MW-EP-342	11	67.5	43	136	46	120	30	107
MW-EP-342	12	70.6	58	132	42	115	25	100
MW-EP-342	13	71.7	55	150	60	133	43	100
MW-EP-342	14	74.5	50	143	53	127	37	100
MW-EP-342	15	76.4	61	161	71	145	55	100
MW-EP-342	16	77.7	60	129	39	113	23	100
MW-EP-342	17	80.4	70	141	51	124	34	100
MW-EP-342	18	81.9	56	133	43	117	27	107
MW-EP-342	19	83.4	44	104	14	88	358	107
MW-EP-342	20	89.1	46	129	39	113	23	100
MW-EP-342	21	91.6	39	169	79	153	63	100
MW-EP-342	22	94.5	56	165	75	149	59	100

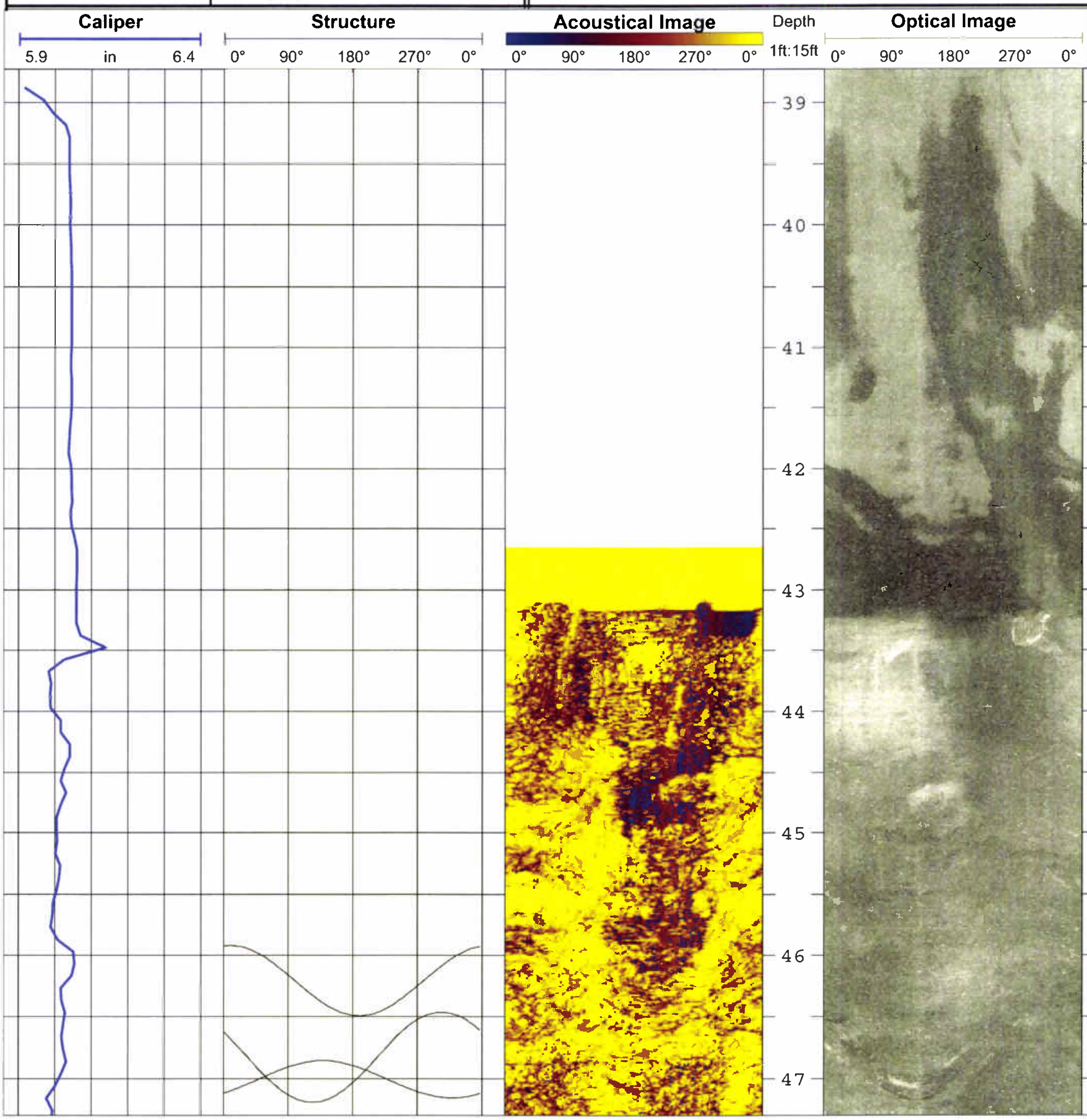
Explanation (from page 1 of report):

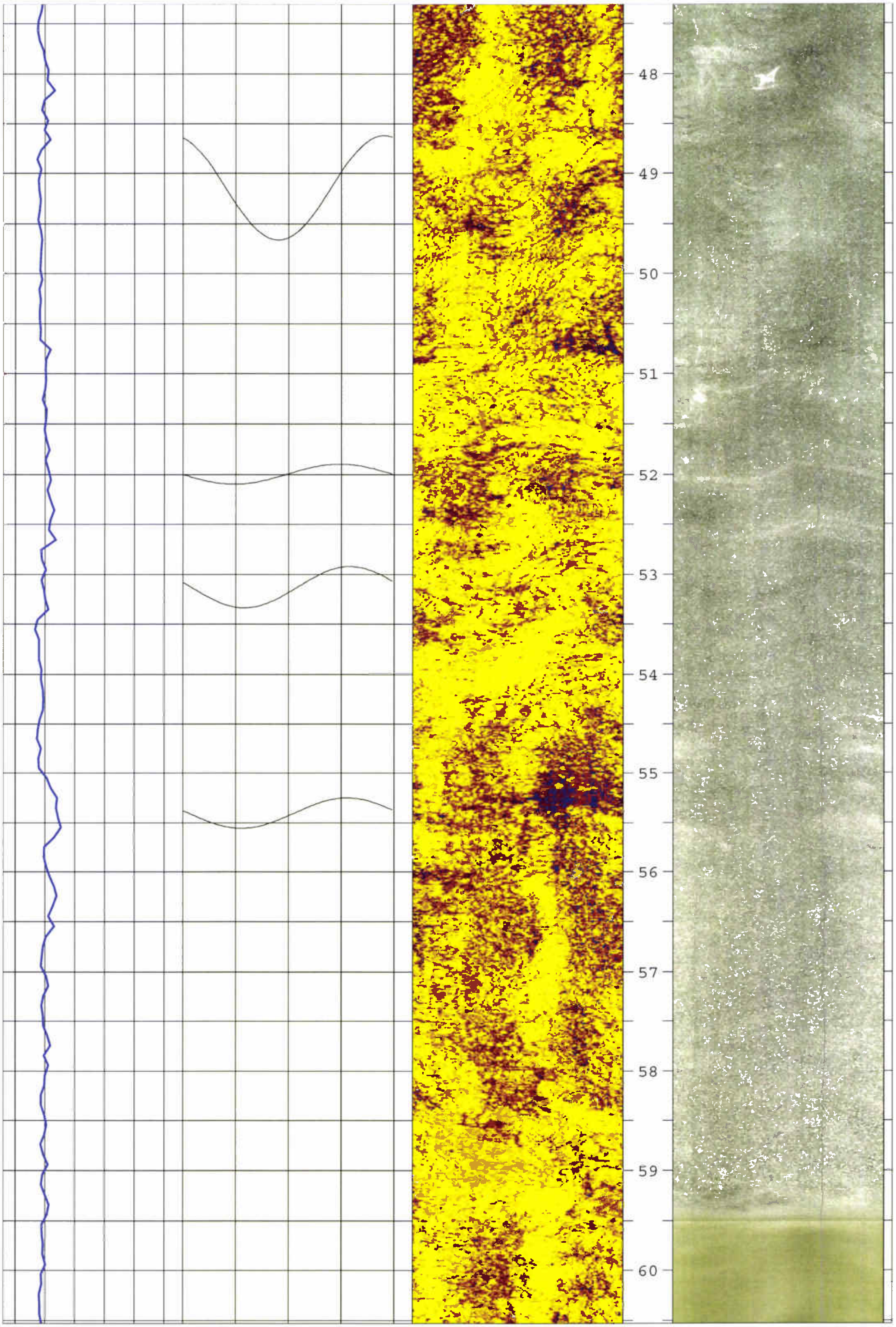
Category 100 = planar feature (possible fracture, joint, foliation, bedding, etc.)
Category 107 = Likely water bearing fracture based upon flowmeter and other geophysical logs
Category 108 = Possible water bearing fracture but less amount of corroborating flowmeter data than 107

Northeast Geophysical Services
4 Union Street Bangor, Maine 04401
Tel: 207-942-2700 email: ngsinc@adelphia.net

Log:	**Caliper and Televiewer Logs**
Well:	**MW-EP-342B**
Site:	NAS Site
Date:	11/24/08
Location:	Brunswick, Maine
Casing Depth:	43.2 ft
Casing Type:	6 in steel
Boring Depth:	96.4 ft
Meas. From:	top of casing
Stickup:	1.9 ft
Water Level:	1.95 ft
For:	Tetra Tech
Logged by:	R. Rawcliffe
Orientation:	Magnetic

Comments:
Structure Plots:
black = planar features (faults, bedding, foliation, etc.)
light blue = possibly transmissive fracture
dark blue = likely transmissive fracture

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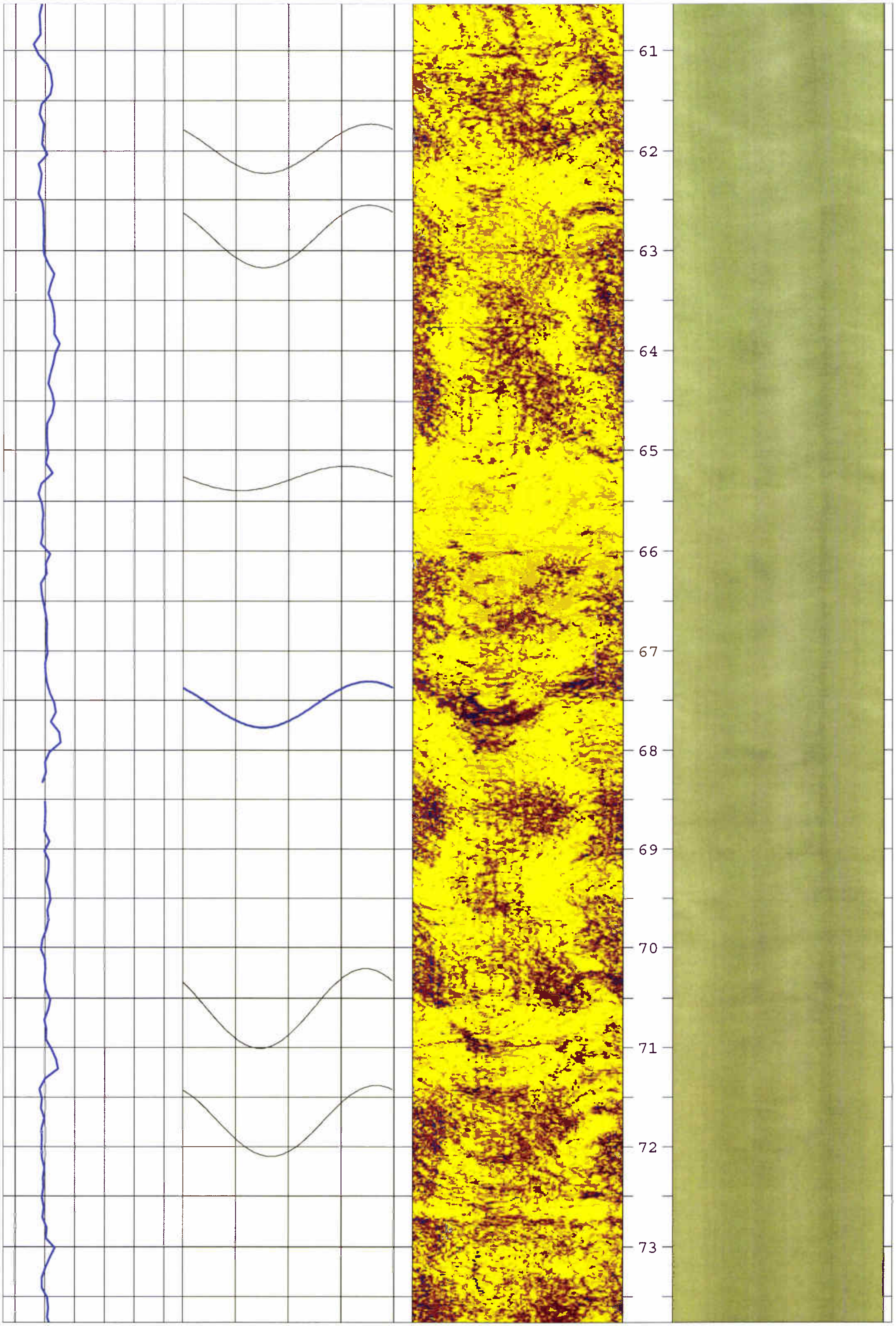
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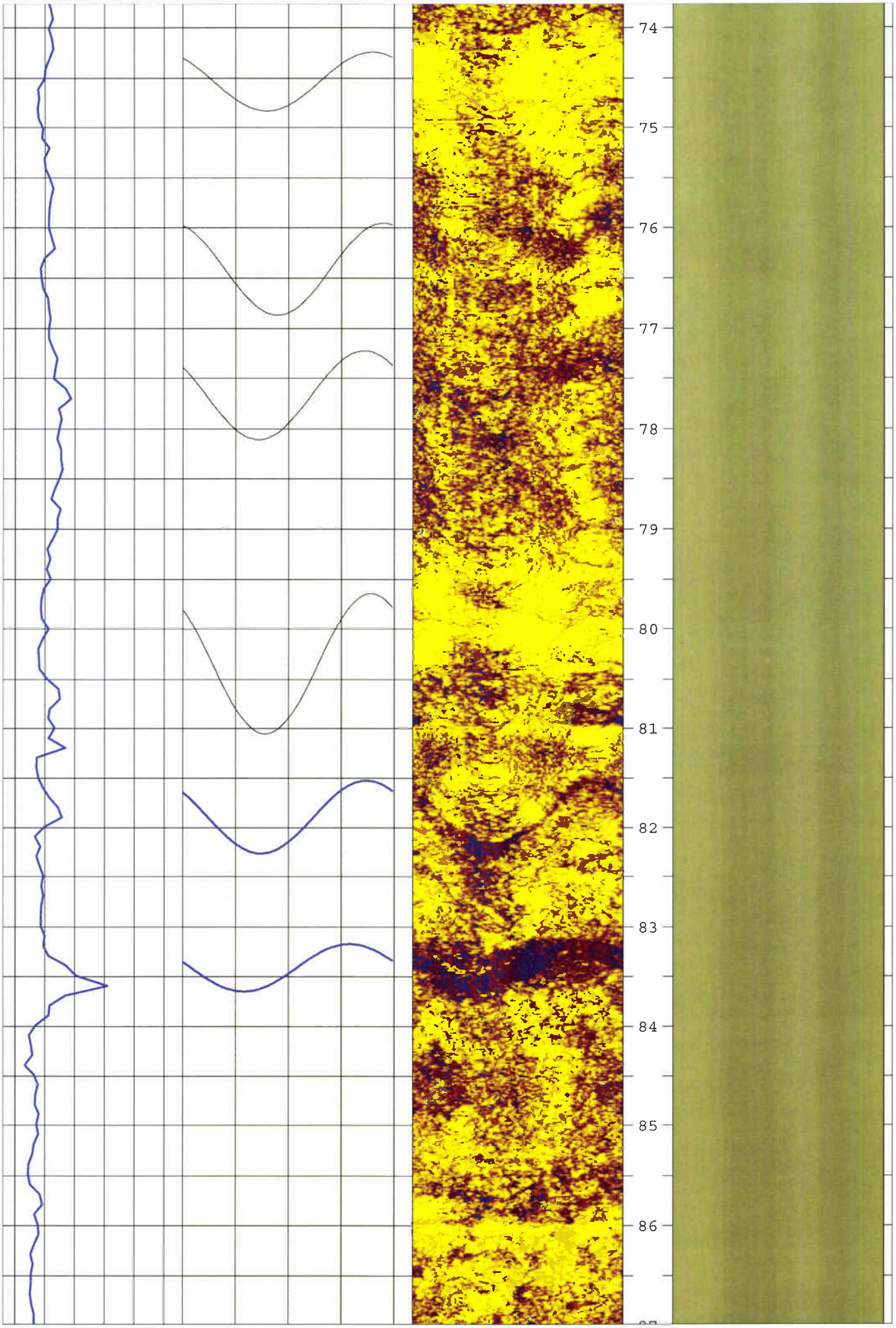
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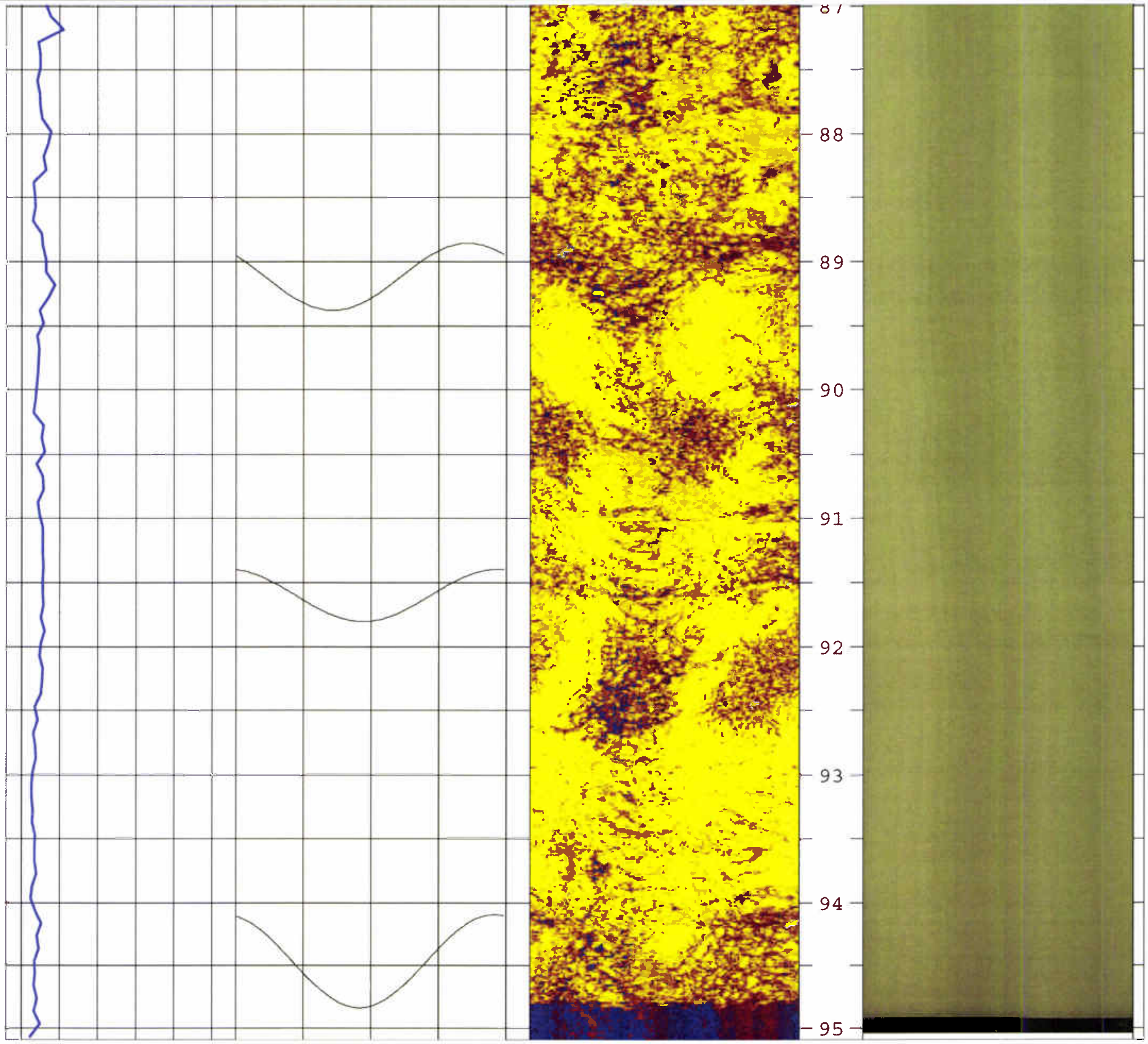
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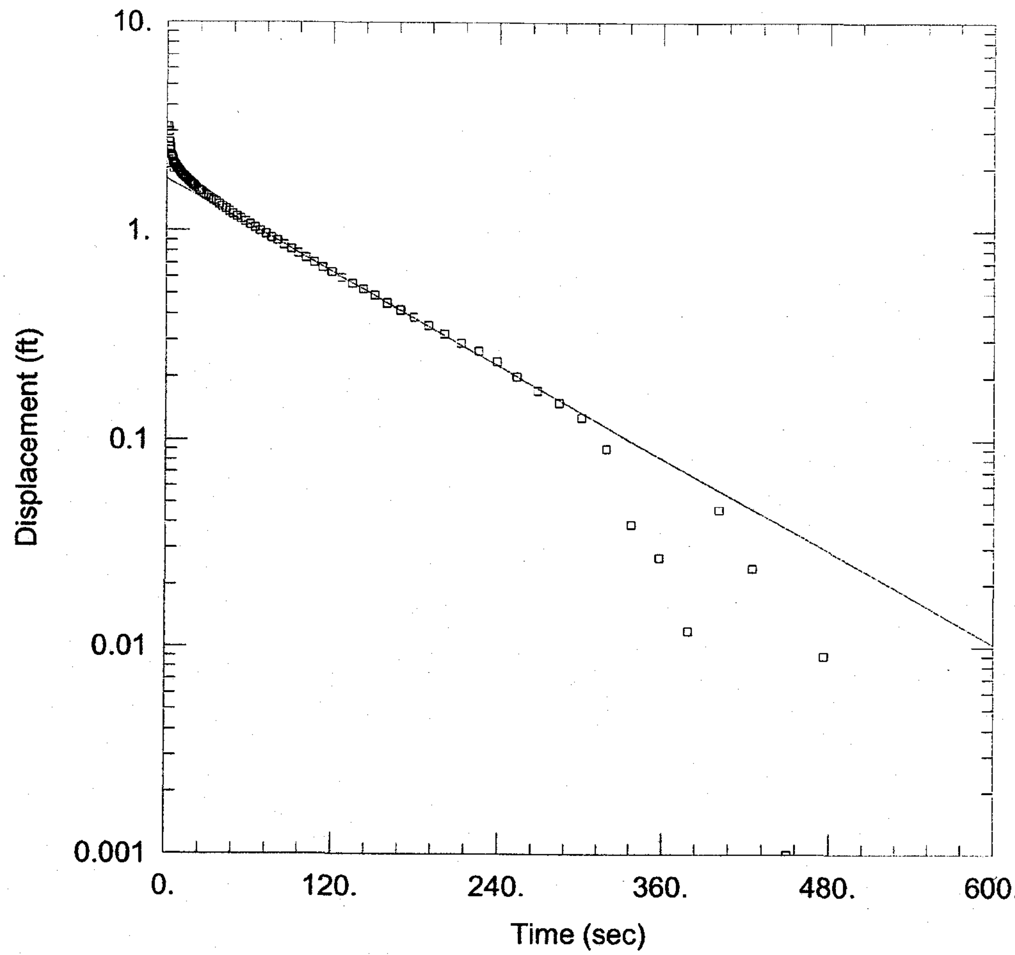
APPENDIX A-7
HYDRAULIC CONDUCTIVITY
GRAPHS and CALCULATIONS



WELL TEST ANALYSIS

Data Set: C:\Tetratech Folders\1-4 dioxane site\Slug Tests\MW-EP-340S.aqt
Date: 09/20/09 Time: 13:32:47

AQUIFER DATA

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 0.1

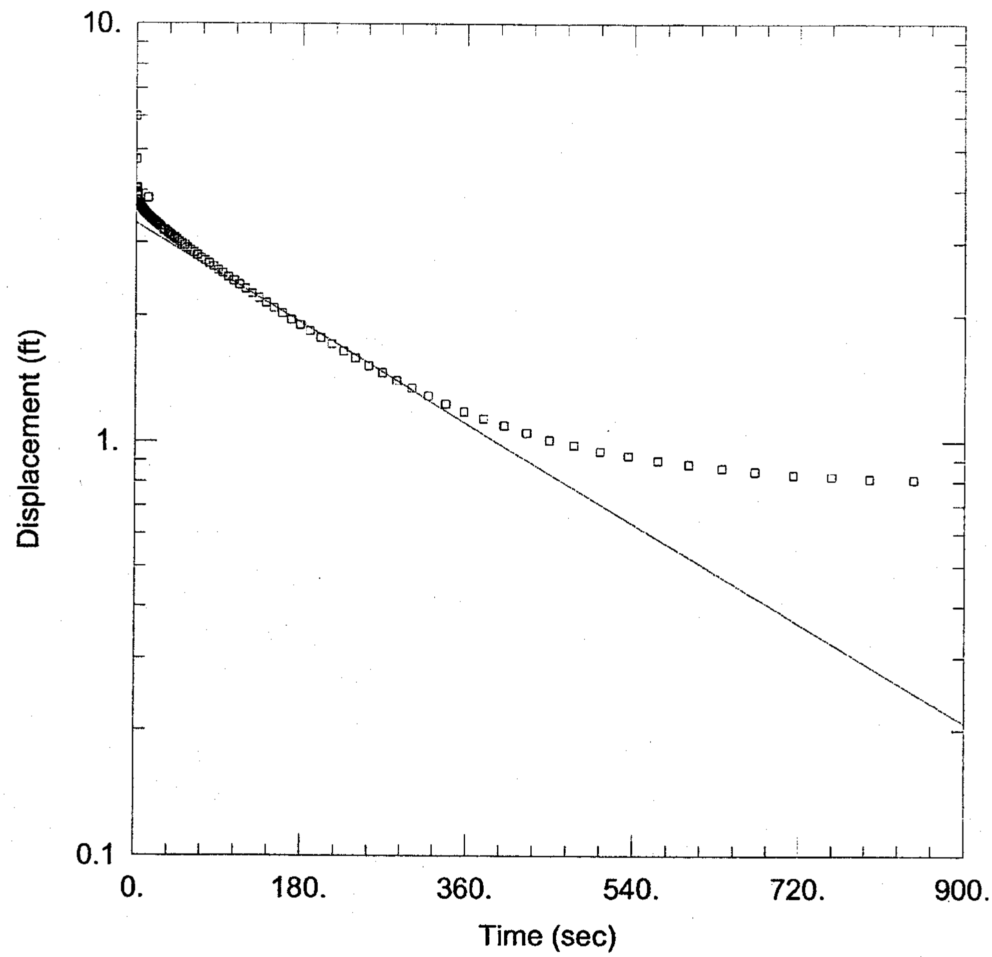
WELL DATA (MW-EP-340S)

Initial Displacement: 3.15 ft
Total Well Penetration Depth: 57.28 ft
Casing Radius: 0.042 ft
Static Water Column Height: 57.28 ft
Screen Length: 10. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 9.68E-5 cm/sec y0 = 1.776 ft



WELL TEST ANALYSIS

Data Set: C:\Tetratech Folders\1-4 dioxane site\Slug Tests\MW-EP-340B1.aqt
Date: 09/16/09 Time: 18:48:45

AQUIFER DATA

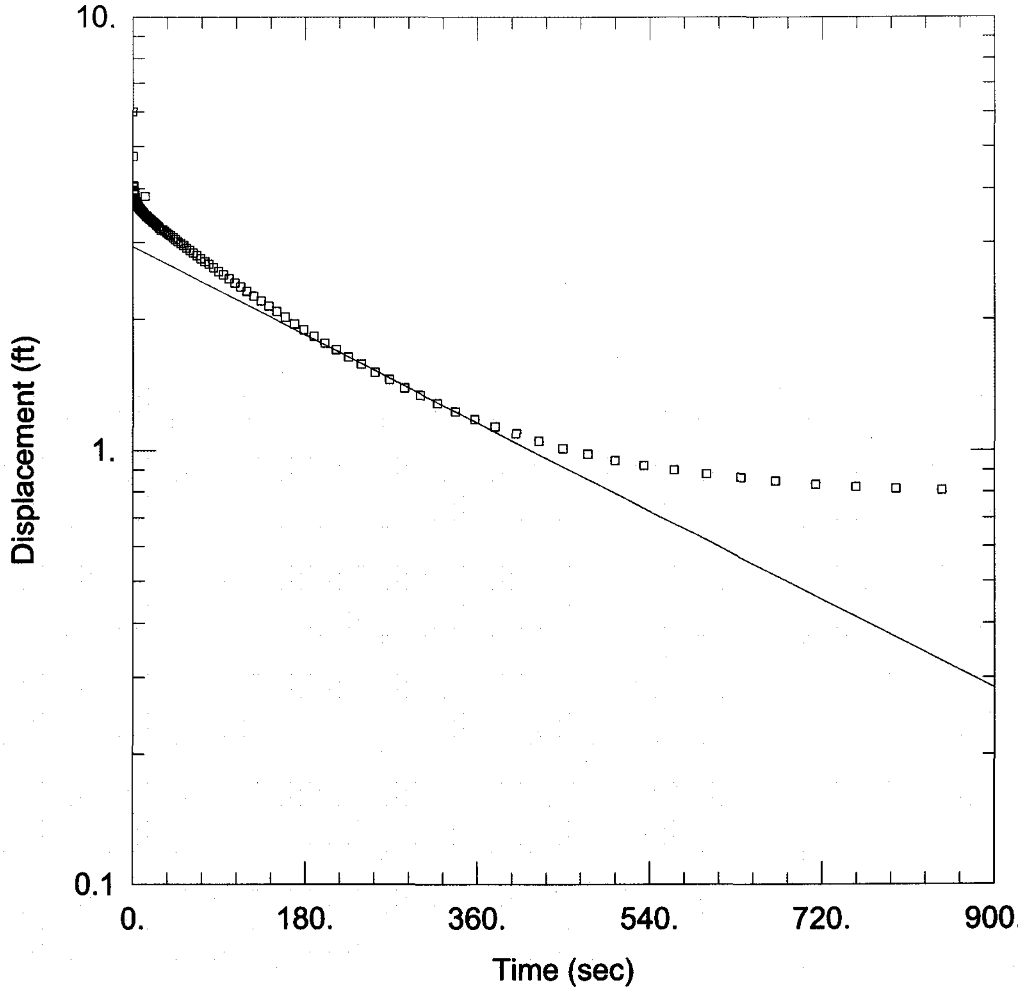
Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-EP-340B1)

Initial Displacement: 11.74 ft
Total Well Penetration Depth: 71.64 ft
Casing Radius: 0.042 ft
Static Water Column Height: 71.64 ft
Screen Length: 5. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 5.978E-5 cm/sec
y0 = 3.339 ft



WELL TEST ANALYSIS

Data Set: C:\Tetratech Folders\1-4 dioxane site\Slug Tests\MW-EP-340B1 Hvorslev.aqt
Date: 09/16/09 Time: 18:47:12

AQUIFER DATA

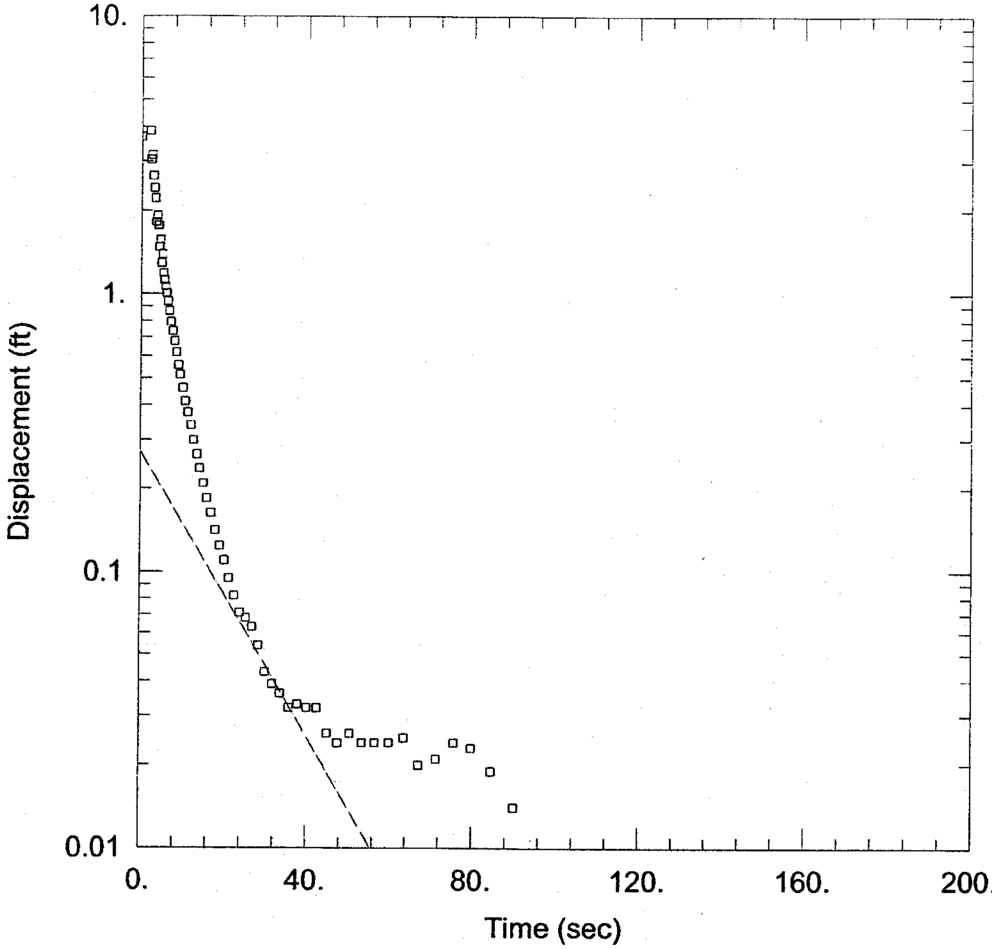
Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-EP-340B1)

Initial Displacement: 11.74 ft
Total Well Penetration Depth: 71.64 ft
Casing Radius: 0.042 ft
Static Water Column Height: 71.64 ft
Screen Length: 5. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
K = 7.387E-5 cm/sec
y0 = 2.938 ft



WELL TEST ANALYSIS

Data Set: C:\Tetratech Folders\1-4 dioxane site\Slug Tests\MW-EP-341S.aqt
Date: 09/20/09 Time: 14:10:50

AQUIFER DATA

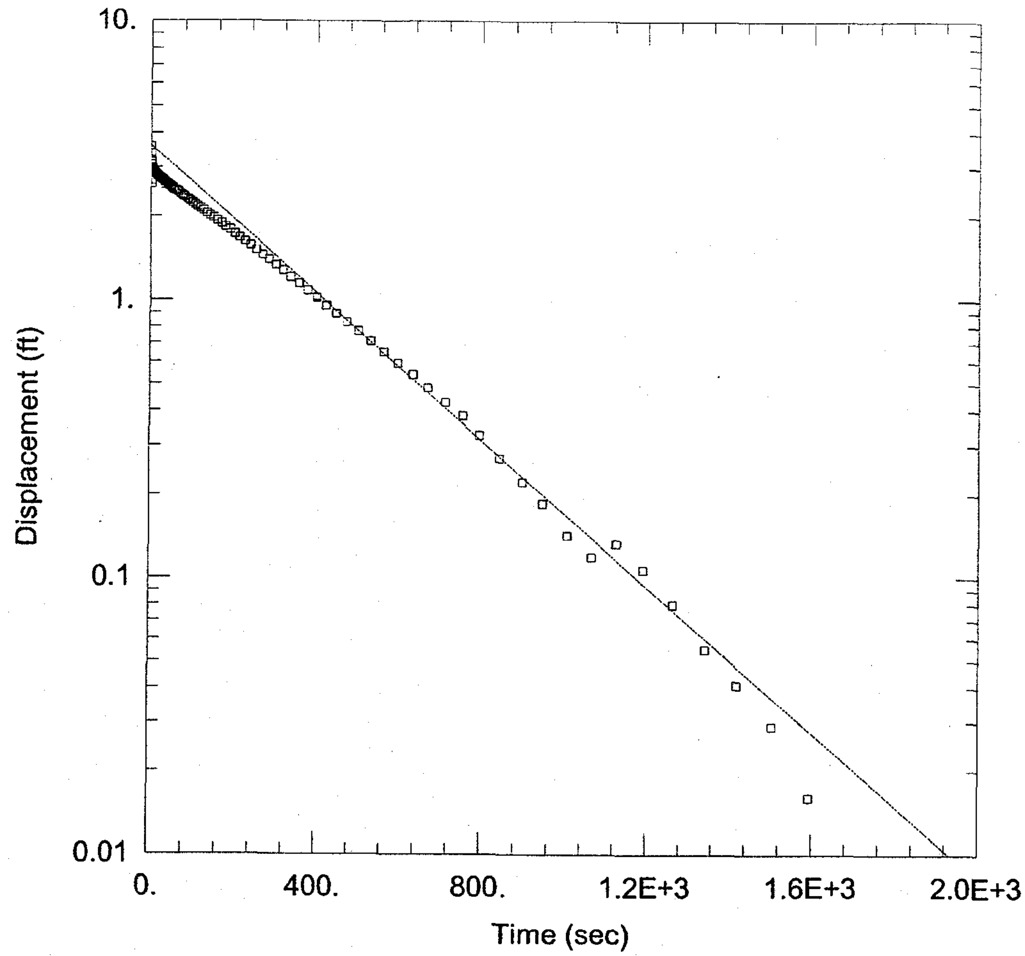
Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-EP-341S)

Initial Displacement: 3.678 ft
Total Well Penetration Depth: 50.9 ft
Casing Radius: 0.042 ft
Static Water Column Height: 51.32 ft
Screen Length: 10. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0006599 cm/sec
y0 = 0.2726 ft



WELL TEST ANALYSIS

Data Set: C:\Tetratech Folders\1-4 dioxane site\Slug Tests\MW-EP-341B1.aqt
Date: 09/16/09 Time: 18:57:38

AQUIFER DATA

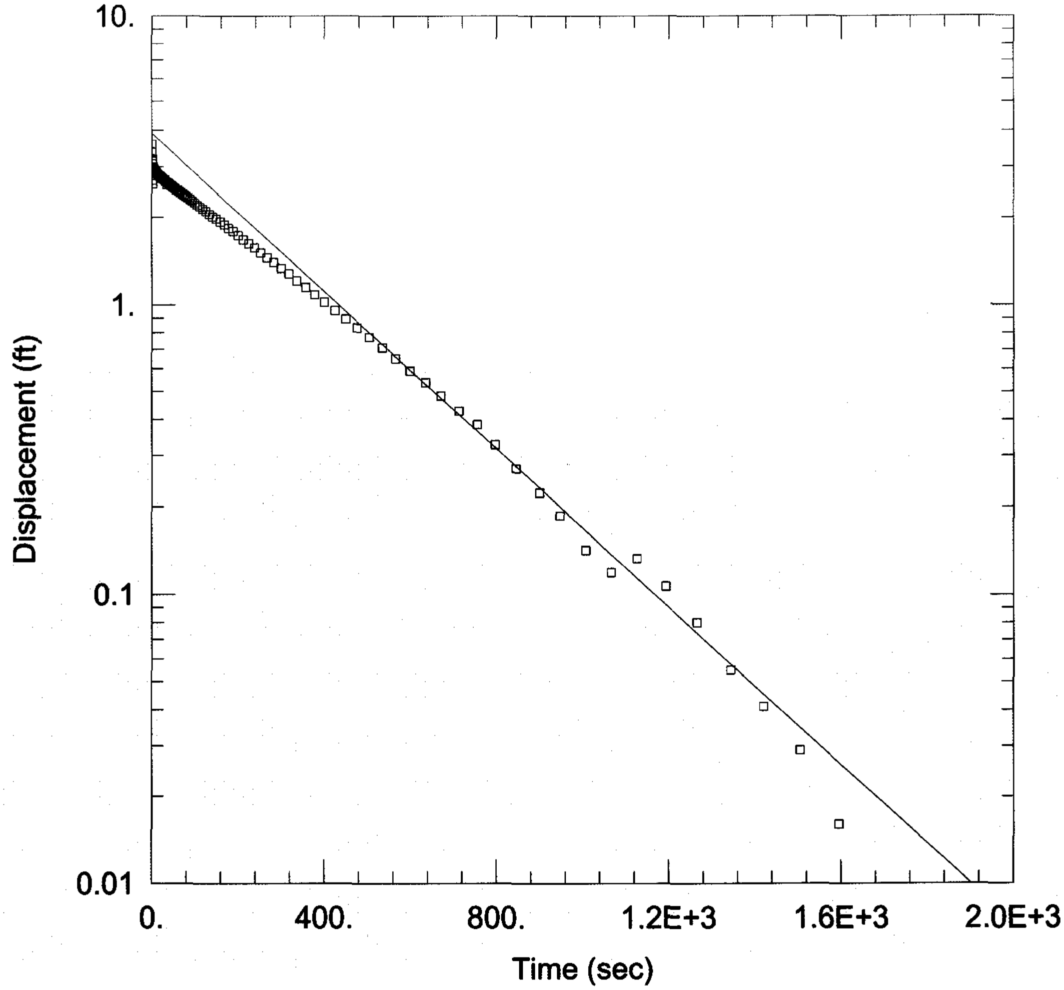
Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-EP-341B1)

Initial Displacement: 10.95 ft
Total Well Penetration Depth: 76.45 ft
Casing Radius: 0.042 ft
Static Water Column Height: 76.45 ft
Screen Length: 5. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 5.942E-5 cm/sec
y0 = 3.572 ft



WELL TEST ANALYSIS

Data Set: C:\Tetratech Folders\1-4 dioxane site\Slug Tests\MW-EP-341B1Hvorslev.aqt
Date: 09/16/09 Time: 18:58:44

AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 0.1

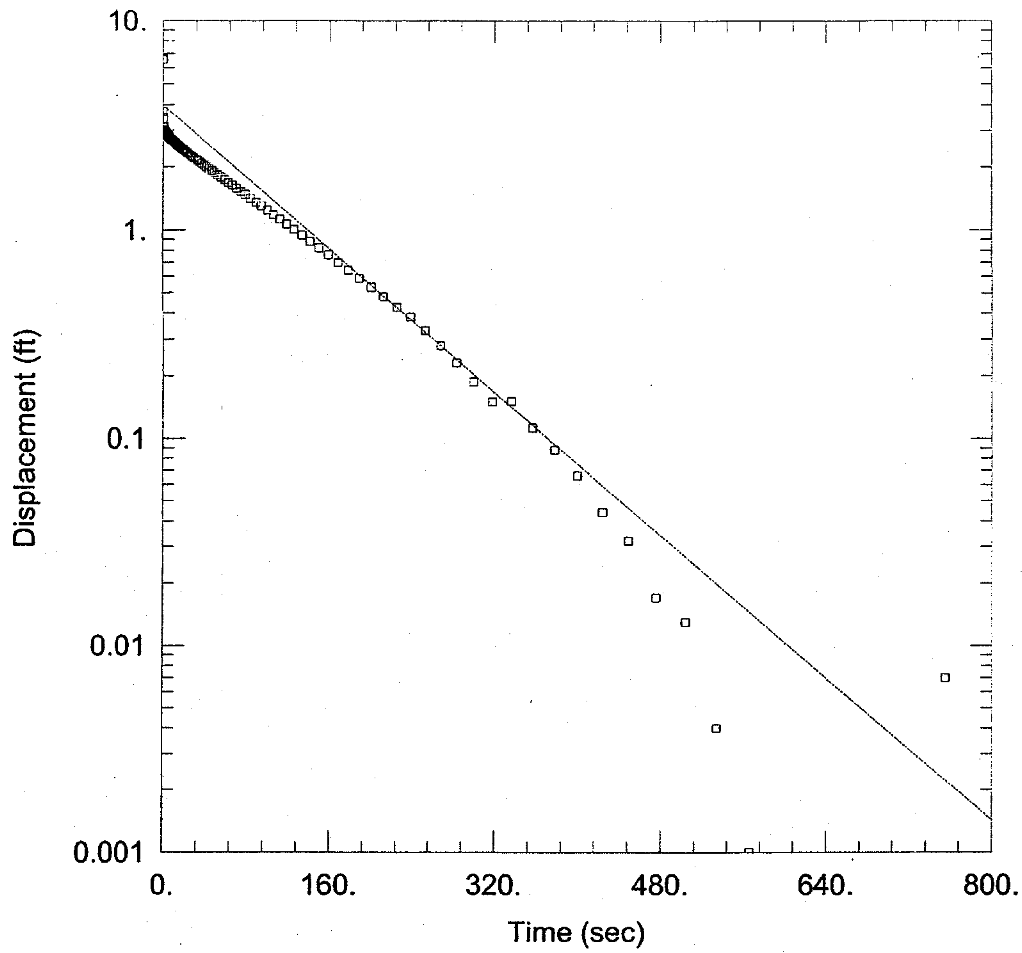
WELL DATA (MW-EP-341B1)

Initial Displacement: 10.95 ft
Total Well Penetration Depth: 76.45 ft
Casing Radius: 0.042 ft
Static Water Column Height: 76.45 ft
Screen Length: 5. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Confined Solution Method: Hvorslev

K = 8.93E-5 cm/sec y0 = 3.891 ft



WELL TEST ANALYSIS

Data Set: C:\Tetratech Folders\1-4 dioxane site\Slug Tests\MW-EP-341B2.aqt
Date: 09/16/09 Time: 19:01:46

AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 0.1

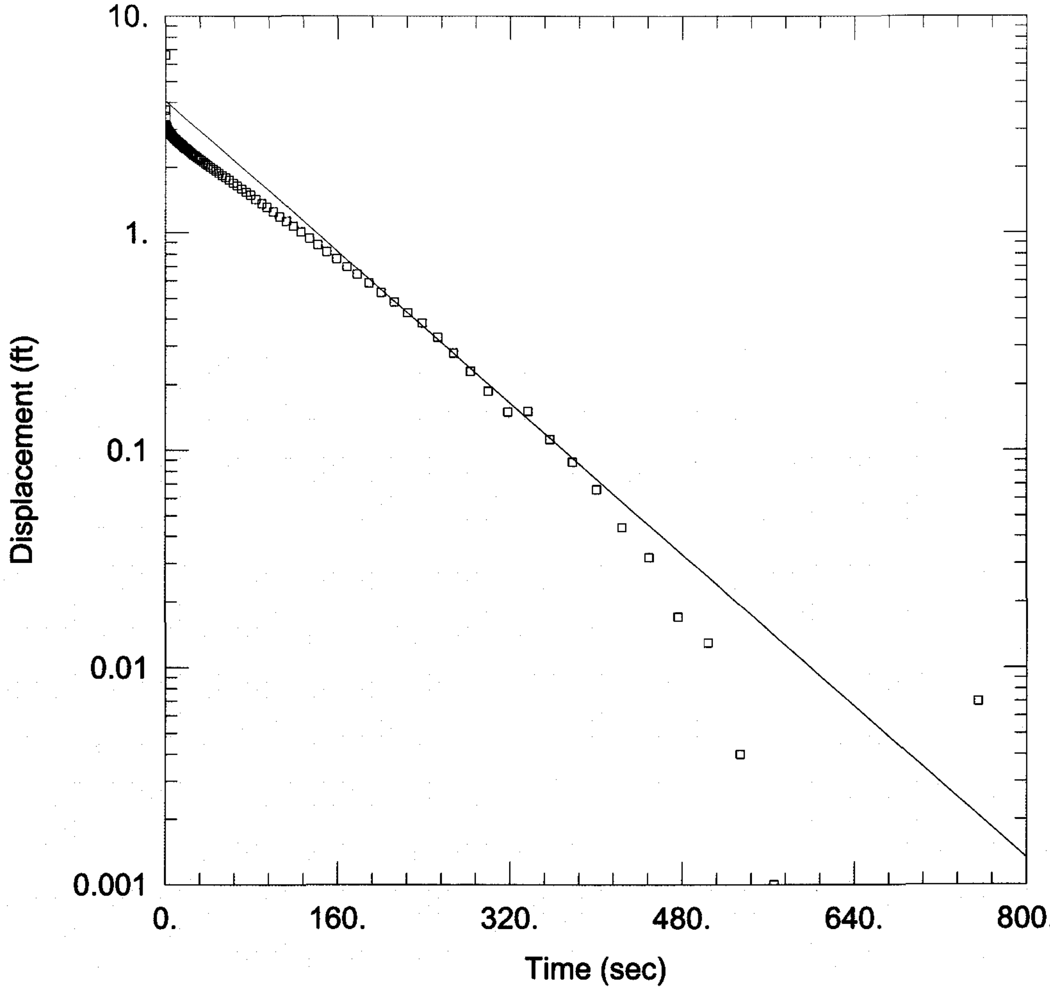
WELL DATA (MW-EP-341B2)

Initial Displacement: 6.589 ft
Total Well Penetration Depth: 91.43 ft
Casing Radius: 0.042 ft
Static Water Column Height: 91.43 ft
Screen Length: 5. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 0.0001978 cm/sec y0 = 3.956 ft



WELL TEST ANALYSIS

Data Set: C:\Tetratech Folders\1-4 dioxane site\Slug Tests\MW-EP-341B2Hvorslev.aqt
Date: 09/16/09 Time: 19:03:03

AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 0.1

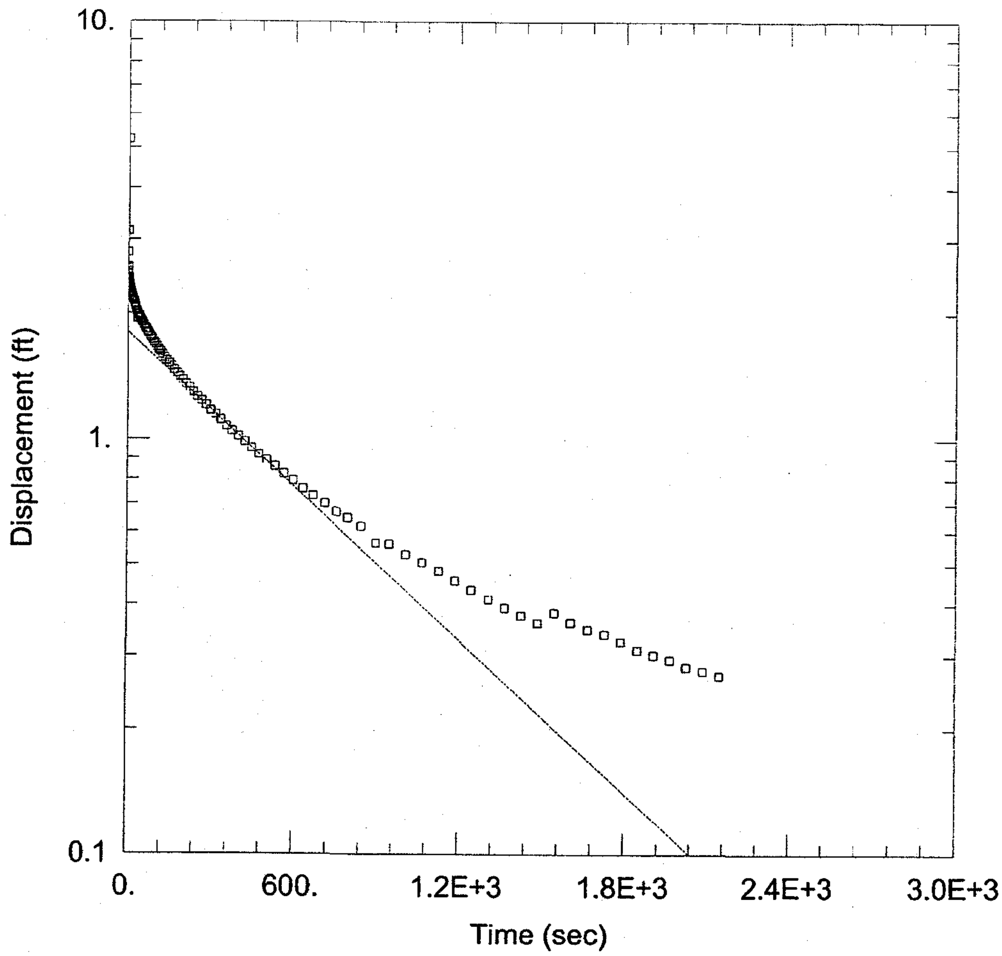
WELL DATA (MW-EP-341B2)

Initial Displacement: 6.589 ft
Total Well Penetration Depth: 91.43 ft
Casing Radius: 0.042 ft
Static Water Column Height: 91.43 ft
Screen Length: 5. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Confined Solution Method: Hvorslev

K = 0.0002856 cm/sec y0 = 4.074 ft



WELL TEST ANALYSIS

Data Set: C:\Tetratech Folders\1-4 dioxane site\Slug Tests\MW-EP-342S.aqt
Date: 09/20/09 Time: 14:13:33

AQUIFER DATA

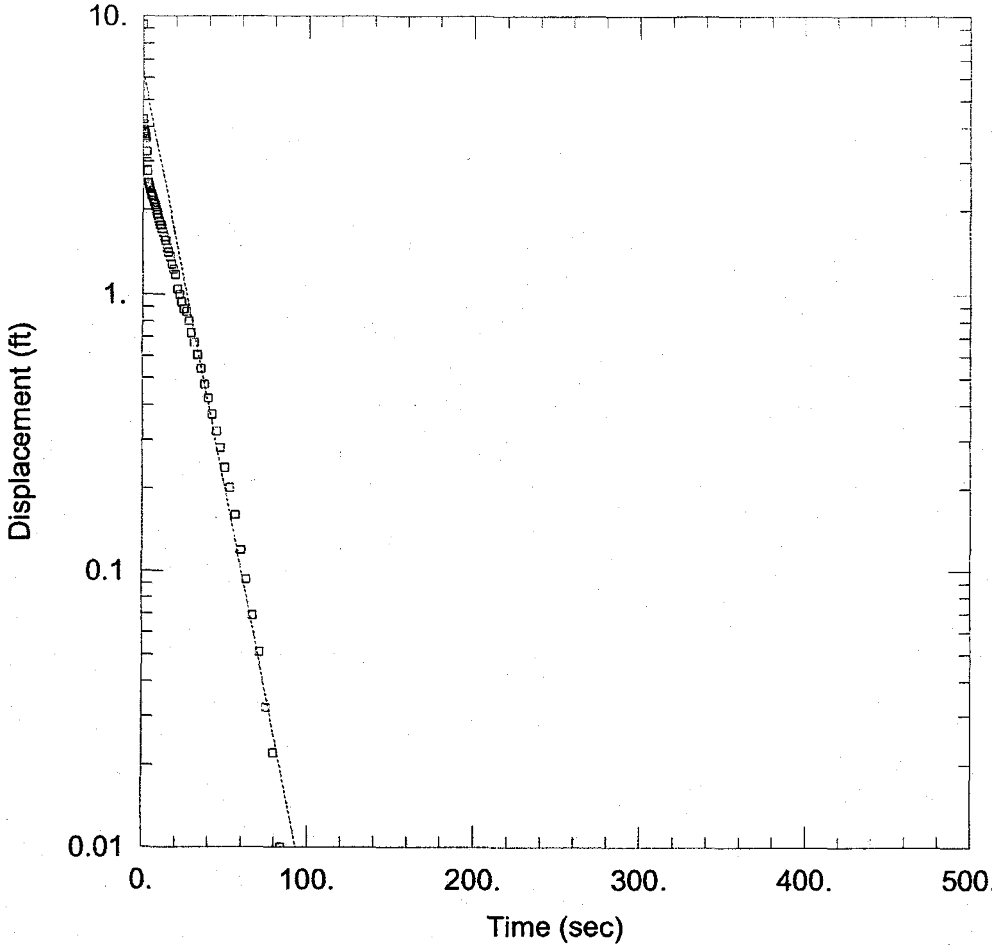
Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-EP-342S)

Initial Displacement: 5.241 ft
Total Well Penetration Depth: 40.15 ft
Casing Radius: 0.042 ft
Static Water Column Height: 40.15 ft
Screen Length: 10. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 1.521E-5 cm/sec
y0 = 1.802 ft



WELL TEST ANALYSIS

Data Set: C:\Tetratech Folders\1-4 dioxane site\Slug Tests\MW-EP-342B1.aqt
Date: 09/16/09 Time: 19:06:59

AQUIFER DATA

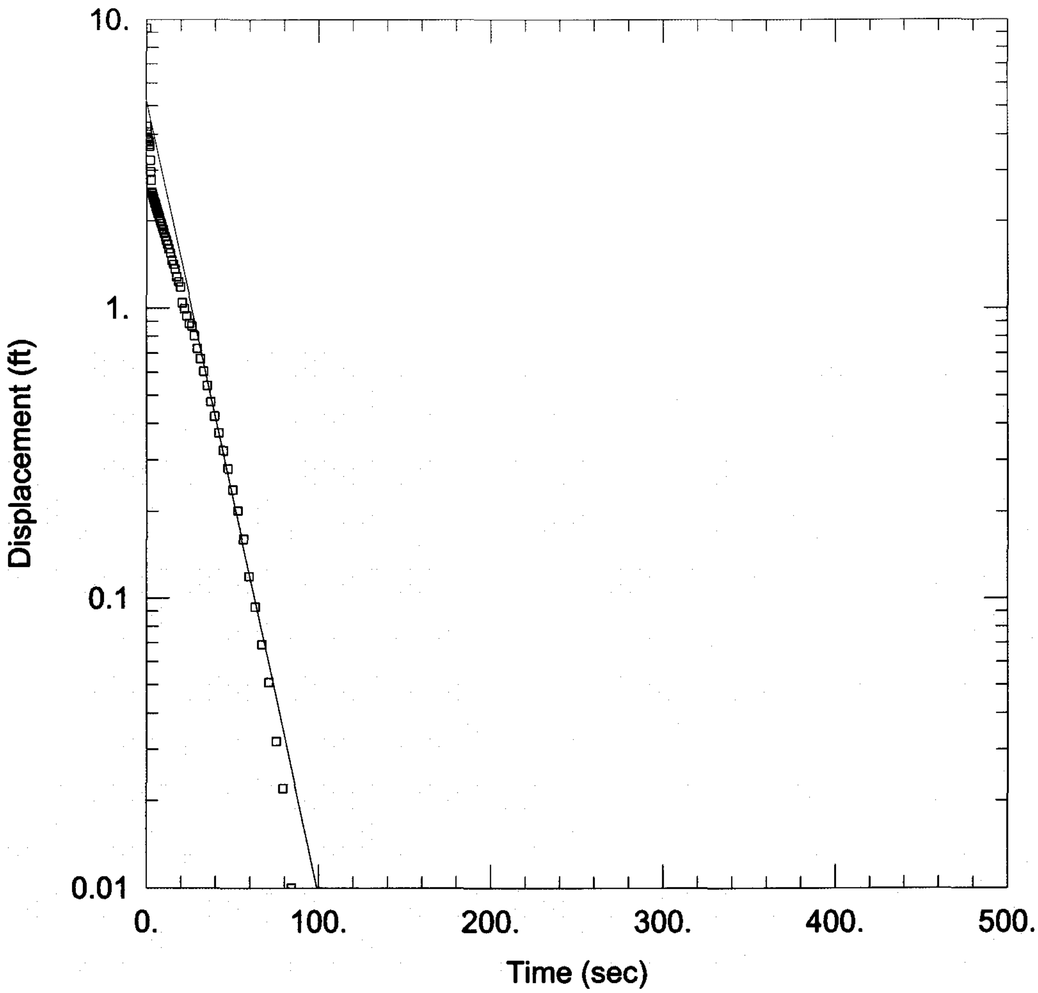
Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-EP-342B1)

Initial Displacement: 9.305 ft
Total Well Penetration Depth: 68.78 ft
Casing Radius: 0.042 ft
Static Water Column Height: 68.78 ft
Screen Length: 5. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.001332 cm/sec
y0 = 6.278 ft



WELL TEST ANALYSIS

Data Set: C:\Tetratech Folders\1-4 dioxane site\Slug Tests\MW-EP-342B1Hvorslev.aqt
Date: 09/16/09 Time: 19:08:00

AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 0.1

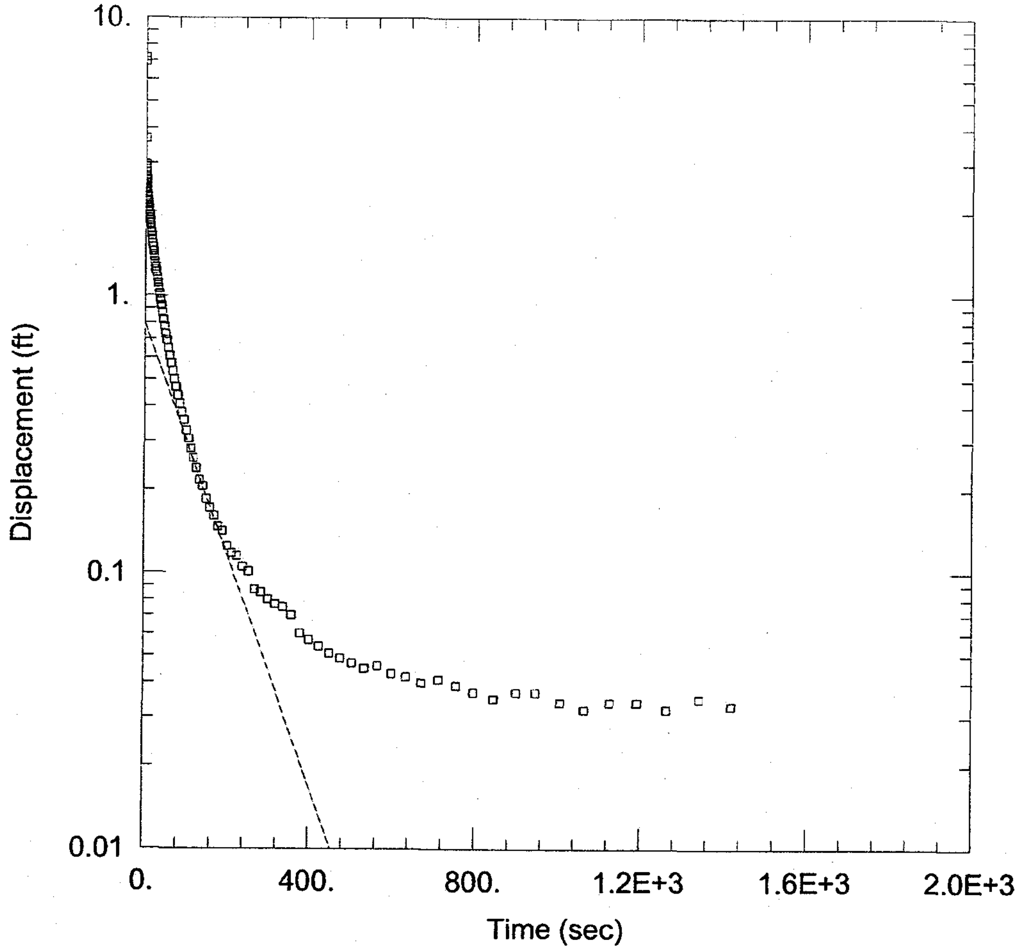
WELL DATA (MW-EP-342B1)

Initial Displacement: 9.305 ft
Total Well Penetration Depth: 68.78 ft
Casing Radius: 0.042 ft
Static Water Column Height: 68.78 ft
Screen Length: 5. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Confined Solution Method: Hvorslev

K = 0.001799 cm/sec y0 = 5.232 ft



WELL TEST ANALYSIS

Data Set: C:\Tetratech Folders\1-4 dioxane site\Slug Tests\MW-EP-342B2.aqt
Date: 09/16/09 Time: 19:11:07

AQUIFER DATA

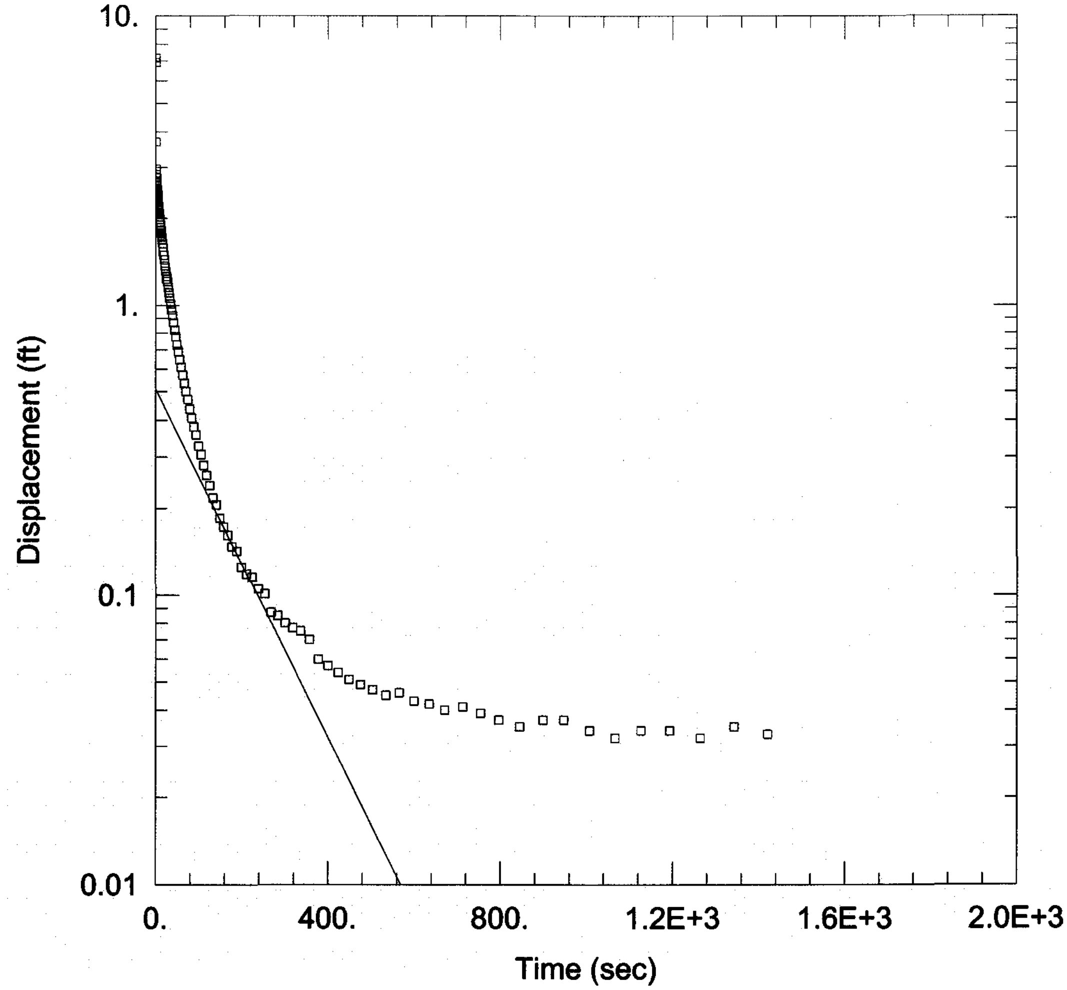
Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-EP-342B2)

Initial Displacement: 7.174 ft
Total Well Penetration Depth: 81.84 ft
Casing Radius: 0.042 ft
Static Water Column Height: 81.84 ft
Screen Length: 5. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0001893 cm/sec
y0 = 0.794 ft



WELL TEST ANALYSIS

Data Set: C:\Tetratech Folders\1-4 dioxane site\Slug Tests\MW-EP-342B2hvorslev.aqt
Date: 09/16/09 Time: 19:12:04

AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 0.1

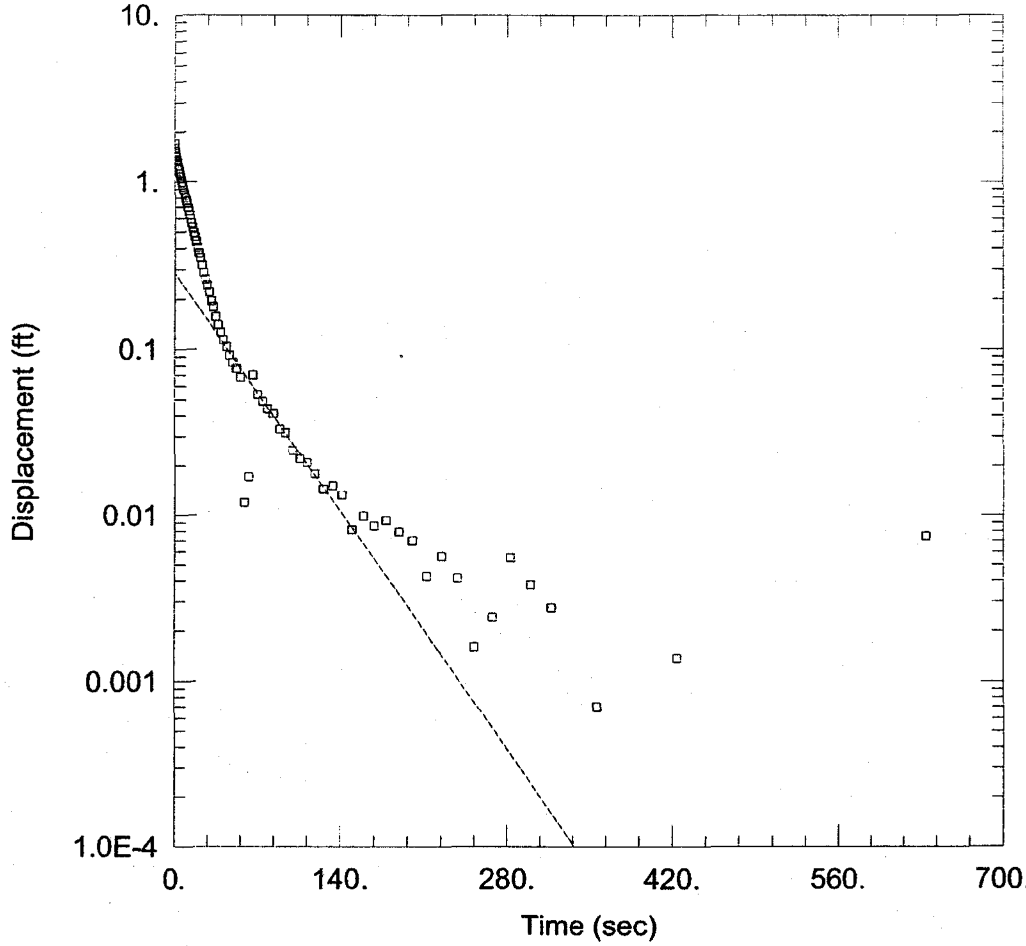
WELL DATA (MW-EP-342B2)

Initial Displacement: 7.174 ft
Total Well Penetration Depth: 81.84 ft
Casing Radius: 0.042 ft
Static Water Column Height: 81.84 ft
Screen Length: 5. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Confined Solution Method: Hvorslev

K = 0.0001968 cm/sec y0 = 0.5113 ft



WELL TEST ANALYSIS

Data Set: C:\...\MW-EP-343-R.aqt
Date: 09/20/09 Time: 14:24:54

AQUIFER DATA

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (EP-MW-343- R)

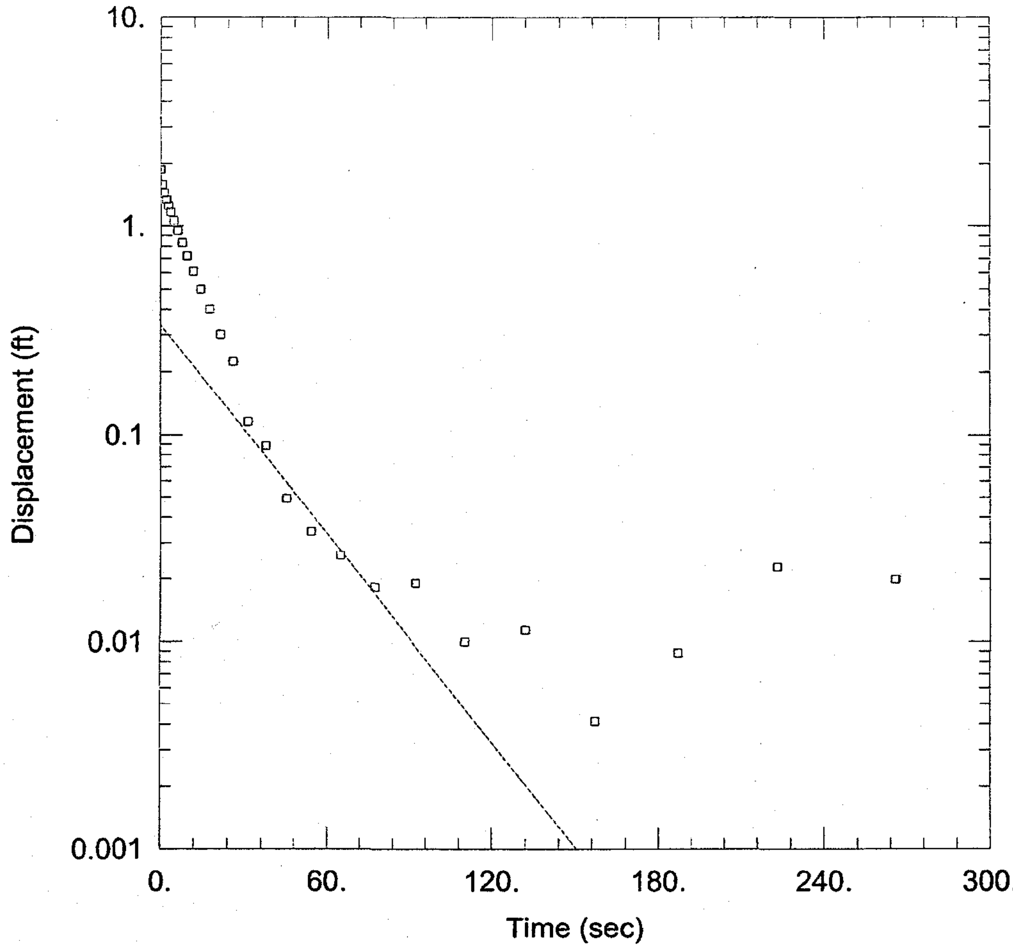
Initial Displacement: 1.705 ft
Total Well Penetration Depth: 78.21 ft
Casing Radius: 0.042 ft

Static Water Column Height: 78.21 ft
Screen Length: 10. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 0.0002772 cm/sec y0 = 0.286 ft



WELL TEST ANALYSIS

Data Set: C:\...\MW-EP-344R.aqt
Date: 09/20/09 Time: 14:27:48

AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 0.1

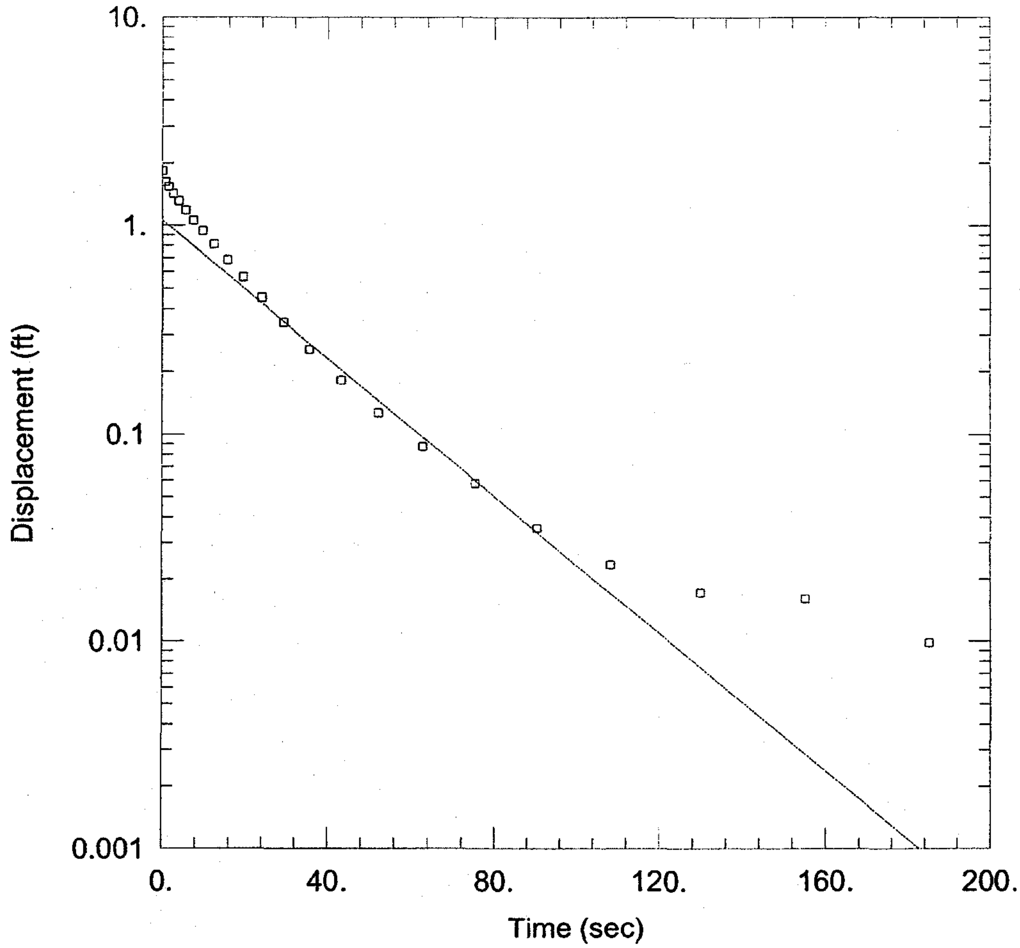
WELL DATA (MW-EP-344-R)

Initial Displacement: 1.872 ft
Total Well Penetration Depth: 69.26 ft
Casing Radius: 0.042 ft
Static Water Column Height: 68.26 ft
Screen Length: 5. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 0.0008377 cm/sec
y0 = 0.3362 ft



WELL TEST ANALYSIS

Data Set: C:\...\MW-EP-345-R.aqt
Date: 09/20/09 Time: 14:28:56

AQUIFER DATA

Saturated Thickness: 15.63 ft Anisotropy Ratio (Kz/Kr): 0.1

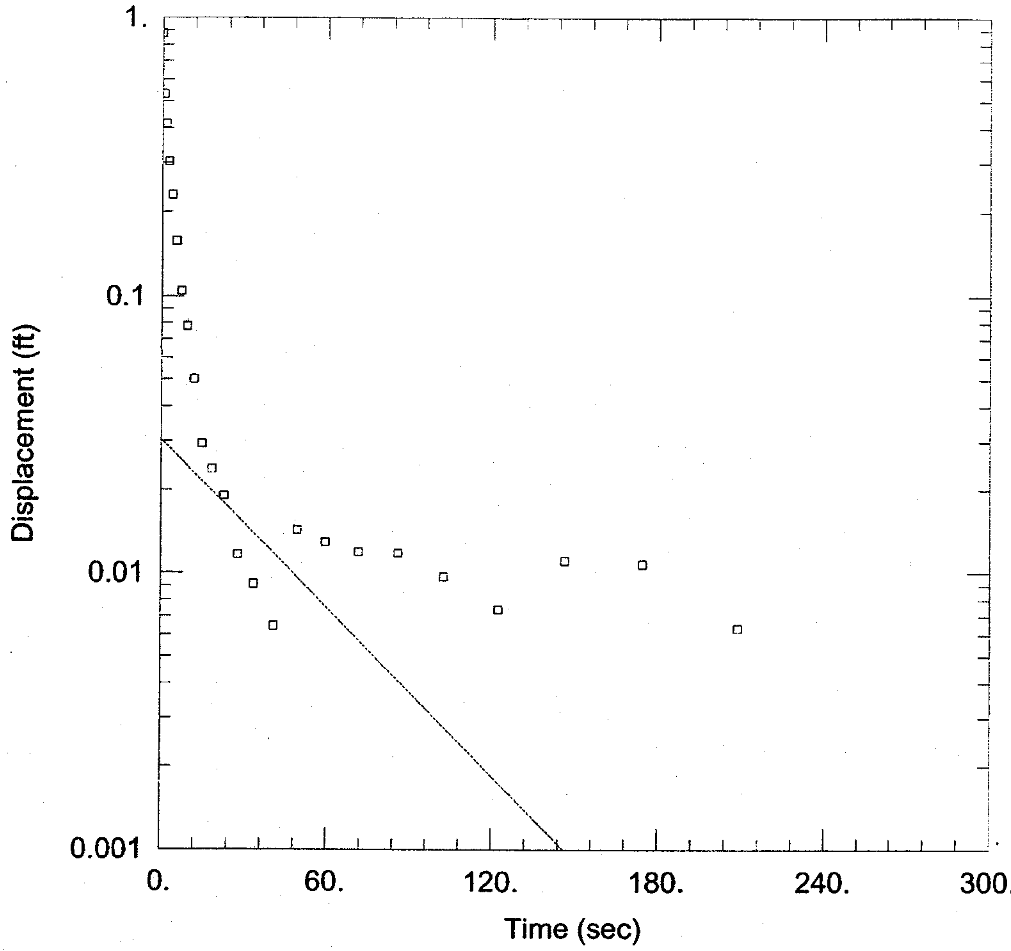
WELL DATA (MW-EP-345-r)

Initial Displacement: 1.837 ft
Total Well Penetration Depth: 15.63 ft
Casing Radius: 0.042 ft
Static Water Column Height: 15.63 ft
Screen Length: 5. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.0008639 cm/sec y0 = 1.058 ft



WELL TEST ANALYSIS

Data Set: C:\...\MW-EP-346R.aqt
Date: 09/20/09 Time: 16:45:27

AQUIFER DATA

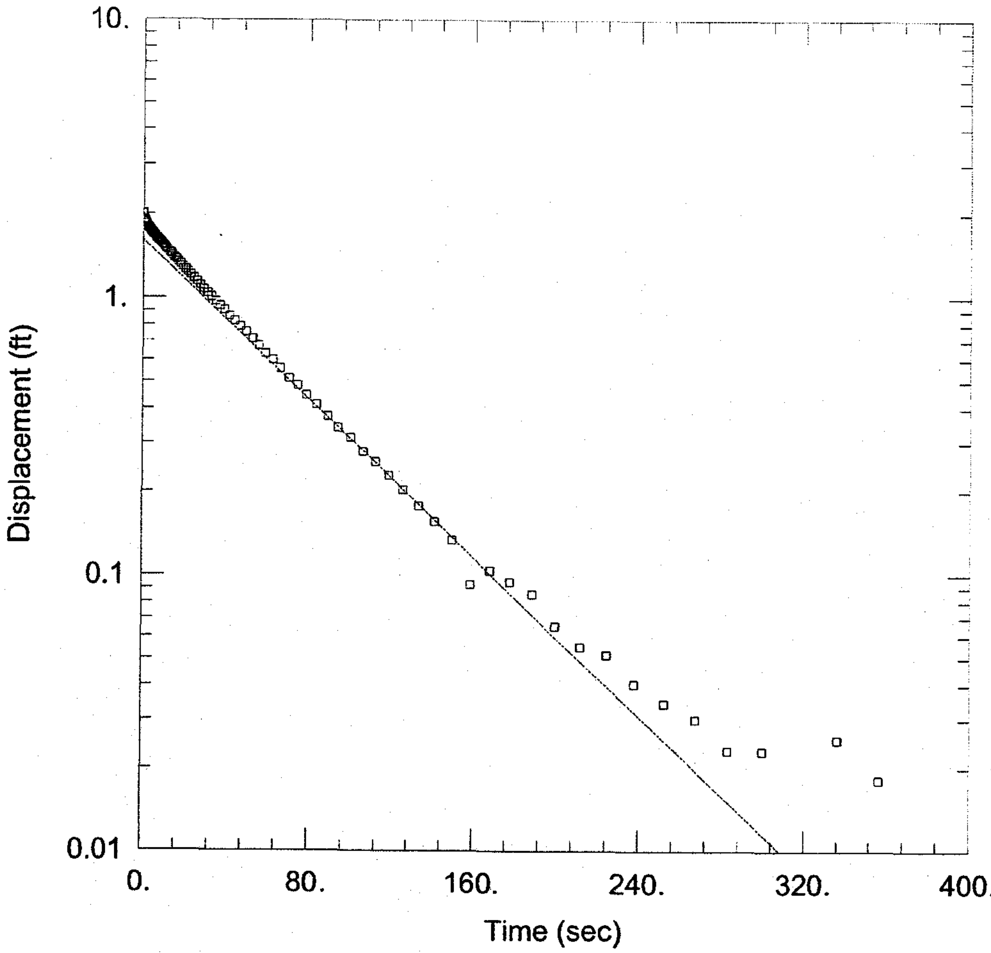
Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-EP-346R)

Initial Displacement: 0.878 ft
Total Well Penetration Depth: 53.6 ft
Casing Radius: 0.042 ft
Static Water Column Height: 53.6 ft
Screen Length: 10. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0002614 cm/sec
y0 = 0.03044 ft



WELL TEST ANALYSIS

Data Set: C:\...\MW-EP-347-R.aqt
Date: 09/20/09 Time: 14:39:22

AQUIFER DATA

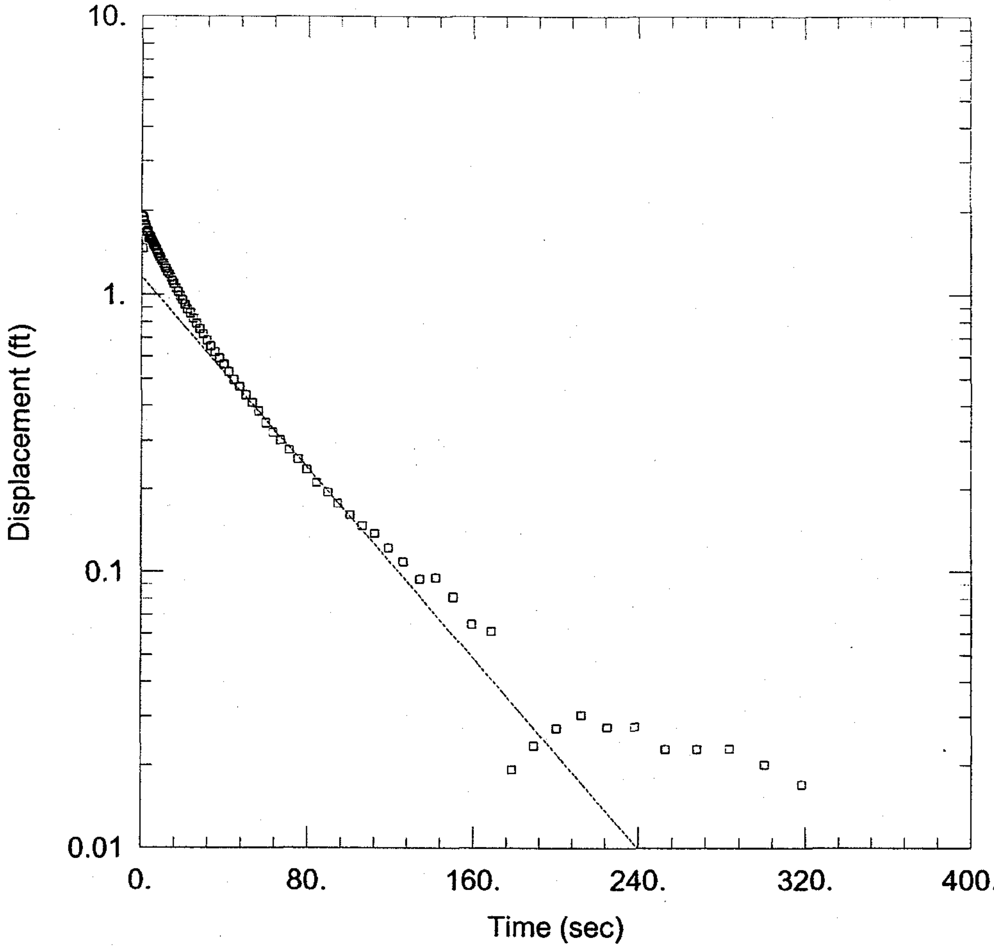
Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-EP-347R)

Initial Displacement: 2.013 ft
Total Well Penetration Depth: 54.81 ft
Casing Radius: 0.042 ft
Static Water Column Height: 55.14 ft
Screen Length: 5. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0003465 cm/sec
y0 = 1.607 ft



WELL TEST ANALYSIS

Data Set: C:\...\MW-EP-348R.aqt
Date: 09/20/09 Time: 14:41:05

AQUIFER DATA

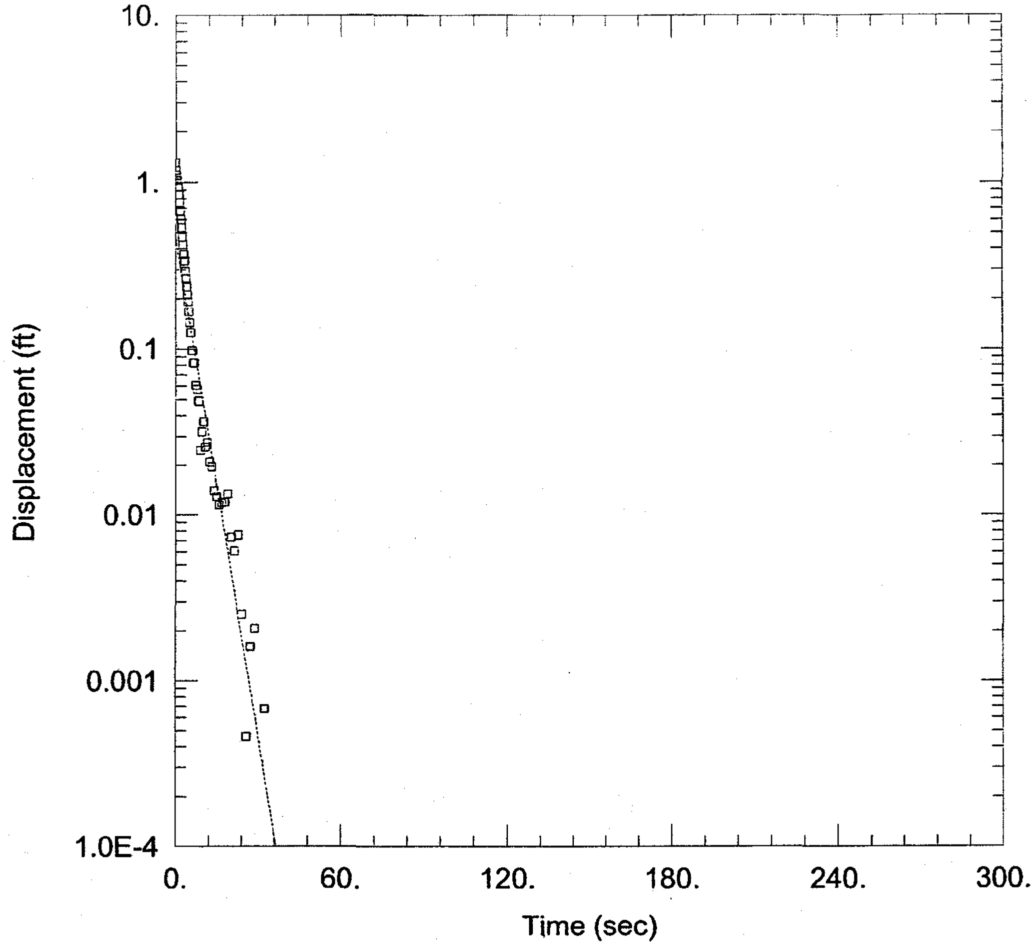
Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-EP-348R)

