VOLUME I: Text and Figures

SUPPLEMENTAL RCRA FACILITY INVESTIGATION REPORT

GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico

(USEPA ID Number: PRD090492109)

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C Well Data

D Groundwater Levels

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F Chemical Analyses for Soil and Water Quality

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I Tabulated Soil and Water Quality Data

Presented in this Supplemental RFI Report:

J Documentation of SRFI Field Activities
- J1 Test Boring Reports
- J2 Well Construction Details
- J3 Well Development Logs
- J4 Water Level Summary Sheets
- J5 Groundwater Sampling Logs
- J6 Summary of Field Parameters

K Photographs of the SRFI Fieldwork

L Analytical Data Quality Report for June 2004 Sampling Event

M *MNAToolBox* Evaluation

LIST OF ACRONYMS

°C	degrees Celsius
°F	degrees Fahrenheit
µg/L	micrograms per liter
µmhos/cm	micromhos per centimeter
1,1,1-TCA	1,1,1-Trichloroethane
1,1,2-TCA	1,1,2-Trichloroethane
1,1-DCA	1,1-Dichloroethane
1,1-DCE	1,1-Dichloroethene
1,2-DCA	1,2-Dichloroethane; EDC; Ethylene Dichloride
1,2-DCE	1,2-Dichloroethene
ADQR	Analytical Data Quality Report
AFCEE	Air Force Center for Environmental Excellence
AO	Administrative Order
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene and xylenes
CGE	Caribe General Electric Products
cm/s	centimeters per second
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
COC	Chemical of Concern
COPC	Chemical of Potential Concern
CSM	Conceptual Site Model
DCA	Dichloroethane
DCE	Dichloroethene
DNAPL	Dense Non-Aqueous Phase Liquid
DO	Dissolved Oxygen
DOC	Dissolved Organic Carbon
DQCR	Daily Quality Control Report
DQO	Data Quality Objective
EI	Environmental Indicator
ft	feet or foot
ft/d	feet per day
ft/ft	feet per feet
ft/yr	feet per year
GE	General Electric, Inc.
gm	gram
GPRA	Government Performance and Results Act
GPS	Global Positioning System

LIST OF ACRONYMS (continued)

HSA	Hollow Stem Auger
IDW	Investigation-Derived Waste
K	Hydraulic Conductivity
lbs	Pounds
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
mL	milliliter
mm Hg	millimeters of mercury
MNA	Monitored Natural Attenuation
mv	millivolt
NAPL	Non-Aqueous Phase Liquid
NOAA	National Oceanic and Atmospheric Administration
ODEX™	Overburden Eccentric Drilling
ORP	Oxidation-Reduction Potential
OSWER	Office of Solid Waste and Emergency Response
PCE	Tetrachloroethene (Perchloroethene)
ppm	parts per million
ppmv	parts per million by volume
PR	Puerto Rico
PRASA	Puerto Rico Aqueduct and Sewer Authority
PRG	Preliminary Remediation Goal
QA	Quality Assurance
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SEC	Sirrine Environmental Consultants
Site	GE Puerto Rico Investment, Inc. Facility, Patillas, Puerto Rico
SRFI	Supplemental RCRA Facility Investigation
TCA	Trichloroethane
TCE	Trichloroethene
TDS	Total Dissolved Solids
TOC	Total Organic Carbon

LIST OF ACRONYMS (continued)

US	United States
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
VOC	Volatile Organic Compound
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

General Electric, Inc. (GE) entered into an Administrative Order on Consent (AO) with the United States Environmental Protection Agency (USEPA) (Docket No. II RCRA-3008(h) 88-0302; USEPA, March 29, 1988) to conduct a three-phase corrective action program at its Puerto Rico Investment, Inc. facility (Site), located in Patillas, Puerto Rico (PR) (Figure 1-1). The three phases are as follows:

1. A Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) to investigate and document the nature and extent of contamination at the Site.
2. A Corrective Measures Study (CMS) to develop, evaluate, and propose appropriate corrective actions for the Site.
3. A Corrective Measures Implementation (CMI) to design, construct, operate, maintain, and monitor the selected corrective action.

The GE Facility is located on the southeastern coast of PR, southeast of the town of Patillas. The address for the Site is Road #3, Km 122.9, Patillas, PR, 00723. The Site covers approximately 7.8 acres. The study area for this investigation covers the entire Site, plus an area of the local flood plain for the Rio Grand de Patillas to the south and west of the Site.

ES.1.1 Historic Facility Operations

Figure ES-1 is a graphic summary of the operational history of the Site, and shows the continuous attention that GE has given to the assessment and remediation of the facility. From November 1974 to March 1987, GE, operating as Caribe General Electric Products (CGE), manufactured and assembled electro-mechanical products. Metal plating, stamping, and cutting operations took place during that time. An on-Site wastewater treatment plant (WWTP) was located on the east side (rear) of the building.

A French Sump was constructed at the CGE Facility in 1977 and was operated for waste disposal until 1980. Wastes discharged to the sump included plating tank wastewater, treated wastewater sludge, spent oils, and spent solvents. Soils containing elevated levels of metals and organics in and adjacent to the former French Sump were excavated, stabilized, and shipped to a RCRA-approved landfill in October 1990. USEPA accepted the closure of the sump as complete.

The Site was idle from 1987 to 1993, when no manufacturing operations were conducted. From 1993 to the present, GE has operated the facility to manufacture electro-mechanical devices under the current name of GE Puerto Rico Investment, Inc. The facility currently operates without a wastewater discharge.

ES.1.2 Investigation History

At this Site an RFI Report and a Draft CMS Report have both been completed. The final RFI was submitted in October 1991 (SEC, October 1991). The draft CMS report for the Site was submitted to USEPA (SEC Donohue, January 1993), and GE began quarterly groundwater monitoring as a self-implementation of the published preferred corrective measure: Natural Attenuation with Groundwater Monitoring.

At meetings in 2000 and 2003, USEPA expressed concern that the extent of downgradient contamination had not been adequately characterized, the presence of recoverable dense non-aqueous phase liquid (DNAPL) had not been discounted, and information to implement a natural attenuation corrective measure was insufficient. In response to these concerns, GE submitted a focused Supplemental RFI (SRFI) Work Plan. The purpose of the SRFI is to:

- Document the downgradient extent of the volatile organic compounds (VOCs) in the aquifer beneath the agricultural fields to the south and west of the Site; and
- Further evaluate the feasibility of a monitored natural attenuation (MNA) remedy at the Site.

The work was completed in three mobilizations: 1) a soil gas investigation during October 2003; 2) a repeated soil gas investigation in December 2003 to determine the current location of the plume in the off-Site area; and 3) well installations and groundwater sampling in May-June 2004.

ES.2 SUMMARY OF THE SRFI

The SRFI effort investigated the overall Site conditions, and the SRFI report updates the existing RFI document (SEC October 1991).

ES.2.1 Geology and Hydrogeology

The GE Facility is located on the edge of a coastal plain south of the mountainous Cordillera Central, approximately ½ mile northeast of the Rio Grande de Patillas. It is underlain by interbedded sedimentary deposits of alluvium (river-laid sediments) and colluvium (landslide deposits) to a depth of approximately 25 to 40 feet. Underlying these sedimentary units is saprolite overlying crystalline bedrock.

Within the geologic units are two substantially continuous permeable zones providing avenues for groundwater movement and contaminant migration in the subsurface. In the on-Site area, the sedimentary deposits (alluvium/colluvium) and weathered rock material (saprolite) underlying the Site create an aquifer approximately 90 feet thick. Although the alluvium/colluvium and saprolite units are

hydraulically connected to create one aquifer, they differ in geologic and hydrologic properties. Local groundwater flow is to the south-southwest, toward the Rio Grande de Patillas.

ES.2.2 Source Characterization

At this facility, deep soils and groundwater were impacted by waste handling operations at the French Sump. The sump and associated contaminated soils were removed in 1990, shipped off-Site for disposal, and no longer contribute to the plumes in the groundwater. Groundwater contaminated with VOCs remains on-Site and has traveled downgradient beneath properties adjacent to the GE operations.

ES.2.3 Nature and Extent of Contamination

The groundwater at the Site has been impacted to a depth of approximately 80 feet. This contamination has spread laterally to beneath the agricultural fields to the south of the town of Patillas. The extent of the VOCs in the groundwater has been fully delineated in all aquifer units, except for the deepest unit beneath the WWTP, where the bottom of the DCE plume been mapped to only 100 µg/L. The principal contaminants identified in this SRFI report are:

Exceeds an MCL and PRG	Exceeds an MCL	Exceeds a PRG
1,1-Dichloroethene Tetrachloroethene Vinyl Chloride	1,1,1-Trichloroethane	1,2-Dichloroethane Trichloroethene

MCL – maximum contaminant level

PRG – preliminary remediation goal, from Region IX of USEPA

The size of the plume in the water table and deep aquifer zones is shrinking and the plume in 2004 covers one-fifth the area and one-half the length of the plume in 1989, when groundwater monitoring began. Figure ES-2 is a comparison of the maps for those two dates.

With few exceptions, contaminant concentrations in each monitoring well have been decreasing. Of prime significance is the observation that the contaminant concentrations in samples from well P-11 have been below their screening levels (in many cases down to non-detect) since December 1999. This 4.5-year period of clean samples indicates that residual contamination at the French Sump (probably DNAPL) has been depleted and can no longer contribute contaminants to the local aquifer.

ES.2.4 Natural Attenuation Assessment

Calculations of contaminant mass in the aquifer show evidence of losses of mass from the water table aquifer zone and stable mass in the deeper zone. Compelling evidence indicates the presence of an effective natural system that is actively working without human intervention to destroy the VOCs in all aquifer zones monitored. Using the natural attenuation evaluation data collected in June 2004, in concert with the analytical results collected over the preceding fifteen years, the following degradation processes have been identified:

1. The presence of 1,1-dichloroethane (1,1-DCA) in the local groundwater indicates that the parent product (1,1,1-trichloroethane [1,1,1-TCA]) was degraded, at least in part, by reductive dechlorination processes that were operating in the past.

2. The presence of 1,1-dichloroethene (1,1-DCE) as the principal and most wide-spread contaminant in the groundwater indicates that the TCA was also degraded by abiotic elimination/hydrolysis reactions in the aquifer that are operating in the present.

3. The measurements taken for this SRFI show that oxidizing conditions predominate in the plume areas of the aquifer, that reductive dechlorination is no longer occurring, and that further breakdown of DCE must continue through abiotic oxidation reactions.

The information presented on Table ES-1 indicates that the GE Site in Patillas, Puerto Rico, has satisfied many of the conditions expected by USEPA for a Site to be amenable for MNA. The most important points are:

- the source in the soils has been removed,

- there is no evidence of DNAPL in the groundwater,

- the dissolved phase of the plume is shrinking, from an estimated size of 20 acres (2,000 feet long) in 1989 down to 4 acres (800 feet long) in 2004, and

- the natural processes involved in the destruction of the contaminants have been described and are not subject to being altered.

Therefore, evidence indicates that NA is an effective remedy and acceptable groundwater quality standards will be achieved in a reasonable timeframe. The mass of contaminants in the water table zone on-Site is close to depleted, and the flushing of the deeper zones will bring the contaminants there into

contact with the oxygen-rich water table zone beneath the flood plain where they will be oxidized and destroyed.

ES.3 CONCLUSION

The three concerns voiced by the USEPA in 2000 and 2003 have been addressed in the following manner:

1. The extent of off-Site contamination in the groundwater has been delineated and has been found to be much smaller than at earlier times,

2. An assessment of five lines of evidence indicates that DNAPL is no longer present at the Site, and

3. Sufficient data were collected in 2004 to describe the natural attenuation mechanisms operating to destroy the contaminants in the local aquifer, and these new data are consistent with the groundwater quality data that have been collected over the past 15 years.

Now that these concerns have been addressed, it appears that the MNA alternative selected in 1993 was justified and should be continued. We propose to return to annual monitoring of groundwater quality to confirm the remedy is performing as anticipated.

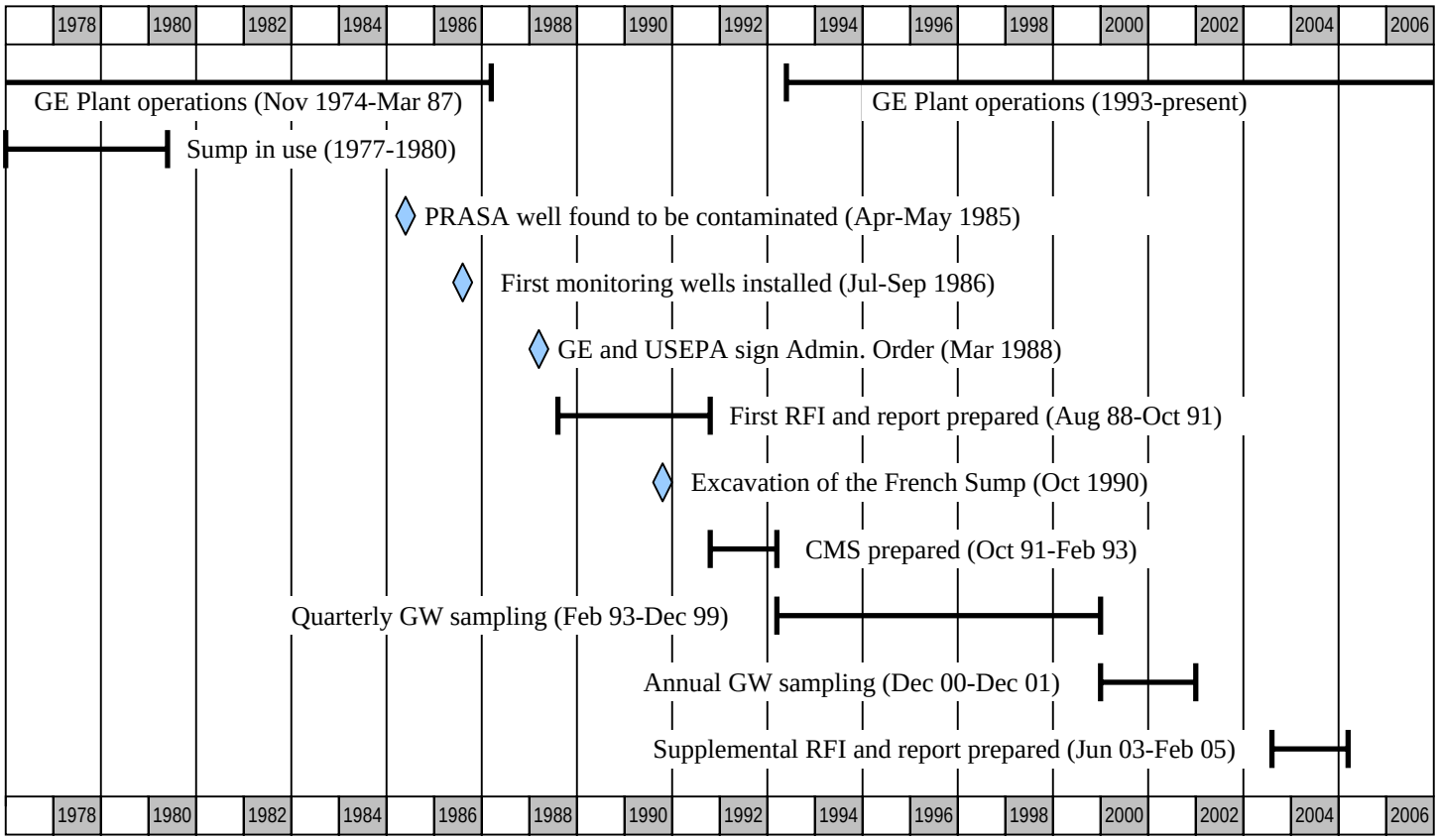

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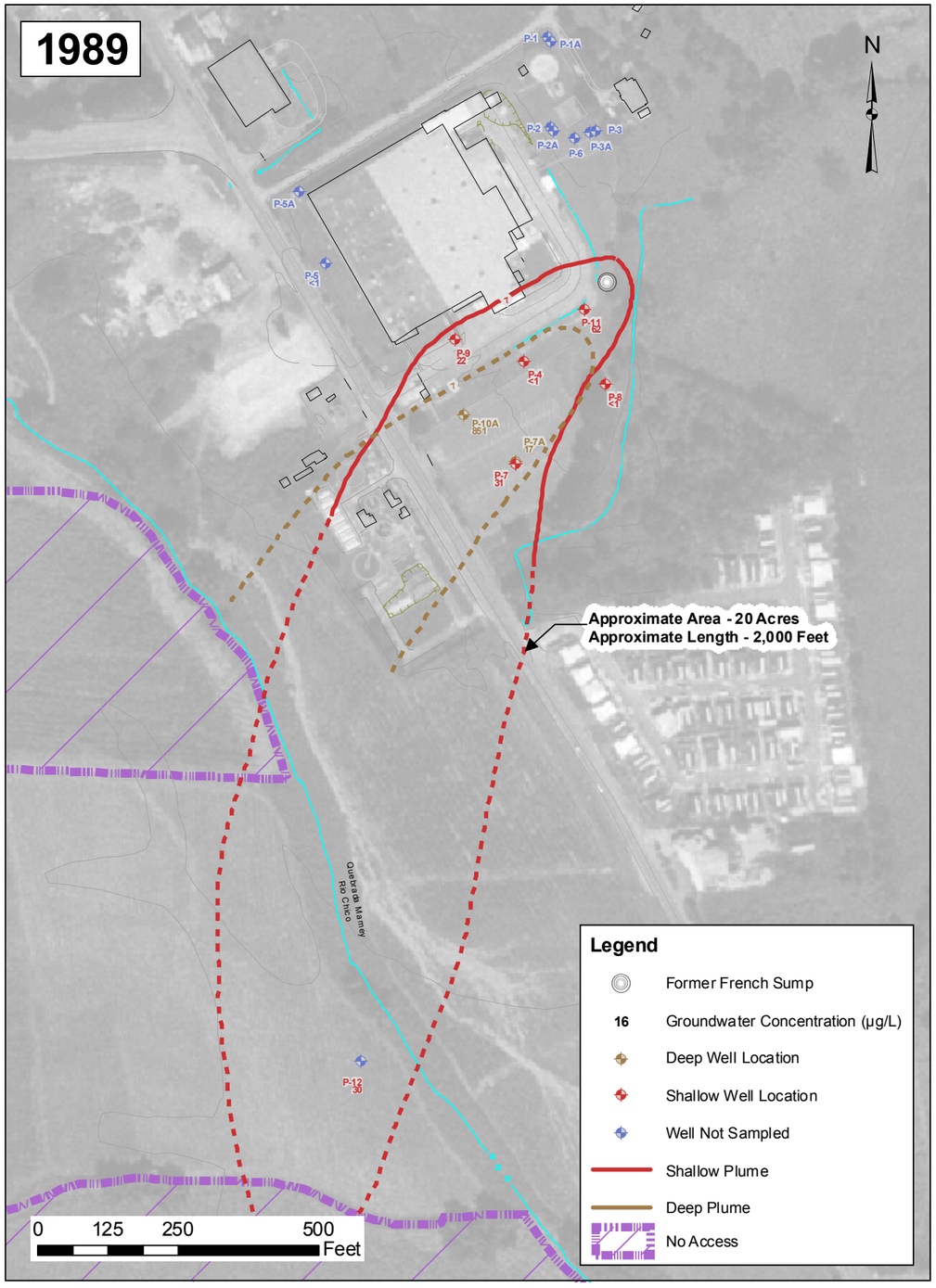
Figure ES-1
Timeline of Historical Site Activities

GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico



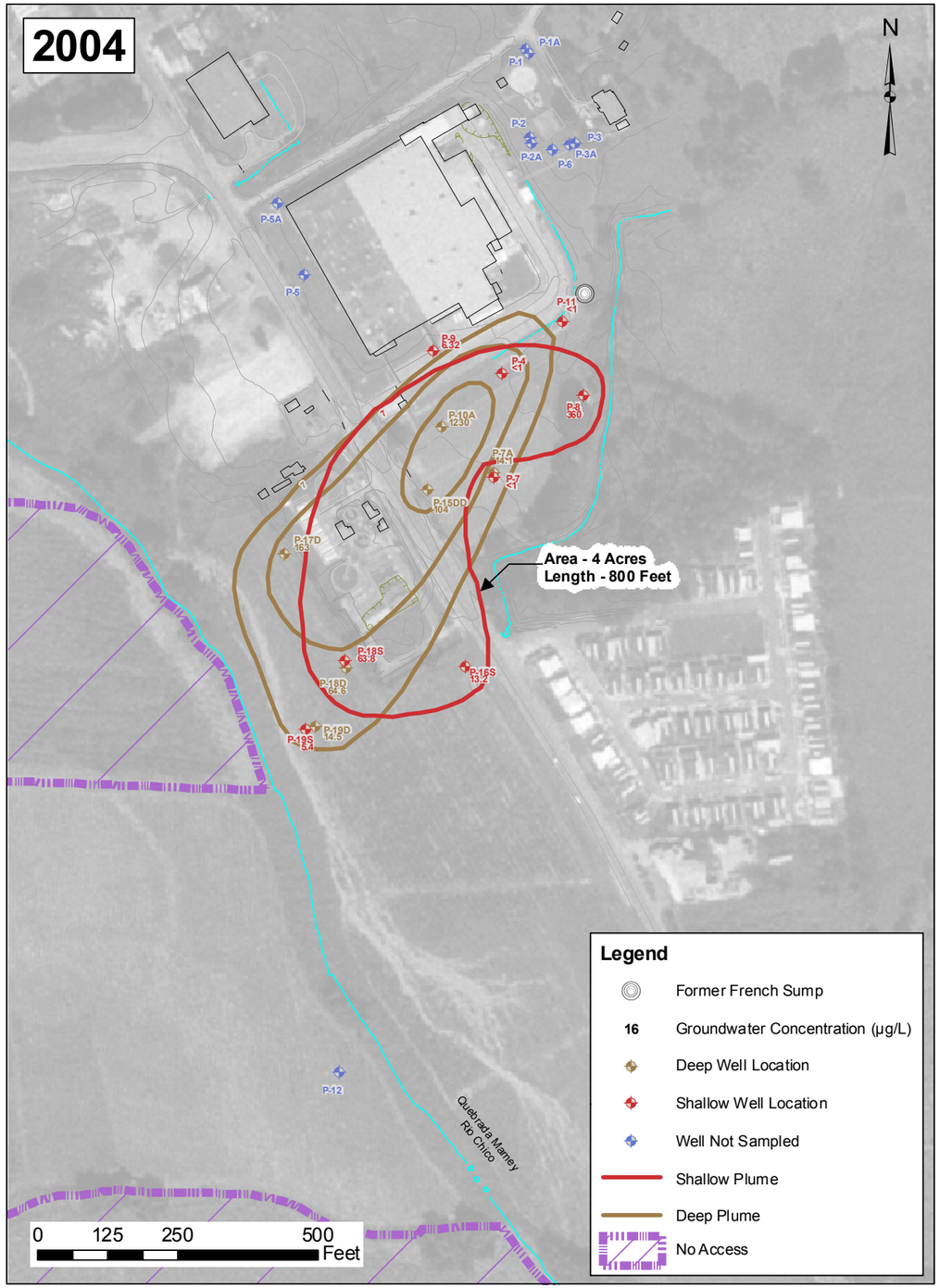


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Figure ES-2
Comparison of 1,1 DCE Plume Sizes, 1989 and 2004

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

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Table ES-1
Natural Attenuation Assessment Summary
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Principal Evaluation Point (per USEPA, April 1999)	**Principal Groundwater Contaminants** [1]	
	1,1,1-TCA	**1,1-DCE**
Contaminant source.	Principal parent product deposited in the former French Sump	Daughter product of TCA through **hydrolysis** and **elimination** reactions
Source under control? [2]	**Sump removed in 1990** [3], no evidence of DNAPL in the aquifer	*Not Applicable*
Plume status? [4] (dissolved phase)	**Shrinking**, only one on-Site well (P-8) remains above the MCL	**Shrinking**, down from 20 acres and 2000 ft long in 1989 to 4 acres and 800 ft long in 2004
Declining mass and/or concentration? [4]	**Yes,** many wells have cleaned up to non-detect concentrations	**Yes,** many wells have cleaned up to non-detect concentrations
Status expected to change?	No	No
Are there receptors/media at risk? [5]	No	No
What attenuation processes have been identified?	**Reductive dechlorination** was active in the past, producing 1-1-DCA, but **hydrolysis** and **elimination** reactions are now operating to make 1,1-DCE	**Oxidation**, perhaps localized **reductive dechlorination** in the past to produce vinyl chloride
Are these processes reversible? [6]	**No**	**No**
What are the anticipated transformation products?	**1,1-DCE and acetic acid**	**Carbon dioxide, water, and chloride ions.** Vinyl chloride is no longer being produced and slightly exceeds the MCL in only one well (P-8).
Processes affected by planned remedial measures?	No	No
Site-specific lab studies available?	No	No
Will NA achieve remedial objectives? [7]	Yes	Yes
Estimated time frame to reach objectives? [8]	5 years (2010)	Shallow: 15 years (2020) Deep: 15 to 30 years (2020-2035)
Will NA be protective of human health and the environment?	Yes	Yes
Is performance monitoring possible?	Yes	Yes
Are Institutional Controls required?	Yes, for restriction of human consumptive use for groundwater	Yes, for restriction of human consumptive use for groundwater

[1] This list does not include four COCs (PCE, TCE, 1,2-DCA, and vinyl chloride) because of their low concentrations and low frequency of detection.

[2] "…MNA will be most appropriate when used in conjunction with other remedial measures (e.g., source control, groundwater extraction), or as a follow-up to active remediation measures that have already been implemented." (USEPA, April 1999)

[3] Excavated and shipped off-Site for disposal in October 1990 (SEC, February 1991).

[4] "…sites where the contaminant plumes are no longer increasing in extent, or are shrinking, would be the most appropriate candidates for MNA remedies." (USEPA, April 1999)

[5] Downgradient of the Site are a WWTP and agricultural fields in the flood plain for the Rio Grand de Patillas.

[6] "Natural attenuation of inorganic contaminants is most applicable to sites where immobilization or radioactive decay is demonstrated to be in effect and the process/mechanism is irreversible." (USEPA, April 1999)

[7] The following generic remedial objectives are assumed: 1) prevention of groundwater migration; and 2) restoration of groundwater to beneficial use. Both of these are achievable based on observations made in this report: 1) the plumes are stable or shrinking for all contaminants, and 2) because DCE is being destroyed by a chemical, rather than a biological, process, its attenuation will continue until the DCE is depleted.

[8] Estimates are based on the concentration trends presented on Figures 4-1 and 4-3 projected to the MCL. The DCE trend at deep well P-10A is flat, and cannot be used to project to the MCL, but now that the source of TCA is gone, the DCE concentration is expected to show declining trend in the near future.

Abbreviations: **NA**-natural attenuation; **DNAPL**-dense non-aqueous phase liquid

1.0 INTRODUCTION

General Electric, Inc. (GE) entered into an Administrative Order on Consent (AO) with the United States Environmental Protection Agency (USEPA) (Docket No. II RCRA-3008(h) 88-0302; USEPA, March 29, 1988) to conduct a three-phase corrective action program at its Puerto Rico Investment, Inc. Facility (Site), located in Patillas, Puerto Rico (PR) (Figure 1-1). The three phases are as follows:

4. A Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) to investigate and document the nature and extent of contamination at the Site.
5. A Corrective Measures Study (CMS) to develop, evaluate, and propose appropriate corrective actions for the Site.
6. A Corrective Measures Implementation (CMI) to design, construct, operate, maintain, and monitor the selected corrective action.

This document has been written in partial fulfillment of the terms of that AO, as a supplement to the previously prepared RFI Report (Sirrine Environmental Consultants (SEC), October 1991), and is called a Supplemental RFI (SRFI).

1.1 GENERAL SITE DESCRIPTION

The GE Facility is located on the southeastern coast of PR, southeast of the town of Patillas. The address for the Site is Road #3, Km 122.9, Patillas, PR, 00723. The Site covers approximately 7.8 acres. The study area for this investigation covers the entire Site, plus an area of the local flood plain for the Rio Grand de Patillas to the south and west of the Site.

1.2 SITE HISTORY

The following sections provide a brief summary of the historic operations at the Site, as well as the previous investigations and remedial actions. Additional details of the Site-specific operations, investigation, remediation, and analytical test results are provided in the previous RFI report (SEC, October 1991) and are summarized below.

1.2.1 Historic Facility Operations

From 1970 to 1974, Kaiser Roth Corporation conducted a sewing and packaging operation for women's hosiery. Hosiery was sewn, pressed, and packaged on-Site. Raw materials were not processed at the facility, and no manufacturing took place. No information exists either from persons knowledgeable of

the operations, operating records, or other documentation regarding the occurrence of hazardous waste spills or releases at the plant during this period.

From November 1974 to March 1987, Caribe General Electric Products (CGE) manufactured and assembled electro-mechanical products. CGE operations were conducted in the building and production areas formerly used by Kaiser Roth Corporation. Metal plating, stamping, and cutting operations took place during that time. An on-Site wastewater treatment plant (WWTP) was located on the east side (rear) of the building.

The Site was idle from 1987 to 1993, when no manufacturing operations were conducted. From 1993 to the present, GE has operated the facility to manufacture electro-mechanical devices under the current name of GE Puerto Rico Investment, Inc. The facility currently operates without a wastewater discharge. Wastewater is treated and evaporated, and the resulting solids are disposed off-Site.

1.2.2 Historic Waste Management Operations

Two structures were constructed at the Site to manage wastes in the past: the former sludge drying beds and the French Sump. The status of each of these units will be discussed below.

1.2.2.1 Sludge Drying Beds

CGE operated a pair of sludge drying beds to remove moisture from the sludge produced by the on-Site WWTP. Those beds were closed in 1989 by removing the sand and gravel drying bed materials and covering them with a concrete cap. Based on three years of post-closure sampling, the drying beds appear to have had no impact on the local groundwater quality, relative to upgradient well concentrations; however, concerns exist about possible impacts by total chromium. In response to the concern, Earth Tech redeveloped the wells around the closed sludge drying beds and sampled them with low-flow methods in December 2000 and 2001. Both events detected chromium at concentrations within background levels, but with intermittent low-level exceedances of its maximum contaminant level (MCL). Earth Tech submitted a report of the sampling event findings in April 2002 (Cloonan, letter to Matt Schoen, 4/11/02) and requested clean closure for the beds because it appears that the chromium levels are naturally occurring.

1.2.2.2 French Sump

A French Sump was constructed at the CGE Facility in 1977. The sump consisted of a rubble-filled hole 12 feet deep and 10 feet in diameter, covered by a concrete cap and manhole. Certain waste streams generated at the CGE Facility were discharged to the French Sump. Wastes reportedly discharged to the

sump included plating tank wastewater, treated wastewater sludges, waste oils, and spent solvents. Use of the French Sump was discontinued in early 1980.

After the RFI investigation indicated that the French Sump was the principal source of volatile organic compounds (VOCs) to the local groundwater, a plan was developed to excavate the sump, thereby removing the source from the aquifer. Soils containing elevated levels of metals and organics in and adjacent to the former French Sump were excavated, stabilized, and shipped to a RCRA-approved landfill in October 1990. Stabilization activities were conducted in accordance with the Interim Remedial Measures Work Plan, French Sump, GE-Patillas Facility (SEC, July 1990). A summary of stabilization activities and results of the confirmation sampling are presented in the French Sump Stabilization Confirmation Report, GE-Patillas Facility (SEC, February 1991). Upon review of that report, the USEPA accepted the closure of the sump as complete (Clappin, letter to J. Sommer, dated 3/5/91).

1.2.3 Investigation History

At this Site an RFI Report and a Draft CMS Report have both been completed. A summary of those reports is presented in the following pages. A timeline showing the sequence and duration of actions taken by GE at this Site is presented in Figure 1-2. This figure documents the continuous attention that GE has given to the investigation and remediation of this facility once the contamination was discovered in 1985.

1.2.3.1 RCRA Facility Investigation Report

The original RFI was conducted to determine the nature and extent of any historical releases of hazardous constituents from the potential sources identified in the RFI AO. The efforts were directed at assessing the nature and extent of on-Site contamination and potential relationship to the off-Site groundwater supply, including the Puerto Rico Aqueduct and Sewer Authority (PRASA) water supply wells. The work was conducted in accordance with both applicable RFI guidance and USEPA-approved Work Plans (SEC, November 1988). The RFI was completed in three tasks (Task I, Task II, and Task III), which are discussed below.

Task I

Task I activities included a thorough background information search, a soil gas survey to determine potential contaminant source areas, and a water-supply well inventory. Task I activities identified three potential source areas of contamination: the French Sump, the container storage area, and the area near the front loading dock.

Task II

Task II field activities were conducted in accordance with the Task II Work Plan (SEC, November 1988) and are summarized below:

- Collection and analysis of stream sediment and surface water samples from the unnamed stream located east and north of the CGE facility to determine any potential impacts.
- Collection and analysis of near surface and vadose zone soil samples to characterize the sources, extent, and distribution of any chemical constituents in CGE Facility soils.
- Collection of groundwater samples from potential contaminant source areas using a HydroPunch™.
- Installation of seven additional monitoring wells at the CGE Facility, including one well pair.
- Sampling and analysis of new and existing monitoring wells to further characterize horizontal and vertical groundwater quality at the CGE Facility.
- Installation and sampling of one off-Site monitoring well (P-12) to determine potential off-Site impacts.

Task III

Additional assessment was required to delineate the extent of groundwater contamination off-Site. Activities to assess off-Site groundwater conditions were conducted during Task III and are presented in the document Task III RCRA Facility Investigation Work Plan (SEC, March 1991). The major objectives of the Task III Investigation were to further delineate the extent of contamination off-Site, further evaluate the hydraulic properties of the aquifer, further refine the information on groundwater quality, and evaluate potential off-Site surface-water impacts.

Task III field activities were conducted in accordance with the Work Plan and are summarized below:

- Collection of surface water and sediment samples from the Rio Grande de Patillas and the Quebrada Mamey Rio Chico to evaluate the potential impact of groundwater discharge to off-Site surface waters.
- Installation of two shallow and two deep monitoring wells off-Site and downgradient of the CGE Facility (P-13S, P-13D, P-14S, and P-14D), near the Rio Grande de Patillas.
- Collection of groundwater samples from the new wells to further delineate both the vertical and horizontal extent of contamination.

- Collection of groundwater samples from existing wells P-4 and P-7 through P-12 to refine data and information concerning groundwater quality in the area and determine seasonal variations in water quality.
- Collection of water level measurements and performance of slug tests in all wells sampled. These data were used to evaluate hydraulic properties and further refine estimates of groundwater flow velocity and direction.

The conclusions of the 1991 RFI are summarized as follows:

- The French Sump was the only source of VOCs to the local groundwater, and since its removal in 1990 that source has been eliminated.
- The local aquifer system, both on and off the Site, has been described.
- The groundwater on-Site is flowing toward the west-southwest, toward the Rio Grande de Patillas. Hydraulic gradients on-Site are downward, but become upward in downgradient areas near the Rio Grande de Patillas.
- Groundwater flow velocities were estimated to range from 120 to 550 feet per year (ft/yr) in the various aquifer units beneath the Site.
- Two on-Site plumes were identified: 1,1,1-trichloroethane (1,1,1-TCA) in the vicinity of the French Sump and 1,1-dichloroethene (1,1-DCE) extending from the French Sump area to the off-Site wells.
- The off-Site plume of 1,1-DCE was detected in a well 1,200 feet (ft) from the French Sump, but not in wells located approximately 2,700 ft from the sump, near the Rio Grande de Patillas.
- No Site-related VOCs were detected in surface water or sediment samples collected from the three local streams.
- Samples of groundwater from the three PRASA wells providing water to the town of Patillas contained no VOCs.
- Land use in areas downgradient of the Site is agricultural, with no water supply wells located in those areas.
- No potential receptors (human or ecological) have been identified in the area between the Site and the Rio Grande de Patillas.

USEPA issued conditional approval (Clappin, letter dated 10/2/91 to J. Sommer) for the RFI report. The final RFI, submitted in October 1991 (SEC, October 1991), addressed the conditions in the approval letter, and work commenced on the CMS.

1.2.3.2 Corrective Measures Study Report

The draft CMS report for the Site was submitted to USEPA for review in 1993 (SEC Donohue, January 1993). After evaluating the RFI data and the corrective measures developed for consideration, the CMS recommended the following corrective measure:

- Natural Attenuation and Groundwater Monitoring with a "Trigger Mechanism" is protective of human health and the environment and is readily implementable.
- Compliance with the remediation goal will be verified through a quarterly monitoring program using an extensive monitoring well network. This frequency of monitoring is more than adequate considering the limited migration rates of DCE at the CGE Facility.
- Ultimate remediation of the CGE Facility does not rely on natural attenuation mechanisms alone. Should an exceedance of the remediation goal be confirmed, a groundwater extraction and treatment system would be implemented.

USEPA responded with comments on the draft CMS (Belling, letter dated 2/26/93 to J. Sommer). GE responded to those comments in June 1993 and began quarterly groundwater monitoring as a self-implementation of the published preferred corrective measure. Annual monitoring reports were submitted to USEPA.

USEPA called a meeting for March 23, 2000 to review the Site status in regard to RCRA cleanup and to discuss the new environmental indicator (EI) initiative at USEPA. At the meeting USEPA expressed concern that the extent of downgradient contamination had not been adequately characterized, the presence of recoverable dense non-aqueous phase liquid (DNAPL) had not been discounted, and information to implement a natural attenuation corrective measure was insufficient.

In response to the meeting comments, GE submitted a position statement on the current Site characterization data (April 28, 2000). USEPA called a follow-up meeting for February 27, 2003 to identify the next steps for further Site investigation. At the close of that meeting, the following conclusions were drawn:

1. GE will obtain sufficient information for USEPA to address their EI goals for the Site, addressing the CA-725 (Control of Human Exposures) first, before moving on to the CA-750 (Control of Contaminant Migration). To this end, USEPA will provide guidance to GE for evaluating indoor air risks.
2. GE will provide USEPA with a focused Work Plan to address concerns regarding the off-Site extent of contamination and an updated evaluation of the natural attenuation processes at the Site.

3. USEPA will review the closure documentation for the sludge drying beds and make a determination on the clean closure application.

1.3 OBJECTIVES OF THE SUPPLEMENTAL RCRA FACILITY INVESTIGATION

Prior to this phase of the investigation, there were no monitoring wells located between P-10A (the most downgradient on-Site well) and P-12 (the closest off-Site well). The concentrations of contaminants in well P-10A are the most elevated on the Site, and the last sample collected from well P-12 (in 1996) detected no VOCs, after monitoring a declining trend for the previous 7 years. The 1,200-foot distance between these two monitoring wells makes it difficult to accurately locate the downgradient extent of the VOCs in the aquifer beneath the agricultural fields to the west and southwest of the GE property. The purpose of the SRFI is to:

- Document the downgradient extent of the VOCs in the aquifer beneath the agricultural fields, thereby addressing the Government Performance and Results Act (GPRA) EIs for control of human health exposure (CA-725) and control of groundwater contamination migration (CA-750), and
- Further evaluate the feasibility of a monitored natural attenuation (MNA) remedy at the Site.

This SRFI Report summarizes the project activities implemented to satisfy the objectives and requirements of both the AO and the USEPA comments, provides an overview of the Site background and the previous work performed, and includes an updated conceptual site model (CSM) based on the body of data collected to date.

The principal objectives of the SRFI for the Site were as follows:

- Using soil gas techniques, estimate the current location of the plume in the off-Site areas prior to installing permanent wells;
- Install seven new wells in the off-Site area to the west of the Site, using overburden eccentric drilling (ODEX™) drilling technology because of the difficult drilling conditions that prevail at the Site; and
- Collect a set of groundwater samples from the new and existing wells to more fully evaluate the potential for a corrective measure involving MNA, as well as document the current location of the local contaminant plumes.

Earth Tech prepared a focused Work Plan (Earth Tech, June 2003) and Well Placement Plan (Earth Tech, April 2004) to cover the purposes and objectives outlined above.

1.4 ORGANIZATION OF THE SRFI REPORT

This report has been developed to summarize both the new and the existing Site information, provide a current CSM, and describe the project tasks associated with implementation of the SRFI. The Report includes the following components:

- **Section 2 – Investigation Activities** presents detailed descriptions of the activities carried out for the characterization of the sources, nature, and extent of the wastes in the areas under investigation in this SRFI.
- **Section 3 – Environmental Setting** provides a description of the environmental setting of the study area at the Site, and updated with information developed during the course of the latest SRFI effort.
- **Section 4 – Nature and Extent of Contamination** presents the results of the environmental quality investigation describing the nature and extent of the contaminant distribution in the groundwater, incorporating the sampling undertaken during the MNA sampling activities between 1993 and 2001.
- **Section 5 – Fate and Transport of Contaminants** describes the processes that are acting to move and degrade the VOCs in the subsurface beneath the Site.
- **Section 6 –Conclusions** is the summary of the SRFI and presents the conclusions drawn by this investigation, including a current description of the CSM for the Site.
- **Section 7 – References** is a listing of the references used in the preparation of this report.

2.0 INVESTIGATION ACTIVITIES

This section presents a brief overview of the scope of work undertaken during the entire SRFI.

2.1 OUTLINE OF THE SCOPE OF WORK

The various environmental media at the Site were characterized according to the procedures presented in the approved SRFI Work Plan document (Earth Tech, June 2003) except as noted in the sections that follow. This section begins with descriptions of the activities undertaken to characterize the physical setting of the study area, followed by descriptions of those activities used to update the current understanding of the nature and extent of the contamination present there.

Multiple records were collected by Earth Tech, Inc. personnel for each phase of the field work and include the following: water level summary sheets, the daily logbooks, sample chain of custody forms, daily quality control reports (DQCRs), field geologic logs, and monitoring well installation diagrams. Selected field records are presented in Appendix J. A Site map showing sampling locations discussed in the following sections is presented in Figure 2-1.

Field activities for this investigation included the following:

- sampling the local soil-gas during two phases of effort;
- drilling with hollow stem augers (HSA)/and ODEX™ technologies;
- describing soil samples;
- installing and developing seven new groundwater monitoring wells;
- measuring water levels in new and existing monitoring wells;
- sampling groundwater in the new and existing wells;
- managing the chain of custody process during sample collection, packaging, and shipment; and
- decontaminating equipment and disposing of investigation-derived waste (IDW).

This section of the SRFI report documents the field activities and technical methods undertaken to satisfy the stated objectives of the SRFI. The work proceeded according to the chronology presented in Table 2-1. Fieldwork for this SRFI was conducted at the study area in the following events (two minor and one major):

- The first minor event was the initial soil gas survey in October 2003 to identify the position of the off-Site groundwater VOC plume and to estimate the locations of the monitoring wells needed to document its location.
- The second minor event was the follow-up soil gas survey in December 2003 to supplement the results of the first survey that was adversely affected by the heavy rains associated with a tropical storm.
- The major event occurred during May through July 2004, when the seven new wells were installed and the groundwater samples were collected.

2.1.1 Characterization of the Local Geology and Hydrogeology

The understanding of the local hydrogeologic conditions at the Site has been advanced through the activities of this SRFI, by the accumulation of additional subsurface and groundwater-level data. These next sections present the details of how those data were collected. Appendix K contains photographs of selected activities conducted at the Site.

2.1.1.1 Soil Gas Investigation

In order to identify suitable locations to install the new wells, the first step in the SRFI was to install a series of soil gas sampling detectors and develop an understanding of the current plume geometry. The passive detectors manufactured by W. L. Gore & Associates, Inc. (Gore) were selected for this deployment because of their robust nature, their ability to be installed below grade (to avoid tampering), and the large mass of absorbent material available that provides for a sensitive detector.

Twenty-three detectors (SG-1 through SG-23) were installed along three lines, as presented in the Work Plan (Earth Tech, June 2003), on October 8, 2003. However, within 2 days of their placement, a tropical storm dropped more than 16 inches of rain on the Patillas area. The detectors were retrieved on October 20, 2003, but their analysis revealed very low levels of contaminants, making it very difficult to draw conclusions regarding plume geometry. Discussions with staff members at Gore indicated that the rainfall may have artificially depressed the soil gas signature for a period and that a new round of sampling may prove helpful.

For the second round, twenty-two soil gas detectors (SG-101 through SG-122) were installed on December 10, 2003 and were recovered on December 29, 2003. This time there was no unusual rainfall event. On the advice of the Gore staff, a pair of detectors was installed in well P-10A, the well with historically the most elevated VOC concentrations in the groundwater. The first detector (SG-123) was installed in the water column at the center of the well screen (at 46 feet below the top of the well casing),

and the second (SG-124) was installed above the water level (at a depth of 5 feet below the top of the well casing). The purpose of these two detectors was to evaluate the detector response to a known groundwater concentration and address the potential concern that perhaps the detectors were not sensitive to the contaminants present in the local aquifer system.

Table 2-2 contains the results of the soil gas investigation. The results from the second round were only slightly higher than the October results, but the pattern of detections was similar for each of the rounds. The combined soil gas results (from both rounds) are presented on Figure 2-2, along with an inferred outline of the VOC plume in the aquifer. This map was presented in the Well Placement Plan (Earth Tech, April 2004) along with a map showing locations for the proposed seven new wells.

2.1.1.2 New Well Installations

At the beginning of this phase of the investigation, there had been a total of 22 wells installed on the Site, including well P-4A that has since been abandoned. After the new well installations, the current number of wells installed at the Site has risen to 29. Of this total, one well (P-4A) has been abandoned, one well (P-12) has been lost (and presumed destroyed), and four wells (P-13S, P-13D, P-14S, and –14D) have had their access permission rescinded. Altogether, there remains a total of 23 wells at the Site available for sampling. Figure 2-1 is the map showing the locations of the existing Site wells, and Table 2-3 presents information regarding the construction of each one. The following table indicates the current status of the wells installed at the Site:

	RFI for the French Sump	**Sludge Drying Bed Closure**	**Totals**
On-Site	**11 wells** (old: P-4, P-4A, P-5, P-5A, P-7, P-7A, P-8, P-9, P-10A, P-11, and new: P-15DD)	**7 wells** (old: P-1, P-1A, P-2, P-2A, P-3, P-3A, P-6)	18 wells
Off-Site	**11 wells** (old: P-12, P-13S, P-13D, P-14S, P-14D, and new: P-16S, P-17D, P-18S, P-18D, P-19S, P-19D)	None	11 wells
Abandoned	**-1 well** (P-4A)	None	-1 well
No Access or Destroyed	**-5 wells** (P-12, P-13S, P-13D, P-14S, P-14D)	None	-5 wells
Totals	16 wells	7 wells	23 wells

The understanding of the local hydrogeologic framework has been expanded by the geologic descriptions obtained during the installation of the seven new monitoring wells. A qualified geologist directed the

drilling and installation of the wells and described the geologic samples from each boring. Appendix J contains the boring logs, development records, and construction information for each of the new wells installed during this field effort. The original RFI report (SEC, October 1991) provides the details from the previous efforts.

In order to install these wells, it was decided to use ODEX™ drilling technology to advance the borings. This decision was necessary because of the difficult drilling conditions encountered at the Site. The on-Site geologic units encountered in the subsurface during past drilling efforts included boulders and slabs of bedrock material incorporated within a matrix of alluvial gravel, sand, silt, and clay. Off-Site drilling operations in the flood plain to the west of the GE Facility encountered alluvial boulders and cobbles that were also incorporated into a matrix of alluvial gravel, sand, silt, and clay. Appendix K contains a photograph of a local outcrop, depicting the types of materials encountered.

Drilling methods used to collect soil or groundwater samples in the past include HSAs, cable-tool, mud rotary, and direct-push (HydroPunch™). All of these methods were at least partially successful, but experienced problems that made them untenable for a drilling program that would need to install seven wells in rapid succession (including four deep wells, with one intended for bedrock). The augers and HydroPunch™ reached refusal at shallow depths because of the boulders and slabs encountered in the subsurface. The cable-tool method was used to successfully install the five wells in the flood plain (P-12, P-13S, P-13D, P-14S, and P-14D), but it was extremely slow, requiring up to 10 days to install a single well. Historical mud-rotary experience encountered lost-circulation zones and other conditions that made drilling difficult.

The ODEX™ technology uses an air-driven down-the-hole hammer to advance the borehole. As the borehole is advanced, a string of casing is advanced at the same time. This casing serves to stabilize the borehole and keep the geologic materials above the bit from shifting into the borehole and locking the drilling tools in the ground. The air hammer allows the drill rig to penetrate both hard and soft sediments, and the casing allows the hole to stay open to facilitate the installation of a well. Appendix K contains photographs of the drilling operation, including photos of the drill bit used.

While drilling well P-17D behind the WWTP, the ODEX™ bit was damaged to an extent that the driller could not repair it. Earth Tech and the driller demobilized from the Site on June 4, 2004 while the bit was sent off for repairs by the manufacturer. On June 28, 2004, the team remobilized to the Site, installed the last well (P-19D), and completed the groundwater sampling event.

2.1.1.3 Water Level Measurements

Water levels were measured in all on-Site wells on June 28, 2004 (even wells that were not scheduled for sampling). The data from the water-level measurements (Appendix J) have been used to produce contemporary potentiometric maps for both groundwater zones for comparison to the historical data set. These comparisons between the available time periods permit the evaluation of temporal variations in the hydrogeologic system beneath the study area that is presented in Section 3.0 of this report. The water level at well P-19D was measured on July 1, 2004, three days after the other wells were measured, the day after the well was drilled, and prior to its development. Because the well had not been developed and had not been allowed to rest after drilling, this measurement should be considered as questionable.

2.1.2 Characterization of the Nature and Extent of Contamination

2.1.2.1 Characterization of the Local Groundwater Quality

Previous studies have indicated that plumes of multiple VOCs are present in the groundwater. The investigation carried out in the SRFI obtained additional data regarding groundwater quality at the Site in order to more closely define the horizontal and vertical extent of the contamination, especially in the areas immediately downgradient of the Site. Investigation activities included collecting groundwater samples from existing monitoring wells, both on and off the Site (Table 2-4). The well samples were analyzed for the parameters on the following list, which includes natural attenuation parameters to evaluate the biodegradation processes occurring in the local groundwater system.

General Water Quality	Cations	Anions	Dissolved Gases
hardness (total) total dissolved solids (TDS) total organic carbon (TOC) pH* specific conductance* temperature* turbidity* oxidation-reduction potential (ORP)* ammonia	calcium iron (total and ferrous**) magnesium manganese potassium sodium	alkalinity bicarbonate carbonate chloride nitrate sulfate sulfide**	oxygen (DO)*

* measured by direct-reading instruments in the field
** measured by field chemistry methods

During May through June 2004, 16 wells were sampled, according to the approved Work Plan (Earth Tech, June 2003). Nomenclature used to identify samples and supplemental Quality Assurance (QA) and Quality Control (QC) samples is presented in Table 2-5.

All samples were shipped to Kemron Environmental Services, Inc. in Marietta, Ohio for analysis. The Analytical Data Quality Report (ADQR) in Appendix L documents the validation of the lab data and identifies any problems identified with the collection and analysis of the samples and the delivery of the analytical information from the lab.

The groundwater sampling method called for in the Work Plan (Earth Tech, June 2003) was the USEPA, Region II-approved low-flow sampling method using bladder pumps. The low-flow sampling process proceeded without incident for all of the wells sampled.

2.1.2.2 Characterization of the Local Air Quality

Because the VOC contaminant source originated underground (the French Sump) and because that source has been removed, there is little chance that the groundwater contaminant sources are directly contributing to the degradation of air quality. The health and safety air monitoring activities conducted throughout the fieldwork at the Site indicated no problems with air quality.

A potential indirect contribution to the degradation of air quality would be from the accumulation of VOCs in indoor air from volatilization of VOCs in plumes in shallow water tables beneath habitable structures. This pathway has potential application in the downgradient stretch of the aquifer to the west of the Site, where the VOC plume travels beyond the GE property boundary. However, the only structure located at that location is the WWTP. A photo of the plant (Appendix K) shows that the office/lab is ventilated by open louvers, and the potential for trapping soil gas emissions there does not exist.

2.1.3 Decontamination and Management of Investigation-Derived Waste

Clean, powder-free disposable gloves were worn while handling sampling equipment or downhole tools during drilling, sampling, and decontamination activities. All disposable sampling supplies and materials were removed from the Site and disposed of in accordance with current procedures.

All equipment and tools used for drilling and sampling activities were decontaminated in accordance with the procedures described in the Work Plan (Earth Tech, June 2003). All drilling equipment was washed with a high-pressure, hot-water pressure washer prior to its first use on-Site and between each successive use. Water used for steam cleaning was obtained from a potable source designated by GE personnel. All runoff water used in the decontamination procedures was collected, transferred into 55-gallon steel drums, and transported to the GE plant for treatment in their on-Site WWTP.

All sampling equipment was washed in a mixture of tap water and phosphate-free detergent, then rinsed in tap water, and finally rinsed with de-ionized water. Deionized water was stored in the plastic

containers in which it was delivered and was decanted directly from the storage container, as needed. If the sampling equipment was not to be used immediately after it had dried, it was wrapped in aluminum foil to keep it clean.

The drill cuttings, decon water, and purge water produced during the investigation's drilling and sampling activities were handled in accordance with the following:

- The soil IDW generated during the 2004 mobilizations was spread at the surface near the location from which it came. This method of disposal was approved by USEPA, and is appropriate because the source of the VOCs (the French Sump) has been removed and the principal contaminants at the Site are VOCs, which preferentially partition to the air or water phase.
- The purge water was transported in 55-gallon drums from the wells where it was generated, and was transferred to the WWTP at the GE facility.

2.2 DEVIATIONS FROM THE WORK PLAN

This SRFI was performed in accordance with the approved Work Plan (Earth Tech, June 2003). The only deviations from the plan were the need to mobilize to the field twice for both the soil gas evaluations (because of readings adversely affected by a hurricane) and the well installations (because of the need to repair the ODEX™ bit that was damaged during the drilling).

3.0 ENVIRONMENTAL SETTING

This section documents the environmental setting for the study area. The environmental setting is comprised of the local physiography of the Site and the hydrogeologic framework beneath it, the soil types and their distribution across it, the surface water and sediment locations within it, and the air that surrounds it. The interpretations presented in this section incorporate the information presented in the previous local investigations, pertinent literature references, and data generated during the current investigation. The sections that follow discuss the atmospheric, geologic, hydrogeologic, and demographic features of the study area that pertain to the RFI objectives.

3.1 CLIMATE

The regional climate is dominated by trade winds out of the east and northeast (Bogart et al., 1964). As the moisture-laden air crosses the northern slopes and peaks of the mountainous Cordillera Central, most of the moisture falls as precipitation.

The nearest National Oceanic and Atmospheric Administration (NOAA) station to the GE Facility is located in San Juan, PR. Data summarized from this station in the Local Climatological Data Annual Summaries for 1980 (NOAA, 1980) reports the predominantly easterly trade winds and proximity to the Atlantic Ocean are the primary influences on climate in the area, particularly to temperature and the rainfall regime. Temperature in the area ranges from an average minimum of 73.3 degrees Fahrenheit (°F) to an average maximum of 85.8°F. Patillas receives approximately 70 inches of rainfall annually. The regional annual rainfall pattern (Bogart et al., 1964) indicates that the period of highest rainfall is from late spring through fall. Monthly average precipitation ranges from 6 to 7 inches from May to November decreasing to about 2 inches in March.

3.2 LAND USE

A reconnaissance of the area downgradient of the CGE Facility was conducted in March of 1990. The survey revealed that the principal land use downgradient of the Site, beyond the PRASA WWTP, is primarily agricultural. The aerial photographs revealed only a limited number of structures between the Site and the Rio Grande de Patillas. The reconnaissance revealed these structures to be agricultural storage buildings. There are no residences or wells used for human water supply between the facility and the Rio Grande. Land between the GE Facility and the Rio Grande is primarily grass and plantain fields interspersed with dirt access roads.

3.3 SURFACE WATER

Two rivers drain the larger Patillas area: the Quebrada Mamey Rio Chico, located approximately 645 feet west of the Site, and the Rio Grande de Patillas, located approximately 2,370 feet southwest of the Site. Both rivers are located in the downgradient groundwater flow direction from the Site. The Rio Chico is an intermittent stream, and water levels in P-12 (located near the river) range from 9 to 18 feet elevation, which is below the stream bed elevation, indicating that flow in the river may infiltrate to the aquifer, rather than the aquifer discharging to the river. The Rio Grande is a perennial river, consistently receiving groundwater from the flood plain deposits.

Two unnamed intermittent streams are located off-Site. One stream is located north of the GE facility. The second unnamed stream flows north to south-southwest along the eastern GE property boundary.

A small ditch located on-Site trends east to southeast of the GE facility. This ditch has no net flow and occasionally may hold stagnant water from surface runoff and precipitation.

3.4 REGIONAL GEOLOGY

The GE Facility is located on the southern coastal plain of PR (Figure 1-1). The surface geology of this area consists of a southward sloping coastal plain of alluvial and colluvial deposits (Figure 3-1). The alluvial and colluvial sediments, deposited at the southern flank of the mountainous Cordillera Central, vary considerably in thickness but are generally thin adjacent to the mountains and thicken toward the coast (Bogart et al., 1964).

The GE Facility is on the east side of the Rio Grande de Patillas. The Quaternary-age sediments in the river valley are underlain by volcanic materials of early Cretaceous age and plutonic rocks thought to be late Cretaceous and Tertiary (Briggs and Akers, 1965). These plutonic rocks are primarily granodiorite and quartz diorite with some diorite and hydrothermally altered rock. The rocks are locally deeply weathered. The Quaternary (recent) alluvial/colluvial deposits generally consist of sand, silt, clay, and gravel flood plain deposits.

3.5 REGIONAL HYDROGEOLOGY

The GE Facility is within the Patillas-Ponce hydrogeologic system, which spans the south-central to southeastern coastal plain region (Figure 3-2). Regional groundwater flow is to the south-southwest, from the Cordillera Central to the Caribbean Sea. The primary groundwater resource along the south coast is the Quaternary alluvium and colluvium (Briggs and Akers, 1965). Groundwater is hard, but suitable for most domestic and industrial purposes.

The largest groundwater yields are from alluvial fans where deposits are thickest and are readily recharged from surface water sources. Wells in thick gravel beds can generate significant yields, as can wells in valleys, along larger streams.

3.6 LOCAL GEOLOGIC CHARACTERISTICS

In this section detailed descriptions of the local geologic units are presented, and the various mapping exercises undertaken for this Site are described. The maps and other illustrations are used to assist in visualizing the three-dimensional relationships between the subsurface geologic units.

The GE Facility is located on the edge of a coastal plain south of the mountainous Cordillera Central, approximately ½ mile northeast of the Rio Grande de Patillas (Figure 1-1). It is underlain by interbedded sedimentary deposits of alluvium and colluvium to a depth of approximately 25 to 40 feet. Underlying the sedimentary deposits is highly weathered bedrock material or saprolite. This saprolite generally continues to depths of 90 feet but may extend to greater than 100 feet in some areas. Crystalline bedrock underlies the saprolite. The interpretation of the local Site geology has been presented in the previous RFI report (SEC, October 1991) in four cross-sections as Figures 4-1 through 4-4 (current Figures 3-3 through 3-6). The geologic interpretations presented in these sections are based on RFI activities conducted by Sirrine Environmental Consultants in December 1988, February 1989, and July 1991 (SEC, October 1991) and on previous investigations conducted by Law Environmental (Law Environmental, April 1987). Figure 3-4 in this report is the extension of the former Figure 4-2 cross-section, using data derived from the 2004 field work. It represents a section through the Site, along the groundwater flow path from the French Sump to well P-12.

3.6.1 Descriptions of Local Geologic Units

The following descriptions have been developed from the boring logs of the wells and other subsurface explorations undertaken at the Site.

3.6.1.1 Alluvial and Colluvial Deposits

In general, the alluvial deposits consist of interbedded well-graded (SW) and poorly-graded (SP) sands. Some strata contain higher amounts of silt and clay (silty sands (SM) and clayey sands (SC)). The sandy deposits range in thickness from as little as 6 feet at the northern Site boundary to as great as 26 feet west of the GE Facility. In some areas the colluvial deposits contain gravel, cobbles, and large boulders that tend to be more angular than the more rounded materials in alluvial deposits.

Three clayey lenses identified as units 1, 2, and 3 on the geologic sections have been identified at the Site. These units consist primarily of low plasticity silts and clays (ML-CL) and appear to be discontinuous. The upper clay lens (1) occurs at or near the land surface and varies in thickness from approximately 2 to 8 feet. This unit is relatively continuous across the eastern half of the Site, but is truncated by the land surface northeast of the GE Facility near well P-1A and pinches out west of the Site (Figure 3-4).

A second clay lens (2) was encountered at depths ranging from 10 to 18 feet. The lens is 20 feet thick near the northeast corner of the Site but is relatively thin (6 feet) elsewhere and pinches out completely further to the south and west. This clay lens is truncated by the land surface near well P-5A (Figure 3-3). The third clay lens (3) occurs in the northeast and southwest corners of the Site but is absent in the center of the Site where saprolite is present (Figure 3-5). This lens ranges in thickness from approximately 3 to 11 feet and occurs at depths ranging from near the surface to 34 feet.

The geology between the Site and the Rio Grande de Patillas has been characterized using the soil boring logs from wells P-12, P-13S, P-13D, P-14S, P-14D, P-16S, P-17D, P-18D, P-19S, and P-19D (Figure 2-1). Off-Site sediments, consisting mainly of alluvial and colluvial sands and gravels, tend to be more homogeneous than those on-Site. The clay units identified on-Site appear to have pinched out to the southwest, and only minor interfingering clays are present off-Site. The thickness of the alluvium and colluvium in the off-Site area is at least 65 feet.

3.6.1.2 Saprolite

The sedimentary deposits of alluvium and colluvium are underlain by weathered bedrock material (saprolite) consisting primarily of silty fine-grained sand (SM) and clayey silt (ML). This material has weathered in situ and has retained the relict rock structure of the underlying crystalline bedrock.

3.6.1.3 Bedrock

Two borings (SB-2 and SB-4) and three monitoring wells (P-15DD, P-17D, and P-18D) were drilled into bedrock. At one location (SB-2), the rock was cored, and a weathered green, white, and gray, coarsely crystalline igneous rock was encountered, which was tentatively identified as diorite (Law Environmental, April 1987). At the on-Site locations (SB-4 and P-15DD), the diorite bedrock was encountered at approximately 65 to 75 feet below ground surface (bgs). At the off-Site locations (P-17D and P-18D), the diorite was encountered at approximately 44.5 to 52 feet bgs.

3.6.2 Geologic Sections

Four geologic cross sections were presented in the previous RFI report (current Figures 3-3 through 3-6). Section B-B′ trends southwest to northeast across the Site. The soil boring logs from P-15DD, P-18S, P-18D, P-19S, and P-19D, drilled during May and June of 2004, and existing well P-12 were added to the former cross section B-B′ (Figure 3-4) to extend the geologic section to the southwest toward the Quebrada Mamey Rio Chico.

As shown on the cross section, the alluvium/colluvium sedimentary deposits are overlaying the saprolite unit. The three clay lenses identified beneath the Site during the previous RFI field activities are labeled 1, 2, and 3 on the sections. A fourth discontinuous clay lens was identified during the most recent field activities and appears to pinch out between well pairs P-18S/D and P-19S/D on the extended section B-B′ (Figure 3-4). Diorite bedrock was encountered in deep well borings P-18D and P-19D.

The groundwater levels of both the shallow and deep aquifer units are shown on the sections. Beneath the GE property, the head difference is strongly downward, indicating groundwater migration from the water table into the deeper aquifer zones. Downgradient of the GE facility, between well pair P-19S/D and P-12, the head difference reverses, and groundwater flows from the deeper unit into the shallow.

3.7 LOCAL HYDROGEOLOGY

Building on the geologic descriptions above, this section develops the hydrogeologic framework and presents initial interpretations of the flow of groundwater within the local aquifers.

3.7.1 Descriptions of the Hydrogeologic Units

Within the geologic units are two substantially continuous permeable zones providing avenues for groundwater movement and contaminant migration in the subsurface. In the on-Site area, the sedimentary deposits (alluvium/colluvium) and weathered rock material (saprolite) underlying the Site create an aquifer approximately 90 feet thick. Although the alluvium/colluvium and saprolite units are hydraulically connected to create one aquifer, they differ in geologic and hydrologic properties and are described separately. Monitoring wells completed at the water table are called shallow wells and are identified with an “S” suffix or no suffix at all. Wells completed in the lower unit (saprolite) or deeper than the water table in the alluvial/colluvial unit are called deep wells and are denoted with a suffix of “A” or “D”. The well P-15DD is the only well completed in the diorite bedrock.

3.7.1.1 Alluvium/Colluvium

The sedimentary deposits of alluvium/colluvium materials make up the upper hydrogeologic unit. The three discontinuous clay lenses present in the sedimentary deposits act on a local scale as semi-confining beds. Groundwater occurs under water table conditions, directly recharged by infiltration from precipitation. The water table generally occurs in or just beneath the upper clay unit (unit 1), except where this unit is absent.

Beneath the Site, the upper hydrogeologic unit ranges up to 72 feet thick. The hydraulic conductivity (K) of this unit ranges from 6.23×10^{-4} centimeters per second (cm/s) to 2.43×10^{-2} cm/s (1.80 to 68.9 feet per day (ft/d)), with a geometric mean of 6.15×10^{-3} cm/s (17.4 ft/d). The K values of the clayey alluvial material are lower than the average value for alluvial/colluvial materials. Well P-1, screened within the clayey alluvial material, has an average K of approximately 1.96×10^{-3} cm/s (5.57 ft/d). The hydraulic conductivities of the alluvial/colluvial sands are somewhat higher, ranging from 4.19×10^{-3} cm/s (11.9 ft/d) at well P-8 to 2.43×10^{-2} cm/s (68.9 ft/d) at well P-5. Both of these wells are screened predominately within well-graded silty sands (SW-SM) (SEC, October 1991).

In the off-Site area southwest of the GE facility, the aquifer becomes more homogeneous and consists primarily of alluvial sands and gravels. As indicated by the geologic logs from the off-Site wells, the alluvial sediments are at least 70 feet thick. The off-Site portion of the aquifer is a single hydrologic unit, but groundwater flow is discussed in two parts, as shallow flow and deep flow, in part to parallel the discussion of the on-Site flow in the alluvial and saprolite zones. The K values calculated for the sand and gravel materials in the off-Site portion of the aquifer are higher than the heterogeneous alluvium/colluvium unit, as would be expected. The K values range from 2.65×10^{-3} to 2.19×10^{-2} cm/s (7.52 to 62.1 ft/d) with a geometric mean of 7.74×10^{-3} cm/s (22.0 ft/d) (SEC, October 1991).

3.7.1.2 Saprolite

The weathered rock material (saprolite) makes up the lower hydrogeologic unit. Based on a resistivity sounding conducted adjacent to well P-5A on-Site, the lower hydrologic unit may be 52 feet thick. In the off-Site area at the SB-2 location, the lower unit may be 34 feet thick. The K values of the lower saprolite unit range from 2.11×10^{-4} to $2.27\text{x}10^{-3}$ cm/s (0.59 to 6.43 ft/d) with a geometric mean of 8.67×10^{-4} cm/s (2.46 ft/d) (SEC, October 1991).

3.7.2 Groundwater Flow

Table 3-1 is a summary of the historical water level measurements taken at the GE plant in Patillas from 1988 through June 2004. Figure 3-7 presents the same data in graphical form, using multiple plot panels

in order to avoid confusion from multiple lines crossing in the graph. In reviewing the data on the figure, the measurements from 7/15/91 and 11/10/92 represent the generally lowest and highest water levels of record, respectively, for those times when data from the five off-site wells are available.

The water levels from these two dates have been plotted for both the shallow (water table) and deeper aquifer zones in Figures 3-8 through 3-11 in order to understand the changes in flow directions and gradients across the study area at periods of high and low groundwater levels. On these figures, it is evident that the groundwater flow path emanating from the former French Sump (the source of the VOCs in the groundwater) for the deeper aquifer zone does not change appreciably between the high and low (wet and dry) periods, but in the water table zone, the dry season flow path occurs about 250 feet west of the wet season flow path in the vicinity of P-12. In comparing the shallow and deep aquifer zones, the deeper flow paths occur about 200 to 250 feet west of the dry-period water table flow path.

Figure 3-12 illustrates the potentiometric map for the water table zone generated from the most recent water levels collected in June 2004. The water table surface and flow direction in June 2004 is similar to the historical water table map from July 1991 (Figure 3-8). The overall groundwater flow path follows the same direction starting from the former French Sump and trending south-southwest toward the Rio Grande River. It also follows the dry season flow path demonstrated by the July 1991 water table map.

Figure 3-13 shows the potentiometric map for the deeper aquifer zone constructed from the June 2004 water levels. The recent potentiometric map for the deeper zone is also similar to the historical maps from July 1991 and November 1992. The groundwater flow direction in the deeper zone in June 2004 also trends south-southwest toward the Rio Grande River.

Local groundwater flow is to the south-southwest toward the Rio Grande, the discharge area for the local groundwater. The Rio Chico, located approximately 400 feet southwest of the Site, may, at times, be a discharge zone for shallow groundwater flow, but because the water levels at P-12 are usually lower than the level of the creek bed, it is likely that when water is flowing in the creek it routinely recharges the aquifer. Groundwater interaction with the Rio Grande, the Rio Chico, and the unnamed streams located adjacent to the facility may vary with time and seasonal fluctuations in recharge. Using water level data collected since 1988, the general regional flow in both the shallow and deep portions of the aquifer is toward the southwest (SEC, October 1991).

Horizontal hydraulic gradients were calculated using water level measurements collected in June 2004 at select wells located along the groundwater flow paths. The mean value of the horizontal gradient in the on-Site water table zone is 0.025, while the mean value calculated for the deep zone is 0.036. For off-Site groundwater flow, the average horizontal hydraulic gradient is 0.012. These are similar to the gradients published in the 1991 RFI Report (SEC, October 1991).

Groundwater flow velocities were estimated based upon the hydraulic conductivity data and the calculated gradients. The estimates were made using the following equation:

$$V = \frac{KI}{n_e}$$

where: V = Average linear velocity in ft/d
K = Hydraulic conductivity in ft/d
n_e = Effective porosity
I = Hydraulic gradient (feet per feet (ft/ft))

A flow velocity range was estimated for the alluvium/colluvium, the saprolite, and the off-Site area because of the variability in geology and hydraulic properties. An effective porosity of 0.30 was assumed based on the heterogeneous sands and silts comprising the aquifer (Freeze and Cherry, 1979).

The calculation results are summarized below:

AQUIFER	PARAMETERS	VELOCITY RANGE
On-Site Alluvium/Colluvium	K = 1.80 ft/d – 68.9 ft/d I = 0.025 ft/ft	V = 55 to 2,100 ft/yr mean of 530 ft/yr
On-Site Saprolite	K = 0.59 ft/d – 6.43 ft/d I = 0.036 ft/ft	V = 25 to 280 ft/yr mean of 110 ft/yr
Off-Site Alluvium	K = 7.52 ft/d – 62.1 ft/d I = 0.012 ft/ft	V = 110 to 910 ft/yr mean of 320 ft/yr

Using the geometric mean K values for the alluvium/colluvium, saprolite, and off-Site area, velocities of 530, 110, and 320 ft/year, respectively, were calculated. This indicates that groundwater flow velocity decreases when groundwater moves downward from the alluvium/colluvium to the saprolite and subsequently increases as groundwater flows downgradient and off-Site. Groundwater flow velocity variations are caused by variations in geologic materials. For example, higher hydraulic conductivities within the alluvium/colluvium, particularly in the well-graded sands, will correlate to higher velocities, whereas lower hydraulic conductivities of silt- and clay-rich materials will correlate to lower velocities.

3.7.2.1 Head Differences Between Well Pairs

In reviewing the plots in Figure 3-7, it is evident that the deeper wells in the pairs on-Site (those having the suffix of A) have generally lower water levels than do their shallower counterparts. This pattern is reversed at the off-Site well pairs (P-13 and P-14), where the deeper wells (those having the suffix of D) have the higher heads. This confirms that the local aquifer is receiving recharge in the vicinity of the GE plant and is discharging to the Rio Grande de Patillas, just beyond the P-13 well pair. Figures 3-14 and 3-15 display the head differences between well pairs for the dry and wet seasons, respectively, and both show a strong downward potential in the vicinity of the plant, centered around the P-5 location where the head differences range from 5.5 to 8.5 ft. As indicated on the maps, it appears that the downward head at the location of the former French Sump varies from about 6 to 4 feet between wet and dry seasons, respectively.

A head difference map constructed from the June 2004 water levels is shown on Figure 3-16. A head difference of approximately 7.5 feet exists in the P-5 area, within the range previously discussed. At the new well pairs P-18 and P-19, just west of the WWTP, the head differences have been reduced to less than about 1 ft, indicating nearly horizontal flow at those locations.

3.8 LOCAL GROUNDWATER USE

The only known sources of drinking water in the area are PRASA wells. These wells provide water to the entire town of Patillas, including industries. The PRASA wells were sampled by the U.S. Geological Survey (USGS) and USEPA in 1985. Contaminants were detected in the well nearest the GE Facility, behind the WWTP, and the pump was removed from this well. It is no longer a water supply source for Patillas. The PRASA water well closest to the GE Site was drilled in 1961 to a total depth of 81 feet with the screen 49 to 80 feet bgs. A lithologic log for this well is not available. The three remaining PRASA wells nearest the Site currently used for water supply are not downgradient of the GE Facility and potential contamination of these wells by activities associated with the GE Facility is not possible (SEC, October 1991). This was confirmed when the three active PRASA wells nearest the Site were sampled for VOCs in 1989. The decommissioned well at the WWTP was not sampled. No VOCs were detected in samples from any of these wells (SEC, October 1991).

4.0 NATURE AND EXTENT OF CONTAMINATION

In this section, the environmental quality of the local groundwater will be discussed, starting with an historical review and proceeding to the current conditions.

4.1 HISTORICAL GROUNDWATER QUALITY RESULTS

The three principal contaminants encountered in groundwater at the Patillas Site are 1,1,1- TCA, 1,1-dichloroethane (1,1-DCA), and 1,1-DCE. Table 4-1 presents a summary of the historical concentration history for these three constituents for the period of record from 1989 through 2001. Plots of the historical trends are presented in Figures 4-1 (TCA), 4-2 (DCA) and 4-3 (DCE). (Note: for plotting on the semi-log axes of these figures, the non-detects on Table 4-1 have been replaced by a value of 0.1, to plot at the bottom of the graph.)

Concentrations of TCA from all wells have been below the MCL since 1999. Only P-10A produced any samples with detectable results during 2000 and 2001 (about 6 micrograms per liter (µg/L)), but these were significantly below the MCL of 200 µg/L. DCA concentrations in 2001 from all wells on-Site were below detection levels, except for well P-10A, which has maintained a concentration of between 10 and 23 µg/L since 1989. There is no MCL for 1,1-DCA. DCE concentrations reflect declining trends to non-detect levels for the shallow wells on-Site, but flat trends for the two deep wells on-Site (P-10A and P-7A) at concentrations above the MCL of 7 µg/L.

An evaluation of the historical data indicates that the TCA plume in the Site groundwater appears to be very stable (in terms of both shape and location) through 1997. However, in 2001, the TCA concentrations dropped below the detection limit (5 µg/L), and the plume disappeared. The concentrations of TCA in well P-11, the water table well closest to the former French Sump, climbed from 736 µg/L in 1993 up to 9,120 µg/L in 1996 and then fell to non-detect (5 µg/L) in 2001. The TCA concentrations at other locations in the water table zone and in the deeper aquifer zone never reached the MCL.

An evaluation of the DCA data shows a similar pattern. As is the case for the TCA plume, the DCA plumes appear to be very stable (in terms of both shape and location) through 1997, but in 2001, the water table plume is gone, and the deeper aquifer plume is reduced in size. Table 4-1 indicates that the DCA concentration at well P-10A in the deeper aquifer zone has been very stable over the period of record (principally ranging between 10 and 23 µg/L).

By far the most widespread historical impact to the local groundwater quality has been the elevated concentrations of DCE in both the water table and deeper zones in the aquifer. Even though the

maximum concentration of DCE (2,260 µg/L at P-11) never approached the maximum for TCA (9,120 µg/L at P-11), it has been more widely distributed, thereby impacting a larger volume of groundwater. Table 4-1 indicates that there were no detections of DCE above its MCL in the water table zone in December 2001. This is consistent with the other two constituents, TCA and DCA, where their water table zone plumes also disappeared by 2001.

4.1.1 Interpretation of Historical Water Quality Results

The historical water quality data presented on Table 4-1 show the rapid decline (to non-detect levels) since 1996 of the groundwater concentrations in the water table zone for the three principal contaminants, TCA, DCA, and DCE. The concentrations in the deeper zone have been relatively more stable. This pattern is consistent with the degradation (destruction) of the original product disposed in the French Sump (TCA) and the accumulation of daughter products (DCA and DCE) in the aquifer. Because the French Sump was removed in 1990, including those surrounding soils showing indications of elevated contaminant levels, there is no more source material to contribute to the plume from the upgradient end.

A more thorough understanding of the attenuation processes occurring in the aquifer is possible with the most recent water quality data collected in 2004. A detailed discussion if the natural attenuation process and progression at the Site is presented in Section 5.0.

A downward head difference, as evidenced by water levels measured in the wells at the Site, indicate that the contaminants in the on-Site portions of the aquifer would be quickly drawn into the deeper zone. This confirms that the disappearance of the plumes from the water table zone is a natural result of Site conditions and historical actions by GE (removal of the sump in 1990).

4.2 SOIL GAS INVESTIGATION

A soil gas investigation was conducted at the Site during October through December 2003. Prior to installing the soil gas modules in October 2003, the water levels were measured in all existing wells. In order to be as comprehensive as possible, an effort was made to recover the five off-Site wells (P-12, P-13S, P-13D, P-14S and P-14D) that had not been accessed since 1996. Wells in the P-13 and P-14 clusters were found, but their conditions were poor, and no access permission was granted. P-12 was not found. The resulting water level maps from the remaining on-Site wells confirmed the proposed locations for the soil gas modules.

The soil gas results listed on Table 2-2 are so low that it is difficult to discern a pattern in their occurrence. A previous soil-gas study, completed by Northeast Research Institute, Inc. in 1988 using the Petrex technology, had no difficulty identifying the location of the plume and was used successfully to

locate the positions of wells P-7 through P-11. The low-strength of the soil-gas signal in 2003 indicates that the groundwater plume is less concentrated than it was in 1988.

Figure 2-2 presents the combined results for both studies in 2003, with a plume for the local groundwater inferred from these results. On the figure, the areas around wells P-10A and P-7A are shaded because the last sampling event in 2001 detected chlorinated solvents, principally DCE, in these wells. This plume outline probably represents the low levels of VOCs that have been able to migrate upwards from the plume in the deeper aquifer zone and through the shallower water table zone to the surface. This inferred plume outline was used to target locations for the new wells to be installed for the SRFI.

4.3 EVALUATION OF THE 2004 DATA SET

For the discussion of the current nature and extent of the chemicals in the environmental media for this SRFI, the data set consists of the analytical results from the most recent groundwater sampling event conducted in 2004. For discussions of historical trends, selected data from the previous RFI report (SEC, October 1991) and the quarterly CMS sampling will be utilized.

4.3.1 Data Validation

The data used for this SRFI were collected during a field mobilization conducted in May through June of 2004. All samples were analyzed in accordance with USEPA-approved protocols. The ADQR, along with the detailed analytical results, are contained in Appendix L. The data summary trend tables, containing the data from the most recent field effort plus the groundwater analytical data back to 1989, are presented in Table 4-1.

An evaluation of the QA/QC sample results in the Appendix L tables reflect that the decontamination and other QA/QC procedures were effective and the shipping and sample-handling procedures did not introduce contaminants.

An evaluation of the data for quality and usability based on USEPA guidance was performed, and summary tables of the analytical results are presented in Appendix L. The analytical data obtained in this investigation met the project-specific data quality objectives (DQOs). Analytical completeness for this project is high. Sufficient data exist to estimate the nature and extent of contamination in the groundwater.

4.3.2 Data Reduction

The validated comprehensive database for this investigation contains multiple analytical results for certain parameters and sample locations. This multiplication of data results occurs for a number of valid reasons:

- Selected samples were collected in duplicate in the field and were submitted to the prime laboratory to evaluate precision. This is a standard practice, and it creates an additional result for each analytical parameter and sample point that is duplicated.
- The QC procedures, as specified by the analytical methodologies, may require that re-analysis be performed by the laboratory for number of data validation purposes (e.g., dilutions required to attain concentrations within instrument calibration ranges). In some instances, a sample may be analyzed three or more times for laboratory QC purposes, resulting in as many results in the database reported to Earth Tech.

For data interpretation purposes, the comprehensive database (containing all QC information and duplicate analyses) was reduced to a database (named the Results Database) consisting of only one analytical result for a given analytical parameter and sample point on a given date. No statistical inferences (e.g., arithmetic mean) of multiple results from a single sample point were used in developing the Results Database. In order to determine the single result for each analytical parameter and sample point (i.e., the one that is most representative of actual site conditions), the following data reduction criteria and procedures were followed:

- Duplicate sample results were used for internal validation purposes only and were not included in the Results Database.
- For any re-analysis performed by the prime laboratory, an environmental chemist evaluated the data qualifiers, using professional judgment to determine which analytical result was more representative of the actual site conditions. Usually, the result with the fewest qualifiers attached to it is the one selected for the Results Database.
- For multiple results with no qualifiers or with data qualifiers of similar impact to data quality, the larger of the results (the higher concentration) was chosen for the Results Database. The objective in this case was to take the conservative approach and present the maximum reasonable concentration.

Upon screening the data results on Table 4-2 against human health regulatory levels, the Primary Data Set will produce a list of chemicals of potential concern (COPCs) that will be discussed further in this section.

4.4 DATA SCREENING PROCESS

The selection of COPCs is a step-wise process to evaluate appropriate analytical data in order to identify those chemicals that are likely to be Site-related (i.e., not present at the site due to natural conditions or detected in samples due to field or laboratory error).

4.4.1 Background Screening

Since there are no background concentrations for VOCs in groundwater, there is no screening for background in this investigation. This amounts to assuming that the background concentration for the analytes is zero.

4.4.2 Human Health Screening Process

After the background comparison is completed, those analytes that exceed background concentrations are subjected to a risk-based screening process. Those constituents exceeding background levels in groundwater are compared to the USEPA primary MCLs (USEPA, Winter 2004) and the USEPA Region IX Preliminary Remediation Goals (PRGs) (USEPA, October 2004). Constituents exceeding these risk-based screening levels for either medium are considered to be COPCs for this investigation.

4.4.3 Identification of Chemicals of Potential Concern

After the screening process outlined above, a total of 11 parameters have been identified as COPCs in groundwater, including nine VOCs (chloroform, 1,1,1-TCA, 1,1,2-TCA, PCE, TCE, 1,2-DCA, 1,1-DCA, 1,1-DCE, and vinyl chloride) and two metals (iron and manganese) (Table 4-2). Even though it does not exceed a screening criterion, 1,1-DCA has been added as a COPC for reasons discussed in the following section.

The nature and distribution of each of the COPCs will be presented and discussed in Section 4.5 below. At the close of each discussion, a decision will be made as to whether or not each COPC is related to past Site activities. Those considered to be related to past Site activities will become chemicals of concern (COCs) for this investigation.

4.5 CHARACTERIZATION OF CONTAMINANTS IN EXPOSURE MEDIA

The laboratory analytical tables provided in Appendix F of the previous RFI report (SEC, October 1991) contain the entire analytical results for soil and groundwater from 1988 through 1991. Summary tables of these results are included in Appendix I of the same report.

Groundwater samples have been collected from select wells for analysis from 1992 through 2001. No groundwater sampling was performed in 2002 or 2003. The latest sampling event was conducted in June 2004. The laboratory analytical results from 1992 through 2001 have been submitted to USEPA as part of the annual reporting process of the selected CMS remedy.

This SRFI document presents and evaluates the results of the latest groundwater sampling event conducted in June 2004. Table 4-2 is a summary of the analytical results from the latest sampling event. Table 4-3 presents the definitions of all the data qualifiers used on the analytical summary table. The occurrence and distribution of the COPCs in groundwater will be discussed in the following sections, as appropriate. The maps prepared for these discussions will present the results from the sampling event in June 2004, because the June 2004 data are from the latest and most up-to-date sampling event. These maps present contour lines indicating areas of each aquifer that appear to exceed the MCL concentration for a particular COPC.

4.5.1 Groundwater

In this section, the distribution of the COPCs in the groundwater will be presented. For those COPCs with few exceedances of their screening values, the discussion will be textual, but for the others, multiple maps will be presented with the text to more easily display the distribution in the two aquifer zones beneath the Site.

The maps and tables presented in this section show that the VOC plume coming from the former French Sump has migrated downgradient from the sump and well P-11 (located immediately downgradient of the sump) and now appears to emanate from the area around P-8. The wells located the farthest downgradient from the Site, P-13S/D and P-14S/D, could not be sampled in June 2004 because off-Site access was denied. Well P-12, also off-Site, could not be located. However, analytical results from the new off-Site wells P-16S through P-19S/D indicate that the VOC plume has shrunk in size since the early 1990s and the groundwater concentrations of VOCs could not exceed their MCLs at the P-12 location.

4.5.1.1 Chloroform

Chloroform was detected in seven monitoring wells (two on-Site [P-4 and P-10A] and five off-Site [P-16S, P-18S/D, and P-19S/D]), with detected concentrations ranging from an estimated value of 0.21J µg/L at P-16S to 2.16 µg/L at P-19D. All of the chloroform detections exceeded the PRG Tap Water criterion (0.166 µg/L), but none exceeded the MCL (80 µg/L). Because of the sporadic locations of chloroform detections, the distribution of this parameter is not shown on a figure.

At the two on-Site locations, chloroform was detected at P-4 at a concentration of 0.258J/B/K µg/L and at well P-10A at 1.69 µg/L. The "B" and "K" flags on the P-4 result mean the analyte was found in an associated blank as well as in the sample at a concentration less than or equal to five times the concentration detected in the associated method blank. Professional judgment must be used to determine if the detected analyte is Site-related.

At the five off-Site wells (P-16S, P-18S, P-18D, P-19S, and P-19D), chloroform concentrations exceeded the PRG. The maximum chloroform concentration was detected at deep well P-19D at 2.16 µg/L.

Based on the locations of the wells exhibiting chloroform exceedances, the source of the chloroform in the groundwater is believed to be chlorinated water and wastewater leaking from lines at the GE facility and at the WWTP. Both P-4 and P-10A are located adjacent to and downgradient of the GE building. P-10A is also located close to a water spigot at a guard shack on-Site. Both the P-18 and P-19 locations are downgradient of the WWTP, which would be chlorinating the wastewater after the treatment process. Well P-16S is located adjacent to the sewer outfall line running along road south of the GE facility.

Chloroform was also the primary VOC detected during both soil gas surveys conducted in October 2004 and December 2004. Concentrations in the soil gas were low, ranging from 0.020 to 1.315 µg (Table 2-2). The maximum detection of 1.315 µg occurred in the soil gas detector installed in the water column in the center of the screen of on-Site deep well P-10A in December 2004. The chloroform concentration detected by this soil gas detector (1.315 µg) corresponds to the concentration detected in the groundwater sample collected from P-10A in June 2004 (1.69 µg/L).

Chloroform concentrations in groundwater exceed the PRG Tap Water criterion. However, the locations of all the wells with exceedances indicate that the source of the chloroform is not the former French Sump but rather potential leaks of chlorinated water from the water lines at the GE facility, the sewer main running along the road, and the WWTP. Also, chloroform would not be a component of the wastes discharged to the French Sump during its use. Therefore, it is not retained as a COC for this investigation.

4.5.1.2 1,1,1-Trichloroethane

The distribution of 1,1,1-TCA in the groundwater (Table 4-2) is presented on Figure 4-4. On-Site, 1,1,1-TCA is present at a concentration above its MCL (200 µg/L) in the shallow aquifer at only one location. At P-8, located on-Site adjacent to the unnamed intermittent stream along the eastern property boundary, this VOC was detected at 586 µg/L. The remaining four groundwater samples collected from on-Site shallow wells indicated 1,1,1-TCA concentrations below the detection limit of 1 µg/L. Concentrations of 1,1,1-TCA in the shallow aquifer off-Site wells were well below the MCL and ranged from an estimated concentration ("J" flagged) of 0.423J µg/L at P-16S to 1.63 µg/L at P-18S. At P-19S, the farthest downgradient location, 1,1,1-TCA was detected at an estimated concentration of 0.44J µg/L.

In the deeper aquifer zone, all 1,1,1-TCA concentrations were below the MCL both on- and off-Site. Concentrations ranged from non-detect (less than 1 µg/L) at P-17D located off-Site to 1.28 µg/L at P-10A located on-Site. At P-19D, the farthest downgradient location in the deeper aquifer, 1,1,1-TCA was detected at only 1.12 µg/L.

Regarding trends in concentrations that can be seen on Table 4-1 and Figure 4-1, the trends appear to be decreasing at all wells except P-8, where spikes of 1,1,1-TCA have been detected sporadically in the past. As shown on Figure 4-4, only a small plume of 1,1,1-TCA exists in the shallow aquifer at the P-8 well location. No detectable concentrations of this VOC were reported at P-11, located immediately downgradient of the former French Sump.

Concentrations of 1,1,1-TCA exceed the screening criteria at only one location. However, detected concentrations of this VOC are widespread both on- and off-Site, and the analyte has been detected at elevated concentrations exceeding the screening criteria in the past. Therefore, 1,1,1-TCA is retained as a Site-related compound.

4.5.1.3 1,1,2-Trichloroethane

The distribution of 1,1,2-TCA in the groundwater is not presented on any figures because it was detected at only one location in 2004. 1,1,2-TCA was detected in on-Site deep well P-10A at an estimated concentration of 0.641J µg/L. This value is slightly above the PRG Tap Water screening criterion for 1,1,2-TCA (0.2 µg/L) but is well below the MCL (5 µg/L). 1,1,2-TCA was not detected in any of the other wells sampled in 2004.

Even though concentrations of 1,1,2-TCA in groundwater exceeded one of the two screening criteria at well P-10A in June 2004, it was not detected in any other well. The only other time that this compound was detected in the analyses conducted at this Site was in April 1996, also at an estimated concentration

below the detection limit. Because of the low frequency of detections and the low concentrations, 1,1,2-TCA is not retained as a final COC.

4.5.1.4 Tetrachloroethene

The distribution of PCE in the groundwater is not presented on any figures because it was only detected in two monitoring wells in 2004. At on-Site well P-8, screened in the shallow aquifer, PCE was detected at 5.94 µg/L, which is slightly above the MCL (5 µg/L). PCE concentrations were below the detection limit (1 µg/L) in the remaining seven shallow wells sampled. In the deeper aquifer zone, PCE was detected at an estimated concentration of 0.404J µg/L at P-10A. This concentration exceeds the PRG Tap Water criterion (0.104 µg/L). Concentrations were non-detect at the remaining five deep wells.

Concentrations of PCE were detected in groundwater at two locations, one in the shallow and one in the deep aquifer zone. One detection exceeded both the MCL and PRG for PCE, and one exceeded the PRG only. The highest concentration was reported at P-8, which exhibits the most VOC detections and the highest VOC concentrations in the shallow aquifer zone. Therefore, PCE is retained as a Site-related compound.

4.5.1.5 Trichloroethene

The distribution of TCE in groundwater is not presented on any figures because it was only detected in three monitoring wells in 2004. In the shallow aquifer, TCE was detected at 3.53 µg/L at well P-8 and at an estimated concentration of 0.435J µg/L at well P-11, both located on-Site. In the deep aquifer, TCE was detected at an estimated concentration of 0.424J µg/L at on-Site well P-10A. All three of these values exceed the PRG Tap Water screening criterion for TCE (0.028 µg/L) but do not exceed the MCL (5 µg/L). TCE concentrations were not detected in the remaining six shallow wells or five deep wells sampled in 2004.

TCE was detected at three locations at concentrations exceeding the screening criteria. The highest detected concentration occurred at P-8, which exhibits the most VOC detections with the highest concentrations in the shallow aquifer zone. Therefore, TCE was retained as a Site-related compound.

4.5.1.6 1,1-Dichloroethane

The distribution of 1,1-DCA is widespread (Table 4-2); however, there is no MCL for 1,1-DCA, and it does not exceed the PRG in groundwater. Because it does not exceed the screening criteria, the distribution of 1,1-DCA is not contoured or presented on a figure.

As in the past, 1,1-DCA continues to be one of the most prevalent VOCs detected in groundwater both on- and off-Site. Concentrations of 1,1-DCA were detected in 12 out of the 14 groundwater samples collected in 2004 but at concentrations that remain well below the PRG Tap Water screening criterion (810 µg/L). In the shallow aquifer zone, concentrations of this VOC ranged from non-detect (less than 1 µg/L at wells P-4 and P-7) to a maximum of 60.8 µg/L at well P-8. In the deeper zone, concentrations ranged from an estimated value of 0.658J µg/L at P-19D to 22.5 µg/L at P-10A. 1,1-DCA was detected in all of the six deep wells sampled.

Even though detected concentrations of 1,1-DCA are widespread in both the shallow and deep aquifer zones at both on- and off-Site locations, it does not exceed its PRG screening criterion (there is no MCL), and it is not retained as a COC for this investigation.

4.5.1.7 1,2-Dichloroethane

The distribution of 1,2-DCA in groundwater was not presented on any figures because it was detected at only one sample location in 2004. In the deeper aquifer zone, 1,2-DCA was detected at 2.03 µg/L at on-Site well P-10A. This exceeds the PRG Tap Water screening criterion (0.12 µg/L) but does not exceed the MCL (5 µg/L). Concentrations of 1,2-DCA were not detected in the remaining five deep wells or in any of the eight shallow wells sampled.

Concentrations of 1,2-DCA were detected at one location and exceeded one of its two screening criteria. The detected value was not an estimated concentration, and it occurred at P-10A, which contains the highest concentrations of several VOCs in the deep zone. Therefore, 1,2-DCA is retained as a Site-related compound.

4.5.1.8 1,1-Dichloroethene

Along with 1,1,1-TCA and 1,1-DCA, 1,1-DCE continues to be one of the most prevalent VOCs detected in groundwater both on-Site and off-Site. Concentrations of 1,1-DCE tend to be the highest among the VOCs. In the shallow aquifer, concentrations of 1,1-DCE ranged from non-detect (less than 1 µg/L) in on-Site wells P-4 and P-7 to a maximum of 360 µg/L at on-Site well P-8. Elevated concentrations of 1,1-DCE were also reported as 63.8 µg/L at off-Site well P-18S and as 13.2 µg/L at off-Site well P-16S. Three of the five detected values exceed the MCL for 1,1-DCE (7 µg/L). One value (360 µg/L at P-8) exceeds both the MCL and the PRG Tap Water criterion (340 µg/L).

Concentrations of 1,1-DCE were detected in all six of the deep wells sampled in 2004. The highest concentration of 1,1-DCE in the both the shallow and deeper aquifer zones was reported at on-Site deep well P-10A at 1,230 µg/L. Concentrations of this VOC in the deep zone ranged from 14.1 µg/L at on-Site

well P-7A to 1,230 µg/L at on-Site well P-10A. All 1,1-DCE concentrations in the deep aquifer zone exceeded the MCL (7 µg/L), and one concentration exceeded the PRG Tap Water criterion (340 µg/L).

Because elevated concentrations of 1,1-DCE have been widespread in groundwater throughout the monitoring period, plume maps depicting the distribution of this VOC have been constructed for select time periods. The time periods selected include February/November 1989, November 1993, October 1996, and June 2004. The first time period was selected because it is the beginning of the period of record. The 1993 and 1996 time periods were chosen because they are representative of spikes in concentrations in both on- and off-Site wells. The 2004 data were selected because they are the latest analytical results available for the Site. Figures 4-5 through 4-9 illustrate the distribution of the 1,1-DCE plume in map view during the chosen time periods. Figures 4-10 through 4-13 show the plume in cross sectional view. The MCL for 1,1-DCE (7 µg/L) is contoured on the figures.

A review of these figures indicates that the size of the 1,1-DCE plume increases from 1989 through 1993 and then shrinks in 1996 (Figures 4-5 through 4-7; Figures 4-10 through 4-12). In 1989 and 1993, the toe of the plume in the shallow aquifer extends beyond P-12. By 1996, the 1,1-DCE concentration in P-12 has fallen to below detection limits, which indicates that the toe of the plume has retreated back toward the source area (the former French Sump). By 2004, the plume has shrunk even further. Concentrations of 1,1-DCE in the P-18S/D and P-19S/D well pairs, installed off-Site in June 2004, indicate that the toe of the plume has receded further. In addition, 1,1-DCE is non-detect at P-11 located on-Site, which shows that removal of the former French Sump and surrounding soils has cut off the source of the plume, resulting in an overall decrease in plume size (Figures 4-8, 4-9, and 4-13).

Although the most recent analytical data collected in 2004 show that the plume has shrunk in size over time, 1,1-DCE is still the most prevalent VOC detected in shallow and deep groundwater at both on- and off-Site locations. Concentrations of 1,1-DCE are also some of the highest reported for VOCs at the Site and exceed the screening criteria at several locations. Therefore, 1,1-DCE is retained as a Site-related compound.

4.5.1.9 Vinyl Chloride

The distribution of vinyl chloride in groundwater was not presented on any figures because it was detected at only one sample location in 2004. Vinyl chloride was detected at 2.14 µg/L in the shallow aquifer at on-Site well P-8. This concentration was flagged with a "B" and a "K", meaning the analyte was found in an associated blank as well as in the sample and it was detected in the sample at a concentration less than or equal to five times the concentration detected in the associated method blank. Professional judgment must be used to determine if the detected analyte is Site-related. Because this

vinyl chloride concentration was detected at P-8 where numerous other elevated VOC concentrations were detected, it is believed to be Site-related.

The vinyl chloride concentration of 2.14 µg/L in the shallow aquifer exceeds both the MCL (2 µg/L) and the PRG Tap Water criterion (0.02 µg/L). Vinyl chloride was not detected in any of the other shallow wells or any of the deep wells sampled in 2004.

Vinyl chloride was detected at one location that exceeded both the screening criteria. It was detected at P-8, which exhibits the highest VOC concentrations and the most detected VOC parameters in the shallow aquifer. Vinyl chloride is also a final daughter product of the degradation of 1,1,1-TCA. Therefore, vinyl chloride is retained as a Site-related compound.

4.5.1.10 Other Chemicals of Potential Concern

Two additional analytes, iron and manganese, were detected at concentrations exceeding the screening criteria in groundwater samples collected in 2004. Their distributions will be presented verbally in this section, along with the rationale for retaining or deleting them from the list of final COCs for this Site.

Iron was detected in 13 of the 16 groundwater samples collected in 2004. Seven of these detections exceed the secondary MCL for iron (300 µg/L) including the sample from the upgradient well MW-1A. Iron concentrations ranged from non-detect (less than 40 µg/L) at wells P-4 and P-18S to 10,200 µg/L at P-8 in the shallow aquifer. In the deep aquifer, concentrations ranged from non-detect at P-18D to 718 µg/L at P-17D. The highest iron concentration occurs at well P-8, which has the most detections of VOCs and the highest concentrations of VOCs. Some of the highest iron concentrations also occur where manganese concentrations are elevated.

Manganese was detected in 12 of the 16 groundwater samples. Three of these detections exceeded the secondary MCL for manganese (50 µg/L), and two exceeded both the secondary MCL and the PRG Tap Water criterion (880 µg/L). In the shallow aquifer, manganese concentrations ranged from non-detect (less than 10 µg/L) at wells P-1, P-4, P-7, and P-9 to 1,810 µg/L at P-16S. In the deep aquifer zone, concentrations ranged from an estimated concentration of 3.4J µg/L at P-18D to 279 µg/L at P-19D.

These two constituents are not retained as COCs for this investigation because they are naturally-occurring in the area, they are not regulated for health reasons, and they occur in apparently random patterns that are unrelated to plume geometry.

4.5.2 Surface Water and Sediment Quality

Surface water and sediment samples were collected during Task II and Task III field activities conducted in 1988. The samples were collected from the unnamed stream located east and north of the CGE facility and from the Rio Grande de Patillas and the Quebrada Mamey Rio Chico to evaluate the potential impact of groundwater discharge to off-Site surface waters. Analytical results are presented and discussed in the original RFI report (SEC, October 1991). Results of these investigation indicated no Site-related compounds were detected in the surface or sediment samples collected from the local streams.

4.5.3 Final Chemicals of Concern

After completing the evaluation process, the list of COPCs developed in Section 4.4.3 after the preliminary RFI screening has been reduced by five (chloroform, 1,1,2-TCA, 1,1-DCA, iron, and manganese). The final COCs for the two groundwater aquifer zones of the Site are listed below:

COPC Name	Selected as Final COC?
Chloroform	No
1,1,1-Trichloroethane	Yes
1,1,2-Trichloroethane	No
Tetrachloroethene	Yes
Trichloroethene	Yes
1,2-Dichloroethane	Yes
1,1-Dichloroethane	No
1,1-Dichloroethene	Yes
Vinyl Chloride	Yes
Iron	No
Manganese	No

5.0 FATE AND TRANSPORT OF CONTAMINANTS

This section provides an overview of fate and transport of selected contaminants detected in the environmental media at the GE Site. The purpose of this section is to provide information on those contaminants to qualitatively predict their fate and transport in the environment. The extent to which constituents actually migrate in the media at the study area, as well as their ultimate fate, depends on three principal factors: (1) the physical and chemical properties of the constituents, (2) the transport and degradation process active in the media at the Site, and (3) the properties of the media through which the constituents migrate. These factors control dominant transport pathways and constituent migration and transformation rates through the different media of concern at the Site.

5.1 CHEMICAL AND PHYSICAL PROPERTIES OF CONTAMINANTS

The concentrations of the analytes detected in the local groundwater during the June 2004 sampling event were compared to the USEPA MCLs (USEPA, Winter 2004) and the Region IX PRGs (USEPA, October 2004), for constituents having those criteria. Ten VOCs were detected in groundwater, but only eight were detected at concentrations exceeding at least one of their screening criteria (Table 4-2). Of these eight, only six have been named a COC for this Site: 1,2-DCA, 1,1-DCE, PCE, 1,1,1-TCA, TCE, and vinyl chloride. The properties of these chemicals and their potential behavior in the subsurface are discussed in this section.

Specific information about the chemical and physical properties of contaminants is important for predicting the fate and transport of chemicals within various environmental media. A summary of the chemical and physical properties of VOCs discussed in this section is provided on Table 5-1. Included on that table are specific gravity, water solubility, K_{ow} (octanol-water partitioning coefficient), K_{oc} (organic carbon distribution coefficient), vapor pressure, Henry's Law constant, and half lives.

5.2 PHYSICAL, CHEMICAL, AND BIOLOGICAL TRANSFORMATIONS

Once the chemicals have entered the environmental media at a site, there is a tremendous potential for those chemicals to be transformed by a variety of natural processes that serve to attenuate the concentrations of those chemicals. Attenuation is the decrease in concentration of a contaminant over time. Natural attenuation includes a variety of chemical, physical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in environmental media. Natural attenuation has been recognized as a potentially important remedial option under certain conditions (USEPA, April 1999).

Subsurface attenuation (in the vadose zone and groundwater) can be broken down into two broad categories: nondestructive attenuation and destructive attenuation (Air Force Center for Environmental Excellence [AFCEE], November 1996). Nondestructive attenuation processes are those that result in a decrease in the concentration of a contaminant in a particular medium, but not the total mass within the system. Destructive attenuation processes, on the other hand, are those that decrease both the concentration and the mass of a contaminant. Attenuation in other environmental media will be similar and can also occur in the atmosphere, as well as in surface water and sediments.

5.2.1 Nondestructive Attenuation Mechanisms

Nondestructive attenuation mechanisms include the following: advection, dispersion, dissolution, sorption, volatilization, and recharge. This section summarizes nondestructive attenuation mechanisms as they apply to this investigation at the GE Site in Patillas.

5.2.1.1 Advection

Advective transport is the transport of solutes (dissolved chemicals) by the bulk movement of groundwater. Advection is the most important process driving dissolved contaminant migration in the subsurface (AFCEE, November 1996). Many outside forces act upon the advancing advective front. It is spread out, or smeared, by dispersion and diffusion, it is retarded by sorption, and its concentration may be decreased by biodegradation.

Advection is active at this study area, as evidenced by the plumes emanating from the source areas that have migrated with the local groundwater flow. The Darcy velocity for this study area ranges from approximately 110 up to 530 ft/yr for the Site in general and 320 ft/yr for the off-Site Area to the west (Section 3.7.2). Based on the maximum calculated Darcy velocity for the main part of the Site (530 ft/yr) and the off-Site alluvium (320 ft/yr) and the elapsed time since the start of disposal activities in 1977 (27 years), the plumes coming from the French Sump could theoretically have traveled up to 9,000 feet downgradient. Because the local groundwater discharges to the Rio Grande de Patillas, the plume cannot extend beyond its banks, approximately 2,700 feet downgradient of the sump, but there is no evidence that it even reached that far, since no contamination was detected in the well pairs P-13 and P-14 before the plume began to recede in 1996.

Section 3.7.2 discusses the local potentiometric data in more detail. The discussion presented in that section shows that the groundwater from the French Sump area is generally flowing downward, from the water table to the deeper zones, in on-Site locations and eventually upward from the deep zone to discharge into the Rio Grande de Patillas in off-Site areas. The plumes appear to be stable or shrinking, with decreasing concentration trends over most of the plume areas.

5.2.1.2 Hydrodynamic Dispersion

Hydrodynamic dispersion is the process whereby a contaminant plume spreads out in directions that are both longitudinal and transverse to the direction of plume migration. Dispersion dilutes the concentration of a contaminant, but does not decrease its mass. Hydrodynamic dispersion is caused by both mechanical dispersion and molecular diffusion. Mechanical dispersion is the dominant mechanism causing hydrodynamic dispersion at normal groundwater velocities. At extremely low groundwater velocities, molecular diffusion can become the dominant mechanism. The fact that the plume at the Site is wider than the inferred source indicates that dispersion is active there.

5.2.1.3 Dissolution

Dissolution is the process of moving chemical mass into the dissolved aqueous phase. It includes the process of desorbtion from a solid phase as well as transfer from a free product, either liquid or solid. Liquid organic compounds that exceed their water solubility will form non-aqueous phase liquids (NAPLs). At the edges of a NAPL zone, the product in contact with water (groundwater, surface water, or percolating recharge) will be constantly losing mass to the dissolved phase. There is no direct evidence of the presence of any NAPL phase at this Site. The fact that the groundwater at well P-11, immediately downgradient of the French Sump, has not had concentrations of TCA detected in the last four sampling events since 1999 is strong evidence that DNAPL does not exist at this Site.

5.2.1.4 Sorption

Sorption and contaminant mobility vary widely depending on the physical and chemical properties of both the contaminants and the environmental media they are traveling through. The mobility of sorbed contaminants through the environment also depends on their physical location. For example, if sorbed to surficial soil, the contaminant may migrate as dust or as suspended particles in surface water runoff (i.e., erosion). On the other hand, if sorbed to deeper soils in the unsaturated vadose zone or saturated zones (aquifer material), the contaminant mobility in the sorbed state is usually insignificant. Contaminants sorbed to sediments may be buried by additional deposition of sediment or, depending on hydraulics, be transported via surface water. Contaminants that are sorbed to particulate matter in the atmosphere (as fugitive dust) have the potential to migrate long distances from their sources over relatively short periods of time. Because of the subsurface releases of the local contaminants, the mobility of sorbed materials is not expected to be a major factor at this site.

5.2.1.5 Volatilization

Volatilization of a chemical can occur from 1) the dissolved aqueous phase of groundwater to soil vapor, 2) the vadose zone soil to the atmosphere, 3) the surface water bodies to the atmosphere, and 4) the sorbed phase on airborne particulate matter to the atmosphere. In general, factors affecting the volatilization of contaminants from groundwater into soil vapor include the contaminant concentration, the change in contaminant concentration with depth, the Henry's Law constant and diffusion coefficient of the compound, mass transport coefficients for the contaminant in both water and soil vapor, sorption, and the water temperature (Larson and Weber, 1994, as cited in AFCEE, November 1996). In general, chemicals with a vapor pressure less than 10^{-7} millimeters of mercury (mm Hg) will not be present in the atmosphere or soil gas. Chemicals with vapor pressures greater than 10^{-2} mm Hg should be present primarily in the atmosphere or soil gas (Dragun, 1988), with negligible amounts attached to the soil particles. A review of the data on Table 5-1 reveals that the contaminants at this Site have vapor pressures at least three orders of magnitude higher than this level (above 10^{1}, with an average of 10^{2}), indicating that they will readily partition themselves to the atmosphere or soil gas.

The propensity for a chemical to volatilize from an aqueous phase and exist in the atmosphere or in soil gas can be grossly estimated using Henry's Law. Henry's Law states that when a solution becomes very dilute, the vapor pressure of a chemical can be estimated to be proportional to its water solubility using the following formula:

$$P_{vp} = S\ K_H$$

where:

P_{vp} = vapor pressure of the chemical (atmospheres or atm)

S = solubility of the chemical in water (moles/m^3 or mol/m^3)

K_H = Henry's Law constant (atm-m^3/mol)

In general, chemicals having K_H values less than 5×10^{-6} atm-m^3/mole encounter resistance to mass transfer and should be present in negligible amounts in the atmosphere or soil gas. Chemicals having K_H values greater than 5×10^{-3} atm-m^3/mole encounter resistance to mass transfer primarily in the aqueous phase and volatilization should dominate (Dragun, 1988). Most of the organic chemicals found at the site will rapidly volatilize when released into surface water (Table 5-1). Only 1,1-DCA, 1,2-DCA, and 1,1,2-TCA have K_H values between the two quoted above, indicating that they have a slightly higher resistance to transfer to the vapor phase.

The constituents present in the aquifers at this Site tend to be found primarily in the dissolved phase and are subject to rapid partitioning from the aqueous phase to the atmosphere upon release to surface water. Volatilization from the water table aquifer is likely active at this study area. Even though this process does not produce major reductions in VOC concentrations at the majority of sites, the local combination of shallow groundwater table, warm groundwater temperatures, permeable materials in both the aquifer matrix and vadose zone (especially in the alluvial deposits of the flood plain), and highly volatile contaminants near the water table work together at this Site to form a significant attenuation pathway.

5.2.1.6 Recharge

Groundwater recharge is the entry of ambient water into the saturated zone of an aquifer. Recharge may occur through the vadose zone or from surface water bodies that are in contact with the saturated zone. Recharge of a water table aquifer has two effects on the natural attenuation of a dissolved contaminant plume. First, additional water entering the system will contribute to dilution of the plume. Secondly, the influx of relatively fresh water will alter geochemical processes and, in some cases, facilitate additional biodegradation (AFCEE, November 1996).

Locally, the water table responds to rainfall events, indicating that recharge is occurring. The tropical climate here produces abundant rainfall, and the soils are permeable enough to receive much of that rainfall as recharge to the water table aquifer. It tends to rain on an almost daily basis, providing abundant opportunities to bring water and other dissolved materials (such as oxygen) to the aquifer zone.

5.2.2 Destructive Attenuation Mechanisms

Environmental processes that result in the reduction of a contaminant's mass by altering its chemistry or its physical properties are referred to as destructive attenuation mechanisms. These destructive processes are either biotic or abiotic. Abiotic processes are chemical transformations that degrade contaminants without microbial facilitation. The primary biotic process is biodegradation, which is mediated by microorganisms such as bacteria and fungi (as opposed to phytoremediation whereby plants uptake contaminants but typically don't degrade them in the process). Biodegradation of many organic chemicals is typically the most significant degradative process in vadose zone soils, groundwater, surface water, and sediments. Figure 5-1 presents degradation pathways that are available for a wide range of chlorinated compounds.

5.2.2.1 Abiotic Degradation

Abiotic degradation is the transformation of an organic compound without the action of biological organisms. Abiotic degradation can occur in vadose zone soils, groundwater, surface water, sediment, or

the atmosphere. Several transformation reactions can occur during this process, including hydrolysis, elimination, and oxidation. Hydrolysis is the reaction of a chemical with water or the hydronium or hydroxide ions associated with water. The reaction results in the introduction of a hydroxyl group into the chemical compound with the loss of the halide group (Olsen and Davis, 1990). Elimination reactions can result in the loss of a hydrogen and a chlorine atom from the central carbons and the formation of a double-bond between the carbons (in a process called dehydrohalogenation). This reaction causes 1,1,1-TCA to break down into 1,1-DCE.

Oxidation involves the loss of electrons during a chemical reaction. Oxidation in the natural environment can occur through either polar reaction or free radical reaction, the latter being the most common (Olsen and Davis, 1990). Overall, abiotic oxidation of organic compounds in groundwater systems is extremely limited unless oxygen or oxidizing agents are already present or are added (Olsen and Davis, 1990). One example is the oxidation of vinyl chloride via iron (III) reduction (AFCEE, November 1996). In this case, ferric iron (III) is reduced to ferrous iron (II), and vinyl chloride is oxidized to carbon dioxide, water, and chloride.

Certain organic chemicals that partition to the atmosphere from surface soil or surface water may undergo abiotic degradation. For most chemicals in the vapor phase of the atmosphere, reaction with photochemically generated hydroxyl radicals is the most important abiotic degradation process (Howard, 1989). Reaction in the atmosphere with ozone, nitrate radicals (at night), and direct photolysis (direct sunlight absorption resulting in photochemical alteration) are occasionally significant for some chemicals. Abiotic degradation by indirect photolysis processes may be important for some chemicals in surface waters.

5.2.2.2 Biotic Degradation

Biodegradation is the biotically mediated transformation of a chemical to daughter products (intermediates) and other simple compounds. The potential for a chemical to biodegrade is affected by its properties and state (metals will not degrade, but organic chemicals may); its concentration; its toxicity to soil microorganisms; the composition and size of the soil microbial population; and physical characteristics of its environment such as pH, ORP, temperature, and moisture. The concentration of an organic chemical also affects the compound's biodegradation rate. Biodegradation rates (half-lives) are useful as an indicator of biodegradation potential under different conditions and can serve as an indicator of whether certain classes of organic compounds will biodegrade faster than other classes. Bacteria require electron donors (sugars; benzene, toluene, ethylbenzene and xylenes [BTEX]; organic carbon) for food and electron acceptors (oxygen, nitrate, manganese 4+, iron 3+, sulfate, and chlorinated aliphatics) for "breathing".

Biodegradation can occur under three different scenarios:

1. As a primary growth substrate (aerobic or anaerobic conditions);
2. As an electron acceptor (reductive dechlorination); or
3. Through a process called cometabolism.

5.2.2.2.1 Biodegradation of Organic Compounds as a Primary Growth Substrate

Organic contaminants may biodegrade when microorganisms use the compound as a primary growth substrate (i.e., as a carbon source for biosynthesis and an electron donor for energy). This process occurs under aerobic conditions, where oxygen serves as the terminal electron acceptor of the lower-energy electron donated from the organic compound that is being oxidized. The carbons in the parent hydrocarbon are oxidized to carbon dioxide (the most oxidized form of carbon) and water. The rate of biodegradation is dependent on many factors including temperature, moisture content, pH, concentration and phase of the hydrocarbon, presence of acclimated microorganisms, and availability of nutrients. In most cases, oxygen is the rate-limiting nutrient for aerobic biodegradation. Fuel-related compounds such as BTEX and aliphatic hydrocarbons are amenable to rapid aerobic biodegradation. Aliphatic compounds that are not heavily chlorinated (e.g., vinyl chloride) will also biodegrade aerobically.

Fuel-related compounds may also biodegrade under anaerobic conditions. However, very little evidence exists to indicate that anaerobic oxidation of chlorinated ethenes (TCE) or chlorinated ethanes (1,2-DCA) is a significant biodegradative process. Many of these more highly chlorinated compounds biodegrade as an electron acceptor, as discussed in the next section.

5.2.2.2.2 Biodegradation of Organic Compounds as an Electron Acceptor

Under anaerobic conditions (the absence of dissolved oxygen), nitrate, manganese (IV), iron (III), sulfate, and carbon dioxide can serve as terminal electron acceptors during the oxidation of organic carbon (either natural or introduced). As the oxygen is consumed in the subsurface during the degradation process, the bacterial population changes to take advantage of other energy sources (electron acceptors) in place of the oxygen. The following table denotes the progression; as the DO drops (ORP becomes more negative), the bacteria utilize a cascade of materials to provide the energy they require.

ORP Range (mv)	Electron Acceptor Reaction	Bacteria
800 – 200	Organic + $O_2 \rightarrow CO_2 + H_2O$	Aerobic
500 – 200	Organic + $NO_3 \rightarrow CO_2 + H_2O + N_2$	Nitrate Reducing
300 – 0	Organic + $Fe^{3+} \rightarrow CO_2 + H_2O + Fe^{2+}$	Iron Reducing
-100 – -300	Organic + $SO_4 \rightarrow CO_2 + H_2O + H_2S$	Sulfate Reducing
-200 – -400	Organic + $CO_2 \rightarrow CO_2 + H_2O + CH_4$	Methanogenic
-200 – -400	Organic + $CO_2 \rightarrow CO_2 + H_2O + CH_3COOH$	Acetogenic

The anaerobic biodegradation of chlorinated compounds is accomplished through a process called reductive dechlorination. Reductive dechlorination is the most important process for the natural biodegradation of the more highly chlorinated solvents (USEPA, 1998), and it involves the transfer of electrons to the contaminant molecule. During this process, the chlorinated hydrocarbon is used as an electron acceptor, not as an electron donor or carbon source. When the chlorinated hydrocarbon receives the electron (as a hydrogen ion), chlorine is removed and replaced with hydrogen. The chlorine removed from the molecule forms a harmless, dissolved chloride ion.

Since chlorinated compounds are used as electron acceptors in this process, there must be a source of electron donors to provide organic carbon necessary for synthesis of new microbial cells. Potential electron donors and carbon sources include low molecular weight compounds (e.g., lactate, acetate, methanol, glucose, molasses), fuel hydrocarbons, by-products of fuel degradation, or naturally occurring organic matter. Hydrogen gas (H_2) can also serve as an electron donor.

In general, reductive dechlorination of highly chlorinated compounds such as TCE occurs by sequential dechlorination, resulting in the formation of intermediates that are more reduced than the parent compound. These intermediates are typically more susceptible to aerobic oxidative biodegradation than they are to further reductive, anaerobic processes (Figure 5-1). Thus, typical parent compounds (PCE or TCE) biodegrade faster under anaerobic conditions, and the intermediates (1,1-DCE and vinyl chloride) biodegrade faster under aerobic conditions. Reductive dechlorination has been demonstrated under nitrate- and iron-reducing conditions (low redox potential), but the most rapid biodegradation rates, affecting the widest range of chlorinated aliphatic hydrocarbons, occur under sulfate-reducing and methanogenic conditions (i.e., under very reducing conditions) (USEPA, 1998).

5.2.2.2.3 Cometabolism

When a chlorinated aliphatic hydrocarbon is biodegraded via cometabolism, the degradation process is catalyzed by an enzyme or cofactor produced by microorganisms for other purposes. During

cometabolism, bacteria indirectly transform the organic compound molecule as they utilize a different energy source. The net result is that cometabolism extends the range of compounds that can be degraded aerobically. Under aerobic conditions, chlorinated ethenes, with the exception of tetrachloroethene (PCE), are susceptible to cometabolic degradation (USEPA, 1998). The rate of cometabolism increases as the degree of dechlorination decreases (USEPA, 1998). Figure 5-1 depicts degradation pathways of chlorinated aliphatics that include cometabolic processes.

5.2.3 Behavior of Chlorinated Solvent Plumes

Chlorinated solvent plumes in groundwater can exhibit four types of behavior. The behavior depends on the amount of chlorinated solvent, the amount of biologically available organic carbon in the aquifer, the distribution and concentration of natural electron acceptors, and the types of electron acceptors being used (AFCEE, November 1996).

5.2.3.1 Type 1 Behavior

Type 1 behavior occurs where the primary substrate is anthropogenic carbon (i.e., BTEX compounds), and microbial degradation of this anthropogenic carbon drives reductive dechlorination. Type 1 behavior results in the rapid and extensive degradation of the more highly chlorinated compounds such as PCE (four chlorines), TCE (three chlorines), and DCE (two chlorines). When evaluating natural attenuation of a plume, the following issues must be considered (AFCEE, November 1996):

1. Is the electron donor supply adequate to allow microbial reduction of the chlorinated compounds?
2. What is the role of competing electron acceptors (e.g., DO, nitrate, iron (III), and sulfate)?
3. Is vinyl chloride being oxidized, or is it being reduced?

5.2.3.2 Type 2 Behavior

Type 2 behavior dominates in areas that have relatively high concentrations of biologically available native organic carbon. Microbial use of this natural carbon source drives reductive dechlorination. The same questions posed for Type 1 behavior must also be considered when considering Type 2 behavior.

Type 2 behavior generally results in slower biodegradation of highly chlorinated compounds as compared to Type 1 behavior. However, in environments with high natural organic carbon contents, Type 2 behavior also can result in rapid degradation of these compounds.

5.2.3.3 Type 3 Behavior

Type 3 behavior dominates in areas that are characterized by inadequate concentrations of native or anthropogenic carbon and concentrations of DO in groundwater greater than 1 milligram per liter (mg/L). Under aerobic conditions, reductive dechlorination of PCE and TCE will not occur; however, DCE and vinyl chloride can be rapidly oxidized under these conditions.

5.2.3.4 Mixed Behavior

A chlorinated compound in groundwater may be subjected to any or all of these conditions in the environment. A common scenario involves conditions in which PCE, TCE, and DCE are reductively dechlorinated (with accumulation of vinyl chloride) near the source area (Type 1 or Type 2 behavior), then vinyl chloride is oxidized (Type 3 behavior) either aerobically or through iron reduction further downgradient. Vinyl chloride is oxidized to carbon dioxide in this type of plume and does not accumulate. The overall sequence of degradation (chlorides not shown) is:

PCE → TCE → DCE → Vinyl Chloride → Carbon Dioxide (no ethene accumulation).

In general, TCE, DCE, and vinyl chloride may attenuate at approximately the same rate, and thus these reactions may be confused with simple dilution. Vinyl chloride is removed from the system much faster under these conditions than it is under vinyl chloride-reducing conditions.

A less desirable scenario, but one in which all contaminants may be biodegraded, involves a plume in which all chlorinated aliphatic hydrocarbons are reductively dechlorinated through Type 1 or Type 2 behavior. Vinyl chloride is reduced to ethene, which may be further reduced to ethane or methane. The following sequence of reactions occur in this type of plume:

PCE → TCE → DCE → Vinyl Chloride → Ethene → Ethane.

In this scenario, vinyl chloride degrades more slowly than TCE and thus tends to accumulate. Ethane will rapidly biodegrade to carbon dioxide and water if exposed to aerobic microorganisms and a dissolved oxygen content of greater than 1 mg/L.

5.2.4 Local Attenuation Evaluation

An evaluation of the potential for the natural attenuation of site-related contaminants in groundwater at this Site was performed using multiple indicator parameters (Table 4-2 and Appendix J-6). Reported ranges of these indicator parameters in the two layers of the local aquifers are summarized in Table 5-2.

In the paragraphs that follow in Section 5, the Site-specific results of each of these indicator parameters is discussed, in turn, and then a summary is presented.

5.2.4.1 Temperature

Groundwater temperature directly affects hydrocarbon biodegradation rates and the solubility of oxygen. At temperatures greater than 20 degrees Celsius (°C), biochemical processes are accelerated. All of the readings recorded during the 2004 sampling event were greater than 20°C (ranging from 27 to 32°C on Table 5-2), indicating optimal temperatures exist for promoting local biodegradation.

5.2.4.2 pH

The pH of groundwater has an effect on the presence and activity of microbial populations. Optimal pH values for microbes ranges from 6 to 8 standard units. Also, many potential reactions in the subsurface produce or consume acid, and their progress may be observed by changes in pH levels.

All measured pH readings in this investigation fall within the optimal range for microbial actions. In reviewing the pH distribution, it appears that the values closest to the French Sump in the water table zone of the aquifer (6.07 at P-11, and 6.12 at P-8) are depressed, relative to the background values (6.25 and 6.33 at P-1 and P-5, respectively). The values recover to background levels, or higher, farther downgradient. No pattern is evident in the deeper aquifer zone.

5.2.4.3 Alkalinity

The total alkalinity of groundwater indicates the capacity of the water to neutralize acid. Alkalinity is important in the maintenance of groundwater pH since it buffers the groundwater system against acids generated during both aerobic and anaerobic biodegradation. There was no carbonate alkalinity detected in the local groundwater, but the bicarbonate alkalinity ranged from 106 up to 296 mg/L of $CaCO_3$. These concentrations indicate sufficient buffering capacity is available to buffer the groundwater system.

5.2.4.4 Specific Conductance

The specific conductance of groundwater is the ability of that water to conduct electricity and is directly related to the concentration of ions in solution. It can be an aid to evaluating the location of bioattenuation activities by measuring the increased chloride concentration produced by the breakdown of chlorinated species. Specific conductivity readings ranged from 0.364 to 0.888 micromhos per centimeter

(µmhos/cm) across the Site. There is no pattern evident in the distribution of the specific conductance readings across the Site.

5.2.4.5 Oxidation-Reduction Potential

ORP is the measurement of electron activity. ORP reactions in groundwater containing organic compounds influence rates of biodegradation.

Figures 5-2 and 5-3 illustrate the ORP values for the water table and deep zones of the aquifer. As illustrated on the figures, the ORP values are all greater than zero, indicating that oxidizing conditions exist at all locations measured at the Site. The range in the water table zone (47 to 186 millivolts [mv]) is very similar to the range in the deeper zone (43 to 172 mv). However, a comparison of the mean and median values of the ORP for the two zones demonstrates that the water table zone is more oxidizing (mean: 145 mv; median: 160 mv) than is the deeper zone (mean: 103 mv; median: 114 mv). Other than the shallower zone having higher ORP readings than the deeper zone (possibly because it is closer to the atmosphere and to the recharge from rainfall), there appear to be no other patterns in the data.

5.2.4.6 Dissolved Oxygen

Oxygen is an electron acceptor used by microbes for the aerobic degradation of organic carbon where DO levels are at least 0.5 mg/L. Aerobic microorganisms use carbon in the aquifer (either anthropogenic or naturally occurring) as a primary substrate. Below about 0.5 mg/L, anaerobic bacteria are required to degrade the contaminants.

Concentrations of DO in the local groundwater ranged from 0.25 to 6.29 mg/L. The readings indicate that anaerobic conditions (DO values less than about 0.5 mg/L) are present in only limited areas of the aquifer: at P-1 and P-11 in the water table zone and at P-7A, P-10A, and P-17D in the deeper zone (Figures 5-4 and 5-5). With the exception of P-1, these are locations historically associated with the on-Site plumes or targeted for plume delineation.

The overall impression from the local distribution of DO is of an oxygenated aquifer, with local pockets of reduced oxygen levels where the VOC plume has persisted for the last 27 years. This distribution closely matches models of plume behavior in the literature and will be discussed further in subsequent sections of this report.

Great care was taken to collect samples from the seven new wells that were unaffected by the air-rotary drilling methods. The average delay in sampling six of the new wells after their installation was 31 days (ranging from 28 to 33 days). However, well P-19D was sampled the day after it was installed because of

time constraints on the field work and because of the delays incurred by the repairs needed for the damaged drill bit for the ODEX system. In spite of this short delay and because of the extra water removed from the well during development, the DO reading from this well (1.41 mg/L) was just slightly above the range of readings from the existing deep wells (0.53 to 1.17 mg/L) and was well below the highest DO reading (6.29 mg/L) measured at the new well P-18D, sampled 29 days after it had been installed.

5.2.4.7 Ammonia and Nitrate

In the standard sequence of carbon destruction in an aquifer (Section 5.2.2.2.2, above), after the DO is consumed and the local groundwater becomes anaerobic, nitrate-reducing bacteria may continue to degrade the organic constituents. The ammonia and nitrate results are used to determine the form of nitrogen present in the groundwater.

There appears to be nitrate present in most areas of the Site (up to 5,340 µg/L in the water table zone and 2,990 µg/L in the deep zone), with the exception of P-8 and P-16S, where concentrations were lower than 100 µg/L. Ammonia is also present in the aquifer at most locations, reaching a maximum at P-15DD at 227 µg/L. The almost ubiquitous presence of nitrate and ammonia indicate that the process of reductive dechlorination has not progressed to the nitrate-reducing step. This observation parallels the observed elevated DO levels discussed in the previous paragraphs. Apparently, even in the heart of the plume, the DO has not been depleted sufficiently to permit the process to continue to the nitrate-reduction stage.

5.2.4.8 Ferrous Iron

The next step in the electron-acceptor reaction series is the reduction of ferric iron to ferrous. Ferrous iron (iron II), the most reduced form of iron, can be soluble in groundwater and is useful as an indicator of anaerobic degradation. In using the native iron within the soils of the aquifer as an energy source, the bacteria reduce the iron from the ferric to the ferrous state, making it soluble in groundwater.

Concentrations of ferrous iron in the local groundwater samples ranged from 0.0 to only 0.6 mg/L. Since the reductive dechlorination process has not proceeded past the consumption of the available oxygen in the system, the ferric iron in the aquifer has remained unchanged, as has the nitrate, discussed above.

5.2.4.9 Sulfate and Sulfide

Sulfate may be used by bacteria in the aquifer as an electron acceptor for anaerobic biodegradation, after the DO, nitrate, and ferric iron have been depleted. This process, known as sulfate reduction, results in the production of sulfide. Sulfate concentrations that are too high would indicate sulfate reduction is

occurring at the site that could hinder reductive dechlorination. Concentrations of sulfate exceeding 20 mg/L may cause this competitive exclusion of dechlorination.

The concentrations of these two constituents at the GE Site ranged from 22 to 58 mg/L (for sulfate) and from non-detect to 0.2 mg/L (for sulfide). These data indicate that sulfate is not being depleted at any location on the Site and that sulfide is not being produced. This is not a surprise since this is the fourth step in the reductive dechlorination series and the other three steps have not been completed either.

5.2.4.10 Chloride

Chloride ions are released into the groundwater during the biodegradation of chlorinated hydrocarbons. This normally results in elevated chloride concentrations within the contaminant plume relative to background.

The concentrations of chloride ranged from 17 to 61 mg/L (at P-16S and P-8, respectively), both located in the water table zone. The average of the chloride concentrations in the background wells (31.3 mg/L in P-1, and 23.2 mg/L in P-1A) is 27.3 mg/L. In order to be considered meaningful, the concentration at a monitoring well in the plume must exceed a level of twice this concentration (or 54.5 mg/L). The only well meeting this criterion is P-8 (61 mg/L), just south of the French Sump, along the unnamed creek running beside the plant parking lot.

5.2.4.11 Total Organic Carbon

The presence of TOC in the groundwater (from either natural or anthropogenic sources) indicates a carbon and energy source is available to help drive reductive dechlorination.

Measured TOC concentrations in groundwater samples ranged from 1.3 to 6.4 mg/L, indicating that limited carbon is available at the site for an energy source during biodegradation. A review of the maps showing the distribution of TOC in the aquifer beneath the Site (Figures 5-6 and 5-7) shows a general low-level decline in the TOC concentration in the vicinity of the plume (1.3 to 4.5 mg/L) relative to the background levels at P-1 and P-1A (6.4 and 4.4 mg/L, respectively). This may indicate that the local carbon material has been partially consumed in the vicinity of the plume, as the degradation process has proceeded.

5.3 PRELIMINARY SCREENING FOR REDUCTIVE DECHLORINATION

This section presents an overview of the AFCEE (November 1996) bioattenuation screening process for certain chlorinated organic compounds. Note that this scoring method is primarily for biologically mediated reductive dechlorination. Specifically, this scoring does not take into account other biodegradative mechanisms such as aerobic biodegradation (use of the contaminant compound as carbon or energy source) or cometabolism. Therefore, even if a score is low for reductive dechlorination, the other biodegradative processes may still be significant in working to decrease the concentration of chlorinated and non-chlorinated compounds.

The analytical parameters and weighting system for the preliminary reductive dechlorination screening are presented in Table 5-3. Interpretation of the scores from this screening step is as follows:

Score	Interpretation
0 to 5	Inadequate evidence for reductive dechlorination of chlorinated organics
6 to 14	Limited evidence for reductive dechlorination of chlorinated organics
15 to 20	Adequate evidence for reductive dechlorination of chlorinated organics
> 20	Strong evidence for reductive dechlorination of chlorinated organics

From the discussions presented earlier in Section 5.0, the Site contaminants are generally amenable to natural attenuation. However, from the points awarded on screening in Table 5-3, the process of reductive chlorination is not likely to be widespread at the Site. Overall there is inadequate evidence that reductive dechlorination is occurring at the Site (Table 5-3). Only two wells, P-8 and P-11, show any indication of the potential for this process to be ongoing in June of 2004, with six points apiece. It is likely that other processes are responsible for the attenuation observed on the Site.

5.4 *MNAToolBox* SCORING

The *MNAToolBox* is a web-based tool developed by the Department of Energy at Sandia National Laboratories to determine if MNA might be an appropriate remedial action for environmental restoration sites prior to collecting extensive characterization data. *MNAToolBox* acts as a database for contaminant chemistry and degradation pathways and can be used to identify which phase transfer and degradation pathways are likely to be important. A description of the technical aspects of *MNAToolBox* is included in Appendix M.