Initial Displacement: 1.915 ft
Total Well Penetration Depth: 55.14 ft
Casing Radius: 0.042 ft
Static Water Column Height: 55.14 ft
Screen Length: 5. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Confined
K = 0.0004173 cm/sec
Solution Method: Bouwer-Rice
y0 = 1.16 ft



WELL TEST ANALYSIS

Data Set: C:\...\MW-EP-349R.aqt
Date: 09/20/09 — Time: 14:44:49

AQUIFER DATA

Saturated Thickness: 5. ft — Anisotropy Ratio (Kz/Kr): 0.1

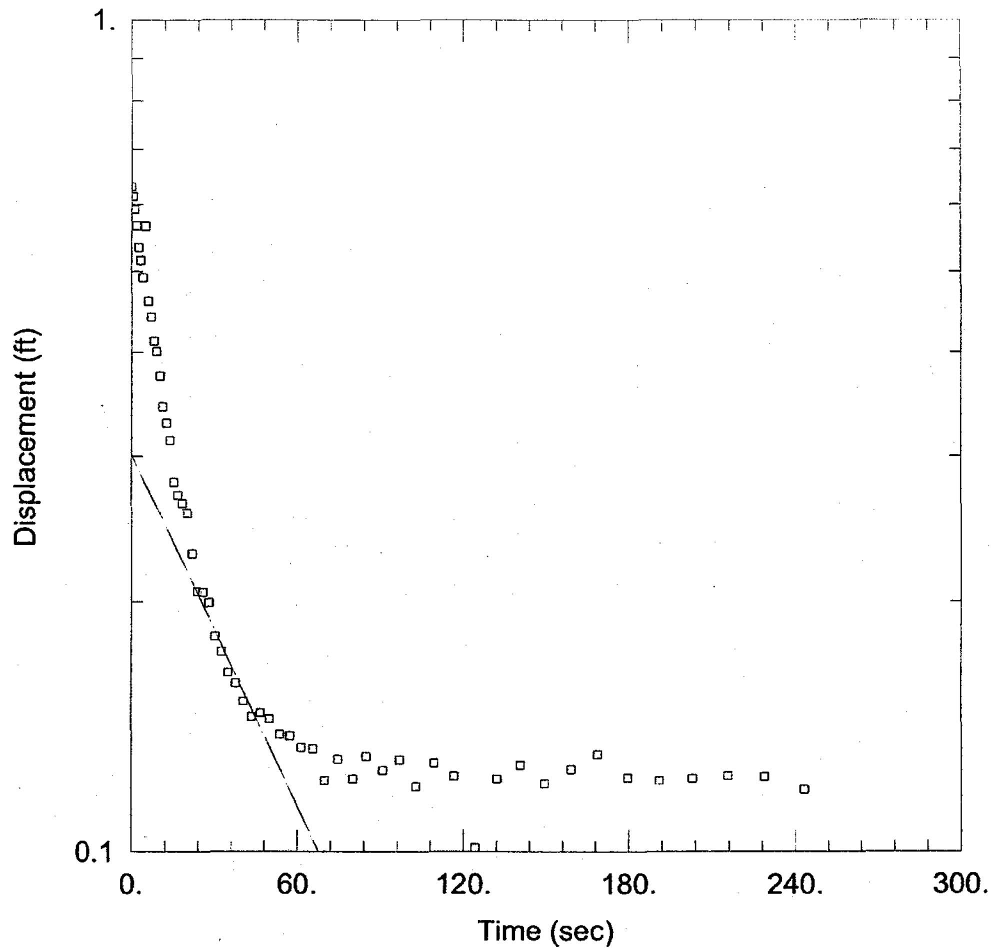
WELL DATA (MW-EP-349R)

Initial Displacement: 1.304 ft
Total Well Penetration Depth: 56.52 ft
Casing Radius: 0.042 ft
Static Water Column Height: 56.52 ft
Screen Length: 5. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Confined — Solution Method: Bouwer-Rice

K = 0.004864 cm/sec — y0 = 0.4603 ft



WELL TEST ANALYSIS

Data Set: C:\...\MW-EP-350R.aqt
Date: 09/20/09 Time: 14:46:29

AQUIFER DATA

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 0.1

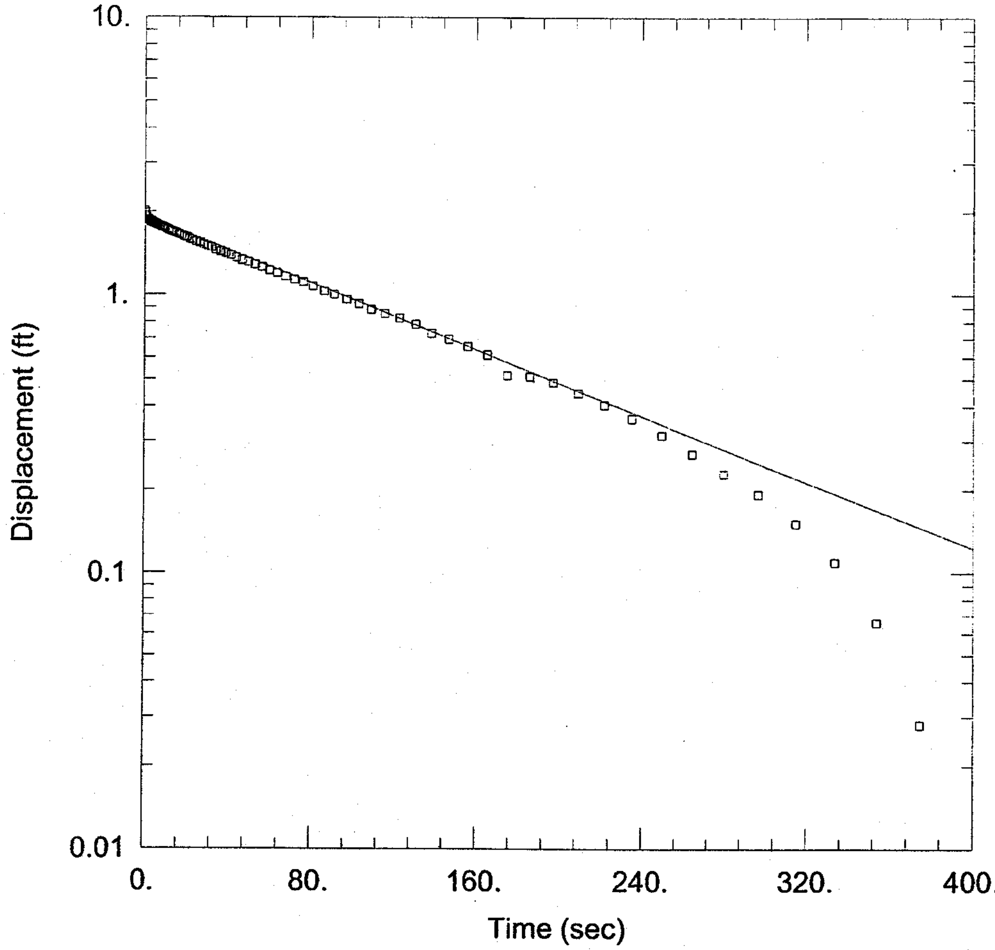
WELL DATA (MW-EP-350R)

Initial Displacement: 0.631 ft
Total Well Penetration Depth: 67.33 ft
Casing Radius: 0.042 ft
Static Water Column Height: 67.33 ft
Screen Length: 10. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 0.0001881 cm/sec y0 = 0.3015 ft



WELL TEST ANALYSIS

Data Set: C:\...\MW-EP-351R.aqt
Date: 09/20/09 Time: 14:48:27

AQUIFER DATA

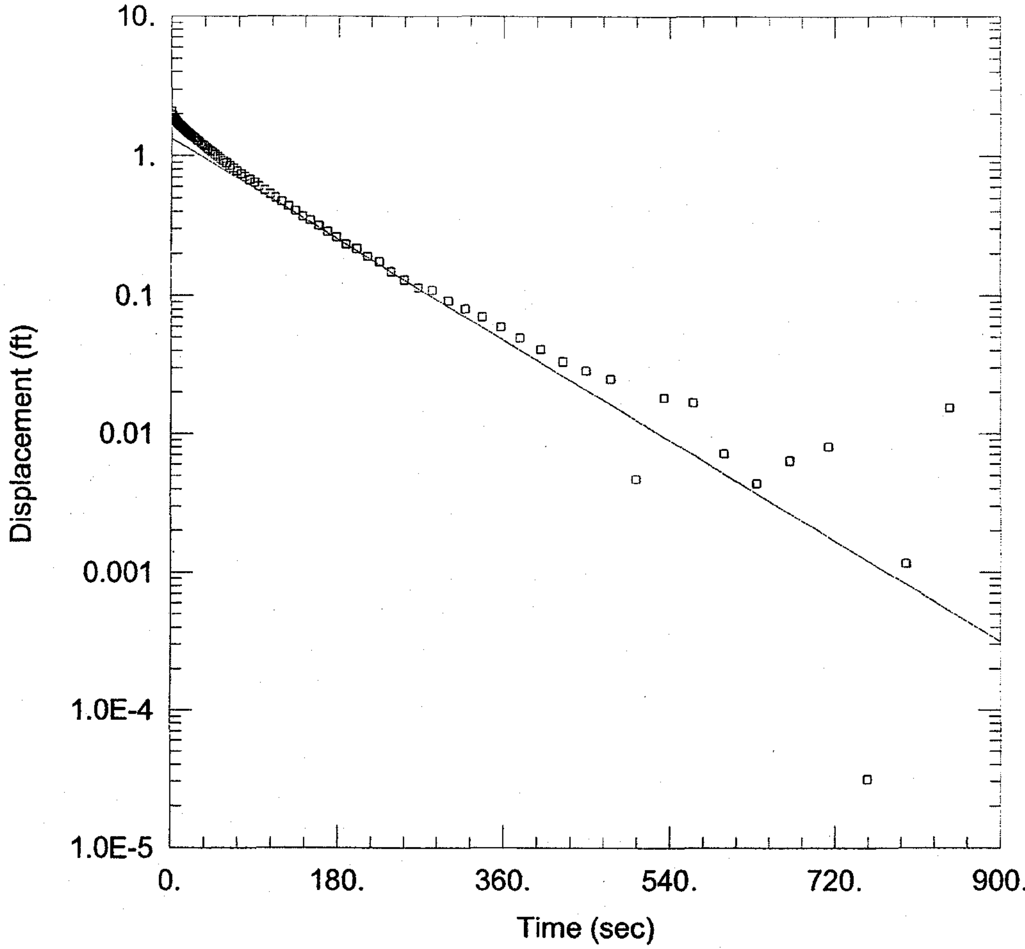
Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-EP-351R)

Initial Displacement: 2.013 ft
Total Well Penetration Depth: 40.69 ft
Casing Radius: 0.042 ft
Static Water Column Height: 40.69 ft
Screen Length: 10. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Confined
K = 9.188E-5 cm/sec
Solution Method: Bouwer-Rice
y0 = 1.913 ft



WELL TEST ANALYSIS

Data Set: C:\...\MW-EP-352R.aqt
Date: 09/20/09 Time: 14:21:49

AQUIFER DATA

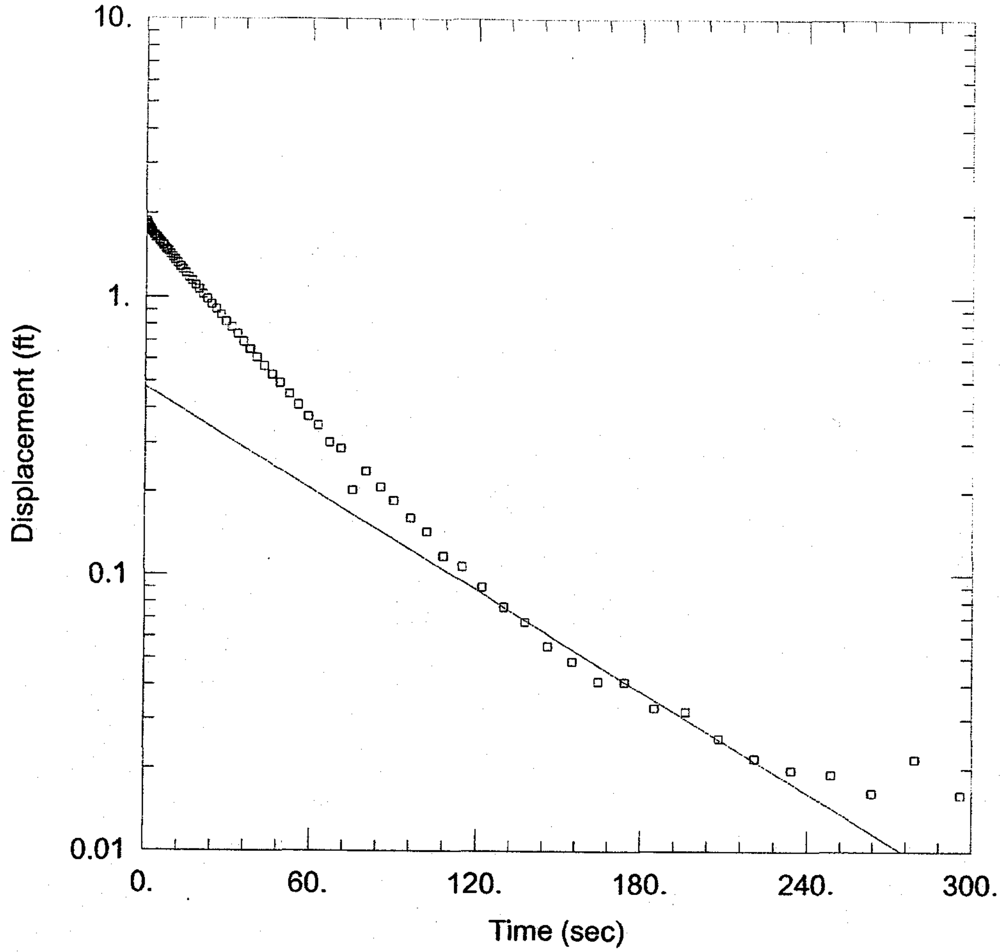
Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-EP-352R)

Initial Displacement: 2.095 ft Static Water Column Height: 50.63 ft
Total Well Penetration Depth: 50.63 ft Screen Length: 5. ft
Casing Radius: 0.042 ft Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice
K = 0.0001933 cm/sec y0 = 1.337 ft



WELL TEST ANALYSIS

Data Set: C:\...\MW-EP-353R.aqt
Date: 09/20/09 Time: 14:49:39

AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-EP-353R)

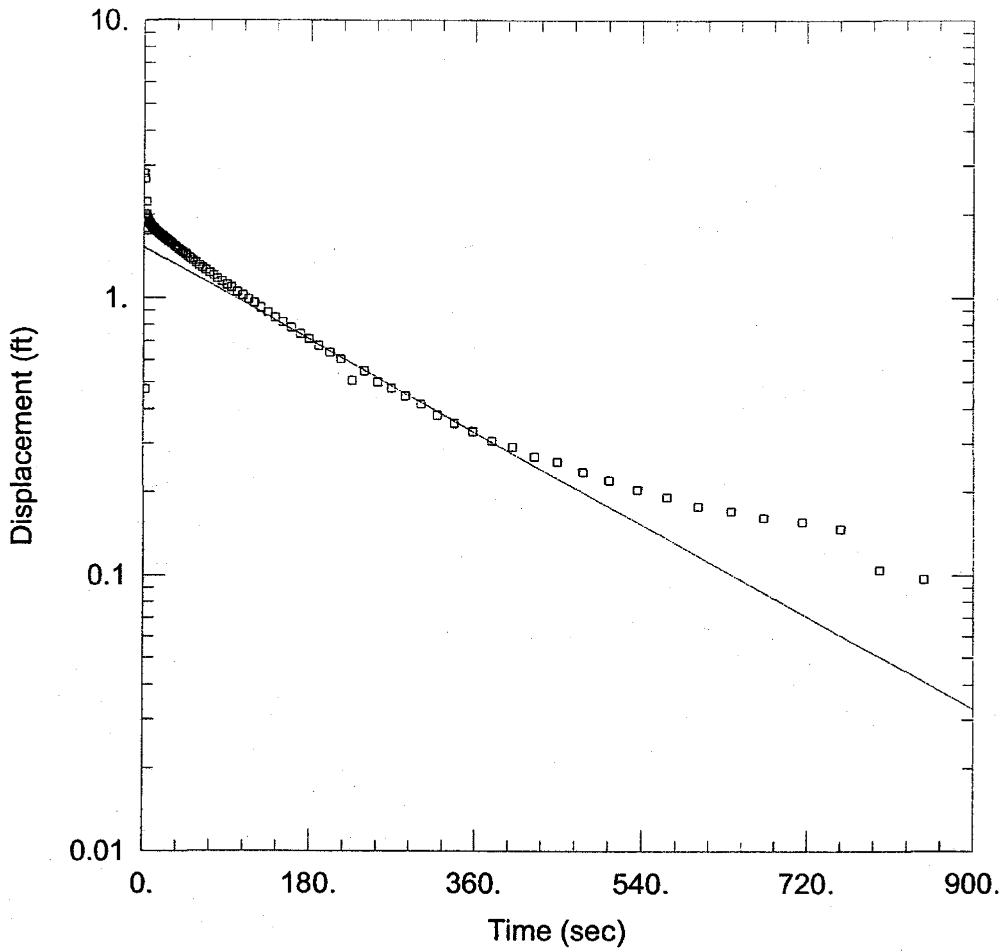
Initial Displacement: 1.867 ft
Total Well Penetration Depth: 68.86 ft
Casing Radius: 0.042 ft

Static Water Column Height: 68.88 ft
Screen Length: 5. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Confined
K = 0.0003051 cm/sec

Solution Method: Bouwer-Rice
y0 = 0.478 ft



WELL TEST ANALYSIS

Data Set: C:\Tetratech Folders\1-4 dioxane site\Slug Tests\MW-EP-354.aqt
Date: 10/27/09 Time: 20:41:12

PROJECT INFORMATION

Test Well: MW-EP-354

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW-EP-354)

Initial Displacement: 2.813 ft
Total Well Penetration Depth: 30.68 ft
Casing Radius: 0.042 ft
Static Water Column Height: 30.68 ft
Screen Length: 5. ft
Well Radius: 0.167 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 8.302E-5 cm/sec
y0 = 1.527 ft

APPENDIX A-8
WATER-LEVEL MEASUREMENTS

JUNE 2009 WATER-LEVEL MEASUREMENTS
EASTERN PLUME
NAVAL AIR STATION BRUNSWICK, MAINE

Well Designation	Top of Riser Elevation (PVC) (ft msl)	PVC Extension Length Added to TPVC for Artesian Wells (ft)	Depth to Water (from TPVC) (ft)	Groundwater Elevation (ft msl)
Shallow Monitoring Wells				
MW-105B	24.55		5.20	19.35
MW-106	51.26		17.13	34.13
MW-206B	42.77		14.93	27.84
MW207B	22.90		5.78	17.12
MW-209	54.84		19.55	35.29
MW-222	57.43		21.21	36.22
MW-223	53.71		18.98	34.73
MW-224	57.63		20.35	37.28
MW-225B	46.25		15.36	30.89
MW-229B	30.08		14.38	15.7
MW-230B	36.00		15.24	20.76
MW-231B	46.31		22.01	24.3
MW-307	62.70		14.62	48.08
MW-318	24.28		5.04	19.24
MW-332	25.33		9.27	16.06
MW-1104	60.09		7.87	52.22
MW-NASB-090	59.70		18.50	41.2
Deep Monitoring Wells				
MW-105A	24.19		0	24.19
MW-205	45.99		21.02	24.97
MW-206A	43.02		14.95	28.07
MW-207A	Destroyed and replaced with MW-207AR			
MW-207AR*	29.82	6.4	3.11	26.71
MW-208	49.40		15.02	34.38
MW-225A	45.95		14.10	31.85
MW-229A	33.83		9.96	23.87
MW-230A	36.32		12.30	24.02
MW-231A	45.41		18.38	27.03
MW-303	44.28		10.43	33.85
MW-305	43.09		11.35	31.74
MW-306	52.12		13.10	39.02
MW-310	53.39		23.72	29.67
MW-311	21.48		11.83	9.65
MW-312	35.97		Could Not Locate	NA
MW-313	21.39		7.39	14
MW-315A	22.86		0	22.86
MW-319	40.16		7.89	32.27
MW-330B	35.71		1.24	34.47
MW-331*	36.94	6.4	2.63	34.31
MW-333	27.25		9.02	18.23
MW-334	30.93		8.72	22.21
MW-335	40.91		16.77	24.14
MW-336	29.62		10.3	19.32
MW-337	37.19		13.3	23.89
MW-338A	21.37		0	21.37
MW-338B	21.48		0	21.48
MW-338C	21.65		0.67	20.98
MW-339	22.54		0.76	21.78

JUNE 2009 WATER-LEVEL MEASUREMENTS
EASTERN PLUME
NAVAL AIR STATION BRUNSWICK, MAINE

Well Designation	Top of Riser Elevation (PVC) (ft msl)	PVC Extension Length Added to TPVC for Artesian Wells (ft)	Depth to Water (from TPVC) (ft)	Groundwater Elevation (ft msl)
MW-NASB-212	41.64		7.15	34.49
MW-EP-340S	39.53		2.88	36.65
MW-EP-341S	38.76		2.39	36.37
MW-EP-342S	35.66		1.34	34.32
MW-EP-343	38.04		2.63	35.41
MW-EP-344	37.74		1.27	36.47
MW-EP-345	36.36		10.28	26.08
MW-EP-346	55.15		19.08	36.07
MW-EP-347*	33.91	2.6	0.75	33.16
MW-EP-348*	28.61	5	0.40	28.21
MW-EP-349*	30.74	5	1.84	28.9
MW-EP-350*	23.38	10.1	3.00	20.38
MW-EP-351*	15.99	5	0	15.99
MW-EP-352	24.73		3.63	21.1
MW-EP-353*	21.92	5.25	0	21.92
MW-EP-354	19.63		6.15	13.48
Bedrock Monitoring Wells				
MW-308	37.70		NM (1)	NA
MW-309A*	29.24	6.4	2	27.24
MW-309B	22.32		0	22.32
MW-316A	53.71		20.66	33.05
MW-316B	54.40		10.57	43.83
MW-317A	71.35		13.41	57.94
MW-317B	70.10		12.16	57.94
MW-323	55.90		14.9	41
MW-NASB-11BR	59.01		20.05	38.96
MW-EP-340B1	39.13		4.10	35.03
MW-EP-340B2	39.10		4.15	34.95
MW-EP-341B1	38.48		3.17	35.31
MW-EP-341B2	38.50		3.13	35.37
MW-EP-342B1	35.94		1.18	34.76
MW-EP-342B2	35.88		0.94	34.94
Mere Brook Wells & Piezometers				
MW-MB-01C*	22.75	2.6	1.85	20.9
MW-MB-02C*	24.62	10.1	0.70	23.92
MW-MB-03C	26.64		0.50	26.14
MW-MB-04B	20.69		6.11	14.58
MW-MB-06A	24.81		12.18	12.63
MW-MB-06C	24.88		6.11	18.77
PZ-MB-B4B	12.36		0	12.36
PZ-MB-B6B	11.14		0	11.14
PZ-MB-C4B	12.12		0	12.12
Shallow P-Series Piezometers				
P-103	60.35		19.64	40.71
P-111	31.48		4.35	27.13
P-121	50.78		15.11	35.67
P-132	42.95		17.56	25.39
Deep P-Series Piezometers				
PZ-1	47.88		22.9	24.98

JUNE 2009 WATER-LEVEL MEASUREMENTS
EASTERN PLUME
NAVAL AIR STATION BRUNSWICK, MAINE

Well Designation	Top of Riser Elevation (PVC) (ft msl)	PVC Extension Length Added to TPVC for Artesian Wells (ft)	Depth to Water (from TPVC) (ft)	Groundwater Elevation (ft msl)
PZ-2	39.66		16.17	23.49
PZ-6	33.14		11.45	21.69
PZ-11	53.66		21.65	32.01
P-105	42.08		5.54	36.54
P-106	38.83		5.28	33.55
P-123	Ice damage to PVC; cannot gauge			
Extraction Wells/Observation Wells				
EW-01	25.34		NM [2]	NA
EW-02A	22.27		NM [2]	NA
EW-04	37.13		NM [2]	NA
EW-05A	37.63		NM [2]	NA
EW-05B	36.82		0.96	35.86
EW-05B-PZ-01	36.30		0.33	35.97
EW-05B-PZ-02	37.46		1.43	36.03
EW-05B-PZ-03	35.46		3.74	31.72
EW-05B-PZ-04	37.26		0.84	36.42
Deep EP-Series Piezometers				
EP-01	31.67		Lock Did Not Open [3]	NA
EP-02	29.74		NM[4]	NA
EP-03	27.91		NM[4]	NA
EP-04	32.59		Lock Did Not Open [3]	NA
EP-05	34.61		2.80	31.81
EP-06	40.14		8.56	31.58
EP-07	48.49		13.74	34.75
EP-08	47.31		Lock Did Not Open [3]	NA
EP-09	37.84		2.03	35.81
EP-10	37.78		2.09	35.69
EP-11	41.59		4.67	36.92
EP-12	49.38		12.13	37.25
EP-13	38.96		1.28	37.68
EP-14	43.46		5.88	37.58
EP-15	45.37		7.90	37.47
Surface Water Gauging Stations				
GP-1A	8.85		1.6	7.25
GP-2A	8.47		Could Not Locate	NA
GP-3B	7.81		1.1	6.71
GP-4A	15.92		1.25	14.67
GP-5B	16.95		1.8	15.15
GP-6A	4.32		Dry	NA

* - Artesian well
NM - Not measured
NA - Not applicable

1. New wells MW-342B1 and MW-342B2 in the immediate vicinity were measured instead.
2. Extraction well in locked vault and key not available. Moreover, confined space entry not included in HASP.
3. Wells were not pre-inspected because it was presumed that the wells could be unlocked considering their inclusion in the ongoing groundwater monitoring program.
4. Key not available. It was presumed that the keys provided would unlock the wells.

TETRA TECH NUS, INC. **GROUNDWATER LEVEL MEASUREMENT**

SITE INFORMATION

Site Name: Eastern Plume - 1,4 Dioxane
Project Number: 112G-00645/CTO 069
Personnel: C. Fellows/B. Geringer / G. Glennon
Date: 06/12/09

Municipality: NASB - Brunswick
County: Cumberland
State: Maine
Street or Map Location:
(If Off-Site):

WEATHER CONDITIONS AND EQUIPMENT

Temperature Range: 60°-70° (F)
Precipitation: 1.00"
Barometric Pressure: 29.9 - 29.7 (mmHg)
Tidally-Influenced [ ] Yes [X] No

Equipment No.:
Equipment Number:
Latest Calibration Date:

Well or Piezometer Number	Date/Time	Elevation of Reference Point (Feet)*	Water Level Indicator Reading (Feet)*	Adjusted Depth (Feet)*	Groundwater Elevation (Feet)*
MW-EP-343	6/12/09 0720		2.63		
MW-EP-344	0728		1.27		
MW-EP-340S	0733		2.88		
MW-EP-340B1	0736		4.10		
MW-EP-340B2	0738		4.15		
MW-EP-342S	0745		1.34		
MW-EP-342B1	0748		1.18		
MW-EP-342B2	0753		0.94		
MW-EP-341B1	1600		3.17		
MW-EP-341B2	1603		3.13		
MW-EP-341S	0800		2.39		
EP-09	0815		2.03		

TtNUS Form 0010

* measured made to 0.00 feet

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TETRA TECH NUS, INC.

GROUNDWATER LEVEL MEASUREMENT

SITE INFORMATION

Site Name: Eastern Plume - 1,4 Dioxane
Project Number: 112G-00645/CTO 069
Personnel: C. Fellows/B. Geringer/G. Glennon
Date: 06/12/09
Municipality: NASB - Brunswick
County: Cumberland
State: Maine
Street or Map Location:
(If Off-Site):

WEATHER CONDITIONS AND EQUIPMENT

Temperature Range: 60° - 70° (F)
Precipitation: 1.00"
Barometric Pressure: 29.9 - 29.7 (mmHg)
Tidally-Influenced [ ] Yes [X] No
Equipment No.:
Equipment Number:
Latest Calibration Date:

Well or Piezometer Number	Date/Time	Elevation of Reference Point (Feet)*	Water Level Indicator Reading (Feet)*	Adjusted Depth (Feet)*	Groundwater Elevation (Feet)*
EP-10	6/12/09 0821		2.09		
EP-11	0828		4.67		
EP-12	0832		12.13		
MW-EP-345	0845		10.28		
MW-309A	0855		2.00 (*)		
MW-309B	0857		@ Top of Casing		
Staff Gauge → SG-4A	0900		1.25-1.30		
MW-330	0915		1.24		
MW-EP-347	0924		0.75 (**)		
MW-EP-346	0927		19.08		
MW-331	0943		2.63 (*)		
P-111	0952		4.35		

TtNUS Form 0010

(*) = Artesian Conditions, added 6.40' of PVC

* measured made to 0.00 feet

(**) = Artesian Conditions, added 2.60' of PVC

TETRA TECH NUS, INC.

GROUNDWATER LEVEL MEASUREMENT

SITE INFORMATION

Site Name: Eastern Plume - 1,4 Dioxane
Project Number: 112G00645/CTO 069
Personnel: C. Fellows/B Geringer/G. Glennon
Date: 06/12/09
Municipality: NASB - Brunswick
County: Cumberland
State: Maine
Street or Map Location:
(If Off-Site):

WEATHER CONDITIONS AND EQUIPMENT

Temperature Range: 60° - 70° (F)
Precipitation: 1.00"
Barometric Pressure: 29.9 - 29.7 (mmHg)
Tidally-Influenced [ ] Yes [X] No
Equipment No.:
Equipment Number:
Latest Calibration Date:

Well or Piezometer Number	Date/Time	Elevation of Reference Point (Feet)*	Water Level Indicator Reading (Feet)*	Adjusted Depth (Feet)*	Groundwater Elevation (Feet)*
MW-319	06/12/09 1000		7.89		
EP-5	1016		2.80		
EP-6	1018		8.56		
EP-4	1020		Lock would not open		
MW-207B	1035		5.78		
MW-207AR	1042		3.11 ⊛		
MW-EP-348	1048		0.40 ⊛⊛		
MW-EP-349	1052		1.84 ⊛⊛		
MW-MB-03C	1056		0.50		
MW-311	1058		11.83		
MW-332	1100		9.27		
MW-MB-06C	1120		6.11		

TtNUS Form 0010

⊛ = Artesian Conditions, added 6.40' of PVC

* measured made to 0.00 feet

⊛⊛ = Artesian Conditions, added 5.00' of PVC

MW-MB-06A 6/12/09 1123 12.18

TETRA TECH NUS, INC.

GROUNDWATER LEVEL MEASUREMENT

SITE INFORMATION

Site Name: Eastern Plume - NASB
Project Number: 112G00645 / CTO 069
Personnel: C. Pellows / B. Geringer / G. Glennon
Date: 06/12/09

Municipality: NASB - Brunswick, ME
County: Cumberland.
State: ME
Street or Map Location:
(If Off-Site):

WEATHER CONDITIONS AND EQUIPMENT

Temperature Range: 60°-70° (F)
Precipitation: 1.00"
Barometric Pressure: 29.9 - 29.7 (mmHg)
Tidally-Influenced [ ] Yes [X] No

Equipment No.:
Equipment Number:
Latest Calibration Date:

Well or Piezometer Number	Date/Time	Elevation of Reference Point (Feet)*	Water Level Indicator Reading (Feet)*	Adjusted Depth (Feet)*	Groundwater Elevation (Feet)*
MW-EP-350	06/12/09 1145		3.0 ⊛		
PZ-MB-B4B	1153		@ Top of Casing		
PZ-MB-C4B	1200		@ Top of Casing		
MW-EP-351	1215		~~25~~ ⊛⊛		
MW-MB-02C	1232		0.70 ⊛		
MW-MB-01C	1248		1.85 ⊛⊛⊛		
PZ-MB-B6B	1256		@ Top of Casing		
MW-EP-352	1300		3.63		
MW-MB-04B	1320		6.11		
MW-333	1328		9.02		
MW-EP-354	1340		6.15		
MW-EP-353	1350		@ Top of Casing ▲		

TtNUS Form 0010

* measured made to 0.00 feet

⊛ = Artesian Conditions, added 10.10' of PVC
⊛⊛ = Artesian Conditions, added 5.0' of PVC - Still overflowing PVC
⊛⊛⊛ = Artesian Conditions, added 2.60' of PVC
▲ = Artesian Conditions, added 5.25' of PVC

TETRA TECH NUS, INC.

GROUNDWATER LEVEL MEASUREMENT

SITE INFORMATION

Site Name: Eastern Plume
Project Number: 112G00645 /CTO 069
Personnel: C.Tibbus/B.Geringer/G. Glennon
Date: 06/12/09

Municipality: NASB-Brunswick
County: Cumberland
State: ME
Street or Map Location:
(If Off-Site):

WEATHER CONDITIONS AND EQUIPMENT

Temperature Range: 60°-70° (F)
Precipitation: 1.00"
Barometric Pressure: 29.9 - 29.7 (mmHg)
Tidally-Influenced [ ] Yes [X] No

Equipment No.:
Equipment Number:
Latest Calibration Date:

Well or Piezometer Number	Date/Time	Elevation of Reference Point (Feet)*	Water Level Indicator Reading (Feet)*	Adjusted Depth (Feet)*	Groundwater Elevation (Feet)*
MW-313	06/12/09 1400		7.39		
MW-334	1410		8.72		
MW-229A	1417		9.96		
MW-229B	1420		14.38		
EP-01	1430		LOCK WOULD NOT OPEN		
P-121	1630		15.11		
MW-312	—		COULD NOT LOCATE		
P-123	1715		OBSTRUCTED		
MW-316A	1717		20.66		
MW-316B	1719		10.57		
MW-317B	1800		12.16		
MW-317A	1802		13.41		

TtNUS Form 0010

* measured made to 0.00 feet

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TETRA TECH NUS, INC. **GROUNDWATER LEVEL MEASUREMENT**

SITE INFORMATION

Site Name: Eastern Plume
Project Number: 112G00645
Personnel: C. Fellows
Date: 6/12/09
Municipality: NASB - Brunswick
County: Cumberland
State: ME
Street or Map Location:
(If Off-Site):

WEATHER CONDITIONS AND EQUIPMENT

Temperature Range: 50-75 °F
Precipitation: Rain AM / Sun PM
Barometric Pressure:
Tidally-Influenced [ ] Yes [X] No
Equipment No.:
Equipment Number:
Latest Calibration Date:

Well or Piezometer Number	Date/Time 6/12/09	Elevation of Reference Point (Feet)*	Water Level Indicator Reading (Feet)* From TOR (PVC)	Adjusted Depth (Feet)*	Groundwater Elevation (Feet)*
MW-1104	0745		7.87		
P-103	0756		19.64		
MW-323	1400		14.90		
MW-NASB-11BR	1213		20.05		
MW-NASB-090	1415		18.50		
MW-337	0816		13.3		
P2-6	0819		11.45		
MW-338C	0825		0.67		
MW-338B	0828		TOR		
MW-338A	0829		TOR		
MW-339	0840		0.76		
MW-315A	0842		TOR		

TtNUS Form 0010

* measured made to 0.00 feet

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TETRA TECH NUS, INC.

GROUNDWATER LEVEL MEASUREMENT

SITE INFORMATION

Site Name: Eastern Plume

Project Number: 112G00045

Personnel: C. Fellows

Date: 6/12/09

Municipality: NASB-Brunswick

County: Cumberland

State: ME

Street or Map Location:

(If Off-Site):

WEATHER CONDITIONS AND EQUIPMENT

Temperature Range: 50-75°F

Precipitation: Rain AM/Sun PM

Barometric Pressure:

Tidally-Influenced [ ] Yes [X] No

Equipment No.:

Equipment Number:

Latest Calibration Date:

Well or Piezometer Number	Date/Time 6/12/09	Elevation of Reference Point (Feet)*	Water Level Indicator Reading (Feet)* From TOR (PVC)	Adjusted Depth (Feet)*	Groundwater Elevation (Feet)*
MW-318	0845		5.04		
MW-336	0850		10.30		
GP-6A	0943		Dry		
MW-230B	0851		15.24		
MW-230A	0855		12.30		
PZ-11	0905		21.65		
MW-231A	0910		18.38		
MW-231B	0912		22.01		
PZ-1	0925		22.90		
PZ-2	0922		16.17		
MW-335	0920		16.77		
GP-5B	0945		1.8 From top of Gauge		

TtNUS Form 0010

* measured made to 0.00 feet

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TETRA TECH NUS, INC.

GROUNDWATER LEVEL MEASUREMENT

SITE INFORMATION

Site Name: Eastern Plume
Project Number: 112G00645
Personnel: C. Fellows
Date: 6/12/09
Municipality: NASB - Brunswick
County: Cumberland
State: ME
Street or Map Location:
(If Off-Site):

WEATHER CONDITIONS AND EQUIPMENT

Temperature Range: 50-75°F
Precipitation: Rain AM / Sun PM
Barometric Pressure:
Tidally-Influenced [ ] Yes [X] No
Equipment No.:
Equipment Number:
Latest Calibration Date:

Well or Piezometer Number	Date/Time 6/12/09	Elevation of Reference Point (Feet)*	Water Level Indicator Reading (Feet)* From TOR (PVC)	Adjusted Depth (Feet)*	Groundwater Elevation (Feet)*
MW-105A	9:50		TOR		
MW-105B	9:52		5.20		
MW-205	9:58		21.02		
MW-206A	10:12		14.95		
MW-206B	10:13		14.93		
MW-310	10:16		23.72		
MW-225A	10:21		14.10		
MW-225B	10:23		15.36		
MW-106	10:26		17.13		
MW-208	10:28		15.02		
MW-223	10:56		18.98		
MW-209	11:06		19.55		

TtNUS Form 0010

* measured made to 0.00 feet

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TETRA TECH NUS, INC.

GROUNDWATER LEVEL MEASUREMENT

SITE INFORMATION

Site Name: Eastern Plume
Project Number: 112G00645
Personnel: Citellas
Date: 6/12/09
Municipality: NASB - Brunswick
County: Cumberland
State: ME
Street or Map Location:
(If Off-Site):

WEATHER CONDITIONS AND EQUIPMENT

Temperature Range: 50-75°F
Precipitation: Rain AM / Sun PM
Barometric Pressure:
Tidally-Influenced [ ] Yes [X] No
Equipment No.:
Equipment Number:
Latest Calibration Date:

Well or Piezometer Number	Date/Time 6/12/09	Elevation of Reference Point (Feet)*	Water Level Indicator Reading (Feet)* From TOR (PVC)	Adjusted Depth (Feet)*	Groundwater Elevation (Feet)*
EP-07	11:15		13.74		
MW-222	11:00		21.21		
MW-224	11:11		20.35		
EP-08	11:16		Lock jammed Can't Unlock		
MW-307	11:40		14.62		
GP-1A	12:45		1.6 From top of gauge		
MW-NASB-212	13:17		7.15		
GP-2A	13:19		NOT FOUND		
MW-303	13:25		10.43		
P-132	13:33		17.56		
MW-305	13:35		11.35		
MW-306	15:01		13.10		

TtNUS Form 0010

* measured made to 0.00 feet

(10)

TETRA TECH NUS, INC.

GROUNDWATER LEVEL MEASUREMENT

SITE INFORMATION

Site Name: Eastern Plume
Project Number: 112G00645 / CTO 069
Personnel: C. Fellows
Date: 6/12/09

Municipality: NASB-Brunswick
County: Cumberland
State: ME
Street or Map Location:
(If Off-Site):

WEATHER CONDITIONS AND EQUIPMENT

Temperature Range: 50-75°F
Precipitation: Rain AM / Sun PM
Barometric Pressure:
Tidally-Influenced [ ] Yes [X] No

Equipment No.:
Equipment Number:
Latest Calibration Date:

Well or Piezometer Number	Date/Time 6/12/09	Elevation of Reference Point (Feet)*	Water Level Indicator Reading (Feet)* From TCR (PVC)	Adjusted Depth (Feet)*	Groundwater Elevation (Feet)*
P-105	15:08		5.54		
EP-15	15:10		7.90		
EP-13	15:~~14~~		1.28		
EP-14	15:15		5.88		
P-106	15:30		5.28		
EW-5B-PZ-4	15:34		0.84		
EW-5B-PZ-2	15:39		1.43		
EW-5B-PZ-1	15:41		0.33		
EW-5B	15:43		0.96		
EW-5B-PZ-3	15:45		3.74		
GP-3B	15:50		1.1 Off of Gauge		

TtNUS Form 0010

* measured made to 0.00 feet

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

LEK 1/5/10

WELL NUMBER: NASB-GW-MWEP35S-0909

PROJECT NAME: NASB ~~Background Study~~

DATE/TIME: 9/16/09 755

PROJECT MANAGER: ~~J. Orient~~ Linda Klink

INSPECTED BY: J. Cardinal

VENT WELL

MONITORING INSTRUMENT READING: PID: 0.0ppm

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC)	64.40 } measurement taken from top of PVC extention
WATER LEVEL DEPTH (FEET FROM TOP OF PVC)	2.60
WELL STICK-UP	3.03 in PVC extention 5.3 in
CASING STICK-UP (FEET)	3.15 inch
WELL DIAMETER (INCHES)	1inch
WELL CONSTRUCTION (PVC, STEEL, ETC.)	PVC

LOCKED UPON ARRIVAL?	YES	NO
LOCKED REPLACED?	YES	NO
OBSTRUCTIONS?	YES	NO
WELL RELABELED?	YES	NO
SLUG TEST CONDUCTED?	YES	NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS: artesian
located next to stream

APPENDIX A-9

GROUNDWATER SAMPLE LOGS

PURGE DATA SHEETS and SUPPORTING FIELD DOCUMENTATION

APPENDIX A-9.1
GROUNDWATER SAMPLE LOGS
and PURGE DATA SHEETS

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-MWEP340S-041509
Sample Location: MW-EP-340S
Sampled By: Fellows, Traut,
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 4/15/09								
Time: 1215								
Method: MicroWadder	Cloudy/colorless	8.21	124	2.67	7.44	250.3	350	

PURGE DATA:

Date: 4/15/09	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Method: MicroWadder								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1"								
Total Well Depth (TD): 59.23								
Static Water Level (WL): 3.25								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1000								
End Purge (hrs): 1210								
Total Purge Time (min): 130								
Total Vol. Purged (gal/L): 1 1/4								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: ~~MW~~ EPGW-MWEP340S

Tetra Tech NUS Charge No. 112G00645 / CTO 069   Page 1 of 1
QC: —— (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ~54 (TOR)   Screen Int. Depth 48-58 ft bgs
Sample Date & Time: 04 / 15 /2009 1215 hours —— (Dup Time)
Sampler(s): C.Fellows / J.Traut /
Data Recorded By: C.Fellows   Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness
Visual Evidence of Sheen (Yes/No)
Olfactory Evidence of Odor (Yes/No)
TD= 59.23 (TOR); Well S/U = 2.78 (PVC)
Weather: Sunny 40's

H&S Survey Meter BZ | W | PW 0 | 0 | 0 PPM   Field Instrument Group A / B / C / D
Initial WL 3.25 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1000	* Begin purge, measuring drawdown, and filling flow through cell. WL drops w/ flow rate above 30ml/min.										
1025	3.30	CPM 9.5/5.5	25							Over limit ERROR 3	Grey/v. Cloudy
1100	3.28	"	35	1/2	~~1/2~~ 10.37	137	7.51	198.9	2.21	over limit ERROR 3	"
1110	3.30	"	"		9.11	128	7.48	237.9	2.50	"	"
1130	3.28	"	"		8.92	132	7.47	243.4	2.54	1037	"
1140	3.30	"	"	3/4	8.73	125	7.45	248.9	2.56	687	cloudy/colorless
1145	"	"	"		8.30	125	7.44	250.9	2.61	580	"
1150	"	"	"		8.33	1.25	7.43	250.7	2.62	532	"
1200	3.31	"	"	1	8.29	124	7.44	250.9	2.65	400	"
1205	3.31	"	"		8.30	123	7.43	250.3	2.65	389	"
1210	"	"	"	1 1/4	8.21	124	7.44	250.3	2.67	380	"
1215	End purge and Begin sampling.										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ________ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-AWEP34OB1-041409
Sample Location: MW-EP-34OB1
Sampled By: Fellows, Traut,
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 4/14/09								
Time: 1240								
Method: Microbladder	Sl. cloudy/colorless	7.53	426	1.56	10.16	-151.8	31	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 4/14/09								
Method: Microbladder								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1"								
Total Well Depth (TD): 75.25								
Static Water Level (WL): 4.5								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1030								
End Purge (hrs): 1235								
Total Purge Time (min): 125								
Total Vol. Purged (gal/L): 13/4								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle If Applicable:		Signature(s):
MS/MSD —	Duplicate ID No.: —	C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: ~~EG EPGW-MW340~~ MWEP340B1-041409

Tetra Tech NUS Charge No. 112G00645 / CTO 069
Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 72 (TOR) Screen Int. Depth 68.3-73.3 ft bgs
Sample Date & Time: 4/14/2009 1240 hours NA (Dup Time)
Sampler(s): C.Fellows / J.Traut
Data Recorded By: J Traut Signature: J Traut;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness;
Visual Evidence of Sheen (Yes/No) NO;
Olfactory Evidence of Odor (Yes/No) NO;
TD= 75.25 (TOR); Well S/U = 2.02.5;
Weather: 50° sunny;

H&S Survey Meter 0.0 PPM Field Instrument Group A / B / C / D
Initial WL 4.5 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft B1	Water Depth below MP ft B2	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1030	4.81	~~65.5~~ 63.5		40ml							220	
1115	4.82 ~~4.77~~	63.96			1	8.35	515	10.15	-112.6	1.74	150	
1130	4.77					8.43	504	10.16	-125.9	1.66	120	
1135	4.82					8.01	500	10.16	-125.9	1.67	100	
1140	4.82				1.25	7.96	486	10.16	-135.7	1.74	90	
1145	4.77					7.81	476	10.16	-139.9	1.75	75	
1155	4.82					7.82	453	10.16	-145.3	1.63	60	
1200	4.84					7.81	452	10.17	-144.6	1.62	55	
1205	4.85				1.5	7.66	448	10.17	-149.0	1.66	50	
1210	4.85					7.56	443	10.15	-150.1	1.66	45	
1215	4.85					7.53	438	10.16	-153.4	1.61	38	
1220	4.86					7.54	434	10.17	-155.8	1.59	36	
1225	4.85					7.59	430	10.16	-156.8	1.61	33	
1230	4.84				1.75	7.63	428	10.16	-157.5	1.59	31	
Acceptance Criteria: <0.3 ft (drawdown)						3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Notes: B2 just got sampled
V. slow recharge

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW ~~MWEP~~ 340B1-041409

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: ______________________ (If applicable)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1235	484		40	1.75	7.53	4216	10.16	-158.8	1.56	31	
1240	B	Parameters stable/collect sample									
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated screen or well volume (gallons) ____________ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-MWEP340B2-041409
Sample Location: MWEP340B2
Sampled By: Fellows, Traut,
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA: CFS

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: ~~4/15/09~~ 4/14/09								
Time: 0830								
Method: MicroWadder/Grab	Sl.Cloudy/colorless	7.74	549	6.44	10.77	140	100	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 4/14/09								
Method: MicroWadder								
Monitor Reading (ppm): 0.9								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1"								
Total Well Depth (TD): 90.10								
Static Water Level (WL): 5.85								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1320								
End Purge (hrs): 1545								
Total Purge Time (min): 145								
Total Vol. Purged (gal/L): 2.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

4/13/09 * Water level / drawdown continued to drop (2.27 to 50.73 ft). Decided to evacuate water volume above screen using waterra tubing. Collected grab sample on 4/14/09 when water level had recovered.

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): C. Fellows

340B2

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME MWEP34OB2
Sample ID: ~~MW-EP-340B2~~ EP/GW-~~MW340B2~~-041409

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ~~88~~ 87 (TOR) Screen Int. Depth 85.7 - 90.7 ft bgs
Sample Date & Time: 4/14/2009 0830 hours NA (Dup Time)
Sampler(s): C.Fellows J.Traut /
Data Recorded By: JTraut Signature: JTraut
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness bottom v soft ~2' of sediment
Visual Evidence of Sheen (Yes/No)
Olfactory Evidence of Odor (Yes/No)
TD= 90.16 (TOR); Well S/U =
Weather: 50° cool windy

H&S Survey Meter 0.9 PPM Field Instrument Group A / B / C / D
Initial WL 5.85' ft btor (Dedicated tubing)
▽ ~~as~~ after pump insertion 1 hr - 2.27 well will need to recover v slowly

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft B2	Water Depth below MP ft B1	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1320	2.27	~~4.34~~ 4.58										
1330	3.84	4.58										
1355	5.46	~~5.46~~ 4.58		~60mL/min								
1400	11.12	4.58		↑								
1430	22.7	4.58		70 mL/min								
1500	35.2	4.58										
1530	47.82	4.58		90mL	2.5	8.82	598	10.97	-229.2	1.34	20	
1535	50.73	4.58				8.53	592	11.04	-247.2	1.30	20	
1540		4.58				8.29	586	11.09	-251.4	1.27	21	
1545	Will Band surge w/ Watterra tubing & take ~~grand~~ grab sample once recovered											
1/09 ~~0800~~ 0815	59.67		Begin purging - reinsert bladder pump - WL rose ~54									
0823	59.61			~50mL/min		7.74	549	10.77	140.3	6.44	100	
0830		collect grab sample										

Acceptance Criteria: <0.3 ft (drawdown)	Temp	Spec. Cond.	pH	ORP	DO	Turbidity
	3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-MW EP341S-0415 09
Sample Location: MW-EP-341S
Sampled By: Fellows, Traut,
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 4/15/09								
Time: 1505								
Method: Micro Wadder	Clear/Colorless	6.24	161	7.38	6.97	296	6.8	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 4/15/09								
Method: MicroWadder								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1"								
Total Well Depth (TD): 54.75								
Static Water Level (WL): 2.85								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1320								
End Purge (hrs): 1500								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:		Signature(s):
MS/MSD —	Duplicate ID No.: —	C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MW-P3415-041509

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 52 (TOR) Screen Int. Depth 42-52 ft bgs
Sample Date & Time: 4/15/2009 1505 hours NA (Dup Time)
Sampler(s): C.Fellows / J.Traut
Data Recorded By: J Traut Signature: J Traut;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness;
Visual Evidence of Sheen (Yes/No);
Olfactory Evidence of Odor (Yes/No);
TD= 54.75(TOR); Well S/U = 2.5;
Weather: ;

H&S Survey Meter 0.0 PPM Field Instrument Group A / B / C / D
Initial WL 2.85 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1320	2.85		Begin low flow								
~~1345~~ 1355	2.85		40	0.5	6.73	161	6.83	261.7	7.66	60	
1405	2.85				6.72	159	6.94	282.9	7.73	55	
1410	2.85			0.75	6.63	160	6.95	285.3	7.74	31	
1415	2.85				6.62	160	6.94	287.3	7.60	21	
1420	2.85				6.47	160	6.95	288.9	7.46	17	
1425	2.85			1	6.50	160	6.96	290.1	7.43	16	
1430	2.85				6.52	161	6.96	291.4	7.44	~~13~~ 12	
1435	2.85				6.52	161	6.97	292.7	7.45	10	
1440	2.85				6.46	161	6.97	293.7	7.44	8.8	
1445	2.85				6.40	161	6.97	294.7	7.43	8.1	
1450	2.85				6.32	161	6.97	295.4	7.43	6.8	
1455	2.85				6.27	162	6.96	295.8	7.40	6.2	
1500	2.85			1.5	6.24	161	6.97	296.0	7.38	6.8	Parameters Stable / collect sample @ 1505
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-MWEP341B1-041509
Sample Location: MWEP341B1
Sampled By: Fellows, Traut,
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 4/15/09								
Time: 1240								
Method: Microbladder	Sl. cloudy/colorless	7.24	354	1.83	7.49	-124.2	50	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 4/15/09								
Method: Microbladder								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1"								
Total Well Depth (TD): 81.14								
Static Water Level (WL): 3.50								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 0900								
End Purge (hrs): 1235								
Total Purge Time (min): 215								
Total Vol. Purged (gal/L): 6 3/4								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	C Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MWEP341B1-041509

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)
Page 1 of 1

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 78 (TOR) Screen Int. Depth 73-78 ft bgs
Sample Date & Time: 4/15/2009 1240 hours NA (Dup Time)
Sampler(s): C.Fellows/J.Traut/
Data Recorded By: J Traut Signature: J Traut
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness
Visual Evidence of Sheen (Yes/No)
Olfactory Evidence of Odor (Yes/No)
TD= 81.14 (TOR); Well S/U = 1.88
Weather: ~~50~~ 40° sunny

H&S Survey Meter 0.0 PPM Field Instrument Group A / B / C / D
Initial WL 3.50 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE **2.** VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft B1	B2	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0900	3.5	3.54		Begin low flow								
0940	3.73	3.56				4.96	374	8.34	-158.1	3.44	1000	
0950	3.73			25		5.10	376	8.35	-154.3	3.33	800	
1005	3.79			30		5.14	381	8.32	-142.9	3.05	550	
1020	3.78	3.54		25		5.30	388	8.23	-143.2	2.73	450	
1030	3.78					5.31	391	8.19	-147.5	2.66	330	
~~105~~ 1100	3.74					5.65	392	8.10	-142.2	2.13	160	
1110	3.76					5.78	388	8.07	-139.1	2.01	110	
1120	3.76					5.77	386	8.03	-139.6	1.91	90	
1130	3.76					5.91	382	8.01	-134.8	1.84	75	
1140	3.76					6.06	377	8.00	-131.7	1.74	70	
1145	3.76	3.59				6.17	373	8.00	131.2	1.71	60	
1150	3.76					6.28	368	8.00	-131.4	1.68	55	
1200	3.76					6.80	363	8.01	-133.0	~~2~~ 1.77	75	
						3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Acceptance Criteria: <0.3 ft (drawdown)
Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ________ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MWEP341B1-041509

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)

Clock Time 24hr	Water Depth below MP B1 ft B2	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1205	3.76		25	0.75	6.85	363	8.01	-134.0	1.95	70	
1210	3.76				6.86	363	7.99	-133.3	1.86	65	
1215	3.76				6.97	362	7.99	-132.5	1.99	55	
1225	3.76				7.14	355	8.00	-129.2	1.99	50	
1230	3.76 3.61				7.21	354	7.99	-126.2	1.93	50	
1235	3.76				7.24	354	7.99	-124.2	1.83	50	
1240		Parameters stable / collect sample									
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

TtNUS Form 0009

Saturated screen or well volume (gallons) ____________ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-MWEP341B2-041409
Sample Location: MW-EP-341B2
Sampled By: Fellows, Traut,
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 4/14/09								
Time: 1545								
Method: Micro bladder	Sl. cloudy/colorless	6.28	479	0.90	7.87	-141.7	29	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 4/14/09								
Method: Micro bladder								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1"								
Total Well Depth (TD): 94.65								
Static Water Level (WL): 3.65								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1400								
End Purge (hrs): 1545								
Total Purge Time (min): 105								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MW341B2-041409

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 92.65 (TOR) Screen Int. Depth 88-93 ft bgs
Sample Date & Time: 4/14/2009 1545 hours NA (Dup Time)
Sampler(s): C.Fellows / J.Traut
Data Recorded By: J. Traut Signature: J. Traut;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ;
Visual Evidence of Sheen (Yes/No) NO;
Olfactory Evidence of Odor (Yes/No) No;
TD= 94.65 (TOR); Well S/U = :
Weather: 50° sunny;

H&S Survey Meter 0.0 PPM Field Instrument Group A / B / C / D
Initial WL 3.65 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft B2	Water Depth below MP ft B1	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1400	3.65	3.60	Begin low flow									
1440	3.85	3.63	CPM 4 10.5/14.5	40		6.84	282	8.16	-143.2	1.84	290	cloudy/colorless
1450	3.85	3.63	"	"		6.34	473	7.96	-139.2	1.17		
1500	"	"	"	"		6.31	473	7.95	-139.5	1.17	45	sl. cloudy/colorless
1520	"	"	"	"		6.29	478	7.91	-140.3	1.03	39	
1525	3.85	3.63	|	|		6.34	478	7.89	-141.6	0.98	36	
1530	3.85	3.63	|	|		6.31	479	7.89	-141.8	0.95	32	
1535	3.85	3.63	|	|		6.24	479	7.87	-141.5	6.93	31	
1540	3.85	3.63	|	|	1.5	6.28	479	7.87	-141.7	6.90	29	
1545			Parameters stable / Collect Sample									
Acceptance Criteria: <0.3 ft (drawdown)						3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-MWEP342S-041409
Sample Location: MW-EP-342S
Sampled By: Fellows, Traut,
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 4/14/09								
Time: 1625								
Method: Microbladder	Cloudy/Colorless	7.58	176	0.59	8.28	-3.6	120	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 4/14/09								
Method: Microbladder								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1"								
Total Well Depth (TD): 41.45								
Static Water Level (WL): 1.25								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1430								
End Purge (hrs): 1625								
Total Purge Time (min): 115								
Total Vol. Purged (gal/L): 1								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	~~3~~ 9 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	~~3~~ 9 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

X Lab QC

Circle If Applicable:		Signature(s):
MS/MSD: Yes	Duplicate ID No.: —	C. Fellows

3X Volume

MW-342S

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MW342S

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: Lab QC (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ~37 (TOR) Screen Int. Depth 30-40 ft bgs
Sample Date & Time: 4/14/2009 1625 hours — (Dup Time)
Sampler(s): C.Fellows / J.Traut /
Data Recorded By: C. Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No) if yes, report depths/describe thickness ;
Visual Evidence of Sheen (Yes/No) ;
Olfactory Evidence of Odor (Yes/No) ;
TD= 41.45 (TOR); Well S/U = :
Weather: Sunny 50's ;

H&S Survey Meter BZ 0 W 0 PW 0 PPM Field Instrument Group A / B / C / D
Initial WL 1.25 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1430	Begin purge, measure drawdown, fill flow through cell. → * Have trouble controlling drawdown, have to decrease flow rate.										
1440	1.71	cpm4 11/9.5	40								
1510	1.71	"	35								
1520	1.65	cpm4 4/4	35								
1545	1.65	cpm4 10/5	"	1/2	10.60	185	8.18	24.2	0.98	235	clear/colorless
1550	1.68	"	"		10.03	184	8.21	22.3	0.97	193	"
1555	1.71	"	"		8.61	181	8.23	13.0	0.86	155	"
1600	1.72	"	"		8.37	180	8.24	8.8	0.81	168	"
1605	1.80	"	"	1	7.81	178	8.25	2.5	0.69	147	"
1610	1.81	"	"		7.61	177	8.27	-1.8	0.63	118	"
1615	1.81	"	"		7.51	176	8.27	-3.2	0.61	124	"
1620	1.85	"	"		7.58	176	8.28	-3.6	0.59	120	"
1625	* End Purge. Begin Sampling.										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- MWEP342B1-041409
Sample Location: MW-EP-342B1
Sampled By: Fellows, Traut,
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 4/14/09								
Time: 1100								
Method: Microbladder	S. cloudy/colorless	7.73	690	0.70	9.39	-58.9	53.9	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 4/14/09								
Method: Microbladder								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1"								
Total Well Depth (TD): 71.3								
Static Water Level (WL): 1.50								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 0925								
End Purge (hrs): 1100								
Total Purge Time (min): 95								
Total Vol. Purged (gal/L): 2 3/4								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
	EPGW-FD-041409 TIME: 1120	C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MWEP342B1

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: EPGW-FD-041409 1120 (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 67.28 (TOR) Screen Int. Depth 632-682 ft bgs
Sample Date & Time: 4/14/2009 1100 hours 1120 (Dup Time) ✓
Sampler(s): C.Fellows / J.Traut /
Data Recorded By: C.Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness;
Visual Evidence of Sheen (Yes/No);
Olfactory Evidence of Odor (Yes/No);
TD= 71.3 (TOR); Well S/U = 1.58;
Weather: ;

H&S Survey Meter (B2 / W / PW) 0 / 0 / 0 PPM Field Instrument Group A / B / C / D w/ A YSI
Initial WL 1.50 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft		Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0925	Begin purging, measure drawdown and fill flow through cell.											
	B1	B2										
0950	1.60	1.52	CPM4 9.5/6.5	60	1/2						425	Grey/cloudy
1000	1.58	1.52	"	"	1						221	Sl. Grey/cloudy
1020	1.60	1.52	"	"	1 1/2						230	"
1025	1.60		"	"		7.43	706	9.47	-34.1	0.88	100.4	Sl. cloudy/colorless
1030	1.60		"	"	2	7.58	694	9.41	-44.1	0.81	80.4	"
1035	1.59		"	"		7.63	693	9.42	-47.0	0.77	83.3	"
1040	1.60		"	"		7.67	692	9.41	-51.6	0.79	69.9	"
1045	1.61		"	"	2 1/2	7.75	690	9.40	-54.7	0.72	58.9	"
1050	1.61		"	"		7.72	690	9.37	-56.2	0.69	54.6	"
1055	1.61		"	"	2 3/4	7.73	690	9.39	-58.9	0.70	53.9	"
1100	*End purge. Begin Sampling											
Acceptance Criteria: <0.3 ft (drawdown)						3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-MWEP342B2-041309
Sample Location: MW-EP-342B2
Sampled By: Fellows, Traut,
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 4/13/09								
Time: 1340								
Method: microbladder	Clear/colorless	11.37	751	1.39	9.51	103.9	4.34	

PURGE DATA:

Date: 4/13/09	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Method: microbladder								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1"								
Total Well Depth (TD): 97.52								
Static Water Level (WL): 1.38								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1150								
End Purge (hrs): 1340								
Total Purge Time (min): 110								
Total Vol. Purged (gal/L): 1								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

* After sampling on 4/13/09, realized bottle set included 6 total 40ml vials instead of 3. Collected 3 more 40ml vials w/ HCL on 4/14/09 at 0800 (w/in 24hrs) Purged 15 min turbidity equaled 5.27 NTU then took 3 vials to add to sample.

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MW-342B2 (EP)

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: ~81 ft (TOR) Screen Int. Depth 76.2-81.2 ft bgs
Sample Date & Time: 4 / 13 /2009 1340 hours ______(Dup Time)
Sampler(s): C.Fellows / J.Traut /
Data Recorded By: C.Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ;
Visual Evidence of Sheen (Yes/No) ;
Olfactory Evidence of Odor (Yes/No) ;
TD= 97.52 (TOR); Well S/U = ~~3.32~~ 1.54 ;
Weather: Sunny 40s ;

H&S Survey Meter BZ 0 WH 0 PW 0 PPM Field Instrument Group A / B / C / D w/ A YSI
Initial WL 1.38 ft btor (Dedicated tubing)
TD = 97.52 ft TOR

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE **2.** VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft (B2)	(B1)	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1150	1.38	1.53	CPM 4 10/s	30								
1200	1.49	1.52	"	30								
1205	1.49	1.52	"	"							24.2	clear, bubbles
1210	1.49	1.52	"	"							23.7	"
1215	1.49	1.53	"	"							20.3	"
1220	1.51	1.53	"	"							19.1	"
1225	1.51	1.53	"	"							16.7	"
1230	1.51	1.53	"	"							16.5	"
1235	1.51	1.53	"	"							11.8	"
1240	1.52	1.53	"	"	1/2						11.1	"
1245	1.54	1.53	"	"		*Switch Power Packs.					10.9	"
1250	1.55	—	"	35		*Attach YSI and fill flow through cell.						
1255												
1300												

Acceptance Criteria: <0.3 ft (drawdown) — Temp 3%; Spec. Cond. 3%; pH +/- 1.0 S.U.; ORP +/- 10mV; DO 10%; Turbidity 10%

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ____________ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MW-EP342B2

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: ______________ (If applicable)

Clock Time 24hr	Water Depth below MP 32 ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1305	1.52	CPM 4 10/5	30		12.85	779	9.60	103.0	1.70	12.0	"
1315	1.53	"	"		12.62	772	9.59	104.2	1.61	7.28	"
1320	1.54	"	"		11.73	758	9.52	104.4	1.40	6.79	"
1325	1.54	"	"		11.42	754	9.51	103.9	1.40	4.41	"
1330	1.54	"	"	1	11.40	752	9.50	104.2	1.39	4.93	"
1335	1.54	"	"		11.37	751	9.51	103.9	1.39	4.34	"
1340	* End purge. Begin sampling.										
1600	* Realize bottle set includes 3 vials w/ HCL for VOCs and 3 vials w/ HCL for 1,4 Dioxane/1,1DCE.										
	Will collect 3 more voa vials on the following morning. (w/in 24 hrs)										
4/14/09											
0800	* Collect 3 more voa vials after 15 min purge. Turbidity @ 5.27 NTU.										

Acceptance Criteria: <0.3 ft (drawdown) — Temp 3%; Spec. Cond. 3%; pH +/- 1.0 S.U.; ORP +/- 10mV; DO 10%; Turbidity 10%

TtNUS Form 0009

Saturated screen or well volume (gallons) __________ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-MWEP343-061509
Sample Location: MW-EP-343
Sampled By: Fellows, ~~Fraut~~, Granger
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (μS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/15/09								
Time: 1650								
Method: Low Flow	Clear/Colorless	11.32	177	0.91	8.03	-123.4	7.2	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/15/09								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1" PVC								
Total Well Depth (TD): 80.57								
Static Water Level (WL): 2.80								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1535								
End Purge (hrs): 1645								
Total Purge Time (min): 1hr 10min								
Total Vol. Purged (gal/L): 5.6 Liters								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MWEP343-061509.

Tetra Tech NUS Charge No. 112G00645 / CTO 069   Page 1 of
QC: ______ (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic~~ Micro-Bladder Pump
Depth Sampled: 73 (TOR) Screen Int. Depth 68-78 ft bgs
Sample Date & Time: 06/15/2009 1650 hours ______ (Dup Time)
Sampler(s): C.Fellows / ~~J.Traut~~ / B.Geringer
Data Recorded By: Brian Geringer Signature: B Geringer;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ______;
Visual Evidence of Sheen (Yes/No) No;
Olfactory Evidence of Odor (Yes/No) No;
TD= 80.57 (TOR); Well S/U = 2.85 : Casing-2.95
Weather: Cloudy / 60s;

H&S Survey Meter 0.0 PPM Field Instrument Group A / B / C / D
Initial WL 2.80 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr START: 1525	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1535	2.92	CPM4/75PSI	70	700	12.84	178	7.01	25.8	6.05	190	Cloudy
1545	2.92		70	1400	12.26	177	7.49	-41.6	2.42	65	Little Cloudy
1555	2.92		70	2100	11.86	177	7.79	-78.4	1.34	34	Clear/Colorless
1605	2.92		70	2800	11.63	177	7.88	-100.1	1.24	22	" / "
1615	2.92		70	3500	11.48	177	7.96	-110.0	0.98	14	
1625	2.92		70	4200	11.51	177	8.00	-116.9	0.98	11	
1635	2.92		70	4900	11.40	177	8.02	-122.2	0.93	8.8	
1645	2.92		70	5600	11.32	177	8.03	-123.4	0.91	7.2	
	Stabilization achieved-		Collected	Samples							
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- MWEP344-06509
Sample Location: MW-EP-344
Sampled By: Fellows, ~~Traut,~~
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/15/06								
Time: 1550								
Method: Low Flow	Clear/colorless	10.87	63	7.04	4.95	91.7	35.1	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/15/06								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1" PVC								
Total Well Depth (TD): 70.6								
Static Water Level (WL): 1.4								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1400								
End Purge (hrs): 1545								
Total Purge Time (min): 1hr 45min								
Total Vol. Purged (gal/L): 3 Gallons								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	
—	—	C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EDGW-MWED344

Tetra Tech NUS Charge No. 112G00645 / CTO 069
Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 68 (TOR) Screen Int. Depth 63-68 ft bgs
Sample Date & Time: 6/15/2009 1550 hours ______(Dup Time)
Sampler(s): C.Fellows / ~~J.Traut~~ /
Data Recorded By: C.Fellows Signature: [illegible];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ______;
Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
TD= 70.6 (TOR); Well S/U = 2.55 : Casing = 2.65
Weather: 60's Showers ;

H&S Survey Meter 0/0/0 PPM Field Instrument Group A / B / C / D
Initial WL 1.4 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE **2.** VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1 CPM	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1400	Begin purging, Allowing flow through and measuring drawdown										
1440	1.6	4	100		11.13	66	5.29	43.5	6.71	120	Sl. cloudy / colorless
1500	1.6	4	100	1	10.99	65	5.07	65.1	6.84	126	"
1510	1.6	"	"		10.78	63	5.06	81.2	7.03	86	"
1525	1.6	"	"	2	10.74	66	4.93	88.7	6.99	39.7	Clear/colorless
1535	"	"	"		10.86	63	4.96	89.1	7.02	34.8	"
1540	"	"	"		10.87	65	4.93	90.4	7.02	35.8	"
1545	"	"	"	3	10.87	63	4.95	91.7	7.04	35.1	"
1550	End Purge. Begin sampling.										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-MWEP34S-061509
Sample Location: MW-EP-34S
Sampled By: Fellows, ~~Traut~~,
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/15/09								
Time: 1325								
Method: Low Flow	Clear/colorless	11.13	73	3.95	6.26	101.6	8.5	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/15/09								
Method: Bladder Pump								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1" PVC								
Total Well Depth (TD): 25.6								
Static Water Level (WL): 10.27								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1220								
End Purge (hrs): 1320								
Total Purge Time (min): 1 hr.								
Total Vol. Purged (gal/L): 3 Liters								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:		Signature(s):
MS/MSD Yes	Duplicate ID No.: —	D. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: ~~MWEP~~ GWEP-MWEP345-061509

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: Collected Lab QC (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 20.5 (TOR) Screen Int. Depth 18-23 ft bgs
Sample Date & Time: 06/15/2009 1325 hours ______ (Dup Time)
Sampler(s): C.Fellows / ~~J.Traut~~ / B.Geringer
Data Recorded By: Brian Geringer Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ______;
Visual Evidence of Sheen (Yes/No) No;
Olfactory Evidence of Odor (Yes/No) No;
TD= 25.6 (TOR); Well S/U = 2.6;
Weather: Cloudy / 60's;

H&S Survey Meter 0.0 PPM Field Instrument Group A / B / C / D
Initial WL 10.27 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr START: 1220	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals.~~ MLs	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1230	10.39	CPM4/60PSI	50	500	11.24	76	7.09	59.6	6.01	80	Little Cloudy
1240	10.35	↓	50	1000	11.03	75	6.55	77.8	4.13	50	Slightly Cloudy
1250	10.30	↓	50	1500	10.95	74	6.41	85.2	4.17	34	Clear/odorless
1300	10.30	↓	50	2000	11.00	74	6.32	92.1	4.08	23	" / "
1310	10.35	↓	50	2500	11.11	73	6.29	96.9	4.06	13	↓
1320	10.33	↓	50	3000	11.13	73	6.26	101.6	3.95	8.5	↓
	Reached Stabilization - Collected Samples										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- MWEP346-061109
Sample Location: MW-EP-346
Sampled By: Fellows, ~~Traut~~, Garinger
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/11/09								
Time: 1455								
Method: Low Flow	Clear/colorless	11.29	267	1.66	6.52	7.6	5.6	

PURGE DATA:

Date: 6/11/09	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1" PVC								
Total Well Depth (TD): 71.03								
Static Water Level (WL): 19.11								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1350								
End Purge (hrs): 1450								
Total Purge Time (min): 1hr	CF5							
Total Vol. Purged (gal/L): ~~1.35~~	~~510~~ 5.1 liters							

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MWEP346-061109

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: ______ (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic Pump~~ Micro-bladder pump
Depth Sampled: 65 (TOR) Screen Int. Depth 60-70 ft bgs
Sample Date & Time: 06 / 11 /2009 1455 hours ______(Dup Time)
Sampler(s): C.Fellows / J.Traut / B.Geringer
Data Recorded By: Brian Geringer Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No) if yes, report depths/describe thickness______;
Visual Evidence of Sheen (Yes/No) No;
Olfactory Evidence of Odor (Yes/No) No;
TD= 71.93 (TOR); Well S/U = 2.93;
Weather: Mostly cloudy / 60's;

H&S Survey Meter 0.0 PPM Field Instrument Group A / B / C / D
Initial WL 19.11 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2.VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr Start: 1325	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1350	19.18	CPM4/70PSI	60	1500	11.27	279	6.60	7.6	1.95	50	Clear/colorless
1400	19.13		60	2100	11.66	278	6.59	5.6	1.91	26	" "
1410	19.11		60	2700	11.46	276	6.56	5.6	1.95	16	
1420	19.11		60	3300	11.46	274	6.55	5.8	1.88	14	
1430	19.11		60	3900	11.53	271	6.54	5.9	1.70	10	
1440	19.11		60	4500	11.47	269	6.54	6.1	1.68	7.8	
1450	19.11		60	5100	11.29	267	6.52	7.6	1.66	5.6	
	Reached Stabilization -		Collected Samples								
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- MWEP347-061509
Sample Location: MW-EP-347
Sampled By: Fellows, ~~Traut,~~ Gerlinger
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/15/09								
Time: 1055								
Method: Low Flow	Clear/Colorless	9.01	175	0.68	7.35	-120.8	7.5	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/15/09								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1" PVC								
Total Well Depth (TD): 52.47								
Static Water Level (WL): 0.0	(From top of 2.2' PVC extension)							
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1015								
End Purge (hrs): 1050								
Total Purge Time (min): 35 min								
Total Vol. Purged (gal/L): 11 Liters								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): C. Fellows

ec

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPMW-MWEP347-061509

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic Pump~~ Micro-bladder Pump
Depth Sampled: 48.5 (TOR) Screen Int. Depth 46-51 ft bgs
Sample Date & Time: 06/15/2009 1055 hours (Dup Time)
Sampler(s): C.Fellows / J.Traut / B.Geringer
Data Recorded By: Brian Geringer Signature: ;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No) if yes, report depths/describe thickness ;
Visual Evidence of Sheen (Yes/No) No ;
Olfactory Evidence of Odor (Yes/No) No ;
TD= 52.47 (TOR); Well S/U = 2.14 :
Weather: Cloudy / 60's ;

H&S Survey Meter 0.0 PPM Field Instrument Group A / B / C / D
Initial WL @ Top of Casing ft btor (Dedicated tubing)

▲= Artesian Conditions, added 2.2' of PVC - Water was flowing without the need for Nitrogen

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr START: 1015	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged ~~Gals~~ (mL)	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1025	0.74	▲	220	2200	8.92	177	7.21	-95.3	0.97	40	Clear/Colorless
1035	0.76		220	4400	8.97	175	7.28	-115.1	0.75	16	" "
1040	0.74		220	6600	8.95	176	7.30	-118.5	0.71	12	
1045	0.76		220	8800	9.00	175	7.33	-119.9	0.70	9.9	
1050	0.76		220	11000 ML	9.01	175	7.35	-120.8	0.68	7.5	
	Reached	Stabilization	Collected	Samples							
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- MWEP348-060809
Sample Location: MW-EP-348
Sampled By: Fellows, ~~Traut~~, Gerlinger
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/8/09								
Time: 1510								
Method: Low Flow	Clear/colorless	9.74	142	4.01	7.47	43.2	0.80	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/8/09								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1" PVC								
Total Well Depth (TD): 50.27								
Static Water Level (WL): 0.55	(From top of 5' PVC extension)							
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1405								
End Purge (hrs): 1505								
Total Purge Time (min): 1 hr								
Total Vol. Purged (gal/L): 19.8 Liters								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:		Signature(s):
MS/MSD —	Duplicate ID No.: —	C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MWEP348-060809

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: ______ (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic Pump~~ BG Micro-bladder Pump
Depth Sampled: 45.5 (TOR) Screen Int. Depth 43-48 ft bgs
Sample Date & Time: 06 / 08 /2009 1510 hours ______(Dup Time)
Sampler(s): C.Fellows ~~/ J. Traut~~ / B. Geringer
Data Recorded By: Brian Geringer Signature: B. G.;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No) No if yes, report depths/describe thickness ______;
Visual Evidence of Sheen (Yes/No) No;
Olfactory Evidence of Odor (Yes/No) No;
TD= 55.27 (TOR); Well S/U = ______:
Weather: Sunny / 60's;

H&S Survey Meter 0.0 PPM Field Instrument Group A / B / C / D
Initial WL 0.55 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE **2.** VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft *	Pump Dial 1 ▲	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1405	1.70	N/A	330		10.57	144	7.22	83.4	4.17	19	Clear/Odorless
1415	1.74		330		10.10	142	7.42	73.3	3.86	5.3	" "
1425	1.74		330		9.96	142	7.40	62.0	4.03	2.8	
1435	1.74		330		10.01	142	7.40	65.0	3.63	1.9	
1445	1.74		330		9.85	142	7.44	60.3	3.89	1.2	
1450	1.74		330		9.80	142	7.44	58.1	3.85	1.0	
1455	1.74		330		9.85	142	7.46	48.0	4.08	0.90	
1500	1.74		330		9.75	142	7.49	46.9	4.10	0.85	
1505	1.74		330	19.8 Liters	9.76	142	7.47	43.2	4.01	0.80	
	Reached	Stabilization	Collected								
	Samples										

Acceptance Criteria: <0.3 ft (drawdown) — Temp 3%; Spec. Cond. 3%; pH +/- 1.0 S.U.; ORP +/- 10mV; DO 10%; Turbidity 10%
Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

* Added 5' length of PVC riser so water was not flowing out of PVC onto the ground.

▲ Due to artesian conditions water was flowing on its own.

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-MW-EP349-060809
Sample Location: MW-EP-349
Sampled By: Fellows, ~~Traut~~, Gerlinger
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (μS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/8/09								
Time: 1215								
Method: Low Flow	Clear/Colorless	10.18	220	3.80	6.27	124.1	0.83	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/8/09								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1" PVC								
Total Well Depth (TD): 53.33								
Static Water Level (WL): 1.94	(From top of 5" PVC extension)							
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1125								
End Purge (hrs): 1210								
Total Purge Time (min): 45 min								
Total Vol. Purged (gal/L): 9.5 Liters								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle If Applicable:		Signature(s):
MS/MSD: —	Duplicate ID No.: —	C. Fellows

Initial H_2O level: 1.94 below 5' 1" PVC

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MWEP349-060809.

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: ______ (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic Pump~~ BG MacroBladder pump
Depth Sampled: 48.5 (TOR) Screen Int. Depth 46-51 ft bgs
Sample Date & Time: 06/08/2009 1215 hours ______(Dup Time)
Sampler(s): C.Fellows / J.Traut / B.Geringer
Data Recorded By: Brian Geringer Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No) if yes, report depths/describe thickness______;
Visual Evidence of Sheen (Yes/No) No;
Olfactory Evidence of Odor (Yes/No) No;
TD= 53.33 (TOR); Well S/U = 2.4 ft:
Weather: Sunny / 60's;

H&S Survey Meter 0.0 PPM Field Instrument Group A / B / C / D
Initial WL 1.94 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft *	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
11:25	1.94	CPM4	~~200~~ 400		10.89	273	6.58	120.6	3.52	4.7	Clear/colorless
1135	2.00	▲	250	3250 (L)	10.24	238	6.35	122.3	3.76	1.8	" / "
1145	2.00		250		10.22	230	6.29	125.4	3.72	1.5	
1155	2.00		~~200~~ 250		10.19	224	6.27	126.0	3.69	1.1	
1200	2.00		250		10.29	223	6.28	124.6	3.81	0.95	
1205	2.00		250		10.23	222	6.27	124.6	3.73	0.85	
1210	2.00		250		10.18	220	6.27	124.1	3.80	0.83	
	Reached	Stabilization	- Collected	9.5 Liters							
	Samples										

Acceptance Criteria: <0.3 ft (drawdown) 3% 3% +/- 1.0 S.U. +/- 10mV 10% 10%
Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

* Added 5' of riser so GW is not discharging on the ground

▲ Due to Artesian Conditions water was flowing without the need of pumping

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- MWEP350-060109
Sample Location: MW-EP-350
Sampled By: Fellows, ~~Traut~~, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/11/09								
Time: 1305								
Method: Low Flow	Clear/colorless	9.10	332	0.59	5.92	44.6	18.8	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/11/09								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD): 59.15								
Static Water Level (WL): 1.60	* From top of 9.5 ft PVC extension.							
Well or Sat. Scrn. Vol. (gal): 1?								
Start Purge (hrs): 1130								
End Purge (hrs): 1300								
Total Purge Time (min): 1hr 30min								
Total Vol. Purged (gal/L): 12								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
	EPGW-FD-060109 time = 1320	C Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MWEP350

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: EPGW-FD-061109 (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic~~ Microbladder Pump
Depth Sampled: 52 (TOR) Screen Int. Depth 48-58 ft bgs
Sample Date & Time: 6 / 11 /2009 1305 hours 1320 (Dup Time)
Sampler(s): C.Fellows / ~~J.Traut~~ /
Data Recorded By: C.Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No) if yes, report depths/describe thickness
Visual Evidence of Sheen (Yes/No)
Olfactory Evidence of Odor (Yes/No)
TD= 59.15 (TOR); Well S/U = 2.5 : Casing 2.5
Weather: Cloudy 50's

H&S Survey Meter ~~0/0/0~~ Background PPM Field Instrument Group A / B / C / D
Initial WL 1.60 ft btor (Dedicated tubing)
* WL measured from top of PVC extension = 9.5 ft. above well PVC

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1130	1.60	* No Pump	Artesian Well.								
1135	"	No Pump	500		8.82	324	6.79	16.5	0.72	100.7	sl. cloudy/colorless
1155	"	"	"	~~3~~ 4	8.93	332	6.44	35.2	0.78	49.4	"
1205	"	"	"		8.96	328	6.16	41.6	0.78	36.6	"
1215	"	"	"	~~5~~ 6	8.97	331	6.08	40.6	0.72	32.1	"
1225	"	"	"		9.07	330	6.05	40.9	0.71	45.7	"
1235	"	"	"	6 8	9.13	332	5.99	43.5	0.62	20.2	clear/colorless
1245	"	"	"		9.01	330	5.97	44.1	0.62	20.1	"
1250	"	"	"	~~8~~ 10	9.14	331	5.96	44.0	0.62	18.9	"
1255	"	"	"		9.15	333	5.94	44.5	0.59	20	"
1300	"	"	"	12	9.10	332	5.92	44.6	0.59	18.8	"
1305	End Purge: Begin Sampling										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

18.9
+1.8
20.7

20
-1.8

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Eastern Plume - NASB Brunswick, ME	Sample ID No. EPGW-MWEP351-060909
Project No.: 112G00645 / CTO 069	Sample Location: MW-EP-351
	Sampled By: Fellows, ~~Traut~~, Carlinger
[] Domestic Well Data	C.O.C. No.:
[X] Monitoring Well Data	Type of Sample:
[] Other Well Type:	[X] Low / Moderate Concentration
[] QA Sample Type:	[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/9/09								
Time: 1025								
Method: Low Flow	Clear/Colorless	8.62	154	3.65	6.46	137.1	4.6	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/9/09								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1" PVC								
Total Well Depth (TD): 35.40								
Static Water Level (WL): 0.0 (From top of 5' PVC extension)								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 0920								
End Purge (hrs): 1020								
Total Purge Time (min): 1 hr.								
Total Vol. Purged (gal/L): 13.2 Liters								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	C. Fellows
—	—	

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-EPMW351-060909

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic~~ Microbladder Pump
Depth Sampled: 28 (TOR) Screen Int. Depth 23-33 ft bgs
Sample Date & Time: 06 / 09 /2009 1025 hours (Dup Time)
Sampler(s): C.Fellows / J.Traut /
Data Recorded By: Brian Geringer Signature: Brian Geringer ;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ;
Visual Evidence of Sheen (Yes/No) No ;
Olfactory Evidence of Odor (Yes/No) No ;
TD= 33.90 (TOR); Well S/U = 2.88 ;
Weather: Rain / 50s ;

H&S Survey Meter 0.0 PPM Field Instrument Group A / B / C / D
Initial WL @ Top of Casing ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft ▲	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
920	4.25	▲	250		8.52	155	6.92	156	3.87	11	Clear/Odorless
930	4.33	N/A	250	2500mL	8.60	~~152.4~~ 155	6.90	152	3.75	14	" "
940	4.43		220		8.57	154	6.96	149.8	3.78	9.2	
950	4.44		220		8.61	154	6.95	146.5	3.73	8.0	
1000	4.46		220		8.59	154	6.95	144.4	3.60	6.5	
1010	4.47		220		8.59	155	7.00	139.7	3.65	5.7	
1015	4.48		220		8.62	154	6.95	138.1	3.62	5.1	
1020	4.48		220	11300mL	8.62	154	6.96	137.1	3.65	4.6	

Reached Stabilization, Collected Samples at 1025

Acceptance Criteria: <0.3 ft (drawdown) — Temp 3% — Spec. Cond. 3% — pH +/- 1.0 S.U. — ORP +/- 10mV — DO 10% — Turbidity 10%
Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

▲ = Artesian Conditions, added 5' of 1" PVC - Water was flowing without the need of Nitrogen

PVC Casing: 2.88

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	Eastern Plume - NASB Brunswick, ME	Sample ID No.	EPGW- MWEP352-061009
Project No.:	112G00645 / CTO 069	Sample Location:	MW-EP-352
		Sampled By:	Fellows, ~~Traut,~~ Geringer
		C.O.C. No.:	

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/10/09								
Time: 1505								
Method: Low Flow	Clear/Colorless	9.16	88	3.50	7.32	73.0	34.4	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/10/09								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1" PVC								
Total Well Depth (TD): 53.9								
Static Water Level (WL): 3.7								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1420								
End Purge (hrs): 1500								
Total Purge Time (min): 40min								
Total Vol. Purged (gal/L): 0.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: ~~A~~ EPGW-MWEP352

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic~~ Microbladder Pump
Depth Sampled: 51.5 (TOR) Screen Int. Depth 47-52 ft bgs
Sample Date & Time: 6 / 10 /2009 1505 hours ______(Dup Time)
Sampler(s): C.Fellows / ~~J.Traut~~ /
Data Recorded By: C.Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness
Visual Evidence of Sheen (Yes/No)
Olfactory Evidence of Odor (Yes/No)
TD= 53.9 (TOR); Well S/U = 2.26 : Casing - 2.65
Weather: 50's Cloudy, light Showers

H&S Survey Meter 0/0/0 PPM (B2 / W / Bz) Field Instrument Group A / B / C / D
Initial WL 3.7 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2.VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1 CPM	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1215	3.45	* Begin purge, measuring drawdown, and filling flow through cell.									
		* Water not coming up. Have to pull up pump and replace grab plate, quick connect, tank, regulator, etc.									
1340	3.58	* Water coming up but only 40ml/min. Begin purge and fill flow through cell.									
1350											
1355		* Water stops flowing. Pull up + replace pump but still no flow. Replace control box and water starts to flow.									
1420	3.90	* Begin purge and filling flow through cell.									
1430	3.90	4 45	70		9.76	92	7.47	73.1	5.51	342	cloudy/colorless
1440	4.10	"	"		9.56	89	7.38	73.6	3.40	104.1	"
1450	4.10	"	"	0.5	9.18	88	7.34	75.7	3.47	54	clear/colorless
~~1500~~ 1455	"	"	"		9.18	88	7.34	75.0	3.46	32	"
1500	"	"	"		9.19	88	7.32	73.0	3.50	34.4	"
1505	End Purge. Begin Sampling										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) __________ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

2.~~44~~
-.48
2.6

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-MWEP353-061009
Sample Location: MW-EP-353
Sampled By: Fellows, ~~Traut~~ Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/10/09								
Time: 1310								
Method: Low Flow	Clear/colorless	8.12	156	0.31	7.02	-229.3	0.15	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/10/09								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1" PVC								
Total Well Depth (TD): 63.73								
Static Water Level (WL): 0.0 (WL @ top of 5ft PVC extension)								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1215								
End Purge (hrs): 1305								
Total Purge Time (min): 50 min								
Total Vol. Purged (gal/L): 28 Liters								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-EPMW3S3-061009

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: ______ (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic Pump~~ Micro Bladder Pump
Depth Sampled: 58.5 (TOR) Screen Int. Depth 56-61 ft bgs
Sample Date & Time: 06 / 10 /2009 1310 hours ______ (Dup Time)
Sampler(s): C.Fellows / ~~J.Traut~~ / B.Geringer
Data Recorded By: Brian Geringer Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No) if yes, report depths/describe thickness ______;
Visual Evidence of Sheen (Yes/No) No;
Olfactory Evidence of Odor (Yes/No) NO;
TD= 63.73 (TOR); Well S/U = 2.73:
Weather: Cloudy / 50's;

H&S Survey Meter 0.0 PPM Field Instrument Group A (B) C / D
Initial WL At top of PVC ft btor (Dedicated tubing)

▲ = Artesian Conditions - added 5' of PVC riser, well Flowing without the need for Nitrogen

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
12:15	@Top of Casing	▲	400	N/A	8.24	162	7.47	-164.6	1.25	9.4	Clear/Colorless
12:25	↓	N/A	400	4000	8.18	158	7.20	-187.3	0.45	2.0	" "
12:35		↓	400	8000	8.20	157	7.14	-230.7	0.49	1.1	↓
1245			400	12000	8.25	157	7.10	-248.5	0.38	0.80	
1250			400	16000	8.17	157	7.06	-261.0	0.31	0.45	
1255			400	20000	8.19	157	7.05	-226.7	0.31	0.30	
1300			400	24000	8.16	157	7.03	-221.7	0.30	0.20	
1305			400	28 Liters	8.12	156	7.02	-229.3	0.31	0.15	
Stabilization reached - Collected Samples											
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- MWEP354-061109
Sample Location: MW-EP-354
Sampled By: Fellows, ~~Traut,~~ Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/11/09								
Time: 0955								
Method: Low Flow	[illegible]	8.69	127	0.45	7.90	-139.6	110	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/11/09								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1" PVC								
Total Well Depth (TD): 35.82								
Static Water Level (WL): 6.56								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 0830								
End Purge (hrs): 0955								
Total Purge Time (min): 1hr 25min								
Total Vol. Purged (gal/L): 2								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MWEP354

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic~~ MicroBladder Pump
Depth Sampled: 31.5 (TOR) Screen Int. Depth 29-34 ft bgs
Sample Date & Time: 6/11/2009 0955 hours ______(Dup Time)
Sampler(s): C.Fellows / ~~J.Traut~~ /
Data Recorded By: C.Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ______;
Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
TD= 35.82 (TOR); Well S/U = 2.85 : Casing S/U = 3.0
Weather: 50's Cloudy ;

H&S Survey Meter BZ/W/HW 0/0/0 PPM Field Instrument Group A / B / C / D
Initial WL 6.56 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr START: 0850	Water Depth below MP ft	Pump Dial 1 CPM	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0900	7.75	4 S/10	70		8.66	185	7.91	-135.6	0.73	220	
0910	7.70	"	"	1	8.70	127	7.89	-139.6	0.40		
0920	7.70	"	"		8.77	128	7.90	-133.1	0.39		Sl. cloudy/colorless
	* Switch Nitrogen tanks				9.22	129	7.88	-137.1	0.63	161	~~Clear~~/colorless (FS)
0930	7.20	"	"		↓	↓	↓	↓	↓	↓	↓
0935	7.65	"	"		8.83	128	7.91	-135.8	0.65	106.2	Sl. cloudy/colorless
0940	7.70	"	"	2	8.78	128	7.90	-137.6	0.50	112	"
0945	7.72	"	"		8.73	127	7.90	-138.9	0.47	106	"
0950	7.75	"	"		8.69	127	7.90	-139.6	0.45	110	"
0955	End Purge, Begin sampling, Reach stabilization ~~except~~ Turbidity w/in 10% but still high.										
1010	Turbidity is still in 100's and slightly cloudy.										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Background Study - NASB Brunswick, ME
Project No.: 112G00958 / CTO 432

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. NASB-GW-MWEP355-0909
Sample Location: MWEP355
Sampled By: Fellows/Horton J. Cardinal
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 9/16/09								
Time: 919								
Method: Low Flow	Clear	10.55	111	1.95	7.13	-17.4	1.5	

PURGE DATA:

Date: 9/16/09	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Method:								
Monitor Reading (ppm):								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD):								
Static Water Level (WL):	See purge sheet							
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs):								
End Purge (hrs):								
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCl	40mL	Yes / No
1,4 dioxane / 1,1 DCE	HCl	40mL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

no pumping required, water flowing without pumping
Pulled up bladder pump 5ft from bottom

Circle if Applicable:		Signature(s):
MS/MSD NA	Duplicate ID No.: NA	J. Cardinal

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Background Study, NASB Brunswick, ME
Sample ID: NASB-GW-MWEP355-0909

Tetra Tech NUS Charge No. 112G00958 / CTO 432 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 59.40* (TOR) Screen Int. Depth 46-56 ft bgs
Sample Date & Time: 9/16/2009 919 hours NA (Dup Time)
Sampler(s): C.Fellows / M.Horton / J. Cardinal
Data Recorded By: J. Cardinal Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness;
Visual Evidence of Sheen (Yes/No);
Olfactory Evidence of Odor (Yes/No);
TD= 64.40* (TOR); Well S/U = 46-56; *measured from top of PVC extention
Weather: 60s, sunny;

H&S Survey Meter 0.0 PPM Field Instrument Group A / B / C / D
Initial WL 2.60 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses: VOC
1,4dioxane / 1,1 DCE

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
835	Water	flowing,	no pump	required							
839		NA	240	<0.5	10.06	110	7.20	125.3	2.56	140	slightly cloudy
845		NA	240	~0.5	9.99	110	7.06	44.6	2.03	45	clear
851		NA	240	~1	10.07	110	7.08	12.3	1.96	16	clear
855		NA	240	~1	10.25	110	7.09	2.7	1.97	8.4	clear
901		NA	240	~1.5	10.42	111	7.11	-11.8	1.94	5.2	clear
905		NA	240	~2	10.40	111	7.12	-14.6	1.97	2.7	clear
909		NA	240	~2	10.45	111	7.12	-16.1	1.96	2.4	clear
913		NA	240	~3	10.55	111	7.13	-17.4	1.95	1.5	clear
Stabilization achieved per work plan											
Begin sampling		919									
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- ~~1.0~~ 0.5 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ________ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

NA - Water flowing without pump

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-MWMB01C-060909
Sample Location: MW-MB-01C
Sampled By: Fellows, ~~Traut~~, Oerlinger
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/9/09								
Time: 1425								
Method: Low Flow	Clear/colorless	8.21	192	3.10	7.02	0.8	9	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/9/09								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD): 61.14								
Static Water Level (WL): 0.60 (From top of 2.07' PVC extension)								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1220								
End Purge (hrs): 1420								
Total Purge Time (min): 2hrs								
Total Vol. Purged (gal/L): 30 Liters								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MWMB01C-060909

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic~~ Microbladder Pump
Depth Sampled: 53 (TOR) Screen Int. Depth 48-58 ft bgs
Sample Date & Time: 06 / 09 /2009 1425 hours (Dup Time)
Sampler(s): C.Fellows / ~~J.Traut~~ / B.Geringer
Data Recorded By: Brian Geringer Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ;
Visual Evidence of Sheen (Yes/No) No ;
Olfactory Evidence of Odor (Yes/No) No ;
TD= 61.14 (TOR); Well S/U = 3.12 : TPVC = 2.98
Weather: Rain / 50's ;

H&S Survey Meter 0.0 PPM Field Instrument Group A / B / C / D
Initial WL 0.60 * ft btor (Dedicated tubing)

* = Added 2.07' of PVC to prevent water from flowing out of casing.