In the *MNAToolBox* a Site Screening Scorecard is associated with each contaminant to determine if natural attenuation may be possible under site-specific conditions. The scorecard is subdivided into hydrologic and geochemical sections. Credit is given or taken away based on the presence of favorable or

unfavorable conditions. A high score approaching the maximum of 100 indicates that MNA is likely to be effective and should be investigated. A low score does not necessarily discourage consideration of MNA at a particular site; it may simply indicate that a greater level of effort to collect characterization data and conduct modeling is required to support MNA for a particular contaminant at a particular site. For the GE Site the score for TCA, DCE, and DCA is 100, indicating that MNA is very likely to be effective. Appendix M includes the facility-specific parameters input to the *MNAToolBox*.

5.5 CALCULATIONS OF CONTAMINANT MASS REDUCTIONS

The concentrations of contaminants in the local aquifer have been decreasing in many of the wells since October 1996, when the concentrations reached their latest peak. Concentrations at well P-11, the well installed to monitor the water table nearest to the French Sump, have declined from 9,000 µg/L in 1996 to non-detect in 1999 and have remained at less than 1 µg/L through the 2004 sampling event. This represents a reduction by nearly four orders of magnitude in 3 years. The closest well installed in the agricultural field, P-12, had detected no contaminants when it was last sampled in 1996, after declining from 30 µg/L in 1994. An exception to this overall decline in concentrations is at wells P-7A and P-10A, completed in the deeper aquifer zone on the GE property, which have maintained remarkably stable concentrations over the course of the investigation.

The mass of VOCs present in the groundwater plume was calculated for four sampling events during the investigation: at the start and end of the investigation, in 1989 and 2004, plus two additional times in 1993 and 1996 that represent peaks in the concentration plots. This exercise was an attempt to document the mass being removed from the system by the operating attenuation mechanisms discussed earlier in the report. Table 5-4 presents the calculations for the mass of VOCs in the local groundwater for the four events. The plot on the third page of Table 5-4 presents a summary of the calculations in graphical form.

In the process of generating the calculations shown on Table 5-4, it became apparent that a significant mass of VOCs was not being accounted for by the well samples. The problems with the calculated results were:

1. The calculated mass of the system in 1989 (33 pounds [lbs]) appears to be inadequate to represent conditions prior to the excavation of the sump, where estimates of materials disposed in the sump between 1977 and 1980 range up to 11,550 gallons.
2. The calculated mass in the aquifer <u>increased</u> between 1989 and 1993, even though the sump had been excavated in 1990, removing possibly thousands of pounds of VOCs from the system.
3. The calculated mass in the water table aquifer <u>doubled</u> between 1993 and 1996, even though all sources had been stopped years before.

One of the underlying assumptions in an estimate like this is that the distribution of contaminants is sufficiently uniform to be faithfully represented by the available wells at the Site. Well P-11 is located approximately 60 feet downgradient of the former French Sump location, where VOCs were disposed and are presumed to have existed in free-product form. However, the concentration of VOCs reaches the mg/L (parts per million) level in only 5 of the 31 samples that were collected, and it reaches its maximum concentration for all three principal contaminants in 1996, a full 6 years after the sump had been removed. This behavior suggests that there was a significant mass of product upgradient of the P-11 location prior to 1996 that the well was unable to detect. To account for this missing mass, the plot on Table 5-4 has been adjusted by adding "estimated" mass to that which had been calculated. The estimate for the 1989 data is for 10,000 gallons of material deposited, at about 8 pounds per gallon (80,000 pounds). The 200-pound estimate for the 1993 data is just a guess to get the mass to exceed the 1996 calculation, assuming that majority of the contamination was removed during the 1990 excavation.

Out of this exercise, three observations were developed:

1. The contaminant mass upgradient of P-11 has been exhausted, as evidenced by the non-detect results for the last four sampling events (since 1999).
2. The mass in the deeper zone has been fairly constant over the life of the investigation.
3. The mass in the water table zone has declined between 1996 and 2004, the two latest periods for which calculations were made.

These observations indicate that the stable mass (and concentrations) in the deep zone is being supported by transport from the shallow zone. As the mass in the water table zone becomes increasingly depleted, now that the source is gone, it appears likely that the mass in the deeper zone will also begin to erode. As the remaining contaminants in the deeper zones are drawn into the shallower, more oxygenated environment of the water table zone beneath and beyond the WWTP, their concentrations will be attenuated by action of the destructive and non-destructive mechanisms mentioned earlier in this section.

5.6 DNAPL EVALUATION

Because of the long-term impacts the presence of DNAPL could exercise over any selected remedy for this Site, this evaluation was undertaken to document the evidence for its presence or absence. The French Sump was excavated through the uppermost silt and clay layer. Waste liquids disposed in the sump would have flowed into the upper sands of the vadose zone and water table and would have partitioned into mobile (density flow) and residual (held by capillary forces) components.

Any mobile component would tend to flow until it thinned sufficiently that the capillary forces predominate and density flow no longer occurs. If enough pure phase product were disposed of, density flow would continue downward through the upper saturated sands and eventually contact the top of the silt and clay of the next layer. That layer would act as a leaky impeding layer and would tend to stop vertical DNAPL migration. The DNAPL would pool, then continue to flow laterally (assuming enough volume was disposed of) downslope (southward) on the silt/clay surface toward well P-8. This layer slopes and pinches out southward, and lateral DNAPL flow would then (assuming enough volume was disposed of) finger vertically into the bottom of the upper sands.

Any residual component would partition to adsorbed (soil partition), dissolved (groundwater partition), and vapor phases (in vadose zone). The dissolved phases would be entrained in the groundwater flow path and would therefore move first through the upper sands toward the flood plain and then through the lower clay to the lower sand (and then to the flood plain). The vapor phase would vent to the vadose zone, and the adsorbed phase would re-partition to the dissolved phase once the contaminated groundwater had moved away and been replaced by clean.

Based on this DNAPL partition and flow model, evidence is provided below for five lines of evidence from industry practice and regulatory guidance to evaluate the potential for a DNAPL source to be present at the Site (Pankow and Cherry, 1996; USEPA, January 1992; and USEPA, September 1994).

5.6.1 Maximum Dissolved Phase Concentrations

According to the DNAPL model above, the worst case groundwater concentrations would be found in the saturated sands above the silt/clay layer. This unit is monitored effectively by wells P-11 and P-8, which are screened completely across the sand unit in the downgradient and downslope direction along the top of that silt/clay unit. The highest historical concentration of TCA is 9.12 mg/L, measured at P-11, and 2.41 mg/L at P-8. As shown in the table below, these concentrations are much less than the 1% solubility screening criteria and suggest that DNAPL is no longer present. TCA is the only DNAPL candidate because both DCE and DCA are daughter products of TCA degradation and were not used at the Site.

Evaluation of DNAPL Potential for 1,1,1-TCA

Historical Maximum TCA Concentration (mg/L)	Well ID	Date	Solubility (mg/L)**	Percent of Solubility
9.12	P-11*	Oct 1996	1,500	0.61%
2.41	P-8*	Nov 1998	1,500	0.16%

* – Well P-11 is located 60 feet downslope of the former French Sump. P-8 is located 180 ft south of the French Sump, in the direction DNAPL would travel on top of the silt/clay unit.

** – See Table 5-1.

5.6.2 Concentrations in Soils

The highest concentration of TCA in vadose zone soils (30.5 mg/kg) was collected in the French Sump prior to removal (SEC, October 1991). The French Sump was constructed of large rock rubble placed in a 10-ft-wide hole. Saturated soil samples were collected from four borings around the French Sump at a depth of 8 ft bgs (water table at 6 ft bgs). While the sump was designed for vertical disposal, there would have been some lateral components as well due to the head. The highest saturated concentration was 450 mg/kg of TCA, far less than the 10,000 mg/kg target value suggested by USEPA. These results also suggest that DNAPL was not present when the borings were sampled for the 1981 RFI report.

5.6.3 Groundwater Concentrations Computed by Partitioning

The fraction of organic carbon (f_{oc}) of Site soils was estimated to be 0.01 in the 1991 RFI (SEC, October 1991). Using an organic carbon partition coefficient (k_{oc}) for TCA of 152 milliliters per gram (mL/gm) and assuming the bulk density of soils is 2.0 gm/mL and the porosity is 0.3, the theoretical pore water concentration, C_w, is 270 mg/L, which is well below the pure-phase solubility of 1,500 mg/L and far higher than any concentrations measured at the Site. This result suggests that DNAPL is not present any more at the Site..

5.6.4 Vapor Phase Concentrations

The saturated vapor concentration for TCA at 20°C is 130,000 parts per million by volume (ppmv). The highest soil gas measurement reading recorded during removal of the French Sump was 3 parts per million (ppm) (HNu reading) while screening soils to select confirmation samples. Residual DNAPL would have resulted in much higher readings.

Higher readings were recorded using an OVA for headspace readings of soil samples collected near the French Sump. Samples from borings VZ-3 and VZ-6 have readings > 1,000 ppm. These values are questionable due to the other organics present in the sump (e.g., aromatics), because the OVA was not filtered to remove methane and because the highest TCA concentration in these samples was 450 mg/kg in VZ-6-8a.

5.6.5 Recent Groundwater Concentrations

The fact that the last four samples collected from well P-11 (in the 5 years between 1999 and 2004) contained only trace amounts of VOCs is further evidence that DNAPL is no longer present in the aquifer. This well is located 60 ft downgradient of the former French Sump, and has historically produced

groundwater samples with the highest concentrations on Site. The groundwater samples from this well are now clean, which would not have happened if a DNAPL source were still present.

Based on the observations from these five lines of evidence and the potential DNAPL partitioning and transport expected at the Site, we conclude there is no longer a mobile DNAPL source remaining at the Site.

5.7 SUMMARY OF THE NATURAL ATTENUATION EVALUATION

Contaminant concentrations and plume size have been reduced from the levels seen in previous reports, and the data from the current sampling event indicate that these downward trends are continuing.

Figures 4-1, 4-2, and 4-3 document the declining trends in local groundwater concentrations. The most notable location is well P-11, where the concentrations of TCA (Figure 4-1), DCA (Figure 4-2), and DCE (Figure 4-3) have declined from hundreds of µg/L in 1996 to non-detect levels in 1999, where they remain. Figure 5-8 shows how the plumes in the shallow and deep aquifer zones have shrunk between 1989 and the present. Because there are only two sample locations in the deep plume for the earlier dates, no size comparison is possible. However, the figure shows that the water table plume has shrunk from 21 acres in 1989 to 4 acres in 2004, a factor of more than 5. The length of the plume has diminished from 2,000 feet in 1989 down to 800 feet in 2004.

Since there is no outlet for the contaminants to have reached the Rio Grande de Patillas and since the local groundwater flow system prevents the contaminants from leaving through the bottom of the aquifer, the cause for these reductions appears to be an effective natural attenuation system that has been operating to destroy Site contaminants since the releases from the French Sump began in 1977. The *MNAToolBox* (Appendix M) confirms that attenuation is likely at this Site. The presence of daughter products of TCA breakdown (1,1-DCE and 1,1-DCA) also indicates that degradation is occurring. The evaluation conducted in June indicates that contaminants in the Site groundwater will continue to naturally attenuate through various processes. The following paragraphs will present a working model of the degradation processes in action at the Site, based on the results of the analyses completed in June 2004.

5.7.1 Description of the Local Attenuation Mechanisms

The principal organic chemical deposited into the French Sump was 1,1,1-TCA, as a spent solvent, along with waste oils, plating tank wastewater, and treated wastewater sludges. These materials would have formed an organic chemical "soup" that was high in chlorinated solvents (TCA), rich in organic carbon (the oils and petroleum materials dissolved in the spent TCA), and with active microbial populations (from the wastewater sludges). The presence of daughter products of TCA breakdown not only confirms

that degradation is occurring, but also suggests the mechanism by which it is operating. The small size of the TCA plume (principally located around a single well, first P-11 and now P-8), relative to the size its daughter product plumes, indicates the speed of the breakdown because large concentrations of TCA were not able to migrate very far from its source.

Figure 5-1 indicates that the production of 1,1-DCA occurs by the reductive dechlorination of TCA. However, the data from June 2004 do not indicate that conditions are currently favorable for that process to occur. Apparently, since the DCA is present in the groundwater, that process must have been active in the past, even though it is no longer operating. It seems reasonable to conceive of a short time frame at the start of the disposal history at the Site, during which the conditions in the aquifer around the French Sump became anaerobic and the high load of available organic carbon allowed the reductive dechlorination process to begin. However, once the initial conditions changed (the organic carbon was depleted, or the plume became too dispersed and diluted, or the sump was excavated), the reactions slowed and allowed the anaerobic conditions to become aerobic, the reductive chlorination process could not be maintained (the production of DCA stopped), and other processes took over.

The DCA found in the local groundwater as a product of the TCA breakdown is not likely to disappear quickly. Its principal mode of breakdown is through reductive dechlorination (Figure 5-1), which requires anaerobic conditions and elevated levels of available organic carbon, neither of which is present at the Site. An alternative pathway is through hydrolysis, but that reaction has a reported half-life of 60 years and seems unlikely to have contributed to the mass reductions we have seen in the aquifer to date. It appears that the DCA found in the aquifer currently will dissipate only through dispersion, volatilization, and other non-destructive attenuation mechanisms mentioned earlier in this section.

Again, referring to Figure 5-1, it can be seen that the breakdown of TCA can also occur through the abiotic processes of elimination (to produce 1,1-DCE) and hydrolysis (to produce acetic acid). These processes are independent of biological intervention and can occur in oxygenated groundwater. These reactions can be rapid, with reported half-lives ranging from 1.1 to 2.5 years. The warmer waters present at the Site may accelerate the process beyond these published rates. The depressed pH near the source area of the plume, near wells P-11 and P-8, may have resulted from the production of acetic acid in the process of destroying the TCA.

Once the DCE has been created, it can degrade by reductive dechlorination to vinyl chloride (Figure 5-1). For the same reasons put forward for the DCA, this is not likely to occur in the oxygen-rich, carbon-poor environment found in the local aquifer. The depressed DO levels at P-7A, P-10A, and P-17D may indicate that the process was begun, but was not carried very far because of insufficient carbon or too much oxygen carried in by recharge. Any vinyl chloride produced by this process would be rapidly oxidized to carbon dioxide and water and chloride ions and would not build up in the aquifer.

An alternative mechanism by which DCE can degrade is through abiotic oxidation directly to carbon dioxide, water, and chloride ions. This may be occurring in the more oxygenated areas of the plume, such as at the water table and at the plume margins.

Since the chloride ions created by the degradation processes at the Site do not appear to be building up in the downgradient areas of the aquifer, it appears that they are being swept away in the local groundwater flow at a rate in excess of their production. The high rates of groundwater flow calculated in Section 3 and the relatively slower rates of the abiotic reactions active at the Site make this possible.

In summary, it appears that the Site has undergone an evolving degradation system, which started as a Type 1 environment around the French Sump (elevated anthropogenic carbon, in the form of petroleum products dissolved in the spent TCA) that supported the initial reductive dechlorination of the TCA. Once the carbon was removed (consumed in the process or excavated when the sump was remediated), the environment became more similar to Type 3 conditions (DO near 1 mg/L and low carbon content). Under these conditions, reductive dechlorination (of TCA and DCA) will not proceed, but the hydrolysis of TCA and the oxidation of DCE and vinyl chloride are possible.

The small size of the plume in 2004, as compared with its much larger size in 1989, indicates that natural attenuation processes are effective in remediating the aquifer. The mass of contaminants in the water table zone on-Site is close to depleted, and the flushing of the deeper zones will bring the contaminants there into contact with the oxygen-rich water table zone beneath the flood plain, where they will be oxidized.

5.7.2 Assessment of Natural Attenuation as a Remedial Alternative

In 1999, the USEPA published a directive on the use of MNA as a remedial alternative at contaminated sites in the United States (USEPA, April 1999). In that Directive the authors established certain expectations regarding the conditions that would make a site amenable to the use of MNA, while still protecting human health and the environment. In this section of the report, the conditions at the Patillas Site are compared to the expectations published in the Directive in order to understand the applicability of MNA to the local groundwater conditions. Table 5-5 is a summary of the assessment that is presented in the following paragraphs.

As stated in the directive, that even while discussing the application of MNA to contaminated soils and groundwater *"EPA remains fully committed to its goals of protecting human health and the environment…"* (page 1, of USEPA, April 1999). With those goals in mind, the directive discusses USEPA's expectations for sites that will be able to use MNA to good advantage. These expectations include:

- Achieving established remediation objectives, (such as control of sources, prevention of plume migration, and restoration of groundwater to beneficial uses, pages 2, 13, 17, and 22)
- Achieving those objectives within a reasonable time frame (pages 2 and 13)
- Implementation of a well-designed monitoring program, with a back-up contingency plan if MNA is not sufficient (page 2)
- Addressing contaminants that will be destroyed, rather than being transferred to another medium (pages 3 and 6)
- Addressing ALL Site contaminants (page 5)
- Preventing additional media or receptors from becoming exposed or impacted by Site contaminants (page 6)
- MNA will seldom be the SOLE remedy, but will follow other technologies dealing with source control or removal of contaminant mass from more highly contaminated areas (pages 2, 10, and 17)
- Processes identified are not likely to be reversed if conditions were to change (page 8)
- The MNA process should be thoroughly supported with site-specific data, including 1) historical evidence of declining concentrations, plume size, and mass, 2) documentation of the MNA processes that are active at the Site in reducing the concentrations or destroying the contamination, and 3) possibly lab or field scale studies that document the existence of a particular biologic population to effectively remediate the Site (pages 13 and 16)
- That groundwater plumes that are stable or shrinking would be the best candidates for MNA (page 18)

Table 5-5 is a summary of these expectations and the Site conditions with which they are largely satisfied.

- At the Patillas location, the source is well understood (the French Sump), and it was removed 14 years ago in 1990.
- The plume is currently less that half its length in 1989, before the Sump was removed, and covers only one-fifth its former area.
- Concentrations of contaminants in all but two wells are declining, and the processes by which they are declining were presented in great detail earlier in this chapter.
- The plume in the groundwater extends beneath the floodplain for the Rio Grande de Patillas, but has never reached a surface water body. The land is in use for agricultural purposes, and is subject to flooding, so it is unlikely to be used for dwellings or water supply wells. Therefore,

there are few opportunities for either ecological or human receptors to become exposed to the contaminants in the plume.

- The installation of the new wells into the downgradient part of the aquifer has improved the monitoring well network for the Site, and will enable GE to accurately monitor the performance of the MNA processes while achieving the Site remediation goals.
- Based on the projected concentrations trends on Figures 4-1 and 4-3, a time frame of about 15 years has been estimated for the Site to achieve groundwater concentrations below MCLs at the Site. This estimate can be refined by additional studies, but appears reasonable in light of the reduction in plume length, area, and concentration already achieved in the 14 years since the Sump was removed.

In summary, it appears that MNA is working at the Site, and will continue to work and be effective in achieving remediation goals for the Site. The principal concerns of the 1999 Directive have been satisfied (source removal and a shrinking plume), and a monitoring network is in place to monitor the progress into the future.

6.0 CONCLUSIONS

This section presents the integration of the results obtained to date and addresses each of the objectives stated in the Work Plan. In the past, USEPA staff had expressed three concerns: 1) that the extent of downgradient contamination had not been adequately characterized, 2) that the presence of recoverable DNAPL had not been discounted, and 3) that information to implement a natural attenuation corrective measure was insufficient. As stated in the introduction of this report and in the Work Plan, the primary objectives of the SRFI for the Site were as follows:

- Document the downgradient extent of the VOCs in the aquifer beneath the agricultural fields, thereby addressing the GPRA EIs for control of human health exposure (CA-725) and control of groundwater contamination migration (CA-750), and
- Further evaluate the feasibility of a MNA remedy at the Site.

6.1 NATURE AND EXTENT OF CONTAMINATION

The understanding of the extent of contaminant occurrence in the groundwater has been expanded by the installation of seven new wells in the area downgradient of the existing wells installed during the RFI. The following discussion summarizes that understanding and presents a summary of the historical behavior of the plume up to the present.

6.1.1 Current Extent of Contamination

At this facility, deep soils and groundwater were impacted by waste handling operations at the French Sump. The sump and associated contaminated soils were removed in 1990 and were shipped off-Site for disposal. Groundwater contaminated with VOCs remains on-Site and has traveled downgradient beneath properties adjacent to the GE operations.

The groundwater at the Site has been impacted to a depth of approximately 80 feet. This contamination has spread laterally to beneath the agricultural fields to the southwest of the Site. The extent of the VOCs in the groundwater has been fully delineated in all aquifer units although in the deepest unit beneath the WWTP the bottom of the DCE plume has been mapped to only 100 µg/L. The principal contaminants identified in this SRFI report are:

Exceeds an MCL and a PRG	Exceeds an MCL	Exceeds a PRG
1,1-Dichloroethene Tetrachloroethene Vinyl Chloride	1,1,1-Trichloroethane	1,2-Dichloroethane Trichloroethene

The plume has not migrated to the point where it has discharged into the Rio Grande de Patillas. Well pairs P-13S/D and P-14S/D, near the riverbank, have detected no VOCs between 1991 and 1996, during the period when that discharge could have been occurring.

The size of the plume in the water table zone is shrinking (from over 20 acres and 2,000 feet long in 1989 to less than 4 acres and 800 feet long in 2004) (Figure 5-8), and, with few exceptions, contaminant concentrations in each monitoring well have been decreasing over the course of the local investigations (Figures 4-1, 4-2, and 4-3). Those wells generally experiencing stable contaminant concentrations are limited to the deep aquifer zone, downgradient of the French Sump (wells P-7A and P-10A).

Compelling evidence indicates the presence of an effective natural system that is actively working without human intervention to destroy the VOCs in all aquifer zones monitored. Multiple lines of evidence document the loss of some VOCs, the accumulation of others, and the release of daughter products that corresponds with the active destruction of contaminants in the local aquifers. During the course of the investigations at the GE Site, groundwater contamination levels have been reduced by up to four orders of magnitude (at P-11, reduced from 9,000 µg/L to less than 1 µg/L for the last four sampling events, since 1999).

6.1.2 Mass Reductions

Calculations of contaminant mass in the aquifer show evidence of losses of mass from the water table aquifer zone and evidence of stable mass in the deeper zone. These calculations are confirmed by the reductions in concentrations in many of the wells and the overall decrease in plume dimensions since the investigations at the Site were started in late 1980s.

6.2 UPDATED CONCEPTUAL SITE MODEL

This conclusions section will start with an update of the Conceptual Site Model based on a review of the data presented in the preceding sections and in the previous reports prepared for the Site. This update of the Conceptual Site Model presents the current understanding of the nature of the sources, release mechanisms, transport pathways, and exposure media at the Site. This requires an understanding and integration of the data presented in previous sections.

6.2.1 Sources

At the GE Facility in Patillas, operations at the French Sump resulted in deposition of waste products to the local soil and groundwater. Volumes of material released at the sump are not available, but the USEPA Superfund notification form submitted by GE in June of 1981 showed an estimate of 11,550

gallons. Other plant areas with the potential to impact the local soil and groundwater quality were investigated and were found to have had no impact, and subsequent investigation efforts at the facility focused on the former French Sump.

In October 1990, the sump was excavated, and the rocky drainage materials and contaminated soils in the vicinity of the sump were removed and shipped off-Site for disposal. Confirmation sampling results were sufficient for USEPA to consider the unit closed.

6.2.2 Source Media

After the removal of the French Sump, there probably remained some residual contamination in the vadose zone and saturated soils around the former sump location. Now that the groundwater at well P-11 is clean, it appears that those residually contaminated soils have been cleaned and are no longer providing dissolved materials to the VOC plume. Currently, the only remaining source media on the GE Site is the locally elevated concentrations in groundwater that continue to disperse into other, less contaminated areas. This secondary source will continue to disperse dissolved contamination until exhausted, but the rate of that dispersion will slow as the mass is dissipated.

6.2.3 Contaminant Transport

The contaminants in the aquifer zones are being transported to the south-southwest with the groundwater flow toward the Rio Grande de Patillas. In the vicinity of the GE Plant, the groundwater flow has a downward gradient, and contaminants are being transported to deeper zones in the aquifer. Beneath the agricultural fields to the west of the Site, at a location between wells P-12 and P-19, it appears that the gradient between the shallow and deep aquifer zones is reversed and the groundwater rises from the deep zone to the water table and eventually discharges to the Rio Grande. In this area, the local contaminants are subject to being transported from deep to shallow units in the aquifer. Even though there have been no confining beds identified in the subsurface, the local aquifer hydraulics serves to limit the vertical extent of contaminant migration by the nature of these flow system dynamics.

Even though the Quebrada Mamey Rio Chico has been mentioned in past reports as a potential discharge location for the local groundwater plume, it appears that the elevation of its riverbed is above the level of the water table at P-12. This means that when it is flowing, the Rio Chico may actually act to recharge the aquifer, rather than the aquifer discharge to the Rio Chico.

In the time since 1989, when the first plume maps were created for this Site, the plume length has shortened from approximately 2,000 feet to 800 feet. In the last four sampling events (since 1999), the groundwater at well P-11, 60 feet downgradient of the French Sump location, has been clean. This

indicates that the plume is no longer connected to its source area and is shrinking from both its upgradient and downgradient ends.

6.2.4 Exposure Media

In the discussions that follow, each of the potential exposure media will be discussed, in turn, to describe its occurrence and the likelihood that it presents exposures to populations at the Study Area.

Soil – The mode of deposition while the French Sump was operational was by pouring liquid wastes through a manhole at the surface. This was a subsurface release, not impacting the surface soils. The principal load of contamination deposited in those subsurface soils was removed in 1990. For the past five years (since 1999), the groundwater at well P-11 has been clean, indicating that the residual contamination left after that removal effort is now gone. There is no complete pathway for exposure to local soil.

Groundwater – Local homeowners and businesses in the town are supplied water from the PR Aqueduct and Sewer Authority (PRASA) wells for the town of Patillas. Over the footprint of the plume, there exists only the WWTP and agricultural fields for the raising of cattle and plantains. No wells are known to exist in this area, including wells for irrigation. There is no complete pathway for current exposures to groundwater.

Surface Water in the Quebrada Mamey Rio Chico – The elevation of the riverbed for the Rio Chico is higher than the groundwater elevations measured at P-12. This indicates that the groundwater in the aquifer flows beneath this intermittent stream on its way to the Rio Grande and does not discharge into it.

Surface Water in the Rio Grande de Patillas – The Rio Grande, located approximately 2,700 feet to the south-southwest of the French Sump at the GE Site along a groundwater flow line, is the ultimate fate for the local groundwater. The well pairs at P-13 and P-14, located near the Rio Grande, were sampled on eight occasions from 1991 through 1996, and no contamination was detected during that time. Since then, the downgradient plume margin has migrated back toward the Site and was found to be within 1,000 feet of the former sump location (or 1,700 feet upgradient from the river). Because of the location of the plume edge and the observation that the plume has been shrinking for the past several years, the Rio Grande is not an exposure point for the local groundwater plume.

Indoor Air in the Playa – The only structure standing over the footprint of the groundwater plume is the WWTP located across the street from the GE Site. The office/lab structure at the plant is built to provide continuous ventilation by open metal louvers, providing no opportunity to trap soil gas vapors. As a result, there is no complete pathway for the current exposure to indoor air.

6.3 EVALUATION OF MONITORED NATURAL ATTENUATION

The Office of Solid Waste and Emergency Response (OSWER) Directive on MNA (USEPA, April 1999) describes three "lines of evidence" that are useful to evaluate the potential efficacy of a MNA corrective measure:

1. Historically decreasing trends in concentrations and/or mass of contaminants in the local aquifers.
2. Hydrogeologic and geochemical data to indirectly determine the types of processes active at the Site and the rates at which contaminant levels will be reduced.
3. Field or microcosm studies that directly demonstrate the occurrence of an effective process acting to reduce the contaminant concentrations.

The current investigation at the Site, coupled with the body of data accumulated over the previous investigations, has confirmed through all three of these lines of evidence that the natural attenuation processes in place at the Site are effective at destroying the local contaminants. No microcosm studies were undertaken because it appears that the principal degradation pathways for this Site are abiotic. The data for each of these lines of evidence are outlined below.

6.3.1 Historical Reductions in Plume Size, Concentration, and Contaminant Mass

In the period from 1989 to 2004, the plume of DCE in the groundwater has diminished in both area and length. Figure 5-8 indicates that the size of the plume in the water table zone has been reduced from over 20 acres and 2,000 feet long in 1989 to less than 4 acres and 800 feet long in 2004.

During the entire period that the quality of the Site groundwater has been monitored, there have been consistent measurements showing the decline of contaminant concentrations coinciding with the reduction of plume size in the local aquifer. Even though the groundwater sample results from many wells have shown periodic short-term increases in concentrations over the sampling period, these peaks are always followed by sharp declines to lower concentration levels. Of prime significance for this evaluation is the observation that the contaminant concentrations in samples from well P-11 have been below their screening levels (in many cases down to non-detect) since December 1999. This is significant because this well is closest to the French Sump and has historically generated samples with the highest contaminant concentrations on the Site. This 4.5-year period of clean samples indicates that any remaining source of contamination at the French Sump (probably residual DNAPL) that had been left in place after the excavation in 1990 has been depleted and can no longer contribute contaminants to the local aquifer.

Calculations of contaminant mass in the aquifer both on and off the Site have declined between 1996 and 2004. The mass calculated to remain in the water table zone of the aquifer has been reduced from 74 lbs in 1996 to 10 lbs in 2004. The mass in the deeper zone has remained stable at about 23 pounds, but is anticipated to start showing declines because the water table zone will no longer be able to supply the deeper zone with a continuing contaminant load.

6.3.2 Process Evaluation

Contaminants at the Site will continue to attenuate through various natural biotic and abiotic processes such as reductive dechlorination, aerobic biodegradation, cometabolism, advection, dispersion, hydrolysis, and volatilization. The reduction in the mass of parent material (1,1,1-TCA), the very small size of the TCA plume, and the presence of daughter products indicate that degradation of the chlorinated solvents is occurring. Using the natural attenuation evaluation data collected in June 2004 in concert with the analytical results collected over the preceding fifteen years, the following degradation processes have been identified:

1. The presence of 1,1-DCA in the local groundwater indicates that the parent product (1,1,1-TCA) was degraded, at least in part, by reductive dechlorination processes at some period in the past.
2. The presence of 1,1-DCE as the principal and most wide-spread contaminant in the groundwater indicates that the TCA was also degraded by abiotic elimination/hydrolysis reactions in the aquifer. This appears to be occurring at the present.
3. The current conditions show that most areas of the chlorinated solvent plume have positive ORP values; elevated levels of DO, nitrate, and sulfate; and no ferrous iron. These data indicate that oxidizing conditions predominate in the plume areas and that reductive dechlorination is not presently occurring. The further breakdown of the DCE will continue through abiotic oxidation reactions.
4. The results of the *MNAToolBox* calculation at the Sandia Lab website (www.sandia.gov/eesector/gs/gc/na/mnahome.html) indicate a score of 100 (Appendix M), which means that MNA should be highly considered as a corrective measure for this Site.

The information presented on Table ES-1 indicates that many of the conditions expected by USEPA for a Site to be amenable for MNA have been satisfied by the GE Site in Patillas, Puerto Rico. The most important points are:

- the source in the soils has been removed,
- there is no evidence of DNAPL in the groundwater,

- the dissolved phase of the plume is shrinking, from an estimated size of 20 acres in 1989 down to 4 acres in 2004, and
- the natural processes involved in the destruction of the contaminants have been described and are not subject to being altered.

Therefore, evidence indicates that NA is an effective remedy and acceptable groundwater quality standards will be achieved in a reasonable timeframe. The mass of contaminants in the water table zone on-Site is close to depleted, and the flushing of the deeper zones will bring the contaminants there into contact with the oxygen-rich water table zone beneath the flood plain where they will be oxidized and destroyed.

6.4 CONCLUSION

The three concerns voiced by the USEPA in 2000 and 2003 have been addressed in the following manner:

1. The extent of off-Site contamination in the groundwater has been delineated and has been found to be much smaller than at earlier times,
2. An assessment of five lines of evidence indicates that DNAPL is no longer present at the Site, and
3. Sufficient data were collected in 2004 to describe the natural attenuation mechanisms operating to destroy the contaminants in the local aquifer, and these new data are consistent with the groundwater quality data that have been collected over the past 15 years.

Now that these concerns have been addressed, it appears that the MNA alternative selected in 1993 was justified and should be continued. We propose to return to annual monitoring of groundwater quality to confirm the remedy is performing as anticipated.

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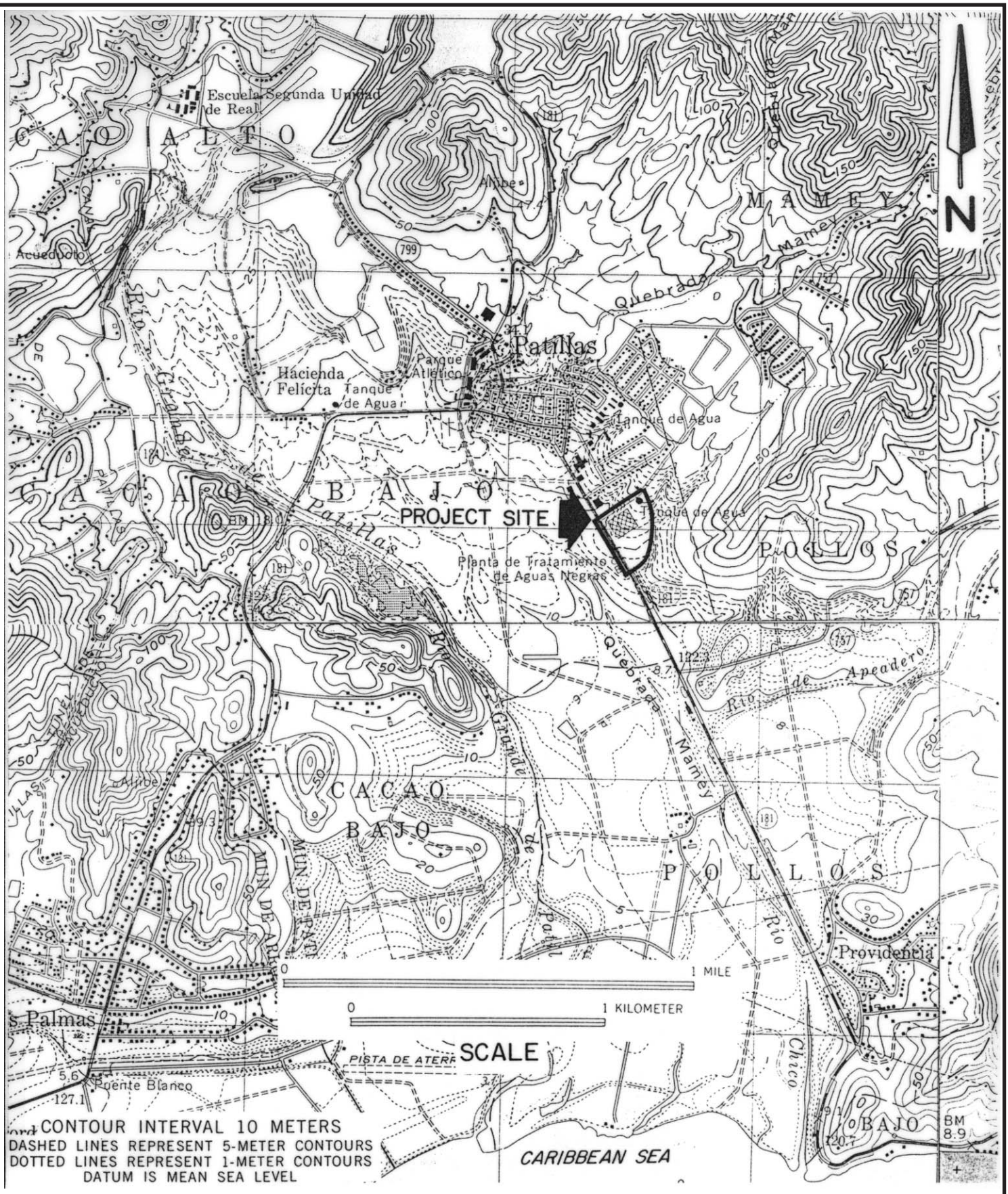
FIGURES



Location Map
Puerto Rico

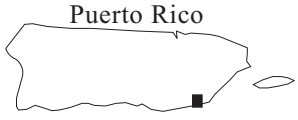


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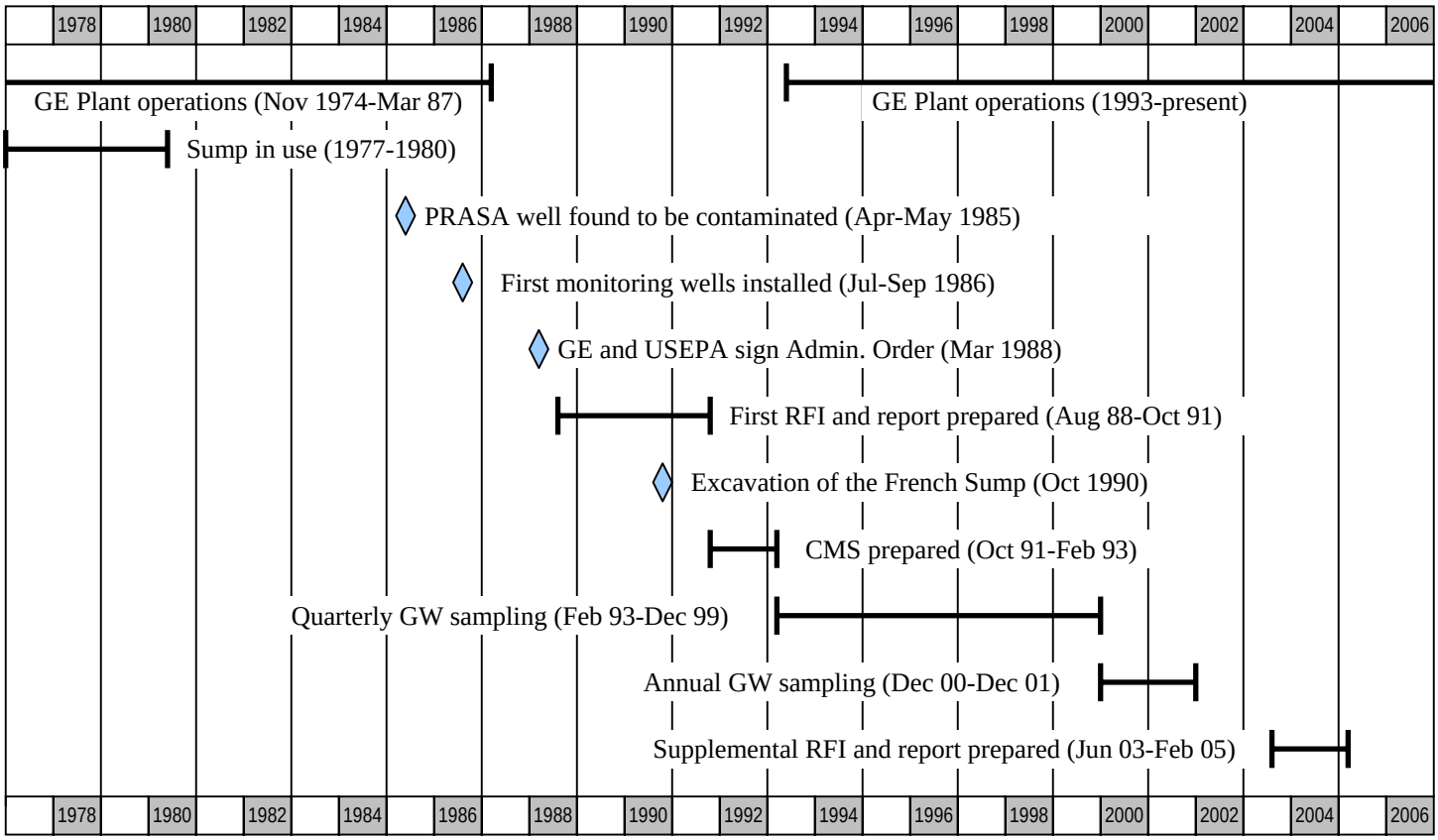
Figure 1-1
Study Area Location

GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico



EarthTech
A Tyco International Ltd. Company

Figure 1-2
Timeline of Historical Site Activities

GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico

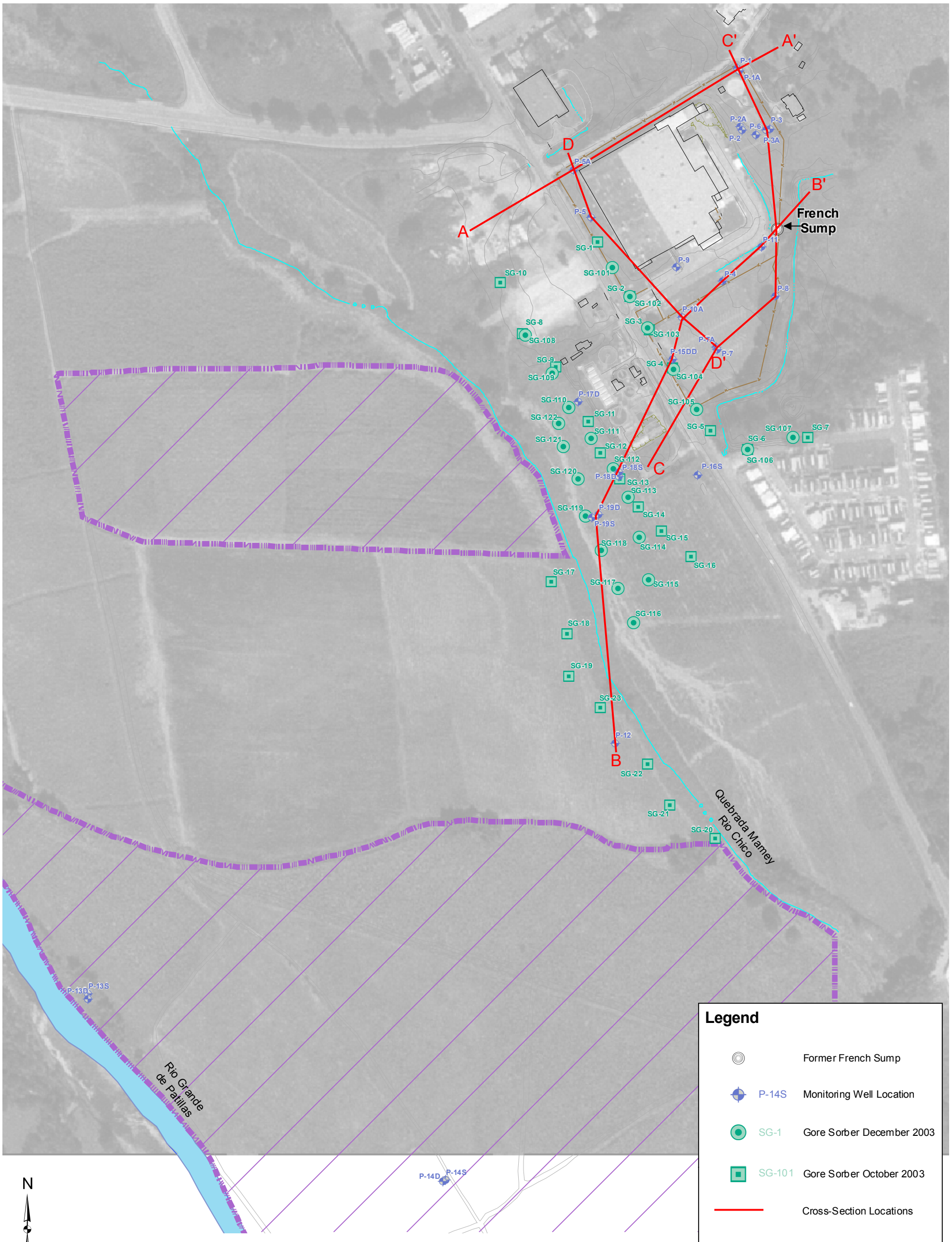


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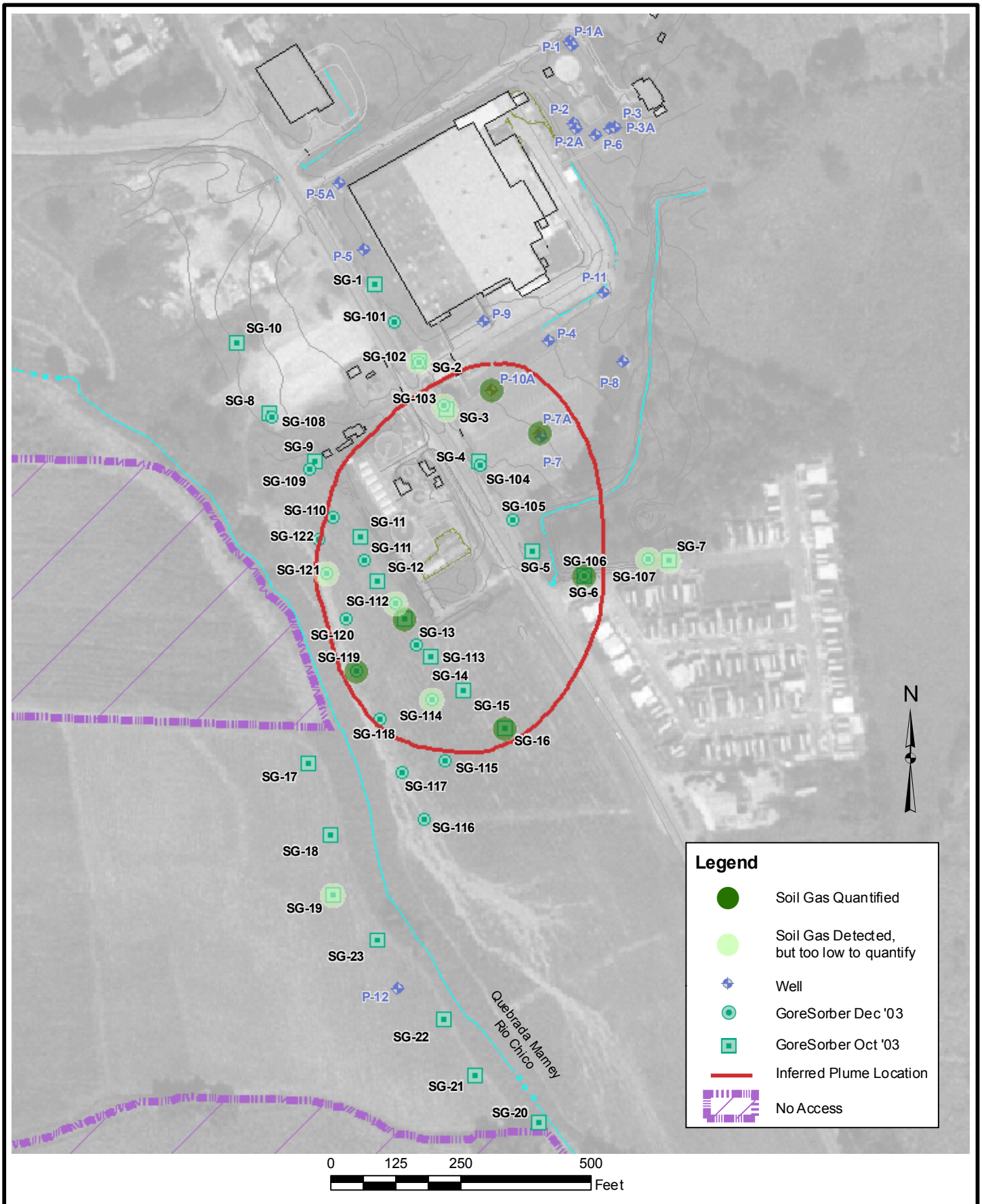
Figure 2-1
SRFI Sampling Locations

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 2-1.mxd



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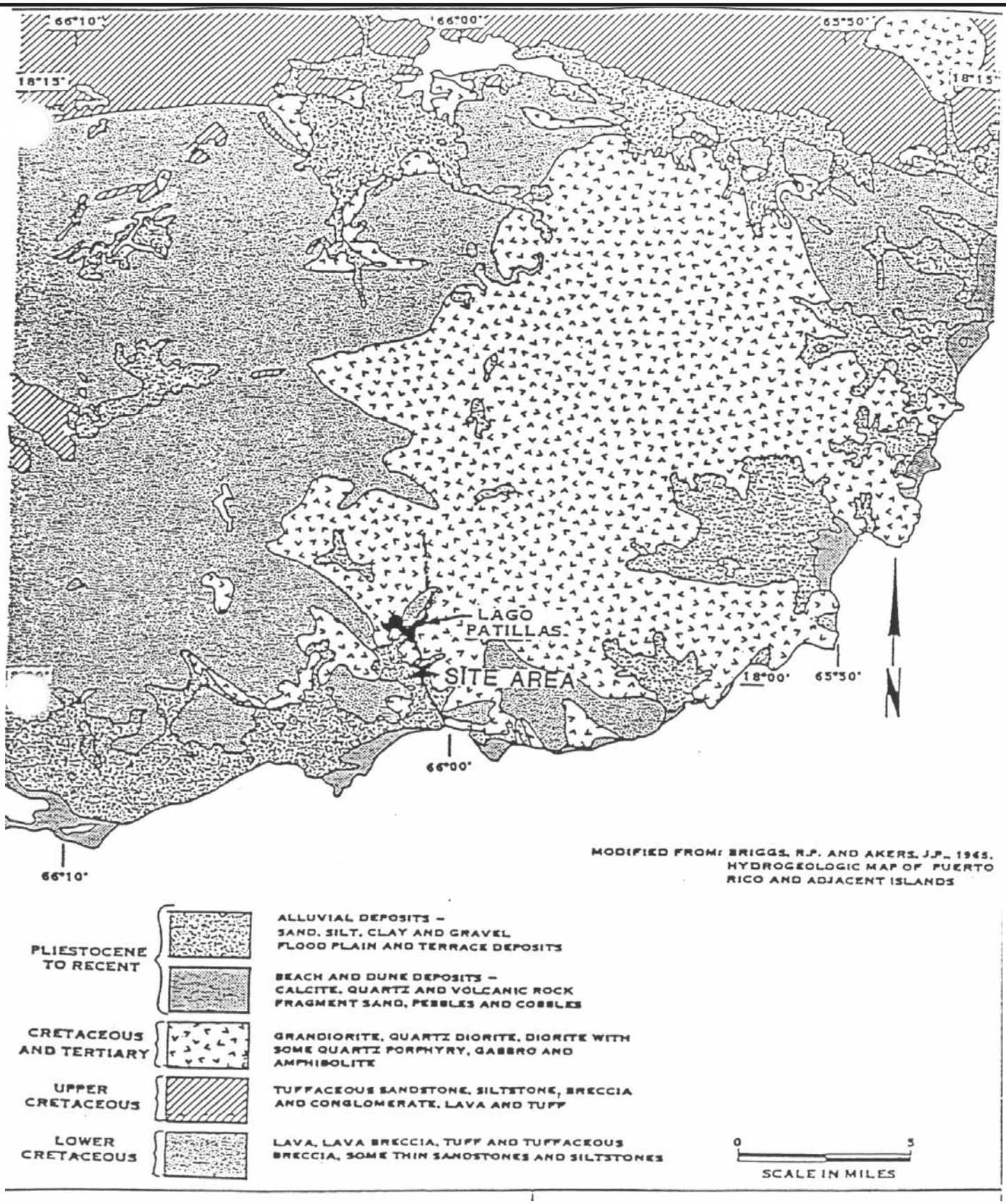
A Tyco International Ltd. Company

Figure 2-2
Soil-Gas Results and Inferred Plume Location

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 2-2.mxd



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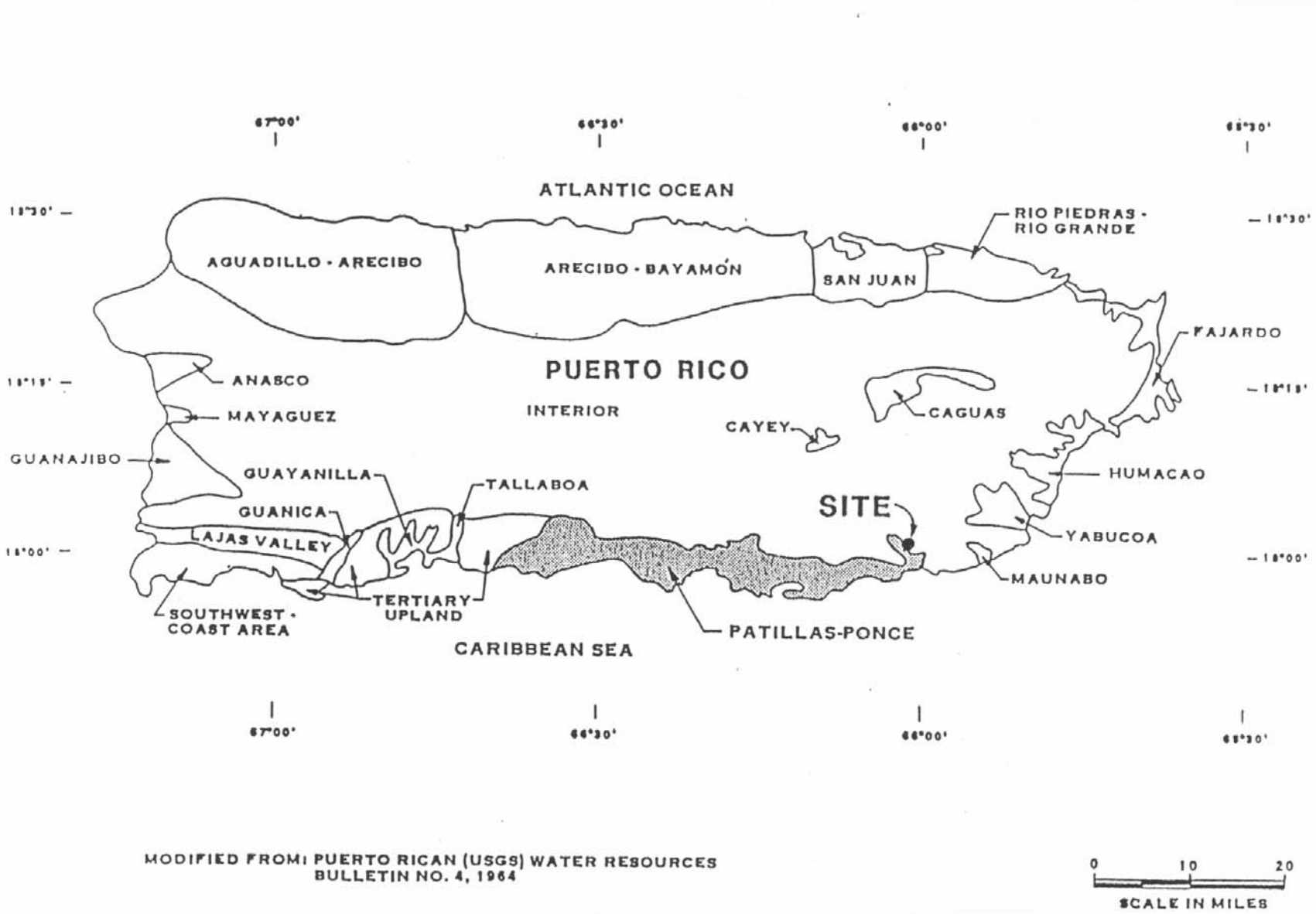
A Tyco International Ltd. Company

Figure 3-1
Subregional Geologic Map

GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico



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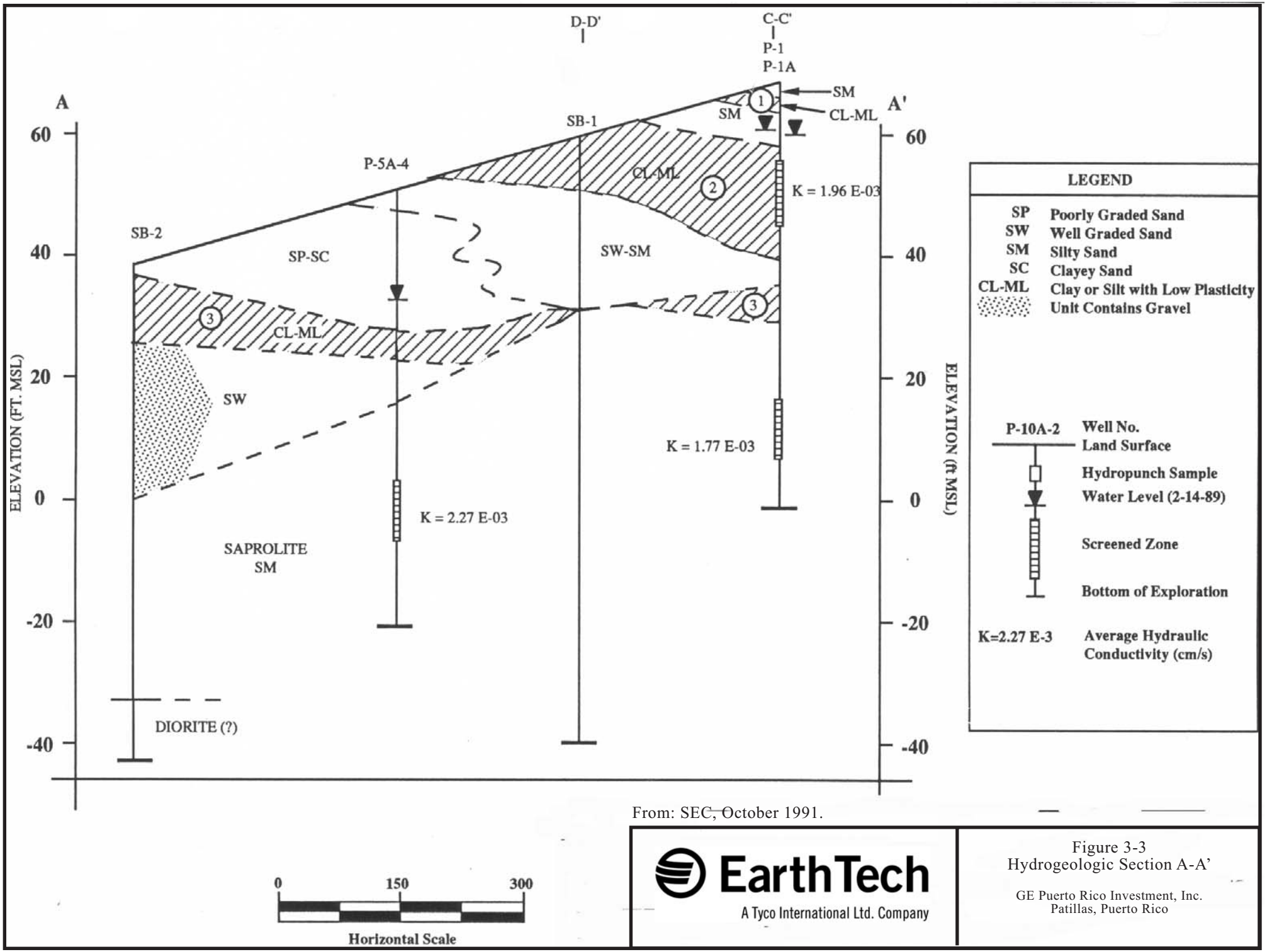
A Tyco International Ltd. Company

Figure 3-2
Groundwater Development Areas in Puerto Rico

GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico



From: SEC, October 1991.

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Figure 3-3
Hydrogeologic Section A-A'

GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico

B

B'

WASTE WATER TREATMENT PLANT

GE PROPERTY

D-D'

C-C'

FORMER FRENCH SUMP

UNNAMED STREAM

ELEVATION (FT. MSL)

60
40
20
0
-20
-40
-60

QUEBRADA MAMEY
RIO CHICO

P-12
P-19S
P-19D
P-18S
P-18D
P-15DD
HP-1
P-10A-1
P-10A-2
P-4
P-4A
P-11
(VZ-10)
VZ-6
(HP-4)
VZ-4
VZ-2

FILL
ML
SP
(FROM 6/6/95)
GW
CL
SW
CL-ML
GP-GC
SP-SM
SW-SC
SW-SM
SM
SM-ML
SW-SM
SP-SM
ALLUVIUM/COLLUVIUM
SAPROLITE
BEDROCK
DIORITE
(WELL P-4A ABANDONED 1989)

0 150 300
HORIZONTAL SCALE IN FEET

LEGEND:

- SHALLOW AQUIFER WATER LEVEL SAMPLED ON 6/28/04
- DEEP AQUIFER WATER LEVEL SAMPLED ON 6/28/04
- SCREENED ZONE
- HYDROPUNCH SAMPLE
- BOTTOM OF EXPLORATION
- UNITS WITH LOW PERMEABILITY
- UNITS WITH INTERMEDIATE PERMEABILITY
- UNITS WITH HIGH PERMEABILITY
- GRAVEL PRESENT

SYMBOL	BRIEF DESCRIPTION
CL	CLAY, LOW PLASTICITY
CL-ML	CLAY, LOW PLASTICITY, SILTY
ML	SILT, LOW PLASTICITY
SM	SAND, SILTY
SP	SAND, POORLY GRADED
SP-SM	SAND, POORLY GRADED, SILTY
SW	SAND, WELL GRADED
SW-SC	SAND, WELL GRADED, CLAYEY
SW-SM	SAND, WELL GRADED, SILTY
GP-GC	GRAVEL, POORLY GRADED
GW	GRAVEL, WELL GRADED

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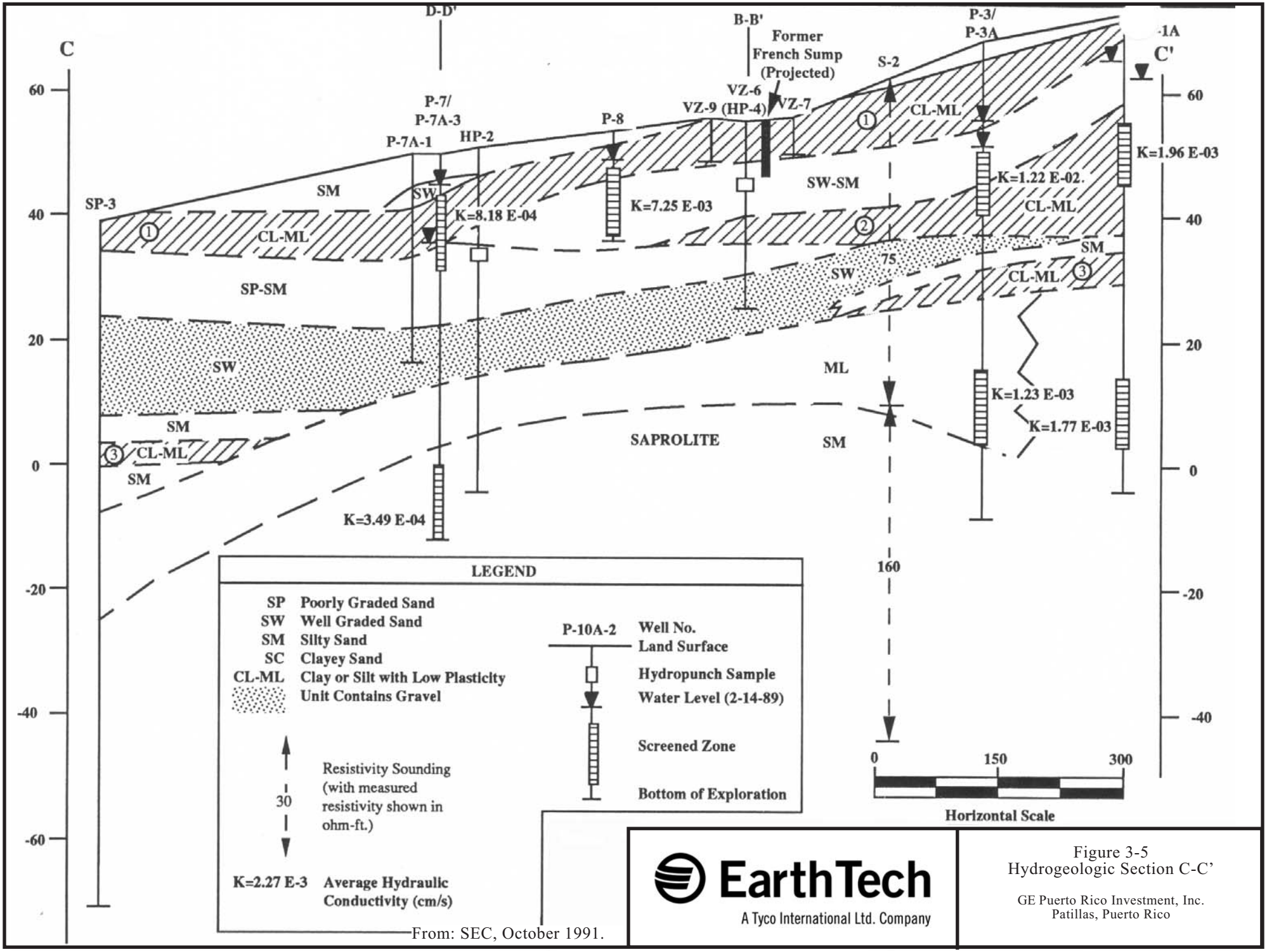
Figure 3-4
Hydrogeologic Section B-B'

GE Puerto Rico Investment Inc. Facility
Patillas, Puerto Rico

L:\work\76058\CADD\GE Patillas X-SECT B-B_Jan05.dwg, 2/9/2005 4:46:58 PM, keith.pranke



From: SEC, October 1991.

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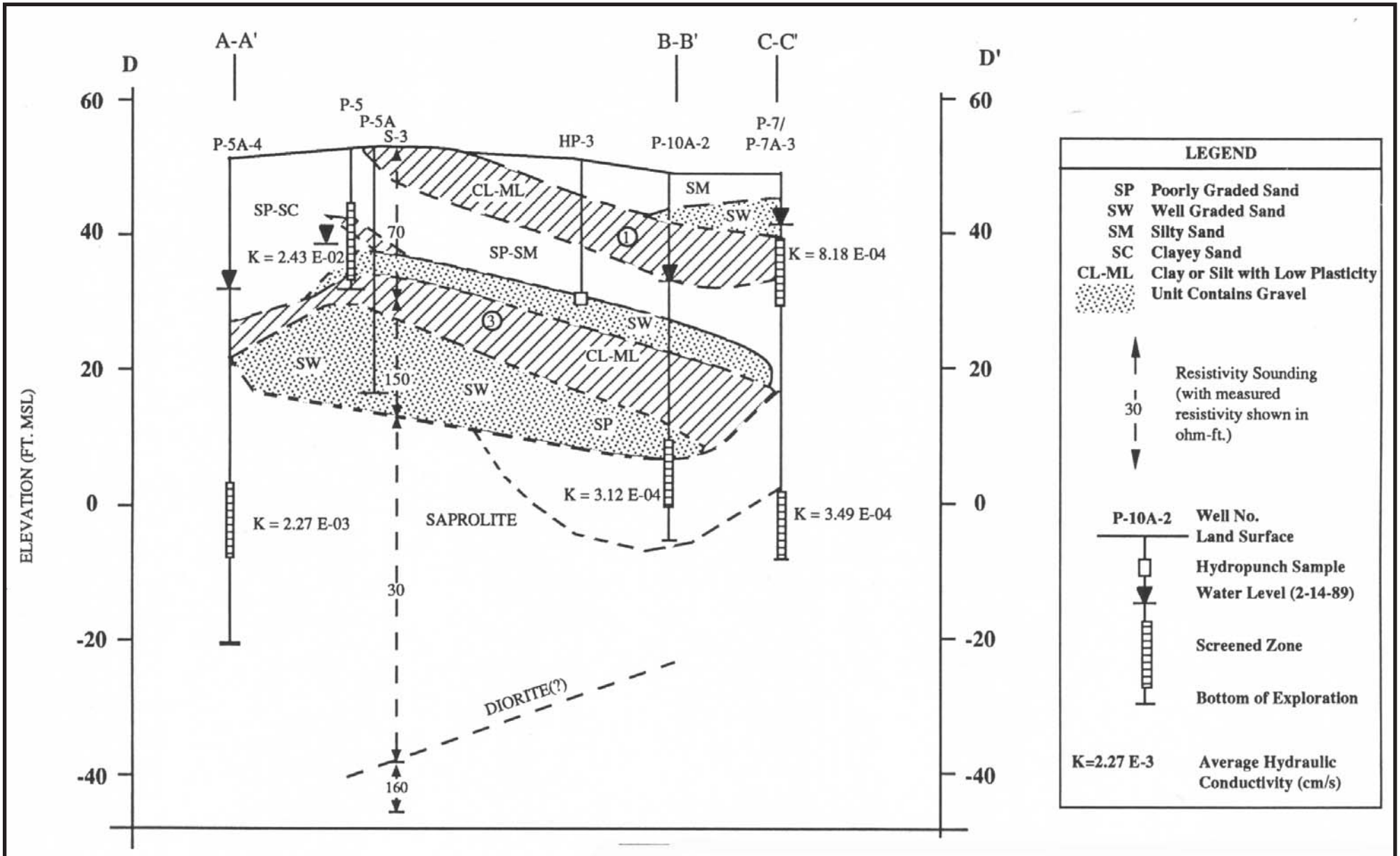
A Tyco International Ltd. Company

Figure 3-5
Hydrogeologic Section C-C'

GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico



From: SEC, October 1991.

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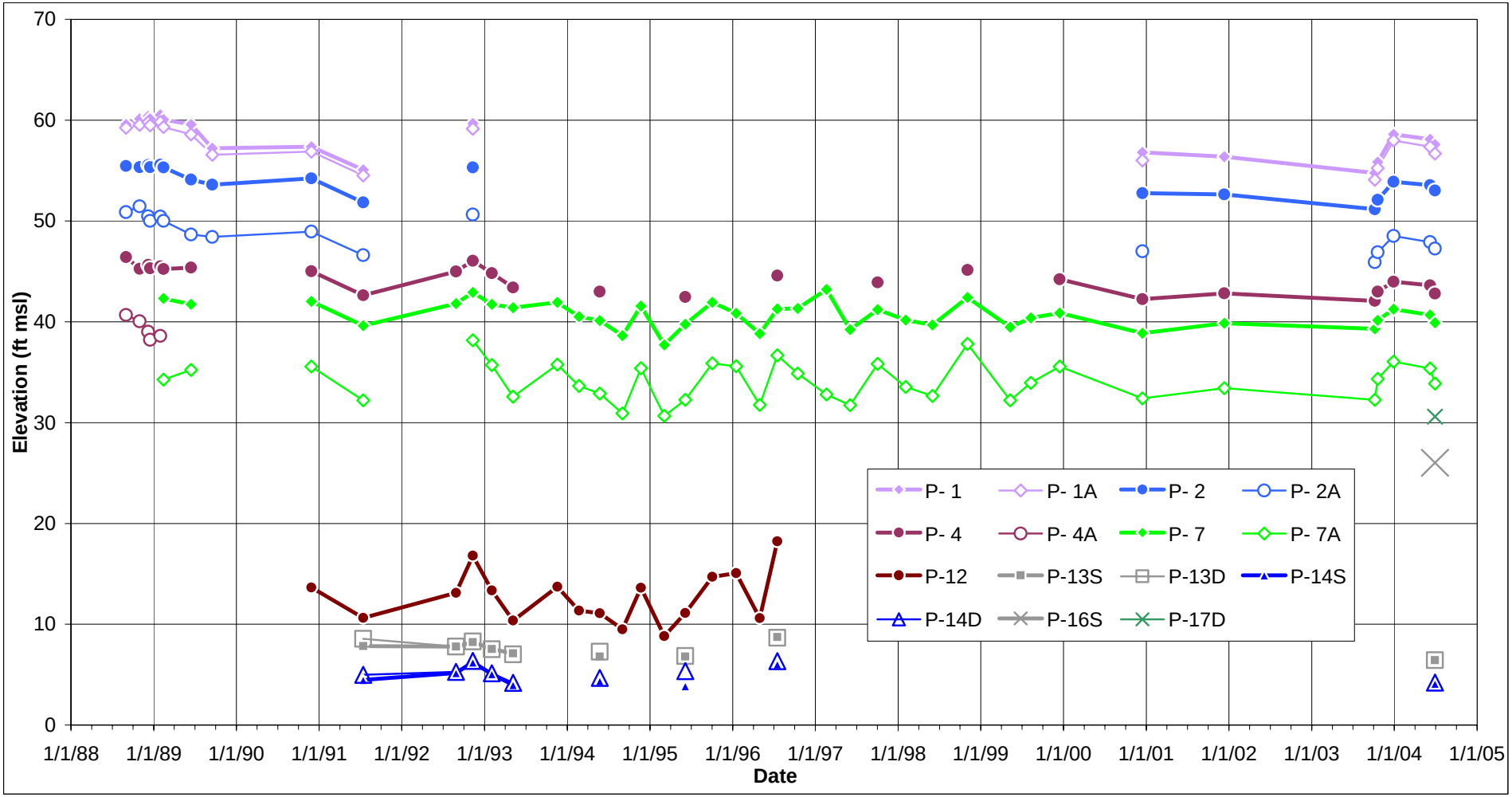
A Tyco International Ltd. Company

Figure 3-6
Hydrogeologic Section D-D'

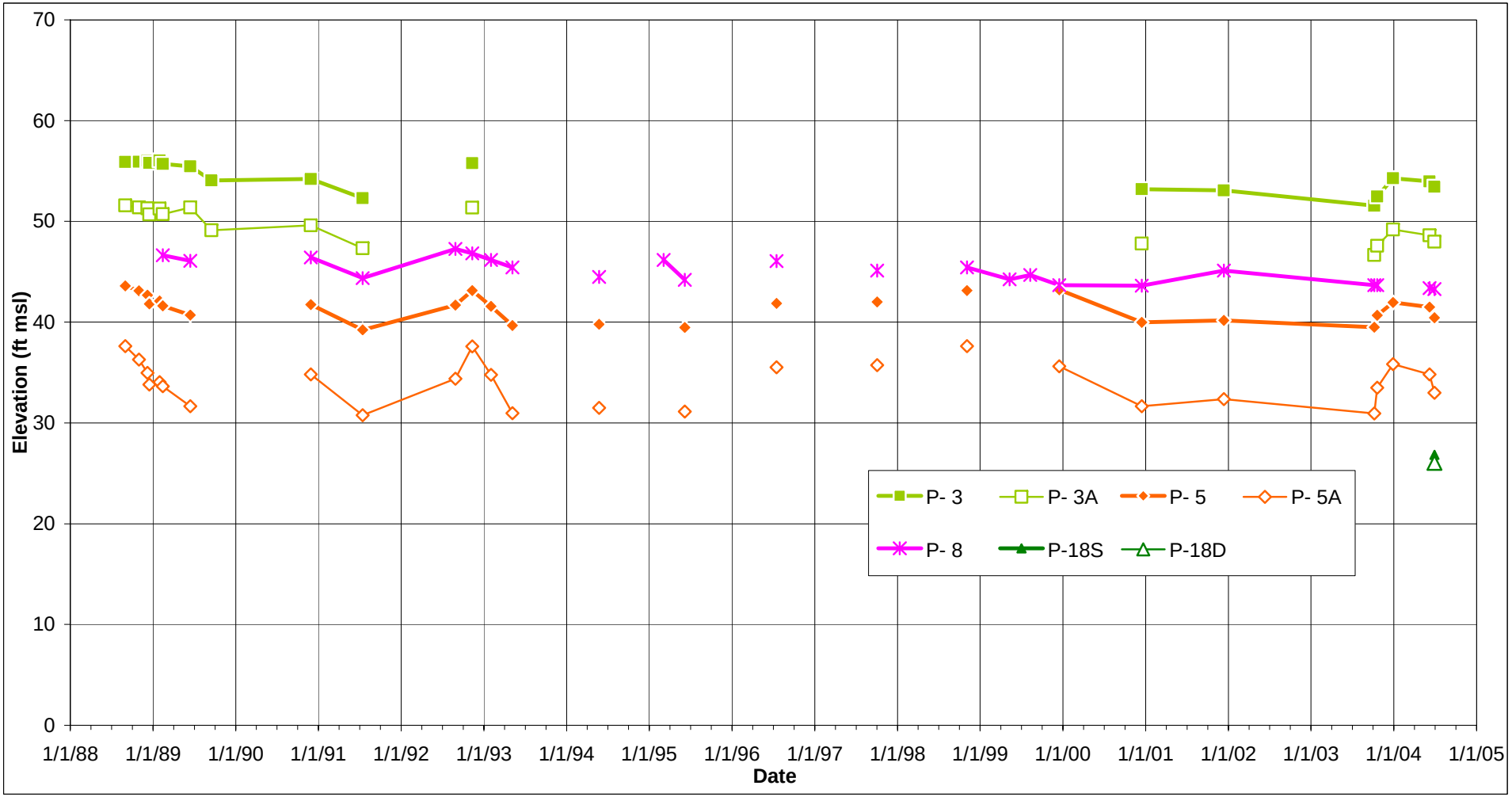
GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico



EarthTech
A Tyco International Ltd. Company

Figure 3-7 (pg 1 of 3)
Hydrographs of Monitoring Wells

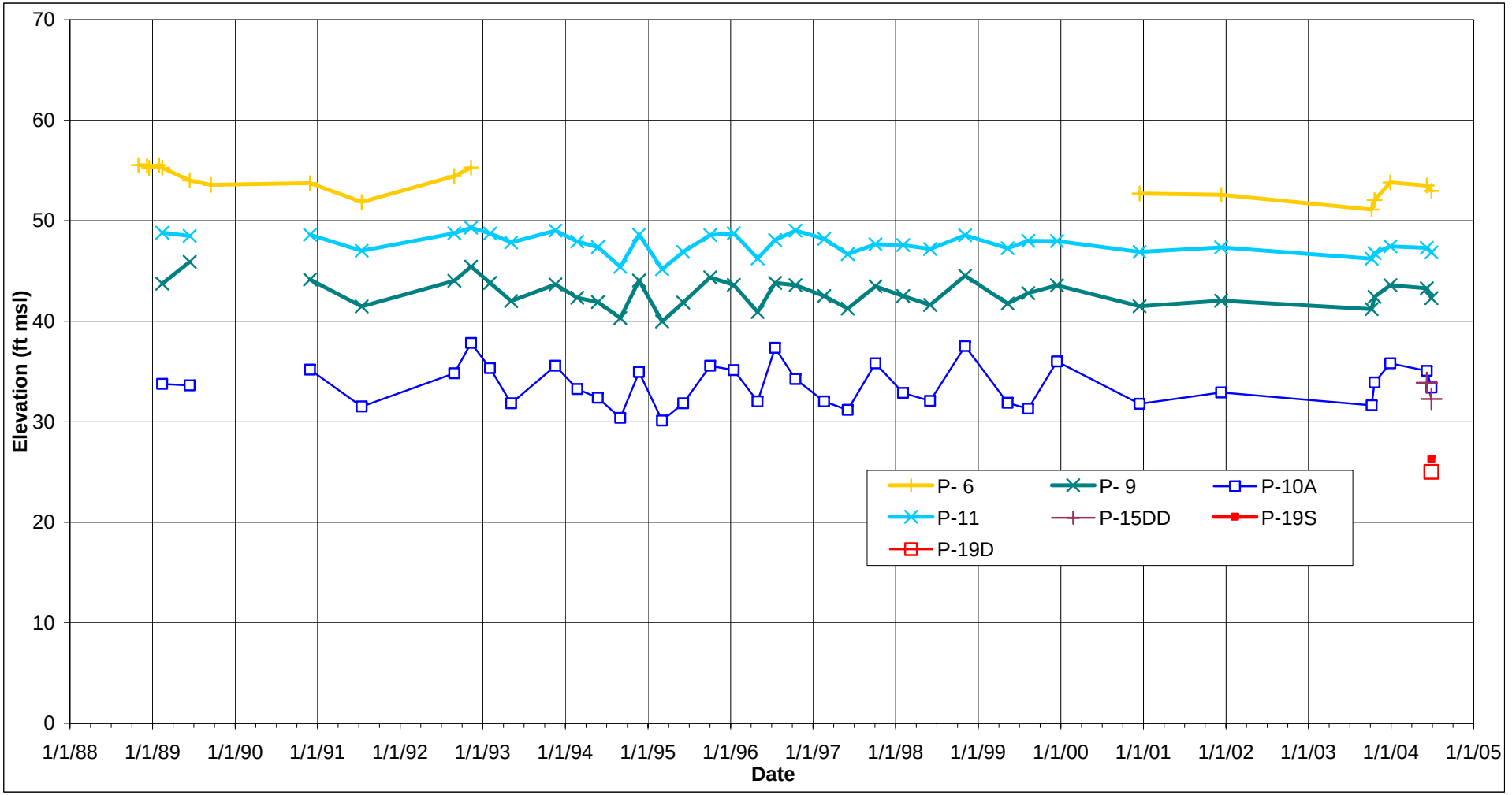
GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico



EarthTech
A Tyco International Ltd. Company

Figure 3-7 (pg 2 of 3)
Hydrographs of Monitoring Wells

GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico



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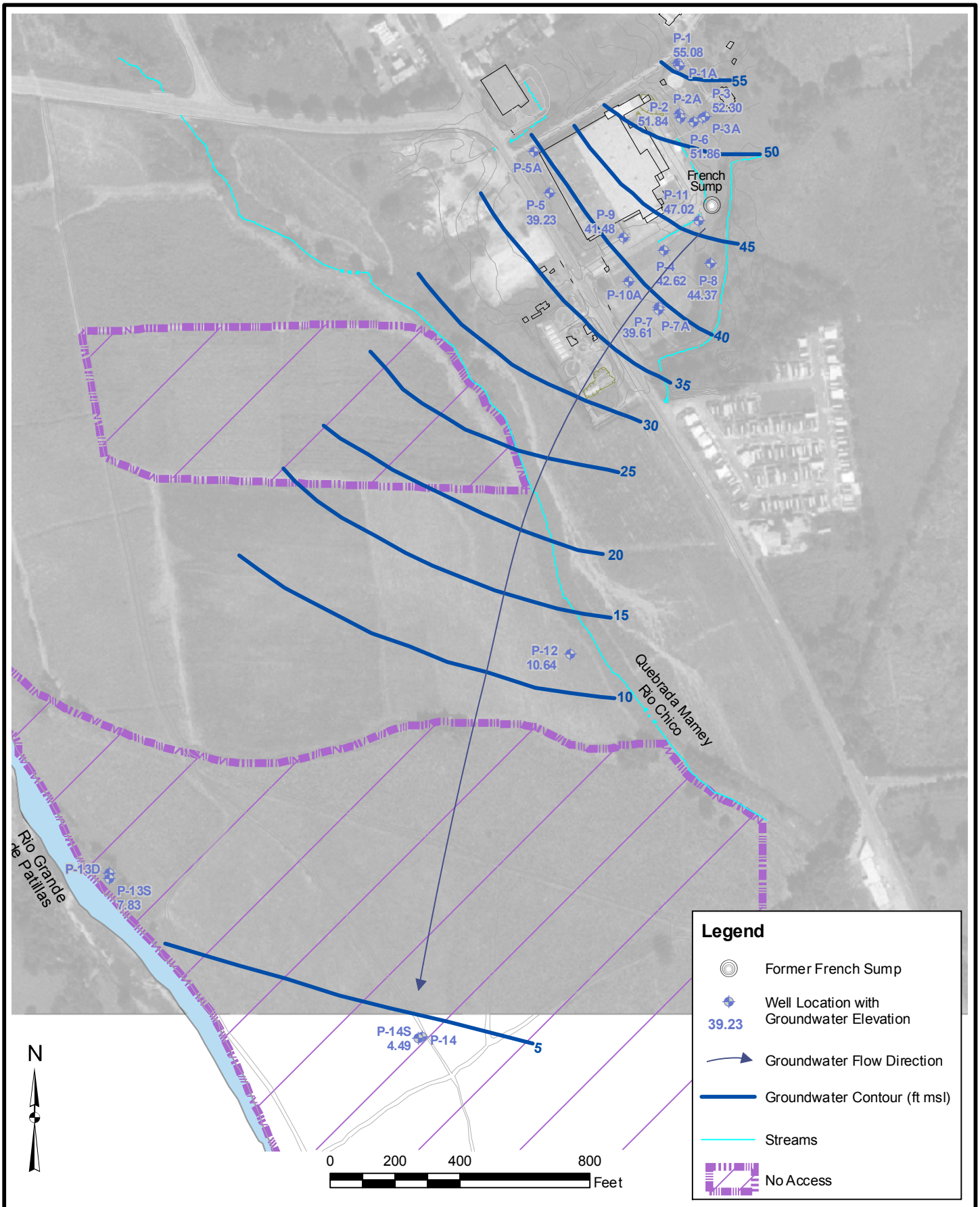
A Tyco International Ltd. Company

Figure 3-7 (pg 3 of 3)
Hydrographs of Monitoring Wells

GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico



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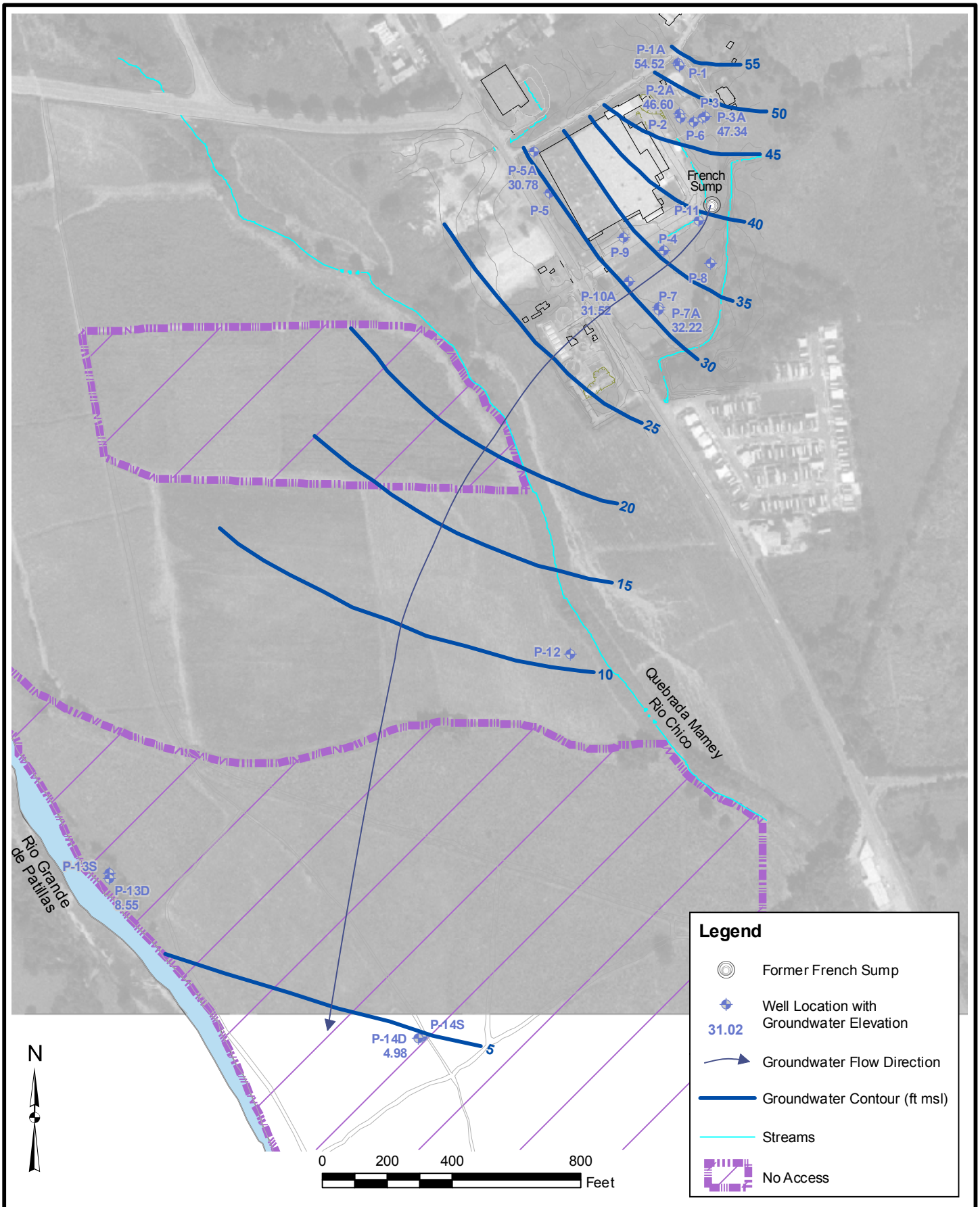
A Tyco International Ltd. Company

Figure 3-8
Potentiometric Map, Water Table Zone, 7/15/1991

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 3-8.mxd

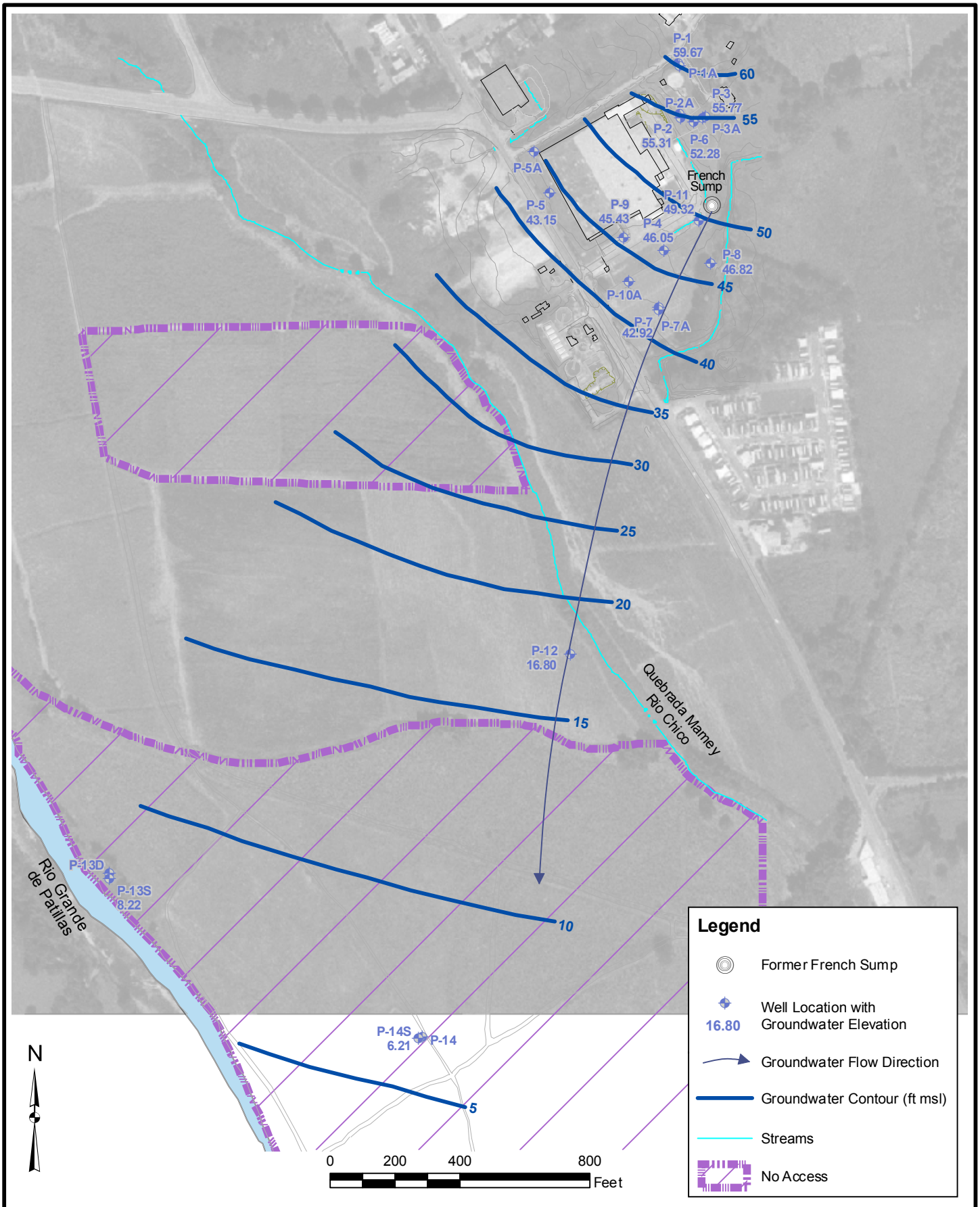


EarthTech
A Tyco International Ltd. Company

Figure 3-9
Potentiometric Map, Deep Zone, 7/15/1991

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 3-9.mxd

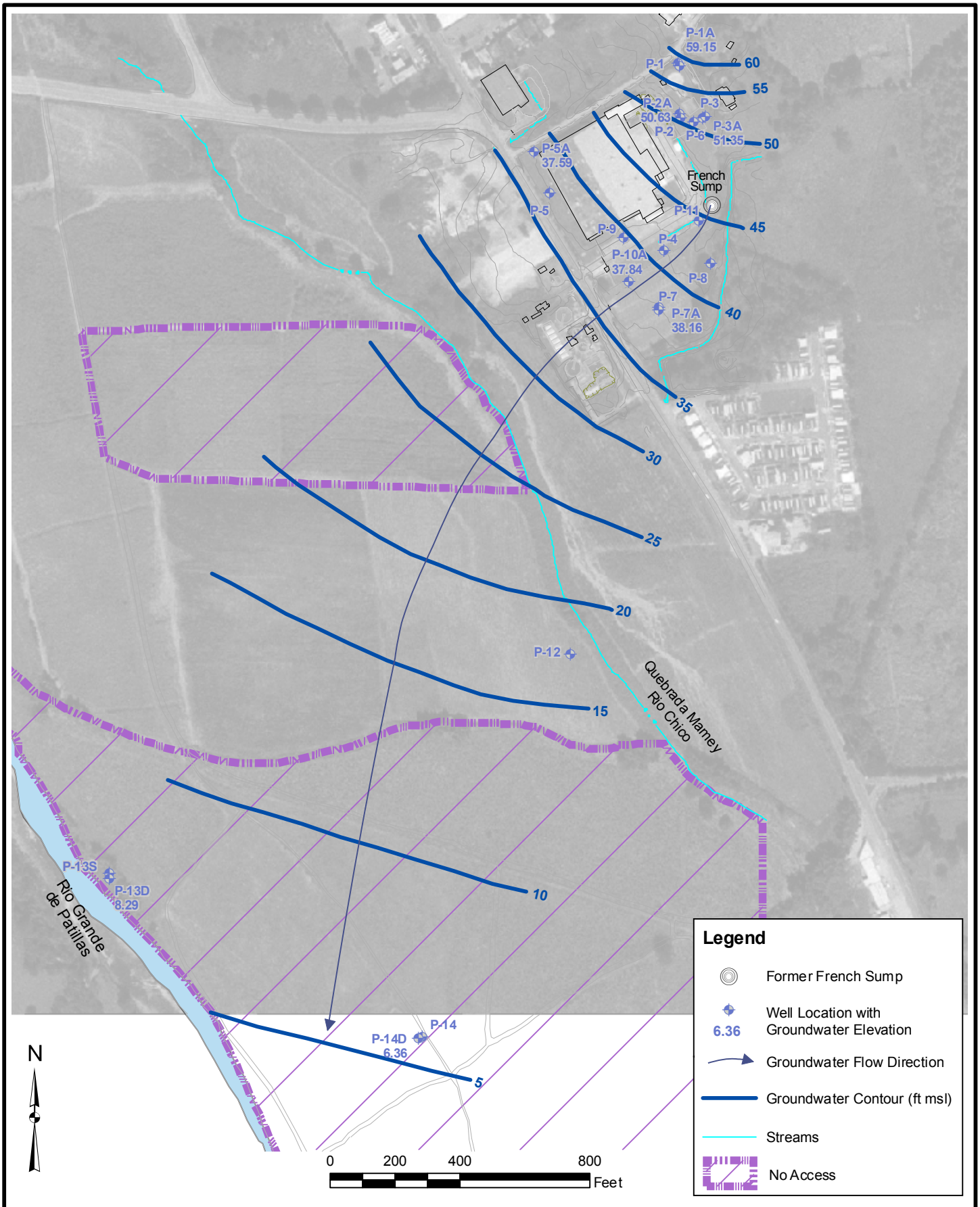


EarthTech
A Tyco International Ltd. Company

Figure 3-10
Potentiometric Map, Water Table Zone, 11/10/1992

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 3-10.mxd

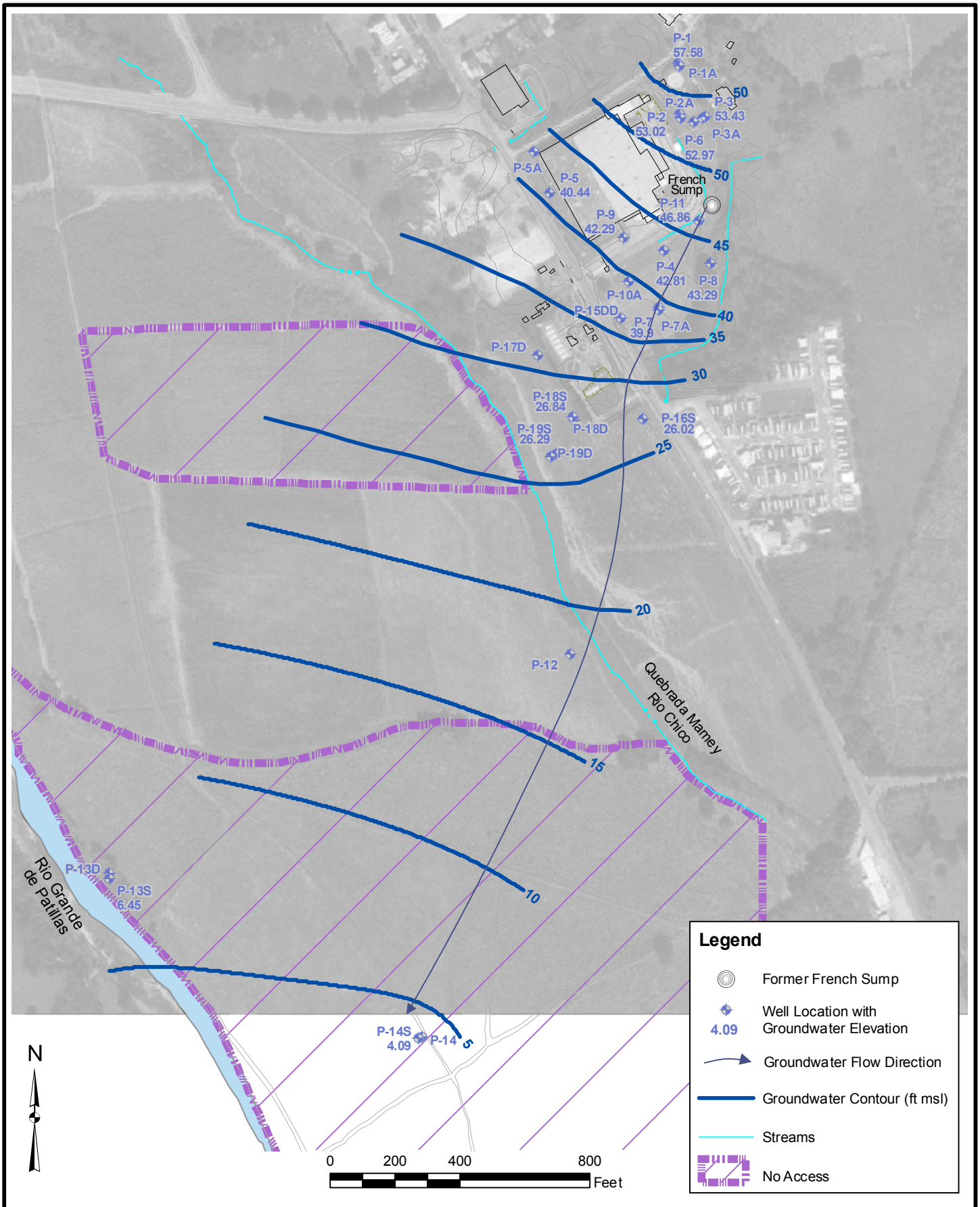


EarthTech
A Tyco International Ltd. Company

Figure 3-11
Potentiometric Map, Deep Zone, 11/10/1992

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 3-11.mxd

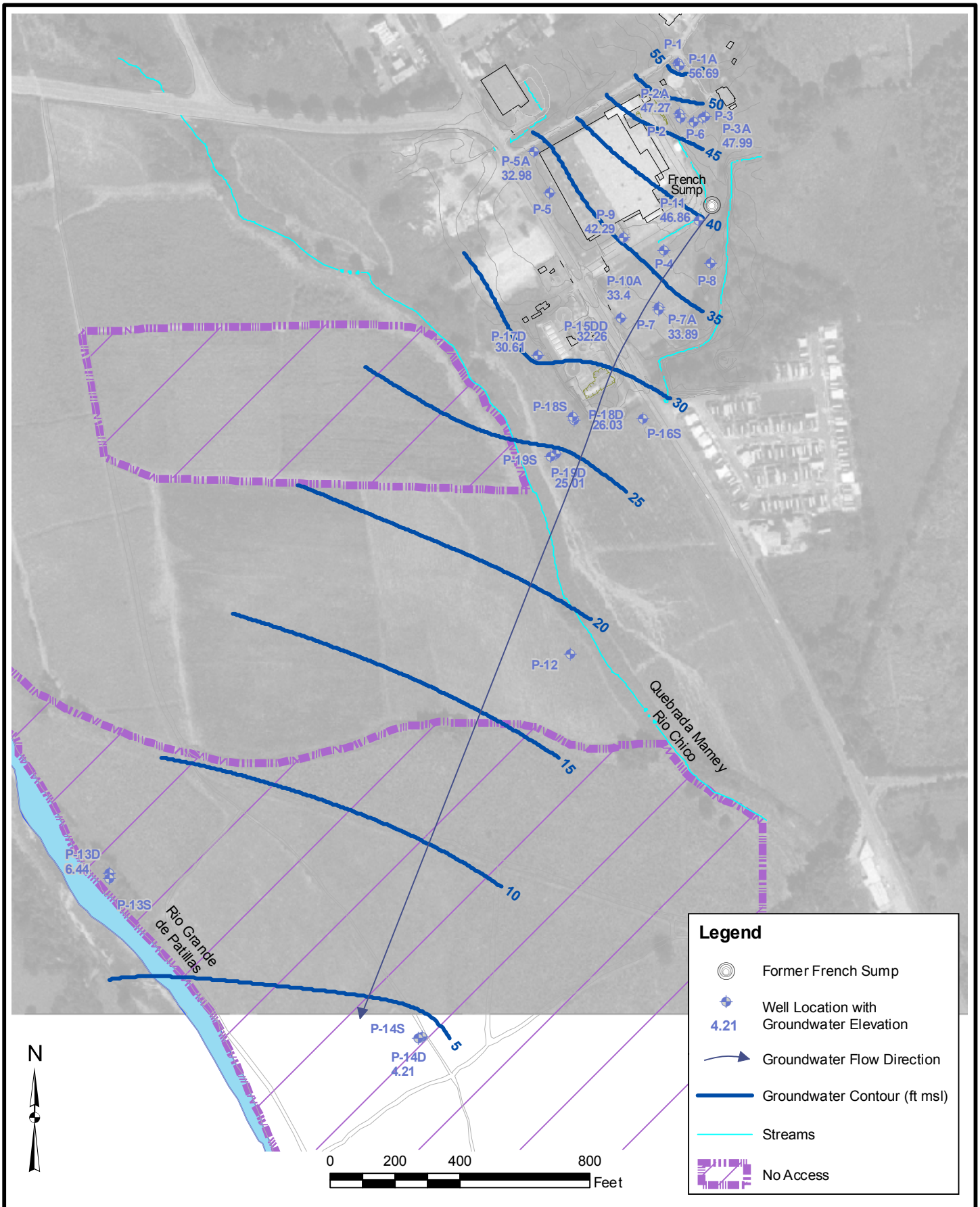


EarthTech
A Tyco International Ltd. Company

Figure 3-12
Potentiometric Map, Water Table Zone, 6/28/2004

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 3-12.mxd

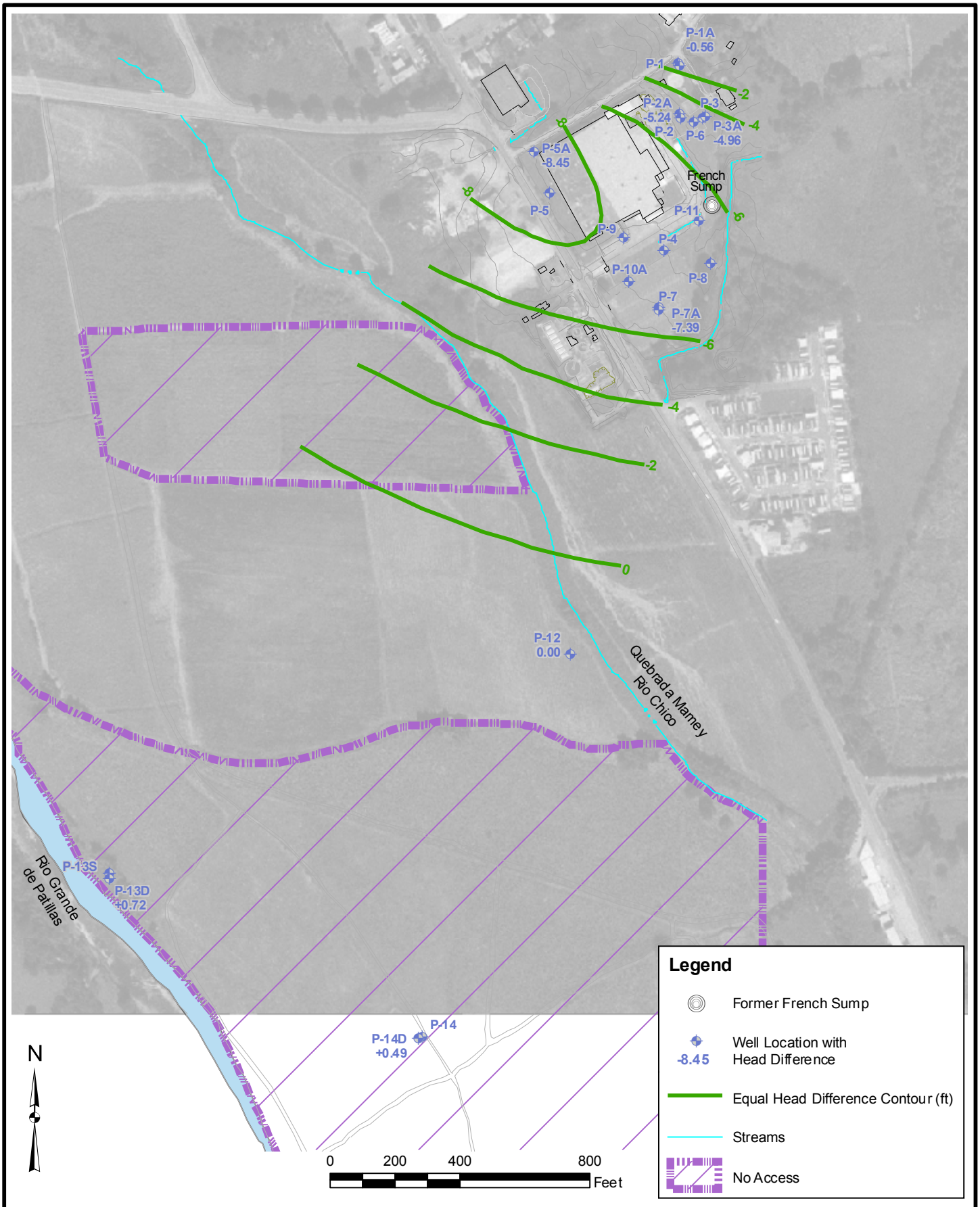


EarthTech
A Tyco International Ltd. Company

Figure 3-13
Potentiometric Map, Deep Zone, 6/28/2004

GE Puerto Rico Investment, Inc. Facility
Patillas. Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 3-13.mxd



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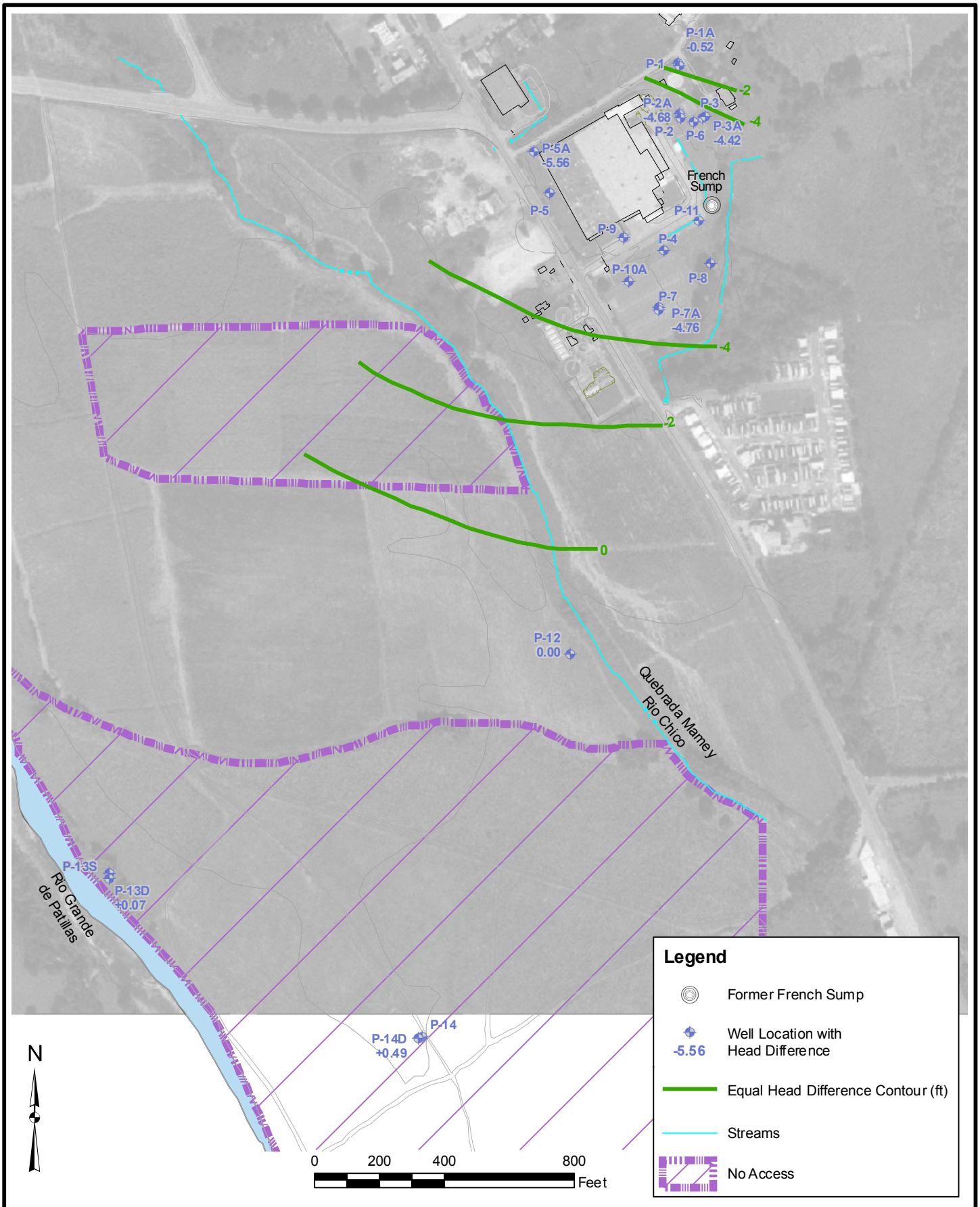
A Tyco International Ltd. Company

Figure 3-14
Distribution of Head Differences, 7/15/1991

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 3-14.mxd



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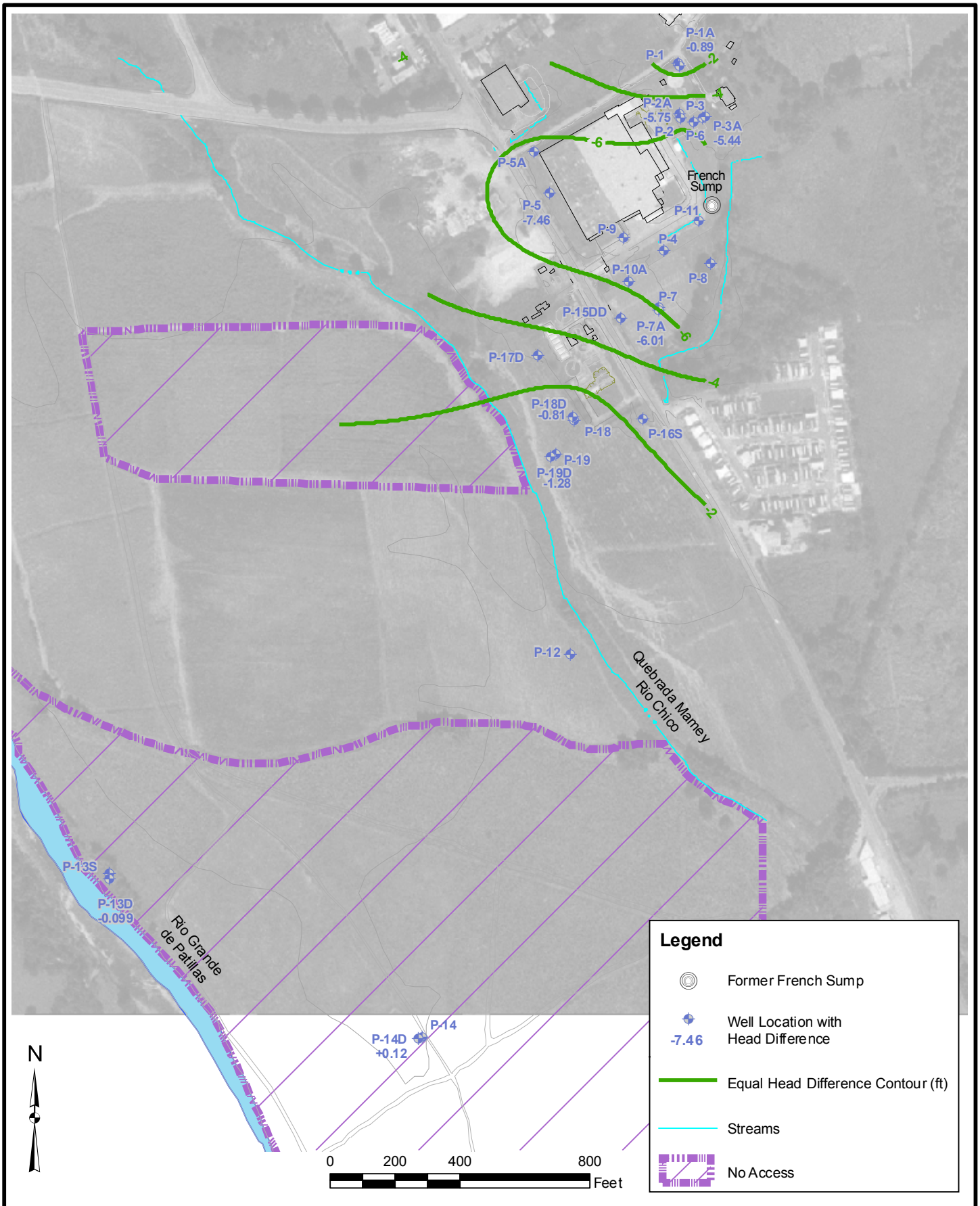
A Tyco International Ltd. Company

Figure 3-15
Distribution of Head Differences, 11/10/1992

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 3-15.mxd

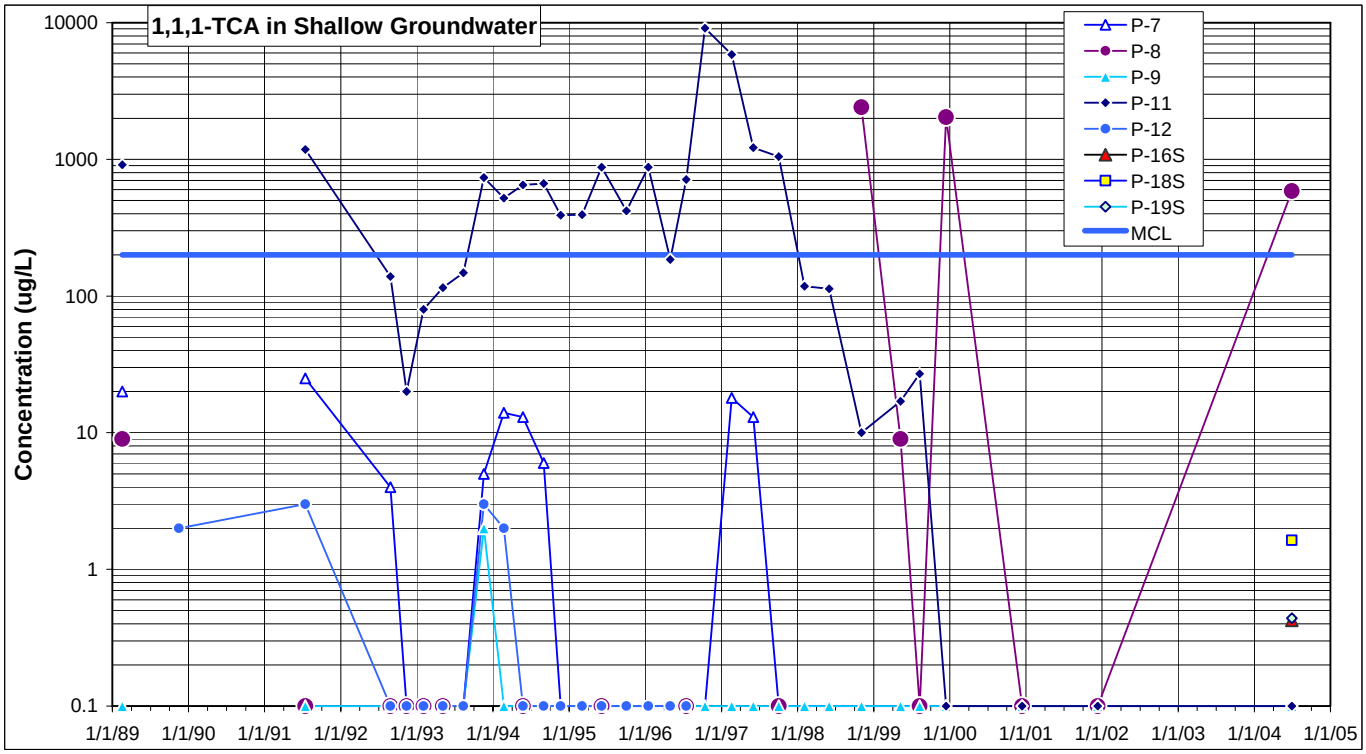


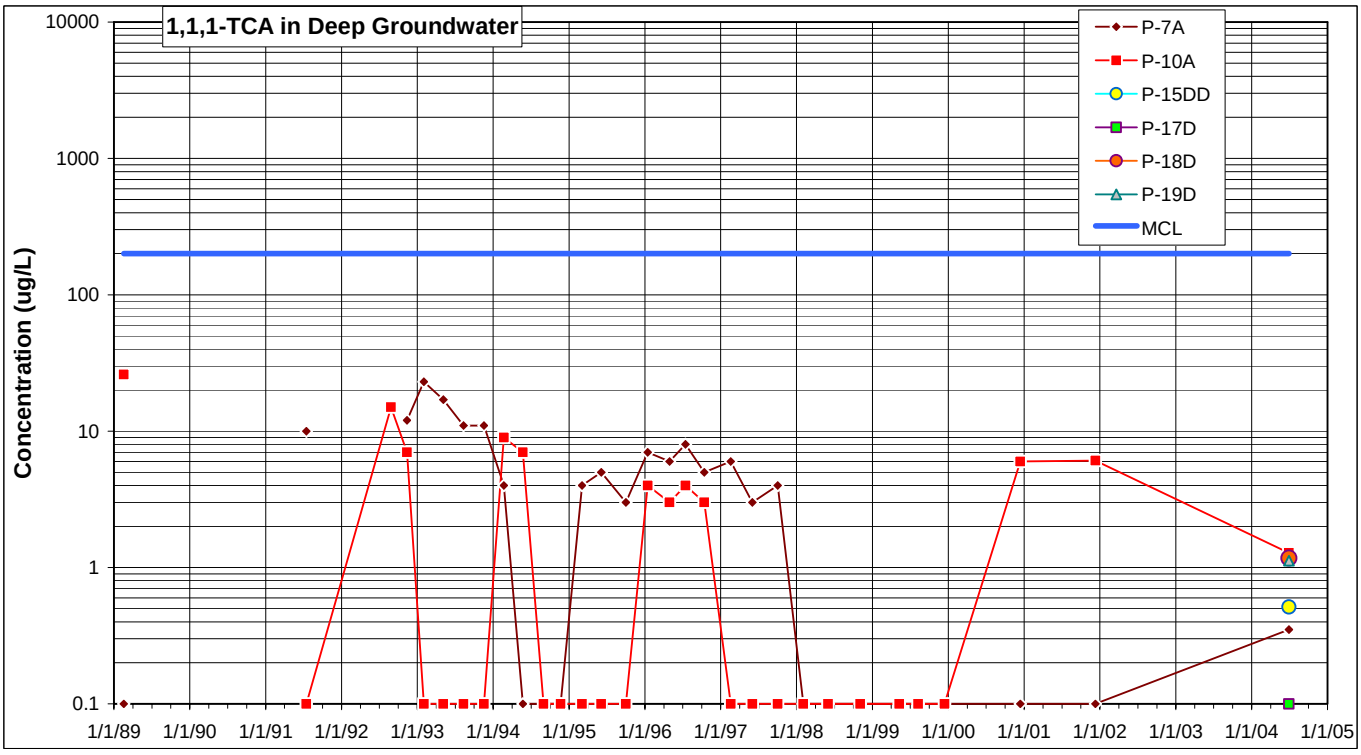
EarthTech
A Tyco International Ltd. Company

Figure 3-16
Distribution of Head Differences, 6/28/2004

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 3-16.mxd

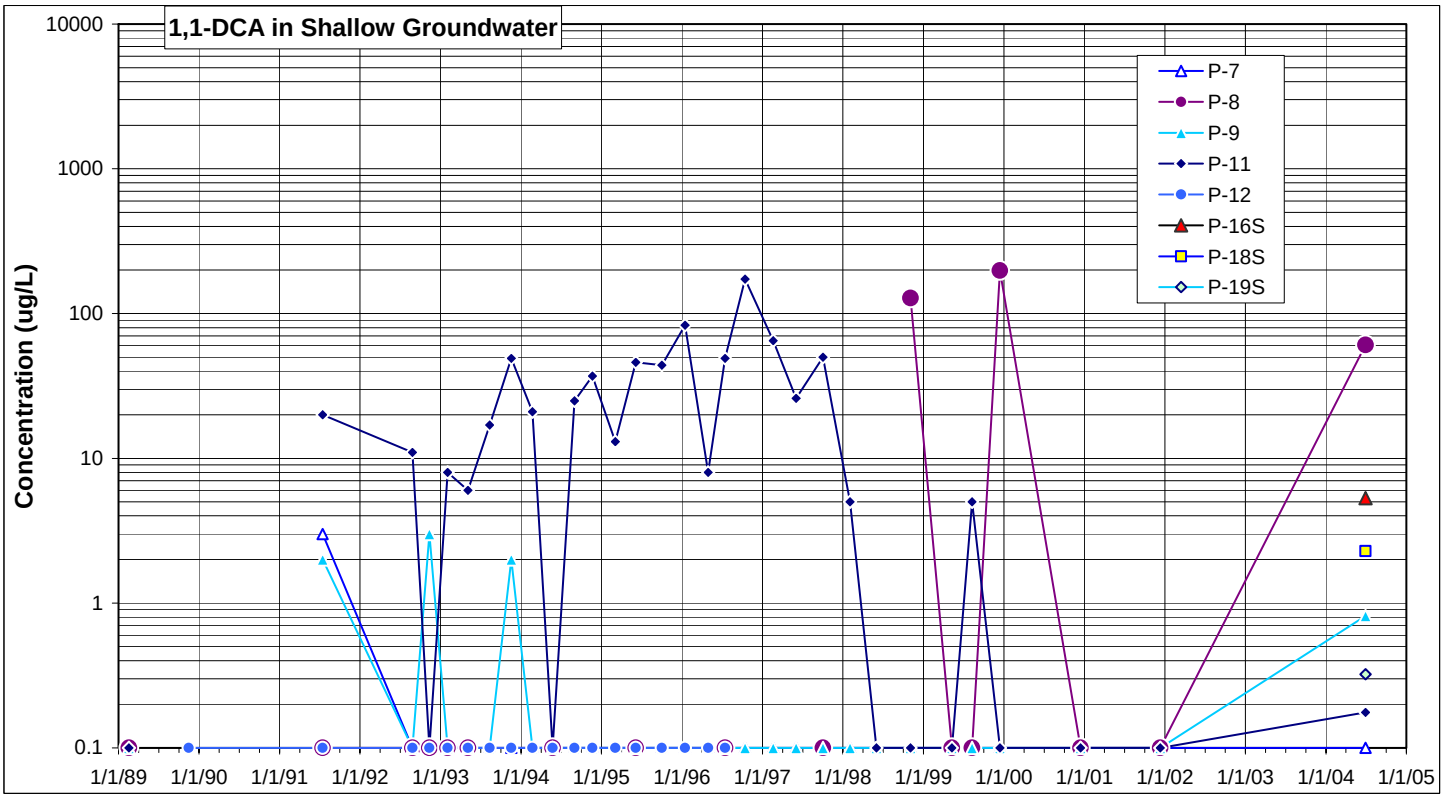




EarthTech
A Tyco International Ltd. Company

Figure 4-1
Historical TCA Results

GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico



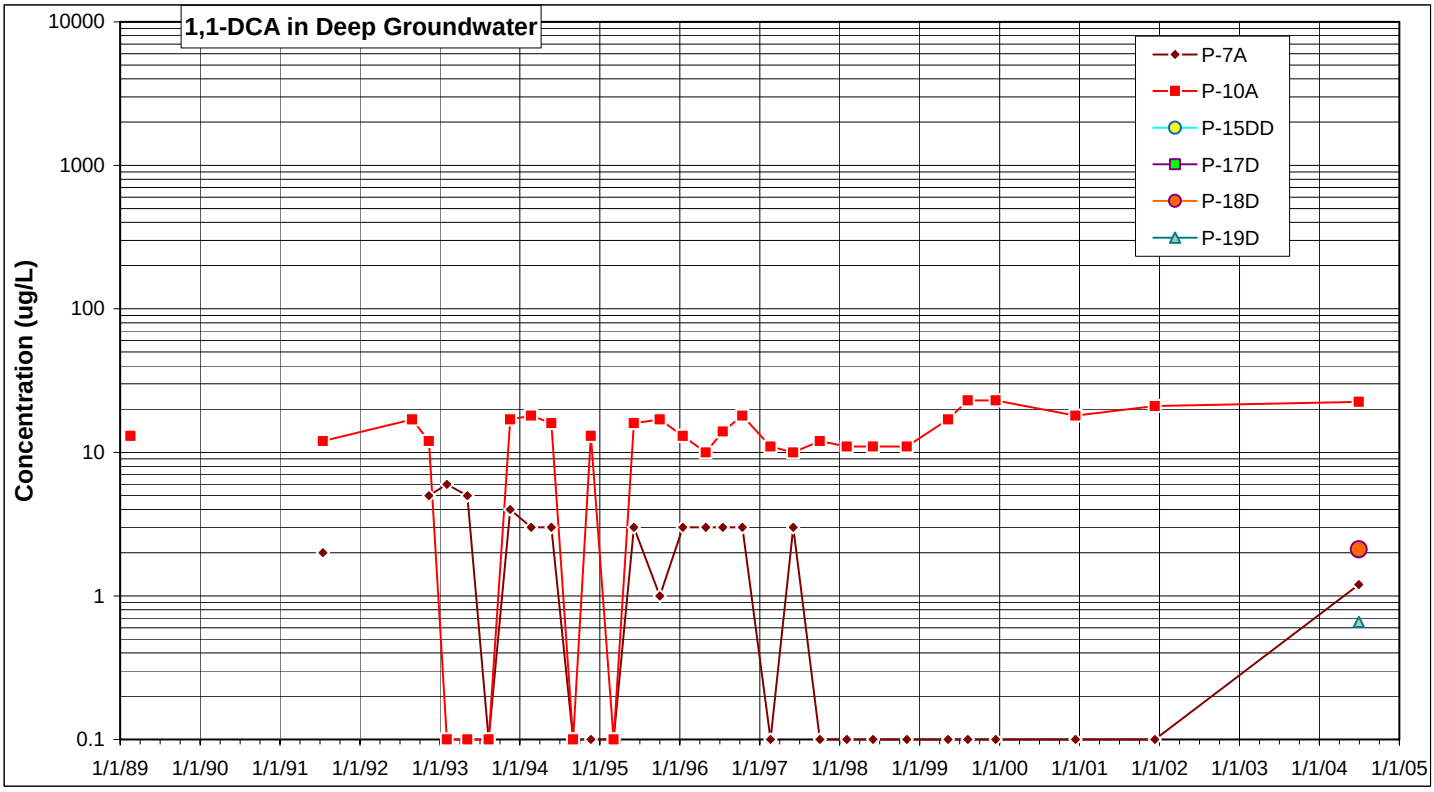


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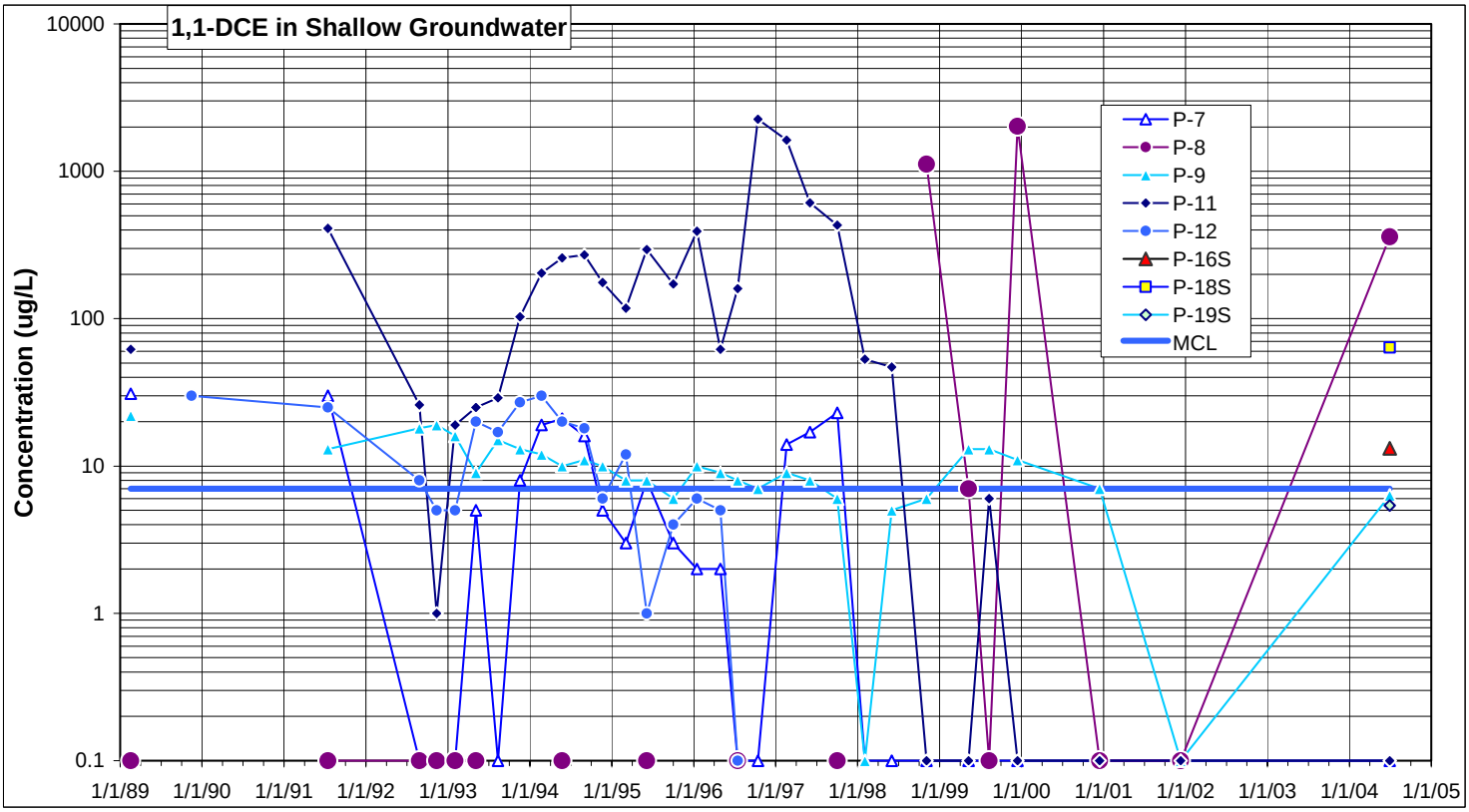
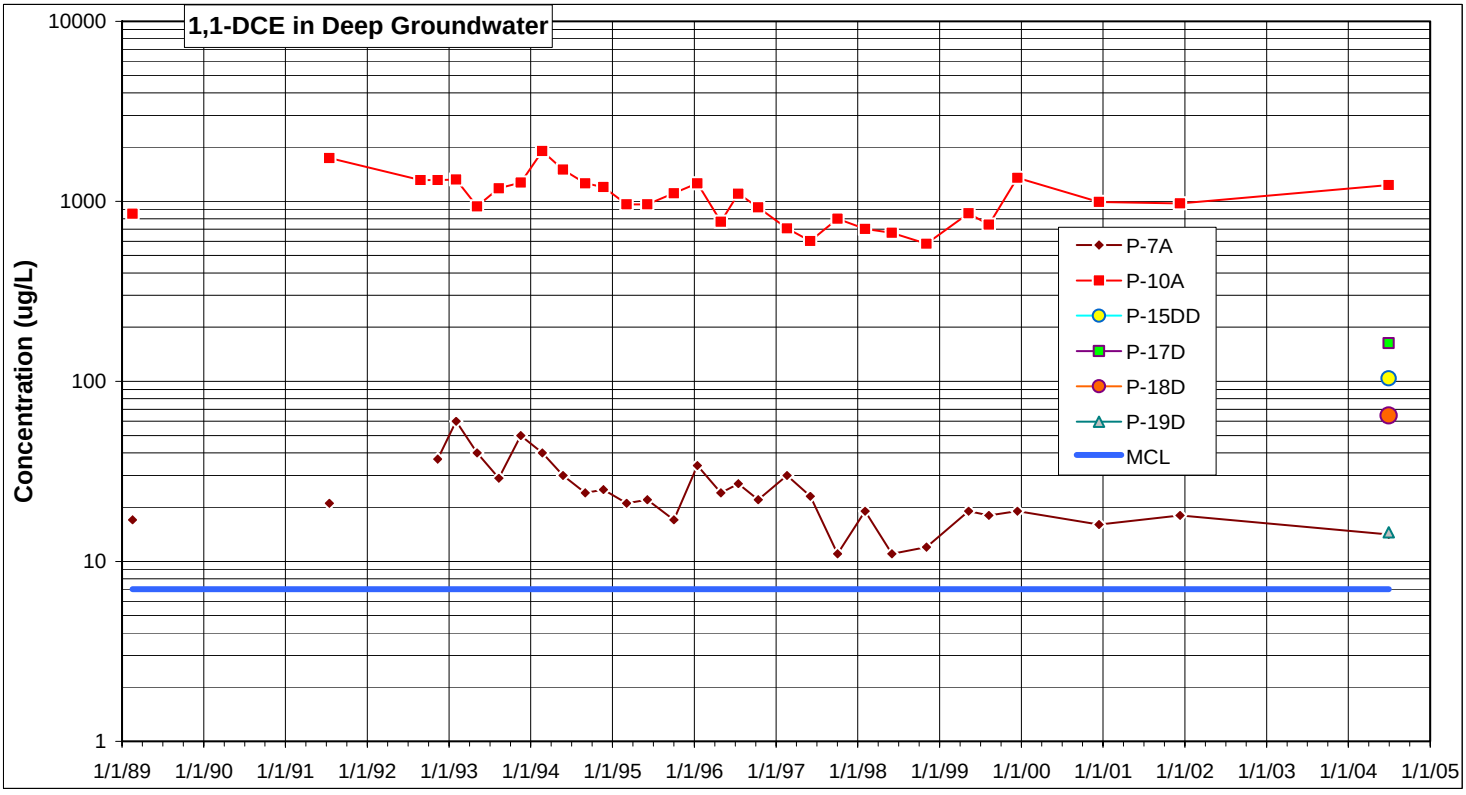
Figure 4-2
Historical DCA Results

GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico





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A Tyco International Ltd. Company

Figure 4-3
Historical DCE Results

GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico

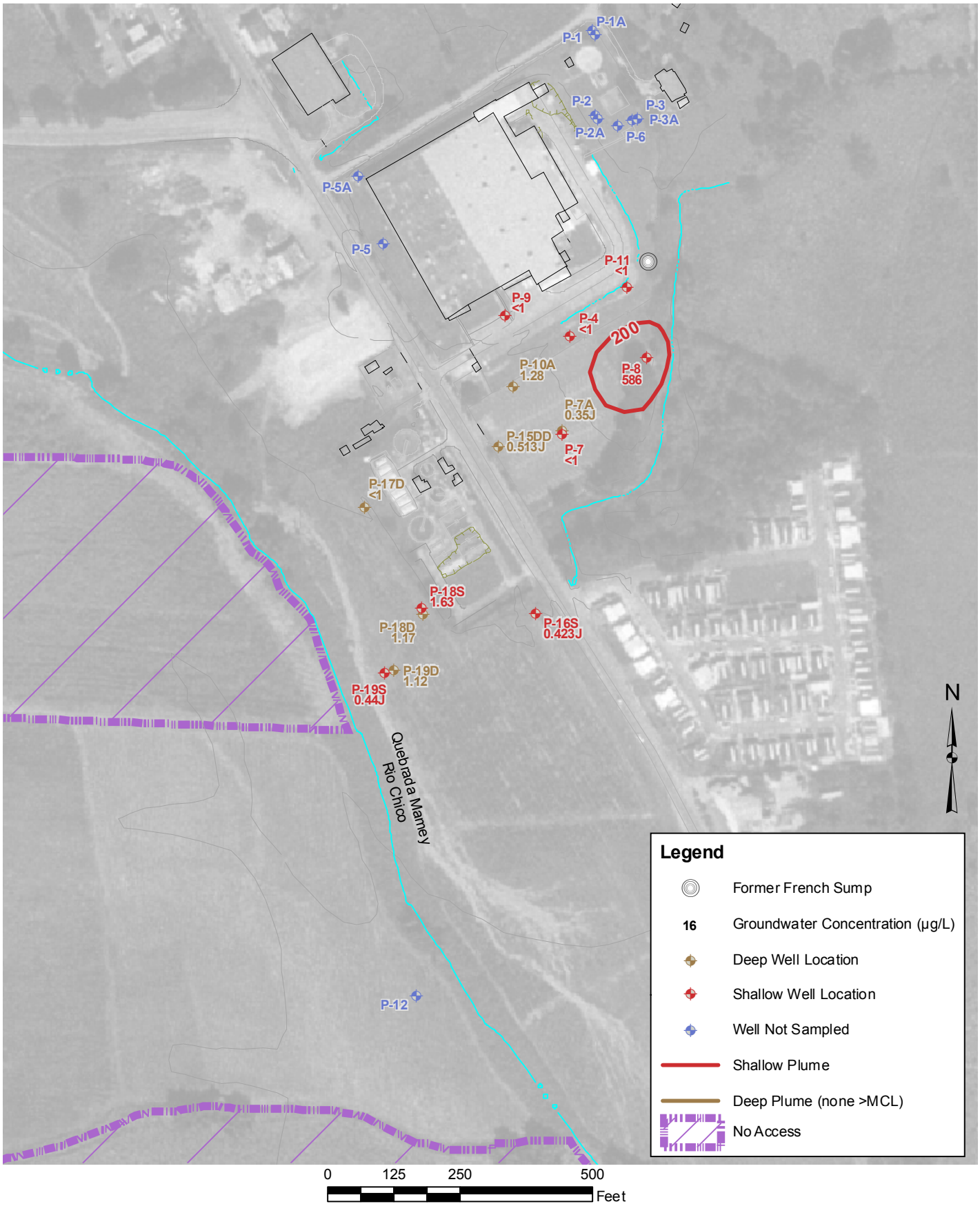

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Figure 4-4
Distribution of 1,1,1-TCA in Shallow and Deep Aquifer Zones, June 2004

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 4-4.mxd

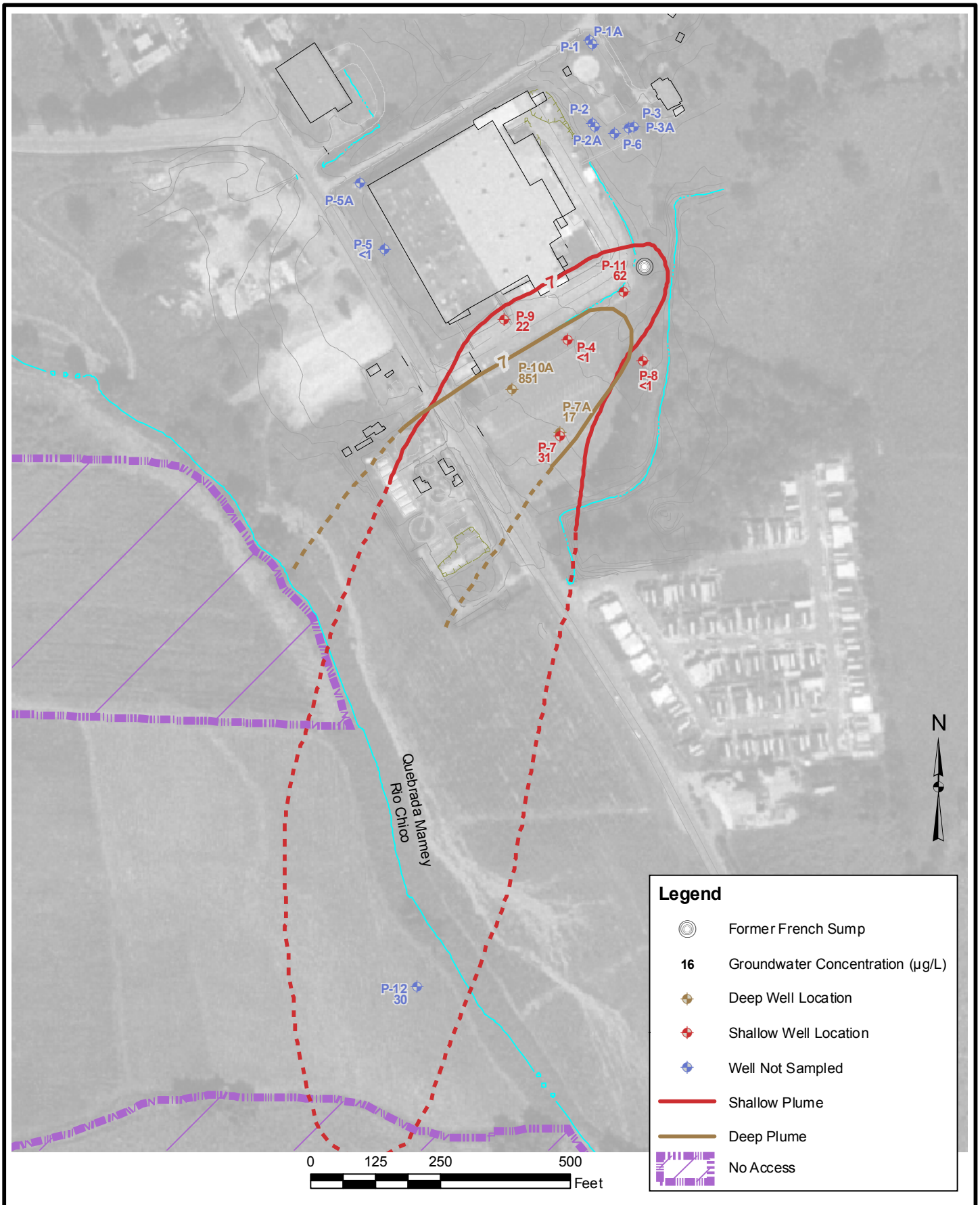

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Figure 4-5
Distribution of 1,1-DCE in Shallow and Deep Aquifer Zones, February/November 1989

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 4-5.mxd

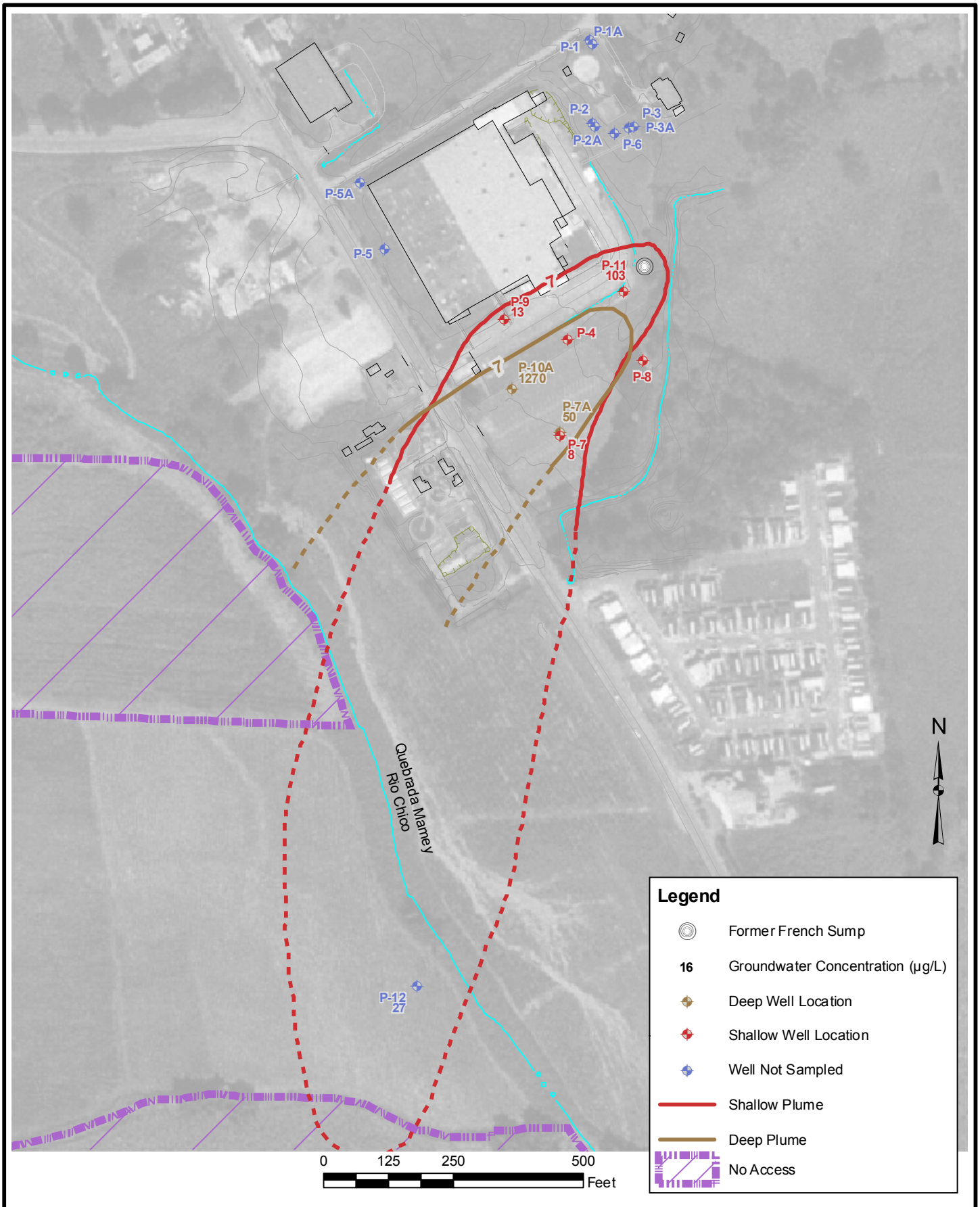

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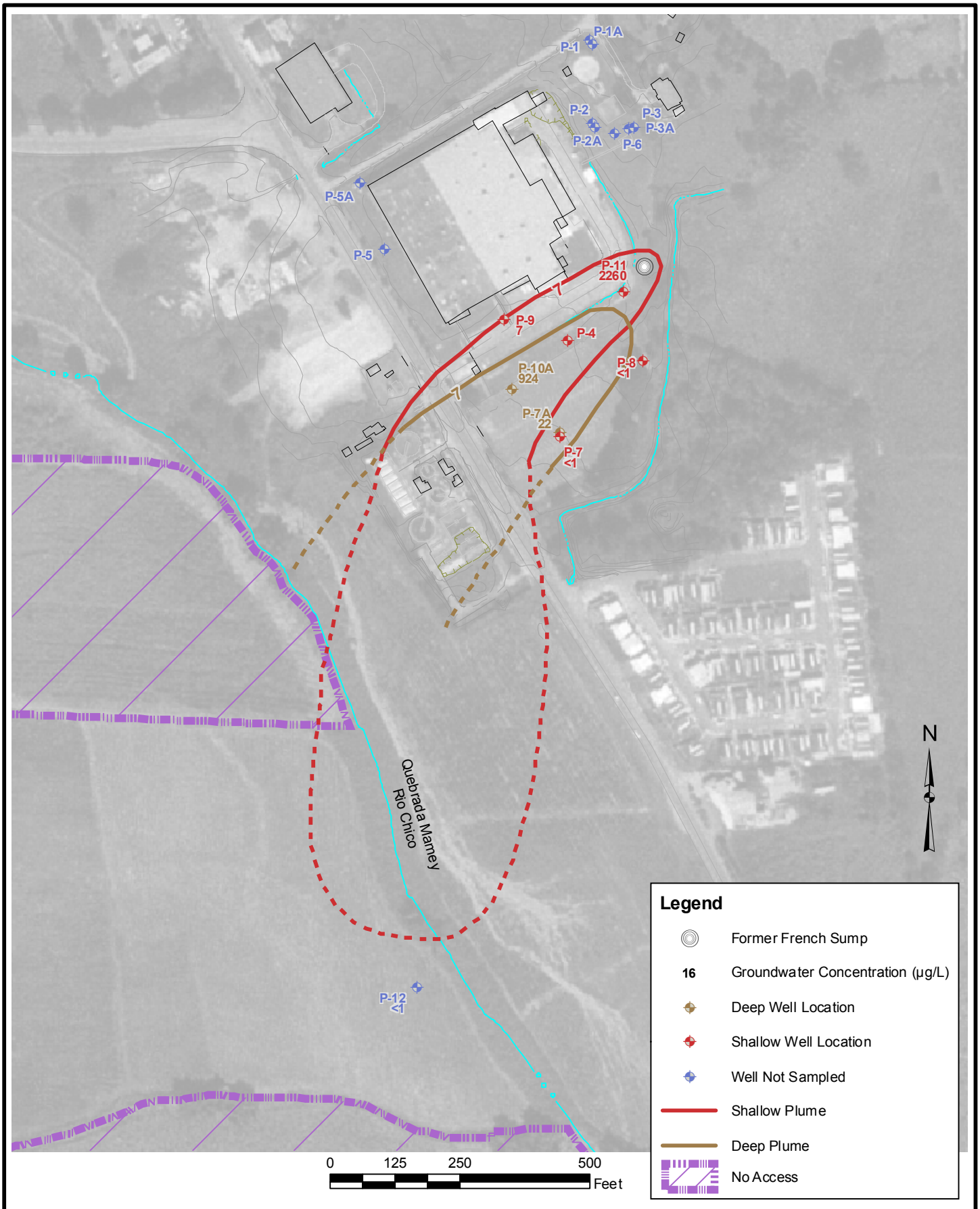
Figure 4-6
Distribution of 1,1-DCE in Shallow and Deep Aquifer Zones, November 1993

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 4-6.mxd

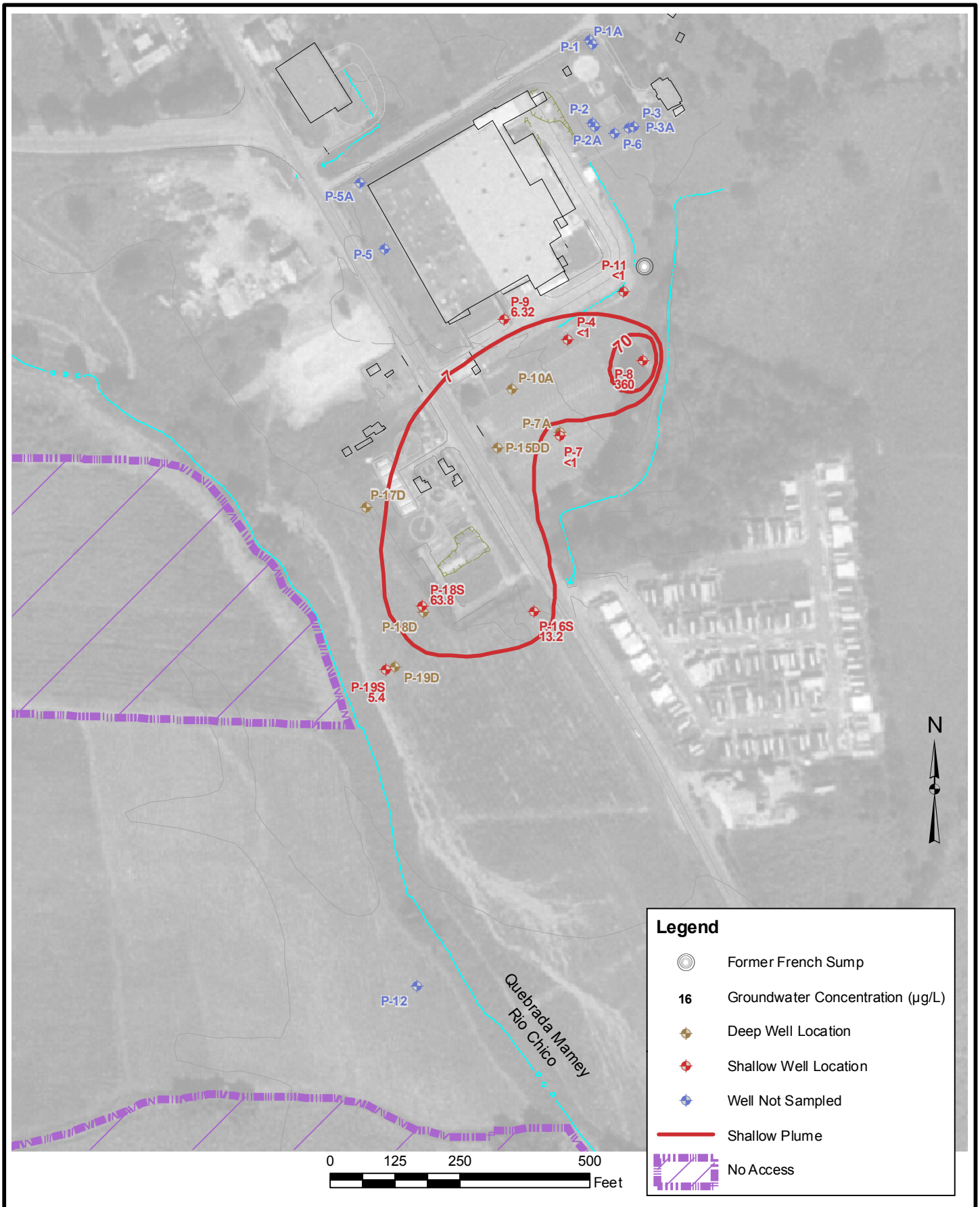


EarthTech
A Tyco International Ltd. Company

Figure 4-7
Distribution of 1,1-DCE in Shallow and Deep Aquifer Zones, October 1996

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 4-7.mxd

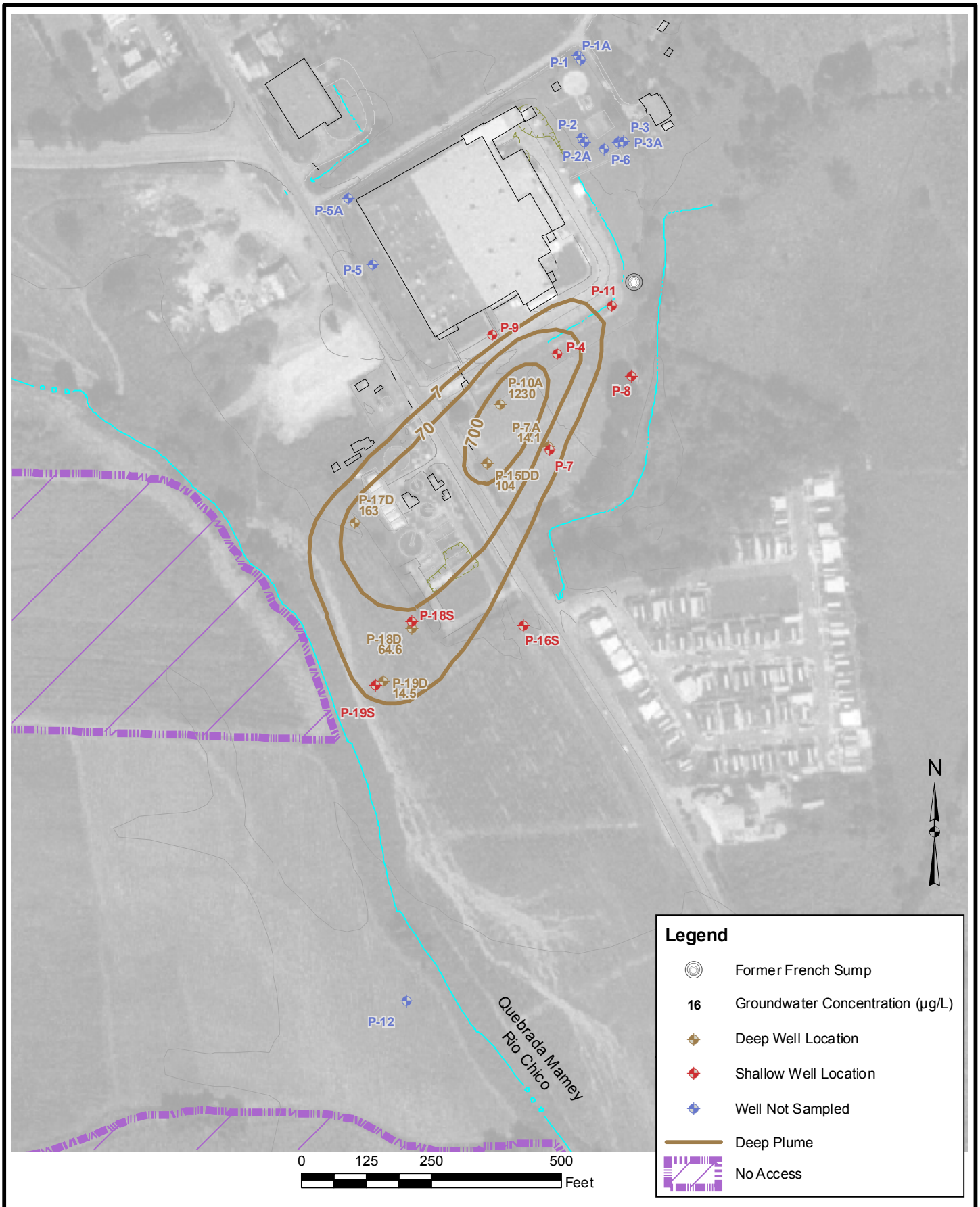


EarthTech
A Tyco International Ltd. Company

Figure 4-8
Distribution of 1,1-DCE in Shallow Aquifer Zone, June 2004

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 4-8.mxd

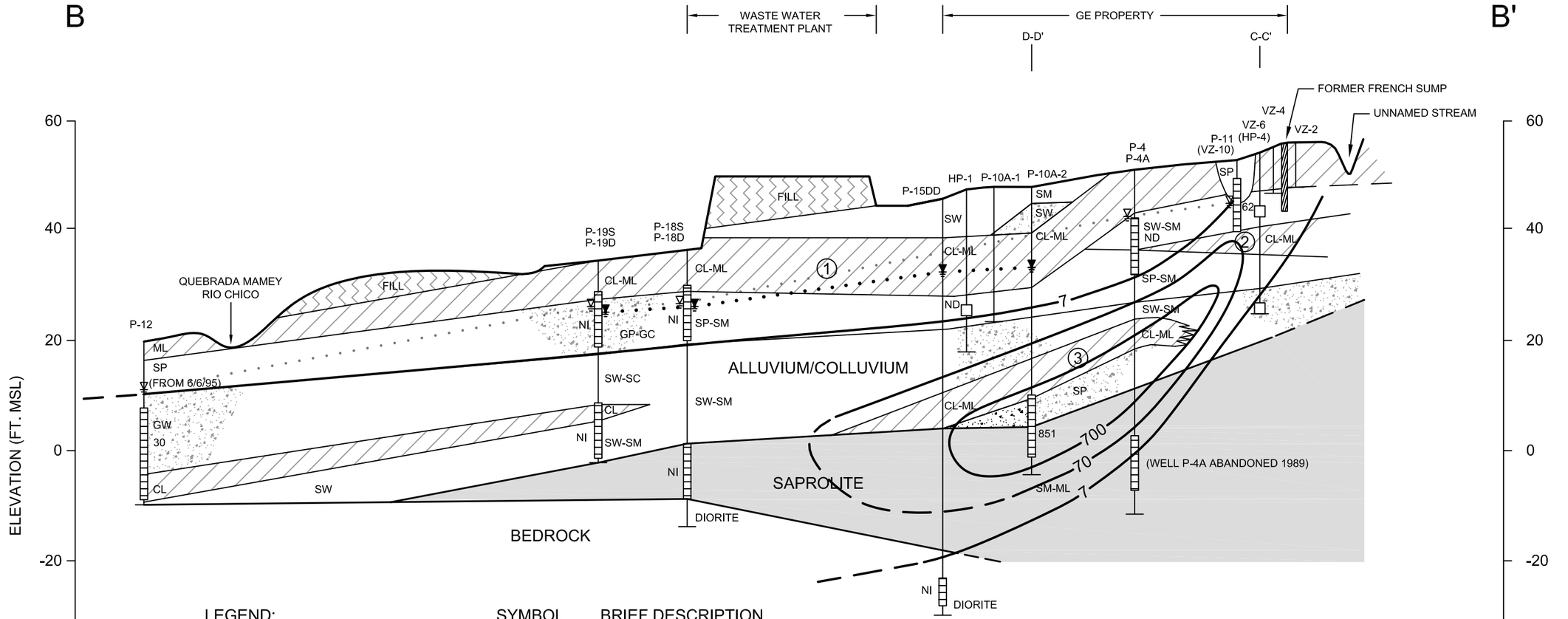


EarthTech
A Tyco International Ltd. Company

Figure 4-9
Distribution of 1,1-DCE in Deep Aquifer Zone, June 2004

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 4-9.mxd



LEGEND:

- SHALLOW AQUIFER WATER LEVEL SAMPLED ON 6/28/04
- DEEP AQUIFER WATER LEVEL SAMPLED ON 6/28/04
- 30 — SCREENED ZONE WITH CONCENTRATION OF 1,1-DCE (µg/L)
- HYDROPUNCH SAMPLE
- BOTTOM OF EXPLORATION
- UNITS WITH LOW PERMEABILITY
- UNITS WITH INTERMEDIATE PERMEABILITY
- UNITS WITH HIGH PERMEABILITY
- GRAVEL PRESENT
- 1,1-DCE FEB./NOV. 1989
- ND — NON-DETECT
- NI — NOT INSTALLED

SYMBOL	BRIEF DESCRIPTION
CL	CLAY, LOW PLASTICITY
CL-ML	CLAY, LOW PLASTICITY, SILTY
ML	SILT, LOW PLASTICITY
SM	SAND, SILTY
SP	SAND, POORLY GRADED
SP-SM	SAND, POORLY GRADED, SILTY
SW	SAND, WELL GRADED
SW-SC	SAND, WELL GRADED, CLAYEY
SW-SM	SAND, WELL GRADED, SILTY
GP-GC	GRAVEL, POORLY GRADED
GW	GRAVEL, WELL GRADED

0 150 300
HORIZONTAL SCALE IN FEET

EarthTech
A Tyco International Ltd. Company

Figure 4-10
Plume Section B-B' for 1,1-DCE
February/November 1989

GE Puerto Rico Investment Inc. Facility
Patillas, Puerto Rico

L:\work\76058\CADD\GE Patillas X-SECT B-B_Plume 1989.dwg, 2/10/2005 3:19:54 PM, robert.stubblefield

B

B'

WASTE WATER TREATMENT PLANT

GE PROPERTY

D-D'

C-C'

FORMER FRENCH SUMP

UNNAMED STREAM

ELEVATION (FT. MSL)

60
40
20
0
-20
-40
-60

QUEBRADA MAMEY
RIO CHICO

FILL

P-12
ML
SP
(FROM 6/6/95)
GW
27
CL

SW

P-19S
P-19D
P-18S
P-18D
CL-ML
NI
GP-GC
SP-SM
SW-SC
CL
SW-SM

ALLUVIUM/COLLUVIUM

SAPROLITE

BEDROCK

DIORITE

P-15DD
HP-1
P-10A-1
P-10A-2
SM
SW
CL-ML
1270
SM-ML
NI
DIORITE

P-4
P-4A
SW-SM
ND
SP-SM
SW-SM
CL-ML
SP
(WELL P-4A ABANDONED 1989)

P-11
(VZ-10)
VZ-6
(HP-4)
VZ-4
VZ-2
SP
103
CL-ML

1
2
3

7
700
70
7

0 150 300
HORIZONTAL SCALE IN FEET

LEGEND:

- SHALLOW AQUIFER WATER LEVEL SAMPLED ON 6/28/04
- DEEP AQUIFER WATER LEVEL SAMPLED ON 6/28/04
- 27 — SCREENED ZONE WITH CONCENTRATION OF 1,1-DCE (µg/L)
- HYDROPUNCH SAMPLE
- BOTTOM OF EXPLORATION
- UNITS WITH LOW PERMEABILITY
- UNITS WITH INTERMEDIATE PERMEABILITY
- UNITS WITH HIGH PERMEABILITY
- GRAVEL PRESENT
- 1,1-DCE NOV. 1993
- ND NON-DETECT
- NI NOT INSTALLED

SYMBOL	BRIEF DESCRIPTION
CL	CLAY, LOW PLASTICITY
CL-ML	CLAY, LOW PLASTICITY, SILTY
ML	SILT, LOW PLASTICITY
SM	SAND, SILTY
SP	SAND, POORLY GRADED
SP-SM	SAND, POORLY GRADED, SILTY
SW	SAND, WELL GRADED
SW-SC	SAND, WELL GRADED, CLAYEY
SW-SM	SAND, WELL GRADED, SILTY
GP-GC	GRAVEL, POORLY GRADED
GW	GRAVEL, WELL GRADED

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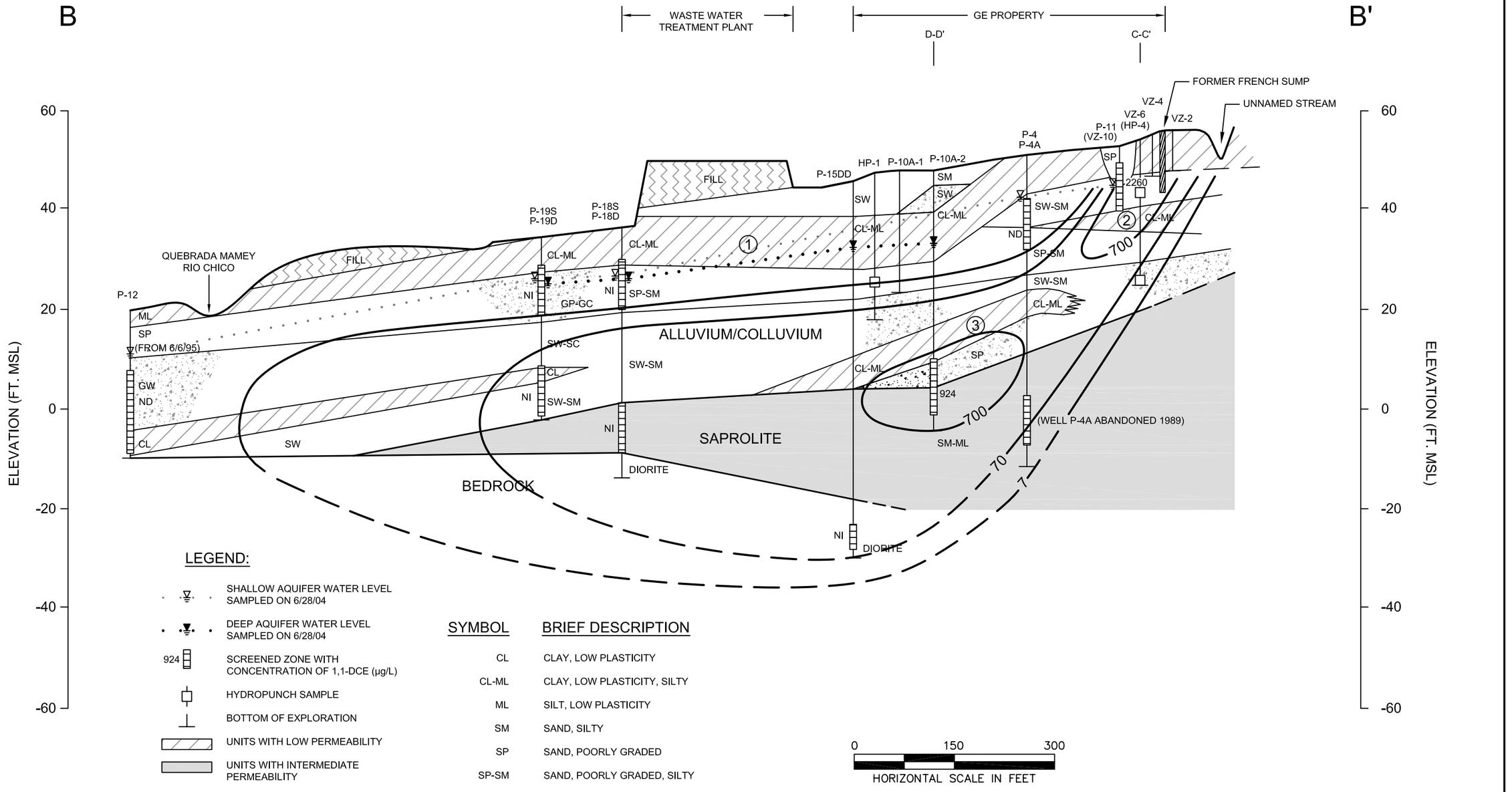
Figure 4-11
Plume Section B-B' for 1,1-DCE
November 1993

GE Puerto Rico Investment Inc. Facility
Patillas, Puerto Rico

L:\work\76058\CADD\GE Patillas X-SECT B-B_Plume 1993.dwg, 2/10/2005 3:17:39 PM, robert.stubblefield



LEGEND:

- SHALLOW AQUIFER WATER LEVEL SAMPLED ON 6/28/04
- DEEP AQUIFER WATER LEVEL SAMPLED ON 6/28/04
- 924 — SCREENED ZONE WITH CONCENTRATION OF 1,1-DCE (µg/L)
- HYDROPUNCH SAMPLE
- BOTTOM OF EXPLORATION
- UNITS WITH LOW PERMEABILITY
- UNITS WITH INTERMEDIATE PERMEABILITY
- UNITS WITH HIGH PERMEABILITY
- GRAVEL PRESENT
- 1,1-DCE OCT. 1996
- ND — NON-DETECT
- NI — NOT INSTALLED

SYMBOL	BRIEF DESCRIPTION
CL	CLAY, LOW PLASTICITY
CL-ML	CLAY, LOW PLASTICITY, SILTY
ML	SILT, LOW PLASTICITY
SM	SAND, SILTY
SP	SAND, POORLY GRADED
SP-SM	SAND, POORLY GRADED, SILTY
SW	SAND, WELL GRADED
SW-SC	SAND, WELL GRADED, CLAYEY
SW-SM	SAND, WELL GRADED, SILTY
GP-GC	GRAVEL, POORLY GRADED
GW	GRAVEL, WELL GRADED

0 150 300
HORIZONTAL SCALE IN FEET

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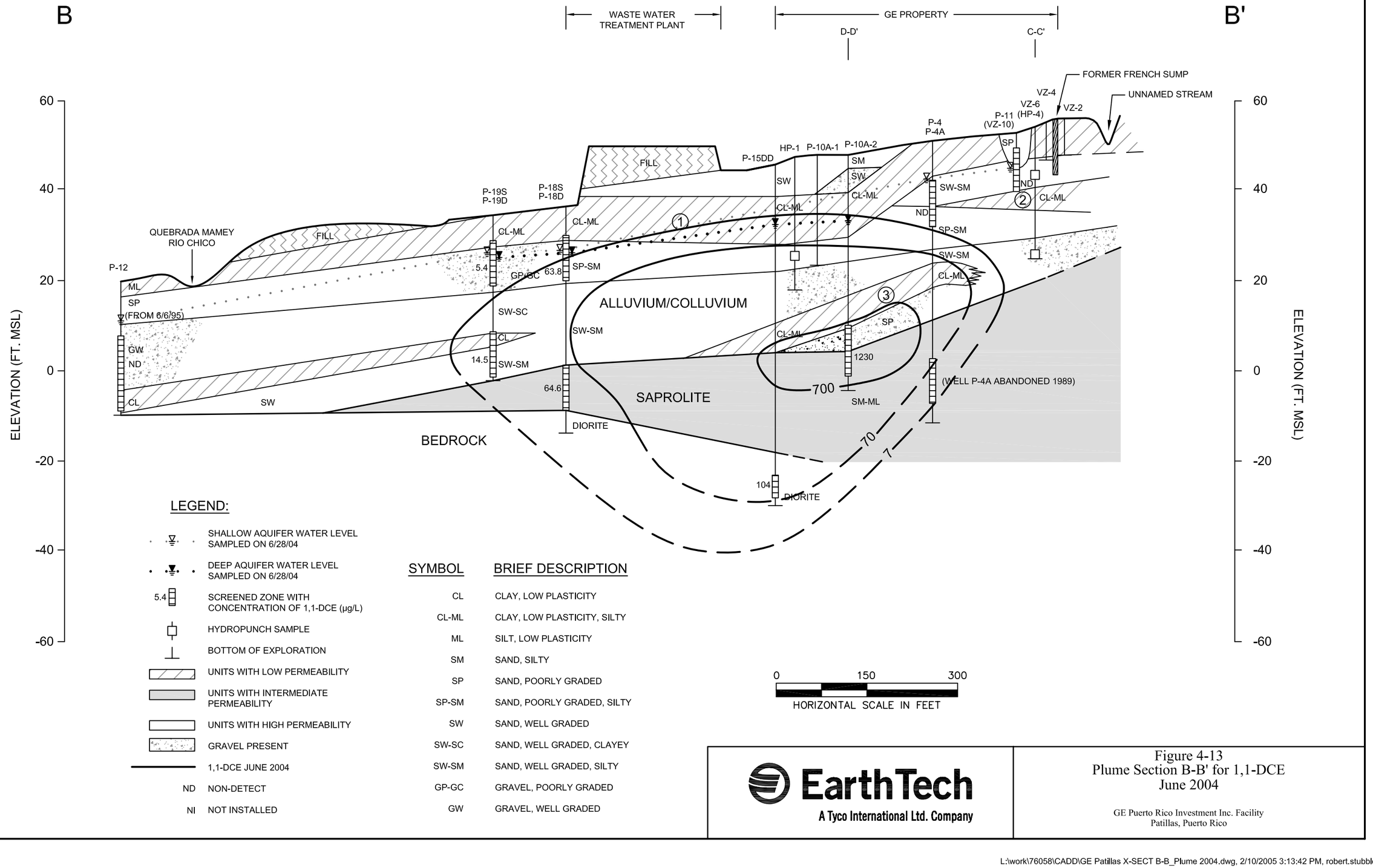
Figure 4-12
Plume Section B-B' for 1,1-DCE
October 1996

GE Puerto Rico Investment Inc. Facility
Patillas, Puerto Rico

L:\work\76058\CADD\GE Patillas X-SECT B-B_Plume 1996.dwg, 2/10/2005 3:15:48 PM, robert.stubblefield



LEGEND:

- SHALLOW AQUIFER WATER LEVEL SAMPLED ON 6/28/04
- DEEP AQUIFER WATER LEVEL SAMPLED ON 6/28/04
- 5.4 — SCREENED ZONE WITH CONCENTRATION OF 1,1-DCE (µg/L)
- HYDROPUNCH SAMPLE
- BOTTOM OF EXPLORATION
- UNITS WITH LOW PERMEABILITY
- UNITS WITH INTERMEDIATE PERMEABILITY
- UNITS WITH HIGH PERMEABILITY
- GRAVEL PRESENT
- 1,1-DCE JUNE 2004
- ND — NON-DETECT
- NI — NOT INSTALLED

SYMBOL	BRIEF DESCRIPTION
CL	CLAY, LOW PLASTICITY
CL-ML	CLAY, LOW PLASTICITY, SILTY
ML	SILT, LOW PLASTICITY
SM	SAND, SILTY
SP	SAND, POORLY GRADED
SP-SM	SAND, POORLY GRADED, SILTY
SW	SAND, WELL GRADED
SW-SC	SAND, WELL GRADED, CLAYEY
SW-SM	SAND, WELL GRADED, SILTY
GP-GC	GRAVEL, POORLY GRADED
GW	GRAVEL, WELL GRADED

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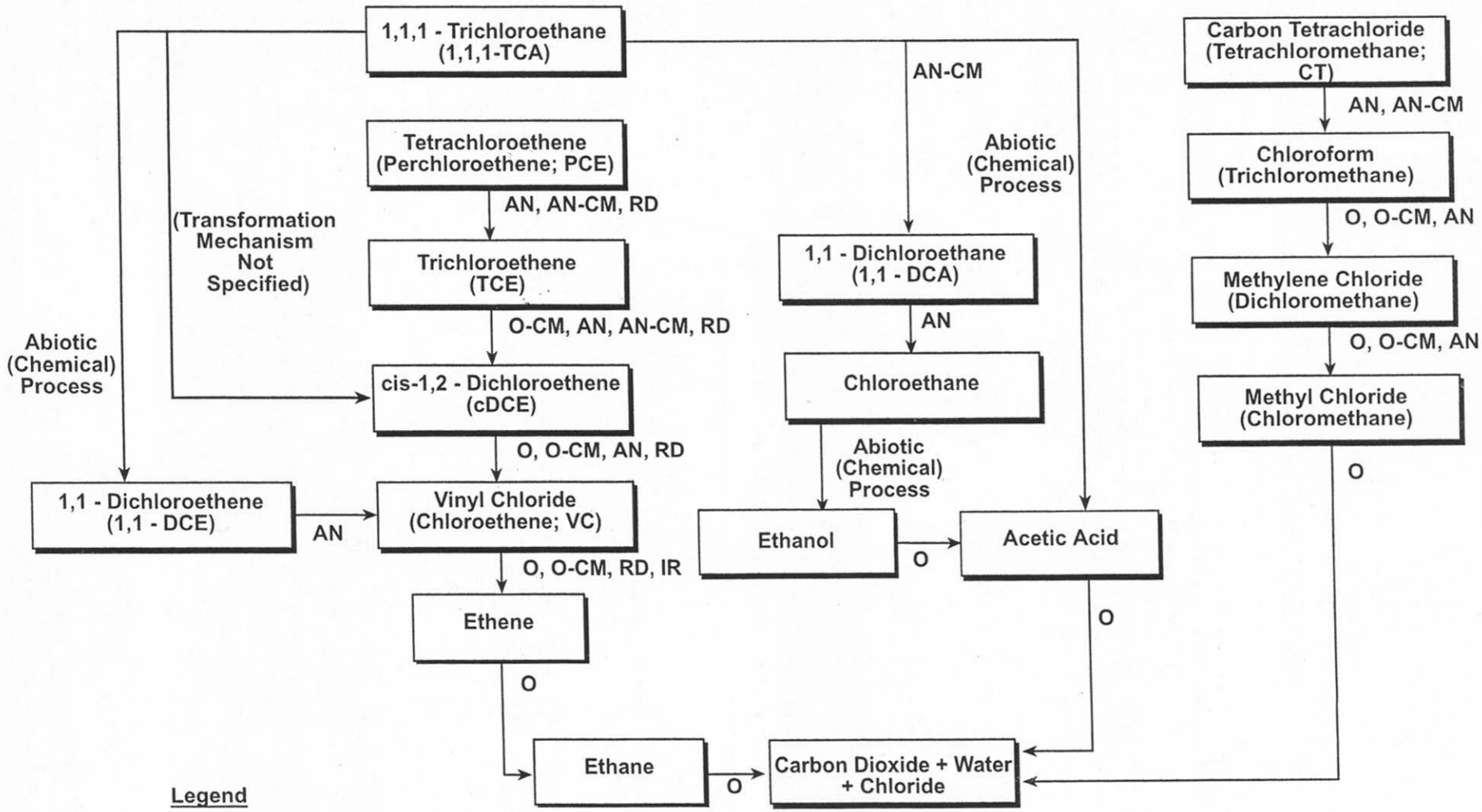
Figure 4-13
Plume Section B-B' for 1,1-DCE
June 2004

GE Puerto Rico Investment Inc. Facility
Patillas, Puerto Rico

L:\work\76058\CADD\GE Patillas X-SECT B-B_Plume 2004.dwg, 2/10/2005 3:13:42 PM, robert.stubblefield



Note: For clarity, complete reactions are not shown (e.g. loss of chlorines, formation of chlorides, etc.)

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Figure 5-1
Environmental Transformation Pathways for Selected Chlorinated Aliphatic Compounds

GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico

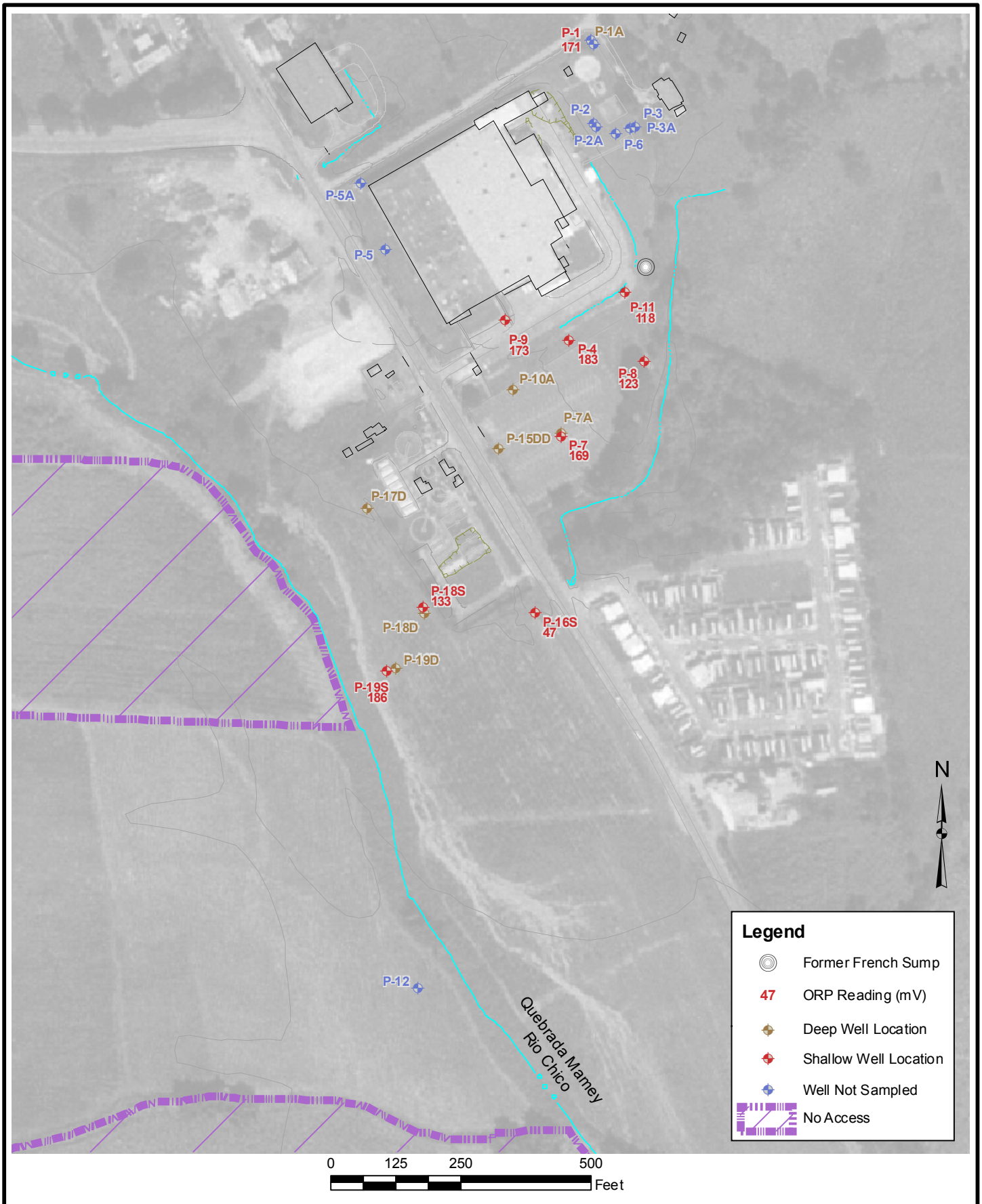

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Figure 5-2
ORP in the Water Table Zone, June 2004

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 5-2.mxd

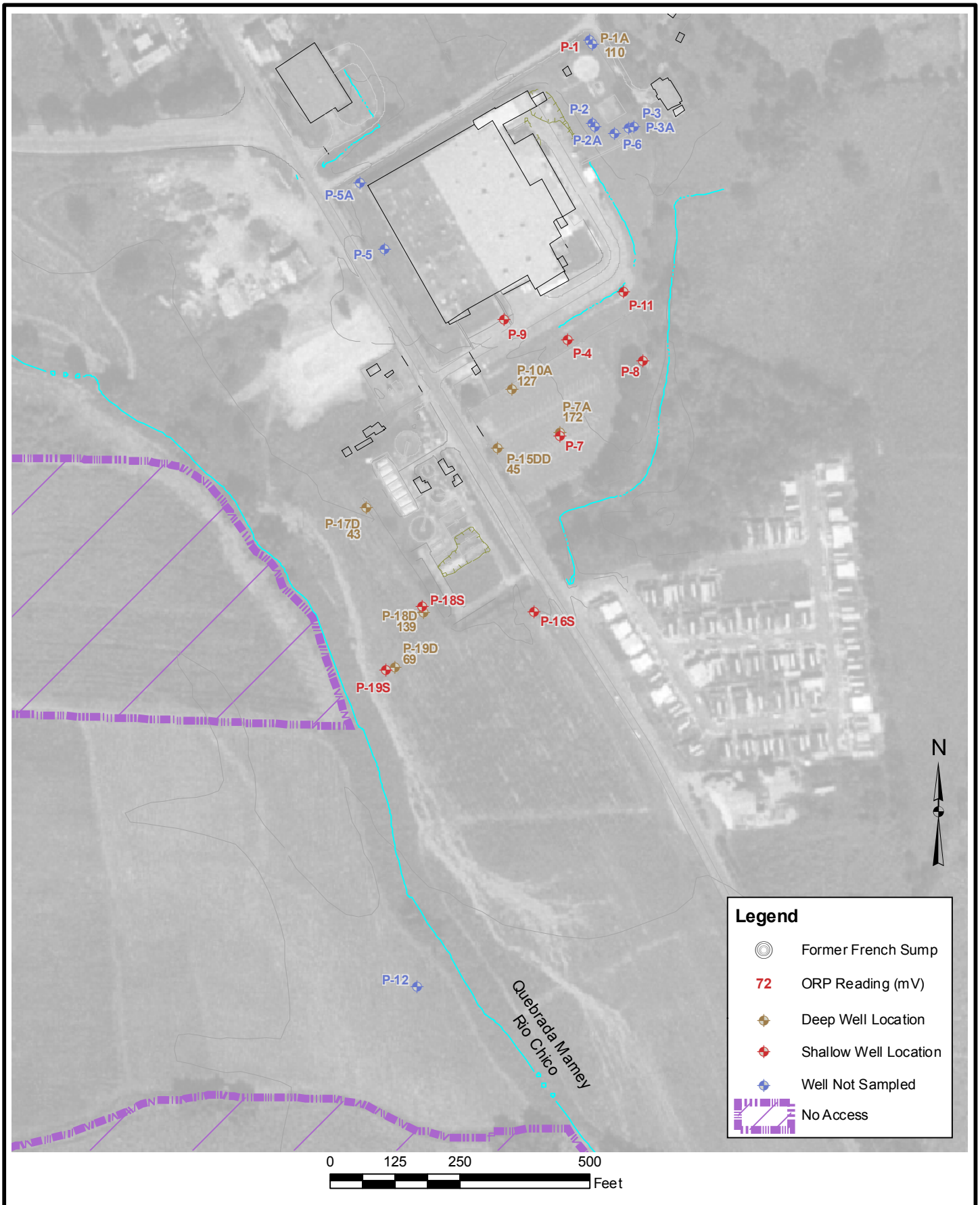

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Figure 5-3
ORP in the Deep Zone, June 2004

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 5-3.mxd

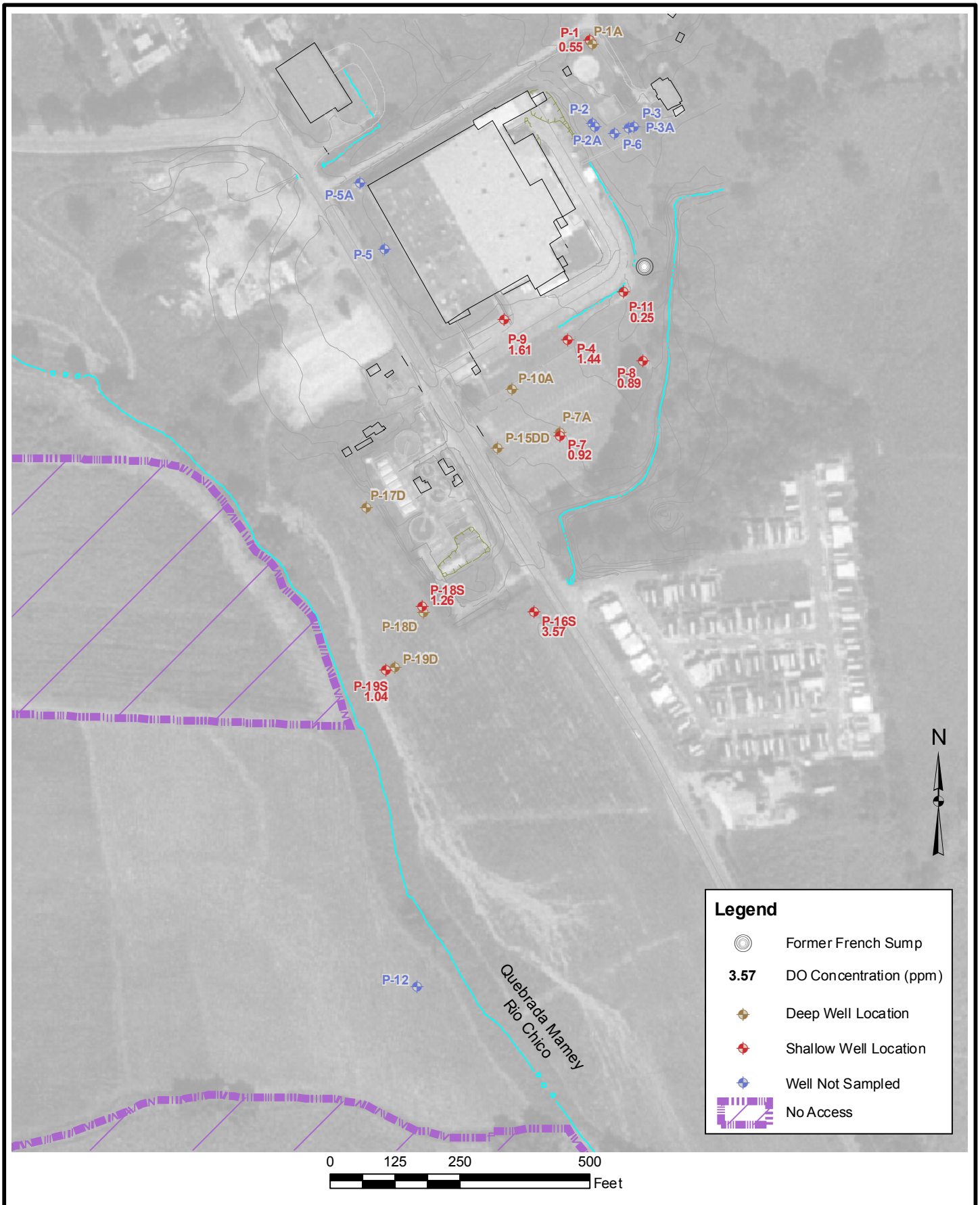

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Figure 5-4
Distribution of DO in the Water Table Zone, June 2004

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 5-4.mxd

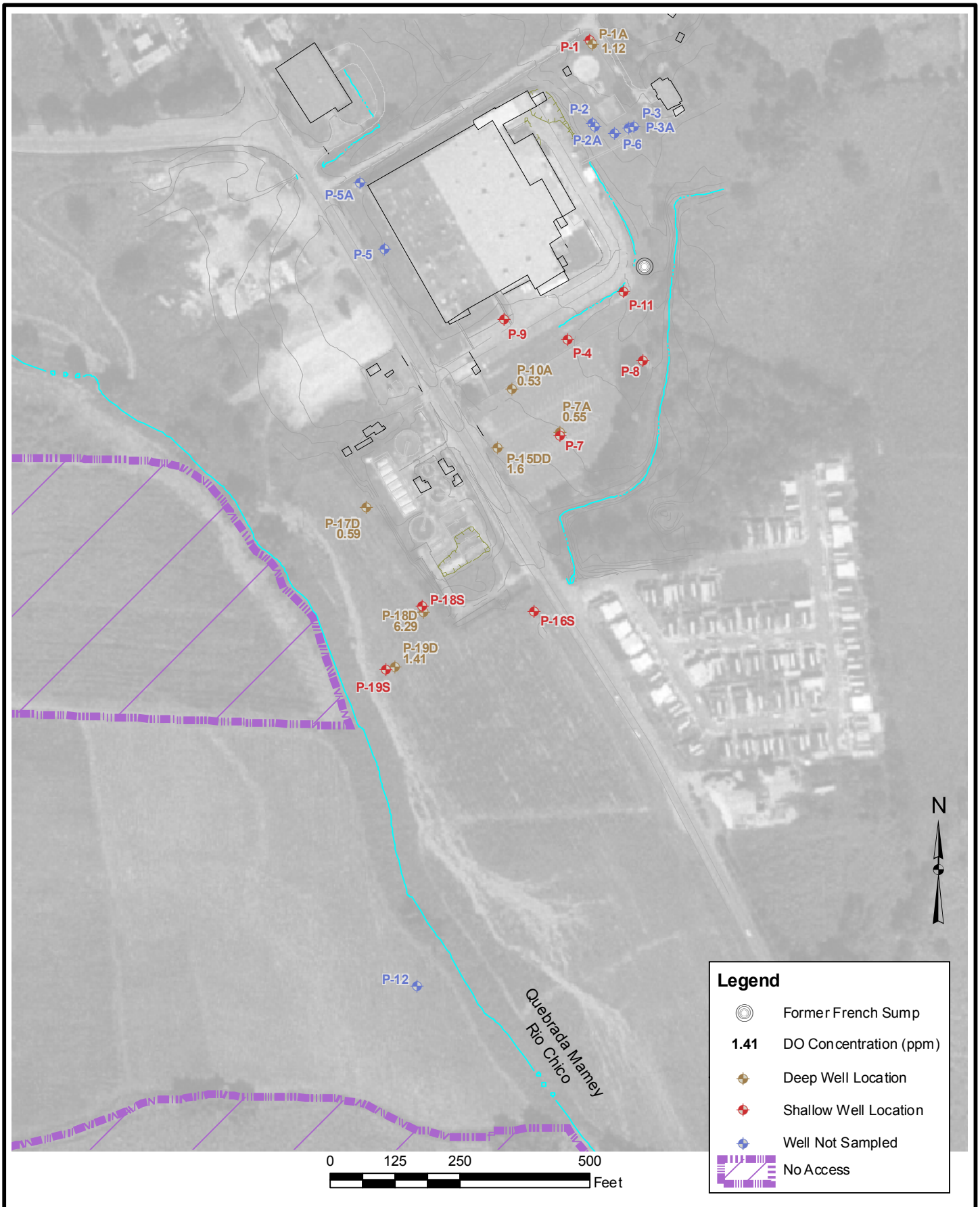

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Figure 5-5
Distribution of DO in the Deep Zone, June 2004

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 5-5.mxd

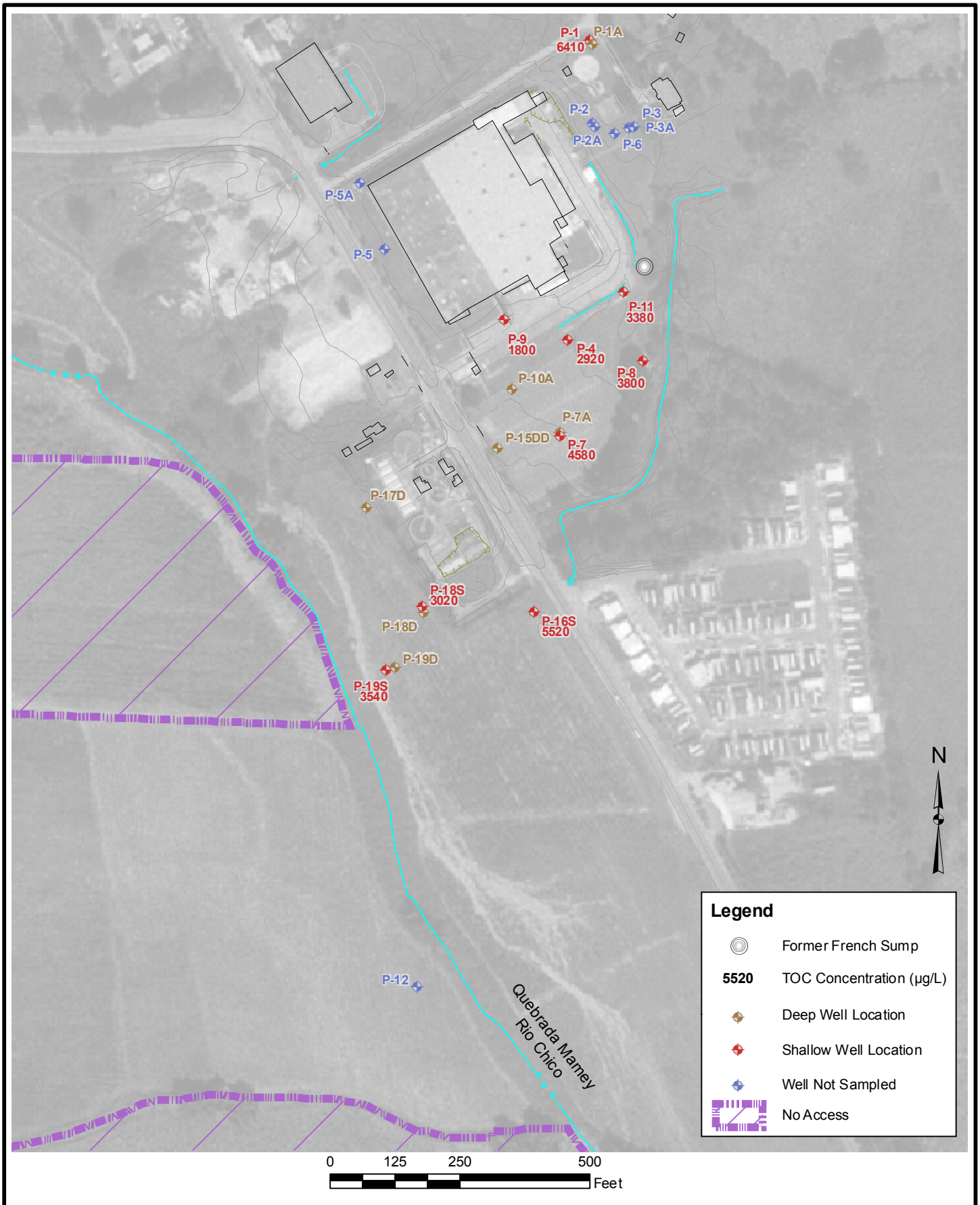

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Figure 5-6
Distribution of TOC in the Water Table Zone, June 2004