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft *	Pump Dial 1 ▲	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1220	0.73	N/A	250	2.5	8.17	195	7.02	22.9	3.16	120	Orange
1230	0.78		250	5.0	8.16	195	7.01	4.7	3.01	95	Slight Orange
1240	0.78		250	7.5	8.17	194	7.01	5.6	3.14	60	Slightly Cloudy
1250	0.78		250	10.0	8.28	195	7.03	13.9	3.24	40	Clear/Colorless
1300	0.78		250	12.5	8.32	197	7.05	10.2	3.24	32	" "
1310	0.78		250	15.0	8.28	197	7.06	1.9	3.09	32	
1320	0.78		250	17.5	8.19	196	7.05	-3.0	3.16	24	
1330	0.78		250	20.0	8.18	198	7.04	2.5	3.01	20	
1340	0.78		250	22.5	8.18	194	7.03	7.0	2.96	18	
1350	0.78		250	25.0	8.22	196	7.03	8.9	3.22	15	
1400	0.78		250		8.20	194	7.03	4.3	3.17	12	
1410	0.78		250	27.5	8.21	192	7.02	2.2	3.13	11	
1420	0.78		250	30 Liters	8.21	192	7.02	0.8	3.10	9	
Reached	two hour purge limit - Collected Samples										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

▲ = Due to artesian conditions, water was flowing without the need of Nitrogen.

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-MWMB02C-061009
Sample Location: MW-MB-02C
Sampled By: Fellows, ~~Traut~~, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/10/09								
Time: 1040								
Method: Low Flow	Clear/colorless	9.39	194	0.69	6.70	-24.0	8.31	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/10/09								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD): 64.6								
Static Water Level (WL): 0.5								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 0835								
End Purge (hrs): 1035								
Total Purge Time (min): 2hrs								
Total Vol. Purged (gal/L): 6 gallons								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	C Fellows
—	—	

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW- ~~MW~~ MMB02C

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: NA (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic~~ Micro Bladder Pump
Depth Sampled: 6ft off bottom (TOR) Screen Int. Depth 52-62 ft bgs
Sample Date & Time: 6 / 16 /2009 1040 hours ________(Dup Time)
Sampler(s): C.Fellows / ~~J.Trout~~ /
Data Recorded By: C.Fellows Signature: Chelsea Fellows ;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ;
Visual Evidence of Sheen (Yes/No) Orange - Iron Floc purge water ;
Olfactory Evidence of Odor (Yes/No) ;
TD= 64.6 (TOR); Well S/U = 2.75 ; Casing 2.93
Weather: 50's Showers ;

H&S Survey Meter BZ/PW 0/0.0 PPM Field Instrument Group (A) / B / C / D
Initial WL 0.5 ft btor (Dedicated tubing)
* water level measured from top of PVC extention = 9.5 ft above TPVC

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0835	0.5	* No pump needed due to well being highly artesian.									
0845	0.5	No pump	180							offscale	Orange
0915	0.5		"	2	9.21	194	6.53	-22.4	0.67	30.5	clear/colorless
0925	"		"		9.18	193	6.64	-28.1	0.73	28.2	clear "
0935	"		"	3	9.05	191	6.61	-20.1	0.79	131	cloudy/orange
0945	* PVC falls off due to weight of water in PVC pipe above ground surface. Re-attach.										
0955	"		180		9.27	193	6.67	-14.1	0.46	248	cloudy/orange
1005	"		"	4	9.26	193	6.67	-16.3	0.51	250	"
1015	"		"		9.36	194	6.68	-20.9	0.80	44	sl. cloudy/sl. orange
1020	"		"	5	9.38	194	6.69	-22.1	0.66	36.9	sl. cloudy/colorless
1025	"		"		9.41	194	6.69	-22.9	0.70	9.46	clear/colorless
1030	"		"	6	9.38	194	6.70	-23.9	0.73	8.97	"
1035	"		"		9.39	194	6.70	-23.0	0.69	8.31	"
1040	* End Purge. Begin Sampling										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ____________ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

* well casing is completely orange from iron floc and well being artesian.

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- MWMB03C-060809
Sample Location: MW-MB-03C
Sampled By: Fellows, ~~Traut~~, Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/8/09								
Time: 1205								
Method: Low Flow	Clear/odorless	10.88	106	0.70	6.90	48.2	10.31	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/8/09								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD): 58.2								
Static Water Level (WL): 0.7								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1100								
End Purge (hrs): 1200								
Total Purge Time (min): 1 hr								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	EPGW-FD-060809 TIME 1215

Signature(s): C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MWNB03C-

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: EPGW-FD-060809 (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 53.8 (TOR) Screen Int. Depth 46-56 ft bgs
Sample Date & Time: 6 / 8 /2009 1205 hours 1215 (Dup Time)
Sampler(s): C.Fellows / ~~J.Traut~~ / B. Geringer
Data Recorded By: C.Fellows Signature: C.Fellows ;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No) if yes, report depths/describe thickness ;
Visual Evidence of Sheen (Yes/No) ;
Olfactory Evidence of Odor (Yes/No) ;
TD= 58.2 ft (TOR); Well S/U = 2.8 ;
Weather: Sunny 60's ;

H&S Survey Meter BZ W PW 0 0 0 PPM Field Instrument Group A / B / C / D
Initial WL 0.7 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1 CPM	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1100	0.80	4 10/5	120	0.5	12.13	111	7.38	136.1	3.30	22.4	Clear Edorless
1125	0.86	"	"	1	10.95	107	6.46	136.9	1.50	15.4	"
1130	0.89	"	"	1.25	10.72	106	6.62	105.0	1.12	17.1	"
1135	0.89	"	"	1.5	10.50	106	6.65	~~95~~ 94.0	1.00	14.7	"
1140	"	"	"	1.75	10.60	106	6.84	64.4	0.80	11	"
1145	"	"	"	2	10.69	106	6.84	63.0	0.86	10.38	"
1150	"	"	"	2.25	10.79	106	6.87	55.0	0.73	10.47	"
1155	"	"	"	2.5	10.89	106	6.89	52.3	0.70	9.82	"
1200	"	"	"	2.75	10.88	106	6.90	48.2	0.70	10.31	"
1205	* End Purge. Begin	Sampling									
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

* Note: Outside of well (casing) is orange → well may be artesian at times.

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- MWAB04B-061109
Sample Location: MW-AB-04B
Sampled By: Fellows, ~~Traut,~~ Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

Date: 6/11/09	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Time: 1015								
Method: Low Flow	Clear/Colorless	9.07	260	1.87	7.86	-124.5	8	

PURGE DATA:

Date: 6/11/09	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD): 37.16								
Static Water Level (WL): 6.26								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 0910								
End Purge (hrs): 1010								
Total Purge Time (min): 1hr.								
Total Vol. Purged (gal/L): 4.2 liters								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): C Fellows

TETRA TECH NUS, INC.	PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MWMB04B-061109

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: ______ (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic Pump~~ Bladder Pump
Depth Sampled: ~~06/11/09~~ 29.0 (TOR) Screen Int. Depth 24-34 ft bgs
Sample Date & Time: 6 / 11 /2009 1015 hours ______(Dup Time)
Sampler(s): C.Fellows / J.Traut / B.Geringer
Data Recorded By: Brian Geringer Signature: ______;
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ______;
Visual Evidence of Sheen (Yes/No) No;
Olfactory Evidence of Odor (Yes/No) No;
TD= 37.16 (TOR); Well S/U = 2.91;
Weather: Cloudy / 50s;

H&S Survey Meter 0.0 PPM Field Instrument Group A / B / C / D
Initial WL 6.26 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE **2.** VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr START: 0900	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0910	7.02	CPM4/70PSI	60	600	9.71	307	7.72	-3.5	2.27	22	Clear/odorless
0920	7.06	↓	60	1200	9.28	313	7.93	-96.0	2.00	19	" "
0930	7.08		60	1800	9.20	300	7.94	-113.7	1.97	15	↓
0940	7.10		60	2400	9.09	281	7.93	-122.9	1.93	13	
0950	7.10		60	3000	9.05	268	7.90	-125.8	1.88	13	
1000	7.10		60	3600	9.07	262	7.88	-123.9	1.90	10	
1010	7.10	↓	60	4.2 Liters	9.07	260	7.86	-124.5	1.87	8	
	Reached Stabilization - collected samples										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-MWMB06A-061509
Sample Location: MW-MB-06A
Sampled By: Fellows, ~~Traut,~~ Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/15/09								
Time: 1205								
Method: Low Flow	S.cloudy/colorless	9.53	47	6.69	3.68	178.5	104.9	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/15/09								
Method: Peristaltic Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 2" PVC								
Total Well Depth (TD): 17.69								
Static Water Level (WL): 12.02								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1045								
End Purge (hrs): 1200								
Total Purge Time (min): 1hr 15min								
Total Vol. Purged (gal/L): 1 1/2								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MW-MB-06A

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)

Sample Method: Low Stress (flow) with Peristaltic Pump
Depth Sampled: 2in above bottom (TOR) Screen Int. Depth 5-15 ft bgs
Sample Date & Time: 6/15/2009 1205 hours ______(Dup Time)
Sampler(s): C.Fellows / ~~J.Traut~~/
Data Recorded By: C.Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ______;
Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
TD= 17.69 (TOR); Well S/U = 2.7 ; Casing S/U = 2.8
Weather: 60's Showers ;

H&S Survey Meter 0/0/0 PPM Field Instrument Group A / B / C / D
Initial WL 12.02 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0955	* Start pump → No water coming up. Add more tubing so pump intake is approx 2in above bottom.										
1015	Still no water pumping up. Change silastic tubing. Change Series Drive from 1 to 2.										
1045	Water starts pumping up. Series Drive 1 must not be working correctly. Put pump on lowest rate it will go.										
1050	13.01	12	100		~~14.71~~ CES					offscale	Cloudy / Brown
1100		"	"		9.88	55	4.54	267.2	6.09	598	"
	* Switch Series Drive back to 1 b/c drawdown not stabilizing w/ Series 2. Able to get pump to operate on 40ml/min										
1115	13.80	12	40	1/2	10.44	104	3.81	227.4	5.91	offscale	Cloudy / Brown
1125	14.10	12	40	3/4	10.45	50	3.69	195.6	7.71	540	"
1130	14.20	"	"		10.33	49	3.69	191.3	7.82	559	"
1135	14.33	"	"		10.24	51	3.72	187.9	7.77	302	"
1140	14.51	"	"		10.08	50	3.59	183.1	7.64	235	"
1145	14.65	"	"		9.79	48	3.56	184.3	7.15	136	sl. cloudy / Gray
1150	14.71	"	"		9.66	48	3.57	179.8	6.78	107.9	"
1155	14.83	"	"		9.59	49	3.60	178.5	6.75	105.1	"
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

* Water level drawdown does not stabilize.

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EDGW-MWMB06A

Tetra Tech NUS Charge No. 112G00645 / CTO 069
QC: NA (If applicable)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1200	14.90	12	40	1 1/2	9.53	47	~~6.68~~ 3.68	178.5	6.69	104.9	"
05 End purge. and began sampling											

Acceptance Criteria: <0.3 ft (drawdown) — Temp 3%; Spec. Cond. 3%; pH +/- 1.0 S.U.; ORP +/- 10mV; DO 10%; Turbidity 10%

TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW - MWMB06A - 061109

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: ______ (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic~~ Microbladder Pump
Depth Sampled: ≈16.50 (TOR) Screen Int. Depth 5-15 ft bgs
Sample Date & Time: 06 / 11 /2009 ______hours ______(Dup Time)
Sampler(s): C.Fellows / J.Traut / B.Geringer
Data Recorded By: Brian Geringer Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ______;
Visual Evidence of Sheen (Yes/No) No;
Olfactory Evidence of Odor (Yes/No) No;
TD= 17.67 (TOR); Well S/U = 2.7 : Casing 2.8
Weather: ______;

H&S Survey Meter 0.0 PPM Field Instrument Group A / B / C / D
Initial WL 12.42 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2.VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1200 - Pumping for 10 minutes at 45 psi - No water coming up - Changed at Controller											
1220 - Still no water - Changed out bladder in pump											
1250 - determined that not enough head for microbladder pump to work - Will Sample via Peri pump on Monday 6/15											

Acceptance Criteria: <0.3 ft (drawdown) — Temp 3% — Spec. Cond. 3% — pH +/- 1.0 S.U. — ORP +/- 10mV — DO 10% — Turbidity 10%
Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW-MWMB06C
Sample Location: MW-MB-06C
Sampled By: Fellows, ~~Traut,~~
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/8/09								
Time: 1540								
Method: Low Flow	Clear/colorless	12.12	194	2.10	7.36	93.3	10	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/8/09								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC								
Total Well Depth (TD): 52.93								
Static Water Level (WL): 6.44								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1450								
End Purge (hrs): 1535								
Total Purge Time (min): 45 min								
Total Vol. Purged (gal/L): 0.8 Gallons								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	C Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-MW MB 06C

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic~~ Microbladder Pump 47.93 ft
Depth Sampled: 47.93 (TOR) Screen Int. Depth 40-50 ft bgs
Sample Date & Time: 6 / 8 /2009 1540 hours ______(Dup Time)
Sampler(s): C.Fellows / J.Traut /
Data Recorded By: C.Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ;
Visual Evidence of Sheen (Yes/No) ;
Olfactory Evidence of Odor (Yes/No) ;
TD= 52.95 (TOR); Well S/U = 3.1 ;
Weather: Sunny 60s ;

H&S Survey Meter 0 | 0 | 0 PPM (BZ | WH | PWL) Field Instrument Group A / B / C / D
Initial WL 6.44 ft btor ~~(Dedicated tubing)~~ or ~~No tubing in well already~~

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1 CPM	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1450	6.56	4 5/10	60	~~0.250~~ 0.1							
1500	6.61	"	"								
1510	6.80	"	"	0.3	12.50	193	7.42	106.6	2.99	14.7	Clear/Colorless
1515	"	"	"		12.33	193	7.41	105.4	2.75	14.9	"
1520	"	"	"	0.5	12.27	195	7.36	98.8	2.22	15	"
1525	"	"	"		12.27	195	7.37	96.6	2.18	11	"
1530	"	"	"	0.7	12.26	195	7.37	95.6	2.13	10	"
1535	"	"	"	0.8	12.12	194	7.36	93.3	2.10	10	"
1540	* End Purge Begin sampling.										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ________ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- P2MW B4B-0609009
Sample Location: P2-MW-B4B
Sampled By: Fellows, ~~Traut,~~ Geringer
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/9/09								
Time: 1305								
Method: Low Flow	Clear/colorless	10.46	132	1.35	7.17	-26.7	35	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/9/09								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1" PVC								
Total Well Depth (TD): 14.12								
Static Water Level (WL): 4.55								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 1205								
End Purge (hrs): 1300								
Total Purge Time (min): 55 min								
Total Vol. Purged (gal/L): 0.5 gallons								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-P2MB R4B

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of
QC: (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic~~ Microsadale Pump
Depth Sampled: 9 ft below (TOR) Screen Int. Depth 8-12 ft bgs
Sample Date & Time: 6/09/2009 1305 hours ______(Dup Time)
Sampler(s): C.Fellows / ~~J.Traut~~ /
Data Recorded By: C.Fellows Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ;
Visual Evidence of Sheen (Yes/No) ;
Olfactory Evidence of Odor (Yes/No) ;
TD= 14.12 (TOR); Well S/U = 3.4 :
Weather: 50's Rain ;

H&S Survey Meter BZ|W|PM 0|0|0 PPM Field Instrument Group A / B / C / D
Initial WL 4.55 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2.VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1 cpm	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
1205	- Begin purging, measuring drawdown, + filling flow through cell										
1230	4.68	4.0/a		0.25	11.91	126	7.26	62	12.37	95	clear/colorless
1245	4.70	"	50		11.37	134	7.15	11.8	1.75	40	"
1250	"	"	"		11.01	132	7.16	-26.1	1.39	33	"
1255	"	"	"		10.97	132	7.16	-26.6	1.38	37	"
1300	"	"	"	0.5	10.96	132	7.17	-26.7	1.35	55	"
1305	End purge. Begin Sampling										
Acceptance Criteria: <0.3 ft (drawdown)					3%	3%	+/- 1.0 S.U.	+/- 10mV	10%	10%	

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type: ______
[] QA Sample Type: ______

Sample ID No. EPGW- PZ MBC4B-060909
Sample Location: PZ-MB-C4B
Sampled By: Fellows, ~~Traut,~~ Geringer
C.O.C. No.: ______
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (µS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/9/09								
Time: 1040								
Method: Low Flow	Clear/colorless	8.62	105	3.49	5.86	249.3	29	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/9/09								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1" PVC								
Total Well Depth (TD): 12.45								
Static Water Level (WL): 1.25								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 0930								
End Purge (hrs): 1035								
Total Purge Time (min): 1hr 5min								
Total Vol. Purged (gal/L): 3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: EPGW-PZ-MB-C4B

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: NA (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic~~ Microbladder Pump
Depth Sampled: 1 ft off bottom (TOR) Screen Int. Depth 9-14 ft bgs
Sample Date & Time: 6/9/2009 1040 hours ______ (Dup Time)
Sampler(s): C.Fellows / J.Traut /
Data Recorded By: C.Fellows Signature: [signature]
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness ______;
Visual Evidence of Sheen (Yes/No) ______;
Olfactory Evidence of Odor (Yes/No) ______;
TD= 12.45 (TOR); Well S/U = 3.0;
Weather: 50's Rain;

H&S Survey Meter BZ 0 | BW 0 | BH 0 PPM Field Instrument Group A / B / C / D
Initial WL 1.25 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE 2. VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1 cpm	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
0950	1.40	4 3/10									
0945	1.52	4 4/11	~~120~~ 150	0.5	9.08	105	6.06	260.6	4.09	offscale	Brown/cloudy
0955	1.53	"	"	1	8.67	105	5.94	253.5	3.81	380	cloudy/Gray brown
1010	"	"	"	1.5	8.69	104	5.89	248.5	3.72	60	sl. cloudy/odorless
1015	"	"	"		8.62	104	5.89	248.2	3.68	50	"
1020	"	"	"	2	8.63	105	5.87	247.0	3.53	45	"
1025	"	"	"		8.63	104	5.87	246.4	3.56	30	clear/odorless
1030	"	"	"	3	8.61	104	5.86	246.9	3.53	31	"
1035	"	"	"		8.62	105	5.86	249.3	3.49	29	"
1040	End Purge Begin sampling										

Acceptance Criteria: <0.3 ft (drawdown) — Temp 3% — Spec. Cond. 3% — pH +/- 1.0 S.U. — ORP +/- 10mV — DO 10% — Turbidity 10%

Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project No.: 112G00645 / CTO 069

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No. EPGW- PZ-MB-BGB-0G109
Sample Location: PZ-MB-BGB
Sampled By: Fellows, ~~Traut,~~
C.O.C. No.:
Type of Sample:
[X] Low / Moderate Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	Temp (°C)	S.C. (μS/cm)	DO (mg/L)	pH (S.U.)	ORP (mv)	Turbidity (NTU)	Other
Date: 6/10/09								
Time: 1048								
Method: Low Flow	Clear/Colorless	8.46	166	0.34	7.25	-21.7	26	

PURGE DATA:

	Volume	Temp	S.C.	DO	pH	ORP	Turbidity	Other
Date: 6/10/09								
Method: Bladder Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material	See separate low-flow purge data sheet							
Type: 1.5 or 2 inch / PVC 1" PVC								
Total Well Depth (TD): 15.73								
Static Water Level (WL): 6.45								
Well or Sat. Scrn. Vol. (gal):								
Start Purge (hrs): 0935								
End Purge (hrs): 1035								
Total Purge Time (min): 1 hr.								
Total Vol. Purged (gal/L): 7.75 Liters								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	3 X 40 mL vial with HCL	Yes / No
1,4 Dioxane/1,1 DCE	HCL	3 X 40 mL vial with HCL	Yes / No

OBSERVATIONS / NOTES:

Visual evidence of contamination - yes or no If yes, describe:

Olfactory evidence of contamination - yes or no If yes, describe:

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	C. Fellows

TETRA TECH NUS, INC.

PURGE DATA SHEET - "LOW FLOW" GROUNDWATER

Site Name: Eastern Plume, NASB Brunswick, ME
Sample ID: ~~EPMW~~ EPPZB6B-061009 GW

Tetra Tech NUS Charge No. 112G00645 / CTO 069 Page 1 of 1
QC: (If applicable)

Sample Method: Low Stress (flow) with ~~Peristaltic Pump~~ Micro Bladder Pump
Depth Sampled: 11.5 (TOR) Screen Int. Depth 9-14 ft bgs
Sample Date & Time: 06 / 10 /2009 1048 hours ______(Dup Time)
Sampler(s): C.Fellows / ~~J.Trout~~ / B. Geringer
Data Recorded By: Brian Geringer Signature: [signature];
Notes: Water Depth MP = top of riser (TOR); NAPL signal at start (Yes/No); if yes, report depths/describe thickness;
Visual Evidence of Sheen (Yes/No) No;
Olfactory Evidence of Odor (Yes/No) No;
TD= 15.73 (TOR); Well S/U = 2.61;
Weather: Drizzle / 50's;

H&S Survey Meter 0.0 PPM Field Instrument Group A / B / C / D
Initial WL 0.45 ft btor (Dedicated tubing)

Sampling Hierarchy and Lab Analyses:
1. 1,4 Dioxane/1,1DCE **2.** VOCs

(Also see separate sample logsheet for gw)

Clock Time 24hr	Water Depth below MP ft	Pump Dial 1	Purge Rate ml/min	Cum. Volume Purged Gals.	Temp °C	Spec. Cond. 2 uS/cm	pH (S.U.)	ORP/Eh3 mv	DO mg/L	Turbidity NTU	Comments
935	2.24	CPM4@	50		9.34	169	6.92	37.3	2.25	150	Cloudy
945	2.12	50 PSI	100	750	8.60	167	7.05	-26.2	0.48	70	little cloudy
955	2.19		100	1750	8.51	168	7.09	-31.0	0.37	65	" "
1005	2.25		100	2750	8.43	167	7.14	-32.2	0.33	45	Clear / Colorless
1015	2.25		100	3750	8.37	167	7.13	-32.5	0.33	37	" "
1020	2.25		100	4750	8.43	167	7.20	-33.4	0.32	29	
1025	2.25		100	5750	8.43	167	7.23	-22.7	0.36	27	
1030	2.25		100	6750	8.43	167	7.24	-22.7	0.35	26	
1035	2.25		100	7.75 Liters	8.46	166	7.25	-21.7	0.34	26	
Reached Stabilization - Collected Samples											

Acceptance Criteria: <0.3 ft (drawdown) — Temp 3%; Spec. Cond. 3%; pH +/- 1.0 S.U.; ORP +/- 10mV; DO 10%; Turbidity 10%
Modified TtNUS Form 0009

Saturated screen or well volume (gallons) ______ (1.5" screen = 0.092 gals/ft of depth; 2" screen = 0.163 gals/ft of depth)

1. Pump dial setting (for example: hertz, cycle/min, etc.)
2. Siemens per cm (same as umhos/cm) at 25 °C.
3. Oxidation reduction potential (stand in for Eh).

APPENDIX A-9.2
QA SAMPLE LOGS

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME

Project Number: 112G00645 / CTO 069

Sample Location:

QA Sample Type:

Sample ID Number: EPGW-T-041309

Sampled By: Fellows / Traut

C.O.C. Number:

[X] Trip Blank
[ ] Source Water Blank
[ ] Rinsate Blank
[ ] Other Blank

SAMPLING DATA:

Date: 4/13/09
Time: 1200
Method:

WATER SOURCE:

[X] Laboratory Prepared
[] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: N/A
Supplier:
Manufacturer:
Order Number:
Lot Number:
Expiration Date:

RINSATE INFORMATION (If Applicable):

Media Type: N/A
Equipment Used:
Equipment Type:
[] Dedicated
[] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	2 x 40 mL vials with HCL	YES / NO
1,4 Dioxane/1,1 DCE	---	2 x 40 mL vials	YES / NO

OBSERVATIONS / NOTES:

* Trip Blank for TCL VOCs only (2x 40ml vials w/ HCL)

Katahdin Lab provided trip blanks. Samples of analyte free water prepared at the laboratory. Prepared in a clean room Tap water filtered through charcoal filter.

Signature(s): C. Fellows

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name:	Eastern Plume - NASB Brunswick, ME	Sample ID Number:	EPGW-R-041409
Project Number:	112G00645 / CTO 069	Sampled By:	Fellows/Traut/
Sample Location:		C.O.C. Number:	
QA Sample Type:			

[ ] Trip Blank
[ ] Source Water Blank (Field Blank)
[X] Rinsate Blank
[ ] Other Blank

SAMPLING DATA:

Date: 4/14/09
Time: 1310
Method: Direct Pour

WATER SOURCE:

[] Laboratory Prepared
[X] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: Reagent Grade Water (DIUF)
Supplier: NERL Diagnostics
Manufacturer:
Order Number:
Lot Number: 0913258
Expiration Date: 09-2009

RINSATE INFORMATION (If Applicable):

Media Type: Groundwater
Equipment Used: Microbladder pump and Disposable Poly and FEP tubing
Equipment Type:
[] Dedicated
[] Reusable
[X] Disposable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	~~2~~ 3 x 40 mL vials with HCL	YES / NO
1,4 Dioxane/1,1 DCE	HCL	~~2~~ 3 x 40 mL vials	YES / NO
		3	

OBSERVATIONS / NOTES:

Signature(s): C. Fellows

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME

Project Number: 112G00645 / CTO 069

Sample Location:

QA Sample Type:

Sample ID Number: EPGW-F-041409

Sampled By: Fellows / Traut /

C.O.C. Number:

[ ] Trip Blank
[X] Source Water Blank (Field Blank)
[ ] Rinsate Blank
[ ] Other Blank

SAMPLING DATA:

Date: 4/14/09
Time: 1745
Method: Direct Pour

WATER SOURCE:

[] Laboratory Prepared
[] Tap
[X] Purchased
[] Fire Hydrant
[] Other

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: Reagent Grade Water (DIUF)
Supplier: NERL Diagnostics
Manufacturer:
Order Number:
Lot Number: 0913258
Expiration Date: 09-2009

RINSATE INFORMATION (If Applicable):

Media Type: N/A
Equipment Used:
Equipment Type:
[] Dedicated
[] Reusable
[] Disposable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	~~2~~ 3 x 40 mL vials with HCL	YES / NO
1,4 Dioxane/1,1 DCE	HCL	~~2~~ 3 x 40 mL vials	YES / NO

OBSERVATIONS / NOTES:

Signature(s): C. Fellows

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME

Project Number: 112G00645 / CTO 069

Sample Location:

QA Sample Type:

Sample ID Number: EPGW-F-060909

Sampled By: Fellows / ~~Traut~~/ Garlinger

C.O.C. Number:

[ ] Trip Blank
[X] Source Water Blank (Field Blank)
[ ] Rinsate Blank
[ ] Other Blank

SAMPLING DATA:

Date: 6/9/09
Time: 1540
Method: Direct Pour

WATER SOURCE:

[] Laboratory Prepared
[X] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: Reagent Grade Water (DIUF)
Supplier: NERL Diagnostics
Manufacturer:
Order Number:
Lot Number: 0913258
Expiration Date: 09-2009

RINSATE INFORMATION (If Applicable):

Media Type: N/A
Equipment Used:
Equipment Type:
[] Dedicated
[] Reusable
[] Disposable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	~~2~~ 3 x 40 mL vials with HCL	YES / NO
1,4 Dioxane/1,1 DCE	HCL	~~2~~ 3 x 40 mL vials w/ HCL	YES / NO

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project Number: 112G00645 / CTO 069
Sample Location:
QA Sample Type:

Sample ID Number: EPGW-R-061009
Sampled By: Fellows/~~Traut~~ Gerlinger
C.O.C. Number:

[ ] Trip Blank
[ ] Source Water Blank (Field Blank)
[X] Rinsate Blank
[ ] Other Blank

SAMPLING DATA:

Date: 6/10/09
Time: 1630
Method: Direct Pour

WATER SOURCE:

[] Laboratory Prepared
[X] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: Reagent Grade Water (DIUF)
Supplier: NERL Diagnostics
Manufacturer:
Order Number:
Lot Number: 0913258
Expiration Date: 9-2009

RINSATE INFORMATION (If Applicable):

Media Type: Groundwater
Equipment Used: Micro bladder pump, FEP tubing and poly tubing
Equipment Type:
[] Dedicated
[] Reusable
[X] Disposable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	~~2~~ 3 x 40 mL vials with HCL	YES / NO
1,4 Dioxane, 1,1 DCE	HCL	~~2~~ 3 x 40 mL vials w/ HCL	YES / NO

OBSERVATIONS / NOTES:

Signature(s):

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project Number: 112G00645 / CTO 069
Sample Location:
QA Sample Type:

Sample ID Number: EPGW-T-060809
Sampled By: Fellows / ~~Traut~~ Geringer
C.O.C. Number:

[X] Trip Blank
[ ] Source Water Blank
[ ] Rinsate Blank
[ ] Other Blank

SAMPLING DATA:

Date: 6/8/09
Time: 0900
Method: Lab Supplied / Direct Pour

WATER SOURCE:

[X] Laboratory Prepared
[] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: N/A
Supplier:
Manufacturer:
Order Number:
Lot Number:
Expiration Date:

RINSATE INFORMATION (If Applicable):

Media Type: N/A
Equipment Used:
Equipment Type:
[] Dedicated
[] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	2 x 40 mL vials with HCL	YES / NO
1,4 Dioxane/1,1 DCE	HCL	2 x 40 mL vials w/ HCL	YES / NO

OBSERVATIONS / NOTES:

Katahdin Lab provided trip blanks. Samples of analyte free water prepared at the laboratory. Prepared in a clean room
Tap water filtered through charcoal filter.

Signature(s): [signature]

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME

Sample ID Number: EPGW-T-061009

Project Number: 112G00645 / CTO 069

Sampled By: Fellows / ~~Traut~~ Beringer

Sample Location:

C.O.C. Number:

QA Sample Type:

[X] Trip Blank
[ ] Rinsate Blank
[ ] Source Water Blank
[ ] Other Blank

SAMPLING DATA:

Date: 6/10/09
Time: 0830
Method: Lab Supplied / Direct Pour

WATER SOURCE:

[X] Laboratory Prepared
[] Tap
[] Purchased
[] Fire Hydrant
[] Other

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: N/A
Supplier:
Manufacturer:
Order Number:
Lot Number:
Expiration Date:

RINSATE INFORMATION (If Applicable):

Media Type: N/A
Equipment Used:
Equipment Type:
[] Dedicated
[] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	2 x 40 mL vials with HCL	YES / NO
1,4 Dioxane/1,1 DCE	HCL	2 x 40 mL vials w/ HCL	YES / NO

OBSERVATIONS / NOTES:

Lab provided trip blanks. Samples of analyte free water prepared at the laboratory. Prepared in a clean room. Tap wat filtered through charcoal filter.

Signature(s): [signature]

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name:	Eastern Plume - NASB Brunswick, ME	Sample ID Number:	EPGW-T-061509
Project Number:	112G00645 / CTO 069	Sampled By:	Fellows / ~~Traut~~ Genyer
Sample Location:		C.O.C. Number:	

QA Sample Type:

[X] Trip Blank
[ ] Source Water Blank
[ ] Rinsate Blank
[ ] Other Blank ______

SAMPLING DATA:

Date: 6/15/09
Time: 0845
Method: Lab supplied / Direct Pour

WATER SOURCE:

[X] Laboratory Prepared
[] Purchased
[] Other ______
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: N/A
Supplier:
Manufacturer:
Order Number:
Lot Number:
Expiration Date:

RINSATE INFORMATION (If Applicable):

Media Type: N/A
Equipment Used:
Equipment Type:
[] Dedicated
[] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	2 x 40 mL vials with HCL	YES / NO
1,4 Dioxane/1,1 DCE	HCL	2 x 40 mL vials W/ HCL	YES / NO

OBSERVATIONS / NOTES:

Katahdin Lab provided trip blanks. Samples of analyte free water prepared at the laboratory. Prepared in a clean room
Tap water filtered through charcoal filter.

Signature(s): [signature]

Tetra Tech NUS, Inc.

QA SAMPLE LOG SHEET

Project Site Name: Eastern Plume - NASB Brunswick, ME
Project Number: 112G0645 / CTO 069
Sample Location:
QA Sample Type:

Sample ID Number: EPGW-TB01-091609
Sampled By: Fellows /
C.O.C. Number:

[X] Trip Blank
[ ] Source Water Blank
[ ] Rinsate Blank
[ ] Other Blank

SAMPLING DATA:

Date: 9/16/09
Time: 0844
Method: Lab Supplied / Direct Pour

WATER SOURCE:

[X] Laboratory Prepared
[] Purchased
[] Other
[] Tap
[] Fire Hydrant

PURCHASED WATER INFORMATION (If Applicable as Source or Rinsate Water):

Product Name: N/A
Supplier:
Manufacturer:
Order Number:
Lot Number:
Expiration Date:

RINSATE INFORMATION (If Applicable):

Media Type: N/A
Equipment Used:
Equipment Type:
[] Dedicated
[] Reusable

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	2 x 40mL vials	YES / NO
1,4 Dioxane/1,1 DCE	HCL	2 x 40mL vials	YES / NO

OBSERVATIONS / NOTES:

Katahdin Lab provided trip blanks. Samples of analyte free water prepared at the laboratory. Prepared in a clean roorr
Tap water filtered through charcoal filter.

Signature(s): C. Fellows

APPENDIX A-9.3

WELL INSPECTION/

GROUNDWATER LEVEL MEASUREMENT SHEETS

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-EP-340S

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 04/15/09

PROJECT MANAGER: Linda Klink

INSPECTED BY: C. Fellows

J. Trant

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC)	59.23
WATER LEVEL DEPTH (FEET FROM TOP OF PVC)	3.25
WELL STICK-UP	2.78
CASING STICK-UP (FEET)	3.04
WELL DIAMETER (INCHES)	1"
WELL CONSTRUCTION (PVC, STEEL, ETC.)	PVC

LOCKED UPON ARRIVAL?	YES	NO
LOCKED REPLACED?	YES	NO
OBSTRUCTIONS?	YES	NO
WELL RELABELED?	YES	NO
SLUG TEST CONDUCTED?	YES	NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.	WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-3408I

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 2/13/09 1010

PROJECT MANAGER: Linda Klink

INSPECTED BY: J Trault

C. Felbus

VENT WELL

MONITORING INSTRUMENT READING: 0.0

LEL/02 READING: —

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC) 75.25

WATER LEVEL DEPTH (FEET FROM TOP OF PVC) ~~6.70~~ (FS)

WELL STICK-UP 0.13

CASING STICK-UP (FEET) 2.62

WELL DIAMETER (INCHES) 1"

WELL CONSTRUCTION (PVC, STEEL, ETC.) PVC

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-340B2

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 4/13/09 1000

PROJECT MANAGER: Linda Klink

INSPECTED BY: J Trout
C. Fellows-Swenson

VENT WELL

MONITORING INSTRUMENT READING: 0.9

LEL/02 READING: NA

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC): 90.10

WATER LEVEL DEPTH (FEET FROM TOP OF PVC): 5.35

WELL STICK-UP: 0.19

CASING STICK-UP (FEET): 2.62

WELL DIAMETER (INCHES): ~~2"~~ 1"

WELL CONSTRUCTION (PVC, STEEL, ETC.): PVC

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS: bottom v. soft

TtNUS Form 0021

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-EP-341S

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 4/15/09

PROJECT MANAGER: Linda Klink

INSPECTED BY: J Traud

VENT WELL

MONITORING INSTRUMENT READING: 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC)	54.75
WATER LEVEL DEPTH (FEET FROM TOP OF PVC)	2.85
WELL STICK-UP	0.1
CASING STICK-UP (FEET)	2.6
WELL DIAMETER (INCHES)	1"
WELL CONSTRUCTION (PVC, STEEL, ETC.)	PVC

LOCKED UPON ARRIVAL?	YES	NO
LOCKED REPLACED?	YES	NO
OBSTRUCTIONS?	YES	NO
WELL RELABELED?	YES	NO
SLUG TEST CONDUCTED?	YES	NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MWEP341B1

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 4/15/09

PROJECT MANAGER: Linda Klink

INSPECTED BY: J. Traut

VENT WELL

MONITORING INSTRUMENT READING: 0.0

LEL/02 READING: —

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC)	81.14
WATER LEVEL DEPTH (FEET FROM TOP OF PVC)	3.50
WELL STICK-UP	1.88
CASING STICK-UP (FEET)	1.9
WELL DIAMETER (INCHES)	2
WELL CONSTRUCTION (PVC, STEEL, ETC.)	PVC

LOCKED UPON ARRIVAL?	YES	NO
LOCKED REPLACED?	YES	NO
OBSTRUCTIONS?	YES	NO
WELL RELABELED?	YES	NO
SLUG TEST CONDUCTED?	YES	NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.	WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MWEP341B2

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 4/14/09

PROJECT MANAGER: Linda Klink

INSPECTED BY: J. Trant

VENT WELL

MONITORING INSTRUMENT READING: 0.0

LEL/02 READING: —

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC) 94.65

WATER LEVEL DEPTH (FEET FROM TOP OF PVC) 3.65

WELL STICK-UP ~~0.08~~ ~~0.1~~ ~~0.08~~ 1.8

CASING STICK-UP (FEET) 1.9

WELL DIAMETER (INCHES) 1"

WELL CONSTRUCTION (PVC, STEEL, ETC.) PVC

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TETRA TECH NUS, INC.	WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-EP-342S

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 4/14/09

PROJECT MANAGER: Linda Klink

INSPECTED BY: C. Fellows

J. Traut

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC) 41.45

WATER LEVEL DEPTH (FEET FROM TOP OF PVC) 1.25

WELL STICK-UP 1.53

CASING STICK-UP (FEET) 2.05

WELL DIAMETER (INCHES) 1"

WELL CONSTRUCTION (PVC, STEEL, ETC.) PVC

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.	WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-EP-342B1

PROJECT NAME: Eastern Plume -1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 04/13/06

PROJECT MANAGER: Linda Klink

INSPECTED BY: C. Fellas

J. Trout

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING: NA

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC) 71.3

WATER LEVEL DEPTH (FEET FROM TOP OF PVC) 2.58

WELL STICK-UP ~~2.32~~ 1.58

CASING STICK-UP (FEET) 2.32

WELL DIAMETER (INCHES) 1"

WELL CONSTRUCTION (PVC, STEEL, ETC.) PVC

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-EP-342B2

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 4/13/06 1145

PROJECT MANAGER: Linda Klink

INSPECTED BY: C. Fellows

J. Trout

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING: NA

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC) ______

WATER LEVEL DEPTH (FEET FROM TOP OF PVC) 1.35

WELL STICK-UP 1.54

CASING STICK-UP (FEET) 2.32

WELL DIAMETER (INCHES) 1"

WELL CONSTRUCTION (PVC, STEEL, ETC.) PVC

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS: ______

TtNUS Form 0021

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-EP-343

PROJECT NAME: Eastern Plume - MASB

DATE/TIME: 6/15/09

PROJECT MANAGER: Linda Klink

INSPECTED BY: B. Geringer

C. Fellows

VENT WELL

MONITORING INSTRUMENT READING: PID -- 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC)	80.57
WATER LEVEL DEPTH (FEET FROM TOP OF PVC)	2.80
WELL STICK-UP	CPB ~~2.85~~ 2.84
CASING STICK-UP (FEET)	~~2.95~~ 2.87
WELL DIAMETER (INCHES)	1"
WELL CONSTRUCTION (PVC, STEEL, ETC.)	PVC

LOCKED UPON ARRIVAL?	YES	NO
LOCKED REPLACED?	YES	NO
OBSTRUCTIONS?	YES	NO
WELL RELABELED?	YES	NO
SLUG TEST CONDUCTED?	YES	NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.	WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-~~ED~~-344

PROJECT NAME: Eastern Plume / NASB

DATE/TIME: 6/15/09

PROJECT MANAGER: Linda Klink

INSPECTED BY: C. Fellows

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC)	70.6
WATER LEVEL DEPTH (FEET FROM TOP OF PVC)	1.4
WELL STICK-UP	YES 2.55
CASING STICK-UP (FEET)	2.65
WELL DIAMETER (INCHES)	1"
WELL CONSTRUCTION (PVC, STEEL, ETC.)	PVC

LOCKED UPON ARRIVAL?	YES	NO
LOCKED REPLACED?	YES	NO
OBSTRUCTIONS?	YES	NO
WELL RELABELED?	YES	NO
SLUG TEST CONDUCTED?	YES	NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.	WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-EP-34S

PROJECT NAME: Eastern Plume - NASB

DATE/TIME: 6/15/09

PROJECT MANAGER: Linda Klink

INSPECTED BY: B. Geringer

C. Fellows

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC)	25.6
WATER LEVEL DEPTH (FEET FROM TOP OF PVC)	10.27
WELL STICK-UP	CFS ~~2.5~~ 2.91
CASING STICK-UP (FEET)	~~2.6~~ 2.98
WELL DIAMETER (INCHES)	1"
WELL CONSTRUCTION (PVC, STEEL, ETC.)	PVC

LOCKED UPON ARRIVAL?	YES	NO
LOCKED REPLACED?	YES	NO
OBSTRUCTIONS?	YES	NO
WELL RELABELED?	YES	NO
SLUG TEST CONDUCTED?	YES	NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.	WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-EP-346

PROJECT NAME: Eastern Plume -1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 6/11/09

PROJECT MANAGER: Linda Klink

INSPECTED BY: B. Geringer

C. Fellows

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC)	71.93
WATER LEVEL DEPTH (FEET FROM TOP OF PVC)	19.11
WELL STICK-UP	~~2.95~~ ~~2.80~~ 2.68
CASING STICK-UP (FEET)	~~3.05~~ ~~2.95~~ 2.95
WELL DIAMETER (INCHES)	1"
WELL CONSTRUCTION (PVC, STEEL, ETC.)	PVC

LOCKED UPON ARRIVAL?	YES	NO
LOCKED REPLACED?	YES	NO
OBSTRUCTIONS?	YES	NO
WELL RELABELED?	YES	NO
SLUG TEST CONDUCTED?	YES	NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-EP-347

PROJECT NAME: Eastern Plume - NASB

DATE/TIME: 6/15/09

PROJECT MANAGER: Linda Klink

INSPECTED BY: B Gorgher

C. Tallus

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC)	52.47
WATER LEVEL DEPTH (FEET FROM TOP OF PVC)	Artesian well 0.0 (WL from top of PVC extension = 2.2 ft)
WELL STICK-UP	CPB ~~2.04~~ 1.96
CASING STICK-UP (FEET)	~~2.14~~ 2.07
WELL DIAMETER (INCHES)	1"
WELL CONSTRUCTION (PVC, STEEL, ETC.)	PVC

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-EP-348

DATE/TIME: 06/08/09 1327

INSPECTED BY: BG/CFS

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

PROJECT MANAGER: Linda Klink

VENT WELL

MONITORING INSTRUMENT READING: 0.0

LEL/02 READING: ~~0.0~~ BG

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC) 55.27 (From top of additional 5' PVC)

WATER LEVEL DEPTH (FEET FROM TOP OF PVC) 0.55

WELL STICK-UP CFS ~~2.50~~ 2.54

CASING STICK-UP (FEET) ~~2.60~~ 2.64

WELL DIAMETER (INCHES) 1"

WELL CONSTRUCTION (PVC, STEEL, ETC.) PVC

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-EP-349

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 6/8/09 / 1115

PROJECT MANAGER: Linda Klink

INSPECTED BY: C. Fellows

B. Geringer

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING:

tPVC + 4.94

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

1.94

WELL DEPTH (FEET FROM TOP OF PVC)	58.33 ft (from 5' PVC added)
WATER LEVEL DEPTH (FEET FROM TOP OF PVC) plus ~~4.94 ft~~ of PVC extention 5.0 ft EF	1.94 ft
WELL STICK-UP	OB ~~2.4 ft.~~ 2.23
CASING STICK-UP (FEET)	~~2.9 ft~~ 2.48
WELL DIAMETER (INCHES)	1 in
WELL CONSTRUCTION (PVC, STEEL, ETC.)	PVC

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-ED-350

DATE/TIME: 6/11/09

INSPECTED BY: C. Tellaus

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

PROJECT MANAGER: Linda Klink

VENT WELL

MONITORING INSTRUMENT READING: PID=0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC): 59.15

WATER LEVEL DEPTH (FEET FROM TOP OF PVC): 1.60 (from top of PVC extension = 9.5 ft) Artesian well

WELL STICK-UP: ~~2.5~~ ~~2.3~~ 2.23

CASING STICK-UP (FEET): ~~2.6~~ 2.48

WELL DIAMETER (INCHES): 2"

WELL CONSTRUCTION (PVC, STEEL, ETC.): PVC

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS: No lock upon arrival, contact AHM to bring another lock (same as other newly installed overburden wells).

TtNUS Form 0021

TETRA TECH NUS, INC.	WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-EP-351

DATE/TIME: 6/9/09

INSPECTED BY: B. Geringer
C. Fellows

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

PROJECT MANAGER: Linda Klink

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC) 35.90

WATER LEVEL DEPTH (FEET FROM TOP OF PVC) 0.0 (WL at top of PVC extension = 5 ft) Artesian well

WELL STICK-UP ~~2.88~~ ~~2.78~~ 2.69

CASING STICK-UP (FEET) ~~2.88~~ 2.41

WELL DIAMETER (INCHES) 1"

WELL CONSTRUCTION (PVC, STEEL, ETC.) PVC

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-EP-352

DATE/TIME: 6/10/09

INSPECTED BY: C. Fellows

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

PROJECT MANAGER: Linda Klink

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC): 53.9

WATER LEVEL DEPTH (FEET FROM TOP OF PVC): 3.7

WELL STICK-UP: 2.26

CASING STICK-UP (FEET): ~~2.65~~ 2.7 CFB

WELL DIAMETER (INCHES): 1"

WELL CONSTRUCTION (PVC, STEEL, ETC.): PVC

LOCKED UPON ARRIVAL? YES NO — YES

LOCKED REPLACED? YES NO — NO

OBSTRUCTIONS? YES NO — NO

WELL RELABELED? YES NO — NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet") — YES

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-EP-353

DATE/TIME: 6/10/09

INSPECTED BY: C. Fellows

B. Geringer

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

PROJECT MANAGER: Linda Klink

VENT WELL

MONITORING INSTRUMENT READING: PID=0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC) 63.73

WATER LEVEL DEPTH (FEET FROM TOP OF PVC) 0.0 (Artesian well - from top of PVC extension = 5.25

WELL STICK-UP ~~2.75~~ 2.61 CF3

CASING STICK-UP (FEET) ~~2.9~~ 2.76

WELL DIAMETER (INCHES) 1"

WELL CONSTRUCTION (PVC, STEEL, ETC.) PVC

LOCKED UPON ARRIVAL?	YES	NO
LOCKED REPLACED?	YES	NO
OBSTRUCTIONS?	YES	NO
WELL RELABELED?	YES	NO
SLUG TEST CONDUCTED?	YES	NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-EP-354

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 6/11/09

PROJECT MANAGER: Linda Klink

INSPECTED BY: C. Fellows

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC)	35.82
WATER LEVEL DEPTH (FEET FROM TOP OF PVC)	6.56
WELL STICK-UP	2.83
CASING STICK-UP (FEET)	OFS ~~3.0~~ 2.99
WELL DIAMETER (INCHES)	1"
WELL CONSTRUCTION (PVC, STEEL, ETC.)	PVC

LOCKED UPON ARRIVAL?	YES	NO
LOCKED REPLACED?	YES	NO
OBSTRUCTIONS?	YES	NO
WELL RELABELED?	YES	NO
SLUG TEST CONDUCTED?	YES	NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: NASB-GW-MWEP3SS-0909

PROJECT NAME: NASB - Background Study

DATE/TIME: 9/16/09 755

PROJECT MANAGER: J. Orient

INSPECTED BY: J. Cardinal

VENT WELL

MONITORING INSTRUMENT READING: PID: 0.0 ppm

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC)	64.40 } measurement taken from top of PVC extention
WATER LEVEL DEPTH (FEET FROM TOP OF PVC)	2.60
WELL STICK-UP	3.03 in — PVC extention 5.3 in
CASING STICK-UP (FEET)	3.15 inch
WELL DIAMETER (INCHES)	1 inch
WELL CONSTRUCTION (PVC, STEEL, ETC.)	PVC

LOCKED UPON ARRIVAL?	YES (circled)	NO
LOCKED REPLACED?	YES	NO (circled)
OBSTRUCTIONS?	YES	NO (circled)
WELL RELABELED?	YES	NO (circled)
SLUG TEST CONDUCTED?	YES	NO (circled) (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS: artesian
located next to stream

TtNUS Form 0021

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-MB-01C

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 6/9/09

PROJECT MANAGER: Linda Klink

INSPECTED BY: B. Geringer
C. Fellows

VENT WELL

MONITORING INSTRUMENT READING: PID - 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC): 61.14

WATER LEVEL DEPTH (FEET FROM TOP OF PVC): 0.60 Artesian well [from top of PVC extension = 2.07 ft]

WELL STICK-UP: ~~3.12~~ 2.98

CASING STICK-UP (FEET): 3.12

WELL DIAMETER (INCHES): 2"

WELL CONSTRUCTION (PVC, STEEL, ETC.): PVC

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.	WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-MB-02C

DATE/TIME: 6/10/09

INSPECTED BY: C. Pellas

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

PROJECT MANAGER: Linda Klink

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC): 64.6

WATER LEVEL DEPTH (FEET FROM TOP OF PVC): 0.5 Artesian well (from top of PVC extension = 9.5 ft)

WELL STICK-UP: 2.75

CASING STICK-UP (FEET): 2.95

WELL DIAMETER (INCHES): 2"

WELL CONSTRUCTION (PVC, STEEL, ETC.): PVC

LOCKED UPON ARRIVAL?	YES	NO
LOCKED REPLACED?	YES	NO
OBSTRUCTIONS?	YES	NO
WELL RELABELED?	YES	NO
SLUG TEST CONDUCTED?	YES	NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.	WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-MB-03C

DATE/TIME: 6/8/09

INSPECTED BY: C. Felkins

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

PROJECT MANAGER: Linda Klink

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC) 58.2 ft (soft)

WATER LEVEL DEPTH (FEET FROM TOP OF PVC) 0.7 ft

WELL STICK-UP 2.8 ft

CASING STICK-UP (FEET) 3 ft

WELL DIAMETER (INCHES) 2 in

WELL CONSTRUCTION (PVC, STEEL, ETC.) PVC

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-MB-04B

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 6/11/09

PROJECT MANAGER: Linda Klink

INSPECTED BY: B. Geringer
C. Fellows

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC) 37.16

WATER LEVEL DEPTH (FEET FROM TOP OF PVC) 6.26

WELL STICK-UP ~~2.91~~ 2.81

CASING STICK-UP (FEET) ~~3.10~~ 2.91

WELL DIAMETER (INCHES) 2"

WELL CONSTRUCTION (PVC, STEEL, ETC.)

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-MB-06A

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 6/8/09 1600

PROJECT MANAGER: Linda Klink

INSPECTED BY: C. Fellas

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.6

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC) 17.7

WATER LEVEL DEPTH (FEET FROM TOP OF PVC) 12.27

WELL STICK-UP 2.7

CASING STICK-UP (FEET) 2.8

WELL DIAMETER (INCHES) 2 in

WELL CONSTRUCTION (PVC, STEEL, ETC.) PVC

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: MW-MB-06C

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 6/8/09

PROJECT MANAGER: Linda Klink

INSPECTED BY: C. Fellows

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC): 52.93

WATER LEVEL DEPTH (FEET FROM TOP OF PVC): 6.44

WELL STICK-UP: 3.1 ft

CASING STICK-UP (FEET): 3.2 ft

WELL DIAMETER (INCHES): 2 in

WELL CONSTRUCTION (PVC, STEEL, ETC.): PVC

LOCKED UPON ARRIVAL?	YES	NO
LOCKED REPLACED?	YES	NO
OBSTRUCTIONS?	YES	NO
WELL RELABELED?	YES	NO
SLUG TEST CONDUCTED?	YES	NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.	WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: PZ-MB-B4B

DATE/TIME: 6/9/08

INSPECTED BY: C.Fellas

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

PROJECT MANAGER: Linda Klink

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC) 14.12

WATER LEVEL DEPTH (FEET FROM TOP OF PVC) 4.55

WELL STICK-UP 3.4

CASING STICK-UP (FEET) No casing

WELL DIAMETER (INCHES) 1"

WELL CONSTRUCTION (PVC, STEEL, ETC.) PVC

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: PZ-MB-C4B

DATE/TIME: 6/9/09

INSPECTED BY: C. Fellas

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

PROJECT MANAGER: Linda Klink

VENT WELL

MONITORING INSTRUMENT READING: PID = 0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC) 12.45

WATER LEVEL DEPTH (FEET FROM TOP OF PVC) 1.25

WELL STICK-UP 3.0

CASING STICK-UP (FEET) No Casing

WELL DIAMETER (INCHES) 1"

WELL CONSTRUCTION (PVC, STEEL, ETC.) PVC

LOCKED UPON ARRIVAL? YES NO

LOCKED REPLACED? YES NO

OBSTRUCTIONS? YES NO

WELL RELABELED? YES NO

SLUG TEST CONDUCTED? YES NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

TtNUS Form 0021

TETRA TECH NUS, INC.

WELL INSPECTION AND GROUNDWATER LEVEL MEASUREMENT SHEET

WELL NUMBER: PZ-MB-B6B

PROJECT NAME: Eastern Plume - 1,4 Dioxane / NASB - Brunswick, ME

DATE/TIME: 6/10/09

PROJECT MANAGER: Linda Klink

INSPECTED BY: B. Geringer
C. Fellows

VENT WELL

MONITORING INSTRUMENT READING: PID=0.0

LEL/02 READING:

WELL INSPECTION/GROUNDWATER LEVEL MEASUREMENT

WELL DEPTH (FEET FROM TOP OF PVC) 15.73

WATER LEVEL DEPTH (FEET FROM TOP OF PVC) 0.45

WELL STICK-UP 2.61

CASING STICK-UP (FEET) NO casing

WELL DIAMETER (INCHES) 1"

WELL CONSTRUCTION (PVC, STEEL, ETC.) PVC

LOCKED UPON ARRIVAL?	YES	NO
LOCKED REPLACED?	YES	NO
OBSTRUCTIONS?	YES	NO
WELL RELABELED?	YES	NO
SLUG TEST CONDUCTED?	YES	NO (If YES, refer to "Hydraulic Conductivity Testing Data Sheet")

GENERAL CONDITION/COMMENTS:

APPENDIX A-9.4
CHAIN OF CUSTODY FORMS

Katahdin ANALYTICAL SERVICES
600 Technology Way
Scarborough, ME 04074
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE BEAR DOWN AND PRINT LEGIBLY IN PEN

Client: Tetra Tech NUS
Contact: Linda Klink
Phone # 412-921-8650 (661)
Fax # (412) 921-404
Address: 661 Anderson Foster Plaza 7
City: Pittsburgh
State: PA
Zip Code: 15220
Purchase Order #
Proj. Name / No. 112G00645 NASB-Eastern Plume CTO 069
Katahdin Quote #
Bill (if different than above)
Address
Sampler (Print / Sign) Chelsea Fellows / Johanna Jarrett
Copies To:

LAB USE ONLY
WORK ORDER #:
KATAHDIN PROJECT NUMBER
REMARKS:
SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT
AIRBILL NO:
TEMP°C ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	VOCs 40ml vial w/HCL (Filt. ☐Y ☒N)	1,4-Dioxane/LLPCE 40ml vial w/HCL (Filt. ☐Y ☒N)	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N
	EPGW-T-041309	4/13/09 / 1200	QC	2	2									
	EPGW-MWEP3412B2-041309	4/13/09 / 1340	GW	6	3	3								
	EPGW-MWEP3423B1-041409	4/14/09 / 1100	GW	6	3	3	*D1							
	EPGW-FD041409	4/14/09 / 1120	GW	6	3	3	*D1							
	EPGW-MWEP3410B1-041409	4/14/09 / 1240	GW	6	3	3								
	EPGW-R-041409	4/14/09 / 1310	QC	6	3	3								
	EPGW-MWEP3411B2-041409	4/14/09 / 1515	GW	6	3	3								
*	EPGW-MWEP3425-041409	4/14/09 / 1625	GW	18	9	9								
	EPGW-F-041409	4/14/09 / 1745	QC	6	3	3								
	EPGW-MWEP3405-041509	4/15/09 / 1215	GW	6	3	3								
	EPGW-MWEP3411B1-041509	4/15/09 / 1240	GW	6	3	3								
	EPGW-MWEP3415-041509	4/15/09 / 1505	GW	6	3	3								
	EPGW-MWEP3410B2-041409	4/14/09 / 0830	GW	6	3	3								
		/												
		/												
		/												

CFS 4/14/09 CFS 4/15/09 CFS 4/14/09

COMMENTS
* Lab QC

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	4/15/09 1550	[signature]			
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

CUSTOMER COPY

Katahdin ANALYTICAL SERVICES

600 Technology Way
Scarborough, ME 04074
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE BEAR DOWN AND PRINT LEGIBLY IN PEN

Client: Tetra Tech NUS
Contact: Linda Klink
Phone #: (412) 921-8250
Fax #: ( )

Address: 661 Anderson Drive Plaza 7
City: Pittsburgh
State: PA
Zip Code:

Purchase Order #:
Proj. Name / No.: Eastern Plume - NASTS
Katahdin Quote #:

Bill (if different than above):
Address:

Sampler (Print / Sign): C Fellows / [signature]
Copies To:

LAB USE ONLY

WORK ORDER #:

KATAHDIN PROJECT NUMBER ______

REMARKS: ______

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT

AIRBILL NO: ______

TEMP°C ______ ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	Filt. ☐Y ☒N VOC 4[illegible] vials w/ HCL	Filt. ☐Y ☒N [illegible] / 11DXE [illegible] vials w/ HCL	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N
	EPGW-T-060809	6/8/09 / 0900	GW	4	2	2								
	EPGW-MWMB03C-060809	6/8/09 / 1205	GW	6	3	3	D1							
	EPGW-FD-060809	6/8/09 / 1215	GW	6	3	3	D1							
	EPGW-MWEP349-060809	6/8/09 / 1215	GW	6	3	3								
	EPGW-MWEP348-060809	6/8/09 / 1510	GW	6	3	3								
	EPGW-MWMB06C-060809	6/8/09 / 1540	GW	6	3	3								
	EPGW-MWEP351-060909	6/9/09 / 1025	GW	6	3	3								
	EPGW-PZMBC4B-060909 ~~EPGW-MWEP~~ CFS	6/9/09 / 1040	GW	6	3	3								
	EPGW-PZMB64B-060909	6/9/09 / 1305	GW	6	3	3								
	EPGW-MWB01C-060909	6/9/09 / 1425	GW	6	3	3								
	EPGW-E-060909	6/9/09 / 1540	GW	6	3	3								
		/												
		/												
		/												
		/												
		/												

6/9/09 CFS

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	6/9/09 1600	C Fellows [signature]			
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

Katahdin ANALYTICAL SERVICES

600 Technology Way
Scarborough, ME 04074
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE BEAR DOWN AND PRINT LEGIBLY IN PEN

Client: Tetra Tech NUS
Contact: Linda Klink
Phone #: (412) 921-8250
Fax #: ( )
Address: 661 Anderson Drive Plaza 7
City: Pittsburgh
State: PA
Zip Code:
Purchase Order #:
Proj. Name / No.: Eastern Plume - NASB
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign): C. Fellows / [signature] Brian Geringer / [signature]
Copies To:

LAB USE ONLY
WORK ORDER #:
KATAHDIN PROJECT NUMBER
REMARKS:
SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT
AIRBILL NO:
TEMP°C ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	VOC 40ml vial w/ HCL (Filt. ☐Y ☒N)	1,4 Dioxane/1,1 DCE 40ml vial w/ HCL (Filt. ☐Y ☒N)	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N
	EPGW-T-061009	6/10/09 / 0830	GW	4	2	2								
	EPGW-MWMB02C-061009	6/10/09 / 1040	GW	6	3	3								
	EPGW-12MW36B-061009	6/10/09 / 1048	GW	6	3	3								
	EPGW-MWEP-353-061009	6/10/09 / 1310	GW	6	3	3								
	EPGW-MWEP-352-061009	6/10/09 / 1505	GW	6	3	3								
	EPGW-R-061009	6/10/09 / 1630	GW	6	3	3								
	EPGW-MWEP354-061109	6/11/09 / 0955	GW	6	3	3								
	EPGW-MWMB04B-061109	6/11/09 / 1015	GW	6	3	3								
	EPGW-MWEP350-061109	6/11/09 / 1305	GW	6	3	3	DI							
	EPGW-FD-061109	6/11/09 / 1320	GW	6	3	3	DI							
	EPGW-MWEP346-061109	6/11/09 / 1455	GW	6	3	3								
		/												
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6/11/09 CFS

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	6/11/09 1600	Dana Kemell			
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

Katahdin
ANALYTICAL SERVICES
600 Technology Way
Scarborough, ME 04074
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE BEAR DOWN AND PRINT LEGIBLY IN PEN

Client: Tetra Tech NUS, Inc.
Contact: Linda Klink
Phone #: (412) 921-8250
Fax #: ( )
Address: 661 Andersen Drive Plaza 7
City: Pittsburgh
State: PA
Zip Code:
Purchase Order #
Proj. Name / No.: Eastern Plume - NAS 13
Katahdin Quote #
Bill (if different than above)
Address
Sampler (Print / Sign): C. Fellows / C. [illegible] / Brian Geringer [signature]
Copies To:

LAB USE ONLY
WORK ORDER #:
KATAHDIN PROJECT NUMBER
REMARKS:

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT
AIRBILL NO:
TEMP°C ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	VOC 40ml vial w/ HCL (Filt. ☐Y ☒N)	1,4-Dioxane / 1,1-DCE 40ml vial w/ HCL (Filt. ☐Y ☒N)	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N
	EPGW-T-061509	6/15/09 / 0845	GW	4	2	2								
	EPGW-MWEP317-061509	6/15/09 / 1055	GW	6	3	3								
	EPGW-MWMB06A-061509	6/15/09 / 1205	GW	6	3	3								
	EPGW-MWEP345-061509	6/15/09 / 1325	GW	18	9	9								
	EPGW-MWEP341-061509	6/15/09 / 1550	GW	6	3	3								
	EPGW-MWEP343-061509	6/15/09 / 1650	GW	6	3	3								
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CFS 6/15/09

COMMENTS: * Lab QC

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	6/16/09 / 1350	[signature]		/	
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
	/			/	

THE TERMS AND CONDITIONS ON THE REVERSE SIDE HEREOF SHALL GOVERN

Katahdin
ANALYTICAL SERVICES

600 Technology Way
Scarborough, ME 04074
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE BEAR DOWN AND PRINT LEGIBLY IN PEN

Client: Tetra Tech NUS
Contact: Chuck Race
Phone #: (978) 474-8400
Fax #: (978) 474-8499

Address: 55 Jonspin Rd.
City: Wilmington
State: MA
Zip Code: 01887

Purchase Order #:
Proj. Name / No.: NASB-Brunswick GO 432
Katahdin Quote #:

Bill (if different than above):
Address:

Sampler (Print / Sign): C. Fellows / [signature]
Copies To:

LAB USE ONLY
WORK ORDER #:
KATAHDIN PROJECT NUMBER

REMARKS:

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT
AIRBILL NO:
TEMP°C ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	VOC 40ml vial / HCL (Filt. ☐Y ☒N)	1,4-Dioxane / 1,1-DCE 40ml vial w/ HCL (Filt. ☐Y ☒N)	Filt. ☐Y ☒N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N
	EPGW-TB01-091609	9/16 / 0844	QC	6	3	3	1							
	EPGW-MWEP355-091609	9/16 / 0919	GW	6	3	3	—							
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MFS

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	9-16-09 / 1600	[signature]		/	
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
	/			/	

APPENDIX A-9.5
EQUIPMENT CALIBRATION LOGS

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER

Site Name: Eastern Plume – NASB Brunswick, ME; Job No: 112G00645 / CTO 069

Serial No. 02F0329AH / 07F100535 Model No. 650 MDS Decal Letter A

Instrument is calibrated in accordance with manufacturers instructions

DATE: 4/13/09	Post Calibration Readings	PM Check	Calibration STDs		Signature	Remarks
Cond.=1000 uS/cm	1000	1037	Lot No. 6601	Exp. 10/30/09	AM: CFS	AM B.P.= 756.1 mmHg
Cond. Check (DIUF)	4	3	Lot No. 0907058	Exp. 9/2009	PM: [illegible]	PM B.P.=
pH=4.0	4.00	4.21	Lot No. 6269	Exp. 4/28/09		AM% Sat.= 99.5%
pH=7.0	7.00	7.10	Lot No. 6291	Exp. 4/30/09		PM% Sat.=
pH=10.0	9.99	~~9.91~~ 10	Lot No. 6281	Exp. 4/25/09		
D.O. mg/l	10.91 @ 11.26°C		% moisture in air			
REDOX mV	249.0 @ 11.78°C	246.3	Lot No. 07H100053	Exp. 8/2009		
Temp °C	11.12	14.68				
DO Zero %						

DATE: 4/14/09					
Cond.=1000 uS/cm	1000	975		AM: CFS	AM B.P.= 760.0 mmHg
Cond. Check (DIUF)	2	4		PM: CFS	PM B.P.=
pH=4.0	4.00	4.13			AM% Sat.= 100.8%
pH=7.0	7.00	7.08			PM% Sat.=
pH=10.0	10.00	9.86			
D.O. mg/l	11.60 @ 8.85	10.03			
REDOX mV	252 @ 6.97°C	228.7			
Temp °C	7.31°C	16.57			
DO Zero %					

Mod. TtNUS Form 0024

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER

Site Name: Eastern Plume – NASB Brunswick, ME; Job No: 112G00645 / CTO 069

Serial No. 02E0329AH / 07F100535 Model No. 650 MDS Decal Letter A

Instrument is calibrated in accordance with manufacturers instructions

DATE: 4/15/09	Post Calibration Readings	PM Check	Calibration STDs		Signature	Remarks
Cond.=1000 uS/cm	1002	990	Lot No.	Exp.	AM: CFS	AM B.P.= 762.7 mmHg
Cond. Check (DIUF)	2	5	Lot No.	Exp.	PM: J. Hart	PM B.P.=
pH=4.0	4.00	4.07	Lot No.	Exp.		AM% Sat.= 100.3%
pH=7.0	7.00	7.04	Lot No.	Exp.		PM% Sat.= 102.3
pH=10.0	9.99	9.90	Lot No.	Exp.		
D.O. mg/l	11.42 @ 9.67°C	9.83 @ 17.3°C	% moisture in air			
REDOX mV	250.2 @ 8.31°C	241.8	Lot No.	Exp.		
Temp °C	10.2°C	16.37				
DO Zero %						

DATE:						
Cond.=1000 uS/cm						AM B.P.=
Cond. Check (DIUF)						PM B.P.=
pH=4.0						AM% Sat.=
pH=7.0						PM% Sat.=
pH=10.0						
D.O. mg/l						
REDOX mV						
Temp °C						
DO Zero %						

Mod. TtNUS Form 0024

TETRA TECH NUS, INC.

FIELD INSTRUMENT CALIBRATION LOG

SITE NAME: Eastern Plume – NASB Brunswick, ME

INSTRUMENT NAME LaMotte Turbidimeter MODEL No.: 2020

SERIAL No.: 3232-2402 DECAL No.: A TT NUS CHARGE No. 112G00645 / CTO 069

DATE	INITIAL READING (AM) 0 NTU (check)	INITIAL READING (AM) 10 NTU (span)	PROCEDURE Per Manufacturer's Instruction	FINAL READING (PM Cal Check) 0 NTU (check)	FINAL READING (PM Cal Check) 10 NTU (span)	SIGNATURE	COMMENTS
4/13/09	0.00	10.0		0.0	10	AM: CFS PM: [signature]	
4/14/09	~~0.0~~ 0.00	~~10~~ 10		0.0	10	AM: CFS PM: [signature]	
4/15/09	0.00	10		0.0	10.0	AM: CFS PM: CFS	
	/			/		AM: PM:	
	/			/		AM: PM:	
	/			/		AM: PM:	
	/			/		AM: PM:	
	/			/		AM: PM:	
	/			/		AM: PM:	
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Mod.TtNUS Form 0007

TETRA TECH NUS, INC.

FIELD INSTRUMENT CALIBRATION LOG

SITE NAME: Eastern Plume – NASB Brunswick, ME

INSTRUMENT NAME LaMotte Turbidimeter MODEL No.: 2020

SERIAL No.: 4531-3303 DECAL No.: B TT NUS CHARGE No. 112G00645 / CTO 069

DATE	INITIAL READING (AM)		PROCEDURE	FINAL READING (PM Cal Check)		SIGNATURE	COMMENTS
	0 NTU (check)	10 NTU (span)	Per Manufacturer's Instruction	0 NTU (check)	10 NTU (span)		
4/13/09	0.00 /	10.02	~~0.02~~	0.02 /	10.11	AM: CFS PM: [illegible]	
4/14/09	0.00 /	10.01		0.0 /	9.73	AM: CFS PM: [illegible]	
4/15/09	0.00 /	10.00		0.0 /	4.27	AM: CFS PM: [illegible]	
	/			/		AM: PM:	
	/			/		AM: PM:	
	/			/		AM: PM:	
	/			/		AM: PM:	
	/			/		AM: PM:	
	/			/		AM: PM:	
	/			/		AM: PM:	
	/			/		AM: PM:	
	/			/		AM: PM:	

Mod.TtNUS Form 0007

TETRA TECH NUS, INC.

PHOTOIONIZATION DETECTOR FIELD CALIBRATION LOG

Serial No.: EDJJ-316 Model No.: PE Photovac 2020 Decal No.: A

Site Name/Location: Eastern Plume – NAS Brunswick, Brunswick ,ME Tetra Tech NUS Charge No.: 112G00645 / CTO 069

CALIBRATION DATE	STANDARD GAS-ISOBUTYLENE	(AM) CALIBRATION READING Isobutylene Equiv. (ppm)	(PM) CALIBRATION CHECK Isobutylene Equiv. (ppm)	SIGNATURE	COMMENTS
4/13/09	Lot # 031009 Conc. = 100 ppm	0.0 / 100	0.0 / 95.0	AM: CFS PM: CFS	
4/14/09	Lot # ↓ Conc. = ↓ ppm	0.0 / 99.7	0.0/8.7	AM: [signature] PM: [signature]	recal – check OK
4/15/09	Lot # ↓ Conc. = ↓ ppm	0.0 / 100	0.0 / 91.2	AM: [signature] PM: CFS	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	

TtNUS Form 0006

TETRA TECH NUS, INC.

PHOTOIONIZATION DETECTOR FIELD CALIBRATION LOG

Serial No.: ~~DG GG-305~~ 07-01494

Model No.: ~~PE Photovac 2020~~ Ion Science Procheck+

Decal No.: 13

Site Name/Location: Eastern Plume – NAS Brunswick, Brunswick ,ME

Tetra Tech NUS Charge No.: 112G00645 / CTO 069

CALIBRATION DATE	STANDARD GAS-ISOBUTYLENE	(AM) CALIBRATION READING Isobutylene Equiv. (ppm)	(PM) CALIBRATION CHECK Isobutylene Equiv. (ppm)	SIGNATURE	COMMENTS
4/13/09	Lot # 031009 Conc. = 100 ppm	Not Working		AM: CFS PM:	
4/15/09	Lot # ↓ Conc. = ↓ ppm	0.0 / ~~100~~ 101	0.1 / 98.6	AM: [illegible] PM: CFS	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	

B

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER

Site Name: Eastern Plume – NASB Brunswick, ME; Job No: 112G00645 / CTO 069

Serial No. 085101247 Model No. 556 MPS Decal Letter A

Instrument is calibrated in accordance with manufacturers instructions

DATE: 6/1/09	Post Calibration Readings	PM Check	Calibration STDs		Signature	Remarks
Cond.=1000 uS/cm	1000	997	Lot No. 6773	Exp. 1/2/10	AM: BG	AM B.P.= 758.6
Cond. Check (DIUF)	2	3	Lot No. 0712168	Exp. 07/09	PM: BG	PM B.P.= 757.5
pH=4.0	4.00	4.29	Lot No. 6508	Exp. 8/25/09		AM% Sat.= 100.1
pH=7.0	7.01	6.89	Lot No. 6658	Exp. 10/30/09		PM% Sat.= 81.5
pH=10.0	10.18	10.07	Lot No. 6507	Exp. 8/23/09		
D.O. mg/l	10.34 @ 13.81	7.14 @ 21.92	% moisture in air			
REDOX mV	237.5 @ 15	230.8	Lot No. 09A100861	Exp. 01/2011		
Temp °C	14.77	18.23				
DO Zero %						

DATE: 6/2/09						
Cond.=1000 uS/cm	1000	998			AM: BG	AM B.P.= 755.9
Cond. Check (DIUF)	3	1			PM: CFS	PM B.P.= 757.5
pH=4.0	4.0	4.10	6666	11/4/2009		AM% Sat.= 99.5
pH=7.0	7.0	7.01				PM% Sat.= 95.3
pH=10.0	10.03	9.99				
D.O. mg/l	9.67 @ 16.71	8.20 @ 22.93°C				
REDOX mV	244 @ 16	231.3 @ 21°C				
Temp °C	17.31	23.11°C				
DO Zero %						

Mod. TtNUS Form 0024

(2)

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER

Site Name: Eastern Plume – NASB Brunswick, ME; Job No: 112G00645 / CTO 069
Serial No. 08J101247 Model No. ______ Decal Letter A
Instrument is calibrated in accordance with manufacturers instructions

DATE: 6/3/09	Post Calibration Readings	PM Check	Calibration STDs		Signature	Remarks
Cond.=1000 uS/cm	1000	1025	Lot No. 6773	Exp. 1/2/10	AM: BG	AM B.P.= 759.3
Cond. Check (DIUF)	4	3	Lot No. 0712168	Exp. 07/09	PM: CFS	PM B.P.= 758.1
pH=4.0	4.0	4.20	Lot No. ~~6508~~ 6666	Exp. ~~8/23~~ 11/4/09		AM% Sat.= 99.9
pH=7.0	7.0	7.03	Lot No. 6658	Exp. 10/30/09		PM% Sat.= 94.6
pH=10.0	10.01	9.98	Lot No. 6507	Exp. 8/23/09		
D.O. mg/l	9.74 @ 16.63	7.63 @ 26.5°C	% moisture in air			
REDOX mV	244.1 @ 14.68	227.0 @ 24.5°C	Lot No. 09A100861	Exp. 01/2011		
Temp °C	17.40	26.58°C				
DO Zero %						

DATE: 6/8/09						
Cond.=1000 uS/cm	1000	985	7080	4/27/10	AM: BG	AM B.P.= 759.4
Cond. Check (DIUF)	2	1			PM: BG	PM B.P.= 758.7
pH=4.0	4.00	4.11	7074	4/24/10		AM% Sat.= 99.9
pH=7.0	7.00	7.04	6658	10/30/09		PM% Sat.= 92.8
pH=10.0	10.00	9.99	6662	10/31/09		
D.O. mg/l	9.11 @ 20.10	7.58 @ 25.61				
REDOX mV	237.5 @ 19	224.4 @ 20.96	09A100861	01/2011		
Temp °C	18.93	26.04				
DO Zero %						

Mod. TtNUS Form 0024

(3)

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER

Site Name: Eastern Plume – NASB Brunswick, ME; Job No: 112G00645 / CTO 069

Serial No. ______ Model No. ______ Decal Letter A

Instrument is calibrated in accordance with manufacturers instructions

DATE: 06/09/09	Post Calibration Readings	PM Check	Calibration STDs	Signature	Remarks
Cond.=1000 uS/cm	1000	976	Lot No. 6773 Exp. 1/2/10	AM: BG	AM B.P.= 760.2
Cond. Check (DIUF)	2	1	Lot No. Exp.	PM: BG	PM B.P.= 763.9
pH=4.0	4.00	4.02	Lot No. 6666 Exp. 11/4/09		AM% Sat.= 100.0
pH=7.0	7.00	7.01	Lot No. 6658 Exp. 10/30/09		PM% Sat.= 100.1
pH=10.0	10.00	10.00	Lot No. 6507 Exp. 8/23/09		
D.O. mg/l	9.65@17.07	9.63@17.17	% moisture in air		
REDOX mV	244.0@15.75	244.5@16.20	Lot No. 09A100861 Exp. 01/2011		
Temp °C	~~[illegible]~~ 19.45	18.30			
DO Zero %					

DATE: 6/10/09				AM: BG	
Cond.=1000 uS/cm	1000	987		PM: BG	AM B.P.= 759.1
Cond. Check (DIUF)	2	1			PM B.P.= 759.2
pH=4.0	4.00	4.02			AM% Sat.= 100.0
pH=7.0	7.00	7.02			PM% Sat.= 98.0
pH=10.0	10.01	10.00			
D.O. mg/l	10.26@14.16	9.82@15.29			
REDOX mV	244@12.90	242.1@14.90			
Temp °C	15.32	14.73			
DO Zero %					

Mod. TtNUS Form 0024

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER

Site Name: Eastern Plume – NASB Brunswick, ME; Job No: 112G00645 / CTO 069

Serial No. ______ Model No. ______ Decal Letter A

Instrument is calibrated in accordance with manufacturers instructions

DATE: 6/11/09	Post Calibration Readings	PM Check	Calibration STDs	Signature	Remarks
Cond.=1000 uS/cm	1000	1028	Lot No. 6773 Exp. 1/2/10	AM: BG	AM B.P.= 760.2
Cond. Check (DIUF)	3	4	Lot No. 0913258 Exp. 9/10	PM: CFS	PM B.P.= 758.5
pH=4.0	4.00	4.05	Lot No. 6666 Exp. 11/4/09		AM% Sat.= 100.0
pH=7.0	7.00	7.00	Lot No. 6658 Exp. 10/30/09		PM% Sat.= 94.5
pH=10.0	10.00	9.97	Lot No. 6507 Exp. 8/23/09		
D.O. mg/l	10.39@13.63	8.34 @ 21.17°C	94.4 % moisture in air		
REDOX mV	244.0@12.97	230.7 @ 19.72°C	Lot No. 09A100861 Exp. 01/2011		
Temp °C	14.95	19.59°C			
DO Zero %					

DATE:	06/15/09				
Cond.=1000 uS/cm	1000	954	7030 4/27/10		AM B.P.= 764.3
Cond. Check (DIUF)	1	2			PM B.P.= 762.9
pH=4.0	4.00	4.03	6666		AM% Sat.= 100.3
pH=7.0	7.00	7.10	6506		PM% Sat.= 96.4
pH=10.0	9.97	9.93	6662		
D.O. mg/l	9.89@16.07	8.95@19.01	—		
REDOX mV	244@15.35	238.3@18.38	09A100861 01/2011		
Temp °C	17.25	17.82	—		
DO Zero %			—		

Mod. TtNUS Form 0024

(5)

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER

Site Name: Eastern Plume – NASB Brunswick, ME; Job No: 112G00645 / CTO 069

Serial No. ______ Model No. ______ Decal Letter A

Instrument is calibrated in accordance with manufacturers instructions

DATE: 6/16/09	Post Calibration Readings	PM Check	Calibration STDs	Signature	Remarks
Cond.=1000 uS/cm	1000	1000	Lot No. 7080 Exp. 9/27/09	AM: CFS	AM B.P.= 765.4
Cond. Check (DIUF)	1	2	Lot No. 09I3258 Exp. 09/2009	PM:	PM B.P.= 765.7
pH=4.0	4.00	4.06	Lot No. 6666 Exp. 11/4/09		AM% Sat.= 100.0
pH=7.0	7.00	7.12	Lot No. 6506 Exp. 8/23/09		PM% Sat.= 94.8
pH=10.0	9.96	9.92	Lot No. 6662 Exp. 6/31/09		
D.O. mg/l	10.30 @ 14.37	8.25@22.51	100.6 % moisture in air		
REDOX mV	244.0 @13.98	227.5@ 20.29	Lot No. 09A100861 Exp. 01/2011		
Temp °C	13.94	24.13			
DO Zero %					

DATE:					
Cond.=1000 uS/cm					AM B.P.=
Cond. Check (DIUF)					PM B.P.=
pH=4.0					AM% Sat.=
pH=7.0					PM% Sat.=
pH=10.0					
D.O. mg/l					
REDOX mV					
Temp °C					
DO Zero %					

Mod. TtNUS Form 0024

(1)

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER

Site Name: Eastern Plume – NASB Brunswick, ME; Job No: 112G00645 / CTO 069

Serial No. 04G13203 Model No. 556 MPS Decal Letter B

Instrument is calibrated in accordance with manufacturers instructions

DATE: 6/1/09	Post Calibration Readings	PM Check	Calibration STDs		Signature	Remarks
Cond.=1000 uS/cm	1000	999	Lot No. 6773	Exp. 1/2/10	AM: BG	AM B.P.= 759.0
Cond. Check (DIUF)	4	1	Lot No. 0712168	Exp. 07/09	PM: BG	PM B.P.=
pH=4.0	4.00	3.90	Lot No. 6508	Exp. 8/25/09		AM% Sat.= 99.9
pH=7.0	7.00	6.57	Lot No. 6658	Exp. 10/30/09		PM% Sat.= 80.1
pH=10.0	10.00	10.21	Lot No. 6507	Exp. 8/23/09		
D.O. mg/l	10.30 @ 13.97	6.94 ~~8.04~~ @ 21.78°C	% moisture in air			
REDOX mV	244.0 @ 16°C	236.7 @ 18.64°C	Lot No. 09A100861	Exp. 01/2011		
Temp °C	14.80°C	18.20				
DO Zero %						

DATE: 6/2/09						
Cond.=1000 uS/cm	1000	1024			AM: BG	AM B.P.= 758.1
Cond. Check (DIUF)	2	3			PM: GFS	PM B.P.= 759.8
pH=4.0	3.99	3.80	6666	11/4/09		AM% Sat.= 99.6
pH=7.0	7.0	6.80				PM% Sat.= 125.1
pH=10.0	10.04	10.74 9.98				
D.O. mg/l	9.55 @ 16.81	~~233.6~~ @ 22.33°C	High			
REDOX mV	244 @ 16	233.6 @ 22°C				
Temp °C	17.24	23.27°C				
DO Zero %						

Mod. TtNUS Form 0024

(2)

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER

Site Name: Eastern Plume – NASB Brunswick, ME; Job No: 112G00645 / CTO 069

Serial No. 04G13203 Model No. ______ Decal Letter B

Instrument is calibrated in accordance with manufacturers instructions

DATE: 6/3/09	Post Calibration Readings	PM Check	Calibration STDs		Signature	Remarks
Cond.=1000 uS/cm	1000	996	Lot No. 6773	Exp. 1/2/10	AM: BG	AM B.P.= 761.3
Cond. Check (DIUF)	3	5	Lot No. 0712168	Exp. 07/09	PM: CFS	PM B.P.= 759.9
pH=4.0	4.0	3.34 (Low)	Lot No. 6666	Exp. 11/4/09		AM% Sat.= 100.2
pH=7.0	7.0	6.75	Lot No. 6658	Exp. 10/30/09		PM% Sat.= 93.0
pH=10.0	10.00	10.33	Lot No. 6507	Exp. 8/23/09		
D.O. mg/l	10.02@16.56	7.61@25.50	% moisture in air			
REDOX mV	244@14.80	~~22~~ 229.6@24.10	Lot No. 09A100861	Exp. 01/2011		
Temp °C	17.40	26.47°C				
DO Zero %						

DATE: 6/8/09						
Cond.=1000 uS/cm	1000	977	7080	4/27/10	AM: BG	AM B.P.= 761.1
Cond. Check (DIUF)	3	1			PM: BG	PM B.P.= 760.3
pH=4.0	3.99	3.89	7074	4/24/10		AM% Sat.= 100.2
pH=7.0	7.00	6.82	6658	10/30/09		PM% Sat.= 95.1
pH=10.0	9.97	9.98	6662	10/31/09		
D.O. mg/l	9.26@19.19					
REDOX mV	237.5@19	227.6@23.08	09A100861	01/2011		
Temp °C	19.00	26.15				
DO Zero %						

Mod. TtNUS Form 0024

(3)

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER

Site Name: Eastern Plume – NASB Brunswick, ME; Job No: 112G00645 / CTO 069
Serial No. ______ Model No. ______ Decal Letter B

Instrument is calibrated in accordance with manufacturers instructions

DATE: 06/09/09	Post Calibration Readings	PM Check	Calibration STDs	Signature	Remarks
Cond.=1000 uS/cm	1000	973	Lot No. 6773 Exp. 1/2/10	AM: BG	AM B.P.= 762.2
Cond. Check (DIUF)	2	3	Lot No. Exp.	PM: BG	PM B.P.= 763.1
pH=4.0	4.00	4.10	Lot No. 6666 Exp. 11/4/09		AM% Sat.= 100.3
pH=7.0	7.00	6.89	Lot No. 6658 Exp. 10/30/09		PM% Sat.= 102.0
pH=10.0	9.94	9.73	Lot No. 6501 Exp. 8/23/09		
D.O. mg/l	9.63 @ 17.62	9.81 @ 17.07	% moisture in air		
REDOX mV	244 @ 15.00	245.3 @ 16.28	Lot No. 09A100861 Exp. 01/2011		
Temp °C	~~16.14~~ 19.43	18.11			
DO Zero %					

DATE: 6/10/09				Am: BG	
Cond.=1000 uS/cm	1000	980		PM: BG	AM B.P.= 761.2
Cond. Check (DIUF)	1	2			PM B.P.= 761.4
pH=4.0	4.00	3.92			AM% Sat.= 100.2
pH=7.0	7.00	6.83			PM% Sat.= 95.8
pH=10.0	9.91	10.04			
D.O. mg/l	10.33 @ 13.95	9.51 @ 15.75			
REDOX mV	244 @ 13.50	241.1 @ 15.11			
Temp °C	15.23	14.78			
DO Zero %					

Mod. TtNUS Form 0024

(4)

TETRA TECH NUS, INC.

YSI MULTIPARAMETER WATER QUALITY METER

Site Name: Eastern Plume – NASB Brunswick, ME; Job No: 112G00645 / CTO 069

Serial No. ______ Model No. ______ Decal Letter B

Instrument is calibrated in accordance with manufacturers instructions

DATE: 6/11/09	Post Calibration Readings	PM Check	Calibration STDs	Signature	Remarks
Cond.=1000 uS/cm	1000	1007	Lot No. 6773 Exp. 1/2/10	AM: BG	AM B.P.= 762.2
Cond. Check (DIUF)	3	4 change solution	Lot No. 0913258 Exp. 9/10	PM:	PM B.P.= 760.1
pH=4.0	4.00	3.31 (low)	Lot No. 6666 Exp. 11/4/09		AM% Sat.= 100.3
pH=7.0	7.00	6.34 (low)	Lot No. 6658 Exp. 10/30/09		PM% Sat.= 94.5
pH=10.0	10.00	9.34 (low)	Lot No. 6507 Exp. 8/23/09		
D.O. mg/l	10.45@ 13.51	8.36@ 21.39°C	94.5 % moisture in air		
REDOX mV	244@ 13.00	232 @ 19.19°C	Lot No. 09A100861 Exp. 01/2011		
Temp °C	15.00	19.74°C			
DO Zero %					

DATE: 6/15/09			7080	4/27/10		
Cond.=1000 uS/cm	1000	945				AM B.P.= 762.4
Cond. Check (DIUF)	2	1				PM B.P.= 764.8
pH=4.0	3.97	2.81 (Low)	6666	11/4/09		AM% Sat.= 100.7
pH=7.0	7.00	5.62 (Low)	6506	8/23/09		PM% Sat.= 97.3
pH=10.0	9.92	8.45 (Low)	6662	10/31/09		
D.O. mg/l	9.89@ 16.22	8.99@ 19.29	—			
REDOX mV	244@ 15.47	238.6@ 18.53	09A100801	01/2011		
Temp °C	17.26	18.02	—			
DO Zero %			—			

Mod. TtNUS Form 0024

TETRA TECH NUS, INC.

PHOTOIONIZATION DETECTOR FIELD CALIBRATION LOG

Serial No.: 272   Model No.: 580B OVM   Decal No.: A

Site Name/Location: Eastern Plume – NAS Brunswick, Brunswick ,ME   Tetra Tech NUS Charge No.: 112G00645 / CTO 069

CALIBRATION DATE	STANDARD GAS-ISOBUTYLENE	(AM) CALIBRATION READING Isobutylene Equiv. (ppm)	(PM) CALIBRATION CHECK Isobutylene Equiv. (ppm)	SIGNATURE	COMMENTS
5/18/09	Lot # 031009 / 3/12/10 Conc. = 100 ppm	0.0 / 106	102	AM: CFS PM: CFS	
5/19/09	Lot # 031009 Conc. = 100 ppm	0.0 / 100	0.1 / 109	AM: CFS PM: CFS	
5/21/09	Lot # 031009 Conc. = 100 ppm	0.0 / 99	0.0 / 92	AM: CFS PM: CFS	
6/1/09	Lot # 031009 Conc. = 100 ppm	0.0 / 102	0.0 / 97.1	AM: CFS PM: CFS	
6/2/09	Lot # 031009 Conc. = 100 ppm	0.0 / 98.6	0.0 / ~~104~~ BG 98.3	AM: CFS PM: BG	
6/3/09	Lot # 031009 Conc. = 100 ppm	0.0 / 102.1	0.0 / 105.7	AM: CFS PM: BG	
6/8/09	Lot # 031009 Conc. = 100 ppm	0.0 / 96	0.0 / 97	AM: CFS PM: CFS	
6/9/09	Lot # 031009 Conc. = 100 ppm	0.0 / 102	0.0 / 102	AM: CFS PM: CFS	
6/10/09	Lot # 031009 Conc. = 100 ppm	0.0 / 97	0.0 / 108	AM: CFS PM: CFS	

TETRA TECH NUS, INC.

PHOTOIONIZATION DETECTOR FIELD CALIBRATION LOG

Serial No.: 212 Model No.: 580B OVM Decal No.: A

Site Name/Location: Eastern Plume – NAS Brunswick, Brunswick ,ME Tetra Tech NUS Charge No.: 112G00645 / CTO 069

CALIBRATION DATE	STANDARD GAS-ISOBUTYLENE	(AM) CALIBRATION READING Isobutylene Equiv. (ppm)	(PM) CALIBRATION CHECK Isobutylene Equiv. (ppm)	SIGNATURE	COMMENTS
6/11/09	Lot # 031009 Conc. = 100 ppm	0.0 / 96	0.0 / 108	AM: CFS PM: CFS	
6/15/09	Lot # 031009 Conc. = 100 ppm	0.0 / 95.2	0.0 / 98	AM: CFS PM: CFS	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	
	Lot # Conc. = ppm	/		AM: PM:	

TETRA TECH NUS, INC.

PHOTOIONIZATION DETECTOR FIELD CALIBRATION LOG

Serial No.: 006971 Model No.: MiniRae 2000 Decal No.: B

Site Name/Location: Eastern Plume – NAS Brunswick, Brunswick ,ME Tetra Tech NUS Charge No.: 112G00645 / CTO 069

CALIBRATION DATE	STANDARD GAS-ISOBUTYLENE	(AM) CALIBRATION READING Isobutylene Equiv. (ppm)	(PM) CALIBRATION CHECK Isobutylene Equiv. (ppm)	SIGNATURE	COMMENTS
6/1/09	Lot # 031009 Conc. = 100 ppm	0.0 / 100	0.0 / 100	AM: CFS PM: CFS	
6/2/09	Lot # 031009 Conc. = 100 ppm	0.0 / 100	0.7 / 104	AM: CFS PM: BG	
6/3/09	Lot # 031009 Conc. = 100 ppm	0.0 / 100	0.0 / 100	AM: CFS PM: BG	
6/8/09	Lot # 031009 Conc. = 100 ppm	0.0 / 100	0.9 / 101	AM: CFS PM: CFS	
6/9/09	Lot # 031009 Conc. = 100 ppm	0.0 / 100	0.0 / ~~102~~ 97.7 CFS	AM: CFS PM: CFS	
6/10/09	Lot # 031009 Conc. = 100 ppm	0.0 / 100	0.0 / 97.4	AM: CFS PM: CFS	
6/11/09	Lot # 031009 Conc. = 100 ppm	0.0 / 100	0.0 / 98.1	AM: CFS PM: CFS	
6/15/09	Lot # 031009 Conc. = 100 ppm	0.0 / 100	0.0 / 97.7	AM: CFS PM: CFS	
6/16/09	Lot # 031009 Conc. = 100 ppm	0.0 / 100	PID sucked up some water while sampling MW-~~??~~-02. Let filter dry overnight And check in AM (6/17/09	AM: BG PM: CFS	Check in AM and Sensor needs to be cleared.

TtNUS Form 0006

TETRA TECH NUS, INC.

FIELD INSTRUMENT CALIBRATION LOG

SITE NAME: Eastern Plume – NASB Brunswick, ME

INSTRUMENT NAME LaMotte Turbidimeter MODEL No.: 2020

SERIAL No.: 1755-1600 DECAL No.: A TT NUS CHARGE No. 112G00645 / CTO 069

DATE	INITIAL READING (AM) 0 NTU (check) / 10 NTU (span)	PROCEDURE Per Manufacturer's Instruction	FINAL READING (PM Cal Check) 0 NTU (check) / 10 NTU (span)	SIGNATURE	COMMENTS
6/1/09	0.0 / 10.0		0.0 / 12.3	AM: CFS PM: CFS *Re-Cal = 10.09	
6/2/09	0.0 / 10.03		0.0 / 9.9	AM: CFS PM: BG	
6/3/09	0.0 / 10.		0.0 / 10.01	AM: CFS PM: BG	
6/8/09	0.0 / 9.98		0.0 / 9.4	AM: CFS PM: CFS	
6/9/09	0.0 / 10		0.0 / 10.54	AM: CFS PM: CFS	
6/10/09	0.0 / 10.05		0.0 / 10.25	AM: CFS PM: CFS	
6/11/09	0.0 / 9.95		0.02 / 10.67	AM: CFS PM: CFS	
6/15/09	0.0 / 9.99		0.00 / 10.94	AM: CFS PM: CFS	
6/16/09	0.0 / 10		0.00 / 10	AM: BG PM: CFS	
	/		/	AM: PM:	
	/		/	AM: PM:	
	/		/	AM: PM:	

Mod.TtNUS Form 0007

TETRA TECH NUS, INC.

FIELD INSTRUMENT CALIBRATION LOG

SITE NAME: Eastern Plume – NASB Brunswick, ME

INSTRUMENT NAME LaMotte Turbidimeter MODEL No.: ~~48~~ 2020

SERIAL No.: 1735-1600 DECAL No.: B TT NUS CHARGE No. 112G00645 / CTO 069

DATE	INITIAL READING (AM)		PROCEDURE	FINAL READING (PM Cal Check)		SIGNATURE	COMMENTS
	0 NTU (check)	10 NTU (span)	Per Manufacturer's Instruction	0 NTU (check)	10 NTU (span)		
6/1/09	0.0 /	10.0		0.0 /	10.53	AM: CFS PM: CFS	
6/2/09	0.0 /	10.0		0.0 /	9.8	AM: CFS PM:	
6/3/09	0.0 /	10		0.0 /	11	AM: CFS PM: BG	
6/8/09	0.0 /	10		0.0 /	9.7	AM: CFS PM: CFS	
6/9/09	0.0 /	10		0.0 /	10	AM: CFS PM: CFS	
6/10/09	0.0 /	10		0.0 /	9.9	AM: CFS PM: CFS	
6/11/09	0.0 /	10		0.0 /	9.8	AM: CFS PM: CFS	
6/15/09	0.0 /	10.0		0.0 /	10	AM: CFS PM: CFS	
	/			/		AM: PM:	
	/			/		AM: PM:	
	/			/		AM: PM:	
	/			/		AM: PM:	

Mod.TtNUS Form 0007

APPENDIX A-10
SURVEY DATA

SURVEY DATA - PORE WATER GPS LOCATIONS

OBJECTID	FEATURE	iAD_SIT	LOCATION_A	DATA_SOURC	X	Y	LATITUDE	LONGITUDE	LAT_DMS	LONG_DMS
50513	PW-83	48744	WITHIN 1M	MDEP UNCONTROLLED SI	425870.68175320	4859254.51581262	43.88266379	-69.92278591	43 52 57.59 N	69 55 22.03 W
50514	PW-84	48744	WITHIN 1M	MDEP UNCONTROLLED SI	425866.08013492	4859269.18218742	43.88279537	-69.92284522	43 52 58.06 N	69 55 22.24 W
50515	PW-85	48744	WITHIN 1M	MDEP UNCONTROLLED SI	425855.22720011	4859277.43296038	43.88286855	-69.92298145	43 52 58.33 N	69 55 22.73 W
50516	PW-86	48744	WITHIN 1M	MDEP UNCONTROLLED SI	425849.65616816	4859288.13888592	43.88296437	-69.92305228	43 52 58.67 N	69 55 22.99 W
50517	PW-87	48744	WITHIN 1M	MDEP UNCONTROLLED SI	425862.89254371	4859304.32457380	43.88311142	-69.92288978	43 52 59.2 N	69 55 22.4 W
50518	PW-88	48744	WITHIN 1M	MDEP UNCONTROLLED SI	425858.48813298	4859319.75402774	43.88324988	-69.92294675	43 52 59.7 N	69 55 22.61 W
	PW-89				no data	no data	no data	no data	no data	no data
50555	PW-90	48744	WITHIN 1M	MDEP TECH SERVICES	425852.84310745	4859343.65395365	43.88346447	-69.92302033	43 53 0.47 N	69 55 22.87 W
50553	PW-91	48744	WITHIN 1M	MDEP TECH SERVICES	425834.57484259	4859345.15273107	43.88347612	-69.92324793	43 53 0.51 N	69 55 23.69 W
50554	PW-92	48744	WITHIN 1M	MDEP TECH SERVICES	425847.01619462	4859353.25519092	43.88355032	-69.92309420	43 53 0.78 N	69 55 23.14 W
50552	PW-93	48744	WITHIN 1M	MDEP TECH SERVICES	425841.86891444	4859369.30430034	43.88369428	-69.92316049	43 53 1.3 N	69 55 23.38 W
50551	PW-94	48744	WITHIN 1M	MDEP TECH SERVICES	425843.73048857	4859378.10562464	43.88377370	-69.92313855	43 53 1.59 N	69 55 23.3 W
50550	PW-95	48744	WITHIN 1M	MDEP TECH SERVICES	425855.81262948	4859385.45380633	43.88384107	-69.92298918	43 53 1.83 N	69 55 22.76 W
50544	PW-96	48744	WITHIN 1M	MDEP TECH SERVICES	425864.71435036	4859397.41860060	43.88394968	-69.92288005	43 53 2.22 N	69 55 22.37 W
50545	PW-97	48744	WITHIN 1M	MDEP TECH SERVICES	425861.62357013	4859410.67746758	43.88406873	-69.92292036	43 53 2.65 N	69 55 22.51 W
50546	PW-98	48744	WITHIN 1M	MDEP TECH SERVICES	425867.68843588	4859414.55414437	43.88410424	-69.92284541	43 53 2.78 N	69 55 22.24 W
50547	PW-99	48744	WITHIN 1M	MDEP TECH SERVICES	425883.08366372	4859416.30326130	43.88412154	-69.92265403	43 53 2.84 N	69 55 21.55 W
50548	PW-100	48744	WITHIN 1M	MDEP TECH SERVICES	425897.35920899	4859412.47645684	43.88408852	-69.92247581	43 53 2.72 N	69 55 20.91 W
50549	PW-101	48744	WITHIN 1M	MDEP TECH SERVICES	425910.46813304	4859414.14180130	43.88410483	-69.92231287	43 53 2.78 N	69 55 20.33 W
50556	PW-102	48744	WITHIN 1M	MDEP TECH SERVICES	425925.87607344	4859412.50448964	43.88409164	-69.92212086	43 53 2.73 N	69 55 19.64 W
50557	PW-103	48744	WITHIN 1M	MDEP TECH SERVICES	425941.77784763	4859417.36524843	43.88413699	-69.92192361	43 53 2.89 N	69 55 18.92 W
50558	PW-104	48744	WITHIN 1M	MDEP TECH SERVICES	425955.86792001	4859423.04319622	43.88418952	-69.92174902	43 53 3.08 N	69 55 18.3 W
50519	PW-105	48744	WITHIN 1M	MDEP UNCONTROLLED SI	425957.92930940	4859438.10170438	43.88432530	-69.92172545	43 53 3.57 N	69 55 18.21 W
50520	PW-106	48744	WITHIN 1M	MDEP UNCONTROLLED SI	425974.78974048	4859442.22024564	43.88436407	-69.92151616	43 53 3.71 N	69 55 17.46 W
50521	PW-107	48744	WITHIN 1M	MDEP UNCONTROLLED SI	425986.28058469	4859451.84006279	43.88445182	-69.92137446	43 53 4.03 N	69 55 16.95 W
50522	PW-108	48744	WITHIN 1M	MDEP UNCONTROLLED SI	425990.17844907	4859460.01977584	43.88452585	-69.92132708	43 53 4.29 N	69 55 16.78 W
50523	PW-109	48744	WITHIN 1M	MDEP UNCONTROLLED SI	425986.64892277	4859478.81447079	43.88469470	-69.92137362	43 53 4.9 N	69 55 16.95 W
50524	PW-110	48744	WITHIN 1M	MDEP UNCONTROLLED SI	425989.15557748	4859487.20638569	43.88477050	-69.92134359	43 53 5.17 N	69 55 16.84 W
50525	PW-111	48744	WITHIN 1M	MDEP UNCONTROLLED SI	425996.10543251	4859499.25169279	43.88487963	-69.92125875	43 53 5.57 N	69 55 16.53 W
50526	PW-112	48744	WITHIN 1M	MDEP UNCONTROLLED SI	425999.79370274	4859508.12733663	43.88495990	-69.92121407	43 53 5.86 N	69 55 16.37 W
50527	PW-113	48744	WITHIN 1M	MDEP UNCONTROLLED SI	426005.00421972	4859519.22637343	43.88506035	-69.92115076	43 53 6.22 N	69 55 16.14 W
	PW-114				no data	no data	no data	no data	no data	no data
50559	PW-115	48744	WITHIN 1M	MDEP TECH SERVICES	426020.57090405	4859552.31617142	43.88535980	-69.92096158	43 53 7.3 N	69 55 15.46 W
50603	PW-116	48744	WITHIN 3M	EPA	426018.29894262	4859570.34061603	43.88552184	-69.92099236	43 53 7.88 N	69 55 15.57 W
50604	PW-117	48744	WITHIN 3M	EPA	426011.95016319	4859585.57123260	43.88565832	-69.92107350	43 53 8.37 N	69 55 15.86 W
50605	PW-118	48744	WITHIN 3M	EPA	426016.66228289	4859599.96803608	43.88578840	-69.92101685	43 53 8.84 N	69 55 15.66 W

SURVEY DATA - PORE WATER GPS LOCATIONS

50606	PW-119	48744 WITHIN 3M	EPA	426020.96368934	4859611.89599654	43.88589621	-69.92096496	43 53 9.23 N	69 55 15.47 W
50607	PW120	48744 WITHIN 3M	EPA	426031.93983813	4859622.06734292	43.88598888	-69.92082975	43 53 9.56 N	69 55 14.99 W
50529	PW-121	48744 WITHIN 1M	MDEP TECH SERVICES	426024.62653447	4859654.88137629	43.88628355	-69.92092533	43 53 10.62 N	69 55 15.33 W
~~50528~~	~~PW-122~~	~~48744 WITHIN 1M~~	~~MDEP TECH SERVICES~~	~~426024.76148311~~	~~4859668.66178392~~	~~43.88640763~~	-69.92092556	43 53 11.07 N	69 55 15.33 W
50530	PW-123	48744 WITHIN 1M	MDEP TECH SERVICES	426024.57275059	4859687.19440469	43.88657445	-69.92093048	43 53 11.67 N	69 55 15.35 W
50531	PW-124	48744 WITHIN 1M	MDEP TECH SERVICES	426027.89920200	4859698.88799782	43.88668005	-69.92089070	43 53 12.05 N	69 55 15.21 W
50532	PW-125	48744 WITHIN 1M	MDEP TECH SERVICES	426025.86714927	4859712.21303527	43.88679981	-69.92091784	43 53 12.48 N	69 55 15.3 W
50533	PW-126	48744 WITHIN 1M	MDEP TECH SERVICES	426020.35642046	4859726.80215686	43.88693059	-69.92098846	43 53 12.95 N	69 55 15.56 W
50534	PW-127	48744 WITHIN 1M	MDEP TECH SERVICES	426014.16540707	4859742.55105445	43.88707175	-69.92106771	43 53 13.46 N	69 55 15.84 W
50535	PW-128	48744 WITHIN 1M	MDEP TECH SERVICES	426011.68939287	4859758.61059468	43.88721608	-69.92110075	43 53 13.98 N	69 55 15.96 W
50536	PW-129	48744 WITHIN 1M	MDEP TECH SERVICES	426006.25656919	4859773.22025193	43.88734706	-69.92117041	43 53 14.45 N	69 55 16.21 W
50625	PW-130	48744 WITHIN 3M	EPA	426006.59850427	4859789.81697903	43.88749651	-69.92116845	43 53 14.99 N	69 55 16.21 W
50624	PW-131	48744 WITHIN 3M	EPA	426012.58676873	4859801.77069055	43.88760472	-69.92109557	43 53 15.38 N	69 55 15.94 W
50623	PW-132	48744 WITHIN 3M	EPA	426017.76534135	4859818.36513591	43.88775463	-69.92103341	43 53 15.92 N	69 55 15.72 W
50622	PW-133	48744 WITHIN 3M	EPA	426012.00785862	4859834.70272250	43.88790113	-69.92110735	43 53 16.44 N	69 55 15.99 W
50621	PW-134	48744 WITHIN 3M	EPA	425999.36995096	4859843.68137062	43.88798070	-69.92126591	43 53 16.73 N	69 55 16.56 W
50620	PW-135	48744 WITHIN 3M	EPA	425989.34398404	4859849.04476420	43.88802797	-69.92139145	43 53 16.9 N	69 55 17.01 W
50560	PW-136	48744 WITHIN 1M	MDEP UNCONTROLLED SI	425982.83809049	4859866.19171668	43.88818169	-69.92147482	43 53 17.45 N	69 55 17.31 W
50561	PW-137	48744 WITHIN 1M	MDEP UNCONTROLLED SI	425971.00889679	4859874.33101033	43.88825377	-69.92162320	43 53 17.71 N	69 55 17.84 W
50619	PW-138	48744 WITHIN 3M	EPA	425965.96038337	4859887.97809913	43.88837612	-69.92168793	43 53 18.15 N	69 55 18.08 W
50618	PW-139	48744 WITHIN 3M	EPA	425964.92968867	4859907.37093600	43.88855060	-69.92170346	43 53 18.78 N	69 55 18.13 W
50617	PW-140	48744 WITHIN 3M	EPA	425966.20387766	4859919.30085223	43.88865813	-69.92168925	43 53 19.17 N	69 55 18.08 W
50616	PW-141	48744 WITHIN 3M	EPA	425970.66174630	4859937.26206003	43.88882028	-69.92163625	43 53 19.75 N	69 55 17.89 W
50613	PW-142	48744 WITHIN 3M	EPA	425968.04328631	4859948.90741065	43.88892485	-69.92167047	43 53 20.13 N	69 55 18.01 W
50615	PW-143	48744 WITHIN 3M	EPA	425972.59535823	4859966.26949864	43.88908161	-69.92161621	43 53 20.69 N	69 55 17.82 W
50543	PW-144	48744 WITHIN 1M	MDEP TECH SERVICES	425962.44356962	4859969.92745433	43.88911352	-69.92174309	43 53 20.81 N	69 55 18.28 W
50542	PW-145	48744 WITHIN 1M	MDEP TECH SERVICES	425960.53603472	4859990.83667061	43.88930157	-69.92176974	43 53 21.49 N	69 55 18.37 W
50541	PW-146	48744 WITHIN 1M	MDEP TECH SERVICES	425967.28900815	4860005.73839062	43.88943640	-69.92168774	43 53 21.97 N	69 55 18.08 W
50540	PW-147	48744 WITHIN 1M	MDEP TECH SERVICES	425942.01775632	4860028.17702484	43.88963586	-69.92200544	43 53 22.69 N	69 55 19.22 W
50539	PW-148	48744 WITHIN 1M	MDEP TECH SERVICES	425933.01270520	4860037.82259306	43.88972179	-69.92211888	43 53 23 N	69 55 19.63 W
50538	PW-149	48744 WITHIN 1M	MDEP TECH SERVICES	425921.47655215	4860050.12117333	43.88983135	-69.92226419	43 53 23.39 N	69 55 20.15 W
50537	PW-150	48744 WITHIN 1M	MDEP TECH SERVICES	425917.92453442	4860058.38009537	43.88990535	-69.92230955	43 53 23.66 N	69 55 20.31 W
50593	PW-SP-01	48744 WITHIN 3M	EPA	425958.92838569	4859518.89552109	43.88505274	-69.92172423	43 53 6.19 N	69 55 18.21 W
50594	PW-SP-02	48744 WITHIN 3M	EPA	425956.87970886	4859467.29396395	43.88458799	-69.92174256	43 53 4.52 N	69 55 18.27 W
50595	PW-SP-03	48744 WITHIN 3M	EPA	425923.36778891	4859440.46754312	43.88434312	-69.92215597	43 53 3.64 N	69 55 19.76 W
50596	PW-SP-04	48744 WITHIN 3M	EPA	425900.05818182	4859439.66143686	43.88433352	-69.92244599	43 53 3.6 N	69 55 20.81 W
50597	PW-SP-05	48744 WITHIN 3M	EPA	425891.07399232	4859455.50975314	43.88447530	-69.92256002	43 53 4.11 N	69 55 21.22 W

SURVEY DATA - PORE WATER GPS LOCATIONS

50598	PW-SP-06	48744	WITHIN 3M	EPA	425836.08339890	4859431.08176733	43.88424985	-69.92324110	43 53 3.3 N	69 55 23.67 W
50599	PW-SP-07	48744	WITHIN 3M	EPA	425782.78292313	4859370.27273612	43.88369706	-69.92389607	43 53 1.31 N	69 55 26.03 W
50600	PW-SP-08	48744	WITHIN 3M	EPA	425802.36644829	4859323.52802622	43.88327821	-69.92364581	43 52 59.8 N	69 55 25.12 W
~~50601~~	~~PW-SP-09~~	~~48744~~	~~WITHIN 3M~~	~~EPA~~	~~425843.23698074~~	~~4859303.86985555~~	~~43.88310535~~	~~-69.92313437~~	~~43 52 59.18 N~~	69 55 23.28 W
50602	PW-SP-10	48744	WITHIN 3M	EPA	425857.13734272	4859238.47843787	43.88251806	-69.92295226	43 52 57.06 N	69 55 22.63 W
50608	PW-SP-11	48744	WITHIN 3M	EPA	425999.86900017	4859617.20691009	43.88594190	-69.92122827	43 53 9.39 N	69 55 16.42 W
50609	PW-SP-12	48744	WITHIN 3M	EPA	425999.86834824	4859626.51641056	43.88602571	-69.92122957	43 53 9.69 N	69 55 16.43 W
50610	PW-SP-13	48744	WITHIN 3M	EPA	425980.49180952	4859592.74209048	43.88571971	-69.92146607	43 53 8.59 N	69 55 17.28 W
50611	PW-SP-14	48744	WITHIN 3M	EPA	425992.57688410	4859592.25282016	43.88571652	-69.92131558	43 53 8.58 N	69 55 16.74 W
50612	PW-SP-15	48744	WITHIN 3M	EPA	425970.21387327	4859865.58509972	43.88817496	-69.92163188	43 53 17.43 N	69 55 17.87 W
50614	PW-SP-16	48744	WITHIN 3M	EPA	425969.67179697	4859978.83504254	43.88919444	-69.92165435	43 53 21.1 N	69 55 17.96 W

SURVEY DATA - BEDROCK CLUSTERS AND PROFILING LOCATIONS

[redacted]	NAD83 MAINE STATE PLANE WEST (US SURVEY FEET)				
	NOTE: ALL NEGATIVE VALUES ARE INVALID --- NOTE: ALL NEGATIVE VALUES ARE INVALID ---				
			NGVD Factor=	0.65	
Point Number	Northing (Y)	Easting (X)	Elevation (Z)NAVD88	Elevation (Z) NGVD29	Description
14100	381199.620	3016864.156	20.5871	21.24	PL-20
1651	384242.390	3018064.702	44.70	45.35	PL-26
1670	384367.499	3016880.053	43.07	43.72	PL-03
1671	384005.888	3017113.835	35.33	35.98	PL-04
1672	383734.592	3017290.127	32.16	32.81	PL-05
1673	384506.967	3017057.351	41.25	41.90	PL-01
1674	384396.879	3017406.586	34.98	35.63	PL-02
1675	384805.542	3017236.555	37.79	38.44	PL-24
1676	384999.577	3017459.862	40.61	41.26	PL-25
15100	381886.540	3016775.013	22.36	23.01	PL-30
15101	381550.258	3016543.163	16.03	16.68	PL-23
15102	381730.158	3016722.671	23.94	24.59	PL-18
15103	381528.627	3016720.724	17.56	18.21	PL-19
15104	381911.387	3016638.535	16.55	17.19	PL-17
15105	381945.664	3016508.245	12.35	13.00	PL-29
15106	381784.016	3016410.254	14.06	14.71	PL-22
15107	382135.918	3016561.780	19.14	19.79	PL-16
15108	382025.699	3016339.078	18.79	19.44	PL-21
15109	382908.087	3016414.713	36.44	37.09	PL-12
15110	382828.331	3016582.553	23.59	24.24	PL-13
15111	382966.352	3016766.204	23.08	23.73	PL-28
15112	382784.003	3016789.236	20.78	21.43	PL-14
15113	382742.435	3016860.983	17.02	17.67	PL-15
15114	383234.816	3016417.139	45.33	45.98	PL-9
15116	383235.207	3016837.170	25.08	25.73	PL-27
15117	383319.686	3017053.146	29.02	29.67	PL-10
15118	383354.104	3017216.129	29.39	30.04	PL-08
15119	383132.259	3017284.746	12.62	13.27	PL-11
15121	383843.084	3017066.781	37.08	37.73	SPK/PAV
15122	383437.350	3016955.665	30.15	30.80	PL-07
15123	383463.188	3016672.933	35.09	35.74	PL-06
15125	383697.440	3017003.109	35.66	36.31	MW-EP342S P
15126	383697.438	3017002.911	36.18	36.83	MW-EP342S C
15127	383697.488	3017002.921	34.13	34.78	MW-EP342S G
15128	383707.718	3017006.433	35.94	36.59	MW-EP342B1 P
15129	383707.521	3017006.333	35.88	36.53	MW-EP342B2 P
15130	383707.335	3017006.526	36.03	36.68	MW-EP342B C
15131	383707.428	3017006.717	34.34	34.99	MW-EP342B G
15132	383826.515	3017019.867	39.53	40.18	MW-EP340S P
15133	383826.471	3017019.899	39.79	40.44	MW-EP340S C
15134	383826.513	3017020.063	36.75	37.40	MW-EP340S G
15135	383823.622	3017023.577	39.13	39.78	MW-EP340B1 P
15136	383823.548	3017023.467	39.10	39.75	MW-EP340B2 P
15137	383823.494	3017023.601	39.27	39.92	MW-EP340B C
15138	383823.693	3017023.919	36.69	37.34	MW-EP340B G
15139	383799.512	3016857.244	38.76	39.41	MW-EP-341S P
15140	383799.674	3016857.111	38.86	39.51	MW-EP-341S C
15141	383799.753	3016857.151	36.43	37.08	MW-EP-341S G
15142	383802.334	3016863.779	38.48	39.13	MW-EP-341B1 P
15143	383802.383	3016863.941	38.50	39.15	MW-EP-341B2 P
15144	383802.485	3016864.100	38.51	39.15	MW-EP-341B C
15145	383802.659	3016864.135	36.62	37.27	MW-EP-341B G

SURVEY DATA - MONITORING WELLS MW343 THROUGH MW355

	NAD83 MAINE STATE PLANE WEST (US SURVEY FEET)				
			NGVD Factor=	0.65	
Point Number	Northing (Y)	Easting (X)	Elevation (Z)NAVD88	Elevation (Z) NGVD29	Description
15200	381569.499	3016742.340	19.63	20.27	MW-EP-354 P
15201	381569.574	3016742.287	19.79	20.44	MW-EP-354 C
15202	381569.375	3016742.012	16.80	17.45	MW-EP-354 G
15203	381885.566	3016775.726	24.73	25.38	MW-EP-352 P
15204	381885.332	3016775.606	25.17	25.82	MW-EP-352 C
15205	381885.457	3016775.590	22.47	23.12	MW-EP-352 G
15206	381789.203	3016409.462	16.67	17.31	MW-EP-353 P
15207	381789.001	3016409.415	16.82	17.47	MW-EP-353 C
15208	381789.133	3016409.623	14.09	14.74	MW-EP-353 G
15209	384395.792	3017405.320	38.04	38.69	MW-EP-343 P
15210	384395.624	3017405.003	38.07	38.72	MW-EP-343 C
15211	384395.824	3017404.780	35.20	35.85	MW-EP-343 G
15212	384004.056	3017112.866	37.74	38.39	MW-EP-344 P
15213	384004.242	3017112.997	37.82	38.47	MW-EP-344 C
15214	384003.842	3017112.686	35.21	35.86	MW-EP-344 G
15215	382199.574	3016886.588	10.99	11.64	MW-EP-351 P
15216	382199.467	3016886.555	11.21	11.86	MW-EP-351 C
15217	382199.374	3016886.760	8.30	8.95	MW-EP-351 G
15218	382816.417	3016844.463	23.61	24.26	MW-EP-348 P
15219	382816.342	3016844.452	23.71	24.36	MW-EP-348 C
15220	382815.978	3016844.475	21.07	21.72	MW-EP-348 G
15221	382482.863	3016721.138	13.28	13.93	MW-EP-350 P
15222	382482.877	3016721.153	13.53	14.18	MW-EP-350 C
15223	382483.006	3016721.118	11.05	11.70	MW-EP-350 G
15224	382777.760	3016660.329	25.74	26.39	MW-EP-349 P
15225	382777.650	3016660.731	26.15	26.80	MW-EP-349 C
15226	382777.639	3016660.782	23.38	24.03	MW-EP-349 G
15227	383598.040	3016540.800	55.15	55.80	MW-EP-346 P
15228	383598.302	3016540.719	55.42	56.07	MW-EP-346 C
15229	383598.105	3016540.597	52.47	53.12	MW-EP-346 G
15230	383436.915	3016949.187	31.31	31.96	MW-EP-347 P
15231	383436.998	3016948.967	31.42	32.07	MW-EP-347 C
15232	383436.911	3016948.641	29.35	30.00	MW-EP-347 G
15233	383662.582	3017247.417	36.36	37.01	MW-EP-345 P
15234	383662.312	3017247.693	36.43	37.08	MW-EP-345 C
15235	383662.137	3017246.685	33.45	34.10	MW-EP-345 G
16384	381878.9608	3015852.752	21.4368	22.09	MW-EP-355 P
16385	381878.8184	3015852.971	21.4892	22.14	MW-EP-355 C
16386	381879.0669	3015852.863	18.3363	18.99	MW-EP-355 G

P = Top of PVC Riser
C = Top of Casing
G = Ground Surface

APPENDIX A-11
FIELD TASK MODIFICATION FORM

TETRA TECH NUS
FIELD TASK MODIFICATION REQUEST FORM

1,4-Dioxane Suppl. RI / NASB — Project/Installation Name
CTO 069 / 112G00645 — CTO & Project Number
01 — Task Mod. Number

SAP dated Oct. 2008 — Modification To (e.g. Work Plan)
PL01 thru PL30 — Site/Sample Location
11/6/08 — Date

Activity Description: Discrete-interval groundwater sample collection using Geoprobe profiler.

Reason for Change: Geoprobe profiler utilizes a dual tube setup. A similar setup was used to collect soil samples for "ground truthing" electrical conductivity data during this project. Flowing sands cause jamming of dual tubes, which is anticipated to occur with the Geoprobe profiler that may compromise groundwater sample integrity and extend project schedule.

Recommended Disposition: Replace Geoprobe profiler with Solinst Model 660 profiler. This profiler is similar to the Waterloo profiler that has been successfully utilized in similar hydrogeologic setting (NH Plating).

[signature] for C. Fellows-Swenson — Field Operations Leader (Signature)
11/6/08 — Date

Approved Disposition:
Discussed internally and with C. Evans of MEDEP who agreed. Change in profiler presented to technical stakeholders via email dated Nov. 5, 2008.

[signature] — Project/Task Order Manager (Signature)
11/6/08 — Date

Distribution:

Program/Project File – 112G00645-2.5
Project/Task Order Manager – Klinck / Race
Field Operations Leader – Fellows-Swenson

Other: —

APPENDIX B
ANALYTICAL RESULTS – SUPPLEMENTAL RI

APPENDIX B-1
PORE WATER AND SEEP ANALYTICAL RESULTS

August 11 - 13, 2008 MEDEP/NAVY/EPA PORE WATER SAMPLING EVENT
PICNIC POND/MERRICONEAG STREAM, NAVAL AIR STATION BRUNSWICK
EPA NEW ENGLAND FIELD & FIXED LABORATORY RESULTS

EPA New England Regional Laboratory (NERL) - Mobile Field Lab VOC Results						NERL Fixed Lab Results	Field Parameters/Notes		
Porewater/Seep Station I.D.	1,1,1-TCA (ppb)	TCE (ppb)	PCE (ppb)	cis-1,2 DCE (ppb)	1,1-DCE (ppb)	1,4-Dioxane (ppb)	Temp (degrees C)	Dissolved O_2 (mg/l)	Notes
PW-83	0.1	nd	nd	nd	nd	nd	16.5	<1	very silty
PW-84	nd	nd	nd	nd	nd	nd	15.2	<1	turbid
PW-85	nd	nd	nd	nd	nd	nd	16.5	<1	fairly clear
PW-86	nd	nd	nd	nd	nd	nd	16.1	<1	fairly clear
PW-86 Dup	nd	nd	nd	nd	nd	nd	16.1	<1	
PW-87	nd	nd	nd	nd	nd	nd	17.3	<1	fairly clear
PW-88	nd	nd	nd	nd	nd	nd	17	<1	somewhat cloudy
PW-89	nd	nd	nd	nd	nd	nd	na	1	clear sample
PW-90	nd	nd	nd	nd	nd	nd	na	<1	turbid
PW-91	nd	nd	nd	nd	nd	nd	na	<1	turbid
PW-92	nd	nd	nd	nd	nd	nd	na	<1	slight turbidity
PW-93	nd	nd	nd	nd	nd	nd	na	<1	not turbid
PW-94	nd	nd	nd	nd	nd	nd	na	<1	not turbid
PW-95	nd	nd	nd	nd	nd	nd	na	<1	not turbid
PW-96	nd	nd	nd	nd	nd	nd	na	<1	sulfur odor/not turbid
PW-97	nd	nd	nd	nd	nd	nd	na	<1	sulfur odor/not turbid
PW-98	nd	nd	nd	nd	nd	na	na	<1	not turbid
PW-99	nd	nd	nd	nd	nd	nd	na	<1	sulfur odor/not turbid
PW-100	nd	nd	nd	nd	nd	nd	na	<1	turbid
PW-101	nd	nd	nd	nd	nd	na	na	<1	not turbid
PW-102	nd	nd	nd	nd	nd	nd	na	<1	not turbid
PW-103	nd	nd	nd	nd	nd	nd	na	<1	not turbid
PW-104	nd	nd	nd	nd	nd	na	na	1	not turbid
PW-105	nd	nd	nd	nd	nd	nd	20.3	<1	clear sample
PW-106	nd	nd	nd	nd	nd	4.04	19.4	<1	clear sample
PW-107	nd	nd	nd	nd	nd	na	18	<1	very silty
PW-108	nd	nd	nd	nd	nd	nd	19	<1	not turbid
PW-109	nd	nd	nd	nd	nd	nd	17	<1	very silty
PW-110	nd	nd	nd	nd	nd	nd	17.2	<1	
PW-110 Dup	nd	nd	nd	nd	nd	nd	17.2	<1	
PW-111	nd	nd	nd	nd	nd	na	17	1	clear sample
PW-112	nd	nd	nd	nd	nd	nd	17.9	1	clear sample
PW-113	nd	nd	nd	nd	nd	nd	17	<1	clear sample
PW-114	nd	nd	nd	nd	nd	na	17.9	na	clear sample
PW-115	nd	nd	nd	nd	nd	nd	na	<1	turbid
PW-116	nd	nd	nd	nd	nd	na	15.6	<1	not turbid
PW-117	nd	nd	nd	nd	nd	nd	17.1	<1	very slight turbidity
PW-118	nd	nd	nd	nd	nd	nd	16	<1	not turbid

August 11 - 13, 2008 MEDEP/NAVY/EPA PORE WATER SAMPLING EVENT
PICNIC POND/MERRICONEAG STREAM, NAVAL AIR STATION BRUNSWICK
EPA NEW ENGLAND FIELD & FIXED LABORATORY RESULTS

EPA New England Regional Laboratory (NERL) - Mobile Field Lab VOC Results						NERL Fixed Lab Results	Field Parameters/Notes		
Porewater/Seep Station I.D.	1,1,1-TCA (ppb)	TCE (ppb)	PCE (ppb)	cis-1,2 DCE (ppb)	1,1-DCE (ppb)	1,4-Dioxane (ppb)	Temp (degrees C)	Dissolved O_2 (mg/l)	Notes
PW-118 Dup	nd	nd	nd	nd	nd	nd	16	<1	
PW-119	nd	nd	nd	nd	nd	nd	15.9	<1	slight turbidity
PW-120	nd	nd	nd	nd	nd	na	15.6	<1	slight turbidity
PW-121	nd	nd	nd	nd	nd	na	na	<1	turbid
PW-122	nd	nd	nd	nd	nd	nd	na	<1	slight turbidity
PW-123	**0.09 J**	nd	nd	nd	nd	na	na	<1	not turbid
PW-124	nd	nd	nd	nd	nd	nd	na	<1	slight turbidity
PW-125	nd	nd	nd	nd	nd	nd	15.5	1	not turbid
PW-126	nd	nd	nd	nd	nd	na	14.8	2	not turbid
PW-127	nd	nd	nd	nd	nd	nd	13.4	3	not turbid
PW-128	nd	nd	nd	nd	nd	nd	15.5	5	turbid
PW-128 Dup	nd	nd	nd	nd	nd	nd	15.5	5	
PW-129	**0.26**	**0.08 J**	nd	nd	nd	na	14.5	4	not turbid
PW-130	**0.34**	**0.23**	nd	nd	nd	nd	14	4	turbid
PW-130 Dup	**0.29**	**0.19 J**	nd	nd	nd	nd	14	4	
PW-131	**1.6**	**2.3**	**0.03 J**	**0.5**	**0.5**	nd	15.1	8	turbid
PW-132	nd	nd	nd	nd	nd	na	15	6	not turbid
PW-133	nd	nd	nd	nd	nd	nd	15.5	6	not turbid
PW-134	nd	nd	nd	nd	nd	nd	14.8	6	turbid
PW-135	nd	nd	nd	nd	nd	nd	13.7	5	not turbid
PW-136	nd	nd	nd	nd	nd	na	17.8	<1	not turbid
PW-137	nd	nd	nd	nd	nd	nd	17	1	not turbid
PW-138	nd	nd	nd	nd	nd	nd	13.5	silt interference	turbid
PW-138 Dup	nd	nd	nd	nd	nd	nd	13.5	silt interference	
PW-139	nd	nd	nd	nd	nd	na	13.8	6	not turbid
PW-140	nd	nd	nd	nd	nd	nd	14.9	7	not turbid
PW-140 Dup	nd	nd	nd	nd	nd	nd	14.9	7	
PW-141	nd	nd	nd	nd	nd	nd	13.3	4	turbid
PW-142	nd	nd	nd	nd	nd	na	12.4	7	not turbid
PW-143	nd	nd	nd	nd	nd	nd	15.2	5	not turbid
PW-144	nd	nd	nd	nd	nd	nd	13.1	5	turbid
PW-145	nd	nd	nd	nd	nd	nd	14.8	5	**artesian**/turbid
PW-146	nd	nd	nd	nd	nd	na	16	<1	not turbid
PW-147	nd	nd	nd	nd	nd	nd	15.7	5	turbid
PW-148	nd	nd	nd	nd	nd	nd	14.7	5	**artesian**/turbid
PW-148 Dup	nd	nd	nd	nd	nd	nd	14.7	5	
PW-149	**1.8**	**0.6**	nd	nd	nd	na	15.1	5	turbid
PW-150	**0.02 J**	nd	nd	nd	nd	nd	14.2	4	**artesian**/not turbid

August 11 - 13, 2008 MEDEP/NAVY/EPA PORE WATER SAMPLING EVENT
PICNIC POND/MERRICONEAG STREAM, NAVAL AIR STATION BRUNSWICK
EPA NEW ENGLAND FIELD & FIXED LABORATORY RESULTS

EPA New England Regional Laboratory (NERL) - Mobile Field Lab VOC Results						NERL Fixed Lab Results	Field Parameters/Notes		
Porewater/Seep Station I.D.	1,1,1-TCA (ppb)	TCE (ppb)	PCE (ppb)	cis-1,2 DCE (ppb)	1,1-DCE (ppb)	1,4-Dioxane (ppb)	Temp (degrees C)	Dissolved O_2 (mg/l)	Notes
PW-150 Dup	**0.02 J**	nd	nd	nd	nd	nd	14.2	4	
PW-SP-01	nd	nd	nd	nd	nd	nd	12.5	2	**artesian?**/turbid
PW-SP-02	nd	nd	nd	nd	nd	**10**	15.2	<1	turbid
PW-SP-03	**0.14**	nd	nd	nd	nd	na	12.5	2	turbid
PW-SP-04	nd	nd	nd	nd	nd	na	13.2	4	sulfur odor/not turbid
PW-SP-05	**0.02 J**	nd	nd	nd	nd	nd	13	5	slight turbidity
PW-SP-06	nd	nd	nd	nd	nd	nd	13	1	slight turbidity
PW-SP-07	nd	nd	nd	nd	nd	na	15.3	1	
PW-SP-08	nd	nd	nd	nd	nd	na	15.9	<1	turbid
PW-SP-09	**0.06 J**	**4.3**	nd	**2.3**	**5.6**	nd	13	<1	**cold (9 C) H_20 mound**
PW-SP-10	nd	nd	nd	nd	nd	na	14.9	<1	not turbid
PW-SP-11	nd	nd	nd	nd	nd	nd	13.6	2	clear sample
PW-SP-12	nd	nd	nd	nd	nd	nd	13.1	3	slight turbidity
PW-SP-13	nd	nd	nd	nd	nd	na	14.8	<1	slight turbidity
PW-SP-14	nd	nd	nd	nd	nd	**2.13**	15	1	mod turbidity
PW-SP-15	nd	nd	nd	nd	nd	na	13	7	slight turbidity
PW-SP-16	sample lost	sample lost	sample lost	sample lost	sample lost	na	14	<1	slight turbidity

* na = not analyzed

* nd = Concentration Below EPA Field Laboratory Practical Quantitation Limits (PQLs)

EPA Field Laboratory (PQLs)

Analyte	PQL (ppb)
1,1,1--TCA	0.1
TCE	0.2
PCE	0.1
cis-1,2-DCE	0.3
1,1-DCE	0.5

EPA NERL 1,4-Dioxane PQL 2 ppb

APPENDIX B-2
GROUNDWATER PROFILING ANALYTICAL RESULTS

ANALYTICAL RESULTS - GROUNDWATER PROFILING RESULTS EASTERN PLUME
NAS BRUNSWICK, MAINE

SAMPLE ID	EPGWPL01D-71	EPGWPL01S-44.3	EPGWPL02D-69.7	EPGWPL02I-45	EPGWPL02S-26.3	EPGWPL03S-31	EPGWPL04D-67	EPGWPL05I-30	EPGWPL05S-20	EPGWPL06I-41
LOCATION ID	EPGWPL01	EPGWPL01	EPGWPL02	EPGWPL02	EPGWPL02	EPGWPL03	EPGWPL04	EPGWPL05	EPGWPL05	EPGWPL06
SAMPLE DATE	12/01/08	11/10/08	11/12/08	11/12/08	11/11/08	12/01/08	11/13/08	11/12/08	11/12/08	12/02/08
TOP DEPTH (FT)	71.0	44.3	69.7	45.0	26.3	31.0	67.0	30.0	20.0	41.0
BOTTOM DEPTH (FT)	71.0	44.3	69.7	45.0	26.3	31.0	67.0	30.0	20.0	41.0
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/L)										
1,1,1-TRICHLOROETHANE	2	1 U	70	1 U	1 U	1 U	350 J	1 U	1 U	1
1,1,2-TRICHLOROETHANE	1 U	1 U	0.4 J	1 U	1 U	1 U	1	1 U	1 U	1 U
1,1-DICHLOROETHANE	0.8 J	1 U	29	1 U	1 U	1 U	25	1 U	1 U	1 U
1,1-DICHLOROETHENE	0.28	0.2 U	18	0.2 U	0.2 U	0.2 U	70	0.2 U	0.2 U	0.2 U
1,2-DICHLOROETHANE	1 U	1 U	1 J	1 U	1 U	1 U	2	1 U	1 U	1 U
1,4-DIOXANE	4.4	2 U	51	2 U	2 U	2 U	74	2 U	2 U	2 U
CHLOROFORM	4	3 U	10	6	31	1 U	8	8	20	1 U
CIS-1,2-DICHLOROETHENE	0.8 J	1 U	7	1 U	1 U	1 U	9	1 U	1 U	1 U
METHYLENE CHLORIDE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TETRACHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U	0.4 J	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	1	1 U	20	1 U	1 U	1 U	100	1 U	1 U	1 U
VINYL CHLORIDE	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
TOTAL 1,2-DICHLOROETHENE	0.8 J	1 U	7	1 U	1 U	1 U	9	1 U	1 U	1 U

J - QUANTITATION APPROXIMATE
R - REJECTED
NA - NOT ANALYZED

SAMPLE ID	EPGWPL01D-71	EPGWPL08S-20	EPGWPL09I-60	EPGWPL09S-40	EPGWPL12I-40	EPGWPL12S-22.5	EPGWPL14I-48	EPGWPL14I-48-AVG	EPGWPL14I-48-D	EPGWPL16D-69
LOCATION ID	EPGWPL01	EPGWPL08	EPGWPL09	EPGWPL09	EPGWPL12	EPGWPL12	EPGWPL14	EPGWPL14	EPGWPL14	EPGWPL16
SAMPLE DATE	12/01/08	11/14/08	12/03/08	12/02/08	12/03/08	12/03/08	11/17/08	11/17/08	11/17/08	11/19/08
TOP DEPTH (FT)	71.0	20.0	60.0	40.0	40.0	22.5	48.0	48.0	48.0	69.0
BOTTOM DEPTH (FT)	71.0	20.0	60.0	40.0	40.0	22.5	48.0	48.0	48.0	69.0
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	AVG	DUP	NORMAL
QC TYPE	NM	NM	NM	NM	NM	NM	NM	NM	FD	NM
VOLATILES (UG/L)										
1,1,1-TRICHLOROETHANE	2	1 U	2	1 U	1 U	1 U	52	53.5	55	0.4 J
1,1,2-TRICHLOROETHANE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	0.8 J	1 U	1 U	1 U	1 U	1 U	4	4	4	1 U
1,1-DICHLOROETHENE	0.28	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	4	4	4	0.12 J
1,2-DICHLOROETHANE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-DIOXANE	4.4	2 U	2.2 U	2 U	2 U	2 U	5.1	5.4	5.7	2 U
CHLOROFORM	4	4	12	1 U	1 U	1 U	1 U	1 U	1 U	18
CIS-1,2-DICHLOROETHENE	0.8 J	1 U	1 U	1 U	1 U	1 U	9	9.5	10	1 U
METHYLENE CHLORIDE	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TETRACHLOROETHENE	1 U	1 U	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	1	1 U	0.4 J	1 U	1 U	1 U	12	13	14	1 U
VINYL CHLORIDE	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
TOTAL 1,2-DICHLOROETHENE	0.8 J	1 U	1 U	1 U	1 U	1 U	9	9.5	10	1 U

J - QUANTITATION APPROXIMATE
R - REJECTED
NA - NOT ANALYZED

ANALYTICAL RESULTS - GROUNDWATER PROFILING RESULTS EASTERN PLUME
NAS BRUNSWICK, MAINE

SAMPLE ID	EPGWPL01D-71	EPGWPL17D-64	EPGWPL24D2-79	EPGWPL24D-66	EPGWPL25D-71	EPGWPL25I-62	EPGWPL25I-62-AVG	EPGWPL25I-62-D	EPGWPL25S-21	EPGWPL28D-45.5
LOCATION ID	EPGWPL01	EPGWPL17	EPGWPL24	EPGWPL24	EPGWPL25	EPGWPL25	EPGWPL25	EPGWPL25	EPGWPL25	EPGWPL28
SAMPLE DATE	12/01/08	11/19/08	12/15/08	12/15/08	12/15/08	12/15/08	12/15/08	12/15/08	12/11/08	12/10/08
TOP DEPTH (FT)	71.0	64.0	79.0	66.0	71.0	62.0	62.0	62.0	21.0	45.5
BOTTOM DEPTH (FT)	71.0	64.0	79.0	66.0	71.0	62.0	62.0	62.0	21.0	45.5
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	AVG	DUP	NORMAL	NORMAL
QC TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
VOLATILES (UG/L)										
1,1,1-TRICHLOROETHANE	2	200	1 U	1 U	2	2	2	2	1 U	36
1,1,2-TRICHLOROETHANE	1 U	0.6 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	0.8 J	19	1 U	1 U	0.4 J	1 U	1 U	1 U	1 U	2
1,1-DICHLOROETHENE	0.28	39	0.2 U	0.2 U	0.28	0.28	0.37	0.46	0.2 U	2.3
1,2-DICHLOROETHANE	1 U	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-DIOXANE	4.4	64	2 U	2 U	1.7 J	2 U	2 U	2 U	2 U	3 U
CHLOROFORM	4	3 U	34	34	16	10	9	8	38	3 U
CIS-1,2-DICHLOROETHENE	0.8 J	1	1 U	1 U	0.4 J	0.5 J	0.45 J	0.4 J	1 U	4
METHYLENE CHLORIDE	5 U	6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TETRACHLOROETHENE	1 U	0.9 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	1	31	1 U	1 U	1	1	1.5	2	1 U	12
VINYL CHLORIDE	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
TOTAL 1,2-DICHLOROETHENE	0.8 J	1	1 U	1 U	0.4 J	0.5 J	0.45 J	0.4 J	1 U	4

J - QUANTITATION APPROXIMATE
R - REJECTED
NA - NOT ANALYZED

APPENDIX B-3
GROUNDWATER PERMANENT WELLS ANALYTICAL RESULTS

ANALYTICAL RESULTS - GROUNDWATER PERMANENT WELLS EASTERN PLUME
NAS BRUNSWICK, MAINE

SAMPLE ID			EW-01-L-20090422	EW-02A-L-20090422	EW-04-L-20090422	EW-05A-L-20090422	EW-05B-L-20090421	MW-105A-D-20090415	MW-1104-M-20090519	MW-205-D-20090415
LOCATION			EW-01	EW-02A	EW-04	EW-05A	EW-05B	MW-105A	MW-1104	MW-205
SAMPLE DATE			20090422	20090422	20090422	20090422	20090421	20090415	20090519	20090415
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
VOLATILES (UG/L)										
1,1,1,2-TETRACHLOROETHANE	10	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
1,1,1-TRICHLOROETHANE	10000	200	3.2	32.8	19.4	3.6 J	251	1 U	1 U	1.6
1,1,2,2-TETRACHLOROETHANE	2	NC	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROETHANE	6	5	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	60	NC	0.98 J	19.1	3.8	2.5 J	60.8	1 U	1 U	1 U
1,1-DICHLOROETHENE	40	7	1.6	26.7	5.3	1 UJ	79	1 U	1 U	1 U
1,1-DICHLOROPROPENE	NC	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
1,2,3-TRICHLOROBENZENE	NC	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
1,2,3-TRICHLOROPROPANE	0.05	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
1,2,4-TRICHLOROBENZENE	70	70	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
1,2,4-TRIMETHYLBENZENE	NC	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
1,2-DIBROMO-3-CHLOROPROPANE	0.4	0.2	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
1,2-DIBROMOETHANE	0.2	0.05	2 U	2 U	2 U	2 UJ	2 U	2 U	2 U	2 U
1,2-DICHLOROBENZENE	200	600	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
1,2-DICHLOROETHANE	4	5	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	10	5	2 U	2 U	2 U	2 UJ	2 U	2 U	2 U	2 U
1,3,5-TRIMETHYLBENZENE	NC	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
1,3-DICHLOROBENZENE	1	NC	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
1,3-DICHLOROPROPANE	100	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
1,4-DICHLOROBENZENE	70	75	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
1,4-DIOXANE	30	3.5	2.8 J	28 J	6.9 J	2.9 J	75.7 J	NA	NA	1.7 J
2,2-DICHLOROPROPANE	NC	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
2-BUTANONE	4000	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
2-CHLOROTOLUENE	100	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
2-HEXANONE	NC	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
4-CHLOROTOLUENE	500	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
4-ISOPROPYLTOLUENE	70	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
4-METHYL-2-PENTANONE	500	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
ACETONE	6000	NC	5 U	5 U	5 U	5 UJ	5 U	5 UJ	12.8 U	5 U
BENZENE	4	5	0.5 U	0.5 U	0.5 U	0.5 UJ	0.85	0.5 U	0.5 U	0.5 U
BROMOBENZENE	NC	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
BROMOCHLOROMETHANE	100	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
BROMODICHLOROMETHANE	6	80	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
BROMOFORM	40	80	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
BROMOMETHANE	10	NC	2 U	2 U	2 U	2 UJ	2 U	2 U	2 U	2 U

J = Quantitation Approximate
NA = Not Analyzed
R = Rejected
U = Undetected

ANALYTICAL RESULTS - GROUNDWATER PERMANENT WELLS EASTERN PLUME
NAS BRUNSWICK, MAINE

SAMPLE ID			EW-01-L-20090422	EW-02A-L-20090422	EW-04-L-20090422	EW-05A-L-20090422	EW-05B-L-20090421	MW-105A-D-20090415	MW-1104-M-20090519	MW-205-D-20090415
LOCATION			EW-01	EW-02A	EW-04	EW-05A	EW-05B	MW-105A	MW-1104	MW-205
SAMPLE DATE			20090422	20090422	20090422	20090422	20090421	20090415	20090519	20090415
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
BTEX	NC	NC	0.875 U	0.875 U	0.875 U	0.875 UJ	0.85	0.875 U	0.875 U	0.875 U
CARBON DISULFIDE	600	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
CARBON TETRACHLORIDE	5	5	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
CHLOROBENZENE	100	100	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
CHLORODIBROMOMETHANE	4	80	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
CHLOROETHANE	7	NC	2 U	2 U	2 U	2 UJ	2 U	2 U	2 U	2 U
CHLOROFORM	70	80	1 U	1 U	0.48 J	0.92 J	0.46 J	1 U	1 U	1 U
CHLOROMETHANE	20	NC	2 U	2 U	2 U	2 UJ	2 U	2 U	2 U	2 U
CIS-1,2-DICHLOROETHENE	70	70	NA	NA	NA	NA	NA	NA	1 U	NA
CIS-1,3-DICHLOROPROPENE	NC	NC	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U
DIBROMOMETHANE	NC	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
DICHLORODIFLUOROMETHANE	1000	NC	2 U	2 U	2 U	2 UJ	2 U	2 U	2 U	2 U
ETHYLBENZENE	30	700	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
HEXACHLOROBUTADIENE	4	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
ISOPROPYLBENZENE	NC	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
METHYL IODIDE	NC	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
METHYL TERT-BUTYL ETHER	35	NC	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
METHYLENE CHLORIDE	50	5	2 U	2 U	2 U	2 UJ	2 U	2 U	2 U	2 U
NAPHTHALENE	10	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
N-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
N-PROPYLBENZENE	NC	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
SEC-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
STYRENE	100	100	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
TERT-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
TETRACHLOROETHENE	0.6	5	2.2	3.2	1 U	1 UJ	3.1	1 U	1 U	3.8
TOLUENE	600	1000	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
TOTAL 1,2-DICHLOROETHENE	NC	NC	6.3	24.2	5.1	2.1 J	42	1 U	1 U	10.5
TOTAL CHLORINATED ETHENES	NC	NC	21.2	111	24.2	8.1 J	306	1 U	1 U	26.3
TOTAL CHLORINATED VOCS	NC	NC	25.4 J	163	47.4	14.2 J	618	1.89 U	1.89 U	27.9
TOTAL XYLENES	1000	10000	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	100	100	NA	NA	NA	NA	NA	NA	1 U	NA
TRANS-1,3-DICHLOROPROPENE	NC	NC	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROETHENE	30	5	11.1	56.9	13.8	6 J	182	1 U	1 U	12
TRICHLOROFLUOROMETHANE	2000	NC	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
VINYL ACETATE	7000	NC	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
VINYL CHLORIDE	0.2	2	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U

J = Quantitation Approximate
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SAMPLE ID			MW-207AR-D-20090420	MW-207AR-M-20090420	MW-209-L-20090414	MW-224-M-20090409	MW-225A-M-20090409	MW-225A-M-20090409-AVG	MW-225A-M-20090409-D	MW-229A-M-20090420
LOCATION			MW-207AR	MW-207AR	MW-209	MW-224	MW-225A	MW-225A	MW-225A	MW-229A
SAMPLE DATE			20090420	20090420	20090414	20090409	20090409	20090409	20090409	20090420
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
VOLATILES (UG/L)										
1,1,1,2-TETRACHLOROETHANE	10	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,1-TRICHLOROETHANE	10000	200	1 U	1 U	1 U	1 U	1 U	1 U	1 U	8.1
1,1,2,2-TETRACHLOROETHANE	2	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROETHANE	6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	60	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.54 J
1,1-DICHLOROETHENE	40	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.9
1,1-DICHLOROPROPENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-TRICHLOROBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-TRICHLOROPROPANE	0.05	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-TRICHLOROBENZENE	70	70	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-TRIMETHYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-DIBROMO-3-CHLOROPROPANE	0.4	0.2	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-DIBROMOETHANE	0.2	0.05	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,2-DICHLOROBENZENE	200	600	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROETHANE	4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	10	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,3,5-TRIMETHYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-DICHLOROBENZENE	1	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-DICHLOROPROPANE	100	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,4-DICHLOROBENZENE	70	75	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-DIOXANE	30	3.5	NA	1 J	1 U	NA	NA	NA	NA	1.5 J
2,2-DICHLOROPROPANE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-BUTANONE	4000	NC	5 U	5 U	5 UJ	5 UJ	5 UJ	5 U	5 UJ	5 U
2-CHLOROTOLUENE	100	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-HEXANONE	NC	NC	5 UJ	5 UJ	5 U	5 U	5 U	5 U	5 U	5 U
4-CHLOROTOLUENE	500	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-ISOPROPYLTOLUENE	70	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-METHYL-2-PENTANONE	500	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ACETONE	6000	NC	6.7 J	8.1 J	5 UJ	7 J	7.7 J	7.65	7.6 J	5 U
BENZENE	4	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
BROMOBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
BROMOCHLOROMETHANE	100	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
BROMODICHLOROMETHANE	6	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMOFORM	40	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMOMETHANE	10	NC	2 U	2 U	2 UJ	2 U	2 U	2 U	2 U	2 U

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R = Rejected
U = Undetected

SAMPLE ID			MW-207AR-D-20090420	MW-207AR-M-20090420	MW-209-L-20090414	MW-224-M-20090409	MW-225A-M-20090409	MW-225A-M-20090409-AVG	MW-225A-M-20090409-D	MW-229A-M-20090420
LOCATION			MW-207AR	MW-207AR	MW-209	MW-224	MW-225A	MW-225A	MW-225A	MW-229A
SAMPLE DATE			20090420	20090420	20090414	20090409	20090409	20090409	20090409	20090420
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL	ORIG	AVG	DUP	NORMAL
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
BTEX	NC	NC	0.875 U	0.875 U	0.875 U	0.875 U	0.875 U	0.875 U	0.875 U	0.875 U
CARBON DISULFIDE	600	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CARBON TETRACHLORIDE	5	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROBENZENE	100	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLORODIBROMOMETHANE	4	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROETHANE	7	NC	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
CHLOROFORM	70	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROMETHANE	20	NC	2 U	2 U	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 U
CIS-1,2-DICHLOROETHENE	70	70	NA	NA	NA	1 U	6.1	6	5.9	NA
CIS-1,3-DICHLOROPROPENE	NC	NC	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	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
DICHLORODIFLUOROMETHANE	1000	NC	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
ETHYLBENZENE	30	700	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
HEXACHLOROBUTADIENE	4	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ISOPROPYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
METHYL IODIDE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
METHYL TERT-BUTYL ETHER	35	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYLENE CHLORIDE	50	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
NAPHTHALENE	10	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-PROPYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SEC-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
STYRENE	100	100	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TERT-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TETRACHLOROETHENE	0.6	5	17.6	17.5	1 U	1 U	1	1	1	1.4
TOLUENE	600	1000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL 1,2-DICHLOROETHENE	NC	NC	3	2.6	1 U	1 U	6.1	6	5.9	1.4
TOTAL CHLORINATED ETHENES	NC	NC	24.3	23.2	1 U	1 U	11	10.85	10.7	12.9
TOTAL CHLORINATED VOCS	NC	NC	24.3	23.2	1.89 UJ	1.89 UJ	11 J	10.85	10.7 J	21.5 J
TOTAL XYLENES	1000	10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	100	100	NA	NA	NA	1 U	1 U	1 U	1 U	NA
TRANS-1,3-DICHLOROPROPENE	NC	NC	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	30	5	3.7	3.1	1 U	1 U	3.9	3.85	3.8	8.2
TRICHLOROFLUOROMETHANE	2000	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
VINYL ACETATE	7000	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
VINYL CHLORIDE	0.2	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

J = Quantitation Approximate
NA = Not Analyzed
R = Rejected
U = Undetected

SAMPLE ID LOCATION SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE	MAINE MEG	US EPA MCL	MW-230A-D-20090413 MW-230A 20090413 NORMAL GW NORMAL	MW-231A-D-20090413 MW-231A 20090413 NORMAL GW NORMAL	MW-231B-D-20090413 MW-231B 20090413 NORMAL GW NORMAL	MW-303-D-20090413 MW-303 20090413 NORMAL GW NORMAL	MW-305-D-20090413 MW-305 20090423 NORMAL GW NORMAL	MW-306-D-20090413 MW-306 20090413 NORMAL GW NORMAL	MW-308-D-20090410 MW-308 20090410 NORMAL GW NORMAL	MW-309A-D-20090410 MW-309A 20090410 NORMAL GW NORMAL
VOLATILES (UG/L)										
1,1,1,2-TETRACHLOROETHANE	10	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,1-TRICHLOROETHANE	10000	200	1 U	1 U	1 U	1 U	1 U	1.8	1 U	1 U
1,1,2,2-TETRACHLOROETHANE	2	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROETHANE	6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	60	NC	0.3 J	1 U	1 U	1 U	3	1 U	4.4	1 U
1,1-DICHLOROETHENE	40	7	1 U	1 U	1 U	1 U	1.6	1 U	8.1	1 U
1,1-DICHLOROPROPENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-TRICHLOROBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-TRICHLOROPROPANE	0.05	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-TRICHLOROBENZENE	70	70	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-TRIMETHYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-DIBROMO-3-CHLOROPROPANE	0.4	0.2	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-DIBROMOETHANE	0.2	0.05	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,2-DICHLOROBENZENE	200	600	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROETHANE	4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	10	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,3,5-TRIMETHYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-DICHLOROBENZENE	1	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-DICHLOROPROPANE	100	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,4-DICHLOROBENZENE	70	75	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-DIOXANE	30	3.5	NA	NA	NA	NA	NA	NA	9.1 J	2.8 J
2,2-DICHLOROPROPANE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-BUTANONE	4000	NC	5 UJ	5 UJ	5 UJ	5 UJ	5 U	5 UJ	5 U	5 U
2-CHLOROTOLUENE	100	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-HEXANONE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-CHLOROTOLUENE	500	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-ISOPROPYLTOLUENE	70	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-METHYL-2-PENTANONE	500	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ACETONE	6000	NC	9.4 J	12.1 J	10.5 J	6.9 J	5 U	8.7 J	3.3 J	5 U
BENZENE	4	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
BROMOBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
BROMOCHLOROMETHANE	100	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
BROMODICHLOROMETHANE	6	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMOFORM	40	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMOMETHANE	10	NC	2 UJ	2 UJ	2 UJ	2 UJ	2 U	2 UJ	2 U	2 U

J = Quantitation Approximate
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SAMPLE ID			MW-230A-D-20090413	MW-231A-D-20090413	MW-231B-D-20090413	MW-303-D-20090413	MW-305-D-20090413	MW-306-D-20090413	MW-308-D-20090410	MW-309A-D-20090410
LOCATION			MW-230A	MW-231A	MW-231B	MW-303	MW-305	MW-306	MW-308	MW-309A
SAMPLE DATE			20090413	20090413	20090413	20090413	20090423	20090413	20090410	20090410
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
BTEX	NC	NC	0.875 U	0.875 U	0.875 U	0.875 U	0.875 U	0.875 U	0.875 U	0.875 U
CARBON DISULFIDE	600	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CARBON TETRACHLORIDE	5	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROBENZENE	100	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLORODIBROMOMETHANE	4	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROETHANE	7	NC	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
CHLOROFORM	70	80	1 U	1 U	1 U	1 U	1 U	2	1 U	1 U
CHLOROMETHANE	20	NC	2 UJ	2 UJ	2 UJ	2 UJ	2 U	2 UJ	2 U	2 U
CIS-1,2-DICHLOROETHENE	70	70	NA	NA	NA	NA	NA	NA	1 U	1 U
CIS-1,3-DICHLOROPROPENE	NC	NC	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	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
DICHLORODIFLUOROMETHANE	1000	NC	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
ETHYLBENZENE	30	700	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
HEXACHLOROBUTADIENE	4	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ISOPROPYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
METHYL IODIDE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
METHYL TERT-BUTYL ETHER	35	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYLENE CHLORIDE	50	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
NAPHTHALENE	10	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-PROPYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SEC-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
STYRENE	100	100	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TERT-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TETRACHLOROETHENE	0.6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOLUENE	600	1000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL 1,2-DICHLOROETHENE	NC	NC	1 U	1 U	1 U	1 U	1 U	2.4	1 U	1 U
TOTAL CHLORINATED ETHENES	NC	NC	1.4	1 U	1 U	1 U	2.7	7.4	25.1	1 U
TOTAL CHLORINATED VOCS	NC	NC	1.7 J	1.89 UJ	1.89 UJ	1.89 UJ	5.7	9.2 J	29.5	1.89 U
TOTAL XYLENES	1000	10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	100	100	NA	NA	NA	NA	NA	NA	1 U	1 U
TRANS-1,3-DICHLOROPROPENE	NC	NC	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	30	5	1.4	1 U	1 U	1 U	1.1	5	17	1 U
TRICHLOROFLUOROMETHANE	2000	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
VINYL ACETATE	7000	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
VINYL CHLORIDE	0.2	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

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SAMPLE ID			MW-309B-D-20090410	MW-311-D-20090417	MW-311-M-20090417	MW-311-M-20090417-AVG	MW-311-M-20090417-D	MW-313-D-20090413	MW-313-D-20090413-AVG	MW-313-D-20090413-D
LOCATION			MW-309B	MW-311	MW-311	MW-311	MW-311	MW-313	MW-313	MW-313
SAMPLE DATE			20090410	20090417	20090417	20090417	20090417	20090413	20090413	20090413
SAMPLE CODE			NORMAL	NORMAL	ORIG	AVG	DUP	ORIG	AVG	DUP
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
VOLATILES (UG/L)										
1,1,1,2-TETRACHLOROETHANE	10	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
1,1,1-TRICHLOROETHANE	10000	200	1 U	17.3	13.4	13.65	13.9	1.8	1.8	NA
1,1,2,2-TETRACHLOROETHANE	2	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
1,1,2-TRICHLOROETHANE	6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
1,1-DICHLOROETHANE	60	NC	1 U	1.8	2.1	2.1	2.1	18.7	18.7	NA
1,1-DICHLOROETHENE	40	7	1 U	4.3	1.1	1.15	1.2	25.7	25.7	NA
1,1-DICHLOROPROPENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
1,2,3-TRICHLOROBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
1,2,3-TRICHLOROPROPANE	0.05	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
1,2,4-TRICHLOROBENZENE	70	70	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
1,2,4-TRIMETHYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
1,2-DIBROMO-3-CHLOROPROPANE	0.4	0.2	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
1,2-DIBROMOETHANE	0.2	0.05	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA
1,2-DICHLOROBENZENE	200	600	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
1,2-DICHLOROETHANE	4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
1,2-DICHLOROPROPANE	10	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA
1,3,5-TRIMETHYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
1,3-DICHLOROBENZENE	1	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
1,3-DICHLOROPROPANE	100	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
1,4-DICHLOROBENZENE	70	75	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
1,4-DIOXANE	30	3.5	0.96 J	NA	4.2 J	4.2 J	NA	102 J	102 J	101
2,2-DICHLOROPROPANE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
2-BUTANONE	4000	NC	5 U	5 U	5 U	5 U	5 U	5 UJ	5 UJ	NA
2-CHLOROTOLUENE	100	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
2-HEXANONE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
4-CHLOROTOLUENE	500	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
4-ISOPROPYLTOLUENE	70	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
4-METHYL-2-PENTANONE	500	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
ACETONE	6000	NC	5 U	11.5 J	12.2	12.4	12.6	8.5 J	8.5 J	NA
BENZENE	4	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA
BROMOBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
BROMOCHLOROMETHANE	100	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
BROMODICHLOROMETHANE	6	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
BROMOFORM	40	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
BROMOMETHANE	10	NC	2 U	2 U	2 UJ	2 U	2 UJ	2 UJ	2 UJ	NA

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U = Undetected

SAMPLE ID			MW-309B-D-20090410	MW-311-D-20090417	MW-311-M-20090417	MW-311-M-20090417-AVG	MW-311-M-20090417-D	MW-313-D-20090413	MW-313-D-20090413-AVG	MW-313-D-20090413-D
LOCATION			MW-309B	MW-311	MW-311	MW-311	MW-311	MW-313	MW-313	MW-313
SAMPLE DATE			20090410	20090417	20090417	20090417	20090417	20090413	20090413	20090413
SAMPLE CODE			NORMAL	NORMAL	ORIG	AVG	DUP	ORIG	AVG	DUP
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
BTEX	NC	NC	0.875 U	0.875 U	0.875 U	0.875 U	0.875 U	0.875 U	0.875 U	NA
CARBON DISULFIDE	600	NC	5 U	5 U	5 UJ	5 U	5 UJ	5 U	5 U	NA
CARBON TETRACHLORIDE	5	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
CHLOROBENZENE	100	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
CHLORODIBROMOMETHANE	4	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
CHLOROETHANE	7	NC	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA
CHLOROFORM	70	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
CHLOROMETHANE	20	NC	2 U	2 U	2 UJ	2 U	2 UJ	2 UJ	2 UJ	NA
CIS-1,2-DICHLOROETHENE	70	70	1 U	NA	NA	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NC	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA
DIBROMOMETHANE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
DICHLORODIFLUOROMETHANE	1000	NC	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA
ETHYLBENZENE	30	700	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
HEXACHLOROBUTADIENE	4	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
ISOPROPYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
METHYL IODIDE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
METHYL TERT-BUTYL ETHER	35	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
METHYLENE CHLORIDE	50	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA
NAPHTHALENE	10	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
N-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
N-PROPYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
SEC-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
STYRENE	100	100	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
TERT-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
TETRACHLOROETHENE	0.6	5	1 U	12.1	14.6	14.6	14.6	1 U	1 U	NA
TOLUENE	600	1000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
TOTAL 1,2-DICHLOROETHENE	NC	NC	1 U	3	3.7	3.75	3.8	1.5	1.5	NA
TOTAL CHLORINATED ETHENES	NC	NC	1 U	34.5	32.1	32.3	32.5	29.5	29.5	NA
TOTAL CHLORINATED VOCS	NC	NC	1.89 U	53.6	47.6 J	48.05 J	48.5 J	50 J	50 J	NA
TOTAL XYLENES	1000	10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
TRANS-1,2-DICHLOROETHENE	100	100	1 U	NA	NA	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NC	NC	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA
TRICHLOROETHENE	30	5	1 U	15.1	12.7	12.8	12.9	2.3	2.3	NA
TRICHLOROFLUOROMETHANE	2000	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA
VINYL ACETATE	7000	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
VINYL CHLORIDE	0.2	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA

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SAMPLE ID			MW-315A-D-20090414	MW-318-D-20090417	MW-319-D-20090417	MW-323-L-20090421	MW-330-D-20090413	MW-331-M-20090413	MW-332-M-20090417	MW-332-M-20090417-AVG
LOCATION			MW-315A	MW-318	MW-319	MW-323	MW-330	MW-331	MW-332	MW-332
SAMPLE DATE			20090414	20090417	20090417	20090421	20090413	20090413	20090417	20090417
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
VOLATILES (UG/L)										
1,1,1,2-TETRACHLOROETHANE	10	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,1-TRICHLOROETHANE	10000	200	1 U	1 U	3.2	1 U	1 U	17.6	1 U	1 U
1,1,2,2-TETRACHLOROETHANE	2	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROETHANE	6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	60	NC	1 U	1 U	0.41 J	2.5	1 U	1.4	1 U	1 U
1,1-DICHLOROETHENE	40	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROPROPENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-TRICHLOROBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-TRICHLOROPROPANE	0.05	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-TRICHLOROBENZENE	70	70	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-TRIMETHYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-DIBROMO-3-CHLOROPROPANE	0.4	0.2	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-DIBROMOETHANE	0.2	0.05	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,2-DICHLOROBENZENE	200	600	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROETHANE	4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	10	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,3,5-TRIMETHYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-DICHLOROBENZENE	1	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-DICHLOROPROPANE	100	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,4-DICHLOROBENZENE	70	75	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-DIOXANE	30	3.5	NA	NA	NA	NA	NA	7.2 J	1.7	1.7
2,2-DICHLOROPROPANE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-BUTANONE	4000	NC	5 UJ	5 U	5 U	5 U	5 UJ	5 UJ	5 U	5 U
2-CHLOROTOLUENE	100	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-HEXANONE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-CHLOROTOLUENE	500	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-ISOPROPYLTOLUENE	70	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-METHYL-2-PENTANONE	500	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ACETONE	6000	NC	8.9 J	12.5 J	11.2	5 U	10 J	8.9 J	8.9	9.25
BENZENE	4	5	0.5 U	0.5 U	0.5 U	0.43 J	0.5 U	0.5 U	0.5 U	0.5 U
BROMOBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
BROMOCHLOROMETHANE	100	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
BROMODICHLOROMETHANE	6	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMOFORM	40	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMOMETHANE	10	NC	2 UJ	2 U	2 UJ	2 U	2 UJ	2 UJ	2 UJ	2 U

J = Quantitation Approximate
NA = Not Analyzed
R = Rejected
U = Undetected

SAMPLE ID			MW-315A-D-20090414	MW-318-D-20090417	MW-319-D-20090417	MW-323-L-20090421	MW-330-D-20090413	MW-331-M-20090413	MW-332-M-20090417	MW-332-M-20090417-AVG
LOCATION			MW-315A	MW-318	MW-319	MW-323	MW-330	MW-331	MW-332	MW-332
SAMPLE DATE			20090414	20090417	20090417	20090421	20090413	20090413	20090417	20090417
SAMPLE CODE			NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
BTEX	NC	NC	0.875 U	0.875 U	0.875 U	0.43 J	0.875 U	0.875 U	0.875 U	0.875 U
CARBON DISULFIDE	600	NC	5 U	5 U	5 UJ	5 U	5 U	5 U	5 UJ	5 UJ
CARBON TETRACHLORIDE	5	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROBENZENE	100	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLORODIBROMOMETHANE	4	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROETHANE	7	NC	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
CHLOROFORM	70	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROMETHANE	20	NC	2 UJ	2 U	2 UJ	2 U	2 UJ	2 UJ	2 UJ	2 UJ
CIS-1,2-DICHLOROETHENE	70	70	NA	NA	NA	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NC	NC	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	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
DICHLORODIFLUOROMETHANE	1000	NC	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
ETHYLBENZENE	30	700	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
HEXACHLOROBUTADIENE	4	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ISOPROPYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
METHYL IODIDE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
METHYL TERT-BUTYL ETHER	35	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYLENE CHLORIDE	50	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
NAPHTHALENE	10	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-PROPYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SEC-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
STYRENE	100	100	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TERT-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TETRACHLOROETHENE	0.6	5	1 U	1 U	22.8	1 U	1 U	17.7	1 U	1 U
TOLUENE	600	1000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL 1,2-DICHLOROETHENE	NC	NC	1 U	1 U	0.94 J	0.84 J	1 U	3.6	1 U	1 U
TOTAL CHLORINATED ETHENES	NC	NC	1 U	1 U	25.2 J	0.84 J	1 U	26.6	1 U	1 U
TOTAL CHLORINATED VOCS	NC	NC	1.89 UJ	1.89 U	28.8 J	3.34 J	1.89 UJ	45.6 J	1.89 UJ	1.89 U
TOTAL XYLENES	1000	10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	100	100	NA	NA	NA	NA	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NC	NC	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	30	5	1 U	1 U	1.5	1 U	1 U	5.3	1 U	1 U
TRICHLOROFLUOROMETHANE	2000	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
VINYL ACETATE	7000	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
VINYL CHLORIDE	0.2	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

J = Quantitation Approximate
NA = Not Analyzed
R = Rejected
U = Undetected

SAMPLE ID			MW-332-M-20090417-D	MW-333-M-20090409	MW-334-L-20090409	MW-335-M-20090409	MW-336-M-20090417	MW-337-M-20090415	MW-338A-M-20090415	MW-338B-M-20090415
LOCATION			MW-332	MW-333	MW-334	MW-335	MW-336	MW-337	MW-338A	MW-338B
SAMPLE DATE			20090417	20090409	20090409	20090409	20090417	20090415	20090415	20090415
SAMPLE CODE			DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	**MAINE**	**US EPA**	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	**MEG**	**MCL**	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
VOLATILES (UG/L)										
1,1,1,2-TETRACHLOROETHANE	10	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,1-TRICHLOROETHANE	10000	200	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-TETRACHLOROETHANE	2	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-TRICHLOROETHANE	6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	60	NC	1 U	2.5	4.1	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHENE	40	7	1 U	2.9	3	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROPROPENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-TRICHLOROBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-TRICHLOROPROPANE	0.05	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-TRICHLOROBENZENE	70	70	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-TRIMETHYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-DIBROMO-3-CHLOROPROPANE	0.4	0.2	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-DIBROMOETHANE	0.2	0.05	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,2-DICHLOROBENZENE	200	600	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROETHANE	4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	10	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,3,5-TRIMETHYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-DICHLOROBENZENE	1	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-DICHLOROPROPANE	100	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,4-DICHLOROBENZENE	70	75	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-DIOXANE	30	3.5	NA	59.6 J	38.9 J	10.6 J	1 UJ	1 UJ	1 UJ	NA
2,2-DICHLOROPROPANE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-BUTANONE	4000	NC	5 U	5 UJ	5 UJ	5 UJ	5 U	5 U	5 U	5 U
2-CHLOROTOLUENE	100	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-HEXANONE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-CHLOROTOLUENE	500	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-ISOPROPYLTOLUENE	70	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-METHYL-2-PENTANONE	500	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ACETONE	6000	NC	9.6	7.4 J	5 UJ	4.9 J	5 UJ	6.9 J	5 UJ	5 UJ
BENZENE	4	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
BROMOBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
BROMOCHLOROMETHANE	100	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
BROMODICHLOROMETHANE	6	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMOFORM	40	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BROMOMETHANE	10	NC	2 UJ	2 U	2 U	2 U	2 U	2 U	2 U	2 U

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U = Undetected

ANALYTICAL RESULTS - GROUNDWATER PERMANENT WELLS EASTERN PLUME
NAS BRUNSWICK, MAINE

SAMPLE ID			MW-332-M-20090417-D	MW-333-M-20090409	MW-334-L-20090409	MW-335-M-20090409	MW-336-M-20090417	MW-337-M-20090415	MW-338A-M-20090415	MW-338B-M-20090415
LOCATION			MW-332	MW-333	MW-334	MW-335	MW-336	MW-337	MW-338A	MW-338B
SAMPLE DATE			20090417	20090409	20090409	20090409	20090417	20090415	20090415	20090415
SAMPLE CODE			DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
BTEX	NC	NC	0.875 U	0.875 U	0.875 U	0.875 U	0.875 U	0.875 U	0.875 U	0.875 U
CARBON DISULFIDE	600	NC	5 UJ	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CARBON TETRACHLORIDE	5	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROBENZENE	100	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLORODIBROMOMETHANE	4	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROETHANE	7	NC	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
CHLOROFORM	70	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROMETHANE	20	NC	2 UJ	2 UJ	2 UJ	2 UJ	2 U	2 U	2 U	2 U
CIS-1,2-DICHLOROETHENE	70	70	NA	1 U	1 U	1 U	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	NC	NC	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	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
DICHLORODIFLUOROMETHANE	1000	NC	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
ETHYLBENZENE	30	700	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
HEXACHLOROBUTADIENE	4	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
ISOPROPYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
METHYL IODIDE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
METHYL TERT-BUTYL ETHER	35	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
METHYLENE CHLORIDE	50	5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	1.5 J
NAPHTHALENE	10	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-PROPYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SEC-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
STYRENE	100	100	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TERT-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
TETRACHLOROETHENE	0.6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOLUENE	600	1000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL 1,2-DICHLOROETHENE	NC	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TOTAL CHLORINATED ETHENES	NC	NC	1 U	2.9	3.95 J	1 U	1 U	0.85 J	1 U	1 U
TOTAL CHLORINATED VOCS	NC	NC	1.89 UJ	5.4 J	8.05 J	1.89 UJ	1.89 U	0.85 J	1.89 U	1.89 U
TOTAL XYLENES	1000	10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	100	100	NA	1 U	1 U	1 U	NA	NA	NA	NA
TRANS-1,3-DICHLOROPROPENE	NC	NC	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	30	5	1 U	1 U	0.95 J	1 U	1 U	0.85 J	1 U	1 U
TRICHLOROFLUOROMETHANE	2000	NC	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
VINYL ACETATE	7000	NC	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
VINYL CHLORIDE	0.2	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

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NA = Not Analyzed
R = Rejected
U = Undetected

SAMPLE ID			MW-338C-M-20090415	MW-339-D-20090414	MW-339-D-20090414-	MW-339-D-20090414-D	MWEP340B1-041409	MWEP340B2-041409	MWEP340S-041509	MWEP341B1-041509
LOCATION			MW-338C	MW-339	MW-339	MW-339	MW-EP-340B1	MW-EP-340B2	MW-EP-340S	MW-EP-341B1
SAMPLE DATE			20090415	20090414	20090414	20090414	20090414	20090414	20090415	20090415
SAMPLE CODE			NORMAL	ORIG	AVG	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
VOLATILES (UG/L)										
1,1,1,2-TETRACHLOROETHANE	10	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	10000	200	1 U	1 U	1 U	1 U	1 U	1 U	88	0.4 J
1,1,2,2-TETRACHLOROETHANE	2	NC	1 U	1 U	1 U	1 U	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	60	NC	1 U	1 U	1 U	1 U	0.7 J	1 U	7	1 U
1,1-DICHLOROETHENE	40	7	1 U	1 U	1 U	1 U	0.54 J	0.2 U	23	0.2 U
1,1-DICHLOROPROPENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	0.05	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	70	70	5 U	5 U	5 U	5 U	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	0.4	0.2	5 U	5 U	5 U	5 U	NA	NA	NA	NA
1,2-DIBROMOETHANE	0.2	0.05	2 U	2 U	2 U	2 U	NA	NA	NA	NA
1,2-DICHLOROBENZENE	200	600	1 U	1 U	1 U	1 U	NA	NA	NA	NA
1,2-DICHLOROETHANE	4	5	1 U	1 U	1 U	1 U	1 U	1 U	0.3 J	1 U
1,2-DICHLOROPROPANE	10	5	2 U	2 U	2 U	2 U	NA	NA	NA	NA
1,3,5-TRIMETHYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
1,3-DICHLOROBENZENE	1	NC	1 U	1 U	1 U	1 U	NA	NA	NA	NA
1,3-DICHLOROPROPANE	100	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
1,4-DICHLOROBENZENE	70	75	1 U	1 U	1 U	1 U	NA	NA	NA	NA
1,4-DIOXANE	30	3.5	NA	NA	NA	NA	2.2 UJ	2 UJ	9 UJ	2 UJ
2,2-DICHLOROPROPANE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
2-BUTANONE	4000	NC	5 U	5 UJ	5 UJ	5 UJ	NA	NA	NA	NA
2-CHLOROTOLUENE	100	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
2-HEXANONE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
4-CHLOROTOLUENE	500	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	70	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
4-METHYL-2-PENTANONE	500	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
ACETONE	6000	NC	5 UJ	9.7 J	9.7 J	9.9 J	NA	NA	NA	NA
BENZENE	4	5	0.5 U	0.5 U	0.5 U	0.5 U	NA	NA	NA	NA
BROMOBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
BROMOCHLOROMETHANE	100	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
BROMODICHLOROMETHANE	6	80	1 U	1 U	1 U	1 U	NA	NA	NA	NA
BROMOFORM	40	80	1 U	1 U	1 U	1 U	NA	NA	NA	NA
BROMOMETHANE	10	NC	2 U	2 UJ	2 UJ	2 UJ	NA	NA	NA	NA