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 5-6.mxd

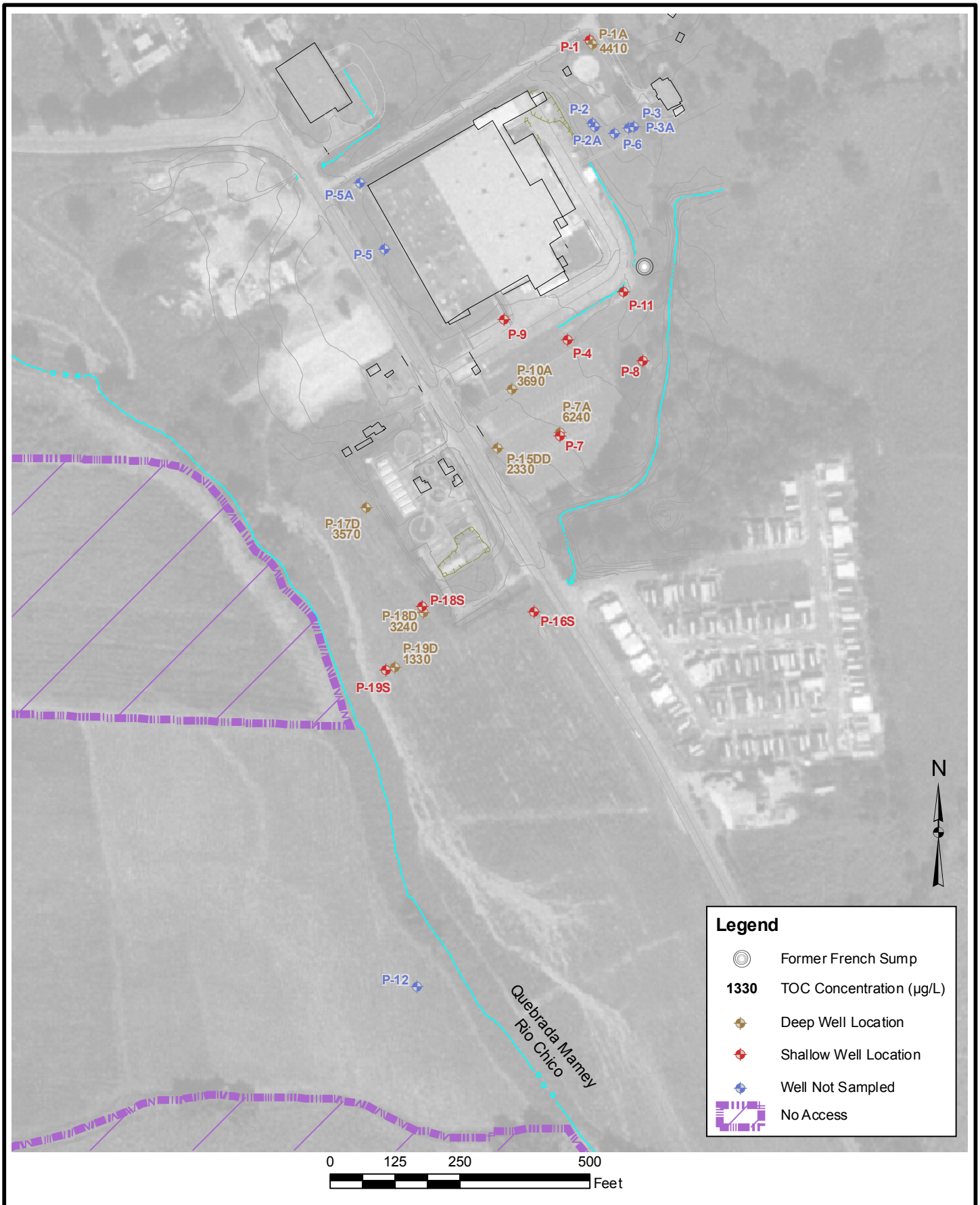

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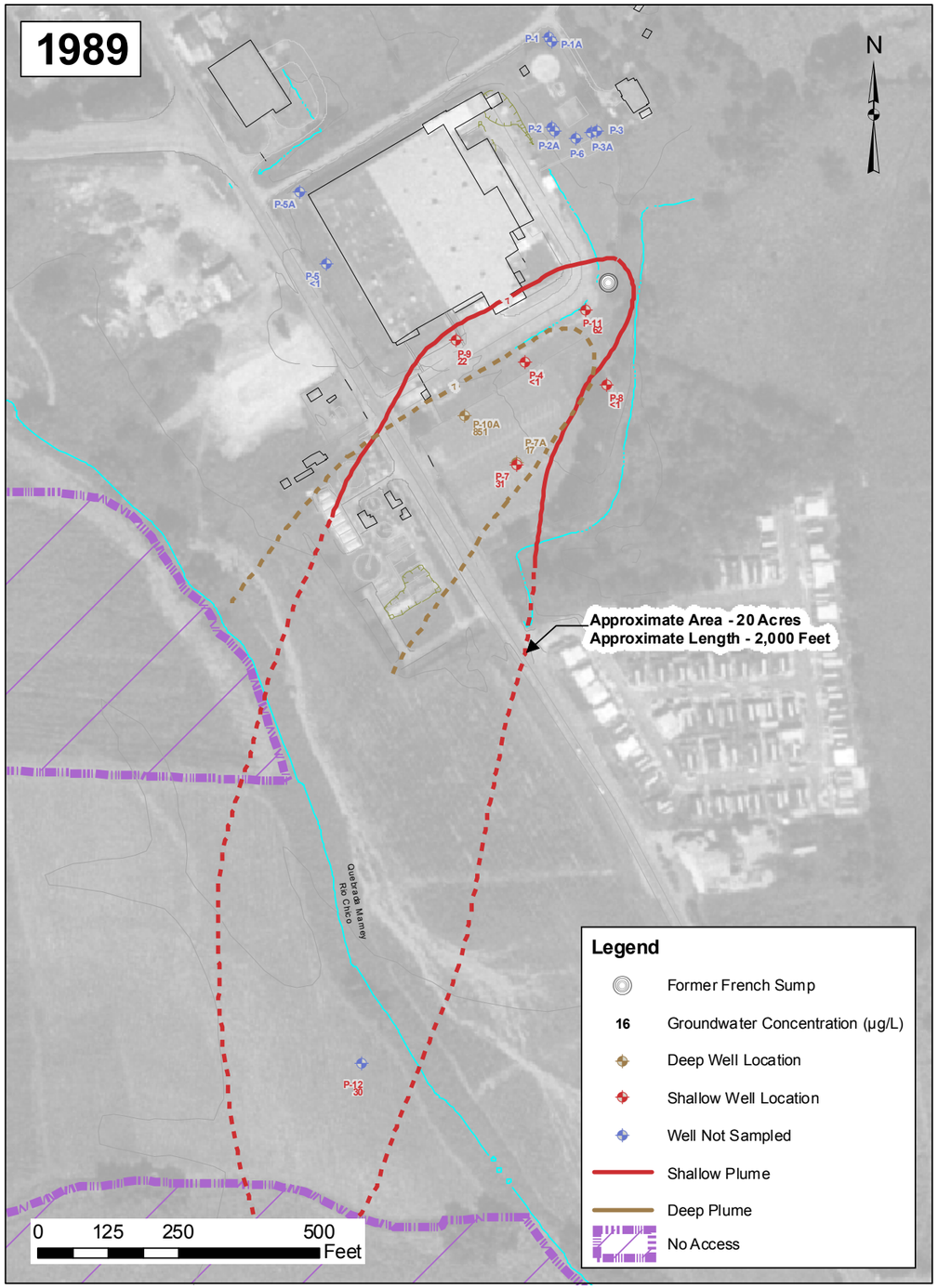
Figure 5-7
Distribution of TOC in the Deep Zone, June 2004

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 5-7.mxd



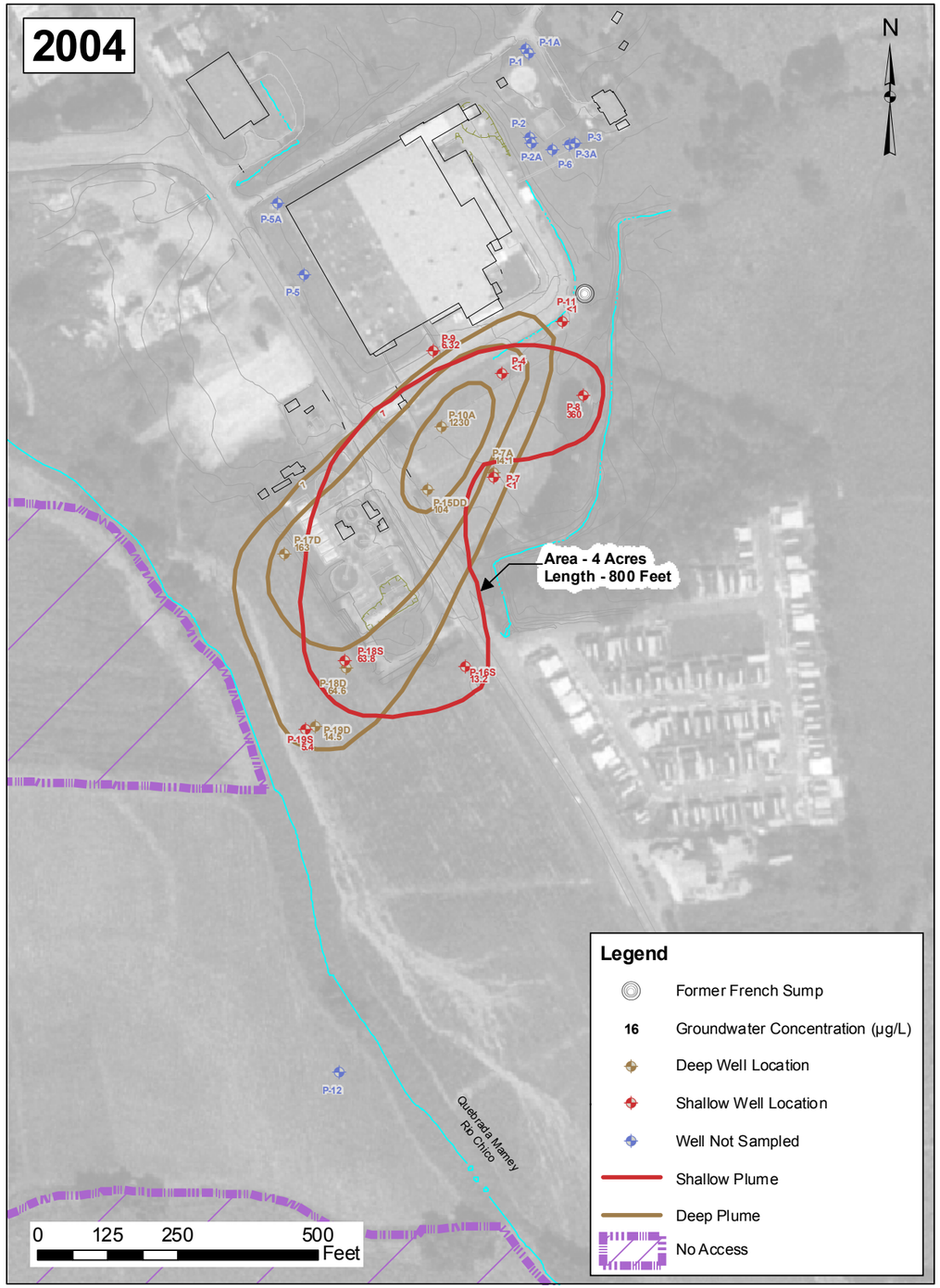


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Figure 5-8
Comparison of 1,1 DCE Plume Sizes, 1989 and 2004

GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

I:\GE_Patillas\Projects\76058\ArcView\GE_Figure 5-8.mxd

VOLUME II: Tables and Appendices

SUPPLEMENTAL RCRA FACILITY INVESTIGATION REPORT

GE Puerto Rico Investment, Inc.
Patillas, Puerto Rico

(USEPA ID Number: PRD090492109)

Prepared for:
GE Industrial Systems, Inc.
41 Woodford Avenue
Plainville, CT 06062

Prepared by:
Earth Tech, Inc.
10 Patewood Drive
Building VI, Suite 500
Greenville, SC 29615

Submitted to:
USEPA Region II
290 Broadway
New York, NY 10007

February 2005

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ES.2.3 Nature and Extent of Contamination ES-3
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C Well Data

D Groundwater Levels

E Quality Control Summary Report

F Chemical Analyses for Soil and Water Quality

G Headspace Analyses for Vadose Zone Borings

H Slug Test Data and Hydraulic Conductivity Calculations

I Tabulated Soil and Water Quality Data

Presented in this Supplemental RFI Report:

J Documentation of SRFI Field Activities
- J1 Test Boring Reports
- J2 Well Construction Details
- J3 Well Development Logs
- J4 Water Level Summary Sheets
- J5 Groundwater Sampling Logs
- J6 Summary of Field Parameters

K Photographs of the SRFI Fieldwork

L Analytical Data Quality Report for June 2004 Sampling Event

M *MNAToolBox* Evaluation

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Chronology of Field Work Events
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

ACTIVITIES COMPLETED	START	END
Initial site visit for the installation of the first phase of soil gas samplers	10/9/2003	10/10/2003
Second visit for additional soil gas sampling	12/11/2003	12/12/2003
Built roadway to new monitoring well locations behind the WWTP	5/25/2004	5/28/2004
Installed new monitoring wells P-15DD, P-16S, P-17D, P-18S, P-18D, and P-19S Could not install well P-19D because the ODEX™ bit was damaged and required repair prior to continuing	5/24/2004	6/4/2004
Installed P-19D after repairs made to ODEX™ bit Searched for P-12, using Global Positioning Sytem (GPS) survey equipment	6/30/2004	7/1/2004
Sampled monitoring wells as specified in work plan	6/7/2004	7/1/2004
Measured water levels in all available wells	6/28/2004	7/1/2004
Disposed of containerized liquid IDW at on-Site treatment plant	6/7/2004	7/1/2004

Table 2-2
Soil Gas Analytical Results
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Earth Tech ID	GORE ID	SAMPLE DATE	RESULTS (µg) PCE	TCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	1,1,1,2-TetCA	1,1,1-TCA	1,1,2-TCA	1,1-DCA	1,2-DCA	Chloroform	1,3-DCB	1,4-DCB	CB	RECOVERY NOTES
		MDL =>	*0.03*	*0.03*	*0.08*	*0.05*	*0.05*	*0.02*	*0.03*	*0.05*	*0.05*	*0.04*	*0.02*	*0.01*	*0.02*	*0.02*	Method Detection Level for the soil gas analysis
SG- 1	419071	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	module was muddy
SG- 2	419064	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.050**	nd	nd	nd	module was fairly dry
SG- 3	418472	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	hard to pull up, rain compacted the soil
SG- 4	419078	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	easy to pull out, module dry
SG- 5	419075	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	relatively dry and easy to remove
SG- 6	419073	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.090**	nd	nd	nd	relatively dry and easy to remove
SG- 7	418471	10/20/03	nd	**bdl**	nd	nd	nd	nd	nd	nd	nd	nd	**0.220**	nd	nd	nd	good seal, module clean and dry
SG- 8	419061	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	pulled out easily
SG- 9	419074	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	pulled out easily
SG-10	419066	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	hard to retrieve for first 6 inches
SG-11	419076	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	hard to pull, good seal
SG-12	419077	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	easy to pull, module wet
SG-13	418470	10/20/03	nd	nd	nd	nd	nd	nd	**0.06**	nd	nd	nd	nd	nd	nd	nd	good seal, module damp
SG-14	419065	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.040**	nd	nd	nd	easy to pull out, relatively dry
SG-15	419079	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**bdl**	nd	nd	nd	easy to pull out, relatively dry, cork chewed on
SG-16	419059	10/20/03	nd	nd	nd	nd	nd	nd	**0.09**	nd	nd	nd	nd	nd	nd	nd	good seal, cork pulled out and chewed on
SG-17	419068	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.050**	nd	nd	nd	fairly easy to pull out, fairly wet
SG-18	419070	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	moderately easy to pull out, fairly wet
SG-19	419063	10/20/03	nd	nd	nd	nd	nd	nd	**bdl**	nd	nd	nd	nd	nd	nd	nd	hard to pull out, wet module
SG-20	419058	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.100**	nd	nd	nd	cork floating in about 6 inches of water in creek bed
SG-21	419069	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**bdl**	nd	nd	nd	easy to pull out, fairly dry module
SG-22	419060	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.360**	nd	nd	nd	easy to pull out, cork chewed, dry module
SG-23	419072	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.100**	nd	nd	nd	hard to pull up, fairly wet module
SG- 101	438126	12/29/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.110**	nd	nd	nd	
SG- 102	438132	12/29/03	**bdl**	nd	**bdl**	nd	nd	nd	nd	**bdl**	nd	nd	**0.234**	nd	nd	**bdl**	
SG- 103	438138	12/29/03	**bdl**	nd	**bdl**	nd	nd	nd	nd	nd	nd	nd	**0.035**	nd	nd	nd	
SG- 104	438144	12/29/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**bdl**	nd	nd	nd	
SG- 105	438150	12/29/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.072**	nd	nd	nd	
SG- 106	438127	12/29/03	nd	nd	nd	nd	nd	nd	**0.07**	nd	nd	nd	**0.093**	nd	nd	nd	
SG- 107	438133	12/29/03	**bdl**	nd	nd	nd	nd	**bdl**	nd	**bdl**	nd	nd	**0.064**	**bdl**	**bdl**	**0.02**	
SG- 108	438139	12/29/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**bdl**	nd	nd	nd	
SG- 109	438145	12/29/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.020**	nd	nd	nd	
SG- 110	438151	12/29/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.066**	nd	nd	nd	
SG- 111	438128	12/29/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.049**	nd	nd	nd	
SG- 112	438134	12/29/03	nd	**bdl**	nd	nd	nd	nd	nd	nd	nd	nd	**0.026**	nd	nd	nd	
SG- 113	438140	12/29/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.075**	nd	nd	nd	
SG- 114	438146	12/29/03	nd	nd	nd	nd	nd	nd	**bdl**	nd	nd	nd	**0.028**	nd	nd	nd	
SG- 115	438129	12/29/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.062**	nd	nd	nd	
SG- 116	438135	12/29/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.107**	nd	nd	nd	
SG- 117	438141	12/29/03															Not Recovered
SG- 118	438147	12/29/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.074**	nd	nd	nd	
SG- 119	438130	12/29/03	**bdl**	**0.06**	nd	nd	nd	nd	nd	nd	nd	nd	**0.070**	nd	nd	nd	
SG- 120	438136	12/29/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.167**	nd	nd	nd	
SG- 121	438142	12/29/03	**bdl**	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.082**	nd	nd	nd	
SG- 122	438148	12/29/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**bdl**	nd	nd	nd	
SG- 123	438131	12/29/03	**0.23**	**0.49**	**340**	**bdl**	nd	nd	**bdl**	**0.48**	**6.31**	**1.50**	**1.315**	nd	**0.04**	nd	NOT A soil gas sample. Taken from well P-10A (at 46' in the screen zone)
SG- 124	438137	12/29/03	**0.18**	**0.48**	**272**	**0.05**	**0.06**	**bdl**	**bdl**	**0.53**	**4.27**	**1.65**	**0.942**	**0.04**	**bdl**	nd	NOT A soil gas sample. Taken from well P-10A (at 5' in the well headspace)
Trip Blank	419062	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	QA/QC
Trip Blank	419067	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	QA/QC
method blank	NONE	10/20/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	QA/QC
Trip Blank	438143	12/29/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	QA/QC
Trip Blank	438149	12/29/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	QA/QC
method blank	NONE	12/29/03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	QA/QC

Notes: **PCE** Tetrachloroethene, Perchloroethene
TCE Trichloroethene
DCE Dichloroethene
TCA Trichloroethane
DCA Dichloroethane
CB Chlorobenzene
nd not detected
bdl detected, but level not quantifiable

Table 2-3
Well Construction Details
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

							SURVEY DATA				WELL CONSTRUCTION DATA								
Well No.	Aquifer Zone	Well Purpose	Well Location	Well Install Date	Boring Depth (ft bls)	Installed By	Northing Coord[1] (ft)	Easting Coord[1] (ft)	Land Surface Elev[2] (ft msl)	Top Of Casing Elev[2] (ft msl)	Casing Material	Casing Diam (in)	Meas Well Depth 12/00 (ft btoc)	Well Screen Top Depth (ft bls)	Well Screen Bottom Depth (ft bls)	Well Screen Length (ft)	Well Screen Top Elev. (ft msl)	Well Screen Bottom Elev. (ft msl)	Comments
P- 1	Water Table	Background	Upgradient	8/1/86	25.5	Law	62,341.44	646,753.65	67.54	68.71	St Steel	2	26.07	14.00	24.00	10.00	53.54	43.54	
P- 1A	Deep Saprolite	Background	Upgradient	8/7/86	70.0	Law	62,332.96	646,758.71	67.47	68.71	St Steel	2	66.07	53.50	63.50	10.00	13.97	3.97	
P- 2	Water Table	SDB monitoring	Downgradient	8/1/86	20.5	Law	62,175.13	646,757.55	61.85	63.60	St Steel	2	21.05	8.50	18.50	10.00	53.35	43.35	
P- 2A	Deep Alluvium	SDB monitoring	Downgradient	8/20/86	69.0	Law	62,184.27	646,754.38	62.23	63.46	St Steel	2	61.04	48.50	58.50	10.00	13.73	3.73	
P- 3	Water Table	SDB monitoring	Downgradient	8/4/86	25.5	Law	62,176.17	646,831.62	63.54	64.58	St Steel	2	25.95	14.00	24.50	10.50	49.54	39.04	
P- 3A	Deep Alluvium	SDB monitoring	Downgradient	8/15/86	70.0	Law	62,172.74	646,822.46	63.23	64.68	St Steel	2	61.05	49.00	59.50	10.50	14.23	3.73	
P- 4	Water Table	Fr Sump Plume	Downgradient	7/29/86	19.11	Law	61,768.07	646,693.08	51.25	52.92	St Steel	2	21.04	9.10	19.10	10.00	42.15	32.15	
P- 4A	**Abandoned**	Fr Sump Plume	Downgradient	7/31/86	63.0	Law	NM	NM	51.66	52.88	St Steel	2	NM	48.00	58.00	10.00	3.66	-6.34	Abd, Grout contam.
P- 5	Water Table	Fr Sump Plume	Side gradient	8/4/86	20.5	Law	61,952.31	646,346.71	52.29	53.90	St Steel	2	21.03	8.00	19.00	11.00	44.29	33.29	
P- 5A	Deep Saprolite	Fr Sump Plume	Side gradient	9/15/86	70.0	Law	62,082.16	646,300.78	51.14	52.51	St Steel	2	61.06	48.50	58.50	10.00	2.64	-7.36	
P- 6	Water Table	SDB monitoring	Downgradient	8/30/88	26.0	SEC	62,162.58	646,794.32	63.05	63.70	St Steel	2	20.23	9.00	19.35	10.35	54.05	43.70	
P- 7	Water Table	Fr Sump Plume	Plume	2/3/89	18.15	SEC	61,584.71	646,670.60	47.64	49.73	St Steel	2	18.71	7.62	17.82	10.20	40.02	29.82	
P- 7A	Deep Saprolite	Fr Sump Plume	Plume	2/2/89	58.2	SEC	61,591.94	646,669.50	47.80	49.67	St Steel	2	50.29	47.79	57.77	9.98	0.01	-9.97	
P- 8	Water Table	Fr Sump Plume	Downgradient	2/3/89	17.7	SEC	61,723.60	646,834.01	52.19	54.87	St Steel	2	20.03	7.22	17.42	10.20	44.97	34.77	
P- 9	Water Table	Fr Sump Plume	Plume	2/6/89	17.4	SEC	61,809.43	646,572.08	50.35	52.32	St Steel	2	20.07	7.20	18.12	10.92	43.15	32.23	Casing bent
P-10A	Deep All/Sap	Fr Sump Plume	Plume	2/9/89	51.5	SEC	61,677.96	646,579.67	47.92	49.86	St Steel	2	50.86	37.57	48.40	10.83	10.35	-0.48	
P-11	Water Table	Fr Sump Plume	Plume	2/8/89	13.2	SEC	61,858.48	646,802.13	52.95	54.68	St Steel	2	15.17	3.00	13.20	10.20	49.95	39.75	
P-12	Water Table	Fr Sump Plume	Downgradient	11/20/89	29.5	SEC	60,532.31	646,363.53	19.70	21.82	St Steel	2	NM	12.00	28.56	16.56	7.70	-8.86	Well Lost
P-13D	Deep Alluvium	Fr Sump Plume	Downgradient	6/28/91	62.7	SEC	59,887.50	644,921.77	20.40	22.10	St Steel	2	NM	53.26	63.54	10.28	-32.86	-43.14	Access denied
P-13S	Water Table	Fr Sump Plume	Downgradient	7/5/91	28.7	SEC	59,900.62	644,923.09	19.59	23.25	St Steel	2	NM	16.34	26.58	10.24	3.25	-6.99	Access denied
P-14D	Deep Alluvium	Fr Sump Plume	Downgradient	7/10/91	67.8	SEC	59,364.25	645,861.75	16.28	19.38	St Steel	2	NM	56.90	67.14	10.24	-40.62	-50.86	Access denied
P-14S	Water Table	Fr Sump Plume	Downgradient	7/13/91	30.5	SEC	59,368.63	645,871.14	15.64	18.07	St Steel	2	NM	16.75	26.99	10.24	-1.11	-11.35	Access denied
P-15DD	Bedrock	Fr Sump Plume	Plume	5/26/04	73.6	ET	61,566.42	646,549.59	45.48	47.68	PVC	2	NM	68.50	73.50	5.00	-23.02	-28.02	New well
P-16S	Water Table	Fr Sump Plume	Side gradient	5/27/04	26.3	ET	61,252.28	646,614.49	40.39	42.61	PVC	2	NM	16.20	26.20	10.00	24.19	14.19	New well
P-17D	Deep Alluvium	Fr Sump Plume	Plume	6/1/04	61.0	ET	61,454.90	646,294.46	38.26	41.02	PVC	2	NM	50.10	60.10	10.00	-11.84	-21.84	New well
P-18S	Water Table	Fr Sump Plume	Plume	5/28/04	16.6	ET	61,264.59	646,400.30	36.55	39.08	PVC	2	NM	6.40	16.40	10.00	30.15	20.15	New well
P-18D	Deep Alluvium	Fr Sump Plume	Plume	5/31/04	50.0	ET	61,251.81	646,401.63	36.26	38.52	PVC	2	NM	35.00	45.00	10.00	1.26	-8.74	New well
P-19S	Water Table	Fr Sump Plume	Plume	5/28/04	15.8	ET	61,142.30	646,327.82	33.89	36.37	PVC	2	NM	5.60	15.60	10.00	28.29	18.29	New well
P-19D	Deep Alluvium	Fr Sump Plume	Plume	6/30/04	36.5	ET	61,148.14	646,344.38	34.32	36.45	PVC	2	NM	25.70	35.70	10.00	8.62	-1.38	New well

Notes:

1 Horizontal coordinates in Puerto Rico State Plane (feet), Zone 1, NAD 27
2 Vertical datum is NGVD29 (in feet above mean sea level)
Abd Abandoned
SDB Sludge Drying Beds
Fr Sump French Sump

Table 2-3
Well Construction Details
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

							SURVEY DATA				WELL CONSTRUCTION DATA								
Well No.	Aquifer Zone	Well Purpose	Well Location	Well Install Date	Boring Depth (ft bls)	Installed By	Northing Coord[1] (ft)	Easting Coord[1] (ft)	Land Surface Elev[2] (ft msl)	Top Of Casing Elev[2] (ft msl)	Casing Material	Casing Diam (in)	Meas Well Depth 12/00 (ft btoc)	Well Screen Top Depth (ft bls)	Well Screen Bottom Depth (ft bls)	Well Screen Length (ft)	Well Screen Top Elev. (ft msl)	Well Screen Bottom Elev. (ft msl)	Comments
P- 1	Water Table	Background	Upgradient	8/1/86	25.5	Law	62,341.44	646,753.65	67.54	68.71	St Steel	2	26.07	14.00	24.00	10.00	53.54	43.54	
P- 1A	Deep Saprolite	Background	Upgradient	8/7/86	70.0	Law	62,332.96	646,758.71	67.47	68.71	St Steel	2	66.07	53.50	63.50	10.00	13.97	3.97	
P- 2	Water Table	SDB monitoring	Downgradient	8/1/86	20.5	Law	62,175.13	646,757.55	61.85	63.60	St Steel	2	21.05	8.50	18.50	10.00	53.35	43.35	
P- 2A	Deep Alluvium	SDB monitoring	Downgradient	8/20/86	69.0	Law	62,184.27	646,754.38	62.23	63.46	St Steel	2	61.04	48.50	58.50	10.00	13.73	3.73	
P- 3	Water Table	SDB monitoring	Downgradient	8/4/86	25.5	Law	62,176.17	646,831.62	63.54	64.58	St Steel	2	25.95	14.00	24.50	10.50	49.54	39.04	
P- 3A	Deep Alluvium	SDB monitoring	Downgradient	8/15/86	70.0	Law	62,172.74	646,822.46	63.23	64.68	St Steel	2	61.05	49.00	59.50	10.50	14.23	3.73	
P- 4	Water Table	Fr Sump Plume	Downgradient	7/29/86	19.11	Law	61,768.07	646,693.08	51.25	52.92	St Steel	2	21.04	9.10	19.10	10.00	42.15	32.15	
P- 4A	**Abandoned**	Fr Sump Plume	Downgradient	7/31/86	63.0	Law	NM	NM	51.66	52.88	St Steel	2	NM	48.00	58.00	10.00	3.66	-6.34	Abd, Grout contam.
P- 5	Water Table	Fr Sump Plume	Side gradient	8/4/86	20.5	Law	61,952.31	646,346.71	52.29	53.90	St Steel	2	21.03	8.00	19.00	11.00	44.29	33.29	
P- 5A	Deep Saprolite	Fr Sump Plume	Side gradient	9/15/86	70.0	Law	62,082.16	646,300.78	51.14	52.51	St Steel	2	61.06	48.50	58.50	10.00	2.64	-7.36	
P- 6	Water Table	SDB monitoring	Downgradient	8/30/88	26.0	SEC	62,162.58	646,794.32	63.05	63.70	St Steel	2	20.23	9.00	19.35	10.35	54.05	43.70	
P- 7	Water Table	Fr Sump Plume	Plume	2/3/89	18.15	SEC	61,584.71	646,670.60	47.64	49.73	St Steel	2	18.71	7.62	17.82	10.20	40.02	29.82	
P- 7A	Deep Saprolite	Fr Sump Plume	Plume	2/2/89	58.2	SEC	61,591.94	646,669.50	47.80	49.67	St Steel	2	50.29	47.79	57.77	9.98	0.01	-9.97	
P- 8	Water Table	Fr Sump Plume	Downgradient	2/3/89	17.7	SEC	61,723.60	646,834.01	52.19	54.87	St Steel	2	20.03	7.22	17.42	10.20	44.97	34.77	
P- 9	Water Table	Fr Sump Plume	Plume	2/6/89	17.4	SEC	61,809.43	646,572.08	50.35	52.32	St Steel	2	20.07	7.20	18.12	10.92	43.15	32.23	Casing bent
P-10A	Deep All/Sap	Fr Sump Plume	Plume	2/9/89	51.5	SEC	61,677.96	646,579.67	47.92	49.86	St Steel	2	50.86	37.57	48.40	10.83	10.35	-0.48	
P-11	Water Table	Fr Sump Plume	Plume	2/8/89	13.2	SEC	61,858.48	646,802.13	52.95	54.68	St Steel	2	15.17	3.00	13.20	10.20	49.95	39.75	
P-12	Water Table	Fr Sump Plume	Downgradient	11/20/89	29.5	SEC	60,532.31	646,363.53	19.70	21.82	St Steel	2	NM	12.00	28.56	16.56	7.70	-8.86	Well Lost
P-13D	Deep Alluvium	Fr Sump Plume	Downgradient	6/28/91	62.7	SEC	59,887.50	644,921.77	20.40	22.10	St Steel	2	NM	53.26	63.54	10.28	-32.86	-43.14	Access denied
P-13S	Water Table	Fr Sump Plume	Downgradient	7/5/91	28.7	SEC	59,900.62	644,923.09	19.59	23.25	St Steel	2	NM	16.34	26.58	10.24	3.25	-6.99	Access denied
P-14D	Deep Alluvium	Fr Sump Plume	Downgradient	7/10/91	67.8	SEC	59,364.25	645,861.75	16.28	19.38	St Steel	2	NM	56.90	67.14	10.24	-40.62	-50.86	Access denied
P-14S	Water Table	Fr Sump Plume	Downgradient	7/13/91	30.5	SEC	59,368.63	645,871.14	15.64	18.07	St Steel	2	NM	16.75	26.99	10.24	-1.11	-11.35	Access denied
P-15DD	Bedrock	Fr Sump Plume	Plume	5/26/04	73.6	ET	61,566.42	646,549.59	45.48	47.68	PVC	2	NM	68.50	73.50	5.00	-23.02	-28.02	New well
P-16S	Water Table	Fr Sump Plume	Side gradient	5/27/04	26.3	ET	61,252.28	646,614.49	40.39	42.61	PVC	2	NM	16.20	26.20	10.00	24.19	14.19	New well
P-17D	Deep Alluvium	Fr Sump Plume	Plume	6/1/04	61.0	ET	61,454.90	646,294.46	38.26	41.02	PVC	2	NM	50.10	60.10	10.00	-11.84	-21.84	New well
P-18S	Water Table	Fr Sump Plume	Plume	5/28/04	16.6	ET	61,264.59	646,400.30	36.55	39.08	PVC	2	NM	6.40	16.40	10.00	30.15	20.15	New well
P-18D	Deep Alluvium	Fr Sump Plume	Plume	5/31/04	50.0	ET	61,251.81	646,401.63	36.26	38.52	PVC	2	NM	35.00	45.00	10.00	1.26	-8.74	New well
P-19S	Water Table	Fr Sump Plume	Plume	5/28/04	15.8	ET	61,142.30	646,327.82	33.89	36.37	PVC	2	NM	5.60	15.60	10.00	28.29	18.29	New well
P-19D	Deep Alluvium	Fr Sump Plume	Plume	6/30/04	36.5	ET	61,148.14	646,344.38	34.32	36.45	PVC	2	NM	25.70	35.70	10.00	8.62	-1.38	New well

Notes:

1 Horizontal coordinates in Puerto Rico State Plane (feet), Zone 1, NAD 27
2 Vertical datum is NGVD29 (in feet above mean sea level)
Abd Abandoned
SDB Sludge Drying Beds
Fr Sump French Sump

Table 2-4
Analytical Summary
GE Puerto Rico Investment, Inc. facility
Patillas, Puerto Rico

SAMPLE_ID	LOGDATE	Media	Sample Type	VOCs SW8260B	Alkalinity E310_1	Hardness E130_2	TDS E160_1	TOC E415_1	NH3 E350_1	Cl- E325_2	Nitrate E353_2	Sulfate E375_4	Metals SW6010B
P-1	11-Jun-04	Groundwater	Normal	0	2	1	1	1	1	1	1	1	6
P-1A	11-Jun-04	Groundwater	Normal	0	2	1	1	1	1	1	1	1	6
P-4	10-Jun-04	Groundwater	Normal	38	2	1	1	1	1	1	1	1	6
P-7	11-Jun-04	Groundwater	Normal	38	2	1	1	1	1	1	1	1	6
P-7A	11-Jun-04	Groundwater	Normal	38	2	1	1	1	1	1	1	1	6
P-8	28-Jun-04	Groundwater	Normal	38	2	1	1	1	1	1	1	1	6
P-9	28-Jun-04	Groundwater	Normal	38	2	1	1	1	1	1	1	1	6
P-9-A	28-Jun-04	Groundwater	Dupe	38	2	1	1	1	1	1	1	1	6
P-10A	10-Jun-04	Groundwater	Normal	38	2	1	1	1	1	1	1	1	6
P-11	28-Jun-04	Groundwater	Normal	38	2	1	1	1	1	1	1	1	6
P-15D	28-Jun-04	Groundwater	Normal	38	2	1	1	1	1	1	1	1	6
P-16S	29-Jun-04	Groundwater	Normal	38	2	1	1	1	1	1	1	1	6
P-17D	29-Jun-04	Groundwater	Normal	38	2	1	1	1	1	1	1	1	6
P-18D	29-Jun-04	Groundwater	Normal	38	2	1	1	1	1	1	1	1	6
P-18D-A	29-Jun-04	Groundwater	Dupe	38	2	1	1	1	1	1	1	1	6
P-18S	29-Jun-04	Groundwater	Normal	38	2	1	1	1	1	1	1	1	6
P-19D	01-Jul-04	Groundwater	Normal	38	2	1	1	1	1	1	1	1	6
P-19S	29-Jun-04	Groundwater	Normal	38	2	1	1	1	1	1	1	1	6

Table 2-5
Sample Nomenclature
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Sample Type	Sequence Number	Special Identifier	QC Suffix
P-	Use the existing numbers for all current installations, and increase the numbers by 1 for each new location in a series.	**Wells:** Nothing or S – water table monitoring well A or D – wells installed deeper into the water table aquifer DD – one well installed into the bedrock aquifer	-a field duplicate -b field split (none taken) -c trip blank -d equipment rinsate blank -ms matrix spike -msd matrix spike duplicate -t temperature blank

NOTES:

Sample Type: P - groundwater sample from a monitoring well

Sequence No: Installed seven new wells at five locations (two were completed as well pairs). We began the new well numbers where the old well number series stopped (P-15, P-16, P-17, P-18, and P-19).

QC Suffix: In the event that a QC sample (such as a trip blank or a temperature blank) was not collected from an environmental medium, that sample was identified by giving it the same number as a valid sample on that same Chain of Custody, but with the appropriate lower-case suffix. Examples of valid QC sample labels follows:

P-10A-a (duplicate water sample from well P-10A)
P-10A-c (trip blank accompanying the P-10A groundwater sample)

Table 3-1
Summary of Groundwater Elevations
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

	Water Level Elevation (ft msl)																					
Well ID	8/31/88	10/31/88	12/7/88	12/16/88	1/30/89	2/13/89	6/14/89	9/16/89	11/28/90	7/15/91	8/27/92	11/10/92	2/1/93	5/6/93	11/18/93	2/22/94	5/24/94	9/1/94	11/22/94	3/5/95	6/6/95	10/3/95
P- 1	59.59	60.13	60.41	60.14	60.52	60.07	59.60	57.23	57.37	55.08		59.67										
P- 1A	59.25	59.54	59.80	59.48	59.82	59.33	58.60	56.56	56.89	54.52		59.15										
P- 2	55.47	55.35	55.56	55.33	55.58	55.32	54.10	53.60	54.24	51.84		55.31										
P- 2A	50.89	51.46	50.47	50.00	50.44	50.02	48.66	48.42	48.95	46.60		50.63										
P- 3	55.89	55.91	56.01	55.79	56.05	55.70	55.46	54.05	54.21	52.30		55.77										
P- 3A	51.58	51.39	51.30	50.68	51.26	50.71	51.38	49.12	49.60	47.34		51.35										
P- 4	46.42	45.25	45.65	45.30	45.51	45.23	45.37		45.03	42.62	45.00	46.05	44.82	43.40			43.00				42.46	
P- 4A	40.68	40.05	39.02	38.21	38.60																	
P- 5	43.59	43.11	42.67	41.80	42.10	41.63	40.70		41.73	39.23	41.69	43.15	41.58	39.66			39.78				39.47	
P- 5A	37.61	36.30	34.97	33.81	34.04	33.64	31.66		34.83	30.78	34.39	37.59	34.77	30.95			31.48				31.13	
P- 6		55.53	55.51	55.27	55.54	55.27	54.02	53.57	53.74	51.86	54.44	55.28										
P- 7						42.31	41.73		42.03	39.61	41.82	42.92	41.75	41.39	41.93	40.50	40.12	38.63	41.58	37.72	39.76	41.94
P- 7A						34.27	35.22		35.57	32.22		38.16	35.71	32.57	35.77	33.64	32.88	30.91	35.40	30.68	32.26	35.89
P- 8						46.63	46.07		46.41	44.37	47.27	46.82	46.17	45.42			44.50			46.17	44.20	
P- 9						43.74	45.92		44.14	41.48	44.03	45.43	43.82	42.01	43.66	42.34	41.91	40.32	44.05	39.99	41.87	44.36
P-10A						33.76	33.61		35.17	31.52	34.81	37.84	35.32	31.84	35.56	33.24	32.38	30.38	34.93	30.11	31.82	35.56
P-11						48.80	48.48		48.62	47.02	48.76	49.32	48.73	47.84	49.03	47.93	47.38	45.40	48.60	45.19	46.90	48.58
P-12									13.64	10.64	13.12	16.80	13.37	10.36	13.72	11.36	11.10	9.50	13.62	8.82	11.11	14.70
P-13S										7.83	7.79	8.22	7.55	7.12			6.80				6.80	
P-13D										8.55	7.79	8.29	7.52	7.02			7.28				6.86	
P-14S										4.49	5.16	6.21	5.07	3.97			4.37				3.87	
P-14D										4.98	5.29	6.36	5.14	4.19			4.68				5.36	
P-15DD																						
P-16S																						
P-17D																						
P-18S																						
P-18D																						
P-19S																						
P-19D																						
Minimum	37.61	36.30	34.97	33.81	34.04	33.64	31.66	48.42	13.64	4.49	5.16	6.21	5.07	3.97	13.72	11.36	4.37	9.50	13.62	8.82	3.87	14.70
Maximum	59.59	60.13	60.41	60.14	60.52	60.07	59.60	57.23	57.37	55.08	54.44	59.67	48.73	47.84	49.03	47.93	47.38	45.40	48.60	46.17	46.90	48.58

NOTE: A blank cell indicates that either the well did not exist or no measurement was available on that date.

Table 3-1
Summary of Groundwater Elevations
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

	Water Level Elevation (ft msl)																						
Well ID	1/16/96	4/30/96	7/16/96	10/14/96	2/19/97	6/3/97	10/3/97	2/3/98	6/2/98	11/4/98	5/11/99	8/10/99	12/15/99	12/14/00	12/11/01	10/7/03	10/20/03	12/29/03	6/7/04	6/28/04	Min	Avg	Max	# of Meas
P- 1														56.80	56.38	54.76	55.85	58.60	58.11	57.58	54.76	58.22	60.52	18
P- 1A														56.01		54.09	55.24	57.98	57.37	56.69	54.09	57.67	59.82	17
P- 2														52.75	52.63	51.18	52.10	53.89	53.56	53.02	51.18	53.93	55.58	18
P- 2A														47.00		45.90	46.90	48.52	47.92	47.27	45.90	48.83	51.46	17
P- 3														53.20	53.07	51.56	52.48	54.28	53.96	53.43	51.56	54.40	56.05	18
P- 3A														47.80		46.66	47.58	49.18	48.60	47.99	46.66	49.62	51.58	17
P- 4			44.59				43.92			45.14			44.22	42.24	42.82	42.07	43.00	43.99	43.62	42.81	42.07	44.21	46.42	26
P- 4A																					38.21	39.31	40.68	5
P- 5			41.85				42.00			43.15			43.20	39.98	40.18	39.50	40.69	41.96	41.49	40.44	39.23	41.40	43.59	26
P- 5A			35.53				35.73			37.62			35.61	31.67	32.36	30.94	33.50	35.84	34.81	32.98	30.78	34.02	37.62	26
P- 6														52.72	52.60	51.13	52.06	53.82	53.51	52.97	51.13	53.82	55.54	18
P- 7	40.84	38.83	41.28	41.33	43.22	39.22	41.20	40.18	39.68	42.42	39.48	40.39	40.88	38.88	39.86	39.31	40.15	41.26	40.69	39.90	26.00	40.29	43.22	37
P- 7A	35.60	31.76	36.67	34.86	32.79	31.73	35.83	33.55	32.66	37.81	32.21	33.95	35.57	32.41	33.43	32.25	34.34	36.05	35.38	33.89	26.00	33.89	38.16	36
P- 8			46.05				45.12			45.42	44.24	44.67	43.67	43.62	45.11	43.66	43.66		43.39	43.29	43.29	45.04	47.27	23
P- 9	43.62	40.91	43.81	43.59	42.52	41.25	43.47	42.51	41.63	44.53	41.77	42.80	43.57	41.51	42.05	41.22	42.43	43.59	43.28	42.29	24.00	42.31	45.92	37
P-10A	35.13	32.03	37.36	34.23	32.01	31.18	35.81	32.86	32.06	37.52	31.87	31.29	36.01	31.78	32.91	31.64	33.91	35.81	35.06	33.40	23.00	33.37	37.84	37
P-11	48.76	46.26	48.08	49.03	48.20	46.69	47.68	47.58	47.18	48.56	47.26	48.02	47.98	46.90	47.35	46.22	46.78	47.45	47.32	46.86	22.00	46.99	49.32	37
P-12	15.07	10.62	18.22																		8.82	13.15	21.00	18
P-13S			8.74																	6.45	6.45	7.48	8.74	9
P-13D			8.65																	6.44	6.44	7.60	8.65	9
P-14S			6.04																	4.09	3.87	4.81	6.21	9
P-14D			6.33																	4.21	4.19	5.17	6.36	9
P-15DD																			33.88	32.26	32.26	33.07	33.88	2
P-16S																				26.02	26.02	26.02	26.02	1
P-17D																				30.61	30.61	30.61	30.61	1
P-18S																				26.84	26.84	26.84	26.84	1
P-18D																				26.03	26.03	26.03	26.03	1
P-19S																				26.29	26.29	26.29	26.29	1
P-19D																				25.01	25.01	25.01	25.01	1
Minimum	15.07	10.62	6.04	34.23	32.01	31.18	35.73	32.86	32.06	37.52	31.87	31.29	35.57	31.67	32.36	30.94	33.50	35.81	33.88	4.09	3.87	4.81		
Maximum	48.76	46.26	48.08	49.03	48.20	46.69	47.68	47.58	47.18	48.56	47.26	48.02	47.98	56.80	56.38	54.76	55.85	58.60	58.11	57.58		58.22	60.52	

Table 4-1
Concentrations of TCA, DCA, and DCE in Groundwater – 1989-2004
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Constituent Name	Date Sampled	Well ID Number																				
		Shallow Zone												Deeper Zone								
		On-Site						Off-Site						On-Site				Off-Site				
		P-4	P-5	P-7	P-8	P-9	P-11	P-12	P-13S	P-14S	P-16S	P-18S	P-19S	P-5A	P-7A	P-10A	P-15DD	P-13D	P-14D	P-17D	P-18D	P-19D
1,1,1-TCA (µg/L)	2/17/89	0.1	0.1	20	9	0.1	911							0.1	0.1	26						
	11/16/89							2														
	7/16/91	0.1		25	0.1	0.1	1180	3	0.1	0.1					10	0.1		0.1	0.1			
	8/27/92	0.1	0.1	4	0.1	0.1	139	0.1	0.1	0.1				0.1		15		0.1	0.1			
	11/12/92	0.1	0.1	0.1	0.1	0.1	20	0.1	0.1	0.1				0.1	12	7		0.1	0.1			
	2/2/93	0.1	0.1	0.1	0.1	0.1	80	0.1	0.1	0.1				0.1	23	0.1		0.1	0.1			
	5/6/93	0.1	0.1	0.1	0.1	0.1	115	0.1	0.1	0.1				0.1	17	0.1		0.1	0.1			
	8/12/93			0.1		0.1	148	0.1							11	0.1						
	11/18/93			5		2	736	3							11	0.1						
	2/22/94			14		0.1	520	2							4	9						
	5/25/94	0.1	0.1	13	0.1	0.1	649	0.1	0.1	0.1				0.1	0.1	7		0.1	0.1			
	9/1/94			6		0.1	665	0.1							0.1	0.1						
	11/22/94			0.1		0.1	390	0.1							0.1	0.1						
	3/5/95			0.1		0.1	394	0.1							4	0.1						
	6/6/95	0.1	0.1	0.1	0.1	0.1	875	0.1	0.1	0.1				0.1	5	0.1		0.1	0.1			
	10/3/95			0.1		0.1	420	0.1							3	0.1						
	1/16/96			0.1		0.1	878	0.1							7	4						
	4/30/96			0.1		0.1	185	0.1							6	3						
	7/16/96	0.1	0.1	0.1	0.1	0.1	712	0.1	0.1	0.1				0.1	8	4		0.1	0.1			
	10/14/96			0.1		0.1	9120								5	3						
	2/19/97			18		0.1	5850								6	0.1						
	6/3/97			13		0.1	1220								3	0.1						
	10/3/97	0.1	0.1	0.1	0.1	0.1	1050							0.1	4	0.1						
	2/3/98			0.1		0.1	118								0.1	0.1						
	6/2/98			0.1		0.1	113								0.1	0.1						
	11/4/98	0.1	0.1	0.1	2410	0.1	10							0.1	0.1	0.1						
	5/11/99			0.1	9	0.1	17								0.1	0.1						
	8/10/99			0.1	0.1	0.1	27								0.1	0.1						
	12/15/99	0.1	0.1	0.1	2040	0.1	0.1							0.1	0.1	0.1						
	12/14/00			0.1	0.1	0.1	0.1								0.1	6						
	12/11/01			0.1	0.1	0.1	0.1								0.1	6.1						
	6/30/04	0.1		0.1	586	0.1	0.1				0.423	1.63	0.44		0.35	1.28	0.513			0.1	1.17	1.12

Table 4-1
Concentrations of TCA, DCA, and DCE in Groundwater – 1989-2004
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Constituent Name	Date Sampled	Well ID Number																				
		Shallow Zone												Deeper Zone								
		On-Site						Off-Site						On-Site				Off-Site				
		P-4	P-5	P-7	P-8	P-9	P-11	P-12	P-13S	P-14S	P-16S	P-18S	P-19S	P-5A	P-7A	P-10A	P-15DD	P-13D	P-14D	P-17D	P-18D	P-19D
1,1-DCA (µg/L)	2/17/89	0.1	0.1	0.1	0.1	0.1	0.1							0.1		13						
	11/16/89							0.1														
	7/16/91	0.1		3	0.1	2	20	0.1	0.1	0.1					2	12		0.1	0.1			
	8/27/92	0.1	0.1	0.1	0.1	0.1	11	0.1	0.1	0.1				0.1		17		0.1	0.1			
	11/12/92	0.1	0.1	0.1	0.1	3	0.1	0.1	0.1	0.1				0.1	5	12		0.1	0.1			
	2/2/93	0.1	0.1	0.1	0.1	0.1	8	0.1	0.1	0.1				0.1	6	0.1		0.1	0.1			
	5/6/93	0.1	0.1	0.1	0.1	0.1	6	0.1	0.1	0.1				0.1	5	0.1		0.1	0.1			
	8/12/93			0.1		0.1	17	0.1							0.1	0.1						
	11/18/93			0.1		2	49	0.1							4	17						
	2/22/94			0.1		0.1	21	0.1							3	18						
	5/25/94	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1				0.1	3	16		0.1	0.1			
	9/1/94			0.1		0.1	25	0.1							0.1	0.1						
	11/22/94			0.1		0.1	37	0.1							0.1	13						
	3/5/95			0.1		0.1	13	0.1							0.1	0.1						
	6/6/95	0.1	0.1	0.1	0.1	0.1	46	0.1	1	0.1				0.1	3	16		0.1	0.1			
	10/3/95			0.1		0.1	44	0.1							1	17						
	1/16/96			0.1		0.1	83	0.1							3	13						
	4/30/96			0.1		0.1	8	0.1							3	10						
	7/16/96	0.1	0.1	0.1	0.1	0.1	49	0.1	0.1	0.1				0.1	3	14		0.1	0.1			
	10/14/96			0.1		0.1	173								3	18						
	2/19/97			0.1		0.1	65								0.1	11						
	6/3/97			0.1		0.1	26								3	10						
	10/3/97	0.1	0.1	0.1	0.1	0.1	50							0.1	0.1	12						
	2/3/98			0.1		0.1	5								0.1	11						
	6/2/98			0.1		0.1	0.1								0.1	11						
	11/4/98	0.1	0.1	0.1	128	0.1	0.1							0.1	0.1	11						
	5/11/99			0.1	0.1	0.1	0.1								0.1	17						
	8/10/99			0.1	0.1	0.1	5								0.1	23						
	12/15/99	0.1	0.1	0.1	198	0.1	0.1							0.1	0.1	23						
	12/14/00			0.1	0.1	0.1	0.1								0.1	18						
	12/11/01			0.1	0.1	0.1	0.1								0.1	21						
	6/30/04	0.1		0.1	60.8	0.816	0.176				5.31	2.29	0.323		1.2	22.5	2.07			2.14	2.11	0.658

Table 4-1
Concentrations of TCA, DCA, and DCE in Groundwater – 1989-2004
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Constituent Name	Date Sampled	Well ID Number																				
		Shallow Zone												Deeper Zone								
		On-Site						Off-Site						On-Site				Off-Site				
		P-4	P-5	P-7	P-8	P-9	P-11	P-12	P-13S	P-14S	P-16S	P-18S	P-19S	P-5A	P-7A	P-10A	P-15DD	P-13D	P-14D	P-17D	P-18D	P-19D
1,1-DCE (µg/L)	2/17/89	0.1	0.1	31	0.1	22	62							0.1	17	851						
	11/16/89							30														
	7/16/91	0.1		30	0.1	13	409	25	0.1	0.1					21	1740		0.1	0.1			
	8/27/92	0.1	0.1	0.1	0.1	18	26	8	0.1	0.1				0.1		1310		0.1	0.1			
	11/12/92	0.1	0.1	0.1	0.1	19	1	5	0.1	0.1				0.1	37	1310		0.1	0.1			
	2/2/93	0.1	0.1	0.1	0.1	16	19	5	0.1	0.1				0.1	60	1320		0.1	0.1			
	5/6/93	0.1	0.1	5	0.1	9	25	20	0.1	0.1				0.1	40	937		0.1	0.1			
	8/12/93			0.1		15	29	17							29	1180						
	11/18/93			8		13	103	27							50	1270						
	2/22/94			19		12	204	30							40	1900						
	5/25/94	0.1	0.1	21	0.1	10	259	20	0.1	0.1				0.1	30	1500		0.1	0.1			
	9/1/94			16		11	271	18							24	1260						
	11/22/94			5		10	176	6							25	1200						
	3/5/95			3		8	118	12							21	960						
	6/6/95	0.1	0.1	8	0.1	8	295	1	0.1	0.1				0.1	22	961		0.1	0.1			
	10/3/95			3		6	172	4							17	1110						
	1/16/96			2		10	392	6							34	1260						
	4/30/96			2		9	62	5							24	770						
	7/16/96	0.1	0.1	0.1	0.1	8	160	0.1	0.1	0.1				0.1	27	1100		0.1	0.1			
	10/14/96			0.1		7	2260								22	924						
	2/19/97			14		9	1630								30	707						
	6/3/97			17		8	611								23	601						
	10/3/97	0.1	0.1	23	0.1	6	431							0.1	11	800						
	2/3/98			0.1		0.1	53								19	702						
	6/2/98			0.1		5	47								11	667						
	11/4/98	0.1	0.1	0.1	1120	6	0.1							0.1	12	580						
	5/11/99			0.1	7	13	0.1								19	857						
	8/10/99			0.1	0.1	13	6								18	742						
	12/15/99	0.1	0.1	0.1	2020	11	0.1							0.1	19	1350						
	12/14/00			0.1	0.1	7	0.1								16	992						
	12/11/01			0.1	0.1	0.1	0.1								18	974						
	6/30/04	0.1		0.1	360	6.32	0.1				13.2	63.8	5.4		14.1	1230	104			163	64.6	14.5

Notes: Results in the shaded rows were used to plot plume maps and plume cross sections in Section 4 of this SRFI Report.
For plotting purposes, values of 0.1 have been used to indicate non-detect results. Blank cells indicate no analysis was made.
All results are in µg/L.

Table 4-2
Analytical Results for Groundwater Samples – June 2004
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Sample ID Date Collected Lab Sample ID	MCL Criteria	PRG Tap Water Criteria	P-01 6/11/2004 L0406256	P-01A 6/11/2004 L0406256	P-04 6/10/2004 L0406242	P-07 6/11/2004 L0406256	P-07A 6/11/2004 L0406256	P-08 6/28/2004 L0406578
Volatile Organic Compounds by Method SW8260B (µg/L)								
Acetone	NS	5480 nc	NA	NA	< 10	< 10	< 10	< 10
Benzene	5	0.345 ca	NA	NA	< 1	< 1	< 1	< 1
Bromochloromethane	NS	NS	NA	NA	< 1	< 1	< 1	< 1
Bromodichloromethane	80 M2	0.18 ca	NA	NA	< 1	< 1	< 1	< 1
Bromoform	80 M2	8.5 ca*	NA	NA	< 1	< 1	< 1	< 1
Bromomethane	NS	8.7 nc	NA	NA	< 1	< 1	< 1	< 1
Butanone, 2- (MEK)	NS	6970 nc	NA	NA	< 10	< 10	< 10	< 10
Carbon Disulfide	NS	1000 nc	NA	NA	< 1	< 1	< 1	< 1
Carbon Tetrachloride	5	0.17 ca*	NA	NA	< 1	< 1	< 1	< 1
Chlorobenzene	100	110 nc	NA	NA	< 1	< 1	< 1	< 1
Chloroethane	NS	4.6 ca	NA	NA	< 1	< 1	< 1	< 1
Chloroform	80	0.166 ca	NA	NA	**0.258 J/B/K**	< 1	< 1	< 1
Chloromethane	NS	158 nc	NA	NA	< 1	< 1	< 1	< 1
Dibromochloromethane	80 M2	0.13 ca	NA	NA	< 1	< 1	< 1	< 1
Dichlorobenzene, 1,2-	600	370 nc	NA	NA	< 1	< 1	< 1	< 1
Dichlorobenzene, 1,3-	NS	183 nc	NA	NA	< 1	< 1	< 1	< 1
Dichlorobenzene, 1,4-	75	0.5 ca	NA	NA	< 1	< 1	< 1	< 1
Dichloroethane, 1,1-	NS	810 nc	NA	NA	< 1	< 1	**1.18**	**60.8**
Dichloroethane, 1,2-	5	0.12 ca*	NA	NA	< 1	< 1	< 1	< 1
Dichloroethene, 1,1-	7	340 nc	NA	NA	< 1	< 1	**14.1**	**360**
Dichloroethene, cis-1,2-	70	61 nc	NA	NA	< 1	< 1	< 1	< 1
Dichloroethene, trans-1,2-	100	120 nc	NA	NA	< 1	< 1	< 1	< 1
Dichloropropane, 1,2-	5	0.16 ca*	NA	NA	< 1	< 1	< 1	< 1
Dichloropropene, cis-1,3-	NS	0.4 ca Sa	NA	NA	< 1	< 1	< 1	< 1
Dichloropropene, trans-1,3-	NS	0.4 ca Sa	NA	NA	< 1	< 1	< 1	< 1
Ethylbenzene	700	1340 nc	NA	NA	< 1	< 1	< 1	< 1
Hexanone, 2- (MBK)	NS	NS	NA	NA	< 10	< 10	< 10	< 10
Methylene Chloride	5	4.3 ca	NA	NA	< 5	< 5	< 5	< 5
Pentanone, 4-Methyl-2- (MIBK)	NS	1990 nc	NA	NA	< 10	< 10	< 10	< 10
Styrene	100	1600 nc	NA	NA	< 1	< 1	< 1	< 1
Tetrachloroethane, 1,1,2,2-	NS	0.055 ca	NA	NA	< 1	< 1	< 1	< 1
Tetrachloroethene	5	0.104 ca	NA	NA	< 1	< 1	< 1	**5.94**
Toluene	1000	720 nc	NA	NA	< 1	< 1	< 1	< 1
Trichloroethane, 1,1,1-	200	3200 nc	NA	NA	< 1	< 1	**0.35 J//**	**586**
Trichloroethane, 1,1,2-	5	0.2 ca	NA	NA	< 1	< 1	< 1	< 1
Trichloroethene	5	0.028 ca	NA	NA	< 1	< 1	< 1	**3.53**
Vinyl Chloride	2	0.02 ca	NA	NA	< 1	< 1	< 1	**2.14 /B/K**
Xylenes, Total	10000	206 nc	NA	NA	< 1	< 1	< 1	< 1
ICP Metals by Method SW6010B (µg/L)								
Calcium	NS	NS	**35600**	**29100**	**26100**	**25900**	**34300**	**35500**
Iron	300	11000 nc	**274**	**555**	< 40	**212**	**312**	**10200**
Magnesium	NS	NS	**17900**	**18900**	**15100**	**15800**	**16700**	**15000**
Manganese	50	880 nc	< 10	**22.7**	< 10	< 10	**32.7**	**1020**
Potassium	NS	NS	**353 J//**	**389 J//**	**382 J//**	< 1000	**296 J//**	**639 J//**
Sodium	NS	NS	**42600**	**40900**	**32800**	**27500**	**41700**	**32100**
Hardness as CaCO3 by Method E130.2 (µg/L)								
Hardness (as CaCO3)	NS	NS	**152000**	**142000**	**124000**	**119000**	**155000**	**163000**
TDS by Method E160.1 (µg/L)								
Total Dissolved Solids	NS	NS	**294000**	**294000**	**278000**	**320000**	**288000**	**264000**
Alkalinity by Method E310.1 (µg/L)								
Alkalinity, Bicarbonate (AS CACO3)	NS	NS	**148000**	**151000**	**130000**	**106000**	**181000**	**178000**
Alkalinity, Carbonate (as CACO3)	NS	NS	< 10000	< 10000	< 10000	< 10000	< 10000	< 10000
Chloride by Method E325.2 (µg/L)								
Chloride	250000	NS	**31300**	**23200**	**19600**	**25100**	**45000**	**61000**
Nitrogen, Ammonia (as N) by Method E350.1 (µg/L)								
Ammonia	NS	NS	**80 J//**	< 100	< 100	**66 J//**	**69 J//**	**161**
Nitrate-Nitrite by Method E353.2 (µg/L)								
Nitrate	10000	10000 nc	**2450**	**2990**	**2210**	**5340**	**1620**	**81.1**
Sulfate by Method E375.4 (µg/L)								
Sulfate (as SO4)	250000	NS	**57700**	**44200**	**32700**	**43000**	**31200**	**21900**
TOC by Method E415.1 (µg/L)								
Total Organic Carbon	NS	NS	**6410**	**4410**	**2920**	**4580**	**6240**	**3800**

Notes:
NS - No Standard
nc - Noncancer PRG
ca - Cancer PRG
ca* - Cancer PRG (where nc < 100X ca)
ca** - Cancer PRG (where nc < 10X ca)
M2 - 1998 Final Rule for Disinfectants and Disinfection By-products: The total for trihalomethanes is 0.08 mg/L.
Sa - The value for the 1,3-dichloropropene was used as a surrogate value
NA - Not Analyzed
Shading indicates the analyte was detected
Bold outline indicates the concentration exceeds the screening criteria
See Table 4-3 for explanation of data qualifiers.

Table 4-2
Analytical Results for Groundwater Samples – June 2004
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Sample ID		PRG	P-09	P-10A	P-11	P-15DD	P-16S	P-17D
Date Collected	MCL	Tap Water	6/28/2004	6/10/2004	6/28/2004	6/28/2004	6/29/2004	6/29/2004
Lab Sample ID	Criteria	Criteria	L0406578	L0406242	L0406578	L0406578	L0406598	L0406598
Volatile Organic Compounds by Method SW8260B (µg/L)								
Acetone	NS	5480 nc	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	5	0.345 ca	< 1	< 1	< 1	< 1	**0.211 J//**	< 1
Bromochloromethane	NS	NS	< 1	< 1	< 1	< 1	< 1	< 1
Bromodichloromethane	80 M2	0.18 ca	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	80 M2	8.5 ca*	< 1	< 1	< 1	< 1	< 1	< 1
Bromomethane	NS	8.7 nc	< 1	< 1	< 1	< 1	< 1	< 1
Butanone, 2- (MEK)	NS	6970 nc	< 10	< 10	< 10	< 10	< 10	< 10
Carbon Disulfide	NS	1000 nc	< 1	< 1	< 1	< 1	< 1	< 1
Carbon Tetrachloride	5	0.17 ca*	< 1	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	100	110 nc	< 1	< 1	< 1	< 1	< 1	< 1
Chloroethane	NS	4.6 ca	< 1	< 1	< 1	< 1	< 1	< 1
Chloroform	80	0.166 ca	< 1	**1.69**	< 1	< 1	**0.21 J//**	< 1
Chloromethane	NS	158 nc	< 1	< 1	< 1	< 1	< 1	< 1
Dibromochloromethane	80 M2	0.13 ca	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorobenzene, 1,2-	600	370 nc	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorobenzene, 1,3-	NS	183 nc	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorobenzene, 1,4-	75	0.5 ca	< 1	< 1	< 1	< 1	< 1	< 1
Dichloroethane, 1,1-	NS	810 nc	**0.816 J//**	**22.5**	**0.176 J//**	**2.07**	**5.31**	**2.14**
Dichloroethane, 1,2-	5	0.12 ca*	< 1	**2.03**	< 1	< 1	< 1	< 1
Dichloroethene, 1,1-	7	340 nc	**6.32**	**1230**	< 1	**104**	**13.2**	**163**
Dichloroethene, cis-1,2-	70	61 nc	< 1	< 1	< 1	< 1	< 1	< 1
Dichloroethene, trans-1,2-	100	120 nc	< 1	< 1	< 1	< 1	< 1	< 1
Dichloropropane, 1,2-	5	0.16 ca*	< 1	< 1	< 1	< 1	< 1	< 1
Dichloropropene, cis-1,3-	NS	0.4 ca Sa	< 1	< 1	< 1	< 1	< 1	< 1
Dichloropropene, trans-1,3-	NS	0.4 ca Sa	< 1	< 1	< 1	< 1	< 1	< 1
Ethylbenzene	700	1340 nc	< 1	< 1	< 1	< 1	< 1	< 1
Hexanone, 2- (MBK)	NS	NS	< 10	< 10	< 10	< 10	< 10	< 10
Methylene Chloride	5	4.3 ca	< 5	< 5	< 5	< 5	< 5	< 5
Pentanone, 4-Methyl-2- (MIBK)	NS	1990 nc	< 10	< 10	< 10	< 10	< 10	< 10
Styrene	100	1600 nc	< 1	< 1	< 1	< 1	< 1	< 1
Tetrachloroethane, 1,1,2,2-	NS	0.055 ca	< 1	< 1	< 1	< 1	< 1	< 1
Tetrachloroethene	5	0.104 ca	< 1	**0.404 J//**	< 1	< 1	< 1	< 1
Toluene	1000	720 nc	< 1	< 1	< 1	< 1	< 1	< 1
Trichloroethane, 1,1,1-	200	3200 nc	< 1	**1.28**	< 1	**0.513 J//**	**0.423 J//**	< 1
Trichloroethane, 1,1,2-	5	0.2 ca	< 1	**0.641 J//**	< 1	< 1	< 1	< 1
Trichloroethene	5	0.028 ca	< 1	**0.424 J//**	**0.435 J//**	< 1	< 1	< 1
Vinyl Chloride	2	0.02 ca	< 1	< 1	< 1	< 1	< 1	< 1
Xylenes, Total	10000	206 nc	< 1	< 1	< 1	< 1	< 1	< 1
ICP Metals by Method SW6010B (µg/L)								
Calcium	NS	NS	**26800**	**36500**	**28100**	**33400**	**48600**	**31900**
Iron	300	11000 nc	**60.2 /B/K**	**347**	**224**	**193**	**6230**	**718**
Magnesium	NS	NS	**13900**	**18700**	**15700**	**17600**	**20300**	**15300**
Manganese	50	880 nc	< 10	**5.9 J//**	**750**	**34.8**	**1810**	**31.1**
Potassium	NS	NS	**310 J//**	**449 J//**	**314 J//**	**442 J//**	**1220**	**437 J//**
Sodium	NS	NS	**33100**	**43500**	**33700**	**59400**	**58200**	**65900**
Hardness as CaCO3 by Method E130.2 (µg/L)								
Hardness (as CaCO3)	NS	NS	**127000**	**167000**	**140000**	**155000**	**231000**	**150000**
TDS by Method E160.1 (µg/L)								
Total Dissolved Solids	NS	NS	**206000**	**324000**	**252000**	**278000**	**384000**	**384000**
Alkalinity by Method E310.1 (µg/L)								
Alkalinity, Bicarbonate (AS CACO3)	NS	NS	**133000**	**185000**	**149000**	**208000**	**296000**	**219000**
Alkalinity, Carbonate (as CACO3)	NS	NS	< 10000	< 10000	< 10000	< 10000	< 10000	< 10000
Chloride by Method E325.2 (µg/L)								
Chloride	250000	NS	**22300**	**28000**	**25200**	**25200**	**17100**	**27300**
Nitrogen, Ammonia (as N) by Method E350.1 (µg/L)								
Ammonia	NS	NS	**147**	**72 J//**	**149**	**227**	**168**	**141**
Nitrate-Nitrite by Method E353.2 (µg/L)								
Nitrate	10000	10000 nc	**2810**	**2690**	**2250**	**2210**	< 50	**1470**
Sulfate by Method E375.4 (µg/L)								
Sulfate (as SO4)	250000	NS	**31400**	**50600**	**33200**	**41200**	**44600**	**51900**
TOC by Method E415.1 (µg/L)								
Total Organic Carbon	NS	NS	**1800**	**3690**	**3380**	**2330**	**5520**	**3570**

Notes:
NS - No Standard
nc - Noncancer PRG
ca - Cancer PRG
ca* - Cancer PRG (where nc < 100X ca)
ca** - Cancer PRG (where nc < 10X ca)
M2 - 1998 Final Rule for Disinfectants and Disinfection By-products: The total for trihalomethanes is 0.08 mg/L.
Sa - The value for the 1,3-dichloropropene was used as a surrogate value
NA - Not Analyzed
Shading indicates the analyte was detected
Bold outline indicates the concentration exceeds the screening criteria
See Table 4-3 for explanation of data qualifiers.