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R = Rejected
U = Undetected

SAMPLE ID			MW-338C-M-20090415	MW-339-D-20090414	MW-339-D-20090414-	MW-339-D-20090414-D	MWEP340B1-041409	MWEP340B2-041409	MWEP340S-041509	MWEP341B1-041509
LOCATION			MW-338C	MW-339	MW-339	MW-339	MW-EP-340B1	MW-EP-340B2	MW-EP-340S	MW-EP-341B1
SAMPLE DATE			20090415	20090414	20090414	20090414	20090414	20090414	20090415	20090415
SAMPLE CODE			NORMAL	ORIG	AVG	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
BTEX	NC	NC	0.875 U	0.875 U	0.875 U	0.875 U	NA	NA	NA	NA
CARBON DISULFIDE	600	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
CARBON TETRACHLORIDE	5	5	1 U	1 U	1 U	1 U	NA	NA	NA	NA
CHLOROBENZENE	100	100	1 U	1 U	1 U	1 U	NA	NA	NA	NA
CHLORODIBROMOMETHANE	4	80	1 U	1 U	1 U	1 U	NA	NA	NA	NA
CHLOROETHANE	7	NC	2 U	2 U	2 U	2 U	NA	NA	NA	NA
CHLOROFORM	70	80	1 U	1 U	1 U	1 U	2	4	2	6
CHLOROMETHANE	20	NC	2 U	2 UJ	2 UJ	2 UJ	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	70	70	NA	NA	NA	NA	1 U	1 U	4	1 U
CIS-1,3-DICHLOROPROPENE	NC	NC	0.5 U	0.5 U	0.5 U	0.5 U	NA	NA	NA	NA
DIBROMOMETHANE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	1000	NC	2 U	2 U	2 U	2 U	NA	NA	NA	NA
ETHYLBENZENE	30	700	1 U	1 U	1 U	1 U	NA	NA	NA	NA
HEXACHLOROBUTADIENE	4	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
ISOPROPYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
METHYL IODIDE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	35	NC	1 U	1 U	1 U	1 U	NA	NA	NA	NA
METHYLENE CHLORIDE	50	5	2 U	1.8 J	1.8 J	1.9 J	5 U	5 U	5 U	5 U
NAPHTHALENE	10	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
N-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
N-PROPYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
SEC-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
STYRENE	100	100	5 U	5 U	5 U	5 U	NA	NA	NA	NA
TERT-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
TETRACHLOROETHENE	0.6	5	1 U	1 U	1 U	1 U	1 U	1 U	2	1 U
TOLUENE	600	1000	1 U	1 U	1 U	1 U	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NC	NC	1 U	1 U	1 U	1 U	1 U	1 U	4	1 U
TOTAL CHLORINATED ETHENES	NC	NC	1 U	1 U	1 U	1 U	0.54 J	1.04 U	106	1.04 U
TOTAL CHLORINATED VOCS	NC	NC	1.89 U	1.89 UJ	1.89 UJ	1.89 UJ	1.24 J	1.02 U	201 J	0.4 J
TOTAL XYLENES	1000	10000	1 U	1 U	1 U	1 U	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	100	100	NA	NA	NA	NA	1 U	1 U	1 U	1 U
TRANS-1,3-DICHLOROPROPENE	NC	NC	0.5 U	0.5 U	0.5 U	0.5 U	NA	NA	NA	NA
TRICHLOROETHENE	30	5	1 U	1 U	1 U	1 U	1 U	1 U	77	1 U
TRICHLOROFLUOROMETHANE	2000	NC	1 U	1 U	1 U	1 U	NA	NA	NA	NA
VINYL ACETATE	7000	NC	5 U	5 U	5 U	5 U	NA	NA	NA	NA
VINYL CHLORIDE	0.2	2	1 U	1 U	1 U	1 U	2 U	2 U	2 U	2 U

J = Quantitation Approximate
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SAMPLE ID			MWEP341B2-041409	MWEP341S-041509	MWEP342B1-041409	MWEP342B1-041409-AVG	MWEP342B1-041409-D	MWEP342B2-041309	MWEP342S-041409	EPGW-MWEP343-
LOCATION			MW-EP-341B2	MW-EP-341S	MW-EP-342B1	MW-EP-342B1	MW-EP-342B1	MW-EP-342B2	MW-EP-342S	MW-EP-343
SAMPLE DATE			20090414	20090415	20090414	20090414	20090414	20090413	20090414	20090615
SAMPLE CODE			NORMAL	NORMAL	ORIG	AVG	DUP	NORMAL	NORMAL	NORMAL
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
VOLATILES (UG/L)										
1,1,1,2-TETRACHLOROETHANE	10	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	10000	200	1 U	0.5 J	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-TETRACHLOROETHANE	2	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	60	NC	0.3 J	1 U	8	8	8	3	0.7 J	24
1,1-DICHLOROETHENE	40	7	0.16 J	0.13 J	15	15	15	1.9	0.32 J	11
1,1-DICHLOROPROPENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	0.05	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	70	70	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	0.4	0.2	NA	NA	NA	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	0.2	0.05	NA	NA	NA	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	200	600	NA	NA	NA	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	10	5	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-TRIMETHYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	1	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	100	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	70	75	NA	NA	NA	NA	NA	NA	NA	NA
1,4-DIOXANE	30	3.5	2 UJ	2 UJ	8.7 UJ	9.35 UJ	10 UJ	2 UJ	2 UJ	38
2,2-DICHLOROPROPANE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
2-BUTANONE	4000	NC	NA	NA	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	100	NC	NA	NA	NA	NA	NA	NA	NA	NA
2-HEXANONE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	500	NC	NA	NA	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	70	NC	NA	NA	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	500	NC	NA	NA	NA	NA	NA	NA	NA	NA
ACETONE	6000	NC	NA	NA	NA	NA	NA	NA	NA	NA
BENZENE	4	5	NA	NA	NA	NA	NA	NA	NA	NA
BROMOBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	100	NC	NA	NA	NA	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	6	80	NA	NA	NA	NA	NA	NA	NA	NA
BROMOFORM	40	80	NA	NA	NA	NA	NA	NA	NA	NA
BROMOMETHANE	10	NC	NA	NA	NA	NA	NA	NA	NA	NA

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SAMPLE ID			MWEP341B2-041409	MWEP341S-041509	MWEP342B1-041409	MWEP342B1-041409-AVG	MWEP342B1-041409-D	MWEP342B2-041309	MWEP342S-041409	EPGW-MWEP343-
LOCATION			MW-EP-341B2	MW-EP-341S	MW-EP-342B1	MW-EP-342B1	MW-EP-342B1	MW-EP-342B2	MW-EP-342S	MW-EP-343
SAMPLE DATE			20090414	20090415	20090414	20090414	20090414	20090413	20090414	20090615
SAMPLE CODE			NORMAL	NORMAL	ORIG	AVG	DUP	NORMAL	NORMAL	NORMAL
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
BTEX	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
CARBON DISULFIDE	600	NC	NA	NA	NA	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	5	5	NA	NA	NA	NA	NA	NA	NA	NA
CHLOROBENZENE	100	100	NA	NA	NA	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	4	80	NA	NA	NA	NA	NA	NA	NA	NA
CHLOROETHANE	7	NC	NA	NA	NA	NA	NA	NA	NA	NA
CHLOROFORM	70	80	11	2	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROMETHANE	20	NC	NA	NA	NA	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	70	70	1 U	1 U	1	1	1 J	0.4 J	1 U	13
CIS-1,3-DICHLOROPROPENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
DIBROMOMETHANE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	1000	NC	NA	NA	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	30	700	NA	NA	NA	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	4	NC	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
METHYL IODIDE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	35	NC	NA	NA	NA	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	50	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
NAPHTHALENE	10	NC	NA	NA	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
STYRENE	100	100	NA	NA	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	0.6	5	1 U	1 U	0.4 J	0.45	0.5 J	1 U	1 U	1 U
TOLUENE	600	1000	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NC	NC	1 U	1 U	1	1 J	1 J	0.4 J	1 U	13
TOTAL CHLORINATED ETHENES	NC	NC	0.16 J	2.13 J	46.4 J	46 J	45.5 J	8.3 J	0.32 J	47.3 J
TOTAL CHLORINATED VOCS	NC	NC	0.46 J	2.63 J	54.4 J	53.95	53.5 J	11.3 J	1.02 J	71.3 J
TOTAL XYLENES	1000	10000	NA	NA	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	100	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,3-DICHLOROPROPENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROETHENE	30	5	1 U	2	30	29.5	29	6	1 U	23
TRICHLOROFLUOROMETHANE	2000	NC	NA	NA	NA	NA	NA	NA	NA	NA
VINYL ACETATE	7000	NC	NA	NA	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	0.2	2	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.3 J

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SAMPLE ID LOCATION SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE	MAINE MEG	US EPA MCL	EPGW-MWEP344- MW-EP-344 20090615 NORMAL GW NORMAL	EPGW-MWEP345- MW-EP-345 20090615 NORMAL GW NORMAL	EPGW-MWEP346- MW-EP-346 20090611 NORMAL GW NORMAL	EPGW-MWEP347- MW-EP-347 20090615 NORMAL GW NORMAL	EPGW-MWEP348- MW-EP-348 20090608 NORMAL GW NORMAL	EPGW-MWEP349- MW-EP-349 20090608 NORMAL GW NORMAL	EPGW-MWEP350- MW-EP-350 20090611 ORIG GW NORMAL	EPGW-MWEP350- MW-EP-350 20090611 AVG GW NORMAL
VOLATILES (UG/L)										
1,1,1,2-TETRACHLOROETHANE	10	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	10000	200	84	1 U	120	69	47	42	9	9
1,1,2,2-TETRACHLOROETHANE	2	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	6	5	1 U	1 U	1 U	3	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	60	NC	4	1 U	16	210	7	2	6	6.5
1,1-DICHLOROETHENE	40	7	9	0.2 U	16	430	14	3.5	5	5
1,1-DICHLOROPROPENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	0.05	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	70	70	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	0.4	0.2	NA	NA	NA	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	0.2	0.05	NA	NA	NA	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	200	600	NA	NA	NA	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	4	5	1 U	1 U	1 U	5	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	10	5	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-TRIMETHYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	1	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	100	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	70	75	NA	NA	NA	NA	NA	NA	NA	NA
1,4-DIOXANE	30	3.5	6.1 J	2 UJ	8.7 J	350	6.1	4.3	12	10.9
2,2-DICHLOROPROPANE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
2-BUTANONE	4000	NC	NA	NA	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	100	NC	NA	NA	NA	NA	NA	NA	NA	NA
2-HEXANONE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	500	NC	NA	NA	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	70	NC	NA	NA	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	500	NC	NA	NA	NA	NA	NA	NA	NA	NA
ACETONE	6000	NC	NA	NA	NA	NA	NA	NA	NA	NA
BENZENE	4	5	NA	NA	NA	NA	NA	NA	NA	NA
BROMOBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	100	NC	NA	NA	NA	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	6	80	NA	NA	NA	NA	NA	NA	NA	NA
BROMOFORM	40	80	NA	NA	NA	NA	NA	NA	NA	NA
BROMOMETHANE	10	NC	NA	NA	NA	NA	NA	NA	NA	NA

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SAMPLE ID LOCATION SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE	MAINE MEG	US EPA MCL	EPGW-MWEP344- MW-EP-344 20090615 NORMAL GW NORMAL	EPGW-MWEP345- MW-EP-345 20090615 NORMAL GW NORMAL	EPGW-MWEP346- MW-EP-346 20090611 NORMAL GW NORMAL	EPGW-MWEP347- MW-EP-347 20090615 NORMAL GW NORMAL	EPGW-MWEP348- MW-EP-348 20090608 NORMAL GW NORMAL	EPGW-MWEP349- MW-EP-349 20090608 NORMAL GW NORMAL	EPGW-MWEP350- MW-EP-350 20090611 ORIG GW NORMAL	EPGW-MWEP350- MW-EP-350 20090611 AVG GW NORMAL
BTEX	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
CARBON DISULFIDE	600	NC	NA	NA	NA	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	5	5	NA	NA	NA	NA	NA	NA	NA	NA
CHLOROBENZENE	100	100	NA	NA	NA	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	4	80	NA	NA	NA	NA	NA	NA	NA	NA
CHLOROETHANE	7	NC	NA	NA	NA	NA	NA	NA	NA	NA
CHLOROFORM	70	80	0.9 J	1 U	1 U	1	0.2 J	1 U	1 U	1 U
CHLOROMETHANE	20	NC	NA	NA	NA	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	70	70	4	1 U	70	24	21	3	2	2
CIS-1,3-DICHLOROPROPENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
DIBROMOMETHANE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	1000	NC	NA	NA	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	30	700	NA	NA	NA	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	4	NC	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
METHYL IODIDE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	35	NC	NA	NA	NA	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	50	5	5 U	5 U	5 U	12 U	0.5 J	5 U	5 U	5 U
NAPHTHALENE	10	NC	NA	NA	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
STYRENE	100	100	NA	NA	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	0.6	5	3	1 U	2	13	2	10	5	5
TOLUENE	600	1000	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NC	NC	4	1 U	70	24.4 J	21	3	2	2
TOTAL CHLORINATED ETHENES	NC	NC	108	1.04 U	135	1330 J	90	32.5	23	23
TOTAL CHLORINATED VOCS	NC	NC	196	1.02 U	271	1620 J	144	76.5	38	38.5
TOTAL XYLENES	1000	10000	NA	NA	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	100	100	1 U	1 U	1 U	0.4 J	1 U	1 U	1 U	1 U
TRANS-1,3-DICHLOROPROPENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROETHENE	30	5	92	1 U	47	860	53	16	11	11
TRICHLOROFLUOROMETHANE	2000	NC	NA	NA	NA	NA	NA	NA	NA	NA
VINYL ACETATE	7000	NC	NA	NA	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	0.2	2	2 U	2 U	2 U	0.8 J	2 U	2 U	2 U	2 U

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SAMPLE ID			EPGW-MWEP350-	EPGW-MWEP351-	EPGW-MWEP352-	EPGW-MWEP353-	EPGW-MWEP354-	EPGW-MWEP355-	EPGW-MWMB01C-	EPGW-MWMB02C-
LOCATION			MW-EP-350	MW-EP-351	MW-EP-352	MW-EP-353	MW-EP-354	MW-EP-355	MW-MB01C	MW-MB02C
SAMPLE DATE			20090611	20090609	20090610	20090610	20090611	20090916	20090609	20090610
SAMPLE CODE			DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
VOLATILES (UG/L)										
1,1,1,2-TETRACHLOROETHANE	10	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-TRICHLOROETHANE	10000	200	9	160	500	0.3 J	1 U	4	60	10
1,1,2,2-TETRACHLOROETHANE	2	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-TRICHLOROETHANE	6	5	1 U	0.3 J	1	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	60	NC	7	11	24	4	12	0.4 J	11	7
1,1-DICHLOROETHENE	40	7	5	52	120	3.9	12	1 J	24	5
1,1-DICHLOROPROPENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROPROPANE	0.05	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	70	70	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,2-DIBROMO-3-CHLOROPROPANE	0.4	0.2	NA	NA	NA	NA	NA	NA	NA	NA
1,2-DIBROMOETHANE	0.2	0.05	NA	NA	NA	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	200	600	NA	NA	NA	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	4	5	1 U	0.9 J	3	0.3 J	0.8 J	1 U	0.5 J	1 U
1,2-DICHLOROPROPANE	10	5	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-TRIMETHYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	1	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,3-DICHLOROPROPANE	100	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	70	75	NA	NA	NA	NA	NA	NA	NA	NA
1,4-DIOXANE	30	3.5	9.8 J	45 J	220	3.7	82	0.8 J	29 J	8
2,2-DICHLOROPROPANE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
2-BUTANONE	4000	NC	NA	NA	NA	NA	NA	NA	NA	NA
2-CHLOROTOLUENE	100	NC	NA	NA	NA	NA	NA	NA	NA	NA
2-HEXANONE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
4-CHLOROTOLUENE	500	NC	NA	NA	NA	NA	NA	NA	NA	NA
4-ISOPROPYLTOLUENE	70	NC	NA	NA	NA	NA	NA	NA	NA	NA
4-METHYL-2-PENTANONE	500	NC	NA	NA	NA	NA	NA	NA	NA	NA
ACETONE	6000	NC	NA	NA	NA	NA	NA	NA	NA	NA
BENZENE	4	5	NA	NA	NA	NA	NA	NA	NA	NA
BROMOBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
BROMOCHLOROMETHANE	100	NC	NA	NA	NA	NA	NA	NA	NA	NA
BROMODICHLOROMETHANE	6	80	NA	NA	NA	NA	NA	NA	NA	NA
BROMOFORM	40	80	NA	NA	NA	NA	NA	NA	NA	NA
BROMOMETHANE	10	NC	NA	NA	NA	NA	NA	NA	NA	NA

J = Quantitation Approximate
NA = Not Analyzed
R = Rejected
U = Undetected

SAMPLE ID			EPGW-MWEP350-	EPGW-MWEP351-	EPGW-MWEP352-	EPGW-MWEP353-	EPGW-MWEP354-	EPGW-MWEP355-	EPGW-MWMB01C-	EPGW-MWMB02C-
LOCATION			MW-EP-350	MW-EP-351	MW-EP-352	MW-EP-353	MW-EP-354	MW-EP-355	MW-MB01C	MW-MB02C
SAMPLE DATE			20090611	20090609	20090610	20090610	20090611	20090916	20090609	20090610
SAMPLE CODE			DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
BTEX	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
CARBON DISULFIDE	600	NC	NA	NA	NA	NA	NA	NA	NA	NA
CARBON TETRACHLORIDE	5	5	NA	NA	NA	NA	NA	NA	NA	NA
CHLOROBENZENE	100	100	NA	NA	NA	NA	NA	NA	NA	NA
CHLORODIBROMOMETHANE	4	80	NA	NA	NA	NA	NA	NA	NA	NA
CHLOROETHANE	7	NC	NA	NA	NA	NA	NA	NA	NA	NA
CHLOROFORM	70	80	1 U	1 U	0.6 J	1 U	1 U	1 U	1 U	1 U
CHLOROMETHANE	20	NC	NA	NA	NA	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	70	70	2	9	7	5	0.4 J	6	14	4
CIS-1,3-DICHLOROPROPENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
DIBROMOMETHANE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
DICHLORODIFLUOROMETHANE	1000	NC	NA	NA	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	30	700	NA	NA	NA	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	4	NC	NA	NA	NA	NA	NA	NA	NA	NA
ISOPROPYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
METHYL IODIDE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
METHYL TERT-BUTYL ETHER	35	NC	NA	NA	NA	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	50	5	5 U	3 J	9 U	5 U	5 U	5 U	2 J	5 U
NAPHTHALENE	10	NC	NA	NA	NA	NA	NA	NA	NA	NA
N-BUTYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
N-PROPYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
SEC-BUTYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
STYRENE	100	100	NA	NA	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	0.6	5	5	7	3	5	1 U	2	15	14
TOLUENE	600	1000	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL 1,2-DICHLOROETHENE	NC	NC	2	9	7	5	0.4 J	6	14	4
TOTAL CHLORINATED ETHENES	NC	NC	23	188	240	36.9	13.4 J	22 J	106	35
TOTAL CHLORINATED VOCS	NC	NC	39	360 J	768	41.5 J	26.2 J	26.4 J	178 J	52
TOTAL XYLENES	1000	10000	NA	NA	NA	NA	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	100	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,3-DICHLOROPROPENE	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROETHENE	30	5	11	120	110	23	1	13	53	12
TRICHLOROFLUOROMETHANE	2000	NC	NA	NA	NA	NA	NA	NA	NA	NA
VINYL ACETATE	7000	NC	NA	NA	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	0.2	2	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

J = Quantitation Approximate
NA = Not Analyzed
R = Rejected
U = Undetected

SAMPLE ID LOCATION SAMPLE DATE SAMPLE CODE MATRIX SAMPLE TYPE	MAINE MEG	US EPA MCL	EPGW-MWMB03C- MW-MB03C 20090608 ORIG GW NORMAL	EPGW-MWMB03C- MW-MB03C 20090608 AVG GW NORMAL	EPGW-MWMB03C- MW-MB03C 20090608 DUP GW NORMAL	EPGW-MWMB04B- MW-MB04B 20090611 NORMAL GW NORMAL	EPGW-MWMB06A- MW-MB06A 20090615 NORMAL GW NORMAL	EPGW-MWMB06C- MW-MB06C 20090608 NORMAL GW NORMAL	MW-NASB-212-S-20090423 MW-NASB-212 20090423 NORMAL GW NORMAL	P-106-L-20090421 P-106 20090421 ORIG GW NORMAL
VOLATILES (UG/L)										
1,1,1,2-TETRACHLOROETHANE	10	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
1,1,1-TRICHLOROETHANE	10000	200	48	48	48	5	8	25	1 U	154
1,1,2,2-TETRACHLOROETHANE	2	NC	NA	NA	NA	NA	NA	NA	1 U	1 U
1,1,2-TRICHLOROETHANE	6	5	0.6 J	0.55	0.5 J	0.4 J	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	60	NC	66	66	66	28	2	10	1 U	8
1,1-DICHLOROETHENE	40	7	61	61	61	36	4	18	1 U	30.1
1,1-DICHLOROPROPENE	NC	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
1,2,3-TRICHLOROBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
1,2,3-TRICHLOROPROPANE	0.05	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
1,2,4-TRICHLOROBENZENE	70	70	NA	NA	NA	NA	NA	NA	5 U	5 U
1,2,4-TRIMETHYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
1,2-DIBROMO-3-CHLOROPROPANE	0.4	0.2	NA	NA	NA	NA	NA	NA	5 U	5 U
1,2-DIBROMOETHANE	0.2	0.05	NA	NA	NA	NA	NA	NA	2 U	2 U
1,2-DICHLOROBENZENE	200	600	NA	NA	NA	NA	NA	NA	1 U	1 U
1,2-DICHLOROETHANE	4	5	0.9 J	0.85 J	0.8 J	1	1 U	0.5 J	1 U	1 U
1,2-DICHLOROPROPANE	10	5	NA	NA	NA	NA	NA	NA	2 U	2 U
1,3,5-TRIMETHYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
1,3-DICHLOROBENZENE	1	NC	NA	NA	NA	NA	NA	NA	1 U	1 U
1,3-DICHLOROPROPANE	100	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
1,4-DICHLOROBENZENE	70	75	NA	NA	NA	NA	NA	NA	1 U	1 U
1,4-DIOXANE	30	3.5	49	46	43	190	9.2	22 J	NA	21.5 J
2,2-DICHLOROPROPANE	NC	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
2-BUTANONE	4000	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
2-CHLOROTOLUENE	100	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
2-HEXANONE	NC	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
4-CHLOROTOLUENE	500	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
4-ISOPROPYLTOLUENE	70	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
4-METHYL-2-PENTANONE	500	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
ACETONE	6000	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
BENZENE	4	5	NA	NA	NA	NA	NA	NA	0.5 U	0.5 U
BROMOBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
BROMOCHLOROMETHANE	100	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
BROMODICHLOROMETHANE	6	80	NA	NA	NA	NA	NA	NA	1 U	1 U
BROMOFORM	40	80	NA	NA	NA	NA	NA	NA	1 U	1 U
BROMOMETHANE	10	NC	NA	NA	NA	NA	NA	NA	2 U	2 U

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U = Undetected

SAMPLE ID			EPGW-MWMB03C-	EPGW-MWMB03C-	EPGW-MWMB03C-	EPGW-MWMB04B-	EPGW-MWMB06A-	EPGW-MWMB06C-	MW-NASB-212-S-20090423	P-106-L-20090421
LOCATION			MW-MB03C	MW-MB03C	MW-MB03C	MW-MB04B	MW-MB06A	MW-MB06C	MW-NASB-212	P-106
SAMPLE DATE			20090608	20090608	20090608	20090611	20090615	20090608	20090423	20090421
SAMPLE CODE			ORIG	AVG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	ORIG
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
BTEX	NC	NC	NA	NA	NA	NA	NA	NA	0.875 U	0.875 U
CARBON DISULFIDE	600	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
CARBON TETRACHLORIDE	5	5	NA	NA	NA	NA	NA	NA	1 U	1 U
CHLOROBENZENE	100	100	NA	NA	NA	NA	NA	NA	1 U	1 U
CHLORODIBROMOMETHANE	4	80	NA	NA	NA	NA	NA	NA	1 U	1 U
CHLOROETHANE	7	NC	NA	NA	NA	NA	NA	NA	2 U	2 U
CHLOROFORM	70	80	0.9 J	0.95	1 J	1 U	1 U	1 U	1 U	0.86 J
CHLOROMETHANE	20	NC	NA	NA	NA	NA	NA	NA	2 U	2 U
CIS-1,2-DICHLOROETHENE	70	70	70	71	72	0.9 J	0.8 J	6	NA	NA
CIS-1,3-DICHLOROPROPENE	NC	NC	NA	NA	NA	NA	NA	NA	0.5 U	0.5 U
DIBROMOMETHANE	NC	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
DICHLORODIFLUOROMETHANE	1000	NC	NA	NA	NA	NA	NA	NA	2 U	2 U
ETHYLBENZENE	30	700	NA	NA	NA	NA	NA	NA	1 U	1 U
HEXACHLOROBUTADIENE	4	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
ISOPROPYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
METHYL IODIDE	NC	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
METHYL TERT-BUTYL ETHER	35	NC	NA	NA	NA	NA	NA	NA	1 U	1 U
METHYLENE CHLORIDE	50	5	5 U	5 U	5 U	5 U	5 U	0.4 J	2 U	2 U
NAPHTHALENE	10	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
N-BUTYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
N-PROPYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
SEC-BUTYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
STYRENE	100	100	NA	NA	NA	NA	NA	NA	5 U	5 U
TERT-BUTYLBENZENE	NC	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
TETRACHLOROETHENE	0.6	5	5	5	5	1 U	0.6 J	5	2.4	4.9
TOLUENE	600	1000	NA	NA	NA	NA	NA	NA	1 U	1 U
TOTAL 1,2-DICHLOROETHENE	NC	NC	72	73	74	0.9 J	0.8 J	6	2.4	5.9
TOTAL CHLORINATED ETHENES	NC	NC	338	339	340	43.9 J	14.4 J	78	16.2	176
TOTAL CHLORINATED VOCS	NC	NC	454 J	454.5	455 J	78.3 J	24.4 J	114 J	16.2	338
TOTAL XYLENES	1000	10000	NA	NA	NA	NA	NA	NA	1 U	1 U
TRANS-1,2-DICHLOROETHENE	100	100	2	2	2	1 U	1 U	1 U	NA	NA
TRANS-1,3-DICHLOROPROPENE	NC	NC	NA	NA	NA	NA	NA	NA	0.5 U	0.5 U
TRICHLOROETHENE	30	5	200	200	200	7	9	49	11.4	135
TRICHLOROFLUOROMETHANE	2000	NC	NA	NA	NA	NA	NA	NA	1 U	1 U
VINYL ACETATE	7000	NC	NA	NA	NA	NA	NA	NA	5 U	5 U
VINYL CHLORIDE	0.2	2	2 U	2 U	2 U	2 U	2 U	2 U	1 U	1 U

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SAMPLE ID			P-106-L-20090421-AVG	P-106-L-20090421-D	P-111-L-20090410	P-132-D-20090423	EPGW-PZMBB4B-	EPGW-PZMBB6B-	EPGW-PZMBC4B-	RW-01-20090422
LOCATION			P-106	P-106	P-111	P-132	PZ-MBB4B	PZ-MBB6B	PZ-MBC4B	RW-01
SAMPLE DATE			20090421	20090421	20090410	20090423	20090609	20090610	20090609	20090422
SAMPLE CODE			AVG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
VOLATILES (UG/L)										
1,1,1,2-TETRACHLOROETHANE	10	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
1,1,1-TRICHLOROETHANE	10000	200	155	156	1 U	1 U	19	140	1 U	1 U
1,1,2,2-TETRACHLOROETHANE	2	NC	1 U	1 U	1 U	1 U	NA	NA	NA	1 U
1,1,2-TRICHLOROETHANE	6	5	1 U	1 U	1 U	1 U	0.6 J	0.8 J	1 U	1 U
1,1-DICHLOROETHANE	60	NC	7.9	7.8	1 U	1 U	69	61	1 U	1 U
1,1-DICHLOROETHENE	40	7	30.2	30.3	1 U	1 U	110	84	0.2 U	1 U
1,1-DICHLOROPROPENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
1,2,3-TRICHLOROBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
1,2,3-TRICHLOROPROPANE	0.05	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
1,2,4-TRICHLOROBENZENE	70	70	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
1,2,4-TRIMETHYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
1,2-DIBROMO-3-CHLOROPROPANE	0.4	0.2	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
1,2-DIBROMOETHANE	0.2	0.05	2 U	2 U	2 U	2 U	NA	NA	NA	2 U
1,2-DICHLOROBENZENE	200	600	1 U	1 U	1 U	1 U	NA	NA	NA	1 U
1,2-DICHLOROETHANE	4	5	1 U	1 U	1 U	1 U	3	3	1 U	1 U
1,2-DICHLOROPROPANE	10	5	2 U	2 U	2 U	2 U	NA	NA	NA	2 U
1,3,5-TRIMETHYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
1,3-DICHLOROBENZENE	1	NC	1 U	1 U	1 U	1 U	NA	NA	NA	1 U
1,3-DICHLOROPROPANE	100	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
1,4-DICHLOROBENZENE	70	75	1 U	1 U	1 U	1 U	NA	NA	NA	1 U
1,4-DIOXANE	30	3.5	19.95	18.4 J	NA	NA	260	260	2 U	1 UJ
2,2-DICHLOROPROPANE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
2-BUTANONE	4000	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
2-CHLOROTOLUENE	100	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
2-HEXANONE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
4-CHLOROTOLUENE	500	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
4-ISOPROPYLTOLUENE	70	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
4-METHYL-2-PENTANONE	500	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
ACETONE	6000	NC	5 U	5 U	5 U	3.4 J	NA	NA	NA	5 U
BENZENE	4	5	0.5 U	0.5 U	0.5 U	0.5 U	NA	NA	NA	0.5 U
BROMOBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
BROMOCHLOROMETHANE	100	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
BROMODICHLOROMETHANE	6	80	1 U	1 U	1 U	1 U	NA	NA	NA	1 U
BROMOFORM	40	80	1 U	1 U	1 U	1 U	NA	NA	NA	1 U
BROMOMETHANE	10	NC	2 U	2 U	2 U	2 U	NA	NA	NA	2 UJ

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SAMPLE ID			P-106-L-20090421-AVG	P-106-L-20090421-D	P-111-L-20090410	P-132-D-20090423	EPGW-PZMBB4B-	EPGW-PZMBB6B-	EPGW-PZMBC4B-	RW-01-20090422
LOCATION			P-106	P-106	P-111	P-132	PZ-MBB4B	PZ-MBB6B	PZ-MBC4B	RW-01
SAMPLE DATE			20090421	20090421	20090410	20090423	20090609	20090610	20090609	20090422
SAMPLE CODE			AVG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	MAINE	US EPA	GW	GW	GW	GW	GW	GW	GW	GW
SAMPLE TYPE	MEG	MCL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
BTEX	NC	NC	0.875 U	0.875 U	0.875 U	0.875 U	NA	NA	NA	0.875 U
CARBON DISULFIDE	600	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
CARBON TETRACHLORIDE	5	5	1 U	1 U	1 U	1 U	NA	NA	NA	1 U
CHLOROBENZENE	100	100	1 U	1 U	1 U	1 U	NA	NA	NA	1 U
CHLORODIBROMOMETHANE	4	80	1 U	1 U	1 U	1 U	NA	NA	NA	1 U
CHLOROETHANE	7	NC	2 U	2 U	2 U	2 U	NA	NA	NA	2 U
CHLOROFORM	70	80	0.86	0.86 J	1 U	1 U	1 U	1 U	1 U	1 U
CHLOROMETHANE	20	NC	2 U	2 U	2 U	2 U	NA	NA	NA	2 UJ
CIS-1,2-DICHLOROETHENE	70	70	NA	NA	1 U	NA	6	3	1 U	NA
CIS-1,3-DICHLOROPROPENE	NC	NC	0.5 U	0.5 U	0.5 U	0.5 U	NA	NA	NA	0.5 U
DIBROMOMETHANE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
DICHLORODIFLUOROMETHANE	1000	NC	2 U	2 U	2 U	2 U	NA	NA	NA	2 U
ETHYLBENZENE	30	700	1 U	1 U	1 U	1 U	NA	NA	NA	1 U
HEXACHLOROBUTADIENE	4	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
ISOPROPYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
METHYL IODIDE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
METHYL TERT-BUTYL ETHER	35	NC	1 U	1 U	1 U	1 U	NA	NA	NA	1 U
METHYLENE CHLORIDE	50	5	2 U	2 U	2 U	2 U	5 U	5 U	5 U	2 U
NAPHTHALENE	10	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
N-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
N-PROPYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
SEC-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
STYRENE	100	100	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
TERT-BUTYLBENZENE	NC	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
TETRACHLOROETHENE	0.6	5	4.95	5	1 U	1 U	2	0.5 J	1 U	1 U
TOLUENE	600	1000	1 U	1 U	1 U	1 U	NA	NA	NA	1 U
TOTAL 1,2-DICHLOROETHENE	NC	NC	5.75	5.6	1 U	1 U	6	3	1 U	1 U
TOTAL CHLORINATED ETHENES	NC	NC	176.5	177	1 U	1 U	193 J	118 J	0.4 J	1 U
TOTAL CHLORINATED VOCS	NC	NC	339.5	341	1.89 U	1.89 U	284 J	323 J	0.4 J	1.89 UJ
TOTAL XYLENES	1000	10000	1 U	1 U	1 U	1 U	NA	NA	NA	1 U
TRANS-1,2-DICHLOROETHENE	100	100	NA	NA	1 U	NA	1 U	1 U	1 U	NA
TRANS-1,3-DICHLOROPROPENE	NC	NC	0.5 U	0.5 U	0.5 U	0.5 U	NA	NA	NA	0.5 U
TRICHLOROETHENE	30	5	135.5	136	1 U	1 U	74	30	0.4 J	1 U
TRICHLOROFLUOROMETHANE	2000	NC	1 U	1 U	1 U	1 U	NA	NA	NA	1 U
VINYL ACETATE	7000	NC	5 U	5 U	5 U	5 U	NA	NA	NA	5 U
VINYL CHLORIDE	0.2	2	1 U	1 U	1 U	1 U	0.8 J	0.3 J	2 U	1 U

J = Quantitation Approximate
NA = Not Analyzed
R = Rejected
U = Undetected

APPENDIX B-4
DATA VALIDATION MEMORANDA

INTERNAL CORRESPONDENCE

C-NAVY-06-09-3162W

Date: June 1, 2009

c: File G00645-4.10 (w/enc.-original)
Chuck Race (scan only)

To: Linda Klink (w/enc.)

From: Jennifer Cardinal (no copy) JJ (for)

Subject: Tier III Organic Data Validation, SDG SC1796
Katahdin Analytical
CTO 069, Naval Air Station Brunswick, Brunswick, Maine

VOC/1,4-Dioxane:

10/Groundwaters/	EPGW-FD041409	MWEP340B1-041409
	MWEP340B2-041409	MWEP340S-041509
	MWEP341B1-041509	MWEP341B2-041409
	MWEP341S-041509	MWEP342B1-041409
	MWEP342B2-041309	MWEP342S-041409

(Field Duplicate Pair: MWEP342B1/EPGW-FD041409)

1/Field Blank/ EPGW-F-041409

1/Rinsate Blank/ EPGW-R-041409

VOC:

1/Trip Blank/ EPGW-T-041309

Tetra Tech NUS, Inc. (TtNUS) performed a Tier III data validation on the volatile organic compounds (VOC) and 1,4-dioxane analytical data for the groundwater samples collected at the Naval Air Station Brunswick, Brunswick, Maine site from April 13-15, 2009. Sample collection and analysis were performed according to the Sampling and Analysis Plan (Field Sampling Plan and QAPP) for Supplemental Remedial Investigation of 1,4-dioxane in the Eastern Plume and Bedrock, NAS Brunswick, Brunswick, Maine; dated October 2008.

The VOC analysis was performed according to USEPA SW-846 Method 8260B. 1,4-Dioxane and 1,1-dichloroethene were analyzed by 8260B in the SIM (selective ion monitoring) mode in order to achieve lower detection limits. In this memorandum, these results are discussed under "Volatiles-SIM".

Data validation was performed in accordance with the Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996.

The sample results, validation qualifiers (VQL), and qualifier codes (QLCD) are presented in the enclosed data summary tables. A list of the qualifier codes, which provide the reasons for the validation qualifiers, is enclosed. The Volatiles-SIM results are reported on the summary table with the header indicating the fraction as "LV".

The data were evaluated based on the following parameters:

- * • Data Completeness
- * • Preservation and Technical Holding Times
- * • GC/MS Instrument Performance Check (Tuning)
- • Initial and Continuing Calibrations
- • Blanks
- • Surrogate Compounds
- * • Internal Standards
- • Matrix Spike/Matrix Spike Duplicate
- • Laboratory Control Sample/Laboratory Control Sample Duplicate
- * • Field Duplicates
- • Reporting Limits
- * • Sample Quantitation

* All criteria were met for this parameter.

Data Completeness

On May 27, 2009 the laboratory explained that the LCS serves as an independent check following the initial calibration for the VOC-SIM analysis and an initial calibration verification is not performed.

Initial and Continuing Calibrations

Volatiles-SIM

The following table summarizes the volatile-SIM compound that failed to meet the initial calibration (IC) or continuing calibration (CC) criterion of RRF >0.05, or the CC criterion of %D <25%:

Compound	%D	RRF	Action		Affected Samples
			(+)	NDs	
1,4-Dioxane	-	0.0188, 0.0225, 0.0232, 0.0154, 0.0213	J	UJ	All samples
1,1-Dichloroethene	27.15, 80.17	-	J	UJ	MWEP341B2-041409, MWEP340B1-041409, MWEP341S-041509, MWEW341B1-041509

-Criterion met

The RRF was outside of the QC limit for 1,4-dioxane; therefore, the project accuracy goals may be impacted. The positive and non-detected results in the affected samples are usable as estimated values and estimated quantitation limits.

Although the %D was outside of the QC limits for 1,1-dichloroethene, the project accuracy goals are not impacted since the instrument calibration variability is within the safety margin allocated for this compound as indicated by the large difference between the sample quantitation and the project action limit. The positive and non-detected results in the affected samples are usable as estimated values and estimated quantitation limits.

Blanks

Volatiles-SIM

The following table summarizes the level of blank contamination detected in the method blank associated with the samples:

Compound	Type of Blank	Maximum Conc. (µg/L)	Action Level (µg/L)	Affected Samples
1,4-Dioxane	Method	2.7	13.5	EPGW-FD041409, MWEP340B1-041409, MWEP340S-041509, MWEP342B1-041409, MWEP342B2-041309

Blank action was applied to the affected sample due to 1,4-dioxane method blank contamination. The 5x rule applies for this compound. The positive results below the blank action level in the affected samples were changed to non-detected values at elevated quantitation limits and the positive results below the blank action level and below the quantitation limit were changed to non-detected values at the quantitation limit (QL).

1,4-Dioxane contamination was found in the method blank; therefore, the project sensitivity goals may be impacted since the elevated quantitation limits exceed the project action limit. The results in the affected samples are usable as non-detected values.

Surrogate Compounds

Volatiles-SIM

The following samples had surrogate spike recoveries outside of the recovery limits:

Sample	Surrogate	% Recovery	QC Limits	Action	
				(+)	NDs
MWEP340S-041509	1,4-Dioxane-d8	148	60-140	J	
MWEP342B2-041309		146		J	
MWEP340B1-041409		155		J	
EPGW-FD041409		142		J	
MWEP341S-041509		145		J	

The surrogate 1,4-dioxane-d8 recovered above the QC limits in the samples listed above. The positive 1,4-dioxane results in the affected samples are estimated (J) due to high surrogate recoveries.

The surrogate recovery QC criteria were not met for 1,4-dioxane-d8; therefore, the project accuracy goals may be impacted. The positive 1,4-dioxane results in affected samples are usable as estimated values which may be biased high.

Matrix Spike/Matrix Spike Duplicate

Volatiles-SIM

The following table summarizes the volatile-SIM compound which did not meet QC limits in the matrix spike and matrix spike duplicate (MS/MSD) analysis and the qualifications applied to the affected sample:

MWEP342S-041409					
Compound	MS %Rec.	MSD %Rec.	QC Limits	Action	
			%Rec.	(+)	ND
1,1-Dichloroethene	Criteria Met	158	60-140	J	

The MSD recovery was above the QC limit for 1,1-dichloroethene; therefore, the project accuracy goals may be impacted. The positive 1,1-dichloroethene result in sample MWEP342S-041409 is usable as an estimated value which may be biased high.

Laboratory Control Sample/Laboratory Control Sample Duplicates

Volatiles-SIM

The following table summarizes the volatile-SIM compound that failed to meet the laboratory LCS recovery limits:

Compound	%Rec.	%Rec. QC Limits	Action		Affected Samples
			(+)	NDs	
1,1-Dichloroethene	150	60-140	J		MWEP341S-041509

The laboratory control sample recovered above the criterion for 1,1-dichloroethene; therefore, the project accuracy goals may be impacted. The positive 1,1-dichloroethene result in the affected sample is usable as an estimated value which may be biased high.

Reporting Limits

All project required quantitation limit and project action limits were achieved with the following exceptions. The project quantitation limit for methylene chloride was not achieved by the laboratory's reporting limit; however, the project action limit was achieved. The project quantitation limit and project action limit for vinyl chloride were not achieved by the laboratory's reporting limit; data usability may be impacted.

1,1-Dichloroethene was reported by both Methods 8260B full scan and 8260B SIM. The SIM results were selected for reporting except in cases where the SIM results exceeded the linear calibration range.

1,4-Dioxane contamination was found in the method blank; therefore, the project sensitivity goals may be impacted since the elevated quantitation limits exceed the project action limit. Data usability may be impacted.

Data Usability Assessment

The data usability assessment was performed to determine if the data met the project data quality objectives for acceptable accuracy, precision, sensitivity, and completeness; and to determine and define the impact of the exceeded quality control indicators on the technical usability of the data. Please refer to the specific sections in the above validation report for further details.

Volatiles

The project goals with respect to accuracy, precision, and completeness were met for the volatiles data set. Data usability was not impacted with regards to accuracy, precision, and completeness.

The project goals with respect to sensitivity were met for the volatiles data set with the following exception. The project quantitation limit and project action limit for vinyl chloride were not achieved by the laboratory's reporting limit; data usability may be impacted.

Volatiles-SIM

The project goals with respect to accuracy were met for the volatiles-SIM data set with the following exceptions. 1,4-Dioxane was qualified as estimated in all samples due to a low instrument response. The positive results in select samples were qualified as estimated due high surrogate recoveries; the affected results may be biased high. 1,1-Dichloroethene was qualified as estimated in sample MWEP342S-041409 due to a high MSD recovery and in sample MWEP341S-041509 due to high LCS recovery; the affected result may be biased high. Although specific method criteria were not met in these instances, the affected positive and non-detected results are usable as estimated values and estimated quantitation limits which may have a minor impact on data usability

The project goals with respect to sensitivity were met for the volatiles-SIM data set with the following exception. Blank actions due to 1,4-dioxane contamination found in the method blank resulted in elevated quantitation limits exceeding the project action limit. Data usability may be impacted.

The project goals with respect to precision and completeness were met for the volatiles-SIM data set. Data usability was not impacted with regards to precision and completeness.

Tables: Data Validation Qualifiers and Codes
Data Summary Tables

Enclosures: Data Validation Worksheets

Data Validation Qualifiers and Codes

Data Validation Qualifiers:

= No qualifier attached to value (positive hit)
J = Value is estimated
U = Value is not detected
UJ = Value is not detected and estimated
R = Value (positive hit) is not usable
UR = Value was reported as ND but is not usable

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 00645	NSAMPLE	EPGW-F-041409			EPGW-FD041409			EPGW-R-041409			EPGW-T-041309		
SDG: SC1796	LAB_ID	SC1796-16			SC1796-6			SC1796-10			SC1796-1		
FRACTION: OV	SAMP_DATE	4/14/2009			4/14/2009			4/14/2009			4/13/2009		
MEDIA: WATER	QC_TYPE	FB			FD			RB			TB		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF				MWEP342B1-041409								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE		1	U		8			1	U		1	U	
1,1-DICHLOROETHENE					15						1	U	
1,2-DICHLOROETHANE		1	U		1	U		1	U		1	U	
CHLOROFORM		1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE		1	U		1	J	P	1	U		1	U	
METHYLENE CHLORIDE		5	U		5	U		5	U		1	J	P
TETRACHLOROETHENE		1	U		0.5	J	P	1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U		1	U		1	U		1	U	
TRICHLOROETHENE		1	U		29			1	U		1	U	
VINYL CHLORIDE		2	U		2	U		2	U		2	U	

PROJ_NO: 00645 SDG: SC1796 FRACTION: OV MEDIA: WATER													
	NSAMPLE	MWEP340B1-041409			MWEP340B2-041409			MWEP340S-041509			MWEP341B1-041509		
	LAB_ID	SC1796-8			SC1796-24			SC1796-18			SC1796-20		
	SAMP_DATE	4/14/2009			4/14/2009			4/15/2009			4/15/2009		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		1	U		88			0.4	J	P
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE		0.7	J	P	1	U		7			1	U	
1,1-DICHLOROETHENE								23					
1,2-DICHLOROETHANE		1	U		1	U		0.3	J	P	1	U	
CHLOROFORM		2			4			2			6		
CIS-1,2-DICHLOROETHENE		1	U		1	U		4			1	U	
METHYLENE CHLORIDE		5	U		5	U		5	U		5	U	
TETRACHLOROETHENE		1	U		1	U		2			1	U	
TRANS-1,2-DICHLOROETHENE		1	U		1	U		1	U		1	U	
TRICHLOROETHENE		1	U		1	U		77			1	U	
VINYL CHLORIDE		2	U		2	U		2	U		2	U	

PROJ_NO: 00645 SDG: SC1796 FRACTION: OV MEDIA: WATER	NSAMPLE	MWEP341B2-041409			MWEP341S-041509			MWEP342B1-041409			MWEP342B2-041309		
	LAB_ID	SC1796-12			SC1796-22			SC1796-4			SC1796-2		
	SAMP_DATE	4/14/2009			4/15/2009			4/14/2009			4/13/2009		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		0.5	J	P	1	U		1	U	
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE		0.3	J	P	1	U		8			3		
1,1-DICHLOROETHENE								15					
1,2-DICHLOROETHANE		1	U		1	U		1	U		1	U	
CHLOROFORM		11			2			1	U		1	U	
CIS-1,2-DICHLOROETHENE		1	U		1	U		1			0.4	J	P
METHYLENE CHLORIDE		5	U		5	U		5	U		5	U	
TETRACHLOROETHENE		1	U		1	U		0.4	J	P	1	U	
TRANS-1,2-DICHLOROETHENE		1	U		1	U		1	U		1	U	
TRICHLOROETHENE		1	U		2			30			6		
VINYL CHLORIDE		2	U		2	U		2	U		2	U	

PROJ_NO: 00645 **SDG: SC1796** **FRACTION: OV** **MEDIA: WATER**	NSAMPLE	MWEP342S-041409
	LAB_ID	SC1796-14
	SAMP_DATE	4/14/2009
	QC_TYPE	NM
	UNITS	UG/L
	PCT_SOLIDS	
	DUP_OF	

PARAMETER	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	0.7	J	P
1,1-DICHLOROETHENE			
1,2-DICHLOROETHANE	1	U	
CHLOROFORM	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
METHYLENE CHLORIDE	5	U	
TETRACHLOROETHENE	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRICHLOROETHENE	1	U	
VINYL CHLORIDE	2	U	

PROJ_NO: 00645 SDG: SC1796 FRACTION: LV MEDIA: WATER	NSAMPLE	EPGW-F-041409			EPGW-FD041409			EPGW-R-041409			MWEP340B1-041409		
	LAB_ID	SC1796-17			SC1796-7RA2			SC1796-11RA			SC1796-9RA		
	SAMP_DATE	4/14/2009			4/14/2009			4/14/2009			4/14/2009		
	QC_TYPE	FB			FD			RB			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF				MWEP342B1-041409								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-DICHLOROETHENE		0.2	U					0.2	U		0.54	J	C
1,4-DIOXANE		2	UJ	C	10	UJ	ACR	2	UJ	C	2.2	UJ	ACR

PROJ_NO: 00645 SDG: SC1796 FRACTION: LV MEDIA: WATER	NSAMPLE	MWEP340B2-041409			MWEP340S-041509			MWEP341B1-041509			MWEP341B2-041409		
	LAB_ID	SC1796-25			SC1796-19			SC1796-21RA3			SC1796-13RA		
	SAMP_DATE	4/14/2009			4/15/2009			4/15/2009			4/14/2009		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-DICHLOROETHENE		0.2	U					0.2	U		0.16	J	CP
1,4-DIOXANE		2	UJ	C	9	UJ	ACR	2	UJ	C	2	UJ	C

PROJ_NO: 00645 SDG: SC1796 FRACTION: LV MEDIA: WATER	NSAMPLE	MWEP341S-041509			MWEP342B1-041409			MWEP342B2-041309			MWEP342S-041409		
	LAB_ID	SC1796-23RA3			SC1796-5RA			SC1796-3RA			SC1796-15		
	SAMP_DATE	4/15/2009			4/14/2009			4/13/2009			4/14/2009		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS												
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-DICHLOROETHENE		0.13	J	EP				1.9			0.32	J	D
1,4-DIOXANE		2	UJ	CR	8.7	UJ	AC	2	UJ	ACR	2	UJ	C

TETRA TECH

INTERNAL CORRESPONDENCE

C-NAVY-07-09-3228W

Date: July 13, 2009

c: File G00645-4.10 (w/enc.-original)
Chuck Race (scan only)

To: Linda Klink (w/enc.)

From: Paula DiMattei (no copy) (for)

Subject: Tier III Organic Data Validation, SDG CTO69-4
Katahdin Analytical
CTO 069, Naval Air Station Brunswick, Brunswick, Maine

VOC/1,4-Dioxane:

18/Groundwaters/	EPGW-MWMB03C-060809	EPGW-FD-060809
	EPGW-MWEP349-060809	EPGW-MWEP348-060809
	EPGW-MWMB06C-060809	EPGW-MWEP351-060909
	EPGW-P2MBC4B-060909	EPGW-P2MBB4B-060909
	EPGW-MWMB01C-060909	EPGW-MWMB02C-061009
	EPGW-P2MWB6B-061009	EPGW-MWEP353-061009
	EPGW-MWEP352-061009	EPGW-MWEP354-061109
	EPGW-MWMB04B-061109	EPGW-MWEP350-061109
	EPGW-FD-061109	EPGW-MWEP346-061109

(Field Duplicate Pairs: EPGW-MWMB03C-060809/EPGW-FD-060809
EPGW-MWEP350-061109/EPGW-FD-061109)

1/Field Blank/	EPGW-F-060909	
1/Rinsate Blank/	EPGW-R-061009	
2/Trip Blanks/	EPGW-T-060809	EPGW-T-061009

Tetra Tech NUS, Inc. (TtNUS) performed a Tier III data validation on the volatile organic compounds (VOC) and 1,4-dioxane analytical data for the groundwater samples collected at the Naval Air Station Brunswick, Brunswick, Maine site from June 8-11, 2009. Sample collection and analysis were performed according to the Sampling and Analysis Plan (Field Sampling Plan and QAPP) for Supplemental Remedial Investigation of 1,4-dioxane in the Eastern Plume and Bedrock, NAS Brunswick, Brunswick, Maine; dated October 2008.

The VOC analysis was performed according to USEPA SW-846 Method 8260B. 1,4-Dioxane and 1,1-dichloroethene were analyzed by 8260B in the SIM (selective ion monitoring) mode in order to achieve lower detection limits. In this memorandum, these results are discussed under "Volatiles-SIM".

Data validation was performed in accordance with the Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996.

The sample results, validation qualifiers (VQL), and qualifier codes (QLCD) are presented in the enclosed data summary tables. A list of the qualifier codes, which provide the reasons for the validation qualifiers, is enclosed. The Volatiles-SIM results are reported on the summary table with the header indicating the fraction as "LV".

The data were evaluated based on the following parameters:

- * • Data Completeness
- * • Preservation and Technical Holding Times
- * • GC/MS Instrument Performance Check (Tuning)
- * • Initial and Continuing Calibrations
- • Blanks
- • Surrogate Compounds
- * • Internal Standards
- NA • Matrix Spike/Matrix Spike Duplicate
- * • Laboratory Control Sample/Laboratory Control Sample Duplicate
- * • Field Duplicates
- • Reporting Limits
- * • Sample Quantitation

* All criteria were met for this parameter.
NA None provided in this SDG

Blanks

Volatiles Full Scan

The following table summarizes the level of blank contamination detected in the method and trip blank associated with the samples:

Compound	Type of Blank	Maximum Conc. (µg/L)	Action Level (µg/L)	Affected Samples
Methylene chloride	Method	0.4	4.0	EPGW-MWMB03C-060809, EPGW-FD-060809
Methylene chloride	Trip	1.0	10	EPGW-P2MWB6B-061009, EPGW-MWEP353-061009, EPGW-MWEP352-061009, EPGW-MWEP354-061109, EPGW-MWMB04B-061109, EPGW-MWEP346-061109

Blank action was applied to the affected sample due to methylene chloride method or trip blank contamination. The 10x rule applies for this compound. The positive results below the blank action level in the affected samples were changed to non-detected values at elevated quantitation limits and the positive results below the blank action level and below the quantitation limit were changed to non-detected values at the quantitation limit (QL).

Methylene chloride contamination was found in the method and trip blanks; therefore, the project sensitivity goals may be impacted for sample EPGW-MWEP352-061009 since the elevated quantitation limit exceed the project action limit for this compound. The elevated quantitation limits for the other samples were equal to the project action limit for this compound. The results in the affected samples are usable as non-detected values.

Surrogate Compounds

Volatiles-SIM

The following samples had surrogate spike recoveries outside of the recovery limits:

Sample	Surrogate	% Recovery	QC Limits	Action	
				(+)	NDs
EPGW-MWMB06C-060809	1,4-Dioxane-d_8	142	60-140	J	
EPGW-MWMB01C-060909		149		J	
EPGW-MWEP346-061109		156		J	
EPGW-FD-061109		146		J	
EPGW-MWEP351-060909		158		J	

The surrogate 1,4-dioxane-d_8 recovered above the QC limits in the samples listed above. The positive 1,4-dioxane results in the affected samples are estimated (J) due to high surrogate recoveries.

The surrogate recovery QC criteria were not met for 1,4-dioxane-d_8; therefore, the project accuracy goals may be impacted. The positive 1,4-dioxane results in affected samples are usable as estimated values which may be biased high.

Reporting Limits

All project required quantitation limit and project action limits were achieved with the following exception. The project action limit for vinyl chloride was not achieved by the laboratory's reporting limit; data usability may be impacted.

1,1-Dichloroethene was reported by both Methods 8260B full scan and 8260B SIM. The SIM results were selected for reporting except in cases where the SIM results exceeded the linear calibration range.

Methylene chloride contamination was found in the method and trip blanks; therefore, the project sensitivity goals may be impacted for sample EPGW-MWEP352-061009 since the elevated quantitation limit exceed the project action limit. Data usability may be impacted.

Data Usability Assessment

The data usability assessment was performed to determine if the data met the project data quality objectives for acceptable accuracy, precision, sensitivity, and completeness; and to determine and define the impact of the exceeded quality control indicators on the technical usability of the data. Please refer to the specific sections in the above validation report for further details.

Volatiles Full San

The project goals with respect to accuracy, precision, and completeness were met for the volatiles data set. Data usability was not impacted with regards to accuracy, precision, and completeness.

The project goals with respect to sensitivity were met for the volatiles data set with the following exception. The action limit for vinyl chloride was not achieved by the laboratory's reporting limit; data usability may be impacted. Additionally, blank actions due to methylene chloride contamination found in the method and trip blanks resulted in elevated quantitation limits exceeding the project action limit for sample EPGW-MWEP352-061009. Data usability may be impacted.

Volatiles-SIM

The project goals with respect to accuracy were met for the volatiles-SIM data set with the following exception. The 1,4-dioxane results in select samples were qualified as estimated due high surrogate recoveries; the affected results may be biased high. Although specific method criteria were not met in this instance, the affected positive results are usable as estimated values which may have a minor impact on data usability

The project goals with respect to precision, sensitivity, and completeness were met for the volatiles-SIM data set. Data usability was not impacted with regards to precision and completeness.

Tables: Data Validation Qualifiers and Codes
Data Summary Tables

Enclosures: Data Validation Worksheets

Data Validation Qualifiers and Codes

Data Validation Qualifiers:

	=	No qualifier attached to value (positive hit)
J	=	Value is estimated
U	=	Value is not detected
UJ	=	Value is not detected and estimated
R	=	Value (positive hit) is not usable
UR	=	Value was reported as ND but is not usable

Qualifier Codes:

A	=	Lab Blank Contamination
B	=	Field Blank Contamination
C	=	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01	=	GC/MS Tuning Noncompliance
D	=	MS/MSD Recovery Noncompliance
E	=	LCS/LCSD Recovery Noncompliance
F	=	Lab Duplicate Imprecision
G	=	Field Duplicate Imprecision
H	=	Holding Time Exceedance
I	=	ICP Serial Dilution Noncompliance
J	=	GFAA PDS - GFAA MSA's $r < 0.995$
K	=	ICP Interference - includes ICS % R Noncompliance
L	=	Instrument Calibration Range Exceedance
M	=	Sample Preservation Noncompliance
N	=	Internal Standard Noncompliance
N01	=	Internal Standard Recovery Noncompliance Dioxins
N02	=	Recovery Standard Noncompliance Dioxins
N03	=	Clean-up Standard Noncompliance Dioxins
O	=	Poor Instrument Performance (e.g. base-line drifting)
P	=	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q	=	Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R	=	Surrogates Recovery Noncompliance
S	=	Pesticide/PCB Resolution
T	=	% Breakdown Noncompliance for DDT and Endrin
U	=	% Difference between columns/detectors >25% for positive results determined via GC/HPLC
V	=	Non-linear calibrations; correlation coefficient $r < 0.995$
W	=	EMPC result
X	=	Signal to noise response drop
Y	=	Percent solids <30%
Z	=	Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 00645 SDG: CTO69-4 FRACTION: OV MEDIA: WATER	NSAMPLE	EPGW-F-060909			EPGW-FD-060809			EPGW-FD-060809-DL			EPGW-FD-061109		
	LAB_ID	SC3014-21			SC3014-5			SC3014-5DL			SC3090-19		
	SAMP_DATE	6/9/2009			6/8/2009			6/8/2009			6/11/2009		
	QC_TYPE	FB			FD			FD			FD		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF				EPGW-MWMB03C-060809			EPGW-MWMB03C-060809			EPGW-MWEP350-061109		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		48						9		
1,1,2-TRICHLOROETHANE		1	U		0.5	J	P				1	U	
1,1-DICHLOROETHANE		1	U		66						7		
1,1-DICHLOROETHENE					61						5		
1,2-DICHLOROETHANE		1	U		0.8	J	P				1	U	
CHLOROFORM		1	U		1	J	P				1	U	
CIS-1,2-DICHLOROETHENE		1	U		72						2		
METHYLENE CHLORIDE		5	U		5	U	A				5	U	
TETRACHLOROETHENE		1	U		5						5		
TRANS-1,2-DICHLOROETHENE		1	U		2						1	U	
TRICHLOROETHENE		1	U					200			11		
VINYL CHLORIDE		2	U		2	U					2	U	

PROJ_NO: 00645	NSAMPLE	EPGW-MWEP346-061109			EPGW-MWEP348-060809			EPGW-MWEP349-060809			EPGW-MWEP350-061109		
SDG: CTO69-4	LAB_ID	SC3090-21			SC3014-9			SC3014-7			SC3090-17		
FRACTION: OV	SAMP_DATE	6/11/2009			6/8/2009			6/8/2009			6/11/2009		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		120			47			42			9		
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE		16			7			2			6		
1,1-DICHLOROETHENE		16			14						5		
1,2-DICHLOROETHANE		1	U		1	U		1	U		1	U	
CHLOROFORM		1	U		0.2	J	P	1	U		1	U	
CIS-1,2-DICHLOROETHENE		70			21			3			2		
METHYLENE CHLORIDE		5	U	B	0.5	J	P	5	U		5	U	
TETRACHLOROETHENE		2			2			10			5		
TRANS-1,2-DICHLOROETHENE		1	U		1	U		1	U		1	U	
TRICHLOROETHENE		47			53			16			11		
VINYL CHLORIDE		2	U		2	U		2	U		2	U	

PROJ_NO: 00645 SDG: CTO69-4 FRACTION: OV MEDIA: WATER	NSAMPLE	EPGW-MWEP351-060909			EPGW-MWEP352-061009			EPGW-MWEP352-061009-DL			EPGW-MWEP353-061009		
	LAB_ID	SC3014-13			SC3090-9			SC3090-9DL			SC3090-7		
	SAMP_DATE	6/9/2009			6/10/2009			6/10/2009			6/10/2009		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		160						500			0.3	J	P
1,1,2-TRICHLOROETHANE		0.3	J	P	1						1	U	
1,1-DICHLOROETHANE		11			24						4		
1,1-DICHLOROETHENE		52			120								
1,2-DICHLOROETHANE		0.9	J	P	3						0.3	J	P
CHLOROFORM		1	U		0.6	J	P				1	U	
CIS-1,2-DICHLOROETHENE		9			7						5		
METHYLENE CHLORIDE		3	J	P	9	U	B				5	U	B
TETRACHLOROETHENE		7			3						5		
TRANS-1,2-DICHLOROETHENE		1	U		1	U					1	U	
TRICHLOROETHENE		120			110						23		
VINYL CHLORIDE		2	U		2	U					2	U	

PROJ_NO: 00645
SDG: CTO69-4
FRACTION: OV
MEDIA: WATER

NSAMPLE	EPGW-MWEP354-061109			EPGW-MWMB01C-060909			EPGW-MWMB02C-061009			EPGW-MWMB03C-060809		
LAB_ID	SC3090-13			SC3014-19			SC3090-3			SC3014-3		
SAMP_DATE	6/11/2009			6/9/2009			6/10/2009			6/8/2009		
QC_TYPE	NM			NM			NM			NM		
UNITS	UG/L			UG/L			UG/L			UG/L		
PCT_SOLIDS	0.0			0.0			0.0			0.0		
DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	1	U		60			10			48		
1,1,2-TRICHLOROETHANE	1	U		1	U		1	U		0.6	J	P
1,1-DICHLOROETHANE	12			11			7			66		
1,1-DICHLOROETHENE	12			24			5			61		
1,2-DICHLOROETHANE	0.8	J	P	0.5	J	P	1	U		0.9	J	P
CHLOROFORM	1	U		1	U		1	U		0.9	J	P
CIS-1,2-DICHLOROETHENE	0.4	J	P	14			4			70		
METHYLENE CHLORIDE	5	U	B	2	J	P	5	U		5	U	A
TETRACHLOROETHENE	1	U		15			14			5		
TRANS-1,2-DICHLOROETHENE	1	U		1	U		1	U		2		
TRICHLOROETHENE	1			53			12					
VINYL CHLORIDE	2	U		2	U		2	U		2	U	

PROJ_NO: 00645 SDG: CTO69-4 FRACTION: OV MEDIA: WATER	NSAMPLE	EPGW-MWMB03C-060809-DL			EPGW-MWMB04B-061109			EPGW-MWMB06C-060809			EPGW-P2MBB4B-060909		
	LAB_ID	SC3014-3DL			SC3090-15			SC3014-11			SC3014-17		
	SAMP_DATE	6/8/2009			6/11/2009			6/8/2009			6/9/2009		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					5			25			19		
1,1,2-TRICHLOROETHANE					0.4	J	P	1	U		0.6	J	P
1,1-DICHLOROETHANE					28			10			69		
1,1-DICHLOROETHENE					36			18			110		
1,2-DICHLOROETHANE					1			0.5	J	P	3		
CHLOROFORM					1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE					0.9	J	P	6			6		
METHYLENE CHLORIDE					5	U	B	0.4	J	P	5	U	
TETRACHLOROETHENE					1	U		5			2		
TRANS-1,2-DICHLOROETHENE					1	U		1	U		1	U	
TRICHLOROETHENE		200			7			49			74		
VINYL CHLORIDE					2	U		2	U		0.8	J	P

PROJ_NO: 00645 SDG: CTO69-4 FRACTION: OV MEDIA: WATER	NSAMPLE	EPGW-P2MBC4B-060909			EPGW-P2MWB6B-061009			EPGW-R-061009			EPGW-T-060809		
	LAB_ID	SC3014-15			SC3090-5			SC3090-11			SC3014-1		
	SAMP_DATE	6/9/2009			6/10/2009			6/10/2009			6/8/2009		
	QC_TYPE	NM			NM			RB			TB		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		140			1	U		1	U	
1,1,2-TRICHLOROETHANE		1	U		0.8	J	P	1	U		1	U	
1,1-DICHLOROETHANE		1	U		61			1	U		1	U	
1,1-DICHLOROETHENE					84								
1,2-DICHLOROETHANE		1	U		3			1	U		1	U	
CHLOROFORM		1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE		1	U		3			1	U		1	U	
METHYLENE CHLORIDE		5	U		5	U	B	5	U		5	U	
TETRACHLOROETHENE		1	U		0.5	J	P	1	U		1	U	
TRANS-1,2-DICHLOROETHENE		1	U		1	U		1	U		1	U	
TRICHLOROETHENE		0.4	J	P	30			1	U		1	U	
VINYL CHLORIDE		2	U		0.3	J	P	2	U		2	U	

PROJ_NO: 00645	NSAMPLE	EPGW-T-061009
SDG: CTO69-4	LAB_ID	SC3090-1
FRACTION: OV	SAMP_DATE	6/10/2009
MEDIA: WATER	QC_TYPE	TB
	UNITS	UG/L
	PCT_SOLIDS	0.0
	DUP_OF	

PARAMETER	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE			
1,2-DICHLOROETHANE	1	U	
CHLOROFORM	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
METHYLENE CHLORIDE	1	J	P
TETRACHLOROETHENE	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRICHLOROETHENE	1	U	
VINYL CHLORIDE	2	U	

PROJ_NO: 00645 SDG: CTO69-4 FRACTION: LV MEDIA: WATER	NSAMPLE	EPGW-F-060909			EPGW-FD-060809			EPGW-FD-061109			EPGW-MWEP346-061109		
	LAB_ID	SC3014-22			SC3014-6			SC3090-20RA			SC3090-22RA		
	SAMP_DATE	6/9/2009			6/8/2009			6/11/2009			6/11/2009		
	QC_TYPE	FB			FD			FD			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF				EPGW-MWMB03C-060809			EPGW-MWEP350-061109					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-DICHLOROETHENE		0.2	U										
1,4-DIOXANE		2	U		43			9.8	J	R	8.7	J	R

PROJ_NO: 00645	NSAMPLE	EPGW-MWEP348-060809			EPGW-MWEP349-060809			EPGW-MWEP350-061109			EPGW-MWEP351-060909		
SDG: CTO69-4	LAB_ID	SC3014-10RA			SC3014-8			SC3090-18			SC3014-14		
FRACTION: LV	SAMP_DATE	6/8/2009			6/8/2009			6/11/2009			6/9/2009		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-DICHLOROETHENE					3.5								
1,4-DIOXANE		6.1			4.3			12			45	J	R

PROJ_NO: 00645 SDG: CTO69-4 FRACTION: LV MEDIA: WATER	NSAMPLE	EPGW-MWEP352-061009			EPGW-MWEP353-061009			EPGW-MWEP354-061109			EPGW-MWMB01C-060909		
	LAB_ID	SC3090-10DL2			SC3090-8RA			SC3090-14			SC3014-20		
	SAMP_DATE	6/10/2009			6/10/2009			6/11/2009			6/9/2009		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-DICHLOROETHENE					3.9								
1,4-DIOXANE		220			3.7			82			29	J	R

PROJ_NO: 00645 SDG: CTO69-4 FRACTION: LV MEDIA: WATER	NSAMPLE	EPGW-MWMB02C-061009			EPGW-MWMB03C-060809			EPGW-MWMB04B-061109			EPGW-MWMB06C-060809		
	LAB_ID	SC3090-4			SC3014-4RA			SC3090-16DL			SC3014-12		
	SAMP_DATE	6/10/2009			6/8/2009			6/11/2009			6/8/2009		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-DICHLOROETHENE													
1,4-DIOXANE		8			49			190			22	J	R

PROJ_NO: 00645 SDG: CTO69-4 FRACTION: LV MEDIA: WATER	NSAMPLE	EPGW-P2MBB4B-060909			EPGW-P2MBC4B-060909			EPGW-P2MWB6B-061009			EPGW-R-061009		
	LAB_ID	SC3014-18DL2			SC3014-16			SC3090-6DL2			SC3090-12		
	SAMP_DATE	6/9/2009			6/9/2009			6/10/2009			6/10/2009		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-DICHLOROETHENE					0.2	U					0.2	U	
1,4-DIOXANE		260			2	U		260			2	U	

PROJ_NO: 00645 SDG: CTO69-4 FRACTION: LV MEDIA: WATER	NSAMPLE	EPGW-T-060809			EPGW-T-061009		
	LAB_ID	SC3014-2			SC3090-2		
	SAMP_DATE	6/8/2009			6/10/2009		
	QC_TYPE	TB			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-DICHLOROETHENE		0.2	U		0.2	U	
1,4-DIOXANE		2	U		2	U	

NAS Brunswick

EPA-NE
Data Validation Worksheet Cover Page - Page 1

Site Name ____________
Reference No. ____________
112G00645.1301

REGION I ORGANIC DATA VALIDATION

The following data package has been validated:

Lab Name Katahdin Analytical Services CTO 69-4
Case/Project No. ____________
SDG No. (SC3014, SC3090) CTO 69-4
No. of Samples/Matrix ____________

SOW/Method No. 8260 full/SIM
Sampling Date(s) ____________
Shipping Date(s) ____________
Date Rec'd by lab ____________

Traffic Report Sample Nos. see following COC

Trip Blank No. ____________
Equipment Blank No. ____________
Bottle Blank No. ____________
Field Duplicate Nos. ____________

PES Nos. ____________

The Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, revision ________ was used to evaluate the data and/or approved modifications to the EPA-NE Functional Guidelines were used to evaluate the data and are attached to this cover page: (attach modified criteria from EPA approved QAPjP or amendment to QAPjP).

A Tier II or Tier III evaluation was used to validate the data (circle one). If a Tier II validation with a partial Tier III was used, ~~then~~ identify samples, parameters, etc. that received partial Tier III validation

____

The data were evaluated based upon the following parameters:

- Overall Evaluation of Data
- Data Completeness (CSF Audit - Tier I)
- Preservation & Technical Holding Times
- GC/MS & GC/ECD Instrument Performance Check
- Initial & Continuing Calibrations
- Blanks
- Surrogate Compounds
- Internal Standards
- Matrix Spike/Matrix Spike Duplicate
- Field Duplicates
- Sensitivity Check
- PE Samples/Accuracy Check
- Target Compound Identification
- Compound Quantitation and Reported Quantitation Limits
- TICs
- Semivolatile and Pesticide/PCB Cleanup
- System Performance

Region I Definitions and Qualifiers:

A - Acceptable Data
J - Numerical value associated with compound is an estimated quantity.
R - The data are rejected as unusable. The R replaces the numerical value or sample quantitation limit.
U - Compound not detected at that numerical sample quantitation limit.
UJ - The sample quantitation limit is an estimated quantity.
TB, BB, EB - Compound detected in aqueous trip blank, aqueous bottle blank, or aqueous equipment blank associated with soil/sediment samples.

Validator's Name Paula Eikner Company Name TTNUS Phone Number ____________

Date Validation Started 7-7-09 Date Validation Completed 7/13/09

Katahdin ANALYTICAL SERVICES

600 Technology Way
Scarborough, ME 04074
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE BEAR DOWN AND PRINT LEGIBLY IN PEN

Page 1 of 1

Client: Tetra Tech NUS | Contact: Linda Klink | Phone #: (412)921-8250 | Fax #: ( )

Address: 661 Anderson Drive Plaza 7 | City: Pittsburgh | State: PA | Zip Code:

Purchase Order #: | Proj. Name / No.: Eastern Plume - NASB | Katahdin Quote #:

Bill (if different than above): | Address:

Sampler (Print / Sign): C. Fellows / [signature] | Copies To:

LAB USE ONLY | WORK ORDER #: | KATAHDIN PROJECT NUMBER: SC3014

REMARKS:

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT

AIRBILL NO:

TEMP°C ____ ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	VOC 40 ml vial w/ HCL (Filt. ☐Y ☐N)	1,4 Dioxane / 1,1 DCE 40 ml vial w/ HCL (Filt. ☐Y ☐N)	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N
	EPGW-T-060809	6/8/09 / 0900	GW	4	2	2								
	EPGW-MWMB03C-060809	6/8/09 / 1205	GW	6	3	3								
	EPGW-FD-060809	6/8/09 / 1215	GW	6	3	3								
	EPGW-MWEP349-060809	6/8/09 / 1215	GW	6	3	3								
	EPGW-MWEP348-060809	6/8/09 / 1510	GW	6	3	3								
	EPGW-MWMB06C-060809	6/8/09 / 1540	GW	6	3	3								
	EPGW-MWEP351-060909	6/9/09 / 1025	GW	6	3	3								
	EPGW-PZMBC4B-060909 ~~EPGW-MWEP~~ CF	6/9/09 / 1040	GW	6	3	3								
	EPGW-PZMBB4B-060909	6/9/09 / 1305	GW	6	3	3								
	EPGW-MWMB01C-060909	6/9/09 / 1425	GW	6	3	3								
	EPGW-F-060909	6/9/09 / 1540	GW	6	3	3								
		/						T=trip						
		/						R=rinse						
		/						F=field						
		/								according to Sampler Chelsea Fellows-Sweeney				
		/										7/7/09		

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	6/9/09 1600	[signature]	[signature]	6/9/09 1700	[signature]
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

Katahdin ANALYTICAL SERVICES
600 Technology Way
Scarborough, ME 04074
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE BEAR DOWN AND PRINT LEGIBLY IN PEN

Client: Tetra Tech NUS | Contact: Linda Klink | Phone #: (412) 921-8250 | Fax #: ( )

Address: 661 Andersen Drive Plaza 7 | City: Pittsburgh | State: PA | Zip Code:

Purchase Order #: | Proj. Name / No.: Eastern Plume - NASB | Katahdin Quote #:

Bill (if different than above): | Address:

Sampler (Print / Sign): C. Fellows / [signature] Brian Geringer / [signature] | Copies To:

LAB USE ONLY | WORK ORDER #: | KATAHDIN PROJECT NUMBER: SC3090

REMARKS:

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT

AIRBILL NO:

TEMP°C ____ ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	VOC 40ml vials w/ HCL (Filt. ☐Y ☒N)	1,4 Dioxane/1,1 DCE 40ml vials w/ HCL (Filt. ☐Y ☒N)	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N
	EPGW-T-061009	6/10/09/0830	GW	4	2	2								
	EPGW-MWMB02C-061009	6/10/09/1040	GW	6	3	3								
	EPGW-PZMW13GB-061009	6/10/09/1048	GW	6	3	3								
	EPGW-~~MW~~ EP-353-061009	6/10/09/1310	GW	6	3	3								
	EPGW-MWEP-352-061009	6/10/09/1505	GW	6	3	3								
	EPGW-R-061009	6/10/09/1630	GW	6	3	3								
	EPGW-MWEP354-061109	6/11/09/0955	GW	6	3	3								
	EPGW-MWMB04B-061109	6/11/09/1015	GW	6	3	3								
	EPGW-MWEP350-061109	6/11/09/1305	GW	6	3	3								
	EPGW-FD-061109	6/11/09/1320	GW	6	3	3								
	EPGW-MWEP346-061109	6/11/09/1455	GW	6	3	3								
		/												
		/												
		/												
		/												
		/												

OMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	6/11/09 1600	[signature]			
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
	6/11/09 1645	[signature]			

THE TERMS AND CONDITIONS ON THE REVERSE SIDE HEREOF SHALL GOVERN

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB

COMPLETE SDG FILE (CSF) AUDIT

Organic Fractions: ____________________

Missing Information	Date Lab Contacted	Date Received
	data package complete	

Validator: fa   Date: 7-8-08

EPA-NE - Data Validation
VOA/SV - Pest/PCB-I

12/96

Sampler:______________ Company:______________ Contacted: Yes No Date:__________

I. PRESERVATION AND HOLDING TIMES - Circle sample numbers with exceeded technical holding times or omitted preservation. List all required preservation codes and circle omitted preservation codes. Circle all exceeded technical holding times. Identify extraction technique after "# of Days"/(*Extraction Code).

All prefixed with EPGW:

Sample No. (TR No.)	Matrix	Pres. Code	Date Sampled	VOA			~~BNA~~ VOA-SIM					PEST/PCB				
				Date Analyzed	# of Days from Samp. to Anal.	Action	Date Extracted	# of Days from Samp. to Extr./(*)	Date Analyzed	# of Days from Extr. to Anal.	Action	Date Extracted	# of Days from Samp. to Extr./(*)	Date Analyzed	# of Days from Extr. to Anal.	Action
T-060809	AQ	1,2,3	6-8-09	6-11-09	3	none			6-17-09	9	none					
MWMB03C-060809	GW		6-8-09	6-11-09	3				6-19-09	11						
MWMB03C-060809DL	↓		↓	6-12-09	4				—							
FD-060809	GW		6-8-09	6-11-09	3				6-19-09	11						
FD-060809DL			↓	6-12-09	4				—							
MWEP349-060809			6-8-09	6-11-09	3				6-17-09	9						
MWEP348-060809			↓	6-12-09	4				6-18-09	10						
MWMB06C-060809			6-8-09	↓	4				6-17-09	9						
MWEP351-060909			6-9-09	6-12-09	3				6-18-09	9						
P2MBC48-060909			↓	↓	3				6-17-09	8						
P2MBB48-060909			6-9-09	6-12-09	3				6-20-09	11						
MWMB01C-060909	↓		6-9-09	↓	3				6-17-09	8						
F-060909	AQ		6-9-09	6-12-09	3				↓	8						
T-061009	AQ		6-10-09	6-15-09	5				6-17-09	7						
MWMB02C-061009	GW		6-10-09	6-15-09	5				↓	7						
P2MWB6B-061009			6-10-09	6-16-09	6				6-20-09	10						
MWEP353-061009			6-10-09	6-15-09	5				6-18-09	8						
MWEP352-061009			↓	↓	5				6-20-09	10						
MWEP352-061009DL	↓		6-10-09	6-16-09	6				—	—						
R-061009	AQ	↓	↓	6-15-09	5	↓			6-17-09	7	↓					

Preservation Code:
1. Cool @ 4°C (± 2°)
2. Preserve with HCl to at least pH 2
3. Protect from light

4. Freeze
5. Room Temperature (Avoid excessive heat)

(*Extraction Code:)
L/L - Liquid/Liquid
SON - Sonication
SEP - Separatory Funnel

SOX - Soxhlet
SPE - Solid Phase Extraction

Action Code:
J - Estimate (J) Detected Values
UJ - Estimate (UJ) Non-Detected Values
R - Reject (R) Non-Detected Values

all pH <2 cooler 1.2°C

Validator: [signature]

Date: 7-7-09

EPA-NE - Data Validation
VOA/SV - Pest/PCB-I

Sampler:__________ Company:__________ Contacted: Yes No Date:__________

I. PRESERVATION AND HOLDING TIMES - Circle sample numbers with exceeded technical holding times or omitted preservation. List all required preservation codes and circle omitted preservation codes. Circle all exceeded technical holding times. Identify extraction technique after "# of Days"/(*Extraction Code).

Sample No. (TR No.)	Matrix	Pres. Code	Date Sampled	VOA			VOA-SIM					PEST/PCB				
				Date Analyzed	# of Days From Samp. to Anal.	Action	~~Date~~ Extracted	~~# of Days~~ from Samp. to Extr./(*)	Date Analyzed	# of Days from Extr. to Anal.	Action	Date Extracted	# of Days from Samp. to Extr./(*)	Date Analyzed	# of Days from Extr. to Anal.	Action
MWEP354-061109	GW	1,2,3	6-11-09	6-15-09	4	none			6-20-09	9	none					
MWMB046-061109	↓	↓	↓	↓	4	↓			—	—	↓					
MWEP350-061109			6-11-09	6-15-09	4				6-17-09	6						
FD-061109			↓	↓	4				6-18-09	7						
MWEP346-061109			6-11-09	6-16-09	5				↓	7						
MWMB066-060809 RE	GW	1,2,3	6-8-09	—	-				6-18-09	10						
MWEP351-060909 RE	GW	↓	6-9-09	—	-				6-19-09	10						
MWMB016-060909 RE	GW		6-9-09	—	-				6-18-09	9						
MWMB048-061109 DL	GW		6-11-09	—	-				6-20-09	9						

Preservation Code:
1. Cool @ 4°C (± 2°)
2. Preserve with HCl to at least pH 2
3. Protect from light
4. Freeze
5. Room Temperature (Avoid excessive heat)

(*Extraction Code:)
L/L - Liquid/Liquid
SON - Sonication
SEP - Separatory Funnel
SOX - Soxhlet
SPE - Solid Phase Extraction

Action Code:
J - Estimate (J) Detected Values
UJ - Estimate (UJ) Non-Detected Values
R - Reject (R) Non-Detected Values

Validator:__________ Date:__________

II. GC/MS INSTRUMENT PERFORMANCE CHECK (TUNING)

List all Instrument Performance Checks that are outside method QC tuning acceptance criteria.

Volatile Instrument Performance Check (Compound Name)	Analysis Date and Time	Instrument	Ion(s) Affected	Percent Relative Abundance	QC Limits	Samples Affected	Action

Comments: Full scan - all met
SIM - all met

Semivolatile Instrument Performance Check (Compound Name)	Analysis Date and Time	Instrument	Ion(s) Affected	Percent Relative Abundance	QC Limits	Samples Affected	Action

Comments:

If tuning compounds and criteria are different from those specified in CLP SOW OLM03.1, then the validator should include a copy of the method-specific tuning criteria with this worksheet.

Validator: pe

Date: ________

Full scan - all met

EPA-NE - Data Validation Worksheet
VOA/SV-III

RRF > 0.01 by lab limits in ccalibration form. LCS has good recovery 1,4-dioxan

III. INITIAL CALIBRATION - List all analytes that are outside calibration criteria.

Date of ICAL	Instrument	Parameter	Matrix	Compound	% RSD	$\overline{RRF}$	Samples Affected	Action
6-16-09	GCMS-M	VOC-SIM	~~AQ~~	1,4-dioxane		0.0114	all samples	~~prof. judg J/UJ~~ → None
ICV met criteria full scan & SIM.								

Comments: Full scan vinyl chloride Rf 200

$\frac{1997939 \times 50}{566376 \times 200} = 0.8818$ ✓

$\bar{x} = 0.7903$ ✓

RSD = 7.0 ✓

ICAL <30% >0.05

SIM 1,4-dioxane Rf 100

$\frac{25404 \times 1}{18140 \times 100} = 0.014$ ✓

$\bar{x} = 0.0112$ ✓ slight diff due to rounding

RSD = 24.3

Validator: *[initials]*

Date: 7-8-09

EPA-NE - Data Validation Worksheet — full scan – all met

VOA/SV-IV

IV. CONTINUING CALIBRATION - List all analytes that are outside calibration criteria.

use 0.01 RRF limit as a minimum.

Date of ICAL	Date of CCAL	Instrument	Parameter	Matrix	Compound	%D	RRF	Samples Affected	Action
6-16-09	6-17-09	GCMS-M	VOA-SIM	AQ	1,4-dioxane		0.0104	1	~~J/UJ~~ None
	6-18-09				1,4-dioxane		0.0117	2	~~J~~ None
	6-19-09				1,1-dichloroethene	26.8	–	3	see full scan all >cal range not reported
	↓				1,4, dioxane		0.0127		~~J~~ None
	6-20-09				1,1-dichloroethene	39.0		EPGW - PZMB04B-060909 DL; MWEP352-061009 DL; PZMWB6B-061009 DL	see full scan >cal range not reported
	↓				1,4-dioxane		0.0134		~~J~~ None
	1 EPGW-T-060809; -PZMBC4S-060909; -F-060909; -T-061009; -R-061009; -MWEP349-060809; -MWMB02C-061009; -MWEP350-061109; -MWMB06C-060809; -MWMB01C-060909				2 EPGW-MWEP353-061009 RE; -MWEP348-060809 RE; -MWEP346-061109; -FD-061109 RE; -MWMB06C-060809RE not reported; -MWMB01C-060909 RE; -MWEP351-060909RE not reported			3 EPGW-MWEP351-060909; MWMB03C-060809; FD-060809; MWEP354-061109; MWMB04B-061109	

Comments: full scan vinyl chloride 6-11-09

$$\frac{438678 \times 50}{493864 \times 50} = 0.888 ✓$$

%D = 12.4 ✓

SIM 1,4-dioxane 6/17/09

$$\frac{3810 \times 1}{18253 \times 20} = 0.0104 ✓$$

%D = 5.45 ✓

CCV criteria <25 %D

Validator: [initials]

Date: 7-8-09

EPA-NE - Data Validation Worksheet

VOA/SV - Pest/PCB-V-A

V. BLANK ANALYSIS

List the blank contamination below. Concentration Level:_____

Sampler: ____________________ Company: ____________________ Contacted: Yes No Date:______

1. ~~Laboratory: Method, Storage and Instrument Blanks~~ Field

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	ug/L Conc. (units)
	SIM - all field, trip and rinsates → no blank contamination					
	6-15-09	VOA - full	EPGW-T-061009		methylene chloride	1.0

~~2. Field: Equipment (Rinsate), Trip and Bottle Blanks~~ Method blanks ↓

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	ug/L Conc. (units)
	6-11-09	VOA - full	WG64876-blank		methylene chloride	0.4
SIM - no blank contamination detected in mbs.						

Validator: [illegible] Date: 7-8-09

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-V-B

3. Blank Actions - List the maximum concentrations of blank compounds.

Compound	Type of Blank	Date Blank Sampled/Originated	Max. Conc. (units)	Action Level (units)	Sample QL	Samples Affected	Action
methylene chloride	MB	6-11-09	0.4	4.0		EPGW-MWMB03C-060809 - QL u -FD-060809 QL u	prof. judg to apply method blank action to those samples analyzed with W364876-blank only (per batch W364876)
methylene chloride	TB	6-10-09	1.0	10		EPGW-PZMWB6B-061009 QL u -MWEP353-061009 QL u -MW EP352-061009 MS017 u -MW EP354-061109 QL u -MWMB043-061109 QL u -MW EP346-061109 QL u	
	Assoc. Sampled:	EPGW-MWMB02C-061009 -PZ MW136B-061009 -MWEP 353-061009 MW EP352-061009 MWEP354-061109 MWMB04B-061109 MWEP350-061109 FD-061109 MWEP346-061109					

Comments: ______________________________

Validator: R

Date: 7-8-09

full scan - all met
SIM - see attached

full scan ⇒ EPGW-MW MB03C-060809 DBF = 100%

$$\frac{33421 \times 50}{442817 \times 0.7556} = 49.95 \div 50_{spike} \times 100 = 100\%$$

EPA-NE - Data Validation Worksheet
VOA-VI

VI. VOA SURROGATE SPIKE RECOVERIES - List all surrogate compound recoveries that are outside method QC acceptance criteria.

Method	Volatile Method QC Acceptance Criteria				
	Toluene-d_8	BFB	DCE-d_4	Other:	
OLM03.2	Water 88-110 Soil 84-138	Water 86-115 Soil 59-113	Water 76-114 Soil 70-121		
OLC02.1	NA	80-120	NA		
Other:					
Sample Number/Matrix	**% Recovery**	**% Recovery**	**% Recovery**	**% Recovery**	**Action**

Validator: pe

Date: 7-7-09

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

SIM

Lab Name: KATAHDIN ANALYTICAL SERVICES   Lab Code: KAS

Project: CT069 NASB   SDG No.: CT069-4

	CLIENT SAMPLE ID	LAB SAMPLE ID	SMC1 #	SMC2 #	SMC3 #	SMC4	TOT OUT
01	WG65116-LCS	WG65116-1	98	112			0
02	WG65116-BLANK	WG65116-2	109	120			0
03	EPGW-T-060809	SC3014-2	110	142*	all ND-no action		
04	EPGW-P2MBC4B-060909	SC3014-16	110	105			0
05	EPGW-F-060909	SC3014-22	104	107			0
06	EPGW-T-061009	SC3090-2	111	130			0
07	EPGW-R-061009	SC3090-12	104	115			0
08	EPGW-MWEP349-060809	SC3014-8	109	138			0
09	EPGW-MWMB02C-061009	SC3090-4	112	109			0
10	EPGW-MWEP350-061109	SC3090-18	112	128			0
11	EPGW-MWMB06C-060809	SC3014-12	112	142*	J	1,4-dioxane	
12	EPGW-MWMB01C-060909	SC3014-20	111	149*	↓		1
13	WG65169-LCS	WG65169-1	107	106			0
14	WG65169-BLANK	WG65169-2	107	99			0
15	EPGW-MWEP353-061009	SC3090-8RA	113	113			0
16	EPGW-MWEP348-060809	SC3014-10RA	119	131			0
17	EPGW-MWEP346-061109	SC3090-22RA	118	156*	J 1,4-dioxane		1
18	EPGW-FD-061109	SC3090-20RA	121	146*	J 1,4-dioxane		1
19	EPGW-MWMB06C-060809	SC3014-12RA	122	152*	not reported		1
20	EPGW-MWMB01C-060909	SC3014-20RA	121	165*	↓		1
21	EPGW-MWEP351-060909	SC3014-14	123	158*	J 1,4 dioxane		1
22	WG65262-LCS	WG65262-1	103	131			0
23	WG65262-BLANK	WG65262-2	118	114			0
24	EPGW-MWEP351-060909	SC3014-14RA	137	160*	not reported		1
25	EPGW-MWMB03C-060809	SC3014-4RA	130	126			0
26	EPGW-FD-060809	SC3014-6	130	124			0
27	EPGW-MWEP354-061109	SC3090-14	133	108			0
28	EPGW-MWMB04B-061109	SC3090-16DL	139	132			0

		QC LIMITS
SMC1	= Fluorobenzene	(60-140)
SMC2	= 1,4-Dioxane-D8	(60-140)

\# Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

EPGW-MWMB03C-060809

Fluorobenzene 130%

$$\frac{32952 \times 1.0}{10687 \times 2.376} = 1.29 \div 1 \times 100 = 129\% \checkmark$$

FULL SCAN } all criteria met
SIM

EPA-NE - Data Validation Worksheet
VOA/SV-VII

VII. INTERNAL STANDARD PERFORMANCE

List the internal standards that are outside the area count and retention time method QC acceptance criteria.
IS Area Count method QC acceptance criteria: ______
IS Retention Time method QC acceptance criteria: ______

Sample Number (TR#)	Date and Time Analyzed	Instrument	Parameter	IS Outside Area Count and/or RT Criteria	__IS Area	RT Shift	Acceptable Range (IS area or RT shift)	Action

Validator: __ft__ Date: 7-7-09

None in this SDG

VIII. MATRIX SPIKE/MATRIX SPIKE DUPLICATE - List all MS/MSD analytes that are outside method QC acceptance criteria. Use a separate worksheet for each MS/MSD pair.

Sample # __________ Matrix __________ Concentration Level __________

Parameter	Compound	MS %Rec	MSD %Rec	RPD	Method QC Limits		Concentration			% RSD	Action
					% Rec	RPD	Unspiked Sample	MS	MSD		

Validator: ______________________________ Date: ________

full scan WG64876
64931
65026
65089
all met

SIM WG65116 all met
65169
65262 - see below
65290

LCS ID	Matrix	Compound	% Recovery	QC Limits	Associated Samples
SIM WG65262-LCS	AQ	1,1-dichloroethene	160	60-140	EPGW-MWMB03C-060809 see full scan > cal range
					-MWEP351-060909 RE - not reported
					-FD-060809 → see full scan > cal range
					-MWEP354-061109
					-MWMB048-061109
SIM WG65290-LCS	AQ	1,1-dichloroethene	200	60-140	EPGW-P2MB848-060909 → see full scan > cal range
					-MWEP352-061009
					-P2MW868-061009

FULL SCAN → WG64876-LCS vinyl chloride = 96%

$$\frac{392920 \times 50}{516606 \times 0.79022} = 48.1 \div 50_{spike} \times 100 = 96\%$$

SIM 1,4-dioxane = 75% WG65116-LCS

$$\frac{2678 \times 1.0}{15649 \times 0.0114} = 15 \div 20_{spike} \times 100 = 75\%$$

ETGW-MWMB03C-060809 / ETGW-FD-060809 ⟩ See following page
-MWEP35D-061109 / -FD-061109

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-IX

IX. FIELD DUPLICATE PRECISION - List all field duplicate analytes that are outside criteria.

Use a separate worksheet for each field duplicate pair.

Sample Number ________ Duplicate Sample Number ________ Matrix ________

Parameter	Compound	Sample Conc.	Sample QL		Duplicate Conc.	Duplicate QL		RPD	QC Acceptance Criteria RPD or NA*	Action
			SQL	2xSQL		SQL	2xSQL			

* For instances where one duplicate result is ND (or reported less than the sample QL).

Does the MS/MSD data indicate acceptable laboratory precision? Y N

Comments: ________

Sampler Name: ________ Contractor Name: ________ Date Contacted: ________

Reason for Contact and resolution obtained: ________

Validator: *[initials]* Date: 7-8-09

Compound	CRQL	2xCRQL	EPGW-MWMB03C-060809 (ug/L)	EPGW-FD-060809 (ug/L)	RPD	Actions
Methylene chloride	5	10	3	3	0.0	all met
trans-1,2-Dichloroethene	1	2	2	2	0.0	all met
1,1-Dichloroethane	1	2	66	66	0.0	all met
cis-1,2-Dichloroethene	1	2	70	72	2.8	all met
Chloroform	1	2	0.9	1	10.5	all met
1,1,1-Trichloroethane	1	2	48	48	0.0	all met
1,2-Dichloroethane	1	2	0.9	0.8	11.8	all met
Trichloroethene	1	2	200	200	0.0	all met
Tetrachloroethene	1	2	5	5	0.0	all met
1,1,2-Trichloroethane	1	2	0.6	0.5	18.2	all met
1,1-Dichloroethene	1	2	61	61	0.0	all met
1,4-Dioxane	2	4	49	43	13.0	all met

Compound	CRQL	2xCRQL	EPGW-MWEP350-061109 (ug/L)	EPGW-FD-061109 (ug/L)	RPD	Actions
1,1-Dichloroethane	1	2	6	7	15.4	all met
cis-1,2-Dichloroethene	1	2	2	2	0.0	all met
1,1,1-Trichloroethane	1	2	9	9	0.0	all met
Trichloroethene	1	2	11	11	0.0	all met
Tetrachloroethene	1	2	5	5	0.0	all met
1,1-Dichloroethene	1	2	5	5	0.0	all met
1,4-Dioxane	2	4	12	9.8	20.2	all met

full scan / SIM > all criteria met

XII. TARGET COMPOUND IDENTIFICATION - List the analytes that are outside the acceptance criteria.

Sample Number	Compound	__MS Ions	___RRT	Action

Validator: re

Date: 7-8-09

XIII. SAMPLE QUANTITATION

Recalculate, from the raw data, the concentrations for one positive detect and one reported sample quantitation limit for a non-detect in a diluted sample or soil sample per fraction. (Note: Although Section XIII, C.1.a, requires that one calculation for each fraction in each sample be performed, the validator is only required to reproduce an example, for each fraction, of one positive detect and one sample quantitation limit calculation on this worksheet.)

Do all soil/sediment samples have % solids greater than 30%? NA Y N
If no, list sample numbers

Fraction		Calculation
VOA		
Sample No.:	EPGW-MWMS03C-060809	$\frac{8571 \times 50 \times 5}{442817 \times 1.105 \times 5} \rightarrow 0.88 \rightarrow 0.9$ ug/L ✓
Reported Compound:	chloroform	
Reported Value:	0.9 ug/L	
Not Detected Compound:	chloroform QL	
Reported Quantitation Limit:	1.0 ✓	
~~BNA~~ SIM		
Sample No.:	EPGW-MWMB03C-060809	$\frac{6013 \times 1 \times 5}{10687 \times 0.01141 \times 5} = 49$ ug/L ✓
Reported Compound:	1,4-dioxane	
Reported Value:	49	
Not Detected Compound:	1,4 dioxane QL	
Reported Quantitation Limit:	2.0 ✓	
Pesticide/PCB		
Sample No.:		
Reported Compound:		
Reported Value:		
Not Detected Compound:		
Reported Quantitation Limit:		

Validator: KL

Date: 7-8-09

TETRA TECH

INTERNAL CORRESPONDENCE

C-NAVY-07-09-3234W

Date: July 16, 2009

c: File G00645-4.10 (w/enc.-original)
Chuck Race (scan only)

To: Linda Klink (w/enc.)

From: Paula DiMattei (no copy) *[handwritten initials] (for)*

Subject: Tier III Organic Data Validation, SDG CT069-5
Katahdin Analytical
CTO 069, Naval Air Station Brunswick, Brunswick, Maine

VOC/1,4-Dioxane:

5/Groundwaters/	EPGW-MWEP343-061509	EPGW-MWEP344-061509
	EPGW-MWEP345-061509	EPGW-MWEP347-061509
	EPGW-MWMB06A-061509	
1/Trip Blank/	EPGW-T-061509	

Tetra Tech NUS, Inc. (TtNUS) performed a Tier III data validation on the volatile organic compounds (VOC) and 1,4-dioxane analytical data for the groundwater samples collected at the Naval Air Station Brunswick, Brunswick, Maine site from June 15, 2009. Sample collection and analysis were performed according to the Sampling and Analysis Plan (Field Sampling Plan and QAPP) for Supplemental Remedial Investigation of 1,4-dioxane in the Eastern Plume and Bedrock, NAS Brunswick, Brunswick, Maine; dated October 2008.

The VOC analysis was performed according to USEPA SW-846 Method 8260B. 1,4-Dioxane and 1,1-dichloroethene were analyzed by 8260B in the SIM (selective ion monitoring) mode in order to achieve lower detection limits. In this memorandum, these results are discussed under "Volatiles-SIM".

Data validation was performed in accordance with the Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996.

The sample results, validation qualifiers (VQL), and qualifier codes (QLCD) are presented in the enclosed data summary tables. A list of the qualifier codes, which provide the reasons for the validation qualifiers, is enclosed. The Volatiles-SIM results are reported on the summary table with the header indicating the fraction as "LV".

The data were evaluated based on the following parameters:

- * Data Completeness
- * Preservation and Technical Holding Times
- * GC/MS Instrument Performance Check (Tuning)
- Initial and Continuing Calibrations
- Blanks
- Surrogate Compounds
- * Internal Standards
- Matrix Spike/Matrix Spike Duplicate

*	•	Laboratory Control Sample/Laboratory Control Sample Duplicate
NA	•	Field Duplicates
	•	Reporting Limits
*	•	Sample Quantitation

* All criteria were met for this parameter.
NA None provided in this SDG

Initial and Continuing Calibrations

Volatiles-SIM

The following table summarizes the volatile-SIM compound that failed to meet the CC criterion of %D <25%:

Compound	%D	Action		Affected Samples
		(+)	NDs	
1,1-Dichloroethene	72.5		UJ	EPGW-T-061509

Although the %D was outside of the QC limits for 1,1-dichloroethene, the project accuracy goals are not impacted since the only affected sample was the trip blank (EPGW-T-061509) and no groundwater samples were impacted by this nonconformance. The non-detected result in the affected trip blank is usable as an estimated quantitation limit.

Blanks

Volatiles Full Scan

The following table summarizes the level of blank contamination detected in the method blank associated with the samples:

Compound	Type of Blank	Maximum Conc. (µg/L)	Action Level (µg/L)	Affected Samples
Methylene chloride	Method	2.0	20	EPGW-MWEP343-061509, EPGW-MWEP347-061509, EPGW-MWMB06A-061509, EPGW-T-061509

Blank action was applied to the affected samples due to methylene chloride method blank contamination. The 10x rule applies for this compound. The positive results below the blank action level in the affected samples were changed to non-detected values at elevated quantitation limits and the positive results below the blank action level and below the quantitation limit were changed to non-detected values at the quantitation limit (QL).

Methylene chloride contamination was found in the method blanks; therefore, the project sensitivity goals may be impacted since the elevated quantitation limits exceed the project action limit for sample EPGW-MWEP347-061509. The elevated quantitation limits for the other samples were equal to the project action limit for this compound. The results in the affected samples are usable as non-detected values.

Surrogate Compounds

Volatiles-SIM

The following sample had surrogate spike recoveries outside of the recovery limits:

Sample	Surrogate	% Recovery	QC Limits	Action	
				(+)	NDs
EPGW-MWEP344-061509	1,4-Dioxane-d_8	154	60-140	J	

The surrogate 1,4-dioxane-d_8 recovered above the QC limits in the sample listed above. The positive 1,4-dioxane result in the affected sample is estimated (J) due to high surrogate recoveries.

The surrogate recovery QC criteria were not met for 1,4-dioxane-d_8; therefore, the project accuracy goals may be impacted. The positive 1,4-dioxane result in the affected sample is usable as an estimated value which may be biased high.

Matrix Spike/Matrix Spike Duplicate

Volatiles-SIM

The following table summarizes the volatile-SIM compound which did not meet QC limits in the matrix spike and matrix spike duplicate (MS/MSD) analysis and the qualifications applied to the affected sample:

EPGW-MWEP345-061509				
Compound	MS/MSD RPD	QC Limits	Action	
		RPD	(+)	ND
1,4-Dioxane	35	30		UJ

The MS/MSD relative percent difference (RPD) exceeded the QC limit for 1,4-dioxane; therefore, the project precision goals may be impacted. The positive 1,4-dioxane result in sample EPGW-MWEP345-061509 is usable as an estimated value for which the bias is indeterminable.

Reporting Limits

All project required quantitation limit and project action limits were achieved with the following exception. The project action limit for vinyl chloride was not achieved by the laboratory's reporting limit; data usability may be impacted.

1,1-Dichloroethene was reported by both Methods 8260B full scan and 8260B SIM. The SIM results were selected for reporting except in cases where the SIM results exceeded the linear calibration range.

Methylene chloride contamination was found in the method blanks; therefore, the project sensitivity goals may be impacted for sample EPGW-MWEP347-061509 since the elevated quantitation limits exceed the project action limit. Data usability may be impacted.

Data Usability Assessment

The data usability assessment was performed to determine if the data met the project data quality objectives for acceptable accuracy, precision, sensitivity, and completeness; and to determine and define the impact of the exceeded quality control indicators on the technical usability of the data. Please refer to the specific sections in the above validation report for further details.

Volatiles Full Scan

The project goals with respect to accuracy, precision, and completeness were met for the volatiles data set. Data usability was not impacted with regards to accuracy, precision, and completeness.

The project goals with respect to sensitivity were met for the volatiles data set with the following exception. The project action limit for vinyl chloride was not achieved by the laboratory's reporting limit; data usability may be impacted. Additionally, blank actions due to methylene chloride contamination found in the method blanks resulted in elevated quantitation limits exceeding the project action limit for sample EPGW-MWEP347-061509. Data usability may be impacted.

Volatiles-SIM

The project goals with respect to accuracy were met for the volatiles-SIM data set with the following exception. The positive 1,4-dioxane result in sample EPGW-MWEP344-061509 was qualified as estimated due high surrogate recoveries; the affected result may be biased high. Although specific method criteria were not met in this instance, the affected positive result is usable as an estimated value which may have a minor impact on data usability. Additionally, the nondetect result for 1,1-dichloroethene in the trip blank was qualified as estimated due to instrument variability. Data usability is not impacted.

The project goals with respect to precision were met for the volatiles-SIM data set with the following exception. The MS/MSD RPD for 1,4-dioxane exceeded the QC criterion. The positive 1,4-dioxane result in sample EPGW-MWEP345-061509 was qualified as estimated. Although specific method criteria were not met in this instance, the affected non-detected result is usable as an estimated quantitation limit which may have a minor impact on data usability.

The project goals with respect to sensitivity and completeness were met for the volatiles-SIM data set. Data usability was not impacted with regards to sensitivity and completeness.

Tables: Data Validation Qualifiers and Codes
Data Summary Tables

Enclosures: Data Validation Worksheets

PROJ_NO: 00645 SDG: CTO69-5 FRACTION: OV MEDIA: WATER	NSAMPLE	EPGW-MWEP343-061509			EPGW-MWEP344-061509			EPGW-MWEP345-061509			EPGW-MWEP347-061509		
	LAB_ID	SC3191-11			SC3191-9			SC3191-7RA			SC3191-3		
	SAMP_DATE	6/15/2009			6/15/2009			6/15/2009			6/15/2009		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		1	U		84			1	U		69		
1,1,2-TRICHLOROETHANE		1	U		1	U		1	U		3		
1,1-DICHLOROETHANE		24			4			1	U				
1,1-DICHLOROETHENE		11			9								
1,2-DICHLOROETHANE		1	U		1	U		1	U		5		
CHLOROFORM		1	U		0.9	J	P	1	U		1		
CIS-1,2-DICHLOROETHENE		13			4			1	U		24		
METHYLENE CHLORIDE		5	U	A	5	U		5	U		12	U	A
TETRACHLOROETHENE		1	U		3			1	U		13		
TRANS-1,2-DICHLOROETHENE		1	U		1	U		1	U		0.4	J	P
TRICHLOROETHENE		23			92			1	U				
VINYL CHLORIDE		0.3	J	P	2	U		2	U		0.8	J	P

PROJ_NO: 00645	NSAMPLE	EPGW-MWEP347-061509-DL			EPGW-MWMB06A-061509			EPGW-T-061509		
SDG: CTO69-5	LAB_ID	SC3191-3DLRA			SC3191-5RA			SC3191-1		
FRACTION: OV	SAMP_DATE	6/15/2009			6/15/2009			6/15/2009		
MEDIA: WATER	QC_TYPE	NM			NM			TB		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE					8			1	U	
1,1,2-TRICHLOROETHANE					1	U		1	U	
1,1-DICHLOROETHANE		210			2			1	U	
1,1-DICHLOROETHENE		430			4					
1,2-DICHLOROETHANE					1	U		1	U	
CHLOROFORM					1	U		1	U	
CIS-1,2-DICHLOROETHENE					0.8	J	P	1	U	
METHYLENE CHLORIDE					5	U	A	5	U	A
TETRACHLOROETHENE					0.6	J	P	1	U	
TRANS-1,2-DICHLOROETHENE					1	U		1	U	
TRICHLOROETHENE		860			9			1	U	
VINYL CHLORIDE					2	U		2	U	

PROJ_NO: 00645 SDG: CTO69-5 FRACTION: LV MEDIA: WATER	NSAMPLE	EPGW-MWEP343-061509			EPGW-MWEP344-061509			EPGW-MWEP345-061509			EPGW-MWEP347-061509		
	LAB_ID	SC3191-12RA			SC3191-10RA			SC3191-8			SC3191-4DLRA		
	SAMP_DATE	6/15/2009			6/15/2009			6/15/2009			6/15/2009		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-DICHLOROETHENE								0.2	U				
1,4-DIOXANE		38			6.1	J	R	2	UJ	D	350		

PROJ_NO: 00645	NSAMPLE	EPGW-MWMB06A-061509			EPGW-T-061509		
SDG: CTO69-5	LAB_ID	SC3191-6RA			SC3191-2		
FRACTION: LV	SAMP_DATE	6/15/2009			6/15/2009		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-DICHLOROETHENE					0.2	UJ	C
1,4-DIOXANE		9.2			2	U	

Data Validation Qualifiers and Codes

Data Validation Qualifiers:

	=	No qualifier attached to value (positive hit)
J	=	Value is estimated
U	=	Value is not detected
UJ	=	Value is not detected and estimated
R	=	Value (positive hit) is not usable
UR	=	Value was reported as ND but is not usable

Qualifier Codes:

A	=	Lab Blank Contamination
B	=	Field Blank Contamination
C	=	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01	=	GC/MS Tuning Noncompliance
D	=	MS/MSD Recovery Noncompliance
E	=	LCS/LCSD Recovery Noncompliance
F	=	Lab Duplicate Imprecision
G	=	Field Duplicate Imprecision
H	=	Holding Time Exceedance
I	=	ICP Serial Dilution Noncompliance
J	=	GFAA PDS - GFAA MSA's r < 0.995
K	=	ICP Interference - includes ICS % R Noncompliance
L	=	Instrument Calibration Range Exceedance
M	=	Sample Preservation Noncompliance
N	=	Internal Standard Noncompliance
N01	=	Internal Standard Recovery Noncompliance Dioxins
N02	=	Recovery Standard Noncompliance Dioxins
N03	=	Clean-up Standard Noncompliance Dioxins
O	=	Poor Instrument Performance (e.g. base-line drifting)
P	=	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q	=	Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R	=	Surrogates Recovery Noncompliance
S	=	Pesticide/PCB Resolution
T	=	% Breakdown Noncompliance for DDT and Endrin
U	=	% Difference between columns/detectors >25% for positive results determined via GC/HPLC
V	=	Non-linear calibrations; correlation coefficient r < 0.995
W	=	EMPC result
X	=	Signal to noise response drop
Y	=	Percent solids <30%
Z	=	Uncertainty at 2 sigma deviation is greater than sample activity

TETRA TECH

INTERNAL CORRESPONDENCE

C-NAVY-10-09-3360W

Date: October 20, 2009

c: File G00645-4.10 (w/enc.-original)
Chuck Race (scan-w/o enc.)

To: Linda Klink (scan-w/enc.)

From: Jennifer Cardinal (no copy) ff (for)

Subject: Tier III Organic Data Validation, SDG CT069-6
Katahdin Analytical
CTO 069, Naval Air Station Brunswick, Brunswick, Maine

VOC/1,4-Dioxane:
1/Groundwater/ EPGW-MWEP355-091609

1/Trip Blank/ EPGW-TB01-091609

Tetra Tech NUS, Inc. (TtNUS) performed a Tier III data validation on the volatile organic compounds (VOC) and 1,4-dioxane analytical data for the groundwater sample collected at the Naval Air Station Brunswick, Brunswick, Maine site on September 16, 2009. Sample collection and analysis were performed according to the Sampling and Analysis Plan (Field Sampling Plan and QAPP) for Supplemental Remedial Investigation of 1,4-dioxane in the Eastern Plume and Bedrock, NAS Brunswick, Brunswick, Maine; dated October 2008.

The VOC analysis was performed according to USEPA SW-846 Method 8260B. 1,4-Dioxane and 1,1-dichloroethene were analyzed by 8260B in the SIM (selective ion monitoring) mode in order to achieve lower detection limits. In this memorandum, these results are discussed under "Volatiles-SIM".

The project specific criteria listed in the site SAP were applied for data validation of the VOC data. Tier III data validation for VOC was performed in accordance with the Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996.

The sample results, validation qualifiers (VQL), and qualifier codes (QLCD) are presented in the enclosed data summary tables. A list of the qualifier codes, which provide the reasons for the validation qualifiers, is enclosed. The volatiles results are reported on the summary table with the header indicating the fraction as "OV". The volatiles-SIM results are reported on the summary table with the header indicating the fraction as "OVSIM".

The data were evaluated based on the following parameters:

- * • Data Completeness
- * • Preservation and Technical Holding Times
- * • GC/MS Instrument Performance Check (Tuning)
- • Initial and Continuing Calibrations
- * • Blanks
- * • Surrogate Compounds
- * • Internal Standards
- NA • Matrix Spike/Matrix Spike Duplicate
- * • Laboratory Control Sample/Laboratory Control Sample Duplicate

NA • Field Duplicates
• Reporting Limits
* • Sample Quantitation

* All criteria were met for this parameter.
NA Not applicable for this SDG.

Initial and Continuing Calibrations

Volatiles-SIM

The following table summarizes the volatile-SIM compound that failed to meet the SAP continuing calibration (CC) criterion of %D <15%:

Compound	%D	Action		Affected Samples
		(+)	NDs	
1,1-Dichloroethene	-20.37	J	UJ	All samples

The %D was outside of the QC limits for 1,1-dichloroethene; therefore, the project accuracy goals may be impacted. The non-detected 1,1-dichloroethene results in the affected samples are usable as estimated quantitation limits.

Reporting Limits

Non-detected results were reported down to the laboratory quantitation limit (QL). Positive results above the MDL and below the quantitation limit (QL) are estimated (J) due to uncertainty below the QL.

All project required quantitation limit and project action limits were achieved with the following exception. The project action limit for vinyl chloride was not achieved by the laboratory's reporting limit; data usability may be impacted.

1,1-Dichloroethene was reported by both Methods 8260B full scan and 8260B SIM. The SIM results were selected for reporting for these samples.

Data Usability Assessment

The data usability assessment was performed to determine if the data met the project data quality objectives for acceptable accuracy, precision, sensitivity, and completeness; and to determine and define the impact of the exceeded quality control indicators on the technical usability of the data. Please refer to the specific sections in the above validation report for further details.

Volatiles - Full Scan

The project goals with respect to accuracy, precision, and completeness were met for the volatiles – full scan data set. Data usability was not impacted with regards to accuracy, precision, and completeness.

The project goals with respect to sensitivity were met for the volatiles – full scan data set with the following exception. The project action limit for vinyl chloride was not achieved by the laboratory's reporting limit; data usability may be impacted. Data usability may be impacted.

Volatiles - SIM

The project goals with respect to accuracy were met for the volatiles – SIM data set with the following exception. 1,1-Dichloroethene was qualified as estimated in all samples due to instrument calibration variability. Although specific method criteria were not met in this instance, the affected positive and non-detected results are usable as estimated values and estimated quantitation limits which may have a minor impact on data usability.

The project goals with respect to sensitivity and completeness were met for the volatiles – SIM data set. Data usability was not impacted with regards to sensitivity and completeness.

The project goals with respect to precision were not evaluated for the volatiles – SIM data set.

Tables: Data Validation Qualifiers and Codes
Data Summary Tables

Enclosures: Data Validation Worksheets

Data Validation Qualifiers and Codes

Data Validation Qualifiers:

	= No qualifier attached to value (positive hit)
J	= Value is estimated
U	= Value is not detected
UJ	= Value is not detected and estimated
R	= Value (positive hit) is not usable
UR	= Value was reported as ND but is not usable

Qualifier Codes:

A	= Lab Blank Contamination
B	= Field Blank Contamination
C	= Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01	= GC/MS Tuning Noncompliance
D	= MS/MSD Recovery Noncompliance
E	= LCS/LCSD Recovery Noncompliance
F	= Lab Duplicate Imprecision
G	= Field Duplicate Imprecision
H	= Holding Time Exceedance
I	= ICP Serial Dilution Noncompliance
J	= GFAA PDS - GFAA MSA's r < 0.995
K	= ICP Interference - includes ICS % R Noncompliance
L	= Instrument Calibration Range Exceedance
M	= Sample Preservation Noncompliance
N	= Internal Standard Noncompliance
N01	= Internal Standard Recovery Noncompliance Dioxins
N02	= Recovery Standard Noncompliance Dioxins
N03	= Clean-up Standard Noncompliance Dioxins
O	= Poor Instrument Performance (e.g. base-line drifting)
P	= Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q	= Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R	= Surrogates Recovery Noncompliance
S	= Pesticide/PCB Resolution
T	= % Breakdown Noncompliance for DDT and Endrin
U	= % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V	= Non-linear calibrations; correlation coefficient r < 0.995
W	= EMPC result
X	= Signal to noise response drop
Y	= Percent solids <30%
Z	= Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 00645 SDG: CTO69-6 FRACTION: OV MEDIA: WATER	NSAMPLE	EPGW-MWEP355-091609			EPGW-TB01-091609		
	LAB_ID	SC5521-3			SC5521-1		
	SAMP_DATE	9/16/2009			9/16/2009		
	QC_TYPE	NM			TB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS						
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1,1-TRICHLOROETHANE		4			1	U	
1,1,2-TRICHLOROETHANE		1	U		1	U	
1,1-DICHLOROETHANE		0.4	J	P	1	U	
1,2-DICHLOROETHANE		1	U		1	U	
CHLOROFORM		1	U		1	U	
CIS-1,2-DICHLOROETHENE		6			1	U	
METHYLENE CHLORIDE		5	U		5	U	
TETRACHLOROETHENE		2			1	U	
TRANS-1,2-DICHLOROETHENE		1	U		1	U	
TRICHLOROETHENE		13			1	U	
VINYL CHLORIDE		2	U		2	U	

PROJ_NO: 00645 SDG: CTO69-6 FRACTION: OVSIM MEDIA: WATER	NSAMPLE	EPGW-MWEP355-091609			EPGW-TB01-091609		
	LAB_ID	SC5521-4			SC5521-2		
	SAMP_DATE	9/16/2009			9/16/2009		
	QC_TYPE	NM			TB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS						
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
1,1-DICHLOROETHENE		1	J	C	0.2	UJ	C
1,4-DIOXANE		0.8	J	P	2	U	

APPENDIX C

POTENTIAL SOURCES OF GROUNDWATER CONTAMINATION OF THE EASTERN PLUME

POTENTIAL SOURCES OF GROUNDWATER CONTAMINATION IN THE EASTERN PLUME FORMER NAVAL AIR STATION BRUNSWICK, MAINE

This document summarizes pertinent information in support of an evaluation of potential sources of groundwater contamination for the Eastern Plume site at the Former Naval Air Station Brunswick (NASB) in Brunswick, Maine. The evaluation is prepared under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract Number N62472-03-D-0057, Contract Task Order (CTO) 069.

Document Review Focus

The Eastern Plume is located in the east-central portion of NASB and has been characterized and documented in a number of investigations. The source(s) of groundwater contamination in the Eastern Plume have not been confirmed; however, because of historical site uses and geographic proximity of Sites 4, 11, and 13 to the Eastern Plume, an evaluation of these three sites as potential sources of contamination to the groundwater is warranted.

The objective of this document is to compile and present the findings of document reviews related to Sites 4, 11 and 13 to evaluate if these sites were sources of the groundwater contamination present in the Eastern Plume at NASB. Findings may aid in evaluating the results of the Supplemental Remedial Investigation (RI) for 1,4-Dioxane in the Eastern Plume and Bedrock.

Facility Description

The main base of NASB is located in the Town of Brunswick, south of the Androscoggin River and north of Harpswell Sound. The main base is located south of U.S. Route 1 between State Routes 24 and 123. Remote properties associated with NASB include the McKeen Street Housing Complex located approximately 3 miles from the main base on the western side of central Brunswick, Topsham Annex located in the neighboring Town of Topsham approximately 4 miles northwest of the main base, and East Brunswick Remote Radio Transmitter Site located approximately 3 miles northeast of the main base.

The United States Environmental Protection Agency (EPA) added NASB to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List (NPL) in July 1987. The Navy has identified 19 sites or areas at the base that have been, or are being, investigated under the Installation Restoration Program (IRP). There are no IRP sites at the McKeen Street Housing Complex, Topsham Annex, or Remote Radio Transmitter Site. The Navy has also identified five sites/Areas of Concern (AOCs) at the main base and one at Topsham Annex that are being investigated under the Munitions Response Program (MRP). There are two petroleum, oil, and lubricant (POL) sites at NASB at which remedial actions are currently ongoing. All IRP and MRP sites are being investigated and remediated in accordance with CERCLA. The locations of the main base and IRP Sites 4, 11, and 13 are shown on Figure 1.

Site Descriptions

Three sites, identified as Site 4 (former Acid/Caustic Pit), Site 11 (former Fire Training Area) and Site 13 [former Defense Reutilization and Marketing Office (DRMO)], are the locations of either past solvent disposal practices or fuel oil storage facilities. Documented site activities including use of chlorinated volatile organic compounds (CVOCs) are associated with each of the three sites. Sites 4, 11, and 13 are all located off of Huey Drive; Site 13 is farther south than Sites 4 and 11. Site locations are shown on Figure 2.

Site 4 consists of a former acid/caustic pit, approximately 4 feet square and 3 feet deep, located beneath the eastern portion of Building 584, which formerly housed the Public Works maintenance shops. An unknown quantity of liquid waste, including transformer oil, battery acid, caustics, solvents (including trichloroethene [TCE]) and paint thinners were reportedly poured into the pit for disposal between 1969 and 1974. Building 584 was constructed on top of the pit in 1975.

Site 11 is the location of a former fire fighting training area that was used regularly over a 30-year period ending in 1990. As part of training operations, waste fuel, oil, solvents and other miscellaneous combustible liquids were spread on the soil for fuel and ignited.

Site 13 is located immediately south of Building 584 and Site 4. The DRMO storage yard, identified as Site 13, consisted of a paved fenced enclosure approximately 280 feet by 300 feet. Three former underground storage tanks (USTs) including a 10,000-gallon diesel fuel oil tank, a 5,000-gallon waste oil tank, and a 5,000-gallon solvent storage tank, were located in the DRMO storage yard. Each of the three tanks was removed in the late 1980s. The diesel tank was replaced with a fiberglass underground storage tank; however, this tank was subsequently removed and replaced with an aboveground tank.

Eastern Plume

The Eastern Plume consists of a localized area of groundwater contamination that extends north-south along Merriconeag Road for approximately 0.6 mile. During the site RIs, the contaminants associated with the Eastern Plume consisted primarily of CVOCs including tetrachloroethene (PCE), 1,1,1-trichloroethane (1,1,1-TCA), and trichloroethene (TCE). Vinyl chloride (VC) was added as a COC after the 1990 RI; VC is a COC because it is a break-down product of CVOCs. VC has been detected at concentrations that exceed the Maine MEG (0.15 ug/l), but not the EPA MCL (2 ug/l). The contaminant 1,4-dioxane, which is also a VOC, was more recently added as an Eastern Plume contaminant of concern (COC) in 2004 when it was detected in groundwater. The presence of 1,4-dioxane is of particular concern because of its greater environmental mobility compared to that of other VOCs associated with the plume.

1,4-Dioxane has been used as a solvent stabilizer associated with solutions of the solvent 1,1,1-TCA. Solvent stabilizers serve to prevent solvent breakdown and to inhibit degradation of solvent properties. Many solvent stabilizer compounds are present in volumetrically inconsequential proportions to be considered significant for solvent release. 1,4-Dioxane has been included with 1,1,1-TCA in mixtures at 2 to 8 percent by volume and has proven to be a COC at solvent release sites. 1,4-Dioxane was not detectable at low concentrations in a standard analytical laboratory scan for chlorinated solvents, and a drinking water standard was not available at the time of the RI which may explain why solvent stabilizers such as 1,4-dioxane are emerging contaminants (Mohr, 2001).

Topography and Drainage

As shown on Figure 3, the Eastern Plume is bounded to the west and north by Merriconeag Road; to the south by Gurnet Road; and to the east by the eastern arm of Picnic Pond in the northern part of the plume and Merriconeag Stream in the southern plume area. A small portion of the plume extends approximately 400 feet west of Merriconeag Road, immediately north of Mere Brook.

Generally, the estimated western boundary of the Eastern Plume is in the vicinity of Merriconeag Road. Overland drainage flows towards the surface water bodies of Picnic Pond to the northeast and Mere Brook and Merriconeag Stream to the south and east, respectively.

Hydrogeology

The characteristics of the overburden hydrostratigraphic units present in the immediate vicinity of the Eastern Plume area contribute to the observed groundwater flow patterns. Specifically, groundwater flow through the upper sand unit is unconfined and flows laterally towards the surface water bodies of Mere Brook and Merriconeag Stream. A water table map for the vicinity is depicted as Figure 4. Groundwater flows generally in a southeasterly direction toward Picnic Pond, Merriconeag Stream, and Mere Brook. The Upper Sand Unit ranges in thickness from approximately 5 to 20 feet across the Eastern Plume area, with an observed thickness of over 40 feet in the vicinity of Sites 1 and 3 located immediately west of the Eastern Plume. The upper sand has the highest hydraulic conductivities of the overburden units, ranging from 10^{-2} to 10^{-4} centimeters per second (cm/sec) (E.C. Jordan, 1990).

Underlying the Upper Sand Unit is the Transition Unit consisting of sandy intervals confined by fine-grained clay and silt. Figure 5 depicts a selected east-west cross section through the Eastern Plume, beginning immediately southwest of Site 13 and extending west toward Merriconeag Stream, in the southeastern groundwater flow direction. Groundwater flow from the Upper Sand Unit through the Transition Unit to underlying units is moderately restricted with preferential groundwater movement limited to sand layers. The sand intervals within the Transition Unit thin and become finer grained to the south, further contributing to artesian conditions within the deeper Transition Unit. The Lower Sand Unit is present near the base of the Transition Unit in some portions of the Eastern Plume. The majority of groundwater flow in the Transition Unit occurs within the Lower Sand Unit and is predominantly to the south-southeast. Groundwater discharge occurs by upward diffusive flow through fine-grained units of the overlying Transition Unit through small springs and seeps near Picnic Pond. The hydraulic conductivity of the Transition Unit ranges from 10^{-4} to 10^{-5} cm/sec (0.3 to 0.03 feet per day) for the fine-grained interbeds and can range up to 10^{-3} cm/sec (approximately 3 ft/day) for sandy intervals (E.C. Jordan, 1990).

The Presumpscot Clay underlies the Transition Unit and covers the bedrock or glacial till surface in a nearly continuous layer. The clay has a low vertical and horizontal hydraulic conductivity, resulting in limited groundwater flow between the overburden and bedrock or glacial till. Specifically, the hydraulic conductivity of the Presumpscot Clay ranges from 10^{-6} to 10^{-8} cm/sec ($3x10^{-3}$ to $3x10^{-5}$ ft/day) (E.C. Jordan, 1990). The topography of the top of clay is similar to the top of bedrock surface, with clay thicknesses varying widely over the entire plume. Clay thickness, measured from the bottom of the Transition Unit to the top of bedrock, is over 110 feet in the vicinity of a bedrock depression parallel with the Merriconeag Road and then thins east of Site 11 and immediately west towards Picnic Pond (ECC, 2008).

The bedrock underlying the Eastern Plume is the Cape Elizabeth Formation, which consists of micaceous schist and includes pegmatite veins up to several feet thick. Regional bedrock folds trend to the north-northeast. The bedrock surface slopes to the east into a north-northeast trending valley located beneath the Eastern Plume Site. The degree of rock fracturing generally decreases with depth below the bedrock surface.

The direction of bulk groundwater flow in bedrock beneath the Eastern Plume is generally toward the southeast toward Merriconeag Stream. In the southern boundary area of the Eastern Plume, shallow groundwater has easterly and northeasterly components. Deep groundwater flow in this area is predominantly to the southeast and east, toward Mere Brook.

Data collected during RI activities from bedrock wells MW-308 and MW-309A located within the Eastern Plume indicate that bulk rock hydraulic conductivity (K) is within the 10^{-5} to 10^{-4} cm/sec range (0.03 to 0.3 ft/day). In comparison, K values estimated at six new bedrock wells completed during the Supplemental RI in the vicinity of MW-308 ranged from 10^{-5} to 10^{-3} cm/sec (0.03 to 3 ft/day), which overlapped with and increased the upper bound of previously estimated K values by approximately one order of magnitude.

Remediation Efforts

Extraction, treatment, and discharge of contaminated groundwater associated with the Eastern Plume began in June 1995, following an Interim Record of Decision (ROD) signed in June 1992 (Navy, 1992). Long-term monitoring of the remedy began after implementation. In February 1998, a final ROD for Sites 4, 11, and 13 was signed (Navy, 1998). The selected remedy included continued operation of the groundwater extraction and treatment system (GWETS), discharge of treated water to the publicly owned treatment works (POTW) and continued long-term monitoring. As a result of the signing of an Explanation of Significant Differences (ESD) for the Eastern Plume in December 2000, a change in the treatment method was implemented. Ultraviolet oxidation treatment of groundwater was replaced with air stripping, and the discharge point was moved from the POTW to an infiltration gallery.

The GWETS continues to operate. Based on monitoring results and supplemental investigations conducted to further evaluate the horizontal and vertical extent of contamination, the extraction system has been effective at reducing the contaminant mass present in the subsurface. Targeting the upper and lower sand units, remediation efforts removed approximately 480 kilograms of VOC mass as of June 2009 (ECC, 2009), with the bulk of the mass originating from the Lower Sand Unit. However, contaminants continue to be detected in groundwater at concentrations exceeding federal and state regulatory standards and at times contamination is discovered in previously unexplored areas. Administrative controls issued in December 2000 as part of NAS Brunswick Instruction (NASBINST) 5090.1B state that groundwater use is restricted for the Eastern Plume (NAS Brunswick, 2000). Specifically, groundwater use is restricted for a large area of the base bounded on the west by Orion Street, on the north by Huey Drive and Picnic Pond, on the east by the base boundary, and on the south by Harpswell Cove.

Potential Sources

Sites 4, 11, and 13 have been cited as potential sources of Eastern Plume groundwater contamination. Each of the sites is located upgradient of the Eastern Plume and has documented historical activities that include the disposal of solvents chemically similar to the contaminants detected in the Eastern Plume. Remediation efforts have been completed at each site, as discussed below.

<u>Site 4</u>

Between 1969 and 1974, an unknown quantity of liquid waste was poured into the former acid/caustic pit for disposal. Waste reportedly disposed included transformer oil, battery acid, caustics, solvents (including TCE), and paint thinners. During the late 1980s, environmental contamination was detected in soil gas and shallow groundwater at Site 4. TCE was detected in groundwater adjacent to Building 584 (MW-405) at concentrations ranging from 6 to 23 micrograms per liter (µg/L), which exceeded EPA's Maximum Contaminant Level (MCL) (5 µg/L) but not the State of Maine's Maximum Exposure Guidelines (MEG) (interim, 32 µg/L) in effect at that time. VOCs were not detected in subsurface soil samples; however, these samples were not collected directly from the source area because of the presence of Building 584. Higher concentrations in groundwater or soil could have potentially been detected if the source area was accessible and/or monitoring wells had been installed at depths that would monitor impacts from dense non-aqueous phase liquids (DNAPLs). Currently, Building 584 covers the pit, and remediation activities have not been conducted at the site.

<u>Site 11</u>

The use and dispersion of waste fuel oil, solvents and other miscellaneous combustible liquids spread on the soil and ignited as part of fire fighting training activities occurred over a 30-year period ending in 1990. During the late 1980s, a draft RI and supplemental RI were completed at Site 11 by E.C.Jordan, in 1990 and 1991, respectively. These investigations included a soil-gas survey, installation of monitoring wells and test pits, soil and groundwater sampling, and aquifer testing. The investigation results indicated VOCs, semivolatile organic compounds (SVOCs), and metals in subsurface soil and groundwater. In December 1994, buried drums and metallic debris from several locations were excavated and removed. In June 1995, the concrete pad and between 6 and 10 feet of soil from beneath the 0.5-acre site were removed. Confirmation soil samples were collected, and TCE was detected at concentrations up to 6,500 micrograms per kilogram (µg/kg). The excavated area was backfilled with clean soil and planted with grass. TCE may still be present in soil below the water table, as noted in the 1998 ROD.

Based on a review of the most recent groundwater monitoring data for Site 11 and the Eastern Plume, groundwater is no longer contaminated at concentrations greater than regulatory standards beneath Site 11 or between the site and the boundary of the Eastern Plume. No VOCs were detected in excess of regulatory standards at Site 11 downgradient wells nearest to the Eastern Plume that are monitored (MW-323 and MW-1104). MW-323 is completed in the bedrock aquifer, and MW-1104 is completed in the shallow aquifer.

Site 13

Removal of the three USTs occurred in the late 1980s. The soil immediately surrounding the USTs was not addressed until investigations conducted in the late 1980s detected contaminants in shallow soil, subsurface soil, and groundwater. Fuel-related SVOCs were detected in subsurface soil at one location, and the pesticide DDT was detected in two shallow soil samples. VOCs were detected in groundwater, although concentrations have decreased significantly since the removal of the tanks. Concentration of total CVOCs ranged from a maximum of 470 µg/L in 1986 to 41 µg/L in 1989, at monitoring well GZA-3 (E.C. Jordan, 1990). Site 13 is completely paved, and soil remediation was not required.

Evaluation of Potential Sources for Eastern Plume

Identifying a connection between Sites 4, 11 and/or 13 as a potential source to the Eastern Plume is contingent upon the following four criteria, with answers summarized in Table 1:

Criteria 1: Is the site hydraulically upgradient of the Eastern Plume?

Criteria 2: Are the contaminants found in the Eastern Plume the same chemicals or degradation byproducts of chemicals identified at Sites 4, 11 and/or 13 (see Figure 6)?

Criteria 3: Is there a potential migration pathway from Sites 4, 11, and/or 13 to the Eastern Plume? If so, identify the pathway.

Criteria 4: Is the contaminated soil that remains in place serving as a significant continuing source to the Eastern Plume?

Table 1
Eastern Plume Source Criteria Matrix

Site	Criteria 1	Criteria 2	Criteria 3	Criteria 4
4	Yes	Yes (TCE, 1,1,1-TCA)	Yes (see Figure 6)	No
11	Yes	Yes (TCE, 1,1,1-TCA, 1,1 DCA, PCE)	Yes (see Figure 6)	No
13	Yes	Yes (TCE, 1,2-DCE)	Yes (see Figure 6)	No

Based on available data, Sites 4, 11 and 13 are: (1) upgradient of the Eastern Plume, (2) have contaminants identified also found in the Eastern Plume, and (3) a migration pathway exists between each site and the Eastern Plume. Available data include the results of the Supplemental 1,4-Dioxane Remedial Investigation of the Eastern Plume and the Eastern Plume Monitoring Event 34 Report for April 2009 (H&S, 2009).

Sites 4, 11, and 13 were likely contaminant sources in the past. Historically (E.C. Jordan, 1990, 1991), the maximum contaminant concentration in groundwater at Site 4 was 23 µg/L TCE (MW-405); at Site 11, the maximum concentration was 2,400 µg/L 1,1,1-TCA (MW-1103); and at Site 13, the maximum concentration was 770 µg/L of 1,2-dichloroethene (MW-1303), which is a reductive dechlorination daughter product of TCE. However, Sites 4, 11, and 13 are not serving as current sources of groundwater contamination to the Eastern Plume (Figure 3).

Conclusions

The Eastern Plume is a localized area of groundwater contamination in the east-central portion of NASB that has been characterized during a number of investigations. The contaminants associated with the Eastern Plume consist primarily of CVOCs including PCE, 1,1,1-TCA, and TCE, and more recently, 1,4-dioxane, which is associated with 1,1,1-TCA.

Sites 4, 11, and 13 were likely former sources of groundwater contamination of the Eastern Plume. Contamination associated with Sites 4, 11, and 13 correspond to the contaminants identified in the Eastern Plume. Also, each site is hydraulically upgradient and a migration pathway exists between the three sites and the Eastern Plume. However, the current-day boundary of the Eastern Plume occurs east of Sites 4, 11, and 13, and no other source(s) for Eastern Plume groundwater contamination have been identified.

References

Environmental Chemical Corporation, 2009. Presentation at Technical Meeting, Naval Air Station Brunswick, Maine. December 02.

Environmental Chemical Corporation, 2008. Conceptual Model Eastern Plume, Revision 4, Naval Air Station Brunswick, Maine.

E.C. Jordan Co., 1990. Draft Final Remedial Investigation Report, RI/FS Program, Naval Air Station Brunswick. Brunswick, Maine.

E.C. Jordan Co., 1991. Draft Final Supplemental Remedial Investigation Report, RI/FS Program, Naval Air Station Brunswick. Brunswick, Maine.

H&S, 2010. Final Eastern Plume Monitoring Event 34 Report April 2009. Naval Air Station Brunswick. January.

Mohr, Thomas K.G., 2001. Solvent Stabilizers White Paper, Underground Storage Tank Program Water Supply Division, Santa Clara Valley Water District, San Jose California. June 14.

NAS (Naval Air Station) Brunswick, 2000. NAS Brunswick Instruction 5090.1B, Restriction on Excavation Activities and Groundwater Use. Brunswick, Maine.

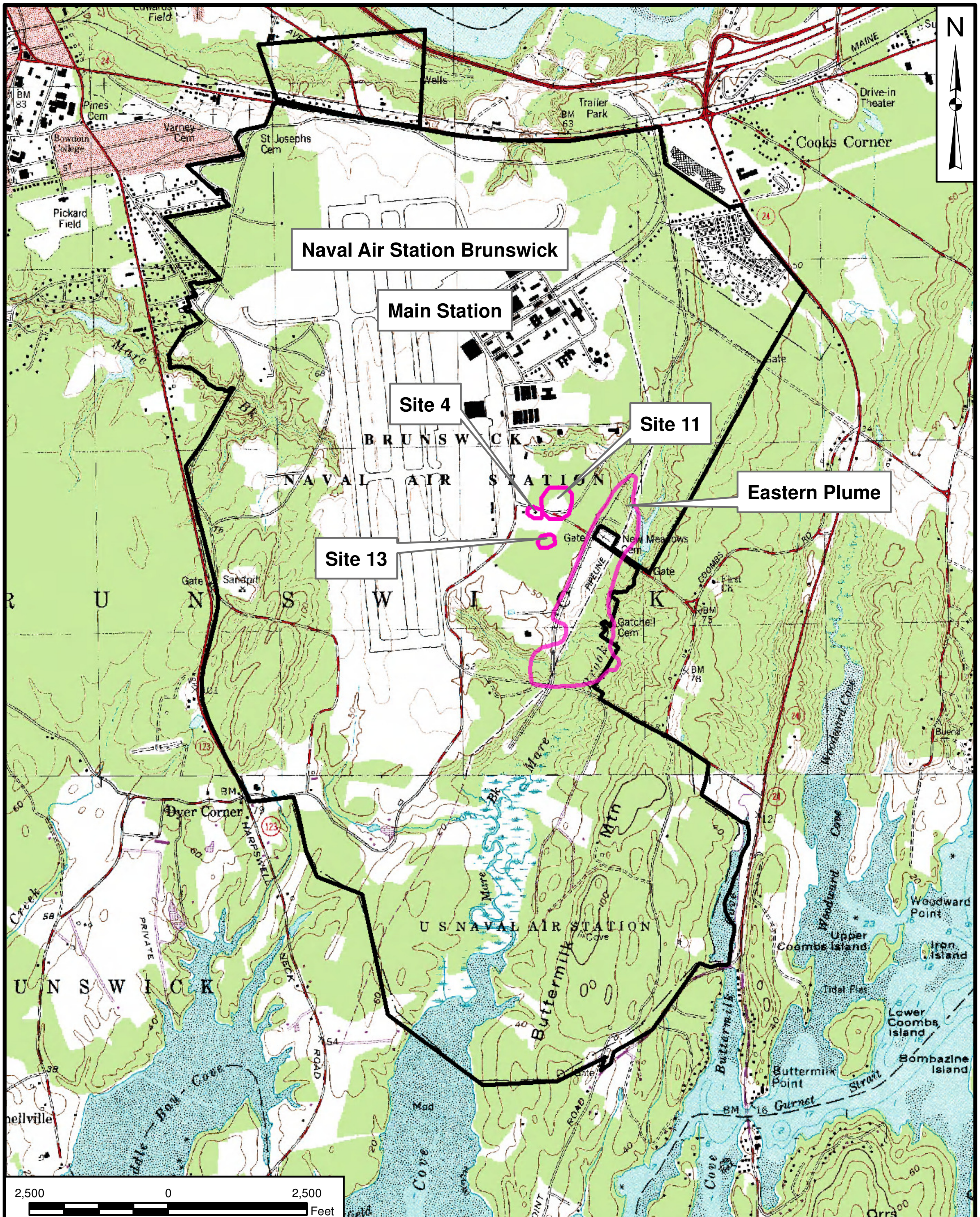
Navy, 1992. Record of Decision for and Interim Remedial Action at the Eastern Plume Operable Unit, Naval Air Station Brunswick, Maine.

Navy, 1998. Record of Decision for No Further Action at Sites 4, 11, and 13 and a Remedial Action for the Eastern Plume, Naval Air Station Brunswick, Maine.

Navy, 2000. Explanation of Significant Difference for the Record of Decision for the Installation Restoration Program Remedial Action for Eastern Plume, Naval Air Station Brunswick, Maine.

FIGURES

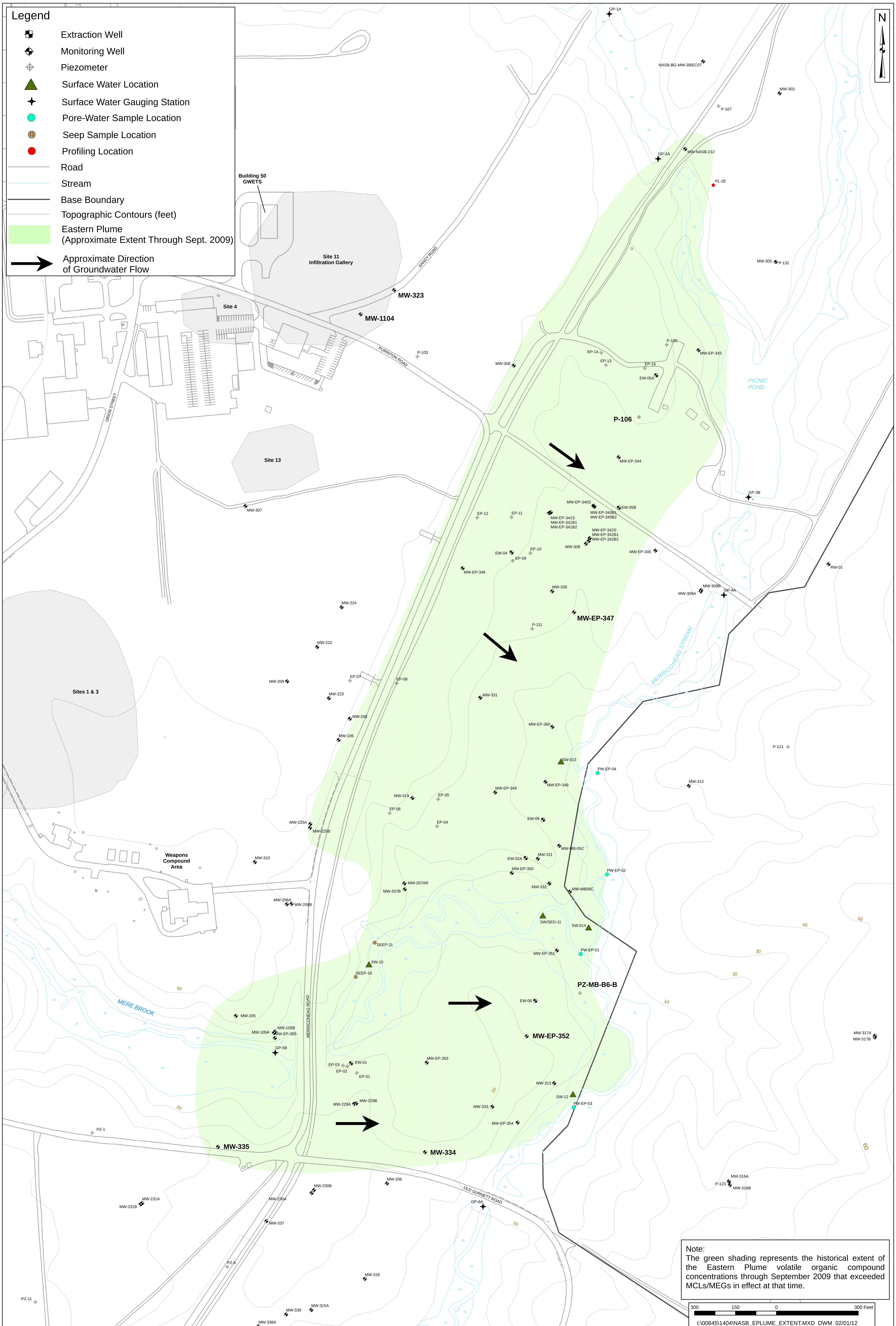
I:\06451404\EPLUME_AREA.MXD 02/01/12 DWM



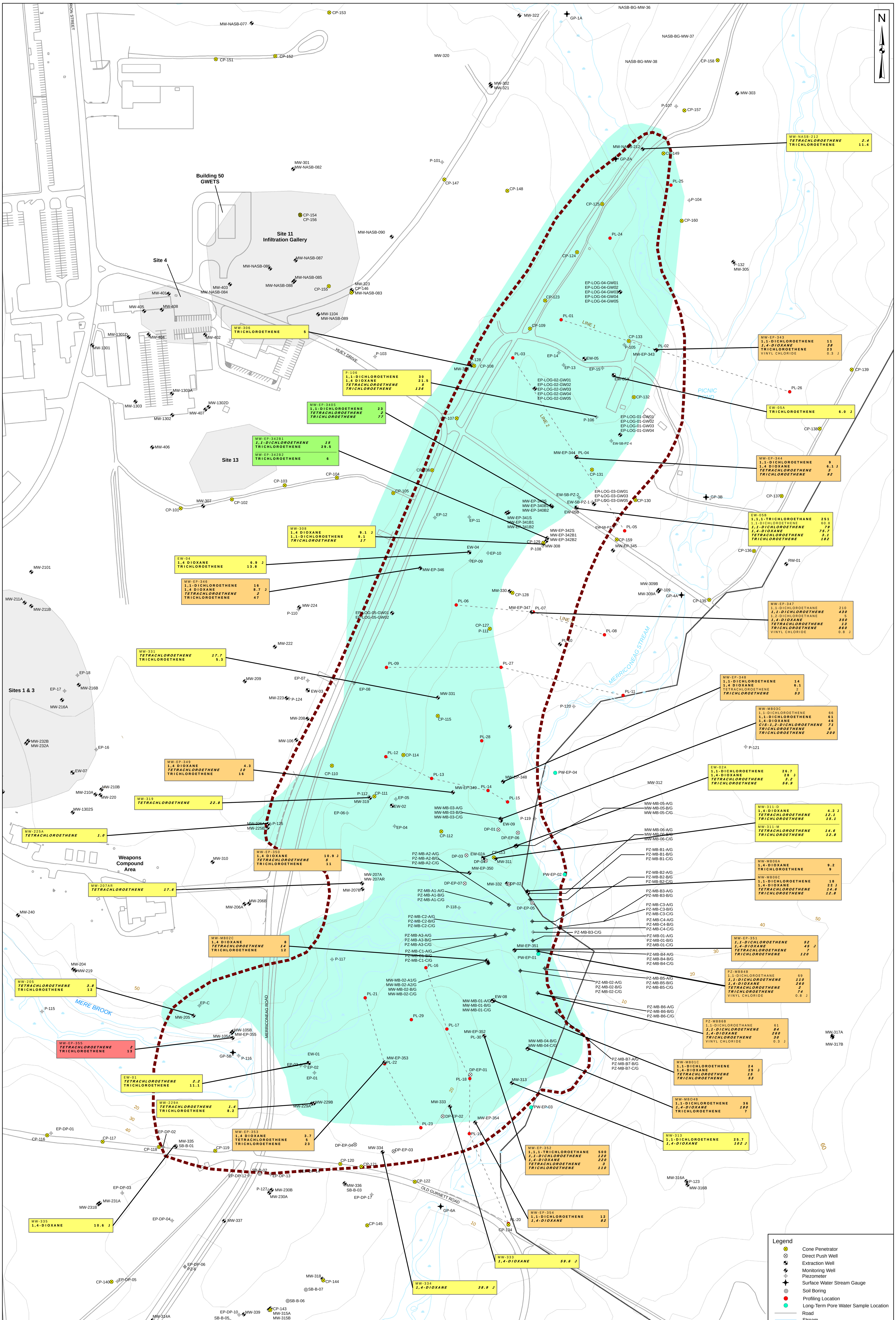
Tetra Tech NUS, Inc.

AREA LOCATION MAP
EASTERN PLUME
NAVAL AIR STATION
BRUNSWICK, MAINE

SCALE	AS NOTED
FILE	AS NOTED
REV 0	DATE 02/01/12
FIGURE NUMBER	FIGURE 1



DRAWN BY D.W. MACDOUGALL — DATE 01/30/12	EASTERN PLUME EXTENT EASTERN PLUME FORMER NAVAL AIR STATION BRUNSWICK BRUNSWICK, MAINE	CONTRACT NUMBER CTO 0069
CHECKED BY C. RACE — DATE 01/30/12		APPROVED BY — DATE
EDITED BY D.W. MACDOUGALL — DATE 01/30/12		APPROVED BY — DATE
SCALE AS NOTED		FIGURE NO. 2 — REV 0



(green)	Sampled by TtNUS 4/13/09 - 4/15/09
(yellow)	Sampled by ECC 4/9/09 - 4/23/09 and 5/19/09
(orange)	Sampled by TtNUS 6/8/09 - 6/15/09
(red)	Sampled by TtNUS 9/16/09

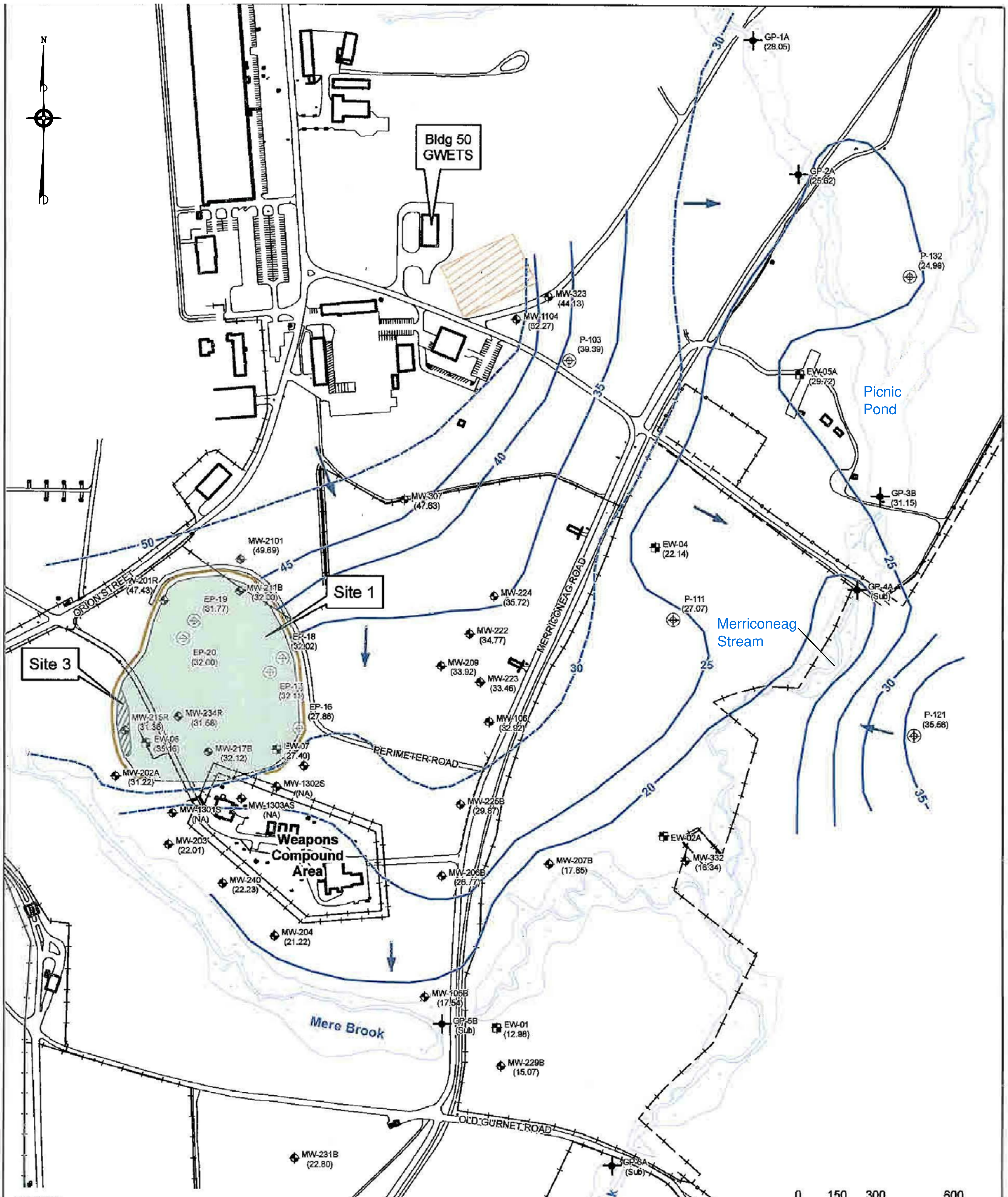
Note:
Results in **BOLD** represent exceedance of MCL.
Results in ***BOLD and Italics*** represent exceedance of MCL and MEG.
Other results exceed MEG only.
The green shading represents the historical extent of the Eastern Plume volatile organic compound concentrations through September 2007 that exceeded MCLs/MEGs in effect at that time.

Legend
- Cone Penetrator
- Direct Push Well
- Extraction Well
- Monitoring Well
- Piezometer
- Surface Water Stream Gauge
- Soil Boring
- Profiling Location
- Long-Term Pore Water Sample Location
- Road
- Stream
- Base Boundary
- Topographic Contours (feet)
- Eastern Plume (Approximate Extent April - June 2009)

150 75 0 150 Feet

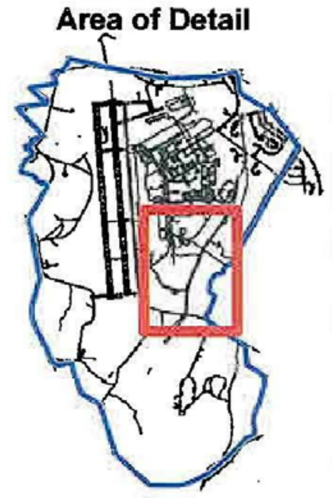
I:\00645\1404\EAST_PLUME_GW_TAGS.MXD DWM 02/01/12

DRAWN BY D.W. MACDOUGALL	DATE 02/01/12	Tetra Tech NUS, Inc.	CONTRACT NUMBER CTO 0069
CHECKED BY C. RACE	DATE 02/01/12	EASTERN PLUME GROUNDWATER MCL AND/OR MEG EXCEEDANCES NAVAL AIR STATION BRUNSWICK, MAINE	APPROVED BY DATE
			APPROVED BY DATE
SCALE AS NOTED			FIGURE NO. FIGURE 3 / REV 0



NOTES
1. Contour interval = 5 ft
2. Contours based on gauging data obtained from April 2007 sampling event.
3. Sub = Submerged
4. NA = Not Available

Area of Detail



Legend

Symbol	Description
MW-316 (19.46)	Shallow Monitoring Well (Groundwater Elevation, ft MSL)
EW-04 (22.14)	Extraction Well (Groundwater Elevation, ft MSL)
P-111 (27.07)	Shallow Piezometer (Groundwater Elevation, ft MSL)
GP-1A (28.05)	Surface Water Piezometer (Groundwater Elevation, ft MSL)
	Groundwater Contour (ft MSL)
	Inferred Groundwater Contour (ft MSL)
	Groundwater Flow Direction
	Approx. Limit of Slurrywall
	GWETS Infiltration Gallery
	Approx. Limit of Sites 1 and 3

NOTE: FIGURE BASED ON ECC FIGURE: INTERPRETED SHALLOW GROUNDWATER SURFACE CONTOUR MAP (APRIL 2007), FIGURE 1-4, 06-AUG-2007, EP_APRIL07_FIG1-4_SHALLOWGWCONTOURS.MXD

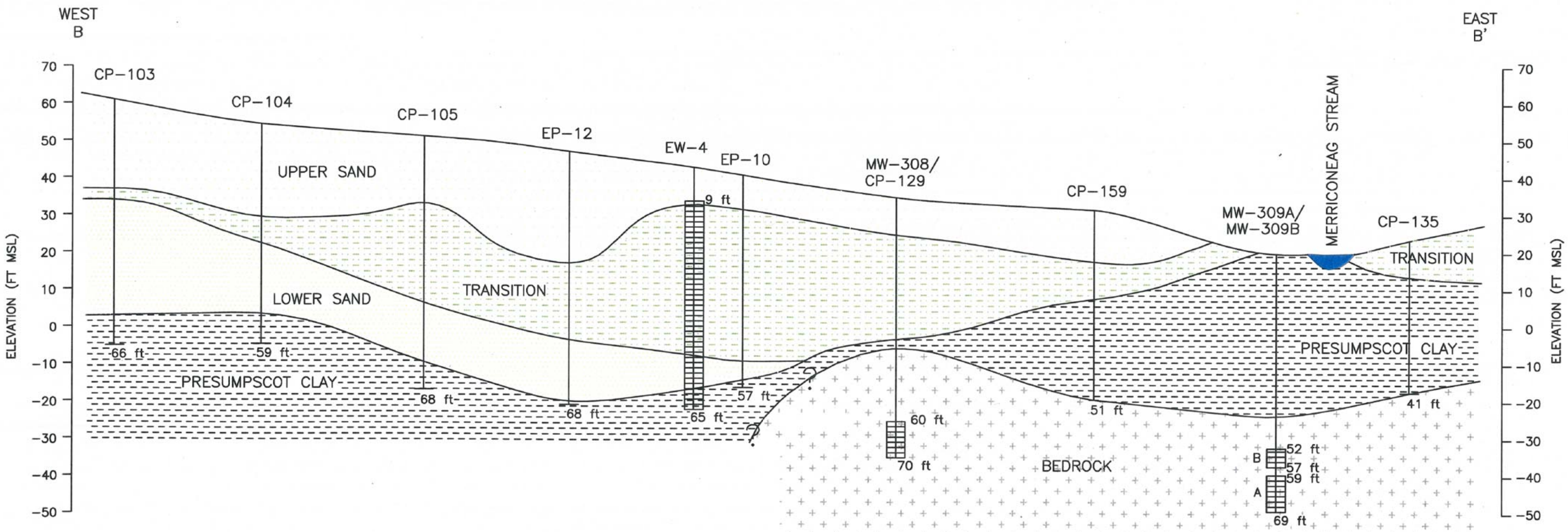
TETRA TECH NUS, INC.

INTERPRETED SHALLOW GROUNDWATER SURFACE CONTOUR MAP (APRIL 2007)
NAVAL AIR STATION
BRUNSWICK, MAINE

FILE	SCALE
\..\SHALL_GW_CONT.DWG	AS NOTED

FIGURE NUMBER	REV	DATE
4	0	10/21/08

ACAD: \00645\1002\X-SECTION.DWG 10/06/08 DWM



LEGEND

Ground surface — MW-308 Location ID (Monitoring wells or borings in bold were not used in cross-section from 1990/1990 RI)

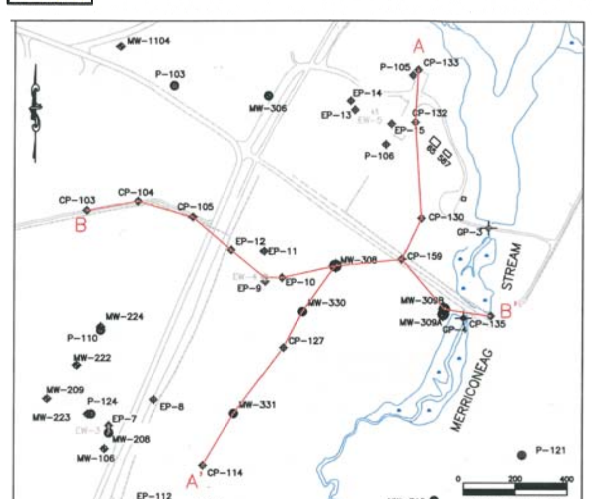
60 ft Depth to top of screen well interval

70 ft Total Depth (ft below ground surface)

SOIL DESCRIPTION

UPPER SAND:	Tan to light brown fine sand, trace to little medium sand and silt, poorly graded, loose to moderately dense, slightly stratified with depth	
TRANSITION:	Brown to gray fine sand and silty fine sand, trace clay, stratified with silt and clay lenses, poorly graded, slightly plastic and soft	
LOWER SAND:	Gray to orange brown fine or very fine sand (likely to be sandy interval within transition unit)	
PRESUMPSCOT CLAY:	Gray silty clay to clayey silt (rock flour), medium to high plasticity, very soft	
BEDROCK:	Weathered micaceous schist	

NOTE: FIGURE BASED ON EA FIGURE: WEST-EAST CROSS-SECTION OF THE EASTERN PLUM NEAR MW-308, 10 NOV 2000, W-E X-SECTION.DWG



NOTES:

1. SOIL AND BEDROCK CONTACTS ARE INFERRED BELOW AND BETWEEN LOCATIONS
2. CONE PENETOMETER LOCATIONS SHOWN ON INDEX MAP ARE APPROXIMATE

0 100 200 400

GRAPHIC SCALE IN FEET

VERTICAL EXAGGERATION = 5X

TETRA TECH NUS, INC.

WEST-EAST CROSS-SECTION OF THE EASTERN PLUME NEAR ME-308 NAVAL AIR STATION BRUSNWICK, MAINE

FILE	SCALE
\..\X-SECTION.DWG	AS NOTED

FIGURE NUMBER	REV	DATE
5	0	10/06/08

Eastern Plume Conceptual Site Model

Contaminants of Concern

Tetrachloroethene (PCE)
1,1,1-Trichloroethane (TCA)
Trichloroethene (TCE)
1,4-dioxane[1]

SITE 4

TCE (GW)
Xylenes, Benzene, Toluene, Tetrahydrocannabinol (THC), Freon-113, 1,1,1-TCA, PCE (SG)

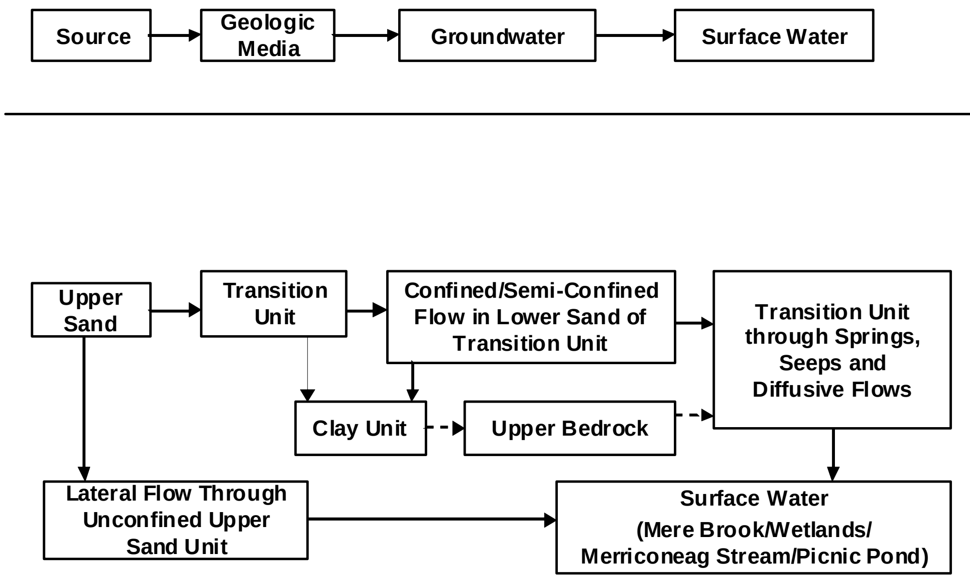
SITE 11

TCE, 1,1,1-TCA, 1,1-dichloroethane (DCA), 1,2-Dichloroethene (DCE), PCE, Toluene, Ethylbenzene, Xylenes, Calcium, Iron, Manganese (GW)
Benzene, Toluene, Ethylbenzene, Xylenes, 1,1-DCE, 1,2-DCE, THC, 1,1,1-TCA, TCE, PCE (SG)
1,1,1-TCA, TCE, 1,1-DCA, PCE, 2-Hexanone, Toluene, Ethylbenzene, Xylenes, butylbenzyphthalate, bis(2-ethylhexyl)phthalate*, Polycyclic Aromatic Hydrocarbons (PAHs) (SO)

SITE 13

TCE, 1,1,1-TCA, 1,2-DCE, 1,1-DCA, PCE, Benzene, Methylene Chloride*, 2-Butanone*, Bis(2-ethlyhexyl)phthalate*, DDT, beta-BHC, Calcium, Manganese, Carbonate, Bicarbonate, Chloride and Sulfate (GW)
THC, Benzene, Toluene, Xylenes, TCE, 1,1,1-TCA, PCE, Freon-113, 1,1-DCE (SG)
Methylene Chloride*, Acetone*, 2-Butanone*, Toluene*, Bis(2-ethlyhexyl)phthalate*, DDT, Napthalene, 2-Methylnaphthalene (SO)

Potential Groundwater Contaminant Migration Pathways



Note:

- - -▶ Potentially incomplete pathway to be determined during pending bedrock investigation

* - Potential Laboratory Contaminant, 1 - Not included in COC list in ROD, (GW) – Groundwater, (SG) – Soil Gas, (SO) - Soil

TETRA TECH NUS, INC.	EASTERN PLUME CONCEPTUAL SITE MODEL NAVAL AIR STATION BRUNSWICK, ME	SCALE: AS NOTED FILE: /../FIGURE_6.DWG REV: 0 DATE: 10/21/08 FIGURE NUMBER: 6

APPENDIX D

DATA VALIDATION PROCESS AND DATA QUALITY REVIEW

DATA VALIDATION PROCESS AND DATA QUALITY REVIEW

This Data Quality Review (DQR) covers data from pore water samples collected along Merriconeag Stream, groundwater profiling of the Eastern Plume overburden, and sampling of permanent overburden monitoring well clusters in the Eastern Plume.

This section contains a description of the data review processes used to determine whether analytical laboratory data were of acceptable technical quality for use in decision making. The review began with data validation, which is a comparison of data quality indicators (DQIs) to prescribed acceptance criteria. The DQIs used are measures to assess the bias and precision of the analytical calibrations and sample analyses. The output of this review was a set of alphabetic flags such as "U," "J," "R," or combinations thereof, that may have been assigned to individual results based on the validation effort. These flags were used to infer the general quality of the data and whether data quality meets the data quality objectives (DQOs) of the project, as presented in the Sampling and Analysis Plan for Supplemental Remedial Investigation of 1,4-Dioxane in the Eastern Plume and Bedrock (TtNUS, October 2008). Also evaluated were measures of data completeness, sensitivity, comparability, and representativeness.

1.0 DATA VALIDATION PROCESS

All analytical laboratory results were validated according to several specifications. Assignment of data qualification flags conformed to Region 1 EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part III (December 1996) to the greatest extent practicable for non-Contract Laboratory Program data. Tier I validation was performed on data associated with pore water samples along Merriconeag Stream and groundwater profiling of the Eastern plume overburden. Tier III validation was performed on data associated with the sampling of permanent overburden and bedrock monitoring wells in the Eastern Plume.

Data validation specifications require that various data qualifiers be assigned when a deficiency is detected or when a result is less than its detection limit. If no qualifier is assigned to a result that has been validated, the data user is assured that no technical deficiencies were identified during validation. The qualification flags used are defined below:

U – Indicates that the chemical was not detected at the numerical detection limit (sample-specific detection limit) noted. Non-detected results from the laboratory are reported in this manner. This qualifier is also added to a positive result (reported by the laboratory) if the detected concentration is determined to be attributable to contamination introduced during field sampling or laboratory analysis.

UJ – Indicates that the chemical was not detected; however, the detection limit (sample-specific detection limit) is considered to be estimated based on problems encountered during laboratory analysis. The associated numerical detection limit is regarded as inaccurate or imprecise.

J – Indicates that the chemical was detected; however, the associated numerical result is not a precise representation of the concentration that is actually present in the sample. The laboratory reported concentration is considered to be an estimate of the true concentration.

UR – Indicates that the chemical may or may not be present. The non-detected analytical result reported by the laboratory is considered to be unreliable and unusable. This qualifier is applied in cases of gross technical deficiencies (i.e., holding times exceeded by a factor of two, severe calibration non-compliances, and extremely low analyte recoveries).

R – Indicates that the chemical may or may not be present. The positive analytical result reported by the laboratory is considered to be unreliable and unusable. This qualifier is applied in cases of gross technical deficiencies.

The preceding data qualifiers may be categorized as indicative of major or minor problems. Major problems are defined as issues that result in the rejection of data and qualification with UR or R data validation qualifiers. These data are considered invalid and are not used for decision-making purposes unless they are used in a qualitative way and the use is justified and documented. Minor problems are defined as issues resulting in the estimation of data and qualification with U, J, and UJ data validation qualifiers. Estimated analytical results are considered to be suitable for decision-making purposes unless data use requirements are very stringent and the qualifier indicates a deficiency that is incompatible with the intended data use. A U qualifier does not necessarily indicate that a data deficiency exists because all non-detect values are assigned a U qualifier regardless of whether a quality deficiency has been detected.

No data for the NAS Brunswick Supplemental RI has been rejected and considered unusable.

2.0 DATA VALIDATION OUTPUTS

After data were validated, a list was developed of non-conformities requiring data qualifier flags that were used to alert the data user to inaccurate or imprecise data. For situations in which several Quality Control (QC) criteria were out of specification, the data validator made professional judgements and or comments on the validity of the overall data package. The reviewer then prepared a technical memorandum presenting qualification of the data, if necessary, and the rationale for making such qualifications. The net result was a data package that had been carefully reviewed for its adherence to prescribed technical requirements. Pertinent quality estimates are summarized in a more quantitative format in the following section.

3.0 DATA QUALITY REVIEW

DQIs are parameters monitored to help establish the quality of data generated during an investigation. Some of the DQIs are generated from analysis of field samples (e.g., field duplicates), and some are generated from the analysis of laboratory samples (e.g., laboratory duplicates). Individually, field and laboratory DQIs provide measures of the performance of the respective investigative operations (field and laboratory). During data validation, individual QC results were evaluated. If individual QC results were acceptable, no validation flag was assigned to an analytical result; otherwise, a flag indicating the type of QC deficiency was assigned to the result.

All data from this Supplemental RI are of sufficient quality to be used for their intended purpose and Table 1 lists all data that has been qualified and the reasons for the qualifications.

3.1 Completeness

Completeness is a measure of the number of valid samples or measurements that are available relative to the number of samples or measurements that were intended to be generated. For this project, completeness was measured on two different bases, samples collected and laboratory measurements as follows:

- Sample completeness was a measure of the usable samples collected compared to those intended to be collected.

- Laboratory measurement completeness was a measure of the amount of usable valid laboratory measurements per matrix obtained for each target analyte.

Usable valid samples (or results) were those judged, after data assessment, to represent the sampling populations and to have not been disqualified for use through data validation or additional data review. Completeness was determined using the following equation:

$$\%C = \frac{V}{T} \times 100$$

where %C = percent completeness
V = number of samples (or results) determined to be valid

T = total number of planned samples (or results)

The percent completeness for sample collection and laboratory measurements for the Eastern Plume Supplemental RI at NAS Brunswick was 100.

3.2 Sensitivity

The project quantitation limit goals (PQLGs) are listed in Worksheet #15 in the QAPP (TtNUS, October 2008). Analytical sensitivity was generally satisfactory to meet the DQOs. It was known at the start of the project, however, that the laboratory could not meet the Maine MEG of 0.2 µg/L and a project action limit (PAL) of 1 µg/L was established for vinyl chloride. The detections for vinyl chloride were reported to the method detection limit (MDL) as planned, of 0.35 µg/L listed in Worksheet #15. The laboratory also did not meet the PQLG for methylene chloride. Methylene chloride detections were also reported to the MDL of 0.51 µg/L; the PAL of 5 µg/L is listed in Worksheet #15.

The amount of sample volume collected can affect the ability of the laboratory to achieve the desired PQLGs. Sample results that were qualified as non-detected due to laboratory or field blank contamination can also elevate a result to greater than the PQLGs. There are instances where non-detected sample results exceed PQLGs either due to the laboratory's inability to meet the PQLG or due to elevated detection limits because of blank contamination. For this NAS Brunswick project, no limitations on the DQOs are anticipated due to the inability to meet PQLGs for vinyl chloride or methylene chloride or for due to blank contamination.

In cases where a sample had to be diluted because of concentrations greater than the calibration range of the instrument, both the undiluted and diluted analytical runs were reported by the laboratory, and the reported result reflects the lowest reporting limit achieved. For this NAS Brunswick project, sample dilution did not result in any non-detected results exceeding PALs.

3.3 Laboratory Accuracy

Accuracy in the laboratory was measured through the comparison of a laboratory control sample (LCS) result to a known or calculated value and is expressed as percent recovery (%R). It was also assessed by monitoring the analytical recovery of select surrogate and internal standard compounds added to samples that are analyzed for a given method. LCSs were used to assess the accuracy of laboratory operations with minimal sample matrix effects. Surrogate compound analyses measure the combined accuracy effects of sample matrix, sample preparation, and sample measurement. Internal standards are added for sample quantitation after sample preparation. Laboratory accuracy was assessed by comparing calculated %R values to accuracy control limits specified by the laboratory using the appropriate analytical method.

Percent recovery is calculated using the following equation:

$$\%R = \frac{Ss - So}{S} \times 100$$

where	%R	=	percent recovery
	Ss	=	result of spiked sample
	So	=	result of non-spiked sample
	S	=	concentration of spiked amount

All matrix spike/matrix spike duplicate (MS/MSD) recoveries met laboratory QC limits for all samples except one. The MS/MSD for sample MWEP342S-041409 had a high 1,1-dichloroethene MSD recovery (158 percent, greater than the 140 percent limit). The MS for sample MWEP342S-041409 met the %R QC. No directional bias exists from this one MSD recovery greater than the control limit.

All LCS/Laboratory Control Standard Duplicate (LCSD) recoveries met laboratory QC limits except one. One LCS had a high 1,1-dichloroethene (1,1-DCE) recovery (150 percent, greater than the 140 percent limit). The detected concentration for sample MWEP341S-041509 may have a slight high bias due to the high LCS recovery, but no DQO impact is expected.

Eleven samples had 1,4-dioxane-d8 surrogate recoveries greater than laboratory QC limits. The associated 1,4-dioxane results may have a slight high bias, but the impact on DQOs is not expected to be significant.

Two positive 1,1-DCE results were qualified as estimated because of a percent difference greater than 25 percent. Both results were less than the PAL, and no DQO impact is expected.

Ten non-detected 1,4-dioxane results were qualified as estimated because of a low relative response factor. The non-detected 1,4-dioxane results for the affected samples may have a slight low bias, no impact on DQOs is expected.

The 1,1,1-trichloroethane (1,1,1-TCA) result for sample EPGWPL04D-67 exceeded the instrument calibration range. The reported result of 350 µg/L is likely biased low and exceeds the PAL. The impact of this 1,1,1-TCA result on DQOs is evaluated in Section 4.0 of the main text concerning nature and extent of contamination.

3.4 Laboratory Precision

Precision is a measure of the degree to which two or more measurements are in agreement and describes the reproducibility of measurements of the same parameter for samples analyzed under similar conditions.

Precision for chemical parameters is typically expressed as a Relative Percent Difference (RPD), which is defined as the ratio of the difference to the mean for the two values being evaluated. RPDs are used to evaluate both field and laboratory duplicate precision and are calculated as follows:

$$RPD = \frac{|V1 - V2|}{(V1 + V2)/2} \times 100$$

where RPD = relative percent difference
V1, V2 = two results obtained by analyzing duplicate samples

The precision estimates obtained from duplicate field samples encompass the combined uncertainty associated with sample collection, homogenization, splitting, handling, laboratory and field storage (as applicable), preparation for analysis, and analysis. In contrast, precision estimates obtained from analyzing duplicate laboratory samples incorporate only homogenization, subsampling, preparation for analysis, laboratory storage (if applicable), and analysis uncertainties.

For this NAS Brunswick project, all field duplicate RPDs met QC limits.

The MS/MSD performed on sample EPGW-MWEP345-061509 had a 1,4-dioxane RPD (35 percent, greater than the 30 percent limit) outside of the laboratory control limit. The positive 1,4-dioxane result for this sample is less than the PAL, and no impact on DQOs is expected for this precision non-compliance.

3.5 Comparability

Comparability is defined as the confidence with which one data set can be compared with another (e.g., among sampling points and among sampling events). Comparability was achieved by using standardized sampling and analysis methods, as well as standardized data reporting formats. Comparability of laboratory measurements was achieved primarily through the use and documentation of standard sampling and analytical methods. Results were reported in units that ensured comparability with previous data.

Comparability of laboratory measurements was assessed primarily through the use of QC samples and through adherence to the SAP (TtNUS, October 2008).

3.6 Representativeness

Representativeness is an expression of the degree to which data accurately and precisely depict the actual characteristics of a population or environmental condition existing at the site.

The SAP (TtNUS, October 2008) and use of standardized sampling, sample handling, sample analysis, and data reporting procedures were designed so that the final data would be accurate representations of actual site conditions for the Eastern Plume at NAS Brunswick. It is believed that all reported data are adequately representative of site conditions and intended populations.