Table 4-2
Analytical Results for Groundwater Samples – June 2004
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Sample ID Date Collected Lab Sample ID	MCL Criteria	PRG Tap Water Criteria	P-18D 6/29/2004 L0406598	P-18S 6/29/2004 L0406598	P-19D 7/1/2004 L0407056	P-19S 6/29/2004 L0406598	Exceedance Summary No. of Analyses	No. of Detects	No. > MCL	No. > PRG
Volatile Organic Compounds by Method SW8260B (µg/L)										
Acetone	NS	5480 nc	< 10	< 10	< 10	< 10	14	0	NS	0
Benzene	5	0.345 ca	< 1	< 1	< 1	< 1	14	**1**	0	0
Bromochloromethane	NS	NS	< 1	< 1	< 1	< 1	14	0	NS	NS
Bromodichloromethane	80 M2	0.18 ca	< 1	< 1	< 1	< 1	14	0	0	0
Bromoform	80 M2	8.5 ca*	< 1	< 1	< 1	< 1	14	0	0	0
Bromomethane	NS	8.7 nc	< 1	< 1	< 1	< 1	14	0	NS	0
Butanone, 2- (MEK)	NS	6970 nc	< 10	< 10	< 10	< 10	14	0	NS	0
Carbon Disulfide	NS	1000 nc	< 1	< 1	< 1	< 1	14	0	NS	0
Carbon Tetrachloride	5	0.17 ca*	< 1	< 1	< 1	< 1	14	0	0	0
Chlorobenzene	100	110 nc	< 1	< 1	< 1	< 1	14	0	0	0
Chloroethane	NS	4.6 ca	< 1	< 1	< 1	< 1	14	0	NS	0
Chloroform	80	0.166 ca	**0.871 J//**	**1.06**	**2.16**	**0.934 J//**	14	**7**	0	7
Chloromethane	NS	158 nc	< 1	< 1	< 1	< 1	14	0	NS	0
Dibromochloromethane	80 M2	0.13 ca	< 1	< 1	< 1	< 1	14	0	0	0
Dichlorobenzene, 1,2-	600	370 nc	< 1	< 1	< 1	< 1	14	0	0	0
Dichlorobenzene, 1,3-	NS	183 nc	< 1	< 1	< 1	< 1	14	0	NS	0
Dichlorobenzene, 1,4-	75	0.5 ca	< 1	< 1	< 1	< 1	14	0	0	0
Dichloroethane, 1,1-	NS	810 nc	**2.11**	**2.29**	**0.658 J//**	**0.323 J//**	14	**12**	NS	0
Dichloroethane, 1,2-	5	0.12 ca*	< 1	< 1	< 1	< 1	14	**1**	0	**1**
Dichloroethene, 1,1-	7	340 nc	**64.6**	**63.8**	**14.5**	**5.4**	14	**11**	**9**	**2**
Dichloroethene, cis-1,2-	70	61 nc	< 1	< 1	< 1	< 1	14	0	0	0
Dichloroethene, trans-1,2-	100	120 nc	< 1	< 1	< 1	< 1	14	0	0	0
Dichloropropane, 1,2-	5	0.16 ca*	< 1	< 1	< 1	< 1	14	0	0	0
Dichloropropene, cis-1,3-	NS	0.4 ca Sa	< 1	< 1	< 1	< 1	14	0	NS	0
Dichloropropene, trans-1,3-	NS	0.4 ca Sa	< 1	< 1	< 1	< 1	14	0	NS	0
Ethylbenzene	700	1340 nc	< 1	< 1	< 1	< 1	14	0	0	0
Hexanone, 2- (MBK)	NS	NS	< 10	< 10	< 10	< 10	14	0	NS	NS
Methylene Chloride	5	4.3 ca	< 5	< 5	< 5	< 5	14	0	0	0
Pentanone, 4-Methyl-2- (MIBK)	NS	1990 nc	< 10	< 10	< 10	< 10	14	0	NS	0
Styrene	100	1600 nc	< 1	< 1	< 1	< 1	14	0	0	0
Tetrachloroethane, 1,1,2,2-	NS	0.055 ca	< 1	< 1	< 1	< 1	14	0	NS	0
Tetrachloroethene	5	0.104 ca	< 1	< 1	< 1	< 1	14	**2**	**1**	**2**
Toluene	1000	720 nc	< 1	< 1	< 1	< 1	14	0	0	0
Trichloroethane, 1,1,1-	200	3200 nc	**1.17**	**1.63**	**1.12**	**0.44 J//**	14	**9**	**1**	0
Trichloroethane, 1,1,2-	5	0.2 ca	< 1	< 1	< 1	< 1	14	**1**	0	**1**
Trichloroethene	5	0.028 ca	< 1	< 1	< 1	< 1	14	**3**	0	**3**
Vinyl Chloride	2	0.02 ca	< 1	< 1	< 1	< 1	14	**1**	**1**	**1**
Xylenes, Total	10000	206 nc	< 1	< 1	< 1	< 1	14	0	0	0
ICP Metals by Method SW6010B (µg/L)										
Calcium	NS	NS	**28100**	**28400**	**32700**	**19600**	16	**16**	NS	NS
Iron	300	11000 nc	< 40	< 40	**91.1**	**1570**	16	**13**	**7**	0
Magnesium	NS	NS	**15400**	**15800**	**17500**	**10000**	16	**16**	NS	NS
Manganese	50	880 nc	**3.4 J/B/K**	**1.7 J/B/K**	**279**	**639**	16	**12**	**5**	**2**
Potassium	NS	NS	**388 J//**	**382 J//**	**553 J//**	**463 J//**	16	**15**	NS	NS
Sodium	NS	NS	**40200**	**38800**	**44900**	**31700**	16	**16**	NS	NS
Hardness as CaCO3 by Method E130.2 (µg/L)										
Hardness (as CaCO3)	NS	NS	**140000**	**140000**	**142000**	**93700**	16	**16**	NS	NS
TDS by Method E160.1 (µg/L)										
Total Dissolved Solids	NS	NS	**284000**	**290000**	**296000**	**222000**	16	**16**	NS	NS
Alkalinity by Method E310.1 (µg/L)										
Alkalinity, Bicarbonate (AS CACO3)	NS	NS	**159000**	**158000**	**160000**	**109000**	16	**16**	NS	NS
Alkalinity, Carbonate (as CACO3)	NS	NS	< 10000	< 10000	< 10000	< 10000	16	0	NS	NS
Chloride by Method E325.2 (µg/L)										
Chloride	250000	NS	**24900**	**22700**	**24600**	**18600**	16	**16**	0	NS
Nitrogen, Ammonia (as N) by Method E350.1 (µg/L)										
Ammonia	NS	NS	**76 J//**	**136**	**56 J//**	**151**	16	**14**	NS	NS
Nitrate-Nitrite by Method E353.2 (µg/L)										
Nitrate	10000	10000 nc	**2370**	**2300**	**2390**	**803**	16	**15**	0	0
Sulfate by Method E375.4 (µg/L)										
Sulfate (as SO4)	250000	NS	**36200**	**38400**	**40600**	**25600**	16	**16**	0	NS
TOC by Method E415.1 (µg/L)										
Total Organic Carbon	NS	NS	**3240**	**3020**	**1330**	**3540**	16	**16**	NS	NS

Notes:
NS - No Standard
nc - Noncancer PRG
ca - Cancer PRG
ca* - Cancer PRG (where nc < 100X ca)
ca** - Cancer PRG (where nc < 10X ca)
M2 - 1998 Final Rule for Disinfectants and Disinfection By-products: The total for trihalomethanes is 0.08 mg/L.
Sa - The value for the 1,3-dichloropropene was used as a surrogate value
NA - Not Analyzed
Shading indicates the analyte was detected
Bold outline indicates the concentration exceeds the screening criteria
See Table 4-3 for explanation of data qualifiers.

Table 4-3
Summary of Added Data Qualifiers
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Modifier	Description
<	Indicates not detected at the reporting limit indicated.
"/"	Separates the laboratory-added data qualifiers from the validation data qualifiers. The laboratory-added data qualifiers precede the first "/". The result qualifiers (a product of the data validation process) follow the first "/", and the analysis qualifiers (defines the type of QC excursion) follow the second "/".

Laboratory Data Qualifiers

Qualifier	Description
J	The analyte was positively identified; the quantitation is an estimation.

Result Data Qualifiers

Qualifier	Description
B	The analyte was found in an associated blank as well as in the sample.

Analysis Data Qualifiers

Qualifier	Description
K	An analyte was detected in the sample at a concentration less than or equal to five times the concentration detected in the associated method blank. Professional judgment must be used to determine if the detected analyte is Site-related.

Table 5-1
Properties of Selected Compounds
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Chemical	Specific Gravity (Unitless) (2)	Water Solubility (mg/L at approx. 20 Deg. C.) (1)	Log K_{ow} (Unitless) (1)	K_{oc} (mL/g) (1)	Vapor Pressure (mm Hg at approx. 20 deg. C) (1)	Estimated Henry's Law Constant (atm-m^3/mole) (1)	Estimated Half-life in Vadose Zone Soil (3)	Estimated Half-life in Groundwater (3)	Estimated Half-life in Surface Water (3)	Estimated Half-life in Air (3)
Chloroform	1.498	8.20E+03	1.97	31	1.51E+02	2.87E-03	1 to 6 months	2 months to 5 years	1 to 6 months	26 to 260 days
Dichloroethane, 1,1-	1.176	5.50 E+03	1.79	30	1.82E+02	4.31E-03	32 days to 22 weeks	64 days to 22 weeks	32 days to 22 weeks	10.3 to 103 days
Dichloroethane, 1,2-	1.253	8.52 E+03	1.48	14	6.40E+01	9.78E-04	100 days to 6 months	100 days to 12 months	100 days to 6 months	12.2 to 122 days
Dichloroethene, 1,1-	1.213	2.25E+03	1.84	65	6.00E+02	3.40E-02	1 to 6 months	8 weeks to 132 days	1 to 6 months	9.9 to 98.7 hours
Tetrachloroethene	1.623	1.50E+02	2.60	364	1.78E+01	2.59E-02	6 months to 1 year	1 to 2 years	6 months to 1 year	16 to 160 days
Trichloroethane, 1,1,1-	1.338	1.50E+03	2.50	152	1.23E+02	1.44E-02	20 to 39 weeks	20 to 78 weeks	20 to 39 weeks	225 days to 6.2 years
Trichloroethane, 1,1,2-	1.441	4.50E+03	2.47	56	3.00E+01	1.17E-03	4.5 months to 1 year	4.5 months to 2 years	4.5 months to 1 year	8.2 to 81.5 days
Trichloroethene	1.462	1.10E+03	2.38	126	5.79E+01	9.10E-03	6 months to 1 year	10.7 months to 4.5 years	6 months to 1 year	1.1 to 11.3 days
Vinyl chloride	0.911	2.67E+03	1.38	57	2.66E+03	8.19E-02	1 to 6 months	2 to 95 months	1 to 6 months	9.7 to 97 hours

Notes:

NC- Not Calculated
ND - No Data

1 - Unless otherwise noted, information is from Exhibit A-1 or A-2 of *Superfund Public Health Evaluation Manual,* EPA/540/1-86/060, USEPA, 1986.

2 - ChemFinder website (www.chemfinder.com), January 2005.

3 - Howard et al., 1991

Table 5-2
Ranges of Natural Attenuation Parameter Values
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Indicator Parameter Name	Units	Optimal Range for Reductive Dechlorination	Shallow		Deep	
			Min	Max	Min	Max
Temperature	°C	> 20	27.3	32.4	28.3	30.7
pH	Std units	between 6 and 8	6.05	6.87	6.10	6.83
Alkalinity (carbonate)	mg/L		ND	ND	ND	ND
Alkalinity (bicarbonate)	mg/L		106	296	151	219
Specific Conductance	µmhos/cm	none	0.364	0.888	0.490	0.742
ORP	mV		47	186	43	172
Dissolved Oxygen	mg/L	< 0.50	0.25	3.57	0.53	6.29
Ammonia	mg/L		ND	168	ND	227
Nitrate	mg/L		ND	5.34	1.47	2.99
Ferrous Iron	mg/L	detected	ND	0.6	ND	0.2
Sulfate	mg/L	<20	21.9	57.7	31.2	51.9
Sulfide	mg/L		ND	0.2	ND	0.2
Chloride	mg/L	> Background	17.1	61.0	23.2	45.0
Total Organic Carbon	mg/L	present	2.92	6.41	1.33	6.24

BOLD Parameters have been mapped on figures in Section 5

Table 5-3
Summary of Screening Scores for Reductive Dechlorination
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

			Shallow Aquifer Zone								Deep Aquifer Zone					
Parameter	**Concentration**	**Value**	**P-4**	**P-7**	**P-8**	**P-9**	**P-11**	**P-16S**	**P-18S**	**P-19S**	**P-7A**	**P-10A**	**P-15DD**	**P-17D**	**P-18D**	**P-19D**
Oxygen	<0.5 mg/L	3					3									
	>0.5 mg/L	-3	-3	-3	-3	-3		-3	-3	-3	-3	-3	-3	-3	-3	-3
TOC	>20 mg/L	2														
Methane	<0.5 mg/L	0	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	>0.5 mg/L	3														
Nitrate	<1 mg/L	2			2			2		2						
Ferrous Iron	>1 mg/L	3														
Sulfate	<20 mg/L	2														
Sulfide	>1 mg/L	3														
ORP	<50 mv	1						1					1	1		
	<-100 mv	2														
pH	5<pH<9	0														
	5>pH>9	-2														
Temp	>20°C	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Carbon Dioxide	>2x background	1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Alkalinity	>2x background	1														
Chloride	>2x background	2			2											
BTEX	>0.1 mg/L	2														
PCE		0														
TCE	Material released	0														
	degradation from PCE	2														
DCE	Material released	0														
	degradation from TCE	2														
VC	Material released	0														
	degradation from DCE	2			2											
1,1,1-TCA	Material released	0														
DCA	degradation from TCA	2			2	2	2	2	2	2	2	2	2	2	2	2
Carbon Tetrachloride	Material released	0														
Ethene/Ethane	>0.01 mg/L	2	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	>0.1 mg/L	3														
Chloroform	Material released	0														
	degradation from C Tet	2														
Methylene chloride	Material released	0														
	degradation from C-form	2														
Chloroethane	degradation from DCA or VC	2														
	Total Screening Scores:		**-2**	**-2**	**6**	**0**	**6**	**3**	**0**	**2**	**0**	**0**	**1**	**1**	**0**	**0**
	Strong Evidence (>20)															
	Adequate Evidence (15-20)															
	Limited Evidence (6-14)				**X**		**X**									
	Inadequate Evidence (<5)		**X**	**X**		**X**		**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**

NM - Not Measured

Table 5-4
Calculated Mass of VOCs in Groundwater
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Plume Name	Plume Contour (ppb)	Total Area Inside Contour (ft^2)	Saturated Thickness (ft^2)	Porosity (fraction)	Area Between Contours (ft^2)	Volume of Water Between Contours (ft^3)	Mass of Water (lbs)	Avg Conc Between Contours (ppb)	Mass of VOCs (lbs)
1989	**Shallow Aquifer Zone**								
1,1,1-TCA	2	562,500	20	0.30	487,500	2,925,000	182,420,550	10	1.8
1,1,1-TCA	20	75,000	20	0.30	56,250	337,500	21,048,525	100	2.1
1,1,1-TCA	200	18,750	20	0.30	18,750	112,500	7,016,175	911	6.4
1,1-DCE	7	930,625	20	0.30	930,625	5,583,750	348,236,153	30	10.4
							MASS OF VOCS IN SHALLOW AQUIFER ZONE, 1989 (lbs):		**20.8**
	Deep Aquifer Zone								
1,1,1-TCA	2	137,500	20	0.30	62,500	375,000	23,387,250	10	0.2
1,1,1-TCA	20	75,000	20	0.30	75,000	450,000	28,064,700	26	0.7
1,1-DCA	5	125,000	20	0.30	125,000	750,000	46,774,500	13	0.6
1,1-DCE	7	105,625	20	0.30	54,375	326,250	20,346,908	35	0.7
1,1-DCE	70	51,250	20	0.30	34,063	204,375	12,746,051	350	4.5
1,1-DCE	700	17,188	20	0.30	17,188	103,125	6,431,494	851	5.5
							MASS OF VOCS IN DEEP AQUIFER ZONE, 1989 (lbs):		**12.2**
							TOTAL MASS OF VOCS IN GROUNDWATER, 1989 (lbs):		**33.0**
1993	**Shallow Aquifer Zone**								
1,1,1-TCA	2	562,500	20	0.30	525,000	3,150,000	196,452,900	10	2.0
1,1,1-TCA	20	37,500	20	0.30	18,750	112,500	7,016,175	100	0.7
1,1,1-TCA	200	18,750	20	0.30	18,750	112,500	7,016,175	736	5.2
1,1-DCA	5	93,750	20	0.30	93,750	562,500	35,080,875	25	0.9
1,1-DCE	7	828,125	20	0.30	805,000	4,830,000	301,227,780	30	9.0
1,1-DCE	70	23,125	20	0.30	23,125	138,750	8,653,283	103	0.9
							MASS OF VOCS IN SHALLOW AQUIFER ZONE, 1993 (lbs):		**18.6**
	Deep Aquifer Zone								
1,1,1-TCA	2	125,000	20	0.30	62,500	375,000	23,387,250	10	0.2
1,1,1-TCA	20	62,500	20	0.30	62,500	375,000	23,387,250	11	0.3
1,1-DCA	5	156,250	20	0.30	156,250	937,500	58,468,125	17	1.0
1,1-DCE	7	146,875	20	0.30	61,250	367,500	22,919,505	50	1.1
1,1-DCE	70	85,625	20	0.30	44,375	266,250	16,604,948	350	5.8
1,1-DCE	700	41,250	20	0.30	41,250	247,500	15,435,585	1270	19.6
							MASS OF VOCS IN DEEP AQUIFER ZONE, 1993 (lbs):		**28.0**
							TOTAL MASS OF VOCS IN GROUNDWATER, 1993 (lbs):		**46.7**

Table 5-4
Calculated Mass of VOCs in Groundwater
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Plume Name	Plume Contour (ppb)	Total Area Inside Contour (ft^2)	Saturated Thickness (ft^2)	Porosity (fraction)	Area Between Contours (ft^2)	Volume of Water Between Contours (ft^3)	Mass of Water (lbs)	Avg Conc Between Contours (ppb)	Mass of VOCs (lbs)
1996	**Shallow Aquifer Zone**								
1,1,1-TCA	2	62,500	20	0.30	25,000	150,000	9,354,900	10	0.1
1,1,1-TCA	20	37,500	20	0.30	18,750	112,500	7,016,175	100	0.7
1,1,1-TCA	200	18,750	20	0.30	9,375	56,250	3,508,088	1000	3.5
1,1,1-TCA	2000	9,375	20	0.30	9,375	56,250	3,508,088	9120	32.0
1,1-DCA	5	62,500	20	0.30	12,500	75,000	4,677,450	25	0.1
1,1-DCA	50	50,000	20	0.30	50,000	300,000	18,709,800	173	3.2
1,1-DCE	7	393,750	20	0.30	269,375	1,616,250	100,799,048	35	3.5
1,1-DCE	70	124,375	20	0.30	103,750	622,500	38,822,835	350	13.6
1,1-DCE	700	20,625	20	0.30	20,625	123,750	7,717,793	2260	17.4
			MASS OF VOCS IN SHALLOW AQUIFER ZONE, 1996 (lbs):						**74.2**
	Deep Aquifer Zone								
1,1,1-TCA	2	125,000	20	0.30	62,500	375,000	23,387,250	10	0.2
1,1,1-TCA	20	62,500	20	0.30	62,500	375,000	23,387,250	5	0.1
1,1-DCA	5	156,250	20	0.30	156,250	937,500	58,468,125	18	1.1
1,1-DCE	7	250,625	20	0.30	137,500	825,000	51,451,950	35	1.8
1,1-DCE	70	113,125	20	0.30	90,000	540,000	33,677,640	350	11.8
1,1-DCE	700	23,125	20	0.30	23,125	138,750	8,653,283	924	8.0
			MASS OF VOCS IN DEEP AQUIFER ZONE, 1996 (lbs):						**23.0**
			TOTAL MASS OF VOCS IN GROUNDWATER, 1996 (lbs):						**97.2**
2004	**Shallow Aquifer Zone**								
1,1,1-TCA	2	18,750	20	0.30	6,250	37,500	2,338,725	10	0.0
1,1,1-TCA	20	12,500	20	0.30	6,250	37,500	2,338,725	100	0.2
1,1,1-TCA	200	6,250	20	0.30	6,250	37,500	2,338,725	586	1.4
1,1-DCA	5	31,250	20	0.30	12,500	75,000	4,677,450	25	0.1
1,1-DCA	50	18,750	20	0.30	18,750	112,500	7,016,175	61	0.4
1,1-DCE	7	182,500	20	0.30	139,375	836,250	52,153,568	35	1.8
1,1-DCE	70	43,125	20	0.30	43,125	258,750	16,137,203	350	5.6
			MASS OF VOCS IN SHALLOW AQUIFER ZONE, 2004 (lbs):						**9.6**
	Deep Aquifer Zone								
1,1-DCA	5	156,250	20	0.30	156,250	937,500	58,468,125	23	1.3
1,1-DCE	7	206,563	20	0.30	87,813	526,875	32,859,086	35	1.2
1,1-DCE	70	118,750	20	0.30	102,125	612,750	38,214,767	350	13.4
1,1-DCE	700	16,625	20	0.30	16,625	99,750	6,221,009	1230	7.7
			MASS OF VOCS IN DEEP AQUIFER ZONE, 2004 (lbs):						**23.5**
			TOTAL MASS OF VOCS IN GROUNDWATER, 2004 (lbs):						**33.2**

Table 5-4
Calculated Mass of VOCs in Groundwater
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Aquifer Zone	Mass (in lbs) for Given Dates			
	February-89	November-93	October-96	June-04
Shallow, Calculated	21	19	74	10
Shallow, Estimated	*80,000*	*200*		
Deep, Calculated	12	28	23	24
TOTAL	80,033	247	97	33

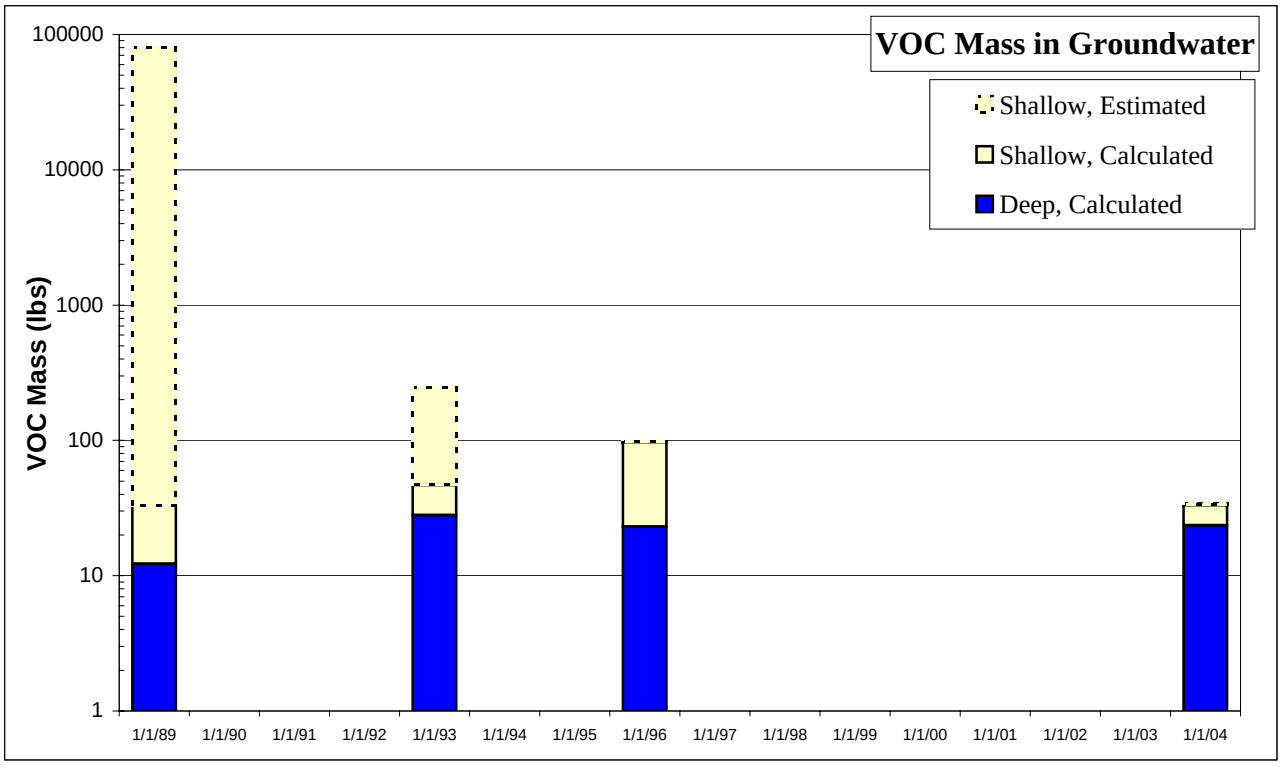

Table 5-5
Natural Attenuation Assessment Summary
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Principal Evaluation Point (per USEPA, April 1999)	**Principal Groundwater Contaminants** [1]	
	1,1,1-TCA	**1,1-DCE**
Contaminant source.	Principal parent product deposited in the former French Sump	Daughter product of TCA through **hydrolysis** and **elimination** reactions
Source under control? [2]	**Sump removed in 1990** [3], no evidence of DNAPL in the aquifer	*Not Applicable*
Plume status? [4] (dissolved phase)	**Shrinking**, only one on-Site well (P-8) remains above the MCL	**Shrinking**, down from 20 acres and 2000 ft long in 1989 to 4 acres and 800 ft long in 2004
Declining mass and/or concentration? [4]	**Yes,** many wells have cleaned up to non-detect concentrations	**Yes,** many wells have cleaned up to non-detect concentrations
Status expected to change?	No	No
Are there receptors/media at risk? [5]	No	No
What attenuation processes have been identified?	**Reductive dechlorination** was active in the past, producing 1-1-DCA, but **hydrolysis** and **elimination** reactions are now operating to make 1,1-DCE	**Oxidation**, perhaps localized **reductive dechlorination** in the past to produce vinyl chloride
Are these processes reversible? [6]	**No**	**No**
What are the anticipated transformation products?	**1,1-DCE and acetic acid**	**Carbon dioxide, water, and chloride ions.** Vinyl chloride is no longer being produced and slightly exceeds the MCL in only one well (P-8).
Processes affected by planned remedial measures?	No	No
Site-specific lab studies available?	No	No
Will NA achieve remedial objectives? [7]	Yes	Yes
Estimated time frame to reach objectives? [8]	5 years (2010)	Shallow: 15 years (2020) Deep: 15 to 30 years (2020-2035)
Will NA be protective of human health and the environment?	Yes	Yes
Is performance monitoring possible?	Yes	Yes
Are Institutional Controls required?	Yes, for restriction of human consumptive use for groundwater	Yes, for restriction of human consumptive use for groundwater

[1] This list does not include four COCs (PCE, TCE, 1,2-DCA, and vinyl chloride) because of their low concentrations and low frequency of detection.

[2] "…MNA will be most appropriate when used in conjunction with other remedial measures (e.g., source control, groundwater extraction), or as a follow-up to active remediation measures that have already been implemented." (USEPA, April 1999)

[3] Excavated and shipped off-Site for disposal in October 1990 (SEC, February 1991).

[4] "…sites where the contaminant plumes are no longer increasing in extent, or are shrinking, would be the most appropriate candidates for MNA remedies." (USEPA, April 1999)

[5] Downgradient of the Site are a WWTP and agricultural fields in the flood plain for the Rio Grand de Patillas.

[6] "Natural attenuation of inorganic contaminants is most applicable to sites where immobilization or radioactive decay is demonstrated to be in effect and the process/mechanism is irreversible." (USEPA, April 1999)

[7] The following generic remedial objectives are assumed: 1) prevention of groundwater migration; and 2) restoration of groundwater to beneficial use. Both of these are achievable based on observations made in this report: 1) the plumes are stable or shrinking for all contaminants, and 2) because DCE is being destroyed by a chemical, rather than a biological, process, its attenuation will continue until the DCE is depleted.

[8] Estimates are based on the concentration trends presented on Figures 4-1 and 4-3 projected to the MCL. The DCE trend at deep well P-10A is flat, and cannot be used to project to the MCL, but now that the source of TCA is gone, the DCE concentration is expected to show declining trend in the near future.

Abbreviations: **NA**-natural attenuation; **DNAPL**-dense non-aqueous phase liquid

APPENDICES

APPENDIX J

DOCUMENTATION OF SRFI FIELD ACTIVITIES

J1 TEST BORING REPORTS

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

TEST BORING REPORT

BORING NO. P-15 DD

PROJECT: Supplemental Groundwater Investigation
CLIENT: General Electric
CONTRACTOR: Geo-Works
EQUIPMENT USED: Mobile B-61 HDX Drill Rig

JOB NO.: 76058.03
PAGE NO.: 1 of 3
LOCATION: Parking lot
ELEVATION: -
DATE START: 5/24/04
DATE FINISH: 5/26/04
DRILLER: Omar Negron
PREPARED BY: J Ron Paulling

GROUNDWATER		DEPTH TO:			CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	Steel	ODEX	X
5/24/04	WD	15'			SIZE ID	4"	4"	
6/2/04	8 days	13.6'		75'	HAMMER WT	X	NA	
					HAMMER FALL	X	NA	

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
0					Asphalt Surface
0.3'					WELL GRADED SAND (SW)
					Pale brown (5YR 5/2), moist, mostly f. to cs. sand, few to little silt. - ALLUVIUM
					Mini-Rom 0.10
5.0					HNu - 0.70
					SILTY CLAY W/ SAND (CL-ML)
					Mod. brown (5YR 3/4), moist, mostly lean inorganic clay, little f. to med. sand - ALLUVIUM
					bit advancing rapidly
10.0					Mini-Rom 0.70
					HNu 1.1
15.0					Becoming wet
20.0					

BLOWS/FT	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
51+	VERY DENSE

BLOWS/FT	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLE ID	COMPONENT %
S - SPLIT SPOON	MOSTLY: 50-100%
T - TUBE	SOME: 30-45%
U - UNDISTURBED PISTON	LITTLE: 15-25%
G - GRAB SAMPLE	FEW: 5-10%
X - OTHER	TRACE: <5%
NR - NO RECOVERY	

GROUNDWATER ABBREV.
WD – WHILE DRILLING
NE – NOT ENCOUNTERED
UR – NOT READ

BORING NO. P-15DD

EARTH TECH

TEST BORING REPORT

BORING NO. P-15DD

PAGE 2 of 3

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
20.0					
25.0					Encountered boulder DIORITE Brownish gray (5YR 4/1), hard, getting water in returns, fine-grained, mostly non-weathered diorite. – COLLUVIUM Mini-Ram 0.12 HNu 1.4
30.0					
35.0					SILTY CLAY W/ SAND (CL-ML) Mod. orange pink (5YR 8/4), wet, mostly lean inorganic clay, some silt, little f. to cs. sand – SAPROLITE
40.0					
41.5					WELL GRADED SAND W/ GRAVEL (SW) Pale yellowish brown (10YR 6/2), grayish orange (10YR 7/4) and black (N1), mostly f. to cs. sand, few f. gravel, trace silt – COLLUVIUM
45.0					

BLOWS/FT.	DENSITY
0 - 4	VERY LOOSE
5 - 10	LOOSE
11 - 30	MEDIUM DENSE
31 - 50	DENSE
51+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0 - 2	VERY SOFT
3 - 4	SOFT
5 - 8	MEDIUM STIFF
9 - 15	STIFF
16 - 30	VERY STIFF
31+	HARD

SAMPLE ID.	
S	SPLIT SPOON
T	TUBE
U	UNDISTURBED PISTON
G	GRAB SAMPLE
X	OTHER
NR	NO RECOVERY

COMPONENT %	
MOSTLY	50 - 100%
SOME	30 - 45%
LITTLE	15 - 25%
FEW	5 - 10%
TRACE	<5%

GROUND WATER ABBREV.
WD - WHILE DRILLING
NE - NOT ENCOUNTERED
UR - NOT READ

BORING NO. P-15DD

Rev. 4/93

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TEST BORING REPORT

BORING NO. P-15DD
PAGE 3 of 3

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
45.0					Mini-Ram 0.7 HNa 1.5 WELL GRADED SAND w/ GRAVEL (SW) Sim to above. - COLLUVIUM
50.0					
55.0					
60.0					
65.0					VOLCANIC DIORITE White (N9), H. brownish gray (5YR 6/1), H. olive brown (5Y 5/6), mostly diorite, highly fractured, hard, fine-grained BORING TERMINATED @ 75' Instructed drillers to set well 68' to 73'
70.0					

BLOWS/FT.	DENSITY
0 - 4	VERY LOOSE
5 - 10	LOOSE
11 - 30	MEDIUM DENSE
31 - 50	DENSE
51+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0 - 2	VERY SOFT
3 - 4	SOFT
5 - 8	MEDIUM STIFF
9 - 15	STIFF
16 - 30	VERY STIFF
31+	HARD

SAMPLE ID.	
S	SPLIT SPOON
T	TUBE
U	UNDISTURBED PISTON
G	GRAB SAMPLE
X	OTHER
NR	NO RECOVERY

COMPONENT %	
MOSTLY	50 - 100%
SOME	30 - 45%
LITTLE	15 - 25%
FEW	5 - 10%
TRACE	<5%

GROUND WATER ABBREV.	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ

BORING NO. P-15DD

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

TEST BORING REPORT

BORING NO. P-165

PROJECT: Supplemental Groundwater Investigation
CLIENT: General Electric
CONTRACTOR: Geo-Works
EQUIPMENT USED: Mobile B-61 HDX Drill Rig / 4" ~~ODEX Bit~~ 8"

JOB NO.: 76058.03
PAGE NO.: 1 of 2
LOCATION:
ELEVATION:
DATE START: 5-27-04
DATE FINISH: 5-27-04
DRILLER: Omar Negron
PREPARED BY: Ron Paulling

GROUNDWATER		DEPTH TO:			4.25" CASING	SAMPLER ~~Bucket~~	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE			
~~5/27~~	WD	20'			TYPE: Steel/HSA	~~ODEX~~	
5/28	24	7'		26'	SIZE ID: ~~4 inch~~	~~4 inch~~	
					HAMMER WT	NA	
					HAMMER FALL	NA	

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
0					Commercially crushed stone surface
0.8'					POORLY GRADED SAND (SP) Mod. brown (5YR 4/4), moist, mostly f. sand, some med. sand, little silt — ALLUVIUM MR-0.14'/HNu 1.1
3.7'					SILTY CLAY W/ SAND (CL-ML) Grayish brown (5YR 3/2), moist, mostly lean inorganic clay, some silt, few f. to med. sand, massive — ALLUVIUM
5.0					
8.8'					WELL GRADED SAND (SW) Mod. brown (5YR 3/4), moist, mostly f. sand, some cs. to med. sand, little silt, trace f. gravel. — COLLUVIUM
10.0					
13.2'					SILTY CLAY W/ SAND (CL-ML) Similar to clay above, except little f. to med. sand.
15.0					15'-20' CLAY becoming v. soft and more moist. — ALLUVIUM
20.0					

BLOWS/FT	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
51+	VERY DENSE

BLOWS/FT	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLE ID
S - SPLIT SPOON
T - TUBE
U - UNDISTURBED PISTON
G - GRAB SAMPLE
X - OTHER
NR - NO RECOVERY

COMPONENT %
MOSTLY: 50-100%
SOME: 30-45%
LITTLE: 15-25%
FEW: 5-10%
TRACE: <5%

GROUNDWATER ABBREV.
WD – WHILE DRILLING
NE – NOT ENCOUNTERED
UR – NOT READ

BORING NO. P-165

EARTH TECH

TEST BORING REPORT

BORING NO. P-166

PAGE 2 of 2

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
20.0					
22.2'					POORLY GRADED SAND W/ SILT (SP-SM) Mod. brown (5YR 4/4), wet, mostly f. sand, little med. sand and silt. -ALLUVIUM
25.0					
26'					Encountered Loose well-rounded gravel, HSA continued to advance - River Bed
26.3					26.3' - met refusal Formation
					Instructed drillers to set well from 14' to 26'
30.0					BORING TERMINATED @ 26'
35.0					
40.0					
45.0					

BLOWS/FT. DENSITY		BLOWS/FT. CONSISTENCY		SAMPLE ID.		COMPONENT %		GROUND WATER ABBREV.	
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S	SPLIT SPOON	MOSTLY	50 - 100%	WD - WHILE DRILLING	
5 - 10	LOOSE	3 - 4	SOFT	T	TUBE	SOME	30 - 45%	NE - NOT ENCOUNTERED	
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U	UNDISTURBED PISTON	LITTLE	15 - 25%	UR - NOT READ	
31 - 50	DENSE	9 - 15	STIFF	G	GRAB SAMPLE	FEW	5 - 10%		
51+	VERY DENSE	16 - 30	VERY STIFF	X	OTHER	TRACE	<5%	BORING NO. P-165	
		31+	HARD	NR	NO RECOVERY				

Rev. 4/93

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

TEST BORING REPORT

BORING NO. P-17D

PROJECT: Supplemental Groundwater Investigation
CLIENT: General Electric
CONTRACTOR: Geo-Works
EQUIPMENT USED: Mobile B-61 HDX Drill Rig

JOB NO.: 76005.03
PAGE NO.: 1 of 3
LOCATION:
ELEVATION:
DATE START: 6/1/04
DATE FINISH: 6/1/04
DRILLER: Omar Negron
PREPARED BY: Ken Pauly

GROUNDWATER		DEPTH TO:			CASING		SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	Steel	ODEX	
6/1/04	WD	11.5			SIZE ID	4"	4"	
6/3/04	2 days	8.31		61'	HAMMER WT		NA	
					HAMMER FALL		NA	

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
0					Commercially crushed stone
0.5					SILT w/ SAND (ML)
					Mod. brown (5YR 3/4), moist, mostly silt, little f. sand, massive - ALLUVIUM
5.0					
					ODEX bit advancing slowly, encountered densely compacted structural fill for WWTP
7.0					POORLY GRADED SAND (SP) Lt. brown (5YR 6/4), moist, mostly f. sand, some med. sand, few cs. sand. - FILL
10.0					SILTY CLAY w/ SAND (CL-ML)
					Mod. brown (5YR 3/4), moist to wet, mostly lean inorganic clay, some silt, little f. sand - ALLUVIUM
11.5					HNU - 1.1
14.0					WELL GRADED SAND w/ SILT (SW)
15.0					Mod. brown (5YR 4/4), wet, mostly f. sand, some med. sand and cs. sand, little silt - COLLUVIUM
					Bit and drill rod vibrating and advancing slowly
					DIORITE Brownish gray (5YR 4/1) to grayish brown (5YR 3/2), hard, non-weathered, fine-grained diorite, 1/4" Ø particles are well rounded - River Bed Formation
20.0					

BLOWS/FT	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
51+	VERY DENSE

BLOWS/FT	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLE ID
S - SPLIT SPOON
T - TUBE
U - UNDISTURBED PISTON
G - GRAB SAMPLE
X - OTHER
NR - NO RECOVERY

COMPONENT %
MOSTLY: 50-100%
SOME: 30-45%
LITTLE: 15-25%
FEW: 5-10%
TRACE: <5%

GROUNDWATER ABBREV.
WD – WHILE DRILLING
NE – NOT ENCOUNTERED
UR – NOT READ
BORING NO.

EARTH TECH

TEST BORING REPORT

BORING NO. P-17D

PAGE 2 of 3

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
20.0					
20.5					WELL GRADED SAND W/ SILT (SW) Mod. brown (5YR 3/4) to H. brown (5YR 5/6), wet, mostly f. sand, some med. to cs. sand - angular to subangular, little silt. - COLLUVIUM
22.3					Coarsening downward, similar to above, except few to little f. gravel subrounded to rounded.
25.0					27.5' Similar to above, except becoming grayish brown (5YR 3/2).
27.5					COLLUVIUM
30.0					
34.8					POORLY GRADED SAND W/ SILT (SP)
35.0					Lt. brown (5YR 6/4), wet, mostly f. sand, some med. sand, little cs. sand, few silt, trace f. gravel. - ALLUVIUM
40.0					
45.0					

BLOWS/FT.	DENSITY
0 - 4	VERY LOOSE
5 - 10	LOOSE
11 - 30	MEDIUM DENSE
31 - 50	DENSE
51+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0 - 2	VERY SOFT
3 - 4	SOFT
5 - 8	MEDIUM STIFF
9 - 15	STIFF
16 - 30	VERY STIFF
31+	HARD

SAMPLE ID.	
S	SPLIT SPOON
T	TUBE
U	UNDISTURBED PISTON
G	GRAB SAMPLE
X	OTHER
NR	NO RECOVERY

COMPONENT %	
MOSTLY	50 - 100%
SOME	30 - 45%
LITTLE	15 - 25%
FEW	5 - 10%
TRACE	<5%

GROUND WATER ABBREV.
WD - WHILE DRILLING
NE - NOT ENCOUNTERED
UR - NOT READ

BORING NO. P-17D

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EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

TEST BORING REPORT

BORING NO: P-17D
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DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
45.0					
50.0					
52'					DIORITE Grayish black (N2), hard fine grained, loose, well rounded diorite. — River Bed Formation
55.0					Bit and drill rod vibrating and advancing slowly —
60.0					
60.5					DIORITE White (N9), hard, fine grained, non-weathered, volcanic diorite.
65.0					BORING TERMINATED @ 61' Instructed drillers to set well from 50' to 60'
70.0					ODEX bit severly damaged after completion of boring

BLOWS/FT.	DENSITY
0 - 4	VERY LOOSE
5 - 10	LOOSE
11 - 30	MEDIUM DENSE
31 - 50	DENSE
51+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0 - 2	VERY SOFT
3 - 4	SOFT
5 - 8	MEDIUM STIFF
9 - 15	STIFF
16 - 30	VERY STIFF
31+	HARD

SAMPLE ID.	
S	SPLIT SPOON
T	TUBE
U	UNDISTURBED PISTON
G	GRAB SAMPLE
X	OTHER
NR	NO RECOVERY

COMPONENT %	
MOSTLY	50 - 100%
SOME	30 - 45%
LITTLE	15 - 25%
FEW	5 - 10%
TRACE	<5%

GROUND WATER ABBREV.
WD - WHILE DRILLING
NE - NOT ENCOUNTERED
UR - NOT READ

BORING NO. P-17D

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

TEST BORING REPORT

BORING NO. P-18D

PROJECT: Supplemental Groundwater Investigation
CLIENT: General Electric
CONTRACTOR: Geo-Works
EQUIPMENT USED: Mobile B-61 HDX Drill Rig

JOB NO.: 76058.03
PAGE NO.: 1 of 2
LOCATION:
ELEVATION:
DATE START: 5/28/04
DATE FINISH: 5/31/04
DRILLER: Omar Negron
PREPARED BY: Ron Paulling

GROUNDWATER		DEPTH TO:			CASING	SAMPLER (Drill Bit)	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	Steel	ODEX	
5/28	WD	7.0			SIZE ID	4 inch	4 inch	
6/3	6 days	10.41		50'	HAMMER WT		NA	
					HAMMER FALL		NA	

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
0'					Commercially crushed stone surface
0.6'					SILTY CLAY W/ SAND (CL-ML) Mod. brown (5YR 3/4), moist, mostly lean inorganic clay, some silt, little f. to med. sand, massive - ALLUVIUM
5.0					
7.0'					Becoming wet.
7.6'					POORLY GRADED SAND W/ SILT (SP-SM) Mod. ~~brown~~ brown (5YR 3/4), wet, mostly f. sand, some med. sand, little silt - ALLUVIUM
10.0					
15.0					
17.0'					WELL GRADED SAND W/ SILT (SW-SM) Mod. brown (5YR 3/4) to lt. brown (5YR 5/6), wet, mostly f. sand, some med. to cs. sand, little silt, sand angular to subangular
20.0					

BLOWS/FT	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
51+	VERY DENSE

BLOWS/FT	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLE ID
S - SPLIT SPOON
T - TUBE
U - UNDISTURBED PISTON
G - GRAB SAMPLE
X - OTHER
NR - NO RECOVERY

COMPONENT %
MOSTLY: 50-100%
SOME: 30-45%
LITTLE: 15-25%
FEW: 5-10%
TRACE: <5%

GROUNDWATER ABBREV.
WD – WHILE DRILLING
NE – NOT ENCOUNTERED
UR – NOT READ
BORING NO. P-18D

EARTH TECH

TEST BORING REPORT

BORING NO. P-18D

PAGE 2 of 2

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
20.0					coarsening downward – little f. gravel
21'					gravel becoming subrounded to rounded.
22.5					– COLLUVIUM
25.0					LEAN CLAY (CL) Lt. brown (5YR 5/6) seams ~ 1/4" in thickness
					WELL GRADED SAND W/ SILT (SW-SM) Similar to above. – COLLUVIUM
30.0					
30.5					DIORITE Grayish black (N2), hard, fine-grained, fresh, non-weathered diorite, smaller particles are rounded. Bit advancing slowly, behavior of drill bit is indicative of small, loose boulders that move slightly as air percussion hammer attempts to hit it. – River Bed Formation
33'					
35.0					POORLY GRADED SAND W/ SILT (SP-SM) Lt. brown (5YR 6/4), wet, mostly med. sand, some f. sand, little cs. sand and silt, few lean clay. – ALLUVIUM
40.0					DIORITE White (N9), lt. brownish gray (5YR 6/1), mod. red (5YR 5/4), and dusky red (5R 3/4), hard, fine-grained diorite with orthoclase.
					BORING TERMINATED @ 50'
					Well pair installed:
44.5'					P-18S screened from 7'-17'
45.0					P-18D screened from 34'-44'

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
51+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLE ID.	
S	SPLIT SPOON
T	TUBE
U	UNDISTURBED PISTON
G	GRAB SAMPLE
X	OTHER
NR	NO RECOVERY

COMPONENT %	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

GROUND WATER ABBREV.
WD - WHILE DRILLING
NE - NOT ENCOUNTERED
UR - NOT READ
BORING NO. P-18D

Rev. 4/93

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

TEST BORING REPORT

BORING NO. P-195

PROJECT: Supplemental Groundwater Investigation
CLIENT: General Electric
CONTRACTOR: Geo-Works
EQUIPMENT USED: Mobile B-61 HDX Drill Rig

JOB NO.: 76058.03
PAGE NO.: 1 of
LOCATION:
ELEVATION:
DATE START: 5/28/04
DATE FINISH: 6/28/04
DRILLER: Omar Negron
PREPARED BY: Ron Powling

GROUNDWATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	HSA / Steel	NA / ODEX	
5/28/04	WD	5.0			SIZE ID	4.25/4"	4"	
6/3	6 days	8.04		15'	HAMMER WT		NA	
					HAMMER FALL		NA	

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
0					Commercially crushed stone
0.6					SILTY CLAY w/ SAND (CL-ML) Mod. brown (5YR 3/4), moist, mostly clay inorganic clay, some silt, little f. sand. - ALLUVIUM
					Mini-Rem 0.7
					HNu 0.5
5.0					Met refusal @ 5.4' w/ HSA, moved 12' East, again met refusal @ 5.6' crew switched to ODEX
					DIORITE. Grayish black (N2), hard, fine-grained, fresh, non-weathered w/ lenses of white (N9) ~~ORTHOCLASE~~ to brownish gray (5YR 4/1), wet.
10.0					Lenses of WELL GRADED SAND (SW) ~ 1" thick Mod. brown (5YR 4/4), moist to wet, mostly f. to cs. sand, little silt - COLLUVIUM
14.5					
15.0					DIORITE Brownish gray (5YR 4/1), hard, fine grained, well rounded flat, elongated particles. - River Bed Formation
					BORING TERMINATED @ 15'
					Instructed driller to set well 5' to 15'
20.0					

BLOWS/FT	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
51+	VERY DENSE

BLOWS/FT	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLE ID
S - SPLIT SPOON
T - TUBE
U - UNDISTURBED PISTON
G - GRAB SAMPLE
X - OTHER
NR - NO RECOVERY

COMPONENT %
MOSTLY: 50-100%
SOME: 30-45%
LITTLE: 15-25%
FEW: 5-10%
TRACE: <5%

GROUNDWATER ABBREV.
WD – WHILE DRILLING
NE – NOT ENCOUNTERED
UR – NOT READ

BORING NO. P-195

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

TEST BORING REPORT

BORING NO. P-19D

PROJECT: Supplemental Groundwater Investigation
CLIENT: Ft. Belvoir
CONTRACTOR: Geo-Works
EQUIPMENT USED: Mobile B-61 HDX Drill Rig

JOB NO: 76053.03
PAGE NO: 1 of 2
LOCATION:
ELEVATION:
DATE START: 6/30/04
DATE FINISH: 6/30/04
DRILLER: W. Kilen
PREPARED BY: L Alexander

GROUND WATER		DEPTH TO:				CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	ODEX Stainless steel		
6/30/04	1	2.65	40.5	36.5	SIZE ID	4"		
		ft BGC	ft BGC	ft BGS	HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
				0.5	Commercially crushed stone (road bed)
					SILTY CLAY W/ SAND (CL-ML) – moist, mod. brown (5YR 3/4, mostly clay, some silt, little fine - med sand HNV = 0.5ppm ALLUVIUM
5.0					
				7	WELL GRADED SAND W/ CLAY (SW-SC), moist-wet, mod. brown (5YR 3/4), mostly fine - coarse sand, little clay,
				8.5	few gravel.
10.0					DIORITE, wet, hard, dark gray (N 3) to olive gray (5Y 4/1), fine grained, moderately weathered. COLLUVIUM
				12	Hard drilling at ~11 ft
					Same as 8.5 ft above but with some lenses of
15.0				14	WELL GRADED SANDS, moist-wet, mod brown (5YR 3/4), mostly fine - coarse sand, few - little silt. COLLUVIUM
					DIORITE, same as 8.5 ft above, hard drilling, lots of chatter, HNV = 0.2 ppm COLLUVIUM
				17	WELL GRADED SANDS W/ SILT (SW), wet, mod. brown (5YR 3/4), mostly fine sand, some med - coarse sand, little silt, angular - subang. sand.
20.0					

BLOWS/FT.	DENSITY
0 - 4	VERY LOOSE
5 - 10	LOOSE
11 - 30	MEDIUM DENSE
31 - 50	DENSE
51+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0 - 2	VERY SOFT
3 - 4	SOFT
5 - 8	MEDIUM STIFF
9 - 15	STIFF
16 - 30	VERY STIFF
31+	HARD

SAMPLE ID.	
S	SPLIT SPOON
T	TUBE
U	UNDISTURBED PISTON
G	GRAB SAMPLE
X	OTHER
NR	NO RECOVERY

COMPONENT %	
MOSTLY	50 - 100%
SOME	30 - 45%
LITTLE	15 - 25%
FEW	5 - 10%
TRACE	<5%

GROUND WATER ABBREV.
WD - WHILE DRILLING
NE - NOT ENCOUNTERED
UR - NOT READ

BORING NO.

EARTH TECH
A TYCO INTERNATIONAL LTD. COMPANY

TEST BORING REPORT

BORING NO. P-19D
PAGE 2 of 2

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
20					DIORITE, wet, grayish black (N2), brownish gray (5YR 4/1) & olive gray (5Y 4/1) w/ few white (N9) to very light gray (N8) fragments (ORTHOCLASE), fine grained, hard, non-weathered edges of stone are rounded, HNV = 0.3 ppm River Bell Formation
				22	SANDY CLAY (SC), moist-wet, dark yellowish brown (10YR 4/2), mostly clay, some fine-coarse sand, angular.
				24	DIORITE same as 20 ft above. hand drilling.
25					
				26	CLAY (w) interbedded w/ WELL GRADED SAND (w) / CLAY (SW-SC) moist-wet, mod. brown (5YR 4/4), few-mostly clay, few-mostly fine-coarse sand, subang. HNV = 0.2 ppm
				29	WELL GRADED SAND (SW), moist, mod. brown (5YR 4/4) to mod. brown (5YR 3/4), mostly fine-V. coarse sand, few clay & silt, few gravel, rounded-subrounded.
30				30	WELL GRADED SAND W/ SILT (SW-SM) interbedded w/ CLAY (w) sand is dry, mod brown (5YR 4/4), few-little silt; clay is moist, mod. brown (5YR 4/4), HNV = 0.4 ppm
				32	WELL GRADED SAND W/ SILT & GRAVEL (SW-SM), wet, moderate yellowish brown (10YR 5/4) w/ light brown (5YR 5/6), grayish black (N2) & pinkish gray (5YR 8/1); mostly fine-very coarse sand, little small gravel, ang-subangular fragments of diorite, few-little silt.
35				33	
			36.5		Same as above but few-little clay.
					Boring terminated at 36.5 ft BGS Install well P-19D. Well set at TD = 36.2 ft BGS, 40.5 ft BTOC total casing length = 40.5 ft prior to surface completion 4.3 ft stickup Screen interval = 25.7 to 35.7 ft BGS (30 ft to 40 ft BTOC) 7/1/04: surface completion 2.25 ft cutoff stickup total stickup height = 2.05 ft above ground total well depth: 36.2 ft BGS = 38.25 ft BTOC screen interval = 27.75 ft BTOC - 37.75 ft BTOC

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLE ID.	COMPONENT %	GROUND WATER ABBREV.
0 - 4	VERY LOOSE	0 - 2	VERY SOFT	S SPLIT SPOON	MOSTLY 50 - 100%	WD - WHILE DRILLING
5 - 10	LOOSE	3 - 4	SOFT	T TUBE	SOME 30 - 45%	NE - NOT ENCOUNTERED
11 - 30	MEDIUM DENSE	5 - 8	MEDIUM STIFF	U UNDISTURBED PISTON	LITTLE 15 - 25%	UR - NOT READ
31 - 50	DENSE	9 - 15	STIFF	G GRAB SAMPLE	FEW 5 - 10%	
51+	VERY DENSE	16 - 30	VERY STIFF	X OTHER	TRACE <5%	BORING NO. P-19D
		31+	HARD	NR NO RECOVERY		

Rev. 4/94

TB pg. 3

J2 WELL CONSTRUCTION DETAILS

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

GROUND WATER MONITORING INSTALLATION DETAIL

PROJECT: Supplemental Ground Water Investigation

LOCATION: GE - Patillas, PR

CLIENT: GE - Patillas

CONTRACTOR: Geo Works

DRILLER: W Rolon CERTIFICATION NO:

ET REPRESENTATIVE: R. Paulling

JOB NO 76058.03

INSTALLATION NO

TYPE OF INSTALLATION G.W. Monitoring Well

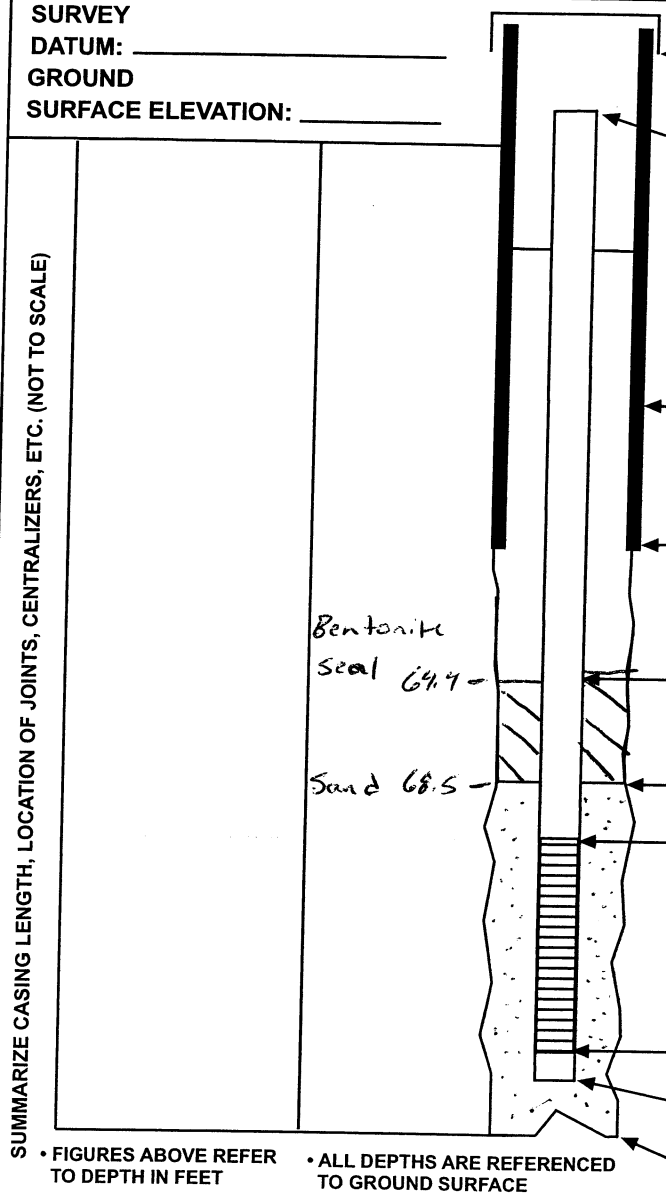
BORING NO. P-15DD

LOCATION

INSTALLATION DATE 5-26-04

SURVEY DATUM:

GROUND SURFACE ELEVATION:



SUMMARIZE CASING LENGTH, LOCATION OF JOINTS, CENTRALIZERS, ETC. (NOT TO SCALE)

TOP OF PROTECTIVE CASING EL. _____ STICKUP 2.5', ~~2.2~~

TOP OF WELL CASING OR RISER PIPE EL. _____ STICKUP 2.2'

TYPE OF SURFACE CASING: Concrete Pad

THICKNESS OF SURFACE SEAL: ~6.0 inches

TYPE OF PROTECTIVE CASING: ~~Square Steel~~

INSIDE DIAMETER: 4.0"

TOTAL LENGTH: 4.0'

BOTTOM OF PROTECTIVE CASING EL. _____ DEPTH 1.5' BGS

TYPE OF WELL CASING OR RISER: Sch. 40 PVC

INSIDE DIAMETER: 2.0"

APPROXIMATE DIAMETER OF BOREHOLE: 4.0"

TOP OF SCREENED INTERVAL EL. _____ DEPTH 68.5'

TYPE OF SCREEN: Sch. 40 PVC

SCREEN GAUGE OR SIZE OF OPENINGS: 0.010"

INSIDE DIAMETER: 2.0"

TYPE OF BACKFILL AROUND POINT: 6/20 Filter Sand

BOTTOM OF SCREENED INTERVAL EL. _____ DEPTH 73.5' BGS

BOTTOM OF WELL EL. _____ DEPTH 73.6' BGS

BOTTOM OF BOREHOLE EL. _____ DEPTH 76.0'

• FIGURES ABOVE REFER TO DEPTH IN FEET

• ALL DEPTHS ARE REFERENCED TO GROUND SURFACE

70.8	+	5.0'	=	75.8'	BENTONITE SEALS 4.1'
LENGTH OF CASING		LENGTH OF ~~OPEN HOLE~~ Screen		TOTAL TO TOC	

BGS - Below Ground Surface

Data/76058/cadd/.pdf file

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

GROUND WATER MONITORING INSTALLATION DETAIL

PROJECT: Supplemental Ground Water Investigation

LOCATION: GE Patillas PR.

CLIENT: ~~Geo works~~ GE - Patillas

CONTRACTOR: ~~W Roton~~ Geo works

DRILLER: W. Roton CERTIFICATION NO:

ET REPRESENTATIVE: R. Paulling

JOB NO 76058.03

INSTALLATION NO

TYPE OF INSTALLATION GW. Monitoring Well

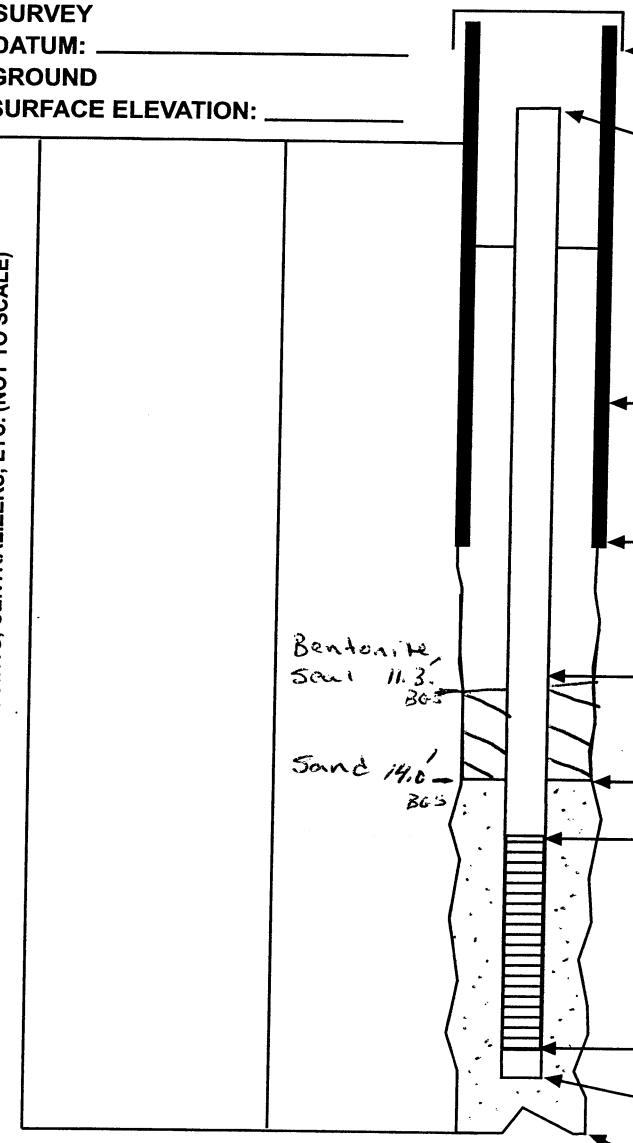
BORING NO. ~~P-16~~ P-16S

LOCATION

INSTALLATION DATE 5-27-04

SURVEY DATUM:

GROUND SURFACE ELEVATION:



SUMMARIZE CASING LENGTH, LOCATION OF JOINTS, CENTRALIZERS, ETC. (NOT TO SCALE)

- TOP OF PROTECTIVE CASING EL. ____ STICKUP 2.5'
- TOP OF WELL CASING OR RISER PIPE EL. ____ STICKUP 2.1'
- TYPE OF SURFACE CASING: Concrete Pad
- THICKNESS OF SURFACE SEAL: ≈ 6.0"
- TYPE OF PROTECTIVE CASING: Square Steel
- INSIDE DIAMETER: 4.0"
- TOTAL LENGTH: 4.0'
- BOTTOM OF PROTECTIVE CASING EL. ____ DEPTH 1.5' BGS
- TYPE OF WELL CASING OR RISER: Sch 40 PVC
- INSIDE DIAMETER: 2.0"
- APPROXIMATE DIAMETER OF BOREHOLE: 4.25"
- TOP OF SCREENED INTERVAL EL. ____ DEPTH 16.2' BGS
- TYPE OF SCREEN: Sch. 40 PVC
- SCREEN GAUGE OR SIZE OF OPENINGS: 0.010"
- INSIDE DIAMETER: 2.0"
- TYPE OF BACKFILL AROUND POINT: 6/20 Filter Sand
- BOTTOM OF SCREENED INTERVAL EL. ____ DEPTH 26.2' BGS
- BOTTOM OF WELL EL. ____ DEPTH 26.3' BGS
- BOTTOM OF BOREHOLE EL. ____ DEPTH 26.3' BGS

• FIGURES ABOVE REFER TO DEPTH IN FEET

• ALL DEPTHS ARE REFERENCED TO GROUND SURFACE

15.7' LENGTH OF CASING + 10.0' LENGTH OF ~~OPEN HOLE~~ Screen = 25.7' TOTAL TO TOC

BENTONITE SEALS 2.7'

95 .R

BGS - Below Ground Surface.

Data/76058/cadd/.pdf file

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

GROUND WATER MONITORING INSTALLATION DETAIL

PROJECT: Supplemental Ground Water Investigation

LOCATION: GE Patillas, P.R.