TABLE 1

DATA QUALIFICATION
SUPPLEMENTAL RI REPORT
1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

SAMPLE ID	PARAMETER	SAMPLE RESULT (µg/L)	VALIDATION QUALIFIER	QUALIFICATION CODE	REASON FOR QUALIFICATION
MWEP340B1-041409	1,1-DICHLOROETHANE	0.7	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
MWEP340B1-041409	1,1-DICHLOROETHENE	0.54	J	C	CALIBRATION NON-COMPLIANCE
MWEP340B1-041409	1,4-DIOXANE	2.2	UJ	ACR	LABORATORY BLANK CONTAMINATION, CALIBRATION NON-COMPLIANCE, AND SURROGATE RECOVERY NON-COMPLIANCE
MWEP340B2-041409	1,4-DIOXANE	2	UJ	C	CALIBRATION NON-COMPLIANCE
MWEP340S-041509	1,2-DICHLOROETHANE	0.3	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
MWEP340S-041509	1,4-DIOXANE	9	UJ	ACR	LABORATORY BLANK CONTAMINATION, CALIBRATION NON-COMPLIANCE, AND SURROGATE RECOVERY NON-COMPLIANCE
MWEP341B1-041509	1,1,1-TRICHLOROETHANE	0.4	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
MWEP341B1-041509	1,4-DIOXANE	2	UJ	C	CALIBRATION NON-COMPLIANCE
MWEP341B2-041409	1,1-DICHLOROETHANE	0.3	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
MWEP341B2-041409	1,1-DICHLOROETHENE	0.16	J	CP	CALIBRATION NON-COMPLIANCE AND UNCERTAINTY NEAR THE DETECTION LIMIT
MWEP341B2-041409	1,4-DIOXANE	2	UJ	C	CALIBRATION NON-COMPLIANCE
MWEP341S-041509	1,1,1-TRICHLOROETHANE	0.5	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
MWEP341S-041509	1,1-DICHLOROETHENE	0.13	J	EP	LCS/LCSD RECOVERY NON-COMPLIANCE AND UNCERTAINTY NEAR THE DETECTION LIMIT
MWEP341S-041509	1,4-DIOXANE	2	UJ	CR	CALIBRATION AND SURROGATE RECOVERY NON-COMPLIANCE
MWEP342B1-041409	1,4-DIOXANE	8.7	UJ	AC	LABORATORY BLANK CONTAMINATION and CALIBRATION NON-COMPLIANCE
MWEP342B1-041409	TETRACHLOROETHENE	0.4	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
MWEP342B1-041409-D	1,4-DIOXANE	10	UJ	ACR	LABORATORY BLANK CONTAMINATION, CALIBRATION NON-COMPLIANCE, AND SURROGATE RECOVERY NON-COMPLIANCE

TABLE 1

DATA QUALIFICATION
SUPPLEMENTAL RI REPORT
1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

SAMPLE ID	PARAMETER	SAMPLE RESULT (µg/L)	VALIDATION QUALIFIER	QUALIFICATION CODE	REASON FOR QUALIFICATION
MWEP342B1-041409-D	CIS-1,2-DICHLOROETHENE	1	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
MWEP342B1-041409-D	TETRACHLOROETHENE	0.5	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
MWEP342B2-041309	1,4-DIOXANE	2	UJ	ACR	LABORATORY BLANK CONTAMINATION, CALIBRATION NON-COMPLIANCE, AND SURROGATE RECOVERY NON-COMPLIANCE
MWEP342B2-041309	CIS-1,2-DICHLOROETHENE	0.4	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
MWEP342S-041409	1,1-DICHLOROETHANE	0.7	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
MWEP342S-041409	1,1-DICHLOROETHENE	0.32	J	D	MS/MSD RECOVERY NON-COMPLIANCE
MWEP342S-041409	1,4-DIOXANE	2	UJ	C	CALIBRATION NON-COMPLIANCE
EPGW-MWEP343-061509	VINYL CHLORIDE	0.3	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWEP344-061509	1,4-DIOXANE	6.1	J	R	SURROGATE RECOVERY NON-COMPLIANCE
EPGW-MWEP344-061509	CHLOROFORM	0.9	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWEP345-061509	1,4-DIOXANE	2	UJ	D	MS/MSD RECOVERY NON-COMPLIANCE
EPGW-MWEP346-061109	1,4-DIOXANE	8.7	J	R	SURROGATE RECOVERY NON-COMPLIANCE
EPGW-MWEP347-061509	TRANS-1,2-DICHLOROETHENE	0.4	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWEP347-061509	VINYL CHLORIDE	0.8	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWEP348-060809	CHLOROFORM	0.2	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWEP348-060809	METHYLENE CHLORIDE	0.5	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWEP350-061109-D	1,4-DIOXANE	9.8	J	R	SURROGATE RECOVERY NON-COMPLIANCE
EPGW-MWEP351-060909	1,1,2-TRICHLOROETHANE	0.3	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWEP351-060909	1,2-DICHLOROETHANE	0.9	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWEP351-060909	1,4-DIOXANE	45	J	R	SURROGATE RECOVERY NON-COMPLIANCE
EPGW-MWEP351-060909	METHYLENE CHLORIDE	3	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWEP352-061009	CHLOROFORM	0.6	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWEP353-061009	1,1,1-TRICHLOROETHANE	0.3	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWEP353-061009	1,2-DICHLOROETHANE	0.3	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWEP354-061109	1,2-DICHLOROETHANE	0.8	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT

TABLE 1

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SUPPLEMENTAL RI REPORT
1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK
NAS BRUNSWICK
BRUNSWICK, MAINE

SAMPLE ID	PARAMETER	SAMPLE RESULT (µg/L)	VALIDATION QUALIFIER	QUALIFICATION CODE	REASON FOR QUALIFICATION
EPGW-MWEP354-061109	CIS-1,2-DICHLOROETHENE	0.4	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWMB01C-060909	1,2-DICHLOROETHANE	0.5	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWMB01C-060909	1,4-DIOXANE	29	J	R	SURROGATE RECOVERY NON-COMPLIANCE
EPGW-MWMB01C-060909	METHYLENE CHLORIDE	2	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWMB03C-060809	1,1,2-TRICHLOROETHANE	0.6	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWMB03C-060809	1,2-DICHLOROETHANE	0.9	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWMB03C-060809	CHLOROFORM	0.9	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWMB03C-060809-D	1,1,2-TRICHLOROETHANE	0.5	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWMB03C-060809-D	1,2-DICHLOROETHANE	0.8	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWMB03C-060809-D	CHLOROFORM	1	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWMB04B-061109	1,1,2-TRICHLOROETHANE	0.4	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWMB04B-061109	CIS-1,2-DICHLOROETHENE	0.9	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWMB06A-061509	CIS-1,2-DICHLOROETHENE	0.8	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWMB06A-061509	TETRACHLOROETHENE	0.6	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWMB06C-060809	1,2-DICHLOROETHANE	0.5	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-MWMB06C-060809	1,4-DIOXANE	22	J	R	SURROGATE RECOVERY NON-COMPLIANCE
EPGW-MWMB06C-060809	METHYLENE CHLORIDE	0.4	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-PZMBB4B-060909	1,1,2-TRICHLOROETHANE	0.6	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-PZMBB4B-060909	VINYL CHLORIDE	0.8	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-PZMBB6B-061009	1,1,2-TRICHLOROETHANE	0.8	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-PZMBB6B-061009	TETRACHLOROETHENE	0.5	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-PZMBB6B-061009	VINYL CHLORIDE	0.3	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGW-PZMBC4B-060909	TRICHLOROETHENE	0.4	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGWPL01D-71	1,1-DICHLOROETHANE	0.8	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGWPL01D-71	CIS-1,2-DICHLOROETHENE	0.8	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGWPL02D-69.7	1,1,2-TRICHLOROETHANE	0.4	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGWPL02D-69.7	1,2-DICHLOROETHANE	1	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGWPL04D-67	1,1,1-TRICHLOROETHANE	350	J	L	CALIBRATION RANGE EXCEEDANCE
EPGWPL04D-67	TETRACHLOROETHENE	0.4	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT

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NAS BRUNSWICK
BRUNSWICK, MAINE

SAMPLE ID	PARAMETER	SAMPLE RESULT (µg/L)	VALIDATION QUALIFIER	QUALIFICATION CODE	REASON FOR QUALIFICATION
EPGWPL09I-60	TRICHLOROETHENE	0.4	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGWPL16D-69	1,1,1-TRICHLOROETHANE	0.4	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGWPL16D-69	1,1-DICHLOROETHENE	0.12	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGWPL17D-64	1,1,2-TRICHLOROETHANE	0.6	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGWPL17D-64	TETRACHLOROETHENE	0.9	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGWPL25D-71	1,1-DICHLOROETHANE	0.4	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGWPL25D-71	1,4-DIOXANE	1.7	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGWPL25D-71	CIS-1,2-DICHLOROETHENE	0.4	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGWPL25I-62	CIS-1,2-DICHLOROETHENE	0.5	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGWPL25I-62-D	CIS-1,2-DICHLOROETHENE	0.4	J	P	UNCERTAINTY NEAR THE DETECTION LIMIT
EPGWPL28D-45.5	1,4-DIOXANE	3	U	A	LABORATORY BLANK CONTAMINATION
EPGW-MWEP343-061509	METHYLENE CHLORIDE	5	U	A	LABORATORY BLANK CONTAMINATION
EPGW-MWEP347-061509	METHYLENE CHLORIDE	12	U	A	LABORATORY BLANK CONTAMINATION
EPGW-MWMB03C-060809	METHYLENE CHLORIDE	5	U	A	LABORATORY BLANK CONTAMINATION
EPGW-MWMB03C-060809-D	METHYLENE CHLORIDE	5	U	A	LABORATORY BLANK CONTAMINATION
EPGW-MWMB06A-061509	METHYLENE CHLORIDE	5	U	A	LABORATORY BLANK CONTAMINATION
EPGWPL01S-44.3	METHYLENE CHLORIDE	5	U	A	LABORATORY BLANK CONTAMINATION
EPGWPL02I-45	METHYLENE CHLORIDE	5	U	A	LABORATORY BLANK CONTAMINATION
EPGWPL02S-26.3	METHYLENE CHLORIDE	5	U	A	LABORATORY BLANK CONTAMINATION
EPGWPL04D-67	METHYLENE CHLORIDE	5	U	A	LABORATORY BLANK CONTAMINATION
EPGWPL09I-60	1,4-DIOXANE	2.2	U	A	LABORATORY BLANK CONTAMINATION
EPGWPL14I-48	METHYLENE CHLORIDE	5	U	A	LABORATORY BLANK CONTAMINATION
EPGWPL14I-48-D	METHYLENE CHLORIDE	5	U	A	LABORATORY BLANK CONTAMINATION
EPGWPL17D-64	METHYLENE CHLORIDE	6	U	A	LABORATORY BLANK CONTAMINATION
EPGWPL25S-21	METHYLENE CHLORIDE	5	U	B	FIELD BLANK CONTAMINATION
EPGWPL28D-45.5	CHLOROFORM	3	U	B	FIELD BLANK CONTAMINATION
EPGW-MWEP346-061109	METHYLENE CHLORIDE	5	U	B	FIELD BLANK CONTAMINATION
EPGW-MWEP352-061009	METHYLENE CHLORIDE	9	U	B	FIELD BLANK CONTAMINATION
EPGW-MWEP353-061009	METHYLENE CHLORIDE	5	U	B	FIELD BLANK CONTAMINATION

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SAMPLE ID	PARAMETER	SAMPLE RESULT (µg/L)	VALIDATION QUALIFIER	QUALIFICATION CODE	REASON FOR QUALIFICATION
EPGW-MWEP354-061109	METHYLENE CHLORIDE	5	U	B	FIELD BLANK CONTAMINATION
EPGW-MWMB04B-061109	METHYLENE CHLORIDE	5	U	B	FIELD BLANK CONTAMINATION
EPGW-PZMBB6B-061009	METHYLENE CHLORIDE	5	U	B	FIELD BLANK CONTAMINATION
EPGWPL01D-71	METHYLENE CHLORIDE	5	U	B	FIELD BLANK CONTAMINATION
EPGWPL01S-44.3	CHLOROFORM	3	U	B	FIELD BLANK CONTAMINATION
EPGWPL03S-31	CHLOROFORM	1	U	B	FIELD BLANK CONTAMINATION
EPGWPL03S-31	METHYLENE CHLORIDE	5	U	B	FIELD BLANK CONTAMINATION
EPGWPL09S-40	CHLOROFORM	1	U	B	FIELD BLANK CONTAMINATION
EPGWPL12I-40	CHLOROFORM	1	U	B	FIELD BLANK CONTAMINATION
EPGWPL12S-22.5	CHLOROFORM	1	U	B	FIELD BLANK CONTAMINATION
EPGWPL14I-48	CHLOROFORM	1	U	B	FIELD BLANK CONTAMINATION
EPGWPL14I-48-D	CHLOROFORM	1	U	B	FIELD BLANK CONTAMINATION
EPGWPL17D-64	CHLOROFORM	3	U	B	FIELD BLANK CONTAMINATION

J - Estimated
U - Not detected at the noted sample-specific detection limit

APPENDIX E

SUPPORTING ECC GROUNDWATER MONITORING ANALYTICAL RESULTS

Draft

EASTERN PLUME MONITORING EVENT 34 REPORT APRIL 2009

Naval Air Station
Brunswick, Maine

Prepared for:

Department of the Navy
Naval Facilities Engineering Command
BRAC Program Management Office - Northeast
4911 South Broad Street
Philadelphia, Pennsylvania 19112-1303

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Table 2-1
Summary of GWETs Sample Analytical Results - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

	Units	Federal MCL	Maine MEG	EW-01	EW-01	EW-02A	EW-02A	EW-04	EW-04
Field Sample ID*				BN-EP-34-EW01	BN-EP-34-EW01	BN-EP-34-EW02A	BN-EP-34-EW02A	BN-EP-34-EW04	BN-EP-34-EW04
Lab Sample ID				M82308-16	M82308-16A	M82308-17	M82308-17A	M82308-18	M82308-18A
Sample Date				04/22/09	04/22/09	04/22/09	04/22/09	04/22/09	04/22/09
Lab Name				Accutest	Accutest	Accutest	Accutest	Accutest	Accutest
Field QC				Original data	Original data	Original data	Original data	Original data	Original data
Sampling Method				Low-Flow	Low-Flow	Low-Flow	Low-Flow	Low-Flow	Low-Flow
VOCs									
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
1,1,1-Trichloroethane	ug/l	200	200	3.2	-	32.8	-	19.4	-
1,1,2,2-Tetrachloroethane	ug/l	NA	1.8	1.0 U	-	1.0 U	-	1.0 U	-
1,1,2-Trichloroethane	ug/l	5	6	1.0 U	-	1.0 U	-	1.0 U	-
1,1-Dichloroethane	ug/l	NA	70	0.98 J	-	19.1	-	3.8	-
1,1-Dichloroethene	ug/l	7	0.6	**1.6**	-	**26.7**	-	**5.3**	-
1,1-Dichloropropene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
1,2,3-Trichlorobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
1,2,3-Trichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
1,2,4-Trichlorobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
1,2,4-Trimethylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
1,2-Dibromoethane	ug/l	0.05	0.2	2.0 U	-	2.0 U	-	2.0 U	-
1,2-Dichlorobenzene	ug/l	600	63	1.0 U	-	1.0 U	-	1.0 U	-
1,2-Dichloroethane	ug/l	5	4	1.0 U	-	1.0 U	-	1.0 U	-
1,2-Dichloroethene (total)	ug/l	NA	NA	6.3	-	24.2	-	5.1	-
1,2-Dichloropropane	ug/l	5	5	2.0 U	-	2.0 U	-	2.0 U	-
1,3,5-Trimethylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
1,3-Dichlorobenzene	ug/l	NA	NA	1.0 U	-	1.0 U	-	1.0 U	-
1,3-Dichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
1,4-Dichlorobenzene	ug/l	NA	NA	1.0 U	-	1.0 U	-	1.0 U	-
1,4-Dioxane	ug/l	NA	32	-	2.8 J	-	28.0 J	-	6.9 J
2,2-Dichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
2-Butanone (MEK)	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
2-Hexanone	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
Acetone	ug/l	NA	6300	5.0 U	-	5.0 U	-	5.0 U	-
Benzene	ug/l	5	6	0.50 U	-	0.50 U	-	0.50 U	-
Bromobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
Bromochloromethane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
Bromodichloromethane	ug/l	NA	6	1.0 U	-	1.0 U	-	1.0 U	-
Bromoform	ug/l	NA	44	1.0 U	-	1.0 U	-	1.0 U	-
Bromomethane	ug/l	NA	10	2.0 U	-	2.0 U	-	2.0 U	-
Carbon disulfide	ug/l	NA	600	5.0 U	-	5.0 U	-	5.0 U	-
Carbon tetrachloride	ug/l	5	3	1.0 U	-	1.0 U	-	1.0 U	-
Chlorobenzene	ug/l	100	47	1.0 U	-	1.0 U	-	1.0 U	-
Chloroethane	ug/l	NA	NA	2.0 U	-	2.0 U	-	2.0 U	-
Chloroform	ug/l	80	70	1.0 U	-	1.0 U	-	0.48 J	-
Chloromethane	ug/l	NA	3	2.0 U	-	2.0 U	-	2.0 U	-
cis-1,2-Dichloroethene	ug/l	70	70	-	-	-	-	-	-

Summary of GWETs Sample ... ytical Results - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

	Units	Federal MCL	Maine MEG	EW-01	EW-01	EW-02A	EW-02A	EW-04	EW-04
Field Sample ID*				BN-EP-34-EW01	BN-EP-34-EW01	BN-EP-34-EW02A	BN-EP-34-EW02A	BN-EP-34-EW04	BN-EP-34-EW04
Lab Sample ID				M82308-16	M82308-16A	M82308-17	M82308-17A	M82308-18	M82308-18A
Sample Date				04/22/09	04/22/09	04/22/09	04/22/09	04/22/09	04/22/09
Lab Name				Accutest	Accutest	Accutest	Accutest	Accutest	Accutest
Field QC				Original data	Original data	Original data	Original data	Original data	Original data
Sampling Method.				Low-Flow	Low-Flow	Low-Flow	Low-Flow	Low-Flow	Low-Flow
VOCs									
cis-1,3-Dichloropropene	ug/l	NA	4	0.50 U	-	0.50 U	-	0.50 U	-
Dibromochloromethane	ug/l	NA	4	1.0 U	-	1.0 U	-	1.0 U	-
Dichlorodifluoromethane	ug/l	NA	NA	2.0 U	-	2.0 U	-	2.0 U	-
Ethylbenzene	ug/l	700	70	1.0 U	-	1.0 U	-	1.0 U	-
Hexachlorobutadiene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
Iodomethane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
Isopropylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
Methyl Tert Butyl Ether	ug/l	NA	35	1.0 U	-	1.0 U	-	1.0 U	-
Methylene bromide	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
Methylene chloride	ug/l	5	47	2.0 U	-	2.0 U	-	2.0 U	-
Naphthalene	ug/l	NA	14	5.0 U	-	5.0 U	-	5.0 U	-
n-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
n-Propylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
o-Chlorotoluene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
p-Chlorotoluene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
p-Isopropyltoluene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
sec-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
Styrene	ug/l	100	140	5.0 U	-	5.0 U	-	5.0 U	-
tert-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
Tetrachloroethene	ug/l	5	7	2.2	-	3.2	-	1.0 U	-
Toluene	ug/l	1000	1400	1.0 U	-	1.0 U	-	1.0 U	-
trans-1,2-Dichloroethene	ug/l	100	140	-	-	-	-	-	-
trans-1,3-Dichloropropene	ug/l	NA	4	0.50 U	-	0.50 U	-	0.50 U	-
Trichloroethene	ug/l	5	32	11.1	-	**56.9**	-	13.8	-
Trichlorofluoromethane	ug/l	NA	2100	1.0 U	-	1.0 U	-	1.0 U	-
Vinyl Acetate	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U	-
Vinyl chloride	ug/l	2	0.2	1.0 U	-	1.0 U	-	1.0 U	-
Xylene (total)	ug/l	10000	1400	1.0 U		1.0 U	-	1.0 U	-
Total VOC	ug/l	NA	NA	25.38	-	162.9	-	47.88	-

Table 2-1
Summary of GWETs Sample Analytical Results - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

	Units	Federal MCL	Maine MEG	EW-05A	EW-05A	EW-05B	EW-05B
Station ID				EW-05A	EW-05A	EW-05B	EW-05B
Field Sample ID*				BN-EP-34-EW05A	BN-EP-34-EW05A	BN-EP-34-EW05B	BN-EP-34-EW05B
Lab Sample ID				M82308-19	M82308-19A	M82308-10	M82308-10A
Sample Date				04/22/09	04/22/09	04/21/09	04/21/09
Lab Name				Accutest	Accutest	Accutest	Accutest
Field QC				Original data	Original data	Original data	Original data
Sampling Method				Low-Flow	Low-Flow	Low-Flow	Low-Flow
VOCs							
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
1,1,1-Trichloroethane	ug/l	200	200	3.6 J	-	**251**	-
1,1,2,2-Tetrachloroethane	ug/l	NA	1.8	1.0 UJ	-	1.0 U	-
1,1,2-Trichloroethane	ug/l	5	6	1.0 UJ	-	1.0 U	-
1,1-Dichloroethane	ug/l	NA	70	2.5 J	-	60.8	-
1,1-Dichloroethene	ug/l	7	0.6	1.0 UJ	-	**79.0**	-
1,1-Dichloropropene	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
1,2,3-Trichlorobenzene	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
1,2,3-Trichloropropane	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
1,2,4-Trichlorobenzene	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
1,2,4-Trimethylbenzene	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
1,2-Dibromoethane	ug/l	0.05	0.2	2.0 UJ	-	2.0 U	-
1,2-Dichlorobenzene	ug/l	600	63	1.0 UJ	-	1.0 U	-
1,2-Dichloroethane	ug/l	5	4	1.0 UJ	-	1.0 U	-
1,2-Dichloroethene (total)	ug/l	NA	NA	2.1 J		42.0	
1,2-Dichloropropane	ug/l	5	5	2.0 UJ	-	2.0 U	-
1,3,5-Trimethylbenzene	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
1,3-Dichlorobenzene	ug/l	NA	NA	1.0 UJ	-	1.0 U	-
1,3-Dichloropropane	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
1,4-Dichlorobenzene	ug/l	NA	NA	1.0 UJ	-	1.0 U	-
1,4-Dioxane	ug/l	NA	32	-	2.9 J	-	**75.7 J**
2,2-Dichloropropane	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
2-Butanone (MEK)	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
2-Hexanone	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
Acetone	ug/l	NA	6300	5.0 UJ	-	5.0 U	-
Benzene	ug/l	5	6	0.50 UJ	-	0.85	-
Bromobenzene	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
Bromochloromethane	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
Bromodichloromethane	ug/l	NA	6	1.0 UJ	-	1.0 U	-
Bromoform	ug/l	NA	44	1.0 UJ	-	1.0 U	-
Bromomethane	ug/l	NA	10	2.0 UJ	-	2.0 U	-
Carbon disulfide	ug/l	NA	600	5.0 UJ	-	5.0 U	-
Carbon tetrachloride	ug/l	5	3	1.0 UJ	-	1.0 U	-
Chlorobenzene	ug/l	100	47	1.0 UJ	-	1.0 U	-
Chloroethane	ug/l	NA	NA	2.0 UJ	-	2.0 U	-
Chloroform	ug/l	80	70	0.92 J	-	0.46 J	-
Chloromethane	ug/l	NA	3	2.0 UJ	-	2.0 U	-
cis-1,2-Dichloroethene	ug/l	70	70	-	-	-	-
cis-1,3-Dichloropropene	ug/l	NA	4	0.50 UJ	-	0.50 U	-

Summary of GWETs Sample ..ytical Results - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

	Units	Federal MCL	Maine MEG				
Station ID				EW-05A	EW-05A	EW-05B	EW-05B
Field Sample ID*				BN-EP-34-EW05A	BN-EP-34-EW05A	BN-EP-34-EW05B	BN-EP-34-EW05B
Lab Sample ID				M82308-19	M82308-19A	M82308-10	M82308-10A
Sample Date				04/22/09	04/22/09	04/21/09	04/21/09
Lab Name				Accutest	Accutest	Accutest	Accutest
Field QC				Original data	Original data	Original data	Original data
Sampling Method				Low-Flow	Low-Flow	Low-Flow	Low-Flow
VOCs							
Dibromochloromethane	ug/l	NA	4	1.0 UJ	-	1.0 U	-
Dichlorodifluoromethane	ug/l	NA	NA	2.0 UJ	-	2.0 U	-
Ethylbenzene	ug/l	700	70	1.0 UJ	-	1.0 U	-
Hexachlorobutadiene	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
Iodomethane	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
Isopropylbenzene	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
Methyl Tert Butyl Ether	ug/l	NA	35	1.0 UJ	-	1.0 U	-
Methylene bromide	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
Methylene chloride	ug/l	5	47	2.0 UJ	-	2.0 U	-
Naphthalene	ug/l	NA	14	5.0 UJ	-	5.0 U	-
n-Butylbenzene	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
n-Propylbenzene	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
o-Chlorotoluene	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
p-Chlorotoluene	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
p-Isopropyltoluene	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
sec-Butylbenzene	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
Styrene	ug/l	100	140	5.0 UJ	-	5.0 U	-
tert-Butylbenzene	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
Tetrachloroethene	ug/l	5	7	1.0 UJ	-	3.1	-
Toluene	ug/l	1000	1400	1.0 UJ	-	1.0 U	-
trans-1,2-Dichloroethene	ug/l	100	140	-	-	-	-
trans-1,3-Dichloropropene	ug/l	NA	4	0.50 UJ	-	0.50 U	-
Trichloroethene	ug/l	5	32	**6.0 J**	-	**182**	-
Trichlorofluoromethane	ug/l	NA	2100	1.0 UJ	-	1.0 U	-
Vinyl Acetate	ug/l	NA	NA	5.0 UJ	-	5.0 U	-
Vinyl chloride	ug/l	2	0.2	1.0 UJ	-	1.0 U	-
Xylene (total)	ug/l	10000	1400	1.0 UJ	-	1.0 U	-
Total VOC	ug/l	NA	NA	15.12	-	619.21	-

Table 2-1
Summary of GWETs Sample Analytical Results - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Notes

MEG - obtained from State of Maine Department of Human Services Maximum Exposure Guidelines, Memorandum dated 5 December 2008
MCL - obtained from 40 CFR Parts 141 and 142 (U.S. EPA 1998)
Screening Value - Risk Based Ecological Screening Values for Surface Water, Seep Water, and Sediment at the Naval Air Station Brunswick, EA Science and Technology, January, 2006
* Field Sample IDs begin with BN-EP-34- for samples collected at Eastern Plume area during Monitoring Event 34
VOCs analyzed by EPA Method 8260B
Target Analyte List Metals analyzed by EPA 6000/7000 series methods
Pesticides analyzed by EPA Method 8081A
Total VOC calculation does not include common laboratory contaminants (acetone, methylene chloride, 2-butanone), VOCs detected in the blank samples, or 1,4-dioxane
The acetone concentrations reported from samples collected from Passive Diffusion Bags (PDBS) are not considered usable data because PDB sampling techniques are not designed for acetone collection
Highlighted concentrations indicate exceedance of an MEG, MCL or screening level. The color of the highlight indicated which screening level was exceeded
Refer to the Data Quality Review section for reporting limits and method detection limits for all analyzed compounds

Acronyms

-	Not sampled
EPA	U.S. Environmental Protection Agency
GWETS	Groundwater Extraction and Treatment System
ID	Identification
MCL	Maximum Contaminant Level
MEG	Maximum Exposure Guideline
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MNA	monitored natural attenuation
NA	Criteria not applicable
VOC	Volatile Organic Compound
ug/L	micrograms per liter

Validation Qualifiers

U	Not detected down to the method detection limit (MDL). Data presented in the table are Method Reporting Limits. MDLs are provided in Appendix C (Analytical Data Quality Review)
J	Estimated concentration
UJ	Not detected. Sample quantitation limit is estimated.
R	Value rejected by data validator

VOC Contaminants of Concern:
1,1-Dichloroethane
1,2-Dichloroethene, total
Chlorobenzene
Ethylbenzene
Methylene Chloride
Toluene
Vinyl Chloride
Xylenes, total

Metals Contaminants of Concern:
Aluminum
Arsenic
Barium
Chromium
Lead
Manganese
Nickel
Potassium

Summary of Groundwater Sample Analy[illegible] Results for Shallow Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name. Eastern Plume

	Units	Federal MCL	Maine MEG					
			Station ID	MW-209	MW-209	MW-224	MW-231B	MW-318
			Field Sample ID*	BN-EP-34-MW209	BN-EP-34-MW209	BN-EP-34-MW224-M	BN-EP-34-MW231B-D	BN-EP-34-MW318-D
			Lab Sample ID	M82126-13	M82126-13A	M81914-2	M82126-4	M82126-37
			Sample Date	04/14/09	04/14/09	04/09/09	04/13/09	04/17/09
			Lab Name	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC	Original data	Original data	Original data	Original data	Original data
			Sampling Method	Low-Flow	Low-Flow	Mid Diffusion	Deep Diffusion	Deep Diffusion
VOCs								
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,1,1-Trichloroethane	ug/l	200	200	1.0 U	-	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/l	NA	1.8	1.0 U	-	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/l	5	6	1.0 U	-	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/l	NA	70	1.0 U	-	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/l	7	0.6	1.0 U	-	1.0 U	1.0 U	1.0 U
1,1-Dichloropropene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,2,3-Trichlorobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,2,3-Trichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,2,4-Trimethylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,2-Dibromoethane	ug/l	0.05	0.2	2.0 U	-	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	ug/l	600	63	1.0 U	-	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/l	5	4	1.0 U	-	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	ug/l	NA	NA	1.0 U		1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/l	5	5	2.0 U	-	2.0 U	2.0 U	2.0 U
1,3,5-Trimethylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	ug/l	NA	NA	1.0 U	-	1.0 U	1.0 U	1.0 U
1,3-Dichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	ug/l	NA	NA	1.0 U	-	1.0 U	1.0 U	1.0 U
1,4-Dioxane	ug/l	NA	32	-	1.0 U	-	-	-
2,2-Dichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
2-Butanone (MEK)	ug/l	NA	NA	5.0 UJ	-	5.0 UJ	5.0 UJ	5.0 U
2-Hexanone	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Acetone	ug/l	NA	6300	5.0 UJ	-	7.0 J	10.5 J	12.5 J
Benzene	ug/l	5	6	0.50 U	-	0.50 U	0.50 U	0.50 U
Bromobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Bromochloromethane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Bromodichloromethane	ug/l	NA	6	1.0 U	-	1.0 U	1.0 U	1.0 U
Bromoform	ug/l	NA	44	1.0 U	-	1.0 U	1.0 U	1.0 U
Bromomethane	ug/l	NA	10	2.0 UJ	-	2.0 U	2.0 UJ	2.0 U
Carbon disulfide	ug/l	NA	600	5.0 U	-	5.0 U	5.0 U	5.0 U

Table 2-2
Summary of Groundwater Sample Analytical Results for Shallow Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name Eastern Plume

	Units	Federal MCL	Maine MEG					
Station ID				MW-209	MW-209	MW-224	MW-231B	MW-318
Field Sample ID*				BN-EP-34-MW209	BN-EP-34-MW209	BN-EP-34-MW224-M	BN-EP-34-MW231B-D	BN-EP-34-MW318-D
Lab Sample ID				M82126-13	M82126-13A	M81914-2	M82126-4	M82126-37
Sample Date				04/14/09	04/14/09	04/09/09	04/13/09	04/17/09
Lab Name				Accutest	Accutest	Accutest	Accutest	Accutest
Field QC				Original data	Original data	Original data	Original data	Original data
Sampling Method				Low-Flow	Low-Flow	Mid Diffusion	Deep Diffusion	Deep Diffusion
VOCs								
Carbon tetrachloride	ug/l	5	3	1.0 U	-	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/l	100	47	1.0 U	-	1.0 U	1.0 U	1.0 U
Chloroethane	ug/l	NA	NA	2.0 U	-	2.0 U	2.0 U	2.0 U
Chloroform	ug/l	80	70	1.0 U	-	1.0 U	1.0 U	1.0 U
Chloromethane	ug/l	NA	3	2.0 UJ	-	2.0 UJ	2.0 UJ	2.0 U
cis-1,2-Dichloroethene	ug/l	70	70	-	-	1.0 U	-	-
cis-1,3-Dichloropropene	ug/l	NA	4	0.50 U	-	0.50 U	0.50 U	0.50 U
Dibromochloromethane	ug/l	NA	4	1.0 U	-	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	ug/l	NA	NA	2.0 U	-	2.0 U	2.0 U	2.0 U
Ethylbenzene	ug/l	700	70	1.0 U	-	1.0 U	1.0 U	1.0 U
Hexachlorobutadiene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Iodomethane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Isopropylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Methyl Tert Butyl Ether	ug/l	NA	35	1.0 U	-	1.0 U	1.0 U	1.0 U
Methylene bromide	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Methylene chloride	ug/l	5	47	2.0 U	-	2.0 U	2.0 U	2.0 U
Naphthalene	ug/l	NA	14	5.0 U	-	5.0 U	5.0 U	5.0 U
n-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
n-Propylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
o-Chlorotoluene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
p-Chlorotoluene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
p-Isopropyltoluene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
sec-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Styrene	ug/l	100	140	5.0 U	-	5.0 U	5.0 U	5.0 U
tert-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/l	5	7	1.0 U	-	1.0 U	1.0 U	1.0 U
Toluene	ug/l	1000	1400	1.0 U	-	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/l	100	140	-	-	1.0 U	-	-
trans-1,3-Dichloropropene	ug/l	NA	4	0.50 U	-	0.50 U	0.50 U	0.50 U
Trichloroethene	ug/l	5	32	1.0 U	-	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane	ug/l	NA	2100	1.0 U	-	1.0 U	1.0 U	1.0 U
Vinyl Acetate	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Vinyl chloride	ug/l	2	0.2	1.0 U	-	1.0 U	1.0 U	1.0 U
Xylene (total)	ug/l	10000	1400	1.0 U	-	1.0 U	1.0 U	1.0 U
Total VOC	ug/l	NA	NA	0	-	0	0	0

Summary of Groundwater Sample Analy... Results for Shallow Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

	Units	Federal MCL	Maine MEG					
Station ID				MW-332	MW-332	MW-332	MW-1104	P-111
Field Sample ID*				BN-EP-34-MW332-M	BN-EP-34-MW332	BN-EP-34-MW-XD4	BN-EP-34-MW1104-M	BN-EP-34-P111
Lab Sample ID				M82126-45	M82126-45A	M82126-46	M82980-2	M81914-12
Sample Date				04/17/09	04/17/09	04/17/09	05/19/09	04/10/09
Lab Name				Accutest	Accutest	Accutest	Accutest	Accutest
Field QC				Original data	Original data	Field duplicates	Original data	Original data
Sampling Method				Mid Diffusion	Low-Flow	Mid Diffusion	Mid Diffusion	Low-Flow
VOCs								
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,1,1-Trichloroethane	ug/l	200	200	1.0 U	-	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/l	NA	1.8	1.0 U	-	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/l	5	6	1.0 U	-	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/l	NA	70	1.0 U	-	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/l	7	0.6	1.0 U	-	1.0 U	1.0 U	1.0 U
1,1-Dichloropropene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,2,3-Trichlorobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,2,3-Trichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,2,4-Trimethylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,2-Dibromoethane	ug/l	0.05	0.2	2.0 U	-	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	ug/l	600	63	1.0 U	-	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/l	5	4	1.0 U	-	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	ug/l	NA	NA	1.0 U	-	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/l	5	5	2.0 U	-	2.0 U	2.0 U	2.0 U
1,3,5-Trimethylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	ug/l	NA	NA	1.0 U	-	1.0 U	1.0 U	1.0 U
1,3-Dichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	ug/l	NA	NA	1.0 U	-	1.0 U	1.0 U	1.0 U
1,4-Dioxane	ug/l	NA	32	-	1.7	-	-	-
2,2-Dichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
2-Butanone (MEK)	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
2-Hexanone	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Acetone	ug/l	NA	6300	8.9	-	5.0	12.8 U	5.0 U
Benzene	ug/l	5	6	0.50 U	-	0.50 U	0.50 U	0.50 U
Bromobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Bromochloromethane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Bromodichloromethane	ug/l	NA	6	1.0 U	-	1.0 U	1.0 UJ	1.0 U
Bromoform	ug/l	NA	44	1.0 U	-	1.0 U	1.0 UJ	1.0 U
Bromomethane	ug/l	NA	10	2.0 UJ	-	2.0 UJ	2.0 UJ	2.0 U
Carbon disulfide	ug/l	NA	600	5.0 UJ	-	5.0 UJ	5.0 U	5.0 U

Table 2-2
Summary of Groundwater Sample Analytical Results for Shallow Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

	Units	Federal MCL	Maine MEG					
Station ID				MW-332	MW-332	MW-332	MW-1104	P-111
Field Sample ID*				BN-EP-34-MW332-M	BN-EP-34-MW332	BN-EP-34-MW-XD4	BN-EP-34-MW1104-M	BN-EP-34-P111
Lab Sample ID				M82126-45	M82126-45A	M82126-46	M82980-2	M81914-12
Sample Date				04/17/09	04/17/09	04/17/09	05/19/09	04/10/09
Lab Name				Accutest	Accutest	Accutest	Accutest	Accutest
Field QC				Original data	Original data	Field duplicates	Original data	Original data
Sampling Method				Mid Diffusion	Low-Flow	Mid Diffusion	Mid Diffusion	Low-Flow
VOCs								
Carbon tetrachloride	ug/l	5	3	1.0 U	-	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/l	100	47	1.0 U	-	1.0 U	1.0 U	1.0 U
Chloroethane	ug/l	NA	NA	2.0 U	-	2.0 U	2.0 U	2.0 U
Chloroform	ug/l	80	70	1.0 U	-	1.0 U	1.0 U	1.0 U
Chloromethane	ug/l	NA	3	2.0 UJ	-	2.0 UJ	2.0 UJ	2.0 U
cis-1,2-Dichloroethene	ug/l	70	70	-	-	-	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/l	NA	4	0.50 U	-	0.50 U	0.50 U	0.50 U
Dibromochloromethane	ug/l	NA	4	1.0 U	-	1.0 U	1.0 UJ	1.0 U
Dichlorodifluoromethane	ug/l	NA	NA	2.0 U	-	2.0 U	2.0 U	2.0 U
Ethylbenzene	ug/l	700	70	1.0 U	-	1.0 U	1.0 U	1.0 U
Hexachlorobutadiene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Iodomethane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Isopropylbenzene	ug/l	NA	NA	5.0 U	-	1.0 U	1.0 U	1.0 U
Methyl Tert Butyl Ether	ug/l	NA	35	1.0 U	-	1.0 U	1.0 U	1.0 U
Methylene bromide	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Methylene chloride	ug/l	5	47	2.0 U	-	2.0 U	2.0 U	2.0 U
Naphthalene	ug/l	NA	14	5.0 U	-	5.0 U	5.0 U	5.0 U
n-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
n-Propylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
o-Chlorotoluene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
p-Chlorotoluene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
p-Isopropyltoluene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
sec-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Styrene	ug/l	100	140	5.0 U	-	5.0 U	5.0 U	5.0 U
tert-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/l	5	7	1.0 U	-	1.0 U	1.0 U	1.0 U
Toluene	ug/l	1000	1400	1.0 U	-	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/l	100	140	-	-	-	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/l	NA	4	0.50 U	-	0.50 U	0.50 UJ	0.50 U
Trichloroethene	ug/l	5	32	1.0 U	-	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane	ug/l	NA	2100	1.0 U	-	1.0 U	1.0 U	1.0 U
Vinyl Acetate	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	5.0 U
Vinyl chloride	ug/l	2	0.2	1.0 U	-	1.0 U	1.0 U	1.0 U
Xylene (total)	ug/l	10000	1400	1.0 U	-	1.0 U	1.0 U	1.0 U

Total VOC	ug/l	NA	NA	0	-	0	0	0

Table 2-2
Summary of Groundwater Sample Analytical Results for Shallow Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

			Station ID	P-132
			Field Sample ID*	BN-EP-34-P132-D
			Lab Sample ID	M82308-22
			Sample Date	04/23/09
			Lab Name	Accutest
			Field QC	Original data
			Sampling Method	Deep Diffusion
	Units	Federal MCL	Maine MEG	
VOCs				
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	5 0 U
1,1,1-Trichloroethane	ug/l	200	200	1 0 U
1,1,2,2-Tetrachloroethane	ug/l	NA	1 8	1 0 U
1,1,2-Trichloroethane	ug/l	5	6	1 0 U
1,1-Dichloroethane	ug/l	NA	70	1 0 U
1,1-Dichloroethene	ug/l	7	0 6	1 0 U
1,1-Dichloropropene	ug/l	NA	NA	5 0 U
1,2,3-Trichlorobenzene	ug/l	NA	NA	5 0 U
1,2,3-Trichloropropane	ug/l	NA	NA	5 0 U
1,2,4-Trichlorobenzene	ug/l	NA	NA	5 0 U
1,2,4-Trimethylbenzene	ug/l	NA	NA	5 0 U
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	5 0 U
1,2-Dibromoethane	ug/l	0 05	0 2	2 0 U
1,2-Dichlorobenzene	ug/l	600	63	1 0 U
1,2-Dichloroethane	ug/l	5	4	1 0 U
1,2-Dichloroethene (total)	ug/l	NA	NA	1 0 U
1,2-Dichloropropane	ug/l	5	5	2 0 U
1,3,5-Trimethylbenzene	ug/l	NA	NA	5 0 U
1,3-Dichlorobenzene	ug/l	NA	NA	1 0 U
1,3-Dichloropropane	ug/l	NA	NA	5 0 U
1,4-Dichlorobenzene	ug/l	NA	NA	1 0 U
1,4-Dioxane	ug/l	NA	32	-
2,2-Dichloropropane	ug/l	NA	NA	5 0 U
2-Butanone (MEK)	ug/l	NA	NA	5 0 U
2-Hexanone	ug/l	NA	NA	5 0 U
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	5 0 U
Acetone	ug/l	NA	6300	5 0 J
Benzene	ug/l	5	6	0 50 U
Bromobenzene	ug/l	NA	NA	5 0 U
Bromochloromethane	ug/l	NA	NA	5 0 U
Bromodichloromethane	ug/l	NA	6	1 0 U
Bromoform	ug/l	NA	44	1 0 U
Bromomethane	ug/l	NA	10	2 0 U

Carbon disulfide	ug/l	NA	600	5.0 U

Table 2-2

Summary of Groundwater Sample Analytical Results for Shallow Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name Eastern Plume

			Station ID	P-132
			Field Sample ID*	BN-EP-34-P132-D
			Lab Sample ID	M82308-22
			Sample Date	04/23/09
			Lab Name	Accutest
			Field QC	Original data
			Sampling Method	Deep Diffusion
	Units	Federal MCL	Maine MEG	
VOCs				
Carbon tetrachloride	ug/l	5	3	1.0 U
Chlorobenzene	ug/l	100	47	1.0 U
Chloroethane	ug/l	NA	NA	2.0 U
Chloroform	ug/l	80	70	1.0 U
Chloromethane	ug/l	NA	3	2.0 U
cis-1,2-Dichloroethene	ug/l	70	70	-
cis-1,3-Dichloropropene	ug/l	NA	4	0.50 U
n-Propylbenzene	ug/l	NA	NA	5.0 U
o-Chlorotoluene	ug/l	NA	NA	5.0 U
p-Chlorotoluene	ug/l	NA	NA	5.0 U
p-Isopropyltoluene	ug/l	NA	NA	5.0 U
sec-Butylbenzene	ug/l	NA	NA	5.0 U
Styrene	ug/l	100	140	5.0 U
tert-Butylbenzene	ug/l	NA	NA	5.0 U
Tetrachloroethene	ug/l	5	7	1.0 U
Toluene	ug/l	1000	1400	1.0 U
trans-1,2-Dichloroethene	ug/l	100	140	-
trans-1,3-Dichloropropene	ug/l	NA	4	0.50 U
Trichloroethene	ug/l	5	32	1.0 U
Trichlorofluoromethane	ug/l	NA	2100	1.0 U
Vinyl Acetate	ug/l	NA	NA	5.0 U
Vinyl chloride	ug/l	2	0.2	1.0 U
Xylene (total)	ug/l	10000	1400	1.0 U
Total VOC	ug/l	NA	NA	0

Notes

MEG - obtained from State of Maine Department of Human Services Maximum Exposure Guidelines, Memorandum dated 5 December 2008
MCL - obtained from 40 CFR Parts 141 and 142 (U.S. EPA 1998)
Screening Value - Risk Based Ecological Screening Values for Surface Water, Seep Water, and Sediment at the Naval Air Station Brunswick, EA Science and Technology, January, 2006
* Field Sample IDs begin with BN-EP-34- for samples collected at Eastern Plume area during Monitoring Event 34
VOCs analyzed by EPA Method 8260B
Target Analyte List Metals analyzed by EPA 6000/7000 series methods
Pesticides analyzed by EPA Method 8081A
Total VOC calculation does not include common laboratory contaminants (acetone, methylene chloride, 2-butanone), VOCs detected in the blank samples, or 1,4-dioxane.
The acetone concentrations reported from samples collected from Passive Diffusion Bags (PDBS) are not considered usable data because PDB sampling techniques are not designed for acetone collection
Highlighted concentrations indicate exceedance of an MEG, MCL or screening level. The color of the highlight indicated which screening level was exceeded
Refer to the Data Quality Review section for reporting limits and method detection limits for all analyzed compounds

Acronyms

-	Not sampled
EPA	U.S. Environmental Protection Agency
GWETS	Groundwater Extraction and Treatment System
ID	Identification
MCL	Maximum Contaminant Level
MEG	Maximum Exposure Guideline
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MNA	monitored natural attenuation
NA	Criteria not applicable
VOC	Volatile Organic Compound
ug/L	micrograms per liter

Validation Qualifiers

U	Not detected down to the method detection limit (MDL). Data presented in the table are Method Reporting Limits. MDLs are provided in Appendix C (Analytical Data Quality Review)
J	Estimated concentration
UJ	Not detected. Sample quantitation limit is estimated
R	Value rejected by data validator

VOC Contaminants of Concern:	Metals Contaminants of Concern:
1,1-Dichloroethane	Aluminum
1,2-Dichloroethene, total	Arsenic
Chlorobenzene	Barium
Ethylbenzene	Chromium
Methylene Chloride	Lead
Toluene	Manganese
Vinyl Chloride	Nickel
Xylenes, total	Potassium

1 -3

Summary of Groundwater Sample Analy...al Results for Deep Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

	Units	Federal MCL	Maine MEG					
Station ID				BN-RW-34-MW01	BN-RW-34-MW01	MW-105A	MW205	MW205
Field Sample ID*				BN-RW-34-MW01	BN-RW-34-MW01	BN-EP-34-MW105A-D	BN-EP-34-MW205-D	BN-EP-34-MW205-D
Lab Sample ID				M82305-2	M82305-2A	M82126-17	M82126-18	M82126-18A
Sample Date				04/22/09	04/22/09	04/15/09	04/15/09	04/15/09
Lab Name				Accutest	Accutest	Accutest	Accutest	Accutest
Field QC				Original data	Original data	Original data	Original data	Original data
Sampling Method				Low-Flow	Low-Flow	Deep Diffusion	Deep Diffusion	Mid Diffusion
VOCs								
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
1,1,1-Trichloroethane	ug/l	200	200	1.0 U	-	1.0 U	1.6	-
1,1,2,2-Tetrachloroethane	ug/l	NA	1.8	1.0 U	-	1.0 U	1.0 U	-
1,1,2-Trichloroethane	ug/l	5	6	1.0 U	-	1.0 U	1.0 U	-
1,1-Dichloroethane	ug/l	NA	70	1.0 U	-	1.0 U	1.0 U	-
1,1-Dichloroethene	ug/l	7	0.6	1.0 U	-	1.0 U	1.0 U	-
1,1-Dichloropropene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
1,2,3-Trichlorobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
1,2,3-Trichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
1,2,4-Trichlorobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
1,2,4-Trimethylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
1,2-Dibromoethane	ug/l	0.05	0.2	2.0 U	-	2.0 U	2.0 U	-
1,2-Dichlorobenzene	ug/l	600	63	1.0 U	-	1.0 U	1.0 U	-
1,2-Dichloroethane	ug/l	5	4	1.0 U	-	1.0 U	1.0 U	-
1,2-Dichloroethene (total)**	ug/l	NA	NA	1.0 U	-	1.0 U	10.5	-
1,2-Dichloropropane	ug/l	5	5	2.0 U	-	2.0 U	2.0 U	-
1,3,5-Trimethylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
1,3-Dichlorobenzene	ug/l	NA	NA	1.0 U	-	1.0 U	1.0 U	-
1,3-Dichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
1,4-Dichlorobenzene	ug/l	NA	NA	1.0 U	-	1.0 U	1.0 U	-
1,4-Dioxane	ug/l	NA	32	-	1.0 UJ	-	-	1.7 J
2,2-Dichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
2-Butanone (MEK)	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
2-Hexanone	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
Acetone	ug/l	NA	6300	5.0 U	-	5.0 UJ	5.0 UJ	-
Benzene	ug/l	5	6	0.50 U	-	0.50 U	0.50 U	-

Table 2-3
Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

	Units	Federal MCL	Maine MEG					
Station ID				BN-RW-34-MW01	BN-RW-34-MW01	MW-105A	MW205	MW205
Field Sample ID*				BN-RW-34-MW01	BN-RW-34-MW01	BN-EP-34-MW105A-D	BN-EP-34-MW205-D	BN-EP-34-MW205-D
Lab Sample ID				M82305-2	M82305-2A	M82126-17	M82126-18	M82126-18A
Sample Date				04/22/09	04/22/09	04/15/09	04/15/09	04/15/09
Lab Name				Accutest	Accutest	Accutest	Accutest	Accutest
Field QC				Original data	Original data	Original data	Original data	Original data
Sampling Method				Low-Flow	Low-Flow	Deep Diffusion	Deep Diffusion	Mid Diffusion
VOCs								
Bromobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
Bromochloromethane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
Bromodichloromethane	ug/l	NA	6	1.0 U	-	1.0 U	1.0 U	-
Bromoform	ug/l	NA	44	1.0 U	-	1.0 U	1.0 U	-
Bromomethane	ug/l	NA	10	2.0 UJ	-	2.0 U	2.0 U	-
Carbon disulfide	ug/l	NA	600	5.0 U	-	5.0 U	5.0 U	-
Carbon tetrachloride	ug/l	5	3	1.0 U	-	1.0 U	1.0 U	-
Chlorobenzene	ug/l	100	47	1.0 U	-	1.0 U	1.0 U	-
Chloroethane	ug/l	NA	NA	2.0 U	-	2.0 U	2.0 U	-
Chloroform	ug/l	80	70	1.0 U	-	1.0 U	1.0 U	-
Chloromethane	ug/l	NA	3	2.0 UJ	-	2.0 U	2.0 U	-
cis-1,2-Dichloroethene	ug/l	70	70	-	-	-	-	-
cis-1,3-Dichloropropene	ug/l	NA	4	0.50 U	-	0.50 U	0.50 U	-
Dibromochloromethane	ug/l	NA	4	1.0 U	-	1.0 U	1.0 U	-
Dichlorodifluoromethane	ug/l	NA	NA	2.0 U	-	2.0 U	2.0 U	-
Ethylbenzene	ug/l	700	70	1.0 U	-	1.0 U	1.0 U	-
Hexachlorobutadiene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
Iodomethane	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
Isopropylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
Methyl Tert Butyl Ether	ug/l	NA	35	1.0 U	-	1.0 U	1.0 U	-
Methylene bromide	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
Methylene chloride	ug/l	5	47	2.0 U	-	2.0 U	2.0 U	-
Naphthalene	ug/l	NA	14	5.0 U	-	5.0 U	5.0 U	-
n-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
n-Propylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
o-Chlorotoluene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
p-Chlorotoluene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-

Summary of Groundwater Sample Anal...al Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name Eastern Plume

			Station ID:	BN-RW-34-MW01	BN-RW-34-MW01	MW-105A	MW205	MW205
			Field Sample ID*:	BN-RW-34-MW01	BN-RW-34-MW01	BN-EP-34-MW105A-D	BN-EP-34-MW205-D	BN-EP-34-MW205-D
			Lab Sample ID:	M82305-2	M82305-2A	M82126-17	M82126-18	M82126-18A
			Sample Date:	04/22/09	04/22/09	04/15/09	04/15/09	04/15/09
			Lab Name:	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC:	Original data	Original data	Original data	Original data	Original data
			Sampling Method:	Low-Flow	Low-Flow	Deep Diffusion	Deep Diffusion	Mid Diffusion
	Units	Federal MCL	Maine MEG					
VOCs								
p-Isopropyltoluene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
sec-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
Styrene	ug/l	100	140	5.0 U	-	5.0 U	5.0 U	-
tert-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
Tetrachloroethene	ug/l	5	7	1.0 U	-	1.0 U	3.8	-
Toluene	ug/l	1000	1400	1.0 U	-	1.0 U	1.0 U	-
trans-1,2-Dichloroethene	ug/l	100	140	-	-	-	-	-
trans-1,3-Dichloropropene	ug/l	NA	4	0.50 U	-	0.50 U	0.50 U	-
Trichloroethene	ug/l	5	32	1.0 U	-	1.0 U	12.0	-
Trichlorofluoromethane	ug/l	NA	2100	1.0 U	-	1.0 U	1.0 U	-
Vinyl Acetate	ug/l	NA	NA	5.0 U	-	5.0 U	5.0 U	-
Vinyl chloride	ug/l	2	0.2	1.0 U	-	1.0 U	1.0 U	-
Xylene (total)	ug/l	10000	1400	1.0 U	-	1.0 U	1.0 U	-
Total VOC	ug/l	NA	NA	0	-	0	27.9	-

Table 2-3

Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

	Units	Federal MCL	Maine MEG					
			Station ID	MW-207AR	MW-207AR	MW-207AR	MW-212	MW-225A
			Field Sample ID*	BN-EP-34-MW207AR	BN-EP-34-MW207AR-M	BN-EP-34-MW207AR-D	BN-EP-34-MW212-S	BN-EP-34-MW225A-M
			Lab Sample ID	M82308-11	M82308-2	M82308-3	M82308-20	M81914-3
			Sample Date	04/21/09	04/20/09	04/20/09	04/23/09	04/09/09
			Lab Name	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC	Original data	Original data	Original data	Original data	Original data
			Sampling Method	Low-Flow	Mid Diffusion	Deep Diffusion	Shallow Diffusion	Mid Diffusion
VOCs								
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,1,1-Trichloroethane	ug/l	200	200	-	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/l	NA	1.8	-	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/l	5	6	-	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/l	NA	70	-	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/l	7	0.6	-	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloropropene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,2,3-Trichlorobenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,2,3-Trichloropropane	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trimethylbenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromoethane	ug/l	0.05	0.2	-	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	ug/l	600	63	-	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/l	5	4	-	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)**	ug/l	NA	NA	-	2.6	3.0	2.4	6.1
1,2-Dichloropropane	ug/l	5	5	-	2.0 U	2.0 U	2.0 U	2.0 U
1,3,5-Trimethylbenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	ug/l	NA	NA	-	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichloropropane	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	ug/l	NA	NA	-	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dioxane	ug/l	NA	32	1.0 J	-	-	-	-
2,2-Dichloropropane	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone (MEK)	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 UJ
2-Hexanone	ug/l	NA	NA	-	5.0 UJ	5.0 UJ	5.0 U	5.0 U
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	ug/l	NA	6300	-	8.1 J	6.7 J	5.0 U	7.7 J
Benzene	ug/l	5	6	-	0.50 U	0.50 U	0.50 U	0.50 U

Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

	Units	Federal MCL	Maine MEG					
Station ID				MW-207AR	MW-207AR	MW-207AR	MW-212	MW-225A
Field Sample ID*				BN-EP-34-MW207AR	BN-EP-34-MW207AR-M	BN-EP-34-MW207AR-D	BN-EP-34-MW212-S	BN-EP-34-MW225A-M
Lab Sample ID				M82308-11	M82308-2	M82308-3	M82308-20	M81914-3
Sample Date				04/21/09	04/20/09	04/20/09	04/23/09	04/09/09
Lab Name				Accutest	Accutest	Accutest	Accutest	Accutest
Field QC				Original data	Original data	Original data	Original data	Original data
Sampling Method				Low-Flow	Mid Diffusion	Deep Diffusion	Shallow Diffusion	Mid Diffusion
VOCs								
Bromobenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Bromochloromethane	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Bromodichloromethane	ug/l	NA	6	-	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/l	NA	44	-	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	ug/l	NA	10	-	2.0 U	2.0 U	2.0 U	2.0 U
Carbon disulfide	ug/l	NA	600	-	5.0 U	5.0 U	5.0 U	5.0 U
Carbon tetrachloride	ug/l	5	3	-	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/l	100	47	-	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/l	NA	NA	-	2.0 U	2.0 U	2.0 U	2.0 U
Chloroform	ug/l	80	70	-	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	ug/l	NA	3	-	2.0 U	2.0 U	2.0 U	2.0 UJ
cis-1,2-Dichloroethene	ug/l	70	70	-	-	-	-	6.1
cis-1,3-Dichloropropene	ug/l	NA	4	-	0.50 U	0.50 U	0.50 U	0.50 U
Dibromochloromethane	ug/l	NA	4	-	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	ug/l	NA	NA	-	2.0 U	2.0 U	2.0 U	2.0 U
Ethylbenzene	ug/l	700	70	-	1.0 U	1.0 U	1.0 U	1.0 U
Hexachlorobutadiene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Iodomethane	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Isopropylbenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Tert Butyl Ether	ug/l	NA	35	-	1.0 U	1.0 U	1.0 U	1.0 U
Methylene bromide	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Methylene chloride	ug/l	5	47	-	2.0 U	2.0 U	2.0 U	2.0 U
Naphthalene	ug/l	NA	14	-	5.0 U	5.0 U	5.0 U	5.0 U
n-Butylbenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
n-Propylbenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
o-Chlorotoluene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
p-Chlorotoluene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U

Table 2-3

Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

			Station ID:	MW-207AR	MW-207AR	MW-207AR	MW-212	MW-225A
			Field Sample ID*:	BN-EP-34-MW207AR	BN-EP-34-MW207AR-M	BN-EP-34-MW207AR-D	BN-EP-34-MW212-S	BN-EP-34-MW225A-M
			Lab Sample ID:	M82308-11	M82308-2	M82308-3	M82308-20	M81914-3
			Sample Date:	04/21/09	04/20/09	04/20/09	04/23/09	04/09/09
			Lab Name:	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC:	Original data	Original data	Original data	Original data	Original data
			Sampling Method:	Low-Flow	Mid Diffusion	Deep Diffusion	Shallow Diffusion	Mid Diffusion
	Units	Federal MCL	Maine MEG					
VOCs								
p-Isopropyltoluene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
sec-Butylbenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	ug/l	100	140	-	5.0 U	5.0 U	5.0 U	5.0 U
tert-Butylbenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/l	5	7	-	17.5	17.6	2.4	1.0
Toluene	ug/l	1000	1400	-	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/l	100	140	-	-	-	-	1.0 U
trans-1,3-Dichloropropene	ug/l	NA	4	-	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	ug/l	5	32	-	3.1	3.7	11.4	3.9
Trichlorofluoromethane	ug/l	NA	2100	-	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Acetate	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Vinyl chloride	ug/l	2	0.2	-	1.0 U	1.0 U	1.0 U	1.0 U
Xylene (total)	ug/l	10000	1400	-	1.0 U	1.0 U	1.0 U	1.0 U
Total VOC	ug/l	NA	NA	-	23.2	24.3	16.2	11

Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

			Station ID:	MW-225A	MW-229A	MW-229A	MW-230A	MW-231A
			Field Sample ID*:	BN-EP-34-MW-XD1	BN-EP-34-MW229A-M	BN-EP-34-MW229A	BN-EP-34-MW230A-D	BN-EP-34-MW231A-D
			Lab Sample ID:	M81914-4	M82308-4	M82308-12	M82126-2	M82126-3
			Sample Date:	04/09/09	04/20/09	04/21/09	04/13/09	04/13/09
			Lab Name:	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC:	Field Duplicate	Original data	Original data	Original data	Original data
			Sampling Method:	Mid Diffusion	Mid Diffusion	Low-Flow	Deep Diffusion	Deep Diffusion
	Units	Federal MCL	Maine MEG					
VOCs								
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
1,1,1-Trichloroethane	ug/l	200	200	1.0 U	8.1	-	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/l	NA	1.8	1.0 U	1.0 U	-	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/l	5	6	1.0 U	1.0 U	-	1.0 U	1.0 U
1,1-Dichloroethane	ug/l	NA	70	1.0 U	0.54 J	-	0.30 J	1.0 U
1,1-Dichloroethene	ug/l	7	0.6	1.0 U	**1.9**	-	1.0 U	1.0 U
1,1-Dichloropropene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
1,2,3-Trichlorobenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
1,2,3-Trichloropropane	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
1,2,4-Trichlorobenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
1,2,4-Trimethylbenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
1,2-Dibromoethane	ug/l	0.05	0.2	2.0 U	2.0 U	-	2.0 U	2.0 U
1,2-Dichlorobenzene	ug/l	600	63	1.0 U	1.0 U	-	1.0 U	1.0 U
1,2-Dichloroethane	ug/l	5	4	1.0 U	1.0 U	-	1.0 U	1.0 U
1,2-Dichloroethene (total)**	ug/l	NA	NA	5.9	1.4	-	1.0 U	1.0 U
1,2-Dichloropropane	ug/l	5	5	2.0 U	2.0 U	-	2.0 U	2.0 U
1,3,5-Trimethylbenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
1,3-Dichlorobenzene	ug/l	NA	NA	1.0 U	1.0 U	-	1.0 U	1.0 U
1,3-Dichloropropane	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
1,4-Dichlorobenzene	ug/l	NA	NA	1.0 U	1.0 U	-	1.0 U	1.0 U
1,4-Dioxane	ug/l	NA	32	-	-	1.5 J	-	-
2,2-Dichloropropane	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
2-Butanone (MEK)	ug/l	NA	NA	5.0 UJ	5.0 U	-	5.0 UJ	5.0 UJ
2-Hexanone	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
Acetone	ug/l	NA	6300	7.6 J	5.0 U	-	9.4 J	5.0 J
Benzene	ug/l	5	6	0.50 U	0.50 U	-	0.50 U	12.1 U

Table 2-3
Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

	Units	Federal MCL	Maine MEG	MW-225A	MW-229A	MW-229A	MW-230A	MW-231A
Field Sample ID*				BN-EP-34-MW-XD1	BN-EP-34-MW229A-M	BN-EP-34-MW229A	BN-EP-34-MW230A-D	BN-EP-34-MW231A-D
Lab Sample ID				M81914-4	M82308-4	M82308-12	M82126-2	M82126-3
Sample Date				04/09/09	04/20/09	04/21/09	04/13/09	04/13/09
Lab Name				Accutest	Accutest	Accutest	Accutest	Accutest
Field QC				Field Duplicate	Original data	Original data	Original data	Original data
Sampling Method				Mid Diffusion	Mid Diffusion	Low-Flow	Deep Diffusion	Deep Diffusion
VOCs								
Bromobenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
Bromochloromethane	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
Bromodichloromethane	ug/l	NA	6	1.0 U	1.0 U	-	1.0 U	1.0 U
Bromoform	ug/l	NA	44	1.0 U	1.0 U	-	1.0 U	1.0 U
Bromomethane	ug/l	NA	10	2.0 U	2.0 U	-	2.0 UJ	2.0 UJ
Carbon disulfide	ug/l	NA	600	5.0 U	5.0 U	-	5.0 U	5.0 U
Carbon tetrachloride	ug/l	5	3	1.0 U	1.0 U	-	1.0 U	1.0 U
Chlorobenzene	ug/l	100	47	1.0 U	1.0 U	-	1.0 U	1.0 U
Chloroethane	ug/l	NA	NA	2.0 U	2.0 U	-	2.0 U	2.0 U
Chloroform	ug/l	80	70	1.0 U	1.0 U	-	1.0 U	1.0 U
Chloromethane	ug/l	NA	3	2.0 UJ	2.0 U	-	2.0 UJ	2.0 UJ
cis-1,2-Dichloroethene	ug/l	70	70	5.9	-	-	-	-
cis-1,3-Dichloropropene	ug/l	NA	4	0.50 U	0.50 U	-	0.50 U	0.50 U
Dibromochloromethane	ug/l	NA	4	1.0 U	1.0 U	-	1.0 U	1.0 U
Dichlorodifluoromethane	ug/l	NA	NA	2.0 U	2.0 U	-	2.0 U	2.0 U
Ethylbenzene	ug/l	700	70	1.0 U	1.0 U	-	1.0 U	1.0 U
Hexachlorobutadiene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
Iodomethane	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
Isopropylbenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
Methyl Tert Butyl Ether	ug/l	NA	35	1.0 U	1.0 U	-	1.0 U	1.0 U
Methylene bromide	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
Methylene chloride	ug/l	5	47	2.0 U	2.0 U	-	2.0 U	2.0 U
Naphthalene	ug/l	NA	14	5.0 U	5.0 U	-	5.0 U	5.0 U
n-Butylbenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
n-Propylbenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
o-Chlorotoluene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
p-Chlorotoluene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U

Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

			Station ID:	MW-225A	MW-229A	MW-229A	MW-230A	MW-231A
			Field Sample ID*:	BN-EP-34-MW-XD1	BN-EP-34-MW229A-M	BN-EP-34-MW229A	BN-EP-34-MW230A-D	BN-EP-34-MW231A-D
			Lab Sample ID:	M81914-4	M82308-4	M82308-12	M82126-2	M82126-3
			Sample Date:	04/09/09	04/20/09	04/21/09	04/13/09	04/13/09
			Lab Name:	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC:	Field Duplicate	Original data	Original data	Original data	Original data
			Sampling Method:	Mid Diffusion	Mid Diffusion	Low-Flow	Deep Diffusion	Deep Diffusion
	Units	Federal MCL	Maine MEG					
VOCs								
p-Isopropyltoluene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
sec-Butylbenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
Styrene	ug/l	100	140	5.0 U	5.0 U	-	5.0 U	5.0 U
tert-Butylbenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
Tetrachloroethene	ug/l	5	7	1.0	1.4	-	1.0 U	1.0 U
Toluene	ug/l	1000	1400	1.0 U	1.0 U	-	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/l	100	140	1.0 U	-	-	-	-
trans-1,3-Dichloropropene	ug/l	NA	4	0.50 U	0.50 U	-	0.50 U	0.50 U
Trichloroethene	ug/l	5	32	3.8	8.2	-	1.4	1.0 U
Trichlorofluoromethane	ug/l	NA	2100	1.0 U	1.0 U	-	1.0 U	1.0 U
Vinyl Acetate	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	5.0 U
Vinyl chloride	ug/l	2	0.2	1.0 U	1.0 U	-	1.0 U	1.0 U
Xylene (total)	ug/l	10000	1400	1.0 U	1.0 U	-	1.0 U	1.0 U
Total VOC	ug/l	NA	NA	10.7	20.14	-	1.7	0

Table 2-3

Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name Eastern Plume

			Station ID	MW-303	MW-305	MW-306	MW308	MW308
			Field Sample ID*	BN-EP-34-MW303-D	BN-EP-34-MW305-D	BN-EP-34-MW306-D	BN-EP-34-MW308-D	BN-EP-34-MW308
			Lab Sample ID	M82126-5	M82308-21	M82126-6	M81914-10	
			Sample Date	04/13/09	04/23/09	04/13/09	04/10/09	04/10/09
			Lab Name	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC	Original data	Original data	Original data	Original data	Original data
			Sampling Method	Deep Diffusion	Deep Diffusion	Deep Diffusion	Deep Diffusion	Low-Flow
	Units	Federal MCL	Maine MEG					
VOCs								
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,1,1-Trichloroethane	ug/l	200	200	1.0 U	1.0 U	1.8	1.0 U	-
1,1,2,2-Tetrachloroethane	ug/l	NA	1.8	1.0 U	1.0 U	1.0 U	1.0 U	-
1,1,2-Trichloroethane	ug/l	5	6	1.0 U	1.0 U	1.0 U	1.0 U	-
1,1-Dichloroethane	ug/l	NA	70	1.0 U	3.0	1.0 U	4.4	-
1,1-Dichloroethene	ug/l	7	0.6	1.0 U	1.6	1.0 U	8.1	-
1,1-Dichloropropene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,2,3-Trichlorobenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,2,3-Trichloropropane	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,2,4-Trichlorobenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,2,4-Trimethylbenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,2-Dibromoethane	ug/l	0.05	0.2	2.0 U	2.0 U	2.0 U	2.0 U	-
1,2-Dichlorobenzene	ug/l	600	63	1.0 U	1.0 U	1.0 U	1.0 U	-
1,2-Dichloroethane	ug/l	5	4	1.0 U	1.0 U	1.0 U	1.0 U	-
1,2-Dichloroethene (total)**	ug/l	NA	NA	1.0 U	1.0 U	2.4	1.0 U	-
1,2-Dichloropropane	ug/l	5	5	2.0 U	2.0 U	2.0 U	2.0 U	-
1,3,5-Trimethylbenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,3-Dichlorobenzene	ug/l	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	-
1,3-Dichloropropane	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,4-Dichlorobenzene	ug/l	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	-
1,4-Dioxane	ug/l	NA	32	-	-	-	-	9.1 J
2,2-Dichloropropane	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
2-Butanone (MEK)	ug/l	NA	NA	5.0 UJ	5.0 U	5.0 UJ	5.0 U	-
2-Hexanone	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Acetone	ug/l	NA	6300	6.9 J	5.0 U	8.7 J	3.3 J	-
Benzene	ug/l	5	6	0.50 U	0.50 U	0.50 U	0.50 U	-

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Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name Eastern Plume

			Station ID:	MW-303	MW-305	MW-306	MW308	MW308
			Field Sample ID*:	BN-EP-34-MW303-D	BN-EP-34-MW305-D	BN-EP-34-MW306-D	BN-EP-34-MW308-D	BN-EP-34-MW308
			Lab Sample ID:	M82126-5	M82308-21	M82126-6	M81914-10	
			Sample Date:	04/13/09	04/23/09	04/13/09	04/10/09	04/10/09
			Lab Name:	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC:	Original data	Original data	Original data	Original data	Original data
			Sampling Method:	Deep Diffusion	Deep Diffusion	Deep Diffusion	Deep Diffusion	Low-Flow
	Units	**Federal MCL**	**Maine MEG**					
VOCs								
Bromobenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Bromochloromethane	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Bromodichloromethane	ug/l	NA	6	1.0 U	1.0 U	1.0 U	1.0 U	-
Bromoform	ug/l	NA	44	1.0 U	1.0 U	1.0 U	1.0 U	-
Bromomethane	ug/l	NA	10	2.0 UJ	2.0 U	2.0 UJ	2.0 U	-
Carbon disulfide	ug/l	NA	600	5.0 U	5.0 U	5.0 U	5.0 U	-
Carbon tetrachloride	ug/l	5	3	1.0 U	1.0 U	1.0 U	1.0 U	-
Chlorobenzene	ug/l	100	47	1.0 U	1.0 U	1.0 U	1.0 U	-
Chloroethane	ug/l	NA	NA	2.0 U	2.0 U	2.0 U	2.0 U	-
Chloroform	ug/l	80	70	1.0 U	1.0 U	2.0	1.0 U	-
Chloromethane	ug/l	NA	3	2.0 UJ	2.0 U	2.0 UJ	2.0 U	-
cis-1,2-Dichloroethene	ug/l	70	70	-	-	-	1.0 U	-
cis-1,3-Dichloropropene	ug/l	NA	4	0.50 U	0.50 U	0.50 U	0.50 U	-
Dibromochloromethane	ug/l	NA	4	1.0 U	1.0 U	1.0 U	1.0 U	-
Dichlorodifluoromethane	ug/l	NA	NA	2.0 U	2.0 U	2.0 U	2.0 U	-
Ethylbenzene	ug/l	700	70	1.0 U	1.0 U	1.0 U	1.0 U	-
Hexachlorobutadiene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Iodomethane	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Isopropylbenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Methyl Tert Butyl Ether	ug/l	NA	35	1.0 U	1.0 U	1.0 U	1.0 U	-
Methylene bromide	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Methylene chloride	ug/l	5	47	2.0 U	2.0 U	2.0 U	2.0 U	-
Naphthalene	ug/l	NA	14	5.0 U	5.0 U	5.0 U	5.0 U	-
n-Butylbenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
n-Propylbenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
o-Chlorotoluene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
p-Chlorotoluene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-

Table 2-3
Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

			Station ID	MW-303	MW-305	MW-306	MW308	MW308
			Field Sample ID*	BN-EP-34-MW303-D	BN-EP-34-MW305-D	BN-EP-34-MW306-D	BN-EP-34-MW308-D	BN-EP-34-MW308
			Lab Sample ID	M82126-5	M82308-21	M82126-6	M81914-10	
			Sample Date	04/13/09	04/23/09	04/13/09	04/10/09	04/10/09
			Lab Name	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC	Original data	Original data	Original data	Original data	Original data
			Sampling Method	Deep Diffusion	Deep Diffusion	Deep Diffusion	Deep Diffusion	Low-Flow
	Units	Federal MCL	Maine MEG					
VOCs								
p-Isopropyltoluene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
sec-Butylbenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Styrene	ug/l	100	140	5.0 U	5.0 U	5.0 U	5.0 U	-
tert-Butylbenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Tetrachloroethene	ug/l	5	7	1.0 U	1.0 U	1.0 U	1.0 U	-
Toluene	ug/l	1000	1400	1.0 U	1.0 U	1.0 U	1.0 U	-
trans-1,2-Dichloroethene	ug/l	100	140	-	-	-	1.0 U	-
trans-1,3-Dichloropropene	ug/l	NA	4	0.50 U	0.50 U	0.50 U	0.50 U	-
Trichloroethene	ug/l	5	32	1.0 U	1.1	5.0	17.0	-
Trichlorofluoromethane	ug/l	NA	2100	1.0 U	1.0 U	1.0 U	1.0 U	-
Vinyl Acetate	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Vinyl chloride	ug/l	2	0.2	1.0 U	1.0 U	1.0 U	1.0 U	-
Xylene (total)	ug/l	10000	1400	1.0 U	1.0 U	1.0 U	1.0 U	-
Total VOC	ug/l	NA	NA	0	5.7	11.2	29.5	-

Summary of Groundwater Sample Anal...al Results for Deep Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name Eastern Plume

	Units	Federal MCL	Maine MEG					
Station ID:				MW-309A	MW-309A	MW-309B	MW-309B	MW-311
Field Sample ID*:				BN-EP-34-MW309A-D	BN-EP-34-MW309A	BN-EP-34-MW309B-D	BN-EP-34-MW309B	BN-EP-34-MW311-M
Lab Sample ID:				M81914-13	M81914-14	M81914-15	M81914-16	M82126-41
Sample Date:				04/10/09	04/10/09	04/10/09	04/10/09	04/17/09
Lab Name:				Accutest	Accutest	Accutest	Accutest	Accutest
Field QC:				Original data	Original data	Original data	Original data	Original data
Sampling Method:				Deep Diffusion	Low-Flow	Deep Diffusion	Low-Flow	Mid Diffusion
VOCs								
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,1,1-Trichloroethane	ug/l	200	200	1.0 U	-	1.0 U	-	13.4
1,1,2,2-Tetrachloroethane	ug/l	NA	1.8	1.0 U	-	1.0 U	-	1.0 U
1,1,2-Trichloroethane	ug/l	5	6	1.0 U	-	1.0 U	-	1.0 U
1,1-Dichloroethane	ug/l	NA	70	1.0 U	-	1.0 U	-	2.1
1,1-Dichloroethene	ug/l	7	0.6	1.0 U	-	1.0 U	-	1.1
1,1-Dichloropropene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2,3-Trichlorobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2,3-Trichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2,4-Trichlorobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2,4-Trimethylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2-Dibromoethane	ug/l	0.05	0.2	2.0 U	-	2.0 U	-	2.0 U
1,2-Dichlorobenzene	ug/l	600	63	1.0 U	-	1.0 U	-	1.0 U
1,2-Dichloroethane	ug/l	5	4	1.0 U	-	1.0 U	-	1.0 U
1,2-Dichloroethene (total)**	ug/l	NA	NA	1.0 U	-	1.0 U	-	3.7
1,2-Dichloropropane	ug/l	5	5	2.0 U	-	2.0 U	-	2.0 U
1,3,5-Trimethylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,3-Dichlorobenzene	ug/l	NA	NA	1.0 U	-	1.0 U	-	1.0 U
1,3-Dichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,4-Dichlorobenzene	ug/l	NA	NA	1.0 U	-	1.0 U	-	1.0 U
1,4-Dioxane	ug/l	NA	32	-	2.8 J	-	0.96 J	-
2,2-Dichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
2-Butanone (MEK)	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
2-Hexanone	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Acetone	ug/l	NA	6300	5.0 U	-	5.0 U	-	12.2
Benzene	ug/l	5	6	0.50 U	-	0.50 U	-	0.50 U

Table 2-3
Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name Eastern Plume

	Units	Federal MCL	Maine MEG					
Station ID				MW-309A	MW-309A	MW-309B	MW-309B	MW-311
Field Sample ID*				BN-EP-34-MW309A-D	BN-EP-34-MW309A	BN-EP-34-MW309B-D	BN-EP-34-MW309B	BN-EP-34-MW311-M
Lab Sample ID				M81914-13	M81914-14	M81914-15	M81914-16	M82126-11
Sample Date				04/10/09	04/10/09	04/10/09	04/10/09	04/17/09
Lab Name				Accutest	Accutest	Accutest	Accutest	Accutest
Field QC				Original data	Original data	Original data	Original data	Original data
Sampling Method				Deep Diffusion	Low-Flow	Deep Diffusion	Low-Flow	Mid Diffusion
VOCs								
Bromobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Bromochloromethane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Bromodichloromethane	ug/l	NA	6	1.0 U	-	1.0 U	-	1.0 U
Bromoform	ug/l	NA	44	1.0 U	-	1.0 U	-	1.0 U
Bromomethane	ug/l	NA	10	2.0 U	-	2.0 U	-	2.0 UJ
Carbon disulfide	ug/l	NA	600	5.0 U	-	5.0 U	-	5.0 UJ
Carbon tetrachloride	ug/l	5	3	1.0 U	-	1.0 U	-	1.0 U
Chlorobenzene	ug/l	100	47	1.0 U	-	1.0 U	-	1.0 U
Chloroethane	ug/l	NA	NA	2.0 U	-	2.0 U	-	2.0 U
Chloroform	ug/l	80	70	1.0 U	-	1.0 U	-	1.0 U
Chloromethane	ug/l	NA	3	2.0 U	-	2.0 U	-	2.0 UJ
cis-1,2-Dichloroethene	ug/l	70	70	1.0 U	-	1.0 U	-	-
cis-1,3-Dichloropropene	ug/l	NA	4	0.50 U	-	0.50 U	-	0.50 U
Dibromochloromethane	ug/l	NA	4	1.0 U	-	1.0 U	-	1.0 U
Dichlorodifluoromethane	ug/l	NA	NA	2.0 U	-	2.0 U	-	2.0 U
Ethylbenzene	ug/l	700	70	1.0 U	-	1.0 U	-	1.0 U
Hexachlorobutadiene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Iodomethane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Isopropylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Methyl Tert Butyl Ether	ug/l	NA	35	1.0 U	-	1.0 U	-	1.0 U
Methylene bromide	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Methylene chloride	ug/l	5	47	2.0 U	-	2.0 U	-	2.0 U
Naphthalene	ug/l	NA	14	5.0 U	-	5.0 U	-	5.0 U
n-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
n-Propylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
o-Chlorotoluene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
p-Chlorotoluene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U

[illegible]-3

Summary of Groundwater Sample Ana[illegible]cal Results for Deep Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name Eastern Plume

	Units	Federal MCL	Maine MEG					
			Station ID	MW-309A	MW-309A	MW-309B	MW-309B	MW-311
			Field Sample ID*	BN-EP-34-MW309A-D	BN-EP-34-MW309A	BN-EP-34-MW309B-D	BN-EP-34-MW309B	BN-EP-34-MW311-M
			Lab Sample ID	M81914-13	M81914-14	M81914-15	M81914-16	M82126-41
			Sample Date	04/10/09	04/10/09	04/10/09	04/10/09	04/17/09
			Lab Name	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC	Original data	Original data	Original data	Original data	Original data
			Sampling Method	Deep Diffusion	Low-Flow	Deep Diffusion	Low-Flow	Mid Diffusion
VOCs								
p-Isopropyltoluene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
sec-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Styrene	ug/l	100	140	5.0 U	-	5.0 U	-	5.0 U
tert-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Tetrachloroethene	ug/l	5	7	1.0 U	-	1.0 U	-	14.6
Toluene	ug/l	1000	1400	1.0 U	-	1.0 U	-	1.0 U
trans-1,2-Dichloroethene	ug/l	100	140	1.0 U	-	1.0 U	-	-
trans-1,3-Dichloropropene	ug/l	NA	4	0.50 U	-	0.50 U	-	0.50 U
Trichloroethene	ug/l	5	32	1.0 U	-	1.0 U	-	12.7
Trichlorofluoromethane	ug/l	NA	2100	1.0 U	-	1.0 U	-	1.0 U
Vinyl Acetate	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Vinyl chloride	ug/l	2	0.2	1.0 U	-	1.0 U	-	1.0 U
Xylene (total)	ug/l	10000	1400	1.0 U	-	1.0 U	-	1.0 U
Total VOC	ug/l	NA	NA	0	-	0	-	47.6

Table 2-3

Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

			Station ID:	MW-311	MW-311	MW-311	MW-313	MW-313
			Field Sample ID*:	BN-EP-34-MW-XD2	BN-EP-34-MW311-D	BN-EP-34-MW311	BN-EP-34-MW313-D	BN-EP-34-MW313
			Lab Sample ID:	M82126-42	M82126-40	M82126-43	M82126-7	M82126-8
			Sample Date:	04/17/09	04/17/09	04/17/09	04/13/09	04/13/09
			Lab Name:	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC:	Field duplicates	Original data	Original data	Original data	Original data
			Sampling Method:	Mid Diffusion	Deep Diffusion	Low-Flow	Deep Diffusion	Low-Flow
	Units	Federal MCL	Maine MEG					
VOCs								
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
1,1,1-Trichloroethane	ug/l	200	200	13.9	17.3	-	1.8	-
1,1,2,2-Tetrachloroethane	ug/l	NA	1.8	1.0 U	1.0 U	-	1.0 U	-
1,1,2-Trichloroethane	ug/l	5	6	1.0 U	1.0 U	-	1.0 U	-
1,1-Dichloroethane	ug/l	NA	70	2.1	1.8	-	18.7	-
1,1-Dichloroethene	ug/l	7	0.6	1.2	4.3	-	25.7	-
1,1-Dichloropropene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
1,2,3-Trichlorobenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
1,2,3-Trichloropropane	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
1,2,4-Trichlorobenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
1,2,4-Trimethylbenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
1,2-Dibromoethane	ug/l	0.05	0.2	2.0 U	2.0 U	-	2.0 U	-
1,2-Dichlorobenzene	ug/l	600	63	1.0 U	1.0 U	-	1.0 U	-
1,2-Dichloroethane	ug/l	5	4	1.0 U	1.0 U	-	1.0 U	-
1,2-Dichloroethene (total)**	ug/l	NA	NA	3.8	3.0	-	1.5	-
1,2-Dichloropropane	ug/l	5	5	2.0 U	2.0 U	-	2.0 U	-
1,3,5-Trimethylbenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
1,3-Dichlorobenzene	ug/l	NA	NA	1.0 U	1.0 U	-	1.0 U	-
1,3-Dichloropropane	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
1,4-Dichlorobenzene	ug/l	NA	NA	1.0 U	1.0 U	-	1.0 U	-
1,4-Dioxane	ug/l	NA	32	-	-	4.2 J	-	102 J
2,2-Dichloropropane	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
2-Butanone (MEK)	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 UJ	-
2-Hexanone	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
Acetone	ug/l	NA	6300	12.6	11.5 J	-	8.5 J	-
Benzene	ug/l	5	6	0.50 U	0.50 U	-	0.50 U	-

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Summary of Groundwater Sample Analy...al Results for Deep Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

			Station ID:	MW-311	MW-311	MW-311	MW-313	MW-313
			Field Sample ID*:	BN-EP-34-MW-XD2	BN-EP-34-MW311-D	BN-EP-34-MW311	BN-EP-34-MW313-D	BN-EP-34-MW313
			Lab Sample ID:	M82126-42	M82126-40	M82126-43	M82126-7	M82126-8
			Sample Date:	04/17/09	04/17/09	04/17/09	04/13/09	04/13/09
			Lab Name:	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC:	Field duplicates	Original data	Original data	Original data	Original data
			Sampling Method:	Mid Diffusion	Deep Diffusion	Low-Flow	Deep Diffusion	Low-Flow
	Units	Federal MCL	Maine MEG					
VOCs								
Bromobenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
Bromochloromethane	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
Bromodichloromethane	ug/l	NA	6	1.0 U	1.0 U	-	1.0 U	-
Bromoform	ug/l	NA	44	1.0 U	1.0 U	-	1.0 U	-
Bromomethane	ug/l	NA	10	2.0 UJ	2.0 U	-	2.0 UJ	-
Carbon disulfide	ug/l	NA	600	5.0 UJ	5.0 U	-	5.0 U	-
Carbon tetrachloride	ug/l	5	3	1.0 U	1.0 U	-	1.0 U	-
Chlorobenzene	ug/l	100	47	1.0 U	1.0 U	-	1.0 U	-
Chloroethane	ug/l	NA	NA	2.0 U	2.0 U	-	2.0 U	-
Chloroform	ug/l	80	70	1.0 U	1.0 U	-	1.0 U	-
Chloromethane	ug/l	NA	3	2.0 UJ	2.0 U	-	2.0 UJ	-
cis-1,2-Dichloroethene	ug/l	70	70	-	-	-	-	-
cis-1,3-Dichloropropene	ug/l	NA	4	0.50 U	0.50 U	-	0.50 U	-
Dibromochloromethane	ug/l	NA	4	1.0 U	1.0 U	-	1.0 U	-
Dichlorodifluoromethane	ug/l	NA	NA	2.0 U	2.0 U	-	2.0 U	-
Ethylbenzene	ug/l	700	70	1.0 U	1.0 U	-	1.0 U	-
Hexachlorobutadiene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
Iodomethane	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
Isopropylbenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
Methyl Tert Butyl Ether	ug/l	NA	35	1.0 U	1.0 U	-	1.0 U	-
Methylene bromide	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
Methylene chloride	ug/l	5	47	2.0 U	2.0 U	-	2.0 U	-
Naphthalene	ug/l	NA	14	5.0 U	5.0 U	-	5.0 U	-
n-Butylbenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
n-Propylbenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
o-Chlorotoluene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
p-Chlorotoluene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-

Table 2-3
Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

			Station ID:	MW-311	MW-311	MW-311	MW-313	MW-313
			Field Sample ID*:	BN-EP-34-MW-XD2	BN-EP-34-MW311-D	BN-EP-34-MW311	BN-EP-34-MW313-D	BN-EP-34-MW313
			Lab Sample ID:	M82126-42	M82126-40	M82126-43	M82126-7	M82126-8
			Sample Date:	04/17/09	04/17/09	04/17/09	04/13/09	04/13/09
			Lab Name:	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC:	Field duplicates	Original data	Original data	Original data	Original data
			Sampling Method:	Mid Diffusion	Deep Diffusion	Low-Flow	Deep Diffusion	Low-Flow
	Units	Federal MCL	Maine MEG					
VOCs								
p-Isopropyltoluene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
sec-Butylbenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
Styrene	ug/l	100	140	5.0 U	5.0 U	-	5.0 U	-
tert-Butylbenzene	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
Tetrachloroethene	ug/l	5	7	14.6	12.1	-	1.0 U	-
Toluene	ug/l	1000	1400	1.0 U	1.0 U	-	1.0 U	-
trans-1,2-Dichloroethene	ug/l	100	140	-	-	-	-	-
trans-1,3-Dichloropropene	ug/l	NA	4	0.50 U	0.50 U	-	0.50 U	-
Trichloroethene	ug/l	5	32	12.9	15.1	-	2.3	-
Trichlorofluoromethane	ug/l	NA	2100	1.0 U	1.0 U	-	1.0 U	-
Vinyl Acetate	ug/l	NA	NA	5.0 U	5.0 U	-	5.0 U	-
Vinyl chloride	ug/l	2	0.2	1.0 U	1.0 U	-	1.0 U	-
Xylene (total)	ug/l	10000	1400	1.0 U	1.0 U	-	1.0 U	-
Total VOC	ug/l	NA	NA	48.5	53.6	-	50	-

Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

	Units	Federal MCL	Maine MEG					
			Station ID:	MW-313	MW-315A	MW-319	MW323	MW330B
			Field Sample ID*:	BN-EP-34-MW-XD3	BN-EP-34-MW315A-D	BN-EP-34-MW319-D	BN-EP-34-MW323	BN-EP-34-MW330-D
			Lab Sample ID:	M82126-9	M82126-14	M82126-44	M82308-13	M82126-10
			Sample Date:	04/13/09	04/14/09	04/17/09	04/21/09	04/13/09
			Lab Name:	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC:	Original data	Original data	Original data	Original data	Original data
			Sampling Method:	Low-Flow	Deep Diffusion	Deep Diffusion	Low flow	Deep Diffusion
VOCs								
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,1,1-Trichloroethane	ug/l	200	200	-	1.0 U	3.2	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/l	NA	1.8	-	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/l	5	6	-	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/l	NA	70	-	1.0 U	0.41 J	2.5	1.0 U
1,1-Dichloroethene	ug/l	7	0.6	-	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloropropene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,2,3-Trichlorobenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,2,3-Trichloropropane	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trichlorobenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-Trimethylbenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromoethane	ug/l	0.05	0.2	-	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	ug/l	600	63	-	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/l	5	4	-	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)**	ug/l	NA	NA	-	1.0 U	0.94 J	0.84 J	1.0 U
1,2-Dichloropropane	ug/l	5	5	-	2.0 U	2.0 U	2.0 U	2.0 U
1,3,5-Trimethylbenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,3-Dichlorobenzene	ug/l	NA	NA	-	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichloropropane	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
1,4-Dichlorobenzene	ug/l	NA	NA	-	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dioxane	ug/l	NA	32	101	-	-	-	-
2,2-Dichloropropane	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone (MEK)	ug/l	NA	NA	-	5.0 UJ	5.0 U	5.0 U	5.0 UJ
2-Hexanone	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	ug/l	NA	6300	-	8.9 J	11.2	5.0 U	10 J
Benzene	ug/l	5	6	-	0.50 U	0.50 U	0.43 J	0.50 U

Table 2-3
Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name Eastern Plume

	Units	Federal MCL	Maine MEG					
			Station ID	MW-313	MW-315A	MW-319	MW323	MW330B
			Field Sample ID*	BN-EP-34-MW-XD3	BN-EP-34-MW315A-D	BN-EP-34-MW319-D	BN-EP-34-MW323	BN-EP-34-MW330-D
			Lab Sample ID	M82126-9	M82126-14	M82126-44	M82308-13	M82126-10
			Sample Date	04/13/09	04/14/09	04/17/09	04/21/09	04/13/09
			Lab Name	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC	Original data	Original data	Original data	Original data	Original data
			Sampling Method:	Low-Flow	Deep Diffusion	Deep Diffusion	Low flow	Deep Diffusion
VOCs								
cis-1,2-Dichloroethene	ug/l	70	70	-	-	-	-	-
cis-1,3-Dichloropropene	ug/l	NA	4	-	0.50 U	0.50 U	0.50 U	0.50 U
Dibromochloromethane	ug/l	NA	4	-	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	ug/l	NA	NA	-	2.0 U	2.0 U	2.0 U	2.0 U
Ethylbenzene	ug/l	700	70	-	1.0 U	1.0 U	1.0 U	1.0 U
Hexachlorobutadiene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Iodomethane	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Isopropylbenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Methyl Tert Butyl Ether	ug/l	NA	35	-	1.0 U	1.0 U	1.0 U	1.0 U
Methylene bromide	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Methylene chloride	ug/l	5	47	-	2.0 U	2.0 U	2.0 U	2.0 U
Naphthalene	ug/l	NA	14	-	5.0 U	5.0 U	5.0 U	5.0 U
n-Butylbenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
n-Propylbenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
o-Chlorotoluene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
p-Chlorotoluene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U

Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

			Station ID:	MW-313	MW-315A	MW-319	MW323	MW330B
			Field Sample ID*:	BN-EP-34-MW-XD3	BN-EP-34-MW315A-D	BN-EP-34-MW319-D	BN-EP-34-MW323	BN-EP-34-MW330-D
			Lab Sample ID:	M82126-9	M82126-14	M82126-44	M82308-13	M82126-10
			Sample Date:	04/13/09	04/14/09	04/17/09	04/21/09	04/13/09
			Lab Name:	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC:	Original data	Original data	Original data	Original data	Original data
			Sampling Method:	Low-Flow	Deep Diffusion	Deep Diffusion	Low flow	Deep Diffusion
	Units	Federal MCL	Maine MEG					
VOCs								
p-Isopropyltoluene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
sec-Butylbenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	ug/l	100	140	-	5.0 U	5.0 U	5.0 U	5.0 U
tert-Butylbenzene	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/l	5	7	-	1.0 U	**22.8**	1.0 U	1.0 U
Toluene	ug/l	1000	1400	-	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/l	100	140	-	-	-	-	-
trans-1,3-Dichloropropene	ug/l	NA	4	-	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	ug/l	5	32	-	1.0 U	1.5	1.0 U	1.0 U
Trichlorofluoromethane	ug/l	NA	2100	-	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Acetate	ug/l	NA	NA	-	5.0 U	5.0 U	5.0 U	5.0 U
Vinyl chloride	ug/l	2	0.2	-	1.0 U	1.0 U	1.0 U	1.0 U
Xylene (total)	ug/l	10000	1400	-	1.0 U	1.0 U	1.0 U	1.0 U
Total VOC	ug/l	NA	NA	-	0	28.85	3.77	0

Table 2-3
Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

	Units	Federal MCL	Maine MEG					
			Station ID	MW-331	MW-331	MW-333	MW-333	MW-334
			Field Sample ID*	BN-EP-34-MW331-M	BN-EP-34-MW331	BN-EP-34-MW333-M	BN-EP-34-MW333	BN-EP-34-MW334
			Lab Sample ID	M82126-11	M82126-12	M81914-5	M81914-6	M81914-7
			Sample Date	04/13/09	04/13/09	04/09/09	04/09/09	04/09/09
			Lab Name	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC	Original data	Original data	Original data	Original data	Original data
			Sampling Method	Mid Diffusion	Low-Flow	Mid Diffusion	Low-Flow	Low-Flow
VOCs								
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,1,1-Trichloroethane	ug/l	200	200	17.6	-	1.0 U	-	1.0 U
1,1,2,2-Tetrachloroethane	ug/l	NA	1.8	1.0 U	-	1.0 U	-	1.0 U
1,1,2-Trichloroethane	ug/l	5	6	1.0 U	-	1.0 U	-	1.0 U
1,1-Dichloroethane	ug/l	NA	70	1.4	-	2.5	-	4.1
1,1-Dichloroethene	ug/l	7	0.6	1.0 U	-	2.9	-	3.0
1,1-Dichloropropene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2,3-Trichlorobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2,3-Trichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2,4-Trichlorobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2,4-Trimethylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2-Dibromoethane	ug/l	0.05	0.2	2.0 U	-	2.0 U	-	2.0 U
1,2-Dichlorobenzene	ug/l	600	63	1.0 U	-	1.0 U	-	1.0 U
1,2-Dichloroethane	ug/l	5	4	1.0 U	-	1.0 U	-	1.0 U
1,2-Dichloroethene (total)**	ug/l	NA	NA	3.6	-	1.0 U	-	1.0 U
1,2-Dichloropropane	ug/l	5	5	2.0 U	-	2.0 U	-	2.0 U
1,3,5-Trimethylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,3-Dichlorobenzene	ug/l	NA	NA	1.0 U	-	1.0 U	-	1.0 U
1,3-Dichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,4-Dichlorobenzene	ug/l	NA	NA	1.0 U	-	1.0 U	-	1.0 U
1,4-Dioxane	ug/l	NA	32	-	7.2 J	-	59.6 J	-
2,2-Dichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
2-Butanone (MEK)	ug/l	NA	NA	5.0 UJ	-	5.0 UJ	-	5.0 UJ
2-Hexanone	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Acetone	ug/l	NA	6300	8.9 J	-	7.4 J	-	5.0 UJ
Benzene	ug/l	5	6	0.50 U	-	0.50 U	-	0.50 U

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Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

	Units	Federal MCL	Maine MEG	MW-331	MW-331	MW-333	MW-333	MW-334
Field Sample ID*				BN-EP-34-MW331-M	BN-EP-34-MW331	BN-EP-34-MW333-M	BN-EP-34-MW333	BN-EP-34-MW334
Lab Sample ID				M82126-11	M82126-12	M81914-5	M81914-6	M81914-7
Sample Date				04/13/09	04/13/09	04/09/09	04/09/09	04/09/09
Lab Name				Accutest	Accutest	Accutest	Accutest	Accutest
Field QC				Original data	Original data	Original data	Original data	Original data
Sampling Method				Mid Diffusion	Low-Flow	Mid Diffusion	Low-Flow	Low-Flow
VOCs								
Bromobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Bromochloromethane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Bromodichloromethane	ug/l	NA	6	1.0 U	-	1.0 U	-	1.0 U
Bromoform	ug/l	NA	44	1.0 U	-	1.0 U	-	1.0 U
Bromomethane	ug/l	NA	10	2.0 UJ	-	2.0 U	-	2.0 U
Carbon disulfide	ug/l	NA	600	5.0 U	-	5.0 U	-	5.0 U
Carbon tetrachloride	ug/l	5	3	1.0 U	-	1.0 U	-	1.0 U
Chlorobenzene	ug/l	100	47	1.0 U	-	1.0 U	-	1.0 U
Chloroethane	ug/l	NA	NA	2.0 U	-	2.0 U	-	2.0 U
Chloroform	ug/l	80	70	1.0 U	-	1.0 U	-	1.0 U
Chloromethane	ug/l	NA	3	2.0 UJ	-	2.0 UJ	-	2.0 UJ
cis-1,2-Dichloroethene	ug/l	70	70	-	-	1.0 U	-	1.0 U
cis-1,3-Dichloropropene	ug/l	NA	4	0.50 U	-	0.50 U	-	0.50 U
Dibromochloromethane	ug/l	NA	4	1.0 U	-	1.0 U	-	1.0 U
Dichlorodifluoromethane	ug/l	NA	NA	2.0 U	-	2.0 U	-	2.0 U
Ethylbenzene	ug/l	700	70	1.0 U	-	1.0 U	-	1.0 U
Hexachlorobutadiene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Iodomethane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Isopropylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Methyl Tert Butyl Ether	ug/l	NA	35	1.0 U	-	1.0 U	-	1.0 U
Methylene bromide	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Methylene chloride	ug/l	5	47	2.0 U	-	2.0 U	-	2.0 U
Naphthalene	ug/l	NA	14	5.0 U	-	5.0 U	-	5.0 U
n-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
n-Propylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
o-Chlorotoluene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
p-Chlorotoluene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U

Table 2-3
Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

	Units	Federal MCL	Maine MEG					
Station ID:				MW-331	MW-331	MW-333	MW-333	MW-334
Field Sample ID*:				BN-EP-34-MW331-M	BN-EP-34-MW331	BN-EP-34-MW333-M	BN-EP-34-MW333	BN-EP-34-MW334
Lab Sample ID:				M82126-11	M82126-12	M81914-5	M81914-6	M81914-7
Sample Date:				04/13/09	04/13/09	04/09/09	04/09/09	04/09/09
Lab Name:				Accutest	Accutest	Accutest	Accutest	Accutest
Field QC:				Original data	Original data	Original data	Original data	Original data
Sampling Method:				Mid Diffusion	Low-Flow	Mid Diffusion	Low-Flow	Low-Flow
VOCs								
p-Isopropyltoluene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
sec-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Styrene	ug/l	100	140	5.0 U	-	5.0 U	-	5.0 U
tert-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Tetrachloroethene	ug/l	5	7	17.7	-	1.0 U	-	1.0 U
Toluene	ug/l	1000	1400	1.0 U	-	1.0 U	-	1.0 U
trans-1,2-Dichloroethene	ug/l	100	140	-	-	1.0 U	-	1.0 U
trans-1,3-Dichloropropene	ug/l	NA	4	0.50 U	-	0.50 U	-	0.50 U
Trichloroethene	ug/l	5	32	5.3	-	1.0 U	-	0.95 J
Trichlorofluoromethane	ug/l	NA	2100	1.0 U	-	1.0 U	-	1.0 U
Vinyl Acetate	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Vinyl chloride	ug/l	2	0.2	1.0 U	-	1.0 U	-	1.0 U
Xylene (total)	ug/l	10000	1400	1.0 U	-	1.0 U	-	1.0 U
Total VOC	ug/l	NA	NA	45.6	-	5.4	-	8.05

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Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

	Units	Federal MCL	Maine MEG					
			Station ID	MW-334	MW-335	MW-335	MW336	MW336
			Field Sample ID*	BN-EP-34-MW334	BN-EP-34-MW335-M	BN-EP-34-MW335	BN-EP-34-MW336-M	BN-EP-34-MW336
			Lab Sample ID	M81914-7A	M81914-8	M81914-9	M82126-38	M82126-39
			Sample Date	04/09/09	04/09/09	04/09/09	04/17/09	04/17/09
			Lab Name	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC	Original data	Original data	Original data	Original data	Original data
			Sampling Method	Low-Flow	Mid Diffusion	Low-Flow	Mid Diffusion	Low-Flow
VOCs								
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
1,1,1-Trichloroethane	ug/l	200	200	-	1.0 U	-	1.0 U	-
1,1,2,2-Tetrachloroethane	ug/l	NA	1.8	-	1.0 U	-	1.0 U	-
1,1,2-Trichloroethane	ug/l	5	6	-	1.0 U	-	1.0 U	-
1,1-Dichloroethane	ug/l	NA	70	-	1.0 U	-	1.0 U	-
1,1-Dichloroethene	ug/l	7	0.6	-	1.0 U	-	1.0 U	-
1,1-Dichloropropene	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
1,2,3-Trichlorobenzene	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
1,2,3-Trichloropropane	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
1,2,4-Trichlorobenzene	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
1,2,4-Trimethylbenzene	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
1,2-Dibromoethane	ug/l	0.05	0.2	-	2.0 U	-	2.0 U	-
1,2-Dichlorobenzene	ug/l	600	63	-	1.0 U	-	1.0 U	-
1,2-Dichloroethane	ug/l	5	4	-	1.0 U	-	1.0 U	-
1,2-Dichloroethene (total)**	ug/l	NA	NA	-	1.0 U	-	1.0 U	-
1,2-Dichloropropane	ug/l	5	5	-	2.0 U	-	2.0 U	-
1,3,5-Trimethylbenzene	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
1,3-Dichlorobenzene	ug/l	NA	NA	-	1.0 U	-	1.0 U	-
1,3-Dichloropropane	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
1,4-Dichlorobenzene	ug/l	NA	NA	-	1.0 U	-	1.0 U	-
1,4-Dioxane	ug/l	NA	32	38.9 J	-	10.6 J	-	1.0 UJ
2,2-Dichloropropane	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
2-Butanone (MEK)	ug/l	NA	NA	-	5.0 UJ	-	5.0 U	-
2-Hexanone	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
Acetone	ug/l	NA	6300	-	4.9 J	-	5.0 UJ	-
Benzene	ug/l	5	6	-	0.50 U	-	0.50 U	-

Table 2-3
Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name Eastern Plume

	Units	Federal MCL	Maine MEG					
Station ID				MW-334	MW-335	MW-335	MW336	MW336
Field Sample ID*				BN-EP-34-MW334	BN-EP-34-MW335-M	BN-EP-34-MW335	BN-EP-34-MW336-M	BN-EP-34-MW336
Lab Sample ID				M81914-7A	M81914-8	M81914-9	M82126-38	M82126-39
Sample Date				04/09/09	04/09/09	04/09/09	04/17/09	04/17/09
Lab Name				Accutest	Accutest	Accutest	Accutest	Accutest
Field QC				Original data	Original data	Original data	Original data	Original data
Sampling Method				Low-Flow	Mid Diffusion	Low-Flow	Mid Diffusion	Low-Flow
VOCs								
Bromobenzene	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
Bromochloromethane	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
Bromodichloromethane	ug/l	NA	6	-	1.0 U	-	1.0 U	-
Bromoform	ug/l	NA	44	-	1.0 U	-	1.0 U	-
Bromomethane	ug/l	NA	10	-	2.0 U	-	2.0 U	-
Carbon disulfide	ug/l	NA	600	-	5.0 U	-	5.0 U	-
Carbon tetrachloride	ug/l	5	3	-	1.0 U	-	1.0 U	-
Chlorobenzene	ug/l	100	47	-	1.0 U	-	1.0 U	-
Chloroethane	ug/l	NA	NA	-	2.0 U	-	2.0 U	-
Chloroform	ug/l	80	70	-	1.0 U	-	1.0 U	-
Chloromethane	ug/l	NA	3	-	2.0 UJ	-	2.0 U	-
cis-1,2-Dichloroethene	ug/l	70	70	-	1.0 U	-	-	-
cis-1,3-Dichloropropene	ug/l	NA	4	-	0.50 U	-	0.50 U	-
Dibromochloromethane	ug/l	NA	4	-	1.0 U	-	1.0 U	-
Dichlorodifluoromethane	ug/l	NA	NA	-	2.0 U	-	2.0 U	-
Ethylbenzene	ug/l	700	70	-	1.0 U	-	1.0 U	-
Hexachlorobutadiene	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
Iodomethane	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
Isopropylbenzene	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
Methyl Tert Butyl Ether	ug/l	NA	35	-	1.0 U	-	1.0 U	-
Methylene bromide	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
Methylene chloride	ug/l	5	47	-	2.0 U	-	2.0 U	-
Naphthalene	ug/l	NA	14	-	5.0 U	-	5.0 U	-
n-Butylbenzene	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
n-Propylbenzene	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
o-Chlorotoluene	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
p-Chlorotoluene	ug/l	NA	NA	-	5.0 U	-	5.0 U	-

Summary of Groundwater Sample Anal...al Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

			Station ID:	MW-334	MW-335	MW-335	MW336	MW336
			Field Sample ID*:	BN-EP-34-MW334	BN-EP-34-MW335-M	BN-EP-34-MW335	BN-EP-34-MW336-M	BN-EP-34-MW336
			Lab Sample ID:	M81914-7A	M81914-8	M81914-9	M82126-38	M82126-39
			Sample Date:	04/09/09	04/09/09	04/09/09	04/17/09	04/17/09
			Lab Name:	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC:	Original data	Original data	Original data	Original data	Original data
			Sampling Method:	Low-Flow	Mid Diffusion	Low-Flow	Mid Diffusion	Low-Flow
	Units	Federal MCL	Maine MEG					
VOCs								
p-Isopropyltoluene	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
sec-Butylbenzene	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
Styrene	ug/l	100	140	-	5.0 U	-	5.0 U	-
tert-Butylbenzene	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
Tetrachloroethene	ug/l	5	7	-	1.0 U	-	1.0 U	-
Toluene	ug/l	1000	1400	-	1.0 U	-	1.0 U	-
trans-1,2-Dichloroethene	ug/l	100	140	-	1.0 U	-	-	-
trans-1,3-Dichloropropene	ug/l	NA	4	-	0.50 U	-	0.50 U	-
Trichloroethene	ug/l	5	32	-	1.0 U	-	1.0 U	-
Trichlorofluoromethane	ug/l	NA	2100	-	1.0 U	-	1.0 U	-
Vinyl Acetate	ug/l	NA	NA	-	5.0 U	-	5.0 U	-
Vinyl chloride	ug/l	2	0.2	-	1.0 U	-	1.0 U	-
Xylene (total)	ug/l	10000	1400	-	1.0 U	-	1.0 U	-
Total VOC	ug/l	NA	NA	-	0	-	0	-

Table 2-3

Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

			Station ID	MW-337	MW-337	MW-338A	MW-338A	MW-338B
			Field Sample ID*	BN-EP-34-MW337-M	BN-EP-34-MW337	BN-EP-34-MW338A-M	BN-EP-34-MW338A	BN-EP-34-MW338B-M
			Lab Sample ID	M82126-20	M82126-21	M82126-22	M82126-23	M82126-24
			Sample Date	04/15/09	04/15/09	04/15/09	04/15/09	04/15/09
			Lab Name	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC	Original data	Original data	Original data	Original data	Original data
			Sampling Method	Mid Diffusion	Low-Flow	Mid Diffusion	Low-Flow	Mid Diffusion
	Units	Federal MCL	Maine MEG					
VOCs								
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,1,1-Trichloroethane	ug/l	200	200	1.0 U	-	1.0 U	-	1.0 U
1,1,2,2-Tetrachloroethane	ug/l	NA	1.8	1.0 U	-	1.0 U	-	1.0 U
1,1,2-Trichloroethane	ug/l	5	6	1.0 U	-	1.0 U	-	1.0 U
1,1-Dichloroethane	ug/l	NA	70	1.0 U	-	1.0 U	-	1.0 U
1,1-Dichloroethene	ug/l	7	0.6	1.0 U	-	1.0 U	-	1.0 U
1,1-Dichloropropene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2,3-Trichlorobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2,3-Trichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2,4-Trichlorobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2,4-Trimethylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,2-Dibromoethane	ug/l	0.05	0.2	2.0 U	-	2.0 U	-	2.0 U
1,2-Dichlorobenzene	ug/l	600	63	1.0 U	-	1.0 U	-	1.0 U
1,2-Dichloroethane	ug/l	5	4	1.0 U	-	1.0 U	-	1.0 U
1,2-Dichloroethene (total)**	ug/l	NA	NA	1.0 U	-	1.0 U	-	1.0 U
1,2-Dichloropropane	ug/l	5	5	2.0 U	-	2.0 U	-	2.0 U
1,3,5-Trimethylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,3-Dichlorobenzene	ug/l	NA	NA	1.0 U	-	1.0 U	-	1.0 U
1,3-Dichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
1,4-Dichlorobenzene	ug/l	NA	NA	1.0 U	-	1.0 U	-	1.0 U
1,4-Dioxane	ug/l	NA	32	-	1.0 UJ	-	1.0 UJ	-
2,2-Dichloropropane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
2-Butanone (MEK)	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
2-Hexanone	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Acetone	ug/l	NA	6300	6.9 J	-	5.0 UJ	-	5.0 UJ
Benzene	ug/l	5	6	0.50 U	-	0.50 U	-	0.50 U

Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

			Station ID:	MW-337	MW-337	MW-338A	MW-338A	MW-338B
			Field Sample ID*:	BN-EP-34-MW337-M	BN-EP-34-MW337	BN-EP-34-MW338A-M	BN-EP-34-MW338A	BN-EP-34-MW338B-M
			Lab Sample ID:	M82126-20	M82126-21	M82126-22	M82126-23	M82126-24
			Sample Date:	04/15/09	04/15/09	04/15/09	04/15/09	04/15/09
			Lab Name:	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC:	Original data	Original data	Original data	Original data	Original data
			Sampling Method:	Mid Diffusion	Low-Flow	Mid Diffusion	Low-Flow	Mid Diffusion
	Units	Federal MCL	Maine MEG					
VOCs								
Bromobenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Bromochloromethane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Bromodichloromethane	ug/l	NA	6	1.0 U	-	1.0 U	-	1.0 U
Bromoform	ug/l	NA	44	1.0 U	-	1.0 U	-	1.0 U
Bromomethane	ug/l	NA	10	2.0 U	-	2.0 U	-	2.0 U
Carbon disulfide	ug/l	NA	600	5.0 U	-	5.0 U	-	5.0 U
Carbon tetrachloride	ug/l	5	3	1.0 U	-	1.0 U	-	1.0 U
Chlorobenzene	ug/l	100	47	1.0 U	-	1.0 U	-	1.0 U
Chloroethane	ug/l	NA	NA	2.0 U	-	2.0 U	-	2.0 U
Chloroform	ug/l	80	70	1.0 U	-	1.0 U	-	1.0 U
Chloromethane	ug/l	NA	3	2.0 U	-	2.0 U	-	2.0 U
cis-1,2-Dichloroethene	ug/l	70	70	-	-	-	-	-
cis-1,3-Dichloropropene	ug/l	NA	4	0.50 U	-	0.50 U	-	0.50 U
Dibromochloromethane	ug/l	NA	4	1.0 U	-	1.0 U	-	1.0 U
Dichlorodifluoromethane	ug/l	NA	NA	2.0 U	-	2.0 U	-	2.0 U
Ethylbenzene	ug/l	700	70	1.0 U	-	1.0 U	-	1.0 U
Hexachlorobutadiene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Iodomethane	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Isopropylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Methyl Tert Butyl Ether	ug/l	NA	35	1.0 U	-	1.0 U	-	1.0 U
Methylene bromide	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Methylene chloride	ug/l	5	47	2.0 U	-	2.0 U	-	1.5 J
Naphthalene	ug/l	NA	14	5.0 U	-	5.0 U	-	5.0 U
n-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
n-Propylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
o-Chlorotoluene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
p-Chlorotoluene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U

Table 2-3

Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name Eastern Plume

	Units	Federal MCL	Maine MEG					
Station ID:				MW-337	MW-337	MW-338A	MW-338A	MW-338B
Field Sample ID:				BN-EP-34-MW337-M	BN-EP-34-MW337	BN-EP-34-MW338A-M	BN-EP-34-MW338A	BN-EP-34-MW338B-M
Lab Sample ID:				M82126-20	M82126-21	M82126-22	M82126-23	M82126-24
Sample Date:				04/15/09	04/15/09	04/15/09	04/15/09	04/15/09
Lab Name:				Accutest	Accutest	Accutest	Accutest	Accutest
Field QC:				Original data	Original data	Original data	Original data	Original data
Sampling Method:				Mid Diffusion	Low-Flow	Mid Diffusion	Low-Flow	Mid Diffusion
VOCs								
p-Isopropyltoluene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
sec-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Styrene	ug/l	100	140	5.0 U	-	5.0 U	-	5.0 U
tert-Butylbenzene	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Tetrachloroethene	ug/l	5	7	1.0 U	-	1.0 U	-	1.0 U
Toluene	ug/l	1000	1400	1.0 U	-	1.0 U	-	1.0 U
trans-1,2-Dichloroethene	ug/l	100	140	-	-	-	-	-
trans-1,3-Dichloropropene	ug/l	NA	4	0.50 U	-	0.50 U	-	0.50 U
Trichloroethene	ug/l	5	32	0.85 J	-	1.0 U	-	1.0 U
Trichlorofluoromethane	ug/l	NA	2100	1.0 U	-	1.0 U	-	1.0 U
Vinyl Acetate	ug/l	NA	NA	5.0 U	-	5.0 U	-	5.0 U
Vinyl chloride	ug/l	2	0.2	1.0 U	-	1.0 U	-	1.0 U
Xylene (total)	ug/l	10000	1400	1.0 U	-	1.0 U	-	1.0 U
Total VOC	ug/l	NA	NA	0.85	-	0	-	0

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Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name Eastern Plume

	Units	Federal MCL	Maine MEG					
Station ID				MW-338C	MW-339	MW-339	P-106	P-106
Field Sample ID*				BN-EP-34-MW338C-M	BN-EP-34-MW339-D	BN-EP-34-MW-XD5	BN-EP-34-P106	BN-EP-34-P106
Lab Sample ID				M82126-25	M82126-15	M82126-16	M82308-14	M82308-14A
Sample Date				04/15/09	04/14/09	04/14/09	04/21/09	04/21/09
Lab Name				Accutest	Accutest	Accutest	Accutest	Accutest
Field QC				Original data	Original data	Field duplicates	Original data	Original data
Sampling Method				Mid Diffusion	Deep Diffusion	Deep Diffusion	Low flow	Low flow
VOCs								
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,1,1-Trichloroethane	ug/l	200	200	1.0 U	1.0 U	1.0 U	154	-
1,1,2,2-Tetrachloroethane	ug/l	NA	1.8	1.0 U	1.0 U	1.0 U	1.0 U	-
1,1,2-Trichloroethane	ug/l	5	6	1.0 U	1.0 U	1.0 U	1.0 U	-
1,1-Dichloroethane	ug/l	NA	70	1.0 U	1.0 U	1.0 U	8.0	-
1,1-Dichloroethene	ug/l	7	0.6	1.0 U	1.0 U	1.0 U	30.1	-
1,1-Dichloropropene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,2,3-Trichlorobenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,2,3-Trichloropropane	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,2,4-Trichlorobenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,2,4-Trimethylbenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,2-Dibromoethane	ug/l	0.05	0.2	2.0 U	2.0 U	2.0 U	2.0 U	-
1,2-Dichlorobenzene	ug/l	600	63	1.0 U	1.0 U	1.0 U	1.0 U	-
1,2-Dichloroethane	ug/l	5	4	1.0 U	1.0 U	1.0 U	1.0 U	-
1,2-Dichloroethene (total)**	ug/l	NA	NA	1.0 U	1.0 U	1.0 U	5.9	-
1,2-Dichloropropane	ug/l	5	5	2.0 U	2.0 U	2.0 U	2.0 U	-
1,3,5-Trimethylbenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,3-Dichlorobenzene	ug/l	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	-
1,3-Dichloropropane	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
1,4-Dichlorobenzene	ug/l	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	-
1,4-Dioxane	ug/l	NA	32	-	-	-	-	21.5 J
2,2-Dichloropropane	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
2-Butanone (MEK)	ug/l	NA	NA	5.0 U	5.0 UJ	5.0 UJ	5.0 U	-
2-Hexanone	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Acetone	ug/l	NA	6300	5.0 UJ	9.7 J	9.9 J	5.0 U	-
Benzene	ug/l	5	6	0.50 U	0.50 U	0.50 U	0.50 U	-

Table 2-3
Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

			Station ID	MW-338C	MW-339	MW-339	P-106	P-106
			Field Sample ID*:	BN-EP-34-MW338C-M	BN-EP-34-MW339-D	BN-EP-34-MW-XD5	BN-EP-34-P106	BN-EP-34-P106
			Lab Sample ID:	M82126-25	M82126-15	M82126-16	M82308-14	M82308-14A
			Sample Date:	04/15/09	04/14/09	04/14/09	04/21/09	04/21/09
			Lab Name	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC	Original data	Original data	Field duplicates	Original data	Original data
			Sampling Method	Mid Diffusion	Deep Diffusion	Deep Diffusion	Low flow	Low flow
	Units	Federal MCL	Maine MEG					
VOCs								
Bromobenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Bromochloromethane	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Bromodichloromethane	ug/l	NA	6	1.0 U	1.0 U	1.0 U	1.0 U	-
Bromoform	ug/l	NA	44	1.0 U	1.0 U	1.0 U	1.0 U	-
Bromomethane	ug/l	NA	10	2.0 U	2.0 UJ	2.0 UJ	2.0 U	-
Carbon disulfide	ug/l	NA	600	5.0 U	5.0 U	5.0 U	5.0 U	-
Carbon tetrachloride	ug/l	5	3	1.0 U	1.0 U	1.0 U	1.0 U	-
Chlorobenzene	ug/l	100	47	1.0 U	1.0 U	1.0 U	1.0 U	-
Chloroethane	ug/l	NA	NA	2.0 U	2.0 U	2.0 U	2.0 U	-
Chloroform	ug/l	80	70	1.0 U	1.0 U	1.0 U	0.86 J	-
Chloromethane	ug/l	NA	3	2.0 U	2.0 UJ	2.0 UJ	2.0 U	-
cis-1,2-Dichloroethene	ug/l	70	70	-	-	-	-	-
cis-1,3-Dichloropropene	ug/l	NA	4	0.50 U	0.50 U	0.50 U	0.50 U	-
Dibromochloromethane	ug/l	NA	4	1.0 U	1.0 U	1.0 U	1.0 U	-
Dichlorodifluoromethane	ug/l	NA	NA	2.0 U	2.0 U	2.0 U	2.0 U	-
Ethylbenzene	ug/l	700	70	1.0 U	1.0 U	1.0 U	1.0 U	-
Hexachlorobutadiene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Iodomethane	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Isopropylbenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Methyl Tert Butyl Ether	ug/l	NA	35	1.0 U	1.0 U	1.0 U	1.0 U	-
Methylene bromide	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Methylene chloride	ug/l	5	47	2.0 U	1.8 J	1.9 J	2.0 U	-
Naphthalene	ug/l	NA	14	5.0 U	5.0 U	5.0 U	5.0 U	-
n-Butylbenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
n-Propylbenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
o-Chlorotoluene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
p-Chlorotoluene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-

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Summary of Groundwater Sample Analyucal Results for Deep Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

			Station ID	MW-338C	MW-339	MW-339	P-106	P-106
			Field Sample ID*	BN-EP-34-MW338C-M	BN-EP-34-MW339-D	BN-EP-34-MW-XD5	BN-EP-34-P106	BN-EP-34-P106
			Lab Sample ID	M82126-25	M82126-15	M82126-16	M82308-14	M82308-14A
			Sample Date	04/15/09	04/14/09	04/14/09	04/21/09	04/21/09
			Lab Name	Accutest	Accutest	Accutest	Accutest	Accutest
			Field QC	Original data	Original data	Field duplicates	Original data	Original data
			Sampling Method	Mid Diffusion	Deep Diffusion	Deep Diffusion	Low flow	Low flow
	Units	Federal MCL	Maine MEG					
VOCs								
p-Isopropyltoluene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
sec-Butylbenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Styrene	ug/l	100	140	5.0 U	5.0 U	5.0 U	5.0 U	-
tert-Butylbenzene	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Tetrachloroethene	ug/l	5	7	1.0 U	1.0 U	1.0 U	4.9	-
Toluene	ug/l	1000	1400	1.0 U	1.0 U	1.0 U	1.0 U	-
trans-1,2-Dichloroethene	ug/l	100	140	-	-	-	-	-
trans-1,3-Dichloropropene	ug/l	NA	4	0.50 U	0.50 U	0.50 U	0.50 U	-
Trichloroethene	ug/l	5	32	1.0 U	1.0 U	1.0 U	135	-
Trichlorofluoromethane	ug/l	NA	2100	1.0 U	1.0 U	1.0 U	1.0 U	-
Vinyl Acetate	ug/l	NA	NA	5.0 U	5.0 U	5.0 U	5.0 U	-
Vinyl chloride	ug/l	2	0.2	1.0 U	1.0 U	1.0 U	1.0 U	-
Xylene (total)	ug/l	10000	1400	1.0 U	1.0 U	1.0 U	1.0 U	-
Total VOC	ug/l	NA	NA	0	0	0	338.76	-

Table 2-3
Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name Eastern Plume

			Station ID	P-106	P-106
			Field Sample ID*	BN-EP-34-MW-XD6	BN-EP-34-P106
			Lab Sample ID	M82308-15	BN-EP-34-MW-XD6
			Sample Date	04/21/09	04/21/09
			Lab Name	Accutest	Accutest
			Field QC	Field duplicates	Field duplicates
			Sampling Method	Low flow	Low flow
	Units	Federal MCL	Maine MEG		
VOCs					
1,1,1,2-Tetrachloroethane	ug/l	NA	NA	5.0 U	-
1,1,1-Trichloroethane	ug/l	200	200	156	-
1,1,2,2-Tetrachloroethane	ug/l	NA	1.8	1.0 U	-
1,1,2-Trichloroethane	ug/l	5	6	1.0 U	-
1,1-Dichloroethane	ug/l	NA	70	7.8	-
1,1-Dichloroethene	ug/l	7	0.6	30.3	-
1,1-Dichloropropene	ug/l	NA	NA	5.0 U	-
1,2,3-Trichlorobenzene	ug/l	NA	NA	5.0 U	-
1,2,3-Trichloropropane	ug/l	NA	NA	5.0 U	-
1,2,4-Trichlorobenzene	ug/l	NA	NA	5.0 U	-
1,2,4-Trimethylbenzene	ug/l	NA	NA	5.0 U	-
1,2-Dibromo-3-chloropropane	ug/l	NA	NA	5.0 U	-
1,2-Dibromoethane	ug/l	0.05	0.2	2.0 U	-
1,2-Dichlorobenzene	ug/l	600	63	1.0 U	-
1,2-Dichloroethane	ug/l	5	4	1.0 U	-
1,2-Dichloroethene (total)**	ug/l	NA	NA	5.6	-
1,2-Dichloropropane	ug/l	5	5	2.0 U	-
1,3,5-Trimethylbenzene	ug/l	NA	NA	5.0 U	-
1,3-Dichlorobenzene	ug/l	NA	NA	1.0 U	-
1,3-Dichloropropane	ug/l	NA	NA	5.0 U	-
1,4-Dichlorobenzene	ug/l	NA	NA	1.0 U	-
1,4-Dioxane	ug/l	NA	32	-	18.4 J
2,2-Dichloropropane	ug/l	NA	NA	5.0 U	-
2-Butanone (MEK)	ug/l	NA	NA	5.0 U	-
2-Hexanone	ug/l	NA	NA	5.0 U	-
4-Methyl-2-pentanone (MIBK)	ug/l	NA	NA	5.0 U	-
Acetone	ug/l	NA	6300	5.0 U	-
Benzene	ug/l	5	6	0.50 U	-

Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

			Station ID:	P-106	P-106
			Field Sample ID*:	BN-EP-34-MW-XD6	BN-EP-34-P106
			Lab Sample ID:	M82308-15	BN-EP-34-MW-XD6
			Sample Date:	04/21/09	04/21/09
			Lab Name:	Accutest	Accutest
			Field QC:	Field duplicates	Field duplicates
			Sampling Method:	Low flow	Low flow
	Units	Federal MCL	Maine MEG		
VOCs					
Bromobenzene	ug/l	NA	NA	5.0 U	-
Bromochloromethane	ug/l	NA	NA	5.0 U	-
Bromodichloromethane	ug/l	NA	6	1.0 U	-
Bromoform	ug/l	NA	44	1.0 U	-
Bromomethane	ug/l	NA	10	2.0 U	-
Carbon disulfide	ug/l	NA	600	5.0 U	-
Carbon tetrachloride	ug/l	5	3	1.0 U	-
Chlorobenzene	ug/l	100	47	1.0 U	-
Chloroethane	ug/l	NA	NA	2.0 U	-
Chloroform	ug/l	80	70	0.86 J	-
Chloromethane	ug/l	NA	3	2.0 U	-
cis-1,2-Dichloroethene	ug/l	70	70	-	-
cis-1,3-Dichloropropene	ug/l	NA	4	0.50 U	-
Dibromochloromethane	ug/l	NA	4	1.0 U	-
Dichlorodifluoromethane	ug/l	NA	NA	2.0 U	-
Ethylbenzene	ug/l	700	70	1.0 U	-
Hexachlorobutadiene	ug/l	NA	NA	5.0 U	-
Iodomethane	ug/l	NA	NA	5.0 U	-
Isopropylbenzene	ug/l	NA	NA	5.0 U	-
Methyl Tert Butyl Ether	ug/l	NA	35	1.0 U	-
Methylene bromide	ug/l	NA	NA	5.0 U	-
Methylene chloride	ug/l	5	47	2.0 U	-
Naphthalene	ug/l	NA	14	5.0 U	-
n-Butylbenzene	ug/l	NA	NA	5.0 U	-
n-Propylbenzene	ug/l	NA	NA	5.0 U	-
o-Chlorotoluene	ug/l	NA	NA	5.0 U	-
p-Chlorotoluene	ug/l	NA	NA	5.0 U	-

Table 2-3

Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume

Monitoring Event 34 (April 2009)

Naval Air Station Brunswick, Maine

Site Name: Eastern Plume

			Station ID:	P-106	P-106
			Field Sample ID*:	BN-EP-34-MW-XD6	BN-EP-34-P106
			Lab Sample ID:	M82308-15	BN-EP-34-MW-XD6
			Sample Date:	04/21/09	04/21/09
			Lab Name:	Accutest	Accutest
			Field QC:	Field duplicates	Field duplicates
			Sampling Method:	Low flow	Low flow
	Units	Federal MCL	Maine MEG		
VOCs					
p-Isopropyltoluene	ug/l	NA	NA	5.0 U	-
sec-Butylbenzene	ug/l	NA	NA	5.0 U	-
Styrene	ug/l	100	140	5.0 U	-
tert-Butylbenzene	ug/l	NA	NA	5.0 U	-
Tetrachloroethene	ug/l	5	7	5.0	-
Toluene	ug/l	1000	1400	1.0 U	-
trans-1,2-Dichloroethene	ug/l	100	140	-	-
trans-1,3-Dichloropropene	ug/l	NA	4	0.50 U	-
Trichloroethene	ug/l	5	32	136	-
Trichlorofluoromethane	ug/l	NA	2100	1.0 U	-
Vinyl Acetate	ug/l	NA	NA	5.0 U	-
Vinyl chloride	ug/l	2	0.2	1.0 U	-
Xylene (total)	ug/l	10000	1400	1.0 U	-
Total VOC	ug/l	NA	NA	341.56	-

Summary of Groundwater Sample Analytical Results for Deep Wells - Eastern Plume
Monitoring Event 34 (April 2009)
Naval Air Station Brunswick, Maine

Notes

MEG - obtained from State of Maine Department of Human Services Maximum Exposure Guidelines. Memorandum dated 5 December 2008
MCL - obtained from 40 CFR Parts 141 and 142 (U.S. EPA 1998).
Screening Value - Risk Based Ecological Screening Values for Surface Water, Seep Water, and Sediment at the Naval Air Station Brunswick, EA Science and Technology, January, 2006.
* Field Sample IDs begin with BN-EP-34- for samples collected at Eastern Plume area during Monitoring Event 34.
VOCs analyzed by EPA Method 8260B.
** 1,2-Dichloroethene (total) is the total of cis-1,2-Dichloroethene and trans-1,2-Dichloroethene and is not included separately in the Total VOCs.
Target Analyte List Metals analyzed by EPA 6000/7000 series methods.
Pesticides analyzed by EPA Method 8081A.
Total VOC calculation does not include common laboratory contaminants (acetone, methylene chloride, 2-butanone), VOCs detected in the blank samples, or 1,4-dioxane.
The acetone concentrations reported from samples collected from Passive Diffusion Bags (PDBS) are not considered usable data because PDB sampling techniques are not designed for acetone collection.
Highlighted concentrations indicate exceedance of an MEG, MCL or screening level. The color of the highlight indicated which screening level was exceeded.
Refer to the Data Quality Review section for reporting limits and method detection limits for all analyzed compounds.

Acronyms:

-	Not sampled.
EPA	U.S. Environmental Protection Agency
GWETS	Groundwater Extraction and Treatment System
ID	Identification
MCL	Maximum Contaminant Level
MEG	Maximum Exposure Guideline
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MNA	monitored natural attenuation
NA	Criteria not applicable
VOC	Volatile Organic Compound
ug/L	micrograms per liter

Validation Qualifiers:

U	Not detected down to the method detection limit (MDL). Data presented in the table are Method Reporting Limits. MDLs are provided in Appendix C (Analytical Data Quality Review).
J	Estimated concentration
UJ	Not detected. Sample quantitation limit is estimated.
R	Value rejected by data validator

VOC Contaminants of Concern:
1,1-Dichloroethane
1,2-Dichloroethene, total
Chlorobenzene
Ethylbenzene
Methylene Chloride
Toluene
Vinyl Chloride
Xylenes, total

Metals Contaminants of Concern:
Aluminum
Arsenic
Barium
Chromium
Lead
Manganese
Nickel
Potassium

APPENDIX F

RESPONSE TO STAKEHOLDER COMMENTS

**RESPONSES TO U.S. ENVIRONMENTAL PROTECTION AGENCY COMMENT
SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK DATED
APRIL 2010
FORMER NAVAL AIR STATION BRUNSWICK, MAINE**

The U.S. Environmental Protection Agency (EPA) verbally requested the use of 3.5 ug/L as an interim risk-based criterion for 1,4-dioxane in groundwater at the Eastern Plume site. This change will be made in the final Supplemental RI report.

The results in this report have been utilized for optimization of the Eastern Plume groundwater extraction and treatment system. An Explanation of Significant Differences (ESD) for the Eastern Plume modified the 1998 Record of Decision (ROD) to document the change in the groundwater treatment technology, included 1,4-dioxane and vinyl chloride as groundwater Contaminants of Concern (COCs), and established interim cleanup goals of 3.5 ug/L (EPA risk-based value) and 0.15 ug/L (1992 Maine MEG), respectively. These cleanup goals are being used for criteria comparison. Other criteria in effect at the time of evaluation of MEDEP comments in 2010 on the Supplemental RI of the Supplemental RI were included in this report and remain unchanged. More current Eastern Plume data are documented in the long term monitoring program (LTMP) reports and also addressed in Five-Year Reviews. A separate pending effort is underway to establish Land Use Control (LUC) boundaries on the basis of the Supplemental RI report, most recent groundwater monitoring results, and the most recent criteria for all constituents. This paragraph is of importance and will be added to the Executive Summary.

RESPONSES TO MEDEP COMMENTS DATED JULY 8, 2010
SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT FOR 1,4-DIOXANE IN THE EASTERN PLUME AND BEDROCK, DATED APRIL 2010
FORMER NAVAL AIR STATION BRUNSWICK, MAINE

Note that where the comment response provides revised text, text additions are shown in italics and deleted text is shown as strikethrough.

The results in this report have been utilized for optimization of the Eastern Plume groundwater extraction and treatment system. An Explanation of Significant Differences (ESD) for the Eastern Plume modified the 1998 Record of Decision (ROD) to document the change in the groundwater treatment technology, included 1,4-dioxane and vinyl chloride as groundwater Contaminants of Concern (COCs), and established interim cleanup goals of 3.5 ug/L (EPA risk-based value) and 0.15 ug/L (1992 Maine MEG), respectively. These cleanup goals are being used for criteria comparison. Other criteria in effect at the time of evaluation of MEDEP comments in 2010 on the Supplemental RI were included in this report and remain unchanged. More current Eastern Plume data are documented in the long term monitoring program (LTMP) reports and also addressed in Five-Year Reviews. A separate pending effort is underway to establish Land Use Control (LUC) boundaries on the basis of the Supplemental RI report, most recent groundwater monitoring results, and the most recent criteria for all constituents. This paragraph is of importance and will be added to the Executive Summary.

General Comments:

MEDEP appreciates the efforts of the Navy and their consultants in developing, implementing and evaluating this SRI. This investigation provides a lot of valuable information needed for the understanding of the Eastern Plume in the vicinity of the brooks and the bedrock around MW-308.

1. **Comment:** The basis for the green shaded 'historic boundary" is unclear since there have been recent detections at MW-308, MW-207AR, MW-337, MW-230A among others. While this may present an historic view nowhere in the report is there a figure depicting the plume boundary based on recent monitoring, the Mere Brook Investigation and the current investigation which really expands the boundary of the exceedances of the Maximum Exposure Guidelines (MEGs) or the Maximum Contaminant Level (MCLs) over the one depicted. Please update.

   Response: The green shading represents the historical extent of the Eastern Plume volatile organic compound concentrations through September 2007 that exceeded MCLs/MEGs in effect at that time. The extent of the Eastern Plume based on monitoring data collected as part of the Supplemental RI is depicted on Figure 4-1 and Figure 4-8 for comparison with the data collected in September 2007. In addition, the following sentence will be added to the Executive Summary, and Sections 1 and 4: "*For comparison purposes, the extent of the Eastern Plume is depicted both historically (based on VOC concentrations through September 2007 that exceeded MCLs/MEGs in effect at that time) and based on the Supplemental RI Report results (last evaluated in 2010); more recent monitoring data are provided in the LTM reports for the Eastern Plume and a separate effort is pending to establish* *a LUC boundary using the Supplemental RI report, most recent groundwater monitoring results, and most recent criteria for all constituents.*"

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2. **Comment:** The boundary of Site 13 on all figures needs to be expanded to include the known source area where the former UST's were located. On figures from the original 1990 Remedial Investigation and 1992 Feasibility Study, it extends to the MW-1301 location.

   Response: According to the Final Site Management Plan (ECC 2008c), underground storage tanks were removed and groundwater samples collected in 1997 contained only low levels of contamination indicating Site 13 is no longer acting as a source of contamination for the Eastern Plume. Although Site 13 was initially identified as a groundwater contamination contributor it has been designated a No Further Action (NFA) site. The Site 13 boundary is consistent with existing GIS mapping available at the time. The site boundaries are currently being revised and are under review to establish Land Use Control boundaries.

   Tetra Tech prepared a Source Evaluation Report for this purpose and included it in Appendix C.

3. **Comment:** There were several wells that were not categorized appropriately as either Lower Sand (LS) or Transition (TR) locations, based on a review of available boring, conductivity, and well logs, or other related information. The disagreement often lies with interpretation of whether screens are in sandy lenses of the Transition or are in strata that represent the Lower Sand. Some locations are omitted from these comments because placing them as either LS or TR is debatable but not critical in terms of evaluating the plume. The wells that should be changed based on the data are listed in specific comments with the rationale, and key figures or tables for those changes.

   Response: Please refer to the responses to the specific comments.

4. **Comment:** With all the new monitoring wells installed in the last two investigations, the recommendations should include a review of the Long Term Monitoring Program (LTMP) to include some of these new wells and to ensure that it is achieving the goals established by the Record of Decision.

   Response: The following sentence will be added to Recommendation 1) in Section 5.2 and the Executive Summary, "*The LTMP is currently under review to determine if any of these new wells should be included in the monitoring program.*"

Specific Comments:

5. **Comment:** Executive Summary, page ES-6, item 1: "...limited upwelling into the streams…"

The heavy rains during the porewater sampling most likely affected the results and porewater sampling is snapshot in time and cannot be used like long term monitoring. Due to the volatility of Volatile Organic Compounds (VOCs) they are difficult to capture in surface water. Also surface water is not analyzed for 1,4 dioxane which would be a better indicator of upwelling of the plume. MEDEP suggests finding the lack of data in the stream and stream sediment a data gap. (Also see comment 11 below.)

Response: The Navy initiated a porewater/shallow groundwater surface water study along Mere Brook and Merriconeag Stream in 2010 that will address the effects of precipitation. The following paragraph will be added to Section 1: "*The porewater/shallow groundwater surface water sampling event conducted during November 2010 provided valuable data from which to update the site conceptual model related to the fate and transport of VOCs and 1,4-dioxane discharge into Mere Brook and Merriconeag Stream. Because of the heavy rains during that time period, the Navy agreed to conduct another round of samples at select locations in September 2011 when conditions were much drier. In addition, samples were collected from the surface water in September 2011 and analyzed for 1,4-dioxane as per the MEDEP's request. The results and conclusions from both the November 2010 and September 2011 will be summarized in a report and used to determine any additional long term monitoring requirements for the Eastern Plume in the near future as well as support any land use control strategies for this area.*"

6. **Comment:** Section 1.3, Site History and Previous On-Base Investigations, bullet 2: Minimize any further negative impact to surface water …"

   Please change "further" to "future" in keeping with the language in the ROD.

   Response: Agreed.

7. **Comment:** Section 1.3 Site History, para 13 & para 15: *"Extraction well EW-5B was constructed to reduce concentrations of VOCs in the vicinity of P-106 in the northern area of the Eastern Plume…"*

   Please revise these paragraphs to indicate that EW-5B was installed in July 2007 and first sampled in *September 2007*.

   Response: The sentence will be revised as follows, "Extraction well EW-05B *was installed in July 2007 and first sampled in September 2007. EW-5B* was constructed to reduce concentrations of VOCs in the vicinity of P-106 in the northern area of the Eastern Plume toward surface water~~.; however this well was not sampled until September 2007~~…."

8. **Comment:** Section 1.4, para. 1: *"Following the RI,…"*

   Please add the date of the Remedial Investigation (RI) referenced in the listed sentence, to distinguish between the original RI and the SRI.

<u>Response:</u> The sentence will be revised as follows, "Following the *1990* RI…"

9. **<u>Comment:</u>** <u>Figure 1-2:</u> The figure has a few minor errors: The new overburden wells are not labeled, there are some stray labels for the 2008 porewater seep samples near the confluence, and the new bedrock wells are not on the figure. Please add or remove features to make the map show conditions before or after the SRI, and title it appropriately.

   <u>Response:</u> The intent of Figure 1-2 is to show the existing monitoring wells and features prior to implementation of the Supplemental RI; therefore, the new overburden wells were not depicted on Figure 1-2. To clarify, the text Section 1.3, 1st paragraph, 2nd sentence will be changed: "The RI process began in 1987……as a result of past improper solvent disposal practices (*historical* Figure 1-2)." Minor errors are addressed.

10. **<u>Comment:</u>** <u>Section 2.0, Supplemental RI Activities, last sentence & Figure 1-2</u>: "The green shading represents the historical extent of the Eastern Plume based on detections of volatile organic compounds in the past."

    There must be a more specific reference than "historical extent" because the plume has migrated over time. It would be better to pick a specific time frame and reference the basis, such as the long term monitoring program and any data used from recent investigations. Also does the Navy really mean detection or does it mean exceedances? The shaded area would be much larger if detections are used.

    <u>Response:</u> The last sentence will be revised as follows: "The green shading ~~presents~~ represents the historical extent of the Eastern Plume ~~based on detections of~~ VOCs *exceedances of MCLs/MEGs, based on data through September 2007*."

11. **<u>Comment:</u>** <u>Section 2.1, Stream Pore Water and Seep Sampling and Section 4.4.1, Stream Porewater Analytical Results</u>: One of these sections needs to note that the 2008 pore water sampling was completed on August 11th and 12th, and that during the period from August 3rd to August 12th the area received approximately four inches of rain (based on data for Bath Maine). This resulted in very high water flows in the streams and most likely reduced the VOC levels detected and the number of detections in the pore water and seep investigation.

    <u>Response:</u> The following will be added to the end of paragraph 1 in Section 4.4.1. "*The pore water sampling was completed on August 11-12, 2008. Between August 3 and August 12 the area received approximately 4 inches of rain based on data from Bath, Maine* (COOP ID 170409), the nearest station to NAS Brunswick with data available for August 2008."

12. **<u>Comment:</u>** <u>Section 2.5, Bedrock Borehole Geophysics paragraph 1 and Appendix A-6:</u> *"A natural gamma log was not performed in borehole MW-EP-341B because the caliper,…"*

There appears to be missing or extra text in this sentence. The contractor's summary in the appendix indicates that natural gamma was not collected "due to time constraints". Please revise the text as needed for clarity.

Response: Section 2.5, paragraph 1 will be revised as follows: "A natural gamma log was not performed in borehole MW-EP-341B because *of time constraints; however,* the caliper, temperature, fluid resistivity, ambient and stressed flow meter and acoustical televiewer geophysical logs *were completed and* provided sufficient information to identify the depth of transmissive (water-bearing) fractures and to recommend well screen depth intervals."

13. **Comment:** Table 2-1 & Table 2-3: The reference to "off-base" is confusing for these locations, they all are located within the base boundary, please revise or omit from the table.

    Response: The words "off-base" will be removed where they refer the locations that are within the base boundary, applicable to Table 2-3.

14. **Comment:** Table 2-3, Table 2-4, Appendix A-2, and Appendix A-9.1:

    a.) The designation of well MW-EP-354 needs to be changed to TR based on the following:

    - The EC log in Appendix A.2 shows that the sand lenses at the locations are less than 2 feet thick, and the profile is similar to PL-30/MW-EP-352, which is denoted as Transition;
    - The field record in Appendix A-9.1 indicates that the groundwater remained turbid, indicating a relatively high percentage of fines; and
    - MW-EP-354 is located very close to Mere Brook, in an area where the stratigraphy is similar to MW-313 and MW-MB-04B/C, which have been designated in the TR Unit.

    Response a): The Navy disagrees with the suggestion to change the designation of MW-EP-354. The electrical conductivity (EC) log in Appendix A-2 that was used to classify MW-354 is PL-19. There is a distinct drop in electrical conductivity (EC) over the interval interpreted by Tetra Tech as Lower Sand. Although this interval relatively thin (approximately four feet), the Lower Sands are known to pinch out to the east towards Mere Brook and Merriconeag Stream. The profile is not strikingly similar to PL-30, which shows no such distinct area, but more like PL-23. The well screen is five feet long and extends one foot into Transition Unit, which accounts for the elevated turbidity.

    b.) MW-EP-347 appears to be in sandy TR soils rather than in a distinct LS unit, and earlier discussions of the data for PL-07 had followed that interpretation. Was the designation revised based on chemical and slug test data, which suggest a stronger connection to the LS? MEDEP accepts its designation as LS, but it is marginal based on the apparent silty zone in the middle of the four feet of sand screened by this well.

Response b): MW-347 is screened from 46-51 feet below ground surface (bgs). The EC data for PL-07 indicates a sharp decrease in EC values at 46 feet and sharp increase at 51.5 feet bgs. EC values between 46-51.5 feet bgs ranges from approximately 3 to 5 milliSiemens per meter (mS/m) which is consistent with saturated sand. Some of the EC peaks in the graph may be due to slightly finer interbeds within the Lower Sand unit. The hydraulic conductivity (K) data from MW-347 (1 foot/day [ft/d]) is the same as the geometric mean K (1 ft/d) for 16 wells completed in the Lower Sand that were K tested.

15. **Comment:** Table 2-4 & Table 3-1: MEDEP would appreciate an electronic spreadsheet of Table 2-4 for our records if one is available. MEDEP can provide a soil log for MW-208 for reference, if needed. The clay at MW-208 is at an elevation of approximately -57.6 feet MSL, if the clay top is picked at 105 feet bgs. Please add the MW-208 data to Figure 3-4, as the log indicates there is a depression in the clay surface not otherwise depicted.

    Response: An electronic spreadsheet of Table 2-4 was provided on August 24, 2010. According to the EA Well Book, there is no soil boring log available for MW-208. Tetra Tech obtained the soil log from the MEDEP and agrees the top of clay elevation is -57.6 feet relative to (mean sea level [MSL]). Because surrounding data indicate the clay surface is between -34 and -38 feet MSL, two contours, -40 and -50 feet MSL surrounding MW-208 were added to Figure 3-4.

16. **Comment:** Section 3.1.1, Overburden Geology:

    a.) Transition Unit para 3: This paragraph appears to be more relevant to the Lower Sand section below, please make it the second paragraph of the Lower Sand Section.

    Response a): The paragraph will be moved as requested.

    b.) Lower Sand, final sentence: The Lower Sand is not distinguishable to the west of Merriconeag Road in part because the sands extend nearly to the top of Presumpscot Clay with very little silt and clay interbeds relative to the stratigraphy to the east. This is important for migration of the plume and impacts consideration of flow rates and hydraulic conductivities in the TR Unit when wells to the west are considered. Locations where sands dominate the profile include MW-306, MW-225A, MW-310 MW-208 and EP-LOG-05. This stratigraphy is distinct from that to the east, where the LS is a confined unit at the base of a silt-clay dominated TR. Please incorporate these stratigraphic differences into the text.

    Response b): The following text will be added to the Lower Sands Section of 3.1.1, after the last sentence: "*Very little to no silt or clay interbeds are present in this area, which makes the Transition Unit unidentifiable as a separate unit in the stratigraphy. The sand interval within the Transition Unit become thinner and finer-grained to the south, and this change is believed to further increase groundwater confining conditions in deeper portions of the Transition Unit and the Lower Sand. The Lower Sand becomes thin and pinches out in an easterly direction in the vicinity* *of Merriconeag Stream, but is thicker to the west of Merriconeag Road where it is described as being in contact with the Upper Sand*."

c.) Summary, final sentence: The final sentence needs to be moved to Section 3.2.2, where the slug test data are discussed.

Response c): Section 3.1.1 includes discussions of the hydraulic conductivity, which is summarized in the "Summary" section. The sentence is relevant to both Sections 3.1.1 and 3.2.2. The final sentence will be repeated in Section 3.2.2.

17. **Comment:** Section 3.1.2

a.) Borehole Geophysics: *"All depth measurements are relative to ground surface."* This statement appears to refer to Appendix A-4, please revise for clarity.

Response a): Concerning borehole geophysics, the sentence at the end of the paragraph will clarify that depth measurements are relative to the ground surface.

b.) MW-EP-340B and other bedrock wells: Please add "below ground surface" to the depth references for flow and fractures, as they appear to be "corrected" from the depths presented in Appendix A-6.

Response b): Refer to the response to the previous comment.

c.) MW-EP-342, para 4: The possible presence of grout in the borehole may represent problems with the seal around the casing, due to the difficulty in sealing a casing with fractured rock including higher angle fractures. However the lack of flow on the geophysics log at that depth suggests no major impact on wells. The pH at the MW-342 wells ranged from 8.28 to 9.51, higher than at the other new wells, but similar to MW-308 and not indicative of major infiltration of grout into the screen zones.

Response c): The following sentence will be added at the end of the referenced paragraph: "*However, the lack of flow on the geophysics log at that depth and the pH range in this well is similar to that measured at MW-308 and does not support infiltration of grout at this location.*"

18. **Comment:** Section 3.2.1, Groundwater Occurrence: Please also note that the deep sand units in the TR are generally confined east of Merriconeag Road, to the west the TR is dominated by sand and there are no artesian wells to suggest confined conditions. Also, note that the clay is thin or absent in at least two locations near MW-323 and MW-342 where bedrock is shallow.

Response: The text in the fourth sentence will be changed as follows: "Groundwater in the Upper Sand is unconfined and flows laterally from recharge to discharge areas. ~~but sandy intervals in the Transition Unit are confined by overlying and underlying silt/clay strata.~~" The following replacement text will be added: "*Flow within the Transition Unit is expected to be more complex because of the varying hydraulic conductivities of the interbedded sands, silts and clays within this unit.*

Deep sand units in the Transition Unit are generally confined east of Merriconeag Road but to the west the Transition Unit is dominated by sand and there are no artesian wells to suggest confined conditions in this area."

Also, a reference to MW-323 and-342 will be added to the last sentence in the paragraph: "The direction of bulk groundwater flow in transmissive bedrock fractures is expected to be generally in a southeast direction and is confined by the solid rock matrix and by the overlying Presumpscot Clay, or by silt/clay interbeds of the Transition Unit where the Presumpscot Clay is absent (e.g., MW-308/bedrock saddle vicinity, *MW-323 and MW-342*)."

19. **<u>Comment:</u>** <u>Section 3.2.2 Groundwater Flow and Figures 3-5/3-7:</u> Please add MW-208 to Figure 3-7, it is screened in the deepest sand units at the top of clay. Also, add the staff gauge data to Figure 3-5 for reference.

    <u>Response:</u> The groundwater elevation for Lower Sand well MW-208 will be added to Figure 3-7 and the nearby 34 foot contour adjusted. The staff gauge data will be added to Figure 3-5 as requested for reference.

20. **<u>Comment:</u>** <u>Section 3.2.2 Groundwater Flow, Lower Sand para 3:</u> Please recalculate MW-EP-354 as a Transition Unit well and adjust the summary ranges for hydraulic conductivity (K) and flow velocities as needed in the Transition and Lower Sand sections. The K value of 2.35×10^{-1} ft/day for MW-EP-354 is also within the range of calibrated values used for the Transition Unit in the 2009 groundwater model (0.27 – 25 ft/day), but an order of magnitude lower than the range for the Lower Sand.

    <u>Response:</u> Please see the response to Comment 14a. Although the hydraulic conductivity (K) value for MW-EP-354 is one of the lower K values in the Lower Sand, it is not the lowest conductivity value within this unit. Well MW-EP-354 will remain associated with the Lower Sand.

21. **<u>Comment:</u>** <u>Section 3.2.2, Groundwater Flow Directions and Velocities, Transition Unit, para 1</u>: "Further south, at the base boundary shallow groundwater has easterly and northeasterly components; deep groundwater flow in this area is predominantly to the southeast and east toward Mere Brook."

    What is the basis for this statement or does the Navy mean at the <u>plume</u> boundary rather than the base boundary? Please correct as necessary.

    <u>Response:</u> The sentence will be revised as follows: "Further south, at ~~the base boundary,~~ *the Merriconeag Stream confluence*, shallow groundwater has easterly and southeasterly components; deep groundwater flow in this area is predominantly to the southeast and east toward Mere Brook."

22. **Comment:** Section 3.2.3, Overburden Wells: "Artesian conditions occur at Lower Sand monitoring well MW-EP-347, located approximately 300 hundred feet northeast (upgradient) Merriconeag Stream."

    Please change "300 hundred" to "300 feet" and "northeast" to "northwest".

    Response: The sentence is revised as follows: "Artesian conditions occur at Lower Sand monitoring well MW-EP-347, located approximately 300 feet *northwest* ~~northeast~~ (upgradient) of Merriconeag Stream.

23. **Comment:** Section 3.2.3, Vertical Hydraulic Gradients, Overburden Wells, para 2, Figures 3-6 & 3-7: It is also notable that several other wells in the northern and southern lobes of the plume are artesian, including MW-EP-348, MW-EP-349, MW-EP-353, MW-331, and MW-MB-02C. These locations are also an indicator of the areas where the Lower Sand is more confined, please note these other artesian locations in the text and on the Figures. Also, Figure 3-6 needs to be reconfigured to account for the elevation at MW-230B.

    Response: Artesian wells identified in Appendix A-8 will be noted in the text in the section titled "Overburden" at the end of paragraph 2: "*In addition, several other wells in the northern and southern lobes of the plume are artesian, including MW-EP-348, MW-EP-349, MW-EP-353, MW-331, and MW-MB-02C. These locations are also an indicator of the areas where the Lower Sand is more confined"*. The groundwater elevation of MW-230B was considered when drawing the groundwater contours for the Transition Unit (Figure 3-6). Because the groundwater elevation of MW-230B was inconsistent with groundwater elevations at nearby Transition Unit wells, the contours were not adjusted. Parentheses will be placed around the MW-230B elevation on Figure 3-6 because it was not used for groundwater contouring. The groundwater elevation for Lower Sand well MW-230A was considered when drawing the groundwater contours on Figure 3-7.

24. **Comment:** Section 3.2.5, Influence of GWETS: The conclusion in the second sentence indicates one reason that the extraction network has not maintained significant hydraulic control of the plume. The statement regarding EW-5 needs to be changed to refer to EW-5A and EW-5B. Please revise.

    Response: The sentence will be revised as follows: "Extraction well EW-5 has been replaced by EW-5A *and EW-5B*, which ~~is~~ *are both* screened only across the Lower Sand."

25. **Comment:** Figures 3-1 and 3-2: Please add porewater detections to the cross-section with data if they intersect the profile. They help illustrate the vertical migration of contaminants that occurs near the streams. For example Profile B-B' crosses Picnic Pond near PW-131.

    Response: Because porewater data is not collected in the same manner as groundwater and shallow groundwater-surface water flow directions may differ from that in the deeper groundwater system, and porewater may be impacted by surface water, the porewater data was not included in the cross sections.

26. **Comment:** Table 3-4, MW-338C: The shallow well at this location is screened at 42-52 feet bgs and is overlain by clay lenses up to 2 feet thick, so it is not representative of the Upper Sand, please revise to Transition Unit and change as necessary in the report.

    Response: Because no well log was available, Tetra Tech presumed the MW-338C (shallow well in cluster) was completed in the Upper Sand. MW-338C will be associated with the Transition Unit and changes made to the report as necessary.

27. **Comment:** Section 4.1, Contaminants of Concern: Vinyl chloride was detected in two new wells and two piezometers during the SRI, and was also detected in a pore water location sampled as part of the LTMP. In all cases it exceeded the MEG, although the detections were less than 1 µg/L. Vinyl chloride was also omitted from the ROD, and needs to be mentioned here, since it is noted later in this section.

    Response: The first sentence will be revised as follows: "As indicated in the final LTMP (ECC, 2009b), Eastern Plume groundwater COCs include 1,4-dioxane and the following CVOCs: TCE, 1,1,1-TCA, PCE, 1,1-DCE, 1,1-DCA, cis-1,2-DCE ~~and~~ trans-1,2-DCE, *and VC."* The Explanation of Significant Differences (ESD) included vinyl chloride and 1.4-dioxane as COCs. The following paragraph will be added to Section 1.3: "*In October 2010, an ESD documented changes to the Eastern Plume groundwater treatment technology from air stripping to an advanced chemical oxidation treatment process that uses hydrogen peroxide and oxone to breakdown VOCs and 1,4-dioxane into non-hazardous end products. Also, this ESD documents the addition of 1,4-dioxane and vinyl chloride as COCs for the Eastern Plume and establishes cleanup goals of 3.5 ug/L and 0.15 ug/L respectively for these COCs.*"

28. **Comment:** Section 4.3, Occurrence of Contaminants: Please justify and explain the rationale for the 220 µg/L TCE cutoff and the 120 µg/L 1,4 Dioxane cutoff used to describe concentrations in this section rather than using their MCLs/MEGs.

    Response: The 220 ug/L TCE cutoff and 120 ug/L 1,4-dioxane cutoff were used to describe the range of concentrations in the referenced areas of the plume. . Section 4.4 describes ranges of concentrations exceeding MCLs/MEGs. No change to the text is warranted.

29. **Comment:** Section 4.3.2, Trichloroethene in Groundwater, Figures 3-6 and 3-7:

    a.) Upper Sand: Based on the log for MW-306 and CP-108 and a screen zone at 45-55 feet bgs, MW-306 is screened below the Upper Sand, but above the majority of the primary LS unit at the base of the TR. Also, based on the log for CP-149 and a screen bottom 64.29 feet below top of casing, MW-NASB-212 appears to be screened in a large sand unit just above the Presumpscot clay, below a 40 foot section of interbedded sands and silts. (MEDEP has not been able to locate any logs for this well; the bottom depth is taken from the latest LTM report for Fall 2009.) Therefore, please move MW-306 to the TR Unit group and MW-NASB-212 to the LS group, and revise tables and figures as needed.

Response a): The Navy differs with the re-designation of MW-306. CP-108 shows that at 45 feet the formation material becomes dominantly sand. The singular presence of a thin silt layer within a section dominated by sand should not change the classification. Records of past boring logs were provided by EA.

EA records indicate that the log for MW-212 is the log for MW-NASB-212. The log for MW-212 indicates that the well is screened from 11 to 16 feet in the Upper Sand, as shown on Table 2-4. The well log is inconsistent with the MW-212 sample log sheet in the Long Term Monitoring Report (April 2009), which indicates this well is 65 feet deep. Because it is unclear whether the well is screened in the Lower Sand or Transition Unit, Tetra Tech will delete the MW-NASB-212 classification and the well screen interval from Table 2-4 and the groundwater elevation will also be removed as a data point from the Upper Sand groundwater contour map (Figure 3-5). The groundwater contours will not be changed because the contours represent a reasonable interpretation considering groundwater elevations in other Upper Sand wells in nearby areas surrounding MW-NASB-212.

Note: Sections 4.3.2 (TCE in Groundwater) and 4.3.3 (1,4-Dioxane in Groundwater) in the Draft Supplemental RI report were swapped, in the Final Supplemental RI Report because of the importance of 1,4-dioxane in the report. Figures in the section were also renumbered.

b.) Lower Sand: "Near EW-5B west of Picnic Pond, TCE ranges from 5 µg/L to 135 µg/L. The highest concentration for TCE was recorded at MW-EP-347, with no other *[accidences]* in the immediate vicinity."

The way this is written it seems to lump MW-EP-347 in with the wells near EW-5B. It should be noted here rather than at the end of the paragraph that it had a concentration of 860 µg/L. Instead of accidences, do you mean occurrences?

Response b): The text will be revised for clarification: "*The northernmost 'hot spot' occurs in the vicinity of EW-5B west of Picnic Pond, where* ~~Near EW-5B west of Picnic Pond,~~ TCE ranged from 5 ug/L to 135 ug/L. The highest detection for TCE *and the second northern 'hot spot'* was recorded at MW-EP-347 *(860 ug/L)*. *There are* ~~with~~ no other ~~accidences~~ *exceedances of TCE* in the immediate vicinity *of MW-EP-347*."

c.) The detections at MW-EP-347 are isolated spatially in part because there were few groundwater profile samples collected in the area south of the "bedrock knob" extending to MW-308, and north of the confluence. The area had previously been interpreted to be free of impacts based on the monitoring of MW-330. Further this well is screened in "fine-grained materials" and does have a relatively low K value, suggesting that it is located at the margins of the LS.

Response c): The following sentence will be inserted at the end of this paragraph: "*It should be noted that MW-330, located approximately 100 feet northwest of MW-347, had been monitored previously without indication of TCE impacts in the area."*

30. **Comment:** Section 4.3.1, Distribution of CVOC…: See comments 1 and 10 above.

    Response: The following text will be added to the second sentence in Section 4.3.1: "*For comparison purposes, the extent of the Eastern Plume is depicted both historically (based on VOC concentrations through September 2007 that exceeded MCLs/MEGs in effect at that time) and based on the Supplemental RI Report results (last evaluated in 2010); more recent monitoring data are provided in the LTM reports for the Eastern Plume and a separate effort is pending to establish a LUC boundary using the Supplemental RI report, most recent groundwater monitoring results, and most recent criteria for all constituents.*"

31. **Comment:** Section 4.3.3, 1,4 Dioxane in Groundwater, Transition Unit: 1,4 Dioxane was also elevated at MW-MB-04B, (190 µg/L) please add this to the text.

    Response: The following will be added to the end of the last sentence: "*and 190 µg/L at MW-MB-04B". These wells are approximately 150 feet apart*."

32. **Comment:** Section 4.3.3, 1,4 Dioxane in Groundwater, Lower Sand: "As depicted on Figure 4-7, with one or two exceptions 1,4 dioxane concentration are less than three times its MEG …"

    Unless the Navy can justify using a comparison of "three times its MEG" please compare the concentration of 1,4 dioxane in groundwater to its MEG of 32 µg/L.

    Response: The MEG for 1,4-dioxane has been updated to 30 ug/L (CDC, October 2010), and EPA provided an interim MCL for 1,4-dioxane as 3.5 ug/L that will be used for comparisons. Relevant text sections, tables and figures will be updated to reflect these changes that were in effect at about the time regulatory comments on the draft Supplemental RI were received in 2010. More recent data and changes to the MCLs/MEGs are addressed in the LTM reports for the Eastern Plume and a separate effort is pending to establish a LUC boundary using the Supplemental RI report, most recent groundwater monitoring results, and most recent criteria for all constituents.

33. **Comment:** Section 4.4.1, Stream Pore Water and Seep Sampling Analytical Results, para 1: "TCE and 1,4-dioxane were detected at 13 of the 83 pore water/seep locations."

    See Comment 11 above and revise accordingly.

    Response: The following sentence will be added to the end of Section 4.4.1, paragraph 1: "*Recharge of the shallow aquifer from heavy rainfall events*

(August 3-12, 2008) may have reduced shallow groundwater/porewater contaminant concentrations."

Note: In Section 4.4.1, 4.4.2, and 4.4.3 subsections titled "CVOCs" and "1,4-Dioxane" in the Draft Supplemental RI report were swapped, in the Final Supplemental RI Report because of the importance of 1,4-dioxane in the report. Figures in the section were also renumbered.

34. **<u>Comment:</u>** <u>Section 4.5, Migration Pathways, Overburden:</u>

a.) It is notable that several locations where the Direct Push (DP) groundwater sampler was unable to collect a sample that the standard monitoring well provided acceptable data (e.g., PL-07/MW-EP-347 and PL-30/MW-EP-352). Several of these locations are artesian wells and include the highest concentrations of any of the new wells installed. This supports the conceptual model for VOCs in the Lower Sand migrating south and east into increasingly confined sand lenses that gradually pinch out near the surface waters, forcing flow into the less permeable Transition Unit, where velocities are slower and there is greater sorption in the finer grained materials. Please add this observation to the text.

<u>Response a:</u> The text in the middle of the paragraph will be revised as follows: "In many areas across the Eastern Plume, ~~recharge~~ *groundwater* continues to move downward into the Transition ~~Unit~~ and ~~underlying~~ ~~geologic units~~ *Lower Sand Units*. *Groundwater moves mainly through the sand lenses of the Transition Unit and Lower Sands and these sands become increasingly confined and pinch out near surface waters to the east. This forces flow into less permeable units where there is greater sorption of contaminants to fine-grained materials.*"

b.) *"Near the Site 4, Site 11 and Site 13 source areas, residual VOCs have decreased…"*

Although this is likely to be true, there is little recent data other than from shallow wells hundreds of feet downgradient to support this statement for Sites 4 and 13. By the Navy own admission "Chlorinated solvents released at these sites entered the Upper Sand, migrated around or through upper Transition Unit, and eventually reached the Lower Sand deep within the Transition Unit." Therefore the statement needs to be qualified or the Navy needs to determine where the western trailing edge of the plume actually is located.

<u>Response b:</u> Reductions in VOCs at Sites 4, 11 and 13 are discussed in the source evaluation report in Appendix C, and in the final Site Management Plan (ECC, 2008). The sentence (paragraph 1) will be revised as follows: Near the Site 4, Site 11 and Site 13 source areas, residual VOCs have decreased ~~less than MEGs or MCLs.~~ as *the plume has migrated toward the east over time.*

35. **<u>Comment:</u>** <u>Section 4.5, Migration Pathways, Bedrock in the Vicinity of MW-308:</u>

a.) MW-323 has also exceeded the MEG in two rounds for 1,1 dichloroethene; please revise.

Response a): The LTM event 34 (April 2009) data (as per report appendix) showed 1,1-dichloroethene is below its 2010 MEG (40 ug/L) at MW-323; therefore, this revision was not made.

b.) MEDEP's records indicate that the 1,1 DCE concentrations are switched between the two LTMP rounds, and that 1,1 DCE concentrations declined by about 50%, similar to TCE. This suggests that although there appears to be dilution or decreases in concentrations, there is no further degradation ongoing in the bedrock. Please correct the text.

Response b): Continued monitoring will clarify whether or not degradation is ongoing. No correction is warranted.

c.) Please revise the second-to-last sentence to note that the two other wells are *upgradient* of MW-EP-342B1/B2.

Response c): The second-to-last sentence will be revised as follows: "VOC concentrations at nearby newly installed bedrock wells at ~~upgradient~~ clusters MW-EP-341 and MW-EP-340 *(both located upgradient of MW-EP-342B1/B2)* were lower and did not exceed criteria *last reviewed in 2010.*"

d.) In keeping with the section header, the text should also describe the most likely pathway for VOCs to migrate into and out of bedrock near MW-308. Please summarize based on the discussion in Section 5, similar to the discussion for the overburden, including the vertical gradients at the new well clusters.

Response d): The following paragraph will be added to the section referenced above and the Executive Summary: "*One of the objectives of this supplemental RI was to determine how contaminants were entering the bedrock via the overburden. The bedrock investigation results indicate that common contaminants are present at higher concentrations upgradient of the MW-308 vicinity, and are present at lower concentrations in the fractured bedrock. Lateral and vertical hydraulic gradients and decreasing contaminant concentrations in the direction of groundwater flow indicate that the source of contaminated groundwater in fractured bedrock is from the overburden upgradient (north-northwest) of the bedrock knob feature rather than from the bedrock itself. Hydraulic conductivity values for the bedrock at this location and sandy zones in the overburden are similar, indicating no impediment to groundwater flow into the bedrock in the vicinity of MW-308. Vertical hydraulic gradients are upward at the well cluster closest to MW-308 (MW-EP-342B1/B2), which limits the vertical migration of contamination deeper into bedrock. Hydraulic gradients indicate that contaminated groundwater moving in a southerly direction in the overburden has the potential to migrate into the bedrock in the MW-308 vicinity, then flow upward and laterally in a southeasterly direction, where it has the potential to re-enter the overburden.*"

36. **Comment:** Section 4.5, Migration Pathways, Residential Wells: "Sampling by MEDEP and the Navy of residential wells potentially affected…"

For clarification, MEDEP suggests the following language: "MEDEP has sampled residential wells that could have been potentially affected by the Eastern Plume and the Navy continues to sample a residential well that is closest to the Eastern Plume boundary."

Response: The sentence will be changed as requested.

37. **Comment:** Section 4.6, Contaminant Migration Rates: The finer-grained materials do tend to adsorb a greater percentage of the total VOCs present in the low-permeability portions of the aquifer, however removal is more impractical than impossible. The dissolved mass available for extraction becomes progressively smaller, and it is difficult to affect low permeability zones with pumping or injection methods within practical limits of time and money. Please revise.

    Response: The middle of the second paragraph will be revised to the following, "After VOCs are bound to geologic materials, especially in deep aquifers, they ~~are~~ *become* very difficult ~~if not impossible~~ to remove. The cleanup strategy at the Eastern Plume has been to remove as much contaminant mass as possible by targeting relatively thick contaminated zones; extraction well EW-5B is the most recent example of an extraction well installed in a thick contaminant zone. The desorption process occurs as the contaminant mass is removed by *the* groundwater cleanup ~~remedies~~ *remedy*, such as groundwater extraction and treatment. However, the desorption process is slow for CVOCs, *which in turn limits the dissolved mass available for extraction* ~~and at some point, CVOC concentrations decline more slowly over time and then level off because the process of desorption is slow and~~ *as the extractable dissolved mass becomes smaller.* Groundwater extraction and treatment ultimately becomes ineffective at removing additional contaminant mass *within the practical limits of time and costs.*"

38. **Comment:** Figure 4-1: The shaded area while informative from an historic perspective is misleading. (See comments 1 and 10 above.) Please depict the Eastern Plume boundary based on exceedances as reported in recent LTMP reports and the SRI data. Also see comment #1.

    Response: Please see the response to General Comment 1.

39. **Comment:** Section 5.1, Conclusions:

    a.) Paragraph 3: The relative values for hydraulic conductivity and velocity in the LS and TR are affected by the choice of which unit to assign to various wells, and particularly by the variation in the TR Unit from west to east. MEDEP disagrees with the designation of several wells, as stated above, which may result in lower TR values and higher LS values for these parameters. The values are also quite different from those in the recent groundwater model, which generally had higher values for the LS and lower for the TR. MEDEP does not disagree that the K values may be quite close in the eastern portion of the plume, as the LS gradually becomes less distinct from sand lenses in the TR. (No response required.)

Response a): Comment noted.

b.) Paragraph 4: The western extent of the plume in the deep TR/LS is not defined by the monitoring currently available, so it is not possible to verify how close the plume boundary is to the former source areas. Please modify the conclusion to reflect the uncertainty.

Response b): The completeness and representativeness of the western plume boundary will be addressed as part of the optimization of the Long-Term Monitoring Program for the Eastern Plume.

c.) Paragraph 6: *"Vertical Hydraulic Gradients are upward at the well cluster…"* Does the statement refer to limiting downward migration in bedrock or horizontal migration of the plume? Please revise for clarity.

Response c): The sentence, in middle of the paragraph, will be changed to: "Vertical hydraulic gradients are upward at the well cluster closest to MW-308 (MW-EP-342B), which limits the vertical migration of contamination *deeper into bedrock*."

40. **Comment:** Section 5.2, Recommendations:

a.) Delineation of the extent of 1,4 dioxane to the north of the confluence is hampered by a lack of data in the vicinity of MW-EP-347, where few of the profile locations or intervals yielded water. It may be more extensive in that area. Please identify this as a data gap.

Response a): The extent of high contaminant concentrations in the vicinity of MW-EP-347 is interpreted to not be extensive. This interpretation is based on the fact the Lower Sand is relatively thin (approximately 4 feet) at the MW-EP-347 location and pinches out to the east (see Figure 3-2, Cross Section EE'), based on geologic descriptions and the artesian head at this well. The extent of the 1,4-dioxane plume was previously defined by its MEG (32 ug/L, now 30 ug/L). The extent is larger when delineated using EPA's interim MCL for 1,4-dioxane (3.5 ug/L).Text will be added to clarify that these changes were in effect at about the time regulatory comments on the draft Supplemental RI were received in 2010. More recent data and changes to the MCLs/MEGs are addressed in the LTM reports for the Eastern Plume and a separate effort is pending to establish a LUC boundary using the Supplemental RI report, most recent groundwater monitoring results, and most recent criteria for all constituents.

b.) Delineation of upwelling in the surface water is in need of some follow up sampling due to the flooded conditions that affected the original porewater effort, particularly between Picnic Pond and the confluence. Current data show that the plume is upwelling in zones north and south of the confluence, as well as at the confluence itself. The 2008 porewater and seep data suggest there are additional zones further north, and the most recent LTM data show increasing levels in porewater. Please add a recommendation to consider these gaps in the upcoming LTM discussions.

<u>Response b):</u> The Navy will consider the completeness of porewater data in the optimized Eastern Plume LTMP. Please see the response to Specific Comment 5.

c.) The LTMP monitoring for surface water does not include 1,4 dioxane, this analyte must be added to future rounds. Improving the surface water sampling technique should also be evaluated for future monitoring as there are methods that can improve data quality over the typical grab sample. This data gap needs to be added to the text.

<u>Response c):</u> The Navy will consider adding 1,4-dioxane to the analytes it monitors for surface water in upcoming long term monitoring events. The Navy will consider changing its surface water sampling technique, although the current technique of grab sampling has provided a sufficient quality of data and provides a basis for trend evaluation where samples are collecting using the same method. Please see the response to Specific Comment 5.

d.) The bedrock data do not indicate that VOCs are present at elevated concentrations over a wide area. The low 1,4 dioxane detections in one round in MW-309A/B to the east of MW-342S/B1/B2 do show that migration in that direction is occurring, albeit not at levels of concern at present. Monitoring as part of the LTM in the future is warranted to ensure levels decline as pumping continues at EW-5B. Continued monitoring of the bedrock should be added as a recommendation.

<u>Response d):</u> The following recommendation will be added to Section 5.2 and the Executive Summary: "*Although additional bedrock monitoring well installation is not recommended, bedrock groundwater monitoring will be considered in the optimized Eastern Plume LTMP.*"

e.) The southern boundary of the plume is not defined near Gurnett Road at MW-EP-354 (1,4 dioxane and 1,1 DCE exceed their MEG). The closing of Weapons Compound and the removal of the security fence will allow access not permissible during this SRI, to the area just north of the road. Stakeholders should consider whether a sentinel point is needed (porewater or shallow well), as the piezometric head data indicate flow is east into the stream. This data gap should be considered during the optimization of the LTMP.

<u>Response e):</u> This data gap will be considered in the optimized Eastern Plume LTMP.

f.) The plume remains poorly defined at its northern extent. Groundwater flow data is lacking to demonstrate that Site 11 is the source of the VOCs and the recent detections in excess of the MEGs at MW-305 are in a totally new area thought to be clean. In addition, there were low VOCs in the porewater despite the flood conditions, and PL-25 revealed VOCs east of the pond are not restricted to MW-NASB-212. This area deserves some additional gauging points to confirm groundwater flow and reconsideration of whether Site 11 is the only source. A recommendation should be added to include this as a data gap that needs to be filled to meet the objectives of this SRI.

Response f): The completeness and representativeness of the northern extent of the Eastern Plume monitoring data set will be addressed as part of the optimized Eastern Plume LTMP.

g.) The western boundary is poorly defined and needs improved monitoring to confirm the true extent of the residual plume in the deep TR/LS. Consideration of Sites 4 and 13 may also be needed for property transfer, as the dataset is incomplete and outdated.

Response g): The completeness and representativeness of the western plume boundary will be addressed as part of the optimization of the Eastern Plume LTMP.

h.) Please add a recommendation to update the Conceptual Site Model with the new information from this investigation.

Response h): The Navy periodically updates the conceptual site model as new data becomes available.

41. **Comment:** Section 5.2, Recommendations, para 2, item 1: Please delete the second sentence as it was not the objective of this investigation to evaluate the effectiveness of the extraction system or the GWETS. Also before the stakeholders consider phasing out the GWETS, there must be an optimization of the extraction system.

    Response: Agree.

42. **Comment:** Appendix A-2: For some logs the sampled zones and stratigraphic units appear to be offset by 1-2 feet from the depth scale. Please check for accuracy and revise as needed, examples include PL-02, 03, 07, 08, and 19.

    Response: The off-set on applicable EC logs will be corrected.

43. **Comment:** Appendix A-9.1: The field notes indicate that artesian wells were not pumped. Please clarify if flow was achieved in the tubing by lowering the pump to the screen level, or if another method was used.

    Response: Flow was achieved in the tubing by lowering the pump to the screen level. Once the pump was at screen level, water flowed readily out of the tubing without using nitrogen gas and MP10 Controller.

44. **Comment:** Appendix C: Please update the figures using the recent investigations and long term monitoring and depicting the new Eastern Plume boundary based on exceedances.

    Response: Figures 1, 2. 3, and Figure 1-1 will be updated to reflect these changes that were in effect after the time regulatory comments on the draft Supplemental RI were received in 2010. More recent data and changes to the MCLs/MEGs are addressed in the LTM reports for the Eastern Plume and a separate effort is pending to establish a LUC boundary using the SRI report, most recent groundwater monitoring results, and most recent criteria for all constituents.

45. **Comment:** Appendix C, Eastern Plume:

a.) Another new COC is the breakdown product, vinyl chloride, which is toxic at very low concentrations. Please add a brief discussion of vinyl chloride.

Response a): On page C-2, under the heading 'Eastern Plume', the following text will be changed as follows: "…contaminants associated with the Eastern Plume consisted primarily of CVOCs including tetrachloroethene (PCE), 1,1,1-trichloroethane (1,1,1-TCA), and trichloroethene (TCE). *Vinyl chloride (VC) was added as a COC after the 1990 RI; VC is emerging as a COC because it is a break-down product of CVOCs. VC has been detected at concentrations that exceed the Maine MEG (0.15 ug/l), but not the EPA MCL (2 ug/l)*. The contaminant 1,4-dioxane, which is also a …"

Note the response changes the MEG for VC of 2 ug/L presented in the draft report to the updated MEG (October 21, 2010) of 0.15 ug/L.

b.) Topography and Drainage: Based on data from the SRI and recent LTM data the plume also extends east of the western arm of Picnic Pond, please refer to the eastern arm of Picnic Pond as a boundary. The 50-foot contour is not visible on any of the figures provided, please choose a different reference or provide a "zoomed" version of the topographic map. There is a lack of monitoring points to the west that are screened appropriately to intercept the plume west of Merriconeag Road, which limits delineation of the upgradient edge of the plume.

Response b): The eastern arm of Picnic Pond will be referred to as a boundary. Also, the first sentence of the second paragraph will be revised as follows: "Generally, the *estimated* western boundary of the Eastern Plume ~~coincides with the 50-foot topographic contour.~~ *is in the vicinity of Merriconeag Road.*"

46. **Comment:** Remediation Efforts: "Based on monitoring results and supplemental investigations conducted to further evaluate the horizontal and vertical extent of contamination, the extraction system has reduced the size of the plume."

This statement is difficult quantify since the plume shape keeps changing as we discover contamination in areas not previously investigated, e.g., along the eastern extent. Although there is evidence that the treatment system has reduced concentrations in the plume and the vertical extent has been reduced in that the upper sand is largely free of VOCs, the horizontal extent may be greater than previously documented. Please revise.

Response: The last paragraph of the Remediation Efforts Section in Appendix C will be revised as follows: "The GWETS continues to operate. Based on monitoring results and supplemental investigations conducted to further evaluate the horizontal and vertical extent of contamination, the extraction system has ~~reduced the size of~~

~~the plume.~~ *been effective at reducing the contaminant mass present in the subsurface*. Targeting the upper and lower sand units, remediation efforts removed approximately 480 kilograms of VOC mass as of June 2009 (ECC, 2009), with the bulk of the mass originating from the Lower Sand Unit. However, contaminants continue to be detected in groundwater at concentrations exceeding federal and state regulatory standards*, and at times contamination is discovered in previously unexplored areas*. Administrative controls issued …"

47. **Comment:** Appendix C, Potential Sources

a.) Site 4: Although the available data does not indicate that groundwater impacts were extensive near Site 4, the source area was not accessible, and the monitoring wells were screened at the water table, potentially missing impacts from DNAPLs discharged at the site.

Response a): The paragraph will be revised as follows: "Between 1969 and 1974, an unknown quantity of liquid waste was poured into the former acid/caustic pit for disposal. Waste reportedly disposed included transformer oil, battery acid, caustics, solvents (including TCE), and paint thinners. During the late 1980s, environmental contamination was detected in soil gas and *shallow* groundwater at Site 4. TCE was detected in groundwater adjacent to Building 584 (MW-405) at concentrations ranging from 6 to 23 micrograms per liter (µg/L), which exceeded EPA's Maximum Contaminant Level (MCL) (5 µg/L) but not the State of Maine's Maximum Exposure Guidelines (MEG) (32 µg/L) *in effect at that time*. VOCs were not detected in subsurface soil samples; however, these samples were not collected directly from the source area because of the presence of Building 584*. Higher concentrations in groundwater or soil could have potentially been detected if the source area was accessible and/or monitoring wells had been installed at depths that would monitor impacts from dense non-aqueous phase liquids (DNAPLs).* Currently, Building 584 covers the pit, and remediation activities have not been conducted at the site."

Note the response changes the MEG for TCE of 32 ug/L presented in the draft report to the updated MEG (October 21, 2010) of 30 ug/L.

b.) Site 11: Of the 3 major known sources Site 11 was remediated to a greater extent than the others, and has been flushed by the infiltration gallery for many years. The plume at this point has largely been flushed out of the shallow aquifer, where MW-1104 is screened. MW-323 is screened in a bedrock knob, and has not exceeded the MEGs since 2008. However there are no locations monitored to demonstrate that the deeper strata are free of VOCs northeast toward MW-NASB-212, or southeast of Site 11 toward MW-EP-346. Please clarify the screened unit at these wells.

Response b): The following sentence will be added to the end of paragraph 2: "*MW-323 is completed in the bedrock aquifer, and MW-1104 is completed in the shallow aquifer."*

c.) Site 13: The well GZA-3 is noted on figures from 1990/1992 but is not on current figures, please add the GZA wells or cite other data. A review of boring logs in MEDEP's electronic files did not locate the logs for these wells. Many wells installed for this site were installed at the water table, and even adjacent the discharge points the VOCs may have migrated to the deeper permeable units, following the conceptual model for flow in the deeper sands that connected the source areas to the lower sands.

Response c): Former well GZA-3 was mentioned only because it was reported by E.C. Jordan to be associated with elevated VOC concentrations; however, Site 13 is no longer a contaminant source for the Eastern Plume. Given that no well logs exist for this well, and no survey is available, this well was not added to the map. GZA-3 is centrally located within the Site 13 boundary delineated in the 1990 Draft Final RI prepared by E.C. Jordan.

48. **Comment:** Appendix C, Evaluation…:

a.) The criterion does not consider if the full extent of the plume can be attributed to the three known sources. There is still unanswered questions regarding the northern most extent of the East Plume that are not clearly attributable to Site 11.

Response a): The objective of the report in Appendix C is to evaluate whether Sites 4, 11 and 13 were potential sources of contamination to the Eastern Plume, which the criteria address. Site 11 is in an upgradient direction from the Picnic Pond. The possibility cannot be ruled out that groundwater contamination in the vicinity of Picnic Pond area may have originated from Site 11.

b.) *"However, Sites 4, 11, and 13 are not serving as current sources of groundwater contamination to the Eastern Plume because the Eastern Plume boundary does not extend to Sites 4, 11, and 13."*

Although MEDEP agrees that it is unlikely significant residual mass (DNAPL) remains at the source areas, the plume boundary is not defined well enough to justify this statement. Please provide alternate justification or qualify the statement.

Response b): This sentence will be revised as follows: **"**However, Sites 4, 11, and 13 are not serving as current sources of groundwater contamination to the Eastern Plume ~~because the Eastern Plume boundary does not extend to Sites 4, 11, and 14~~ (Figure 3)."