CLIENT: GE Patillas

CONTRACTOR: GEO Works

DRILLER: W. Rolon CERTIFICATION NO: _____

ET REPRESENTATIVE: R. Pawling

JOB NO 76058.03

INSTALLATION NO _____

TYPE OF INSTALLATION G.W. Monitoring Well

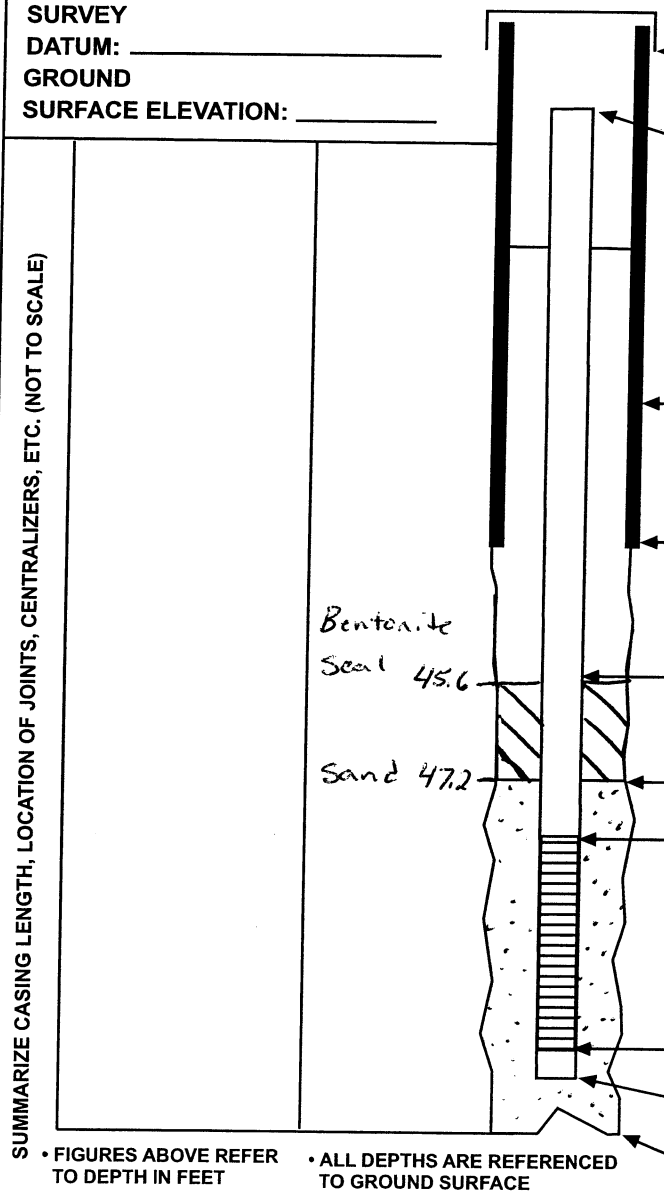
BORING NO. P-17D

LOCATION _____

INSTALLATION DATE 6-1-04

SURVEY DATUM: _____

GROUND SURFACE ELEVATION: _____



SUMMARIZE CASING LENGTH, LOCATION OF JOINTS, CENTRALIZERS, ETC. (NOT TO SCALE)

- TOP OF PROTECTIVE CASING EL. _____ STICKUP 2.9'
- TOP OF WELL CASING OR RISER PIPE EL. _____ STICKUP 2.6'
- TYPE OF SURFACE CASING: Concrete Pad
- THICKNESS OF SURFACE SEAL: ~6.0"
- TYPE OF PROTECTIVE CASING: Square Steel
- INSIDE DIAMETER: 4.0"
- TOTAL LENGTH: 4.0'
- BOTTOM OF PROTECTIVE CASING EL. _____ DEPTH 1.1' BGS
- TYPE OF WELL CASING OR RISER: Sch 40 PVC
- INSIDE DIAMETER: 2.0"
- APPROXIMATE DIAMETER OF BOREHOLE: 4.0"
- TOP OF SCREENED INTERVAL EL. _____ DEPTH 50.1' BGS
- TYPE OF SCREEN: Sch 40 PVC
- SCREEN GAUGE OR SIZE OF OPENINGS: 0.010"
- INSIDE DIAMETER: 2.0"
- TYPE OF BACKFILL AROUND POINT: #20 Filter Sand
- BOTTOM OF SCREENED INTERVAL EL. _____ DEPTH 60.1' BGS
- BOTTOM OF WELL EL. _____ DEPTH 60.9' BGS
- BOTTOM OF BOREHOLE EL. _____ DEPTH 61.0' BGS

• FIGURES ABOVE REFER TO DEPTH IN FEET

• ALL DEPTHS ARE REFERENCED TO GROUND SURFACE

53.5' LENGTH OF CASING + 10.0' LENGTH OF ~~OPEN HOLE~~ Screen = 63.5' TOTAL TO TOC

BENTONITE SEALS 1.6'

95 .R

Data/76058/cadd/.pdf file

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

GROUND WATER MONITORING INSTALLATION DETAIL

PROJECT: Supplemental Ground Water Investigation

LOCATION: GE Patillas P.R.

CLIENT: GE-Patillas

CONTRACTOR: Geo Works

DRILLER: W. Rolon CERTIFICATION NO:

ET REPRESENTATIVE: R. Paulling

JOB NO 76058.03

INSTALLATION NO

TYPE OF INSTALLATION GW Monitoring Well

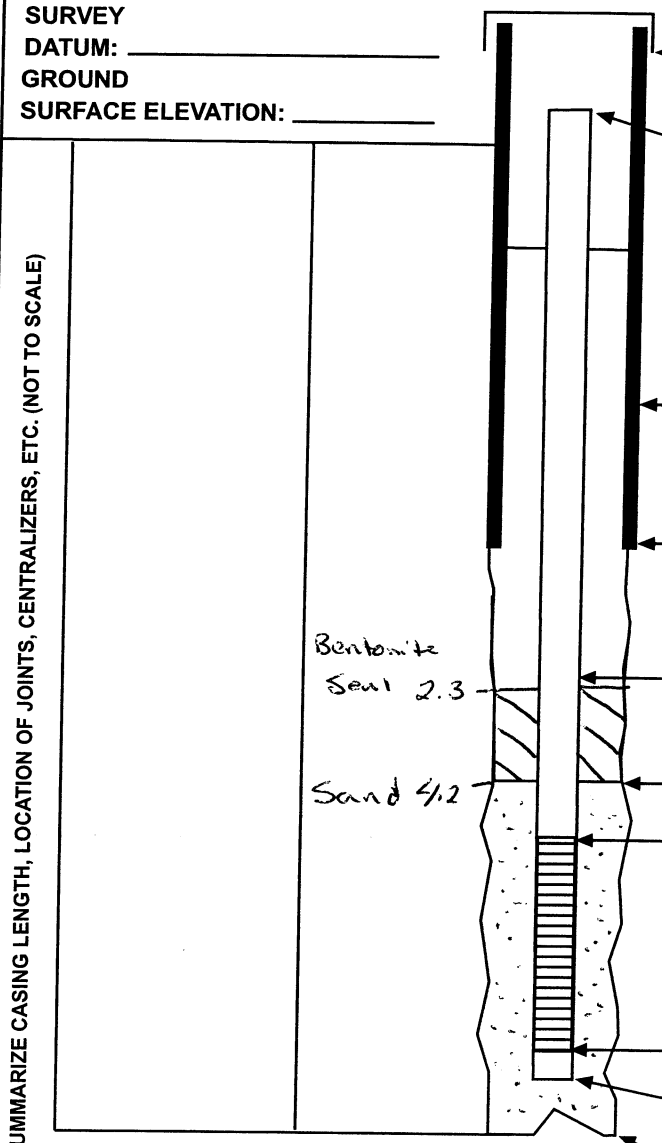
BORING NO. P-185

LOCATION

INSTALLATION DATE 5-28-04

SURVEY DATUM:

GROUND SURFACE ELEVATION:



SUMMARIZE CASING LENGTH, LOCATION OF JOINTS, CENTRALIZERS, ETC. (NOT TO SCALE)

- TOP OF PROTECTIVE CASING EL. ____ STICKUP 2.9'
- TOP OF WELL CASING OR RISER PIPE EL. ____ STICKUP 2.5'
- TYPE OF SURFACE CASING: Concrete Pad
- THICKNESS OF SURFACE SEAL: ~6.0"
- TYPE OF PROTECTIVE CASING: Square Steel
- INSIDE DIAMETER: 4.0"
- TOTAL LENGTH: 4.0'
- BOTTOM OF PROTECTIVE CASING EL. ____ DEPTH 1.1' BGS
- TYPE OF WELL CASING OR RISER: Sch. 40 PVC
- INSIDE DIAMETER: 2.0"
- APPROXIMATE DIAMETER OF BOREHOLE: 4.0"
- TOP OF SCREENED INTERVAL EL. ____ DEPTH 6.4' BGS
- TYPE OF SCREEN: Sch. 40 PVC
- SCREEN GAUGE OR SIZE OF OPENINGS: 0.010"
- INSIDE DIAMETER: 2.0"
- TYPE OF BACKFILL AROUND POINT: 6/20 Filter Sand
- BOTTOM OF SCREENED INTERVAL EL. ____ DEPTH 16.4' BGS
- BOTTOM OF WELL EL. ____ DEPTH 16.6' BGS
- BOTTOM OF BOREHOLE EL. ____ DEPTH 17.0 BGS

• FIGURES ABOVE REFER TO DEPTH IN FEET

• ALL DEPTHS ARE REFERENCED TO GROUND SURFACE

9.1' LENGTH OF CASING + 10.0' LENGTH OF ~~OPEN HOLE~~ Screen = 19.1' TOTAL TO TOC

BENTONITE SEALS 1.9'

95 .R

BGS - Below Ground Surface

Data/76058/cadd/.pdf file

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

GROUND WATER MONITORING INSTALLATION DETAIL

PROJECT: Supplemental Ground Water Investigation

LOCATION: GE Patillas P.R.

CLIENT: GE - Patillas

CONTRACTOR: Geo Works

DRILLER: W. Rolon CERTIFICATION NO: _____

ET REPRESENTATIVE: R. Paulling

JOB NO 76058.03

INSTALLATION NO _____

TYPE OF INSTALLATION GW. Monitoring Well

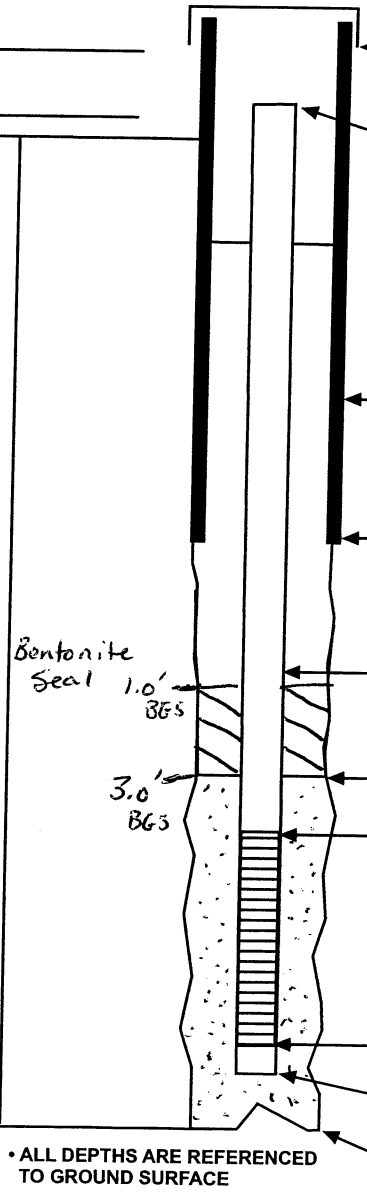
BORING NO. P-195

LOCATION _____

INSTALLATION DATE 5-28-04

SURVEY DATUM: _____

GROUND SURFACE ELEVATION: _____



SUMMARIZE CASING LENGTH, LOCATION OF JOINTS, CENTRALIZERS, ETC. (NOT TO SCALE)

- TOP OF PROTECTIVE CASING EL. _____ STICKUP 2.9'
- TOP OF WELL CASING OR RISER PIPE EL. _____ STICKUP 2.4'
- TYPE OF SURFACE CASING: Concrete Pad
- THICKNESS OF SURFACE SEAL: ~6.0"
- TYPE OF PROTECTIVE CASING: Square Steel
- INSIDE DIAMETER: 4.0"
- TOTAL LENGTH: 4.0'
- BOTTOM OF PROTECTIVE CASING EL. _____ DEPTH 1.1' BGS
- TYPE OF WELL CASING OR RISER: Sch. 40 PVC
- INSIDE DIAMETER: 2.0"
- APPROXIMATE DIAMETER OF BOREHOLE: 4.25"
- TOP OF SCREENED INTERVAL EL. _____ DEPTH 5.6' BGS
- TYPE OF SCREEN: Sch. 40 PVC
- SCREEN GAUGE OR SIZE OF OPENINGS: 0.010"
- INSIDE DIAMETER: 2.0"
- TYPE OF BACKFILL AROUND POINT: 6/20 Filter Sand
- BOTTOM OF SCREENED INTERVAL EL. _____ DEPTH 15.6' BGS
- BOTTOM OF WELL EL. _____ DEPTH 15.8' BGS
- BOTTOM OF BOREHOLE EL. _____ DEPTH 15.8' BGS

• FIGURES ABOVE REFER TO DEPTH IN FEET

• ALL DEPTHS ARE REFERENCED TO GROUND SURFACE

8.7' LENGTH OF CASING + 10.0' LENGTH OF ~~OPEN HOLE~~ Screen = 18.7' TOTAL TO TOC

BENTONITE SEALS 2.0'

95 .R

BGS - Below Ground Surface.

Data/76058/cadd/.pdf file

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

GROUND WATER MONITORING INSTALLATION DETAIL

PROJECT: Supplemental Ground Water Investigation

LOCATION: GE Patillas, PR.

CLIENT: GE Patillas

CONTRACTOR: Geo Works

DRILLER: W. Rolon CERTIFICATION NO: _____

ET REPRESENTATIVE: R. Pauling

JOB NO 76058.03

INSTALLATION NO _____

TYPE OF INSTALLATION GW Monitoring Well

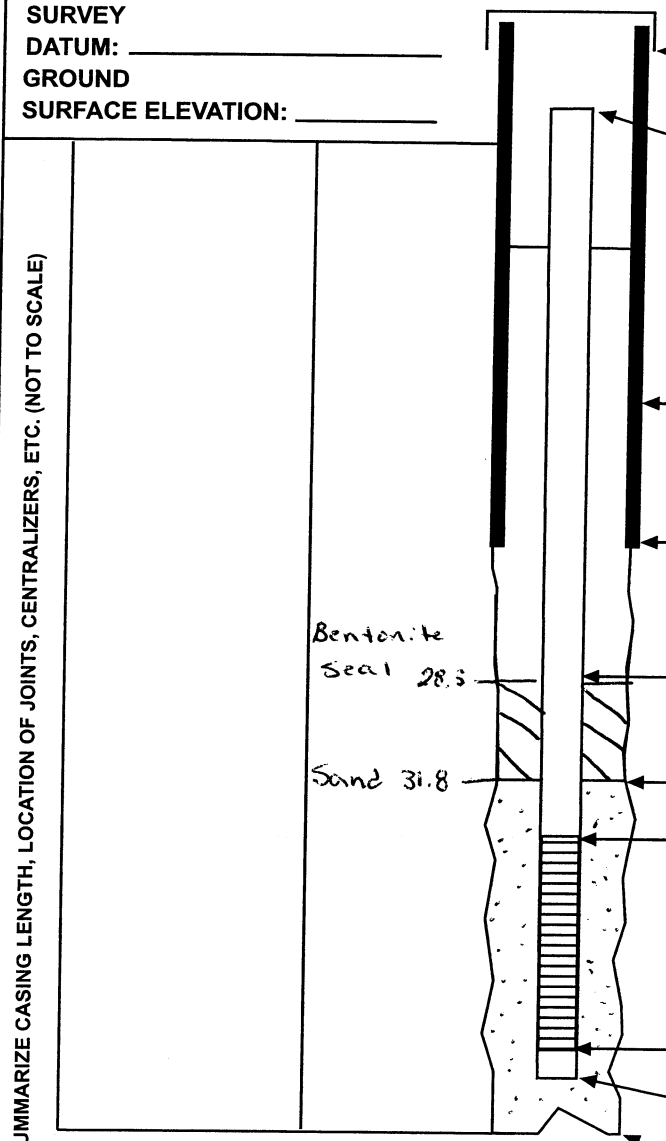
BORING NO. P-18D

LOCATION _____

INSTALLATION DATE 5-31-04

SURVEY DATUM: _____

GROUND SURFACE ELEVATION: _____



SUMMARIZE CASING LENGTH, LOCATION OF JOINTS, CENTRALIZERS, ETC. (NOT TO SCALE)

- FIGURES ABOVE REFER TO DEPTH IN FEET
- ALL DEPTHS ARE REFERENCED TO GROUND SURFACE

TOP OF PROTECTIVE CASING EL. _____ STICKUP 2.7'

TOP OF WELL CASING OR RISER PIPE EL. _____ STICKUP 2.1'

TYPE OF SURFACE CASING: Concrete Pad

THICKNESS OF SURFACE SEAL: ~6.0"

TYPE OF PROTECTIVE CASING: Square Steel

INSIDE DIAMETER: 4.0"

TOTAL LENGTH: 4.0'

BOTTOM OF PROTECTIVE CASING EL. _____ DEPTH 1.3' BGS

TYPE OF WELL CASING OR RISER: Sch. 40 PVC

INSIDE DIAMETER: 2.0"

APPROXIMATE DIAMETER OF BOREHOLE: 4.0"

TOP OF SCREENED INTERVAL EL. _____ DEPTH 35.0' BGS

TYPE OF SCREEN: Sch. 40 PVC

SCREEN GAUGE OR SIZE OF OPENINGS: 0.010"

INSIDE DIAMETER: 2.0"

TYPE OF BACKFILL AROUND POINT: 6/20 Filter Sand

BOTTOM OF SCREENED INTERVAL EL. _____ DEPTH 45' BGS

BOTTOM OF WELL EL. _____ DEPTH 45.8 BGS

BOTTOM OF BOREHOLE EL. _____ DEPTH 50.0' BGS

37.9' LENGTH OF CASING + 10.0' LENGTH OF ~~OPEN HOLE~~ Screen = 47.9' TOTAL TO TOC

BENTONITE SEALS 3.5'

BGS - Below Ground Surface.

Data/76058/cadd/.pdf file

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

GROUND WATER MONITORING INSTALLATION DETAIL

PROJECT: Supplemental Ground Water Investigation

LOCATION: GE, Patillas, P.R.

CLIENT: GE, Patillas

CONTRACTOR: Geo. Works

DRILLER: W. Rolon CERTIFICATION NO: _____

ET REPRESENTATIVE: L. Alexander

JOB NO 76058.03

INSTALLATION NO _____

TYPE OF INSTALLATION G.W. Monitoring Well

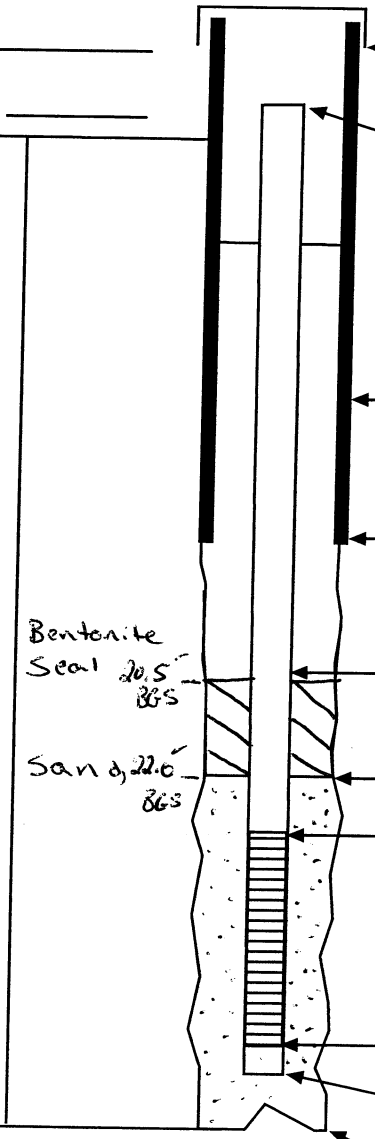
BORING NO. P-19D

LOCATION _____

INSTALLATION DATE 6-30-04

SURVEY DATUM: _____

GROUND SURFACE ELEVATION: _____



TOP OF PROTECTIVE CASING EL. _____ STICKUP 0.5'

TOP OF WELL CASING OR RISER PIPE EL. _____ STICKUP 2.05'

TYPE OF SURFACE CASING: Concrete Pad

THICKNESS OF SURFACE SEAL: ~6.0"

TYPE OF PROTECTIVE CASING: Square Steel

INSIDE DIAMETER: 4.0"

TOTAL LENGTH: 4.0'

BOTTOM OF PROTECTIVE CASING EL. _____ DEPTH 1.5' BGS

TYPE OF WELL CASING OR RISER: Sch 40 PVC

INSIDE DIAMETER: 2.0"

APPROXIMATE DIAMETER OF BOREHOLE: 4.0"

TOP OF SCREENED INTERVAL EL. _____ DEPTH 25.7' BGS

TYPE OF SCREEN: Sch 40 PVC

SCREEN GAUGE OR SIZE OF OPENINGS: 0.010"

INSIDE DIAMETER: 2.0"

TYPE OF BACKFILL AROUND POINT: 6/20 Filter Sand

BOTTOM OF SCREENED INTERVAL EL. _____ DEPTH 35.7' BGS

BOTTOM OF WELL EL. _____ DEPTH 36.2' BGS

BOTTOM OF BOREHOLE EL. _____ DEPTH 36.5' BGS

SUMMARIZE CASING LENGTH, LOCATION OF JOINTS, CENTRALIZERS, ETC. (NOT TO SCALE)

• FIGURES ABOVE REFER TO DEPTH IN FEET

• ALL DEPTHS ARE REFERENCED TO GROUND SURFACE

28.25'	+	10.0'	=	38.25'	BENTONITE SEALS 1.5'
LENGTH OF CASING		LENGTH OF ~~OPEN HOLE~~ Screen		TOTAL TO TOC	

BGS - below ground surface

J3 WELL DEVELOPMENT LOGS

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

Monitoring Well Development Log

Date Started (yr/mo/day) 6/2/04 Date Completed (yr/mo/day) 6/2/04

Field Personnel Ron Pauling

Site Name GE Pathlas

Earth Tech Job # 76058.03

Well ID # P-15DD

____ Upgradient X Downgradient

Weather Conditions hot humid ~~90°~~ F/C

Air Temperature 90° °F

Total Well Depth (TWD) = 75.8 1/100 ft

Depth to Ground Water (DGW) = 13.60 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 62.2 1/100 ft

1 Casing Volume (OCV) = LWC x 0.163 = 10.14 ⇒ 10.2 gallons

5 Casing Volumes = 10.2 x 5 = 51 gallons

Method of Well Development Submersible Whaler Pump and Surging

Total Volume of Water Removed ~50 gallons

Date/Time 6/2/04	Discharge Rate (gpm)	Volume Purged (gallons)	Water Temperature (°C)	pH	DO SAL	Specific Conductivity (mS/cm)	Turbidity/Color	~~Sand Content~~ (%) ✓	Remarks
1105	0.8	Initial	30.1	6.36	8.18	0.498	2	0.01	Surged
1118	0.8	10.2	29.1	6.92	8.70	0.441	1	0.01	
1131	0.8	20.8	28.9	6.96	8.70	0.438	0	0.01	Surged
1146	0.8	32.8	28.9	6.97	9.04	0.438	0	0.01	
1157	0.8	41.6	28.8	6.91	8.76	0.437	0	0.01	
1207	0.8	49.6	28.7	6.93	8.64	0.437	0	0.01	

COMMENTS/OBSERVATIONS: Well yield was high.

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

Monitoring Well Development Log

Date Started (yr/mo/day) 6/3/04 Date Completed (yr/mo/day) 6/3/04

Field Personnel Ron Paulling

Site Name GE Patillas

Earth Tech Job # 76058.03

Well ID # P-165

____ Upgradient X Downgradient

Weather Conditions PC hot humid

Air Temperature 82 °F

Total Well Depth (TWD) = 28.4 1/100 ft

Depth to Ground Water (DGW) = 14.61 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 13.79 1/100 ft

1 Casing Volume (OCV) = LWC x 0.163 = 2.3 gallons

5 Casing Volumes = 11.5 gallons

Method of Well Development Whaler submersible pump and surging

Total Volume of Water Removed ~48 gallons

Date/Time 6/3/04	Discharge Rate (gpm)	Volume Purged (gallons)	Water Temperature (°C)	pH	~~Eh~~ DO (mg/l)	Specific Conductivity (~~µmhos~~/cm)	Turbidity/Color	Sand Content (%)	Remarks	Salinity %
0825	~~0.8~~ 0.4						Brown	20	Water extremely	
0925	0.4	24	28.8	6.56	8.33	0.519	116/lt. brn	5	turbid, ET up	0.02
0941	0.4	30.4	29.1	6.81	8.63	0.489	32/CL	<1	will purge	0.02
0955	0.4	36.0	29.0	6.79	8.49	0.477	29/CL	<1	~~not~~ until water	0.01
1008	0.4	41.2	29.0	6.77	8.46	0.465	26/CL	<1	begins to clear.	0.01
1022	0.4	46.8	29.2	6.79	8.86	0.459	25/CL	<1		0.01

COMMENTS/OBSERVATIONS: Well yield was moderate to high

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

Monitoring Well Development Log

Date Started (yr/mo/day) 6/3/04 Date Completed (yr/mo/day) 6/4/04

Field Personnel Ron Paulling

Site Name GE - Patillas

Earth Tech Job # 76058.03

Well ID # P-17D

___ Upgradient X Downgradient

Weather Conditions hot humid P/C

Air Temperature 85 °F

Total Well Depth (TWD) = 63.5 1/100 ft

Depth to Ground Water (DGW) = 8.31 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 55.19 1/100 ft

1 Casing Volume (OCV) = LWC x 0.163 = 9.0 gallons

5 Casing Volumes = 45.0 gallons

Method of Well Development Whaler submersible pump and surging

Total Volume of Water Removed Initial 55 / Final 42.4 ⇒ Total 97.4 gallons (6/3/04) / (6/4/04)

Date/Time 6/4/04	Discharge Rate (gpm)	Volume Purged (gallons)	Water Temperature (°C)	pH	DO mg/l	Specific Conductivity mS (µmhos/cm)	Turbidity/Color	Sand Content (%)	Remarks	Salinity %
0847	1.2	65.0	28.4	6.49	8.23	0.503	4/clear	0	Surged	0.02
0856	1.2	75.8	28.3	7.03	8.14	0.482	3	0		0.02
0905	1.2	86.6	28.4	7.03	8.38	0.480	3	0	Surged	0.01
0914	1.2	97.4	28.5	7.03	8.39	0.480	1	0		0.01

COMMENTS/OBSERVATIONS: well yield was high

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

Monitoring Well Development Log

Date Started (yr/mo/day) 6/3/04 Date Completed (yr/mo/day) 6/3/04

Field Personnel Ron Paulling

Site Name GE - Patillas

Earth Tech Job # 76058.03

Well ID # P-18D

____ Upgradient X Downgradient

Weather Conditions PC, hot, humid

Air Temperature 95 °F

Total Well Depth (TWD) = 47.9 1/100 ft

Depth to Ground Water (DGW) = 10.41 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 37.49 1/100 ft

1 Casing Volume (OCV) = LWC x 0.163 = 6.1 gallons

5 Casing Volumes = 30.5 gallons

Method of Well Development Whaler Submersible pump and surging

Total Volume of Water Removed Initial 55 / Final 51 ⇒ Total 106 gallons

Date/Time 6/3/04	Discharge Rate (gpm)	Volume Purged (gallons)	Water Temperature (°C)	pH	DO mg/l	Specific Conductivity (µmhos/cm)	Turbidity/Color	Sand Content (%)	Remarks	Salinity %
1601	1.5	65.5	28.5	6.61	8.89	0.377	73/H. brwn	<5	Surged	0.02
1608	1.5	76	28.2	6.54	8.63	0.377	7/clear	0		0.01
1615	1.5	86.5	28.0	6.54	8.53	0.379	2	0	Surged	0.01
1618	1.5	91	28.1	6.53	8.61	0.378	2	0		0.01
1621	1.5	95.5	28.0	6.54	8.56	0.379	2	0		0.01
1628	1.5	106	28.0	6.52	8.64	0.378	2	0		0.01

COMMENTS/OBSERVATIONS: well yield was high

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

Monitoring Well Development Log

Date Started (yr/mo/day) 6/3/04 Date Completed (yr/mo/day) 6/3/04

Field Personnel Ron Paulling

Site Name GE - Patillas

Earth Tech Job # 76058.03

Well ID # P-185

___ Upgradient X Downgradient

Weather Conditions hot humid

Air Temperature 95 °F

Total Well Depth (TWD) = 19.1 1/100 ft

Depth to Ground Water (DGW) = 10.23 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 8.87 1/100 ft

1 Casing Volume (OCV) = LWC x 0.163 = 1.5 gallons

5 Casing Volumes = 7.5 gallons

Method of Well Development Whaler submersible pump and surging

Total Volume of Water Removed Initial 55 / Final 33 ⇒ Total 88 gallons

Date/Time 6/3/04	Discharge Rate (gpm)	Volume Purged (gallons)	Water Temperature (°C)	pH	DO Eh mg/l	Specific Conductivity (µmhos/cm)	Turbidity/Color	Sand Content (%)	Remarks	Salinity %
1428	1.5	65.5	28.4	6.58	9.09	0.368	3/CL	<1	Surgd	0.01
1435	1.5	76	28.0	6.51	8.86	0.367	2/Clear	~~<1~~ 0		0.01
1439	1.5	~~80~~ 82	27.9	6.49	8.60	0.366	3	~~<1~~ 0	Surgd	0.01
1443	1.5	88	27.8	6.49	8.68	0.367	2	0		0.01

COMMENTS/OBSERVATIONS: well yield was high

1
15.8
2.4
18.2

EARTH TECH

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Monitoring Well Development Log

Page 1 of 1

Date Started (yr/mo/day) 6/3/04 Date Completed (yr/mo/day) 6/3/04

Field Personnel Ron Paulling

Site Name GE - Patillas

Earth Tech Job # 76058.03

Well ID # P-195

___ Upgradient X Downgradient

Weather Conditions PC hot humid

Air Temperature 95 °F

Total Well Depth (TWD) = 18.20 1/100 ft

Depth to Ground Water (DGW) = 8.04 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 10.16 1/100 ft

1 Casing Volume (OCV) = LWC x 0.163 = 1.7 gallons

5 Casing Volumes = 8.5 gallons

Method of Well Development whaler submersible pump and surging

Total Volume of Water Removed Initial 55 / Final 36 gallons ⇒ Total 91 gallons

Date/Time 6/3/04	Discharge Rate (gpm)	Volume Purged (gallons)	Water Temperature (°C)	pH	DO mg/l	Specific Conductivity (mS/cm)	Turbidity/Color	Sand Content (%)	Remarks	Salinity %
1236	1.5	58	28.4	6.75	9.32	0.245	83/ Lt. brown	5	Surged	0.00
1241	1.5	65.5	27.4	6.48	8.66	0.252	16/ CL	1		0.00
1248	1.5	76	27.2	6.41	8.82	0.257	13/ CL	<1	Surged	0.01
1255	1.5	86.5	27.1	6.42	8.56	0.261	8/ CL	<1		0.01
1258	1.5	91	27.1	6.40	8.50	0.262	8/ CL	<1		0.01

COMMENTS/OBSERVATIONS: well yield was high

EARTH TECH

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Monitoring Well Development Log

Date Started (yr/mo/day) 2004/07/01 Date Completed (yr/mo/day) 2004/07/01

Field Personnel LAlexander, W.Relon (Geowks) M.Relon (Geoworks)

Site Name GE-Patillas

Earth Tech Job #

Well ID # P-19D

____ Upgradient ____ Downgradient

Weather Conditions p.sunny, hot, humid, light breeze

Air Temperature 85 °F

Total Well Depth (TWD) = 36.2 ft BGS ; 40.5 ft BTOC 1/100 ft

Depth to Ground Water (DGW) = 13.69 ftBTOC; 9.39 ft BGS 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 26.81 1/100 ft

1 Casing Volume (OCV) = LWC x 0.167 = 4.5 gallons

5 Casing Volumes = 22.5 gallons

Method of Well Development purge w/ craftsman utility pump (Geoworks drillers) & surge

Total Volume of Water Removed 55 gallons

Date/Time	Discharge Rate (gpm)	Volume Purged (gallons)	Water Temperature (°C)	pH	~~Eh~~ ORP	Specific Conductivity ~~(umhos/cm)~~ mS/cm	Turbidity/Color	Sand Content ~~(%)~~ ml	~~Remarks~~ DO mg/L
~~2004~~/07/01 0740	—	~~2~~ 4 initial	28.91	5.57	128	0.717	~~999~~/brown		9.90
0745	0.4	~2	29.22	5.93	141	0.519	895/light brown		8.12
0753	0.4	~5	28.30	6.20	153	0.507	142/v. light brown		8.23
0800	0.6	~10	28.21	6.32	148	0.508	~~175~~ 175/v. light brown		8.09
0810	0.8	~18	28.07	6.36	138	0.506	97.8/v. light brown		7.52
0820	0.8	~25	28.26	6.40	131	0.507	15.5/clear		7.43
0830	1.5	~40	28.35	6.42	121	0.507	15.8/clear	DTW: 9.9 ft BTOC	7.32
0840	1.0	~50	28.69	6.45	118	0.507	9.6/clear		7.31
0850	1.0	~55	28.61	6.49	113	0.508	6.5/clear		7.31

COMMENTS/OBSERVATIONS: Finish development after 55 gallons removed

J4 WATER LEVEL SUMMARY SHEETS

EARTH TECH

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PAGE 1 OF 1

WATER LEVEL DATA SUMMARY

PROJECT: GE Patillas

LOCATION: Patillas, PR

CLIENT: GE

SURVEY DATUM:

MEASURING DEVICE: Simple Pro (10679)

JOB NUMBER 76058.03

DATE 6/7/04

MEASURED BY J. Stapp / J. Murphy

WELL NUMBER	TIME (Military)	MEASURING POINT		DEPTH TO WATER (FT) TOC	ELEVATION OF WATER (FT)	COMMENTS
		Description	Elevation (FT)			
P6	1125			10.19		
P-3	1130			10.62		
P-3a	1425			16.08		
P-2	1135			10.04		
P-2A	1138			15.54		
P-1A	1145			11.34		
P-1	1149			10.60		
P-4	1436			9.30		
P-11	1441			7.36		
P-9	1449			9.04		
P-10A	1500			14.80		
P-7A	1503			14.29		
P-7	1505			9.04		
P-15D	1516			13.80		
P-8	1603			11.48		
P-5A	1619			17.70		
P-5	1623			12.41		

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WATER LEVEL DATA SUMMARY

PROJECT: GE Patillas

LOCATION: Patillas, PR, GE Plant

CLIENT: GE

SURVEY DATUM:

MEASURING DEVICE: H_2O level tape

JOB NUMBER 76058.03

DATE 6/28/04

MEASURED BY LA, JS, WH, RR

WELL NUMBER	TIME (Military)	MEASURING POINT		DEPTH TO WATER (FT)	ELEVATION OF WATER (FT)	COMMENTS
		Description	Elevation (FT)			
P-1A	0716			12.02		
P-1	0718			11.13		
P-2A	0721			16.19		
P-2	0723			10.58		
P-6	0725			10.73		ants
P-3A	0727			16.69		
P-3	0729			11.15		ants; busted lock - needs re
P-11	0730			7.82		
P-4	0736			10.11		needs lock (Key stuck in
P9	0738			10.03		
P-5A	~~0746~~ 0743			19.53		
P-5	0745			13.46		
P-15D	0752			15.42		needs lock - per lockout
P-7A	0755			15.78		
P-7	0757			9.83		
P-8	0800			11.58		

EARTH TECH
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PAGE 1 OF 1

WATER LEVEL DATA SUMMARY

PROJECT: GE Patillas
LOCATION: Patillas, PR
CLIENT: GE
SURVEY DATUM:
MEASURING DEVICE: H2O level tape

JOB NUMBER 76058.03
DATE 6-28-04
MEASURED BY Reynolds / Stepp

WELL NUMBER	TIME (Military)	MEASURING POINT		DEPTH TO WATER (FT)	ELEVATION OF WATER (FT)	COMMENTS
		Description	Elevation (FT)			
P-16S				16.59		
P-19S				10.08		
P-18D				12.49		
P-18S				12.24		
P-11D				10.41		smells like sewer @ this area
P-10A				16.46		
P-14S				13.98		fenceline / field / floodplain trees
P-14D				15.17		
P-13S				16.80		
P-13D				15.66		

Rev. 10-93

J5 GROUNDWATER SAMPLING LOGS

EARTH TECH

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Resample

FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

Date (yr/mo/day) 2004/06/11

Field Personnel J. Stepp, J. Murphy

Site Name GE, Pittsfield

Earth Tech Job #

Well ID # P-1

___ Upgradient ___ Downgradient

Weather Conditions P-Sunny, Wind 5-15 mph

Air Temperature 85 °F

Total Well Depth (TWD) = 25.5 1/100 ft

Depth to Ground Water (DGW) = 10.55 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 1/100 ft

1 Casing Volume (OCV) = LWC x ___ = gal

3 Casing Volumes = gal = Standard Evacuation Volume

Method of Well Evacuation Bladder Pump

Method of Sample Collection Bladder pump

Total Volume of Water Removed gal

Casing Diameter 2 inches

Casing Material SS

Measuring Point Elevation 1/100 ft

Height of Riser (above land surface) 1/100 ft

Land Surface Elevation 1/100 ft

Screened Interval 1/100 ft

Dedicated Pump or Bailer YES ___ NO X Type ___

Steel Guard Pipe Around Casing YES X NO ___

Locking Cap YES X NO ___

Protective Post/Abutment YES X NO ___

Well Integrity Satisfactory YES X NO ___

Well Yield LOW ___ MODERATE ___ HIGH ___

Comments/Observations

TOTAL SULFIDE = 0.02 mg/L

SAMPLES COLLECTED @ 0955

FIELD ANALYSES

VOLUME PURGED (gallons)	3000ml	6000ml	7500	9000	10500	12000	
TIME (military)	0915	0925	0930	0935	0940	0945	
pH (S.U.)	6.26	6.25	6.25	6.25	6.25	6.25	
Sp. Cond. (µmhos/cm)	0.642	0.644	0.644	0.651	0.653	0.658	
Water Temp. (°C)	29.41	29.45	29.47	29.46	29.53	29.60	
Turbidity (NTUs)	29.1	17.2	17.1	12.5	11.9	9.4	
Dissolved Oxygen (mg/l)	1.71	0.65	0.60	0.56	0.54	0.55	
~~Eh (mV)~~ ORP	180	175	174	173	172	171	
Ferrous Iron (mg/l)						0.2 mg/L	
	10.54	10.56	10.55	10.57	10.57	10.57	

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS Pump on @ 0905

~~Discharge Rate: 300 ml/min~~

EARTH TECH

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RESAMPLE

FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

Page 1 of 1

Date (yr/mo/day) 2004/06/11

Field Personnel J. Stepp J. Murphy

Site Name GE PATTILAS

Earth Tech Job #

Well ID # ~~P-10A~~ P-1A

____ Upgradient ____ Downgradient

Weather Conditions CLOUDY - RAIN

Air Temperature 85 °F

Total Well Depth (TWD) = 50.86 1/100 ft

Depth to Ground Water (DGW) = 11.06 1/100 ft

Length of Water Column (LWC) = TWD - DGW = ____ 1/100 ft

1 Casing Volume (OCV) = LWC x 0.16 = ____ gal

3 Casing Volumes = ____ gal = Standard Evacuation Volume

Method of Well Evacuation

Method of Sample Collection

Total Volume of Water Removed ____ gal

Casing Diameter 2 inches

Casing Material SS

Measuring Point Elevation ____ 1/100 ft

Height of Riser (above land surface) ____ 1/100 ft

Land Surface Elevation ____ 1/100 ft

Screened Interval ____ 1/100 ft

Dedicated Pump or Bailer YES ___ NO X Type ___

Steel Guard Pipe Around Casing YES X NO ___

Locking Cap YES X NO ___

Protective Post/Abutment YES X NO ___

Well Integrity Satisfactory YES X NO ___

Well Yield LOW ___ MODERATE ___ HIGH ___

Comments/Observations

SAMPLES COLLECTED @ 0825

TOTAL SULFIDE = 0.02 mg/L

FIELD ANALYSES

VOLUME PURGED (gallons)	3000 ml	6000 ml	9000	10500	12000		
TIME (military)	0745	0755	0805	0810	0815		
pH (S.U.)	6.51	6.48	6.47	6.47	6.47		
Sp. Cond. (µmhos/cm)	0.608	0.607	0.606	0.605	0.605		
Water Temp. (°C)	28.76	28.83	28.78	28.76	28.73		
Turbidity (NTUs)	30.7	17.0	15.25	14.00	13.0		
Dissolved Oxygen (mg/l)	3.67	1.25	1.15	1.14	1.12		
~~Eh (mV)~~ ORP	113	105	107	109	110		
Ferrous Iron (mg/l)					0.2 mg/L		
	11.10	11.10	11.10	11.10	11.10		

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS PUMP ON AT 0735
DISCHARGE RATE 300

EARTH TECH

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11800
5300
13300

FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

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Date (yr/mo/day) 2004/06/10
Field Personnel J. Stepp, J. Murphy
Site Name GE Pittsfield
Earth Tech Job #
Well ID # P-41
____ Upgradient ____ Downgradient
Weather Conditions RAIN - HEAVY AT TIMES
Air Temperature 85 °F
Total Well Depth (TWD) = 21.04 1/100 ft
Depth to Ground Water (DGW) = 9.30 1/100 ft
Length of Water Column (LWC) = TWD - DGW = ____ 1/100 ft
1 Casing Volume (OCV) = LWC x ____ = ____ gal
3 Casing Volumes = ____ gal = Standard Evacuation Volume
Method of Well Evacuation
Method of Sample Collection
Total Volume of Water Removed ____ gal

Casing Diameter 2 inches
Casing Material SS
Measuring Point Elevation ____ 1/100 ft
Height of Riser (above land surface) ____ 1/100 ft
Land Surface Elevation ____ 1/100 ft
Screened Interval ____ 1/100 ft
Dedicated Pump or Bailer YES ___ NO X Type ___
Steel Guard Pipe Around Casing YES X NO ___
Locking Cap YES X NO ___
Protective Post/Abutment YES X NO ___
Well Integrity Satisfactory YES X NO ___
Well Yield LOW ___ MODERATE ___ HIGH ___

Comments/Observations
~~Pump on @ 0907~~
Samples Collected @ 1010
FOR Sulfide = 0.02 mg/L

FIELD ANALYSES

VOLUME PURGED (gallons)	2800 ml	5800 ml	8800 ml	11800 ml	13300		
TIME (military)	0915	0925	0935	0945	0950		
pH (S.U.)	6.30	6.27	6.27	6.27	6.27		
Sp. Cond. (µmhos/cm)	0.479	0.482	0.483	0.483	0.483		
Water Temp. (°C)	28.84	28.64	28.69	28.81	28.93		
Turbidity (NTUs)	8.25	3.41	2.23	0.98	1.48		
Dissolved Oxygen (mg/l)	4.67	1.81	1.58	1.49	1.44		
~~Eh (mV)~~ ORP	221	210	198	188	183		
Ferrous Iron (mg/l)					0.2 mg/L		

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS Discharge Rate = 300 ml/min
Pump on @ 0907

9.55 | 9.6 | 9.6 | 9.6 | 9.6

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Field Data for GW

EARTH TECH

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FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

Page 1 of 1

Date (yr/mo/day) 2004/06/09

Field Personnel J. Stepp, J. Murphy

Site Name GE Pittsfield

Earth Tech Job # ~~P-55~~

Well ID # P-5

____ Upgradient ____ Downgradient

Weather Conditions P- cloudy, wind 0 - 10 mph

Air Temperature 85 °F

Total Well Depth (TWD) = 21.03 1/100 ft

Depth to Ground Water (DGW) = 12.54 1/100 ft

Length of Water Column (LWC) = TWD - DGW = ____ 1/100 ft

1 Casing Volume (OCV) = LWC x 0.16 = ____ gal

3 Casing Volumes = ____ gal = Standard Evacuation Volume

Method of Well Evacuation ____

Method of Sample Collection ____

Total Volume of Water Removed ____ gal

Casing Diameter 2 inches

Casing Material SS

Measuring Point Elevation ____ 1/100 ft

Height of Riser (above land surface) ____ 1/100 ft

Land Surface Elevation ____ 1/100 ft

Screened Interval ____ 1/100 ft

Dedicated Pump or Bailer YES ____ NO X Type ____

Steel Guard Pipe Around Casing YES X NO ____

Locking Cap YES X NO ____

Protective Post/Abutment YES X NO ____

Well Integrity Satisfactory YES X NO ____

Well Yield LOW ____ MODERATE ____ HIGH ____

Comments/Observations

SAMPLE WAS @ 1755

FORM SULFIDE = 0.02 mg/L

FIELD ANALYSES

VOLUME PURGED (gallons)	1500ml	3000ml	4500ml	6000ml			
TIME (military)	1730	1735	1740	1745			
pH (S.U.)	6.35	6.35	6.33	6.33			
Sp. Cond. (µmhos/cm)	0.585	0.585	0.584	0.583			
Water Temp. (°C)	28.49	28.42	28.38	28.38			
Turbidity (NTUs)	3.10	2.54	1.76	1.57			
Dissolved Oxygen (mg/l)	2.06	1.85	~~1.76~~ 1.62	1.56			
Eh (mV) ORP	147	148	149	150			
Ferrous Iron (mg/l)		~~1.66~~		0.6			
	12.54	12.64	12.65	12.65			

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS Pump on @ 1720 1725 Discharge rate 300 ML/min

EARTH TECH

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FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

Page 1 of 1

Date (yr/mo/day) 2004/06/09

Field Personnel J. Stipp, J. Murphy

Site Name GE Patillas

Earth Tech Job #

Well ID # P-5A

____ Upgradient ____ Downgradient

Weather Conditions P-Cloudy, Wind 0-10 mph

Air Temperature 85 °F

Total Well Depth (TWD) = 61.06 1/100 ft

Depth to Ground Water (DGW) = 18.2 1/100 ft

Length of Water Column (LWC) = TWD - DGW = ____ 1/100 ft

1 Casing Volume (OCV) = LWC x 0.16 = ____ gal

3 Casing Volumes = ____ gal = Standard Evacuation Volume

Method of Well Evacuation

Method of Sample Collection

Total Volume of Water Removed ____ gal

Casing Diameter 2 inches

Casing Material SS

Measuring Point Elevation ____ 1/100 ft

Height of Riser (above land surface) ____ 1/100 ft

Land Surface Elevation ____ 1/100 ft

Screened Interval ____ 1/100 ft

Dedicated Pump or Bailer YES ____ NO X Type ____

Steel Guard Pipe Around Casing YES X NO ____

Locking Cap YES X NO ____

Protective Post/Abutment YES X NO ____

Well Integrity Satisfactory YES X NO ____

Well Yield LOW ____ MODERATE ____ HIGH ____

Comments/Observations

Samples taken @ 1610

TOTAL Sulfide = 0.02 mg/L

FIELD ANALYSES

VOLUME PURGED (gallons)	4000 ml	8000 ml	12000 ml	16000 ml	20000 ml	24000 ml	
TIME (military)	1505	1515	1525	1535	1545	1555	
pH (S.U.)	6.67	6.25	6.41	6.63	6.65	6.64	
Sp. Cond. (µmhos/cm)	0.686	0.681	0.678	0.676	0.674	0.676	
Water Temp. (°C)	28.93	28.92	29.06	29.08	28.81	28.91	
Turbidity (NTUs)	34.3	14.5	8.3	5.4	4.1	3.5	
Dissolved Oxygen (mg/l)	1.95	1.02	0.95	0.90	0.89	0.87	
~~Eh (mV)~~ ORP	101	128	127	118	117	117	
Ferrous Iron (mg/l)						0.2 mg/L	
	18.3	18.3	18.3	18.3	18.3	18.4	

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS Pump on @ 1455

Discharge Rate: 400 ml/min

Resample

EARTH TECH

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FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

Page 1 of 1

Date (yr/mo/day) 2004/06/11
Field Personnel J. Stepp, J. Murphy
Site Name GE Pittsfield
Earth Tech Job #
Well ID # P-7
___ Upgradient ___ Downgradient
Weather Conditions P-Sunny, wind 5-15mph
Air Temperature 90 °F
Total Well Depth (TWD) = 18.71 1/100 ft
Depth to Ground Water (DGW) = 8.70 1/100 ft
Length of Water Column (LWC) = TWD - DGW = ___ 1/100 ft
1 Casing Volume (OCV) = LWC x ___ = ___ gal
3 Casing Volumes = ___ gal = Standard Evacuation Volume
Method of Well Evacuation
Method of Sample Collection
Total Volume of Water Removed ___ gal

Casing Diameter 2 inches
Casing Material SS
Measuring Point Elevation ___ 1/100 ft
Height of Riser (above land surface) ___ 1/100 ft
Land Surface Elevation ___ 1/100 ft
Screened Interval ___ 1/100 ft
Dedicated Pump or Bailer YES ___ NO X Type ___
Steel Guard Pipe Around Casing YES X NO ___
Locking Cap YES X NO ___
Protective Post/Abutment YES X NO ___
Well Integrity Satisfactory YES X NO ___
Well Yield LOW ___ MODERATE ___ HIGH ___

Comments/Observations
SAMPLES COLLECTED @ 1425
TOTAL SULFIDES 0.02 mg/L

FIELD ANALYSES

VOLUME PURGED (gallons)	3400 mL	~~6800~~	10200	11900			
TIME (military)	1350	1400	1410	1415			
pH (S.U.)	6.27	6.25	6.23	6.22			
Sp. Cond. (µmhos/cm)	0.472	0.482	0.484	0.492			
Water Temp. (°C)	32.42	32.44	32.45	32.40			
Turbidity (NTUs)	9.8	5.5	4.37	2.90			
Dissolved Oxygen (mg/l)	1.37	0.91	0.90	0.92			
~~Eh (mV)~~ ORP	178	173	170	169			
Ferrous Iron (mg/l)				0.2 mg/L			
	8.90	8.84	8.84	8.84			

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS PUMP ON @ 1340
Discharge Rate: 340 mL/min

EARTH TECH

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ReSample

FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

Page 1 of 1

Date (yr/mo/day) 2004/06/11

Field Personnel J. Stepp, J. Murphy

Site Name GE Pittsfield

Earth Tech Job #

Well ID # P-7A

____ Upgradient ____ Downgradient

Weather Conditions P-Cloudy ~~90~~ Wind - 5-15 mph

Air Temperature 90 °F

Total Well Depth (TWD) = 58.2 1/100 ft

Depth to Ground Water (DGW) = 13.52 1/100 ft

Length of Water Column (LWC) = TWD - DGW = ____ 1/100 ft

1 Casing Volume (OCV) = LWC x ____ = ____ gal

3 Casing Volumes = ____ gal = Standard Evacuation Volume

Method of Well Evacuation

Method of Sample Collection

Total Volume of Water Removed ____ gal

Casing Diameter 2 inches

Casing Material SS

Measuring Point Elevation ____ 1/100 ft

Height of Riser (above land surface) ____ 1/100 ft

Land Surface Elevation ____ 1/100 ft

Screened Interval ____ 1/100 ft

Dedicated Pump or Bailer YES ____ NO X Type ____

Steel Guard Pipe Around Casing YES X NO ____

Locking Cap YES X NO ____

Protective Post/Abutment YES X NO ____

Well Integrity Satisfactory YES X NO ____

Well Yield LOW ____ MODERATE ____ HIGH ____

Comments/Observations SAMPLES COLLECTED @ 1310
TOTAL SULFIDES 0.02 mg/L

FIELD ANALYSES

VOLUME PURGED (~~gallons~~)	4000 ml	8000	12000	16000	18000	20000	22000
TIME (military)	1215	1225	1235	1245	1250	1255	1300
pH (S.U.)	6.47	6.46	6.44	6.44	6.42	6.40	6.40
Sp. Cond. (µmhos/cm)	0.648	0.647	0.647	0.647	0.643	0.640	0.640
Water Temp. (°C)	30.67	30.66	30.60	30.37	30.65	30.63	30.73
Turbidity (NTUs)	15.7	12.0	9.2	6.8	6.3	6.3	6.2
Dissolved Oxygen (mg/l)	1.86	0.99	0.83	0.74	0.64	0.56	0.55
~~Eh (mV)~~ ORP	196	188	182	177	175	173	172
Ferrous Iron (mg/l)							0.2 mg/L
DEPTH TO WATER	13.50	13.54	13.52	13.50	13.49	13.46	

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS Pump on @ 12:05
DISCHARGE RATE 400 ML/MIN

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

Page 1 of ____

Date (yr/mo/day) 2004/06/29

Field Personnel L. Alexander, N. Hicks

Site Name GE Patillas

Earth Tech Job # ____

Well ID # P-8

____ Upgradient ____ Downgradient

Weather Conditions P-Cloudy, Hot & Humid

Air Temperature 92 °F

Total Well Depth (TWD) = 20.03 1/100 ft

Depth to Ground Water (DGW) = 11.58 1/100 ft

Length of Water Column (LWC) = TWD - DGW = ____ 1/100 ft

1 Casing Volume (OCV) = LWC x ____ = ____ gal

3 Casing Volumes = ____ gal = Standard Evacuation Volume

Method of Well Evacuation Bladder Pump

Method of Sample Collection Bladder Pump

Total Volume of Water Removed ____ gal

Casing Diameter 2 inches

Casing Material SS

Measuring Point Elevation ____ 1/100 ft

Height of Riser (above land surface) ____ 1/100 ft

Land Surface Elevation ____ 1/100 ft

Screened Interval ____ 1/100 ft

Dedicated Pump or Bailer YES ___ NO X Type ___

Steel Guard Pipe Around Casing YES X NO ___

Locking Cap YES X NO ___

Protective Post/Abutment YES ___ NO X

Well Integrity Satisfactory YES X NO ___

Well Yield LOW ___ MODERATE ___ HIGH ___

Comments/Observations Sampled @ 1520

Amn BK = 0 / Sulfide = 0

Amn Well = 0 / Ferrous Iron = 0

FIELD ANALYSES

VOLUME PURGED (gallons)	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0			
TIME (military)	1435	1440	1445	1450	1455	1500	1505	1510	1515			
pH (S.U.)	6.43	6.06	6.08	6.10	6.11	6.11	6.12	6.12	6.12			
Sp. Cond. (µmhos/cm)	0.546	0.506	0.505	0.506	0.506	0.506	0.507	0.507	0.507			
Water Temp. (°C)	27.49	27.31	27.31	27.33	27.31	27.24	27.25	27.26	27.28			
Turbidity (NTUs)	141	93.8	148	161	176	66.1	65.0	50.7	92.8			
Dissolved Oxygen (mg/l)	6.69	1.93	1.61	1.45	1.32	1.21	1.14	1.04	0.89			
Eh (mV)	226	219	199	183	162	142	135	131	123			
~~Ferrous Iron (mg/l)~~ DTW (Feet)	11.70	11.69	11.68	11.67	11.68	11.69	11.68	11.67	11.68			

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS Pump on @ ~1425 / Purge rate = 380 ml/min = 0.10 gpm

Rev. 4/93

J6 SUMMARY OF FIELD PARAMETERS

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FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

Date (yr/mo/day) 2004/06/28

Field Personnel J. Stepp, L. Alexander

Site Name GE Patillas

Earth Tech Job #

Well ID # P-9

____ Upgradient ____ Downgradient

Weather Conditions P-Sunny Hot, Humid

Air Temperature 90 °F

Total Well Depth (TWD) = 20.07 Ft BTOC 1/100 ft

Depth to Ground Water (DGW) = 10.14 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 9.93 1/100 ft

1 Casing Volume (OCV) = LWC x 0.167 = 1.656 gal

3 Casing Volumes = 4.98 gal = Standard Evacuation Volume

Method of Well Evacuation Bladder Pump

Method of Sample Collection Bladder Pump

Total Volume of Water Removed ____ gal

Casing Diameter 2 inches

Casing Material ~~Stainless~~ Steel

Measuring Point Elevation ____ 1/100 ft

Height of Riser (above land surface) ____ 1/100 ft

Land Surface Elevation ____ 1/100 ft

Screened Interval ____ 1/100 ft

Dedicated Pump or Bailer YES ___ NO X Type ___

Steel Guard Pipe Around Casing YES X NO ___

Locking Cap YES X NO ___

Protective Post/Abutment YES X NO ___

Well Integrity Satisfactory YES X NO ___

Well Yield LOW ___ MODERATE ___ HIGH ___

Comments/Observations

Sample taken @1200 w/duplicate (P-9-a)

Hnu BK = 0.0 / Sulfide = 0.0

Hnu well = 0.0 / Ferrous Iron = 0.0

FIELD ANALYSES

VOLUME PURGED (gallons)	0.77	1.32	1.87	2.42	2.97	3.52	4.07	4.62	5.17	5.72		
TIME (military)	1125	1130	1135	1140	1145	1150	1155	1200	1205	1210		
pH (S.U.)	6.07	6.07	6.08	6.07	6.07	6.05	6.05		6.4			
Sp. Cond. (~~mmhos~~/cm) ms/cm	0.431	0.444	0.442	0.439	0.434	0.433	0.432					
Water Temp. (°C)	30.51	30.40	30.34	30.41	30.45	30.43	30.52					
Turbidity (NTUs)*	clear	clear	clear	clear	clear	clear	clear					
Dissolved Oxygen (mg/l)	4.91	2.09	1.95	1.79	1.70	1.65	1.61					
~~Eh~~ (mV) ORP	196	187	183	178	175	174	173					
~~Ferrous Iron (mg/l)~~ DTW (Ft BTOC)	10.12	10.12	10.12	10.12	10.12	10.12						

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS Pump on @ 1118 / Purge rate = 400ml/min = 0.11gpm

*Turbidity reading >999 but water is crystal clear, no more spare turbidity meters

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EARTH TECH

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FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

Date (yr/mo/day) 2004/06/10

Field Personnel J. Stepp, J. Murphy

Site Name GE Ruti'lgs

Earth Tech Job #

Well ID # 10-A

____ Upgradient ____ Downgradient

Weather Conditions P. Sunny, wind 5-15mph

Air Temperature 90 °F

Total Well Depth (TWD) = 50.86 1/100 ft

Depth to Ground Water (DGW) = 14.13 1/100 ft

Length of Water Column (LWC) = TWD - DGW = ____ 1/100 ft

1 Casing Volume (OCV) = LWC x 0.16 = ____ gal

3 Casing Volumes = ____ gal = Standard Evacuation Volume

Method of Well Evacuation

Method of Sample Collection

Total Volume of Water Removed ____ gal

Casing Diameter 2 inches

Casing Material SS

Measuring Point Elevation ____ 1/100 ft

Height of Riser (above land surface) ____ 1/100 ft

Land Surface Elevation ____ 1/100 ft

Screened Interval ____ 1/100 ft

Dedicated Pump or Bailer YES ___ NO X Type ___

Steel Guard Pipe Around Casing YES X NO ___

Locking Cap YES X NO ___

Protective Post/Abutment YES X NO ___

Well Integrity Satisfactory YES X NO ___

Well Yield LOW ___ MODERATE ___ HIGH ___

Comments/Observations

Samples Collected @ 1500

TOM Sulfide = 0.02 mg/L

FIELD ANALYSES

VOLUME PURGED (gallons)	4000 mL	8000	12000	16000	20000	22000	
TIME (military)	1410	1420	1430	1440	1450	1455	
pH (S.U.)	6.78	6.75	6.74	6.72	6.67	6.66	
Sp. Cond. (µmhos/cm)	0.678	0.673	0.671	0.670	0.656	0.652	
Water Temp. (°C)	29.91	30.02	30.51	29.77	29.75	29.74	
Turbidity (NTUs)	17.4	5.05	—	8.55	3.72	4.75	
Dissolved Oxygen (mg/l)	1.90	0.74	1.06	1.63	0.56	0.53	
~~Eh (mV)~~ ORP	170	151	148	132	127	127	
Ferrous Iron (mg/l)						0.2 mg/L	

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS Pump on @ 1400

Discharge Rate = 400 mL/min

14.54	14.34	—	14.79	14.70	14.62

EARTH TECH

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FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

Page 1 of ____

Date (yr/mo/day) 04/6/28

Field Personnel N.H., Jr.

Site Name GE Pittsfield

Earth Tech Job # ____

Well ID # P-11

____ Upgradient ____ Downgradient

Weather Conditions Sunny & Cl. Cloud

Air Temperature ____ °F

Total Well Depth (TWD) = 15.17 1/100 ft

Depth to Ground Water (DGW) = ~~7.82~~ 7.82 1/100 ft

Length of Water Column (LWC) = TWD - DGW = 7.35 1/100 ft

1 Casing Volume (OCV) = LWC x .167 = 1.23 gal

3 Casing Volumes = 3.68 gal = Standard Evacuation Volume

Method of Well Evacuation Bladder Pump

Method of Sample Collection Bladder Pump

Total Volume of Water Removed ____ gal

Casing Diameter 2" inches

Casing Material SS

Measuring Point Elevation ____ 1/100 ft

Height of Riser (above land surface) ____ 1/100 ft

Land Surface Elevation ____ 1/100 ft

Screened Interval ____ 1/100 ft

Dedicated Pump or Bailer YES ____ NO X Type ____

Steel Guard Pipe Around Casing YES X NO ____

Locking Cap YES X NO ____

Protective Post/Abutment YES X NO ____

Well Integrity Satisfactory YES X NO ____

Well Yield LOW ____ MODERATE ____ HIGH ____

Comments/Observations HNU 0.7 background; 0.7 well

Sampled @ = 1300

Sulfide = 0.0

FIELD ANALYSES

VOLUME PURGED (gallons)	0	1.375 L	2.75	4.135 L	5.5 L	6.875	8.25	9.625	11	12.375	13.75	15.125	16.5
TIME (military)	1218	1215	1220	1225	1230	1235	1240	12.45	1250	1255			
pH (S.U.)	6.28	6.19	6.18	6.15	6.14	6.12	6.11	6.09	6.07	6.07			
Sp. Cond. (~~µ~~mhos/cm) mS/cm	0.523	0.522	0.522	0.523	0.524	0.524	0.524	0.525	0.525	0.525			
Water Temp. (°C)	30.4	30.2	30.3	30.4	30.3	30.5	30.5	30.4	30.3	30.3			
Turbidity (NTUs)	14.9	11.2	8.57	6.31	4.79	3.98	3.56	2.77	1.85	1.97			
Dissolved Oxygen (mg/l)	0.64	0.46	0.42	0.38	0.34	0.32	0.29	0.28	0.26	0.25			
Eh (mV) ORP	+98	106	101	104	108	110	113	114	117	118			
Ferrous Iron (mg/l)										0.0			
* (1) Clear (2) Slight (3) Moderate (4) High	DTW			7.84			7.84		7.85				

COMMENTS/OBSERVATIONS Pump on @ : / Purge rate = 275 ml/min

EARTH TECH

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FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

Date (yr/mo/day) 04-06-28

Field Personnel R. Reynolds / N. Hicks / L. Alexander / J. Stepp

Site Name GE - Patillas, PR

Earth Tech Job #

Well ID # ~~P-15D~~ Change to P-15 DD (JS 1-11-05

____ Upgradient ____ Downgradient

Weather Conditions Sunny, humid, & hot

Air Temperature 99 °F

Total Well Depth (TWD) = 75.80 1/100 ft

Depth to Ground Water (DGW) = 15.42 1/100 ft

Length of Water Column (LWC) = TWD - DGW = ____ 1/100 ft

1 Casing Volume (OCV) = LWC x ____ = ____ gal

3 Casing Volumes = ____ gal = Standard Evacuation Volume

Method of Well Evacuation Bladder Pump

Method of Sample Collection Bladder Pump

Total Volume of Water Removed ____ gal

Casing Diameter 2 inches

Casing Material PVC

Measuring Point Elevation TOC 1/100 ft

Height of Riser (above land surface) ____ 1/100 ft

Land Surface Elevation ____ 1/100 ft

Screened Interval ____ 1/100 ft

Dedicated ~~Pump or Bailer~~ Tubing YES X NO ____ Type ____

Steel Guard Pipe Around Casing YES X NO ____

Locking Cap YES X NO ____

Protective Post/Abutment YES X NO ____

Well Integrity Satisfactory YES X NO ____

Well Yield LOW ____ MODERATE X HIGH ____

Comments/Observations HNU 0.1 background & in well

sample time = 1230 Purge rate = 325 ml/min

~~ferrous iron~~ = sulfide =

FIELD ANALYSES

VOLUME PURGED (gallons)	Initial												
TIME (military)	1150	1155	1200	1205	1210	1215	1220	1225	1230	1235	1240	1245	1250
pH (S.U.)	6.80	6.78	6.79	6.81	6.80								
Sp. Cond. (µmhos/cm)	0.592	0.588	0.587	0.585	0.584								
Water Temp. (°C)	30.67	30.36	30.30	30.23	30.24								
*Turbidity (NTUs)	50.2	44.2	29.5	25.2	13.7	10.0	9.7						
Dissolved Oxygen (mg/l)	3.96	2.20	2.01	1.71	1.60								
~~ER~~ (mV) ORP	42	44	44	44	45								
~~Ferrous Iron (mg/l)~~ DTW	15.52	15.52	15.53	15.52	15.52								

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS * turbidimeter

EARTH TECH

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FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

Page ____ of ____

Date (yr/mo/day) 04/6/99
Field Personnel N Hicks
Site Name GE Pittsfield
Earth Tech Job #
Well ID # P-165
____ Upgradient ____ Downgradient
Weather Conditions
Air Temperature °F
Total Well Depth (TWD) = 28.4 1/100 ft
Depth to Ground Water (DGW) = 17 1/100 ft
Length of Water Column (LWC) = TWD - DGW = 11.4 1/100 ft
1 Casing Volume (OCV) = LWC x 0.167 = 1.9 gal
3 Casing Volumes = 5.7 gal = Standard Evacuation Volume
Method of Well Evacuation Bladder Pump
Method of Sample Collection Bladder Pump
Total Volume of Water Removed gal

Casing Diameter 2" inches
Casing Material PVC
Measuring Point Elevation 1/100 ft
Height of Riser (above land surface) 1/100 ft
Land Surface Elevation 1/100 ft
Screened Interval 1/100 ft
Dedicated Pump or Bailer YES ___ NO X Type ___ Tubing
Steel Guard Pipe Around Casing YES X NO ___
Locking Cap YES X NO ___
Protective Post/Abutment YES X NO ___
Well Integrity Satisfactory YES X NO ___
Well Yield LOW X MODERATE ___ HIGH ___
Comments/Observations HNU 0.7 background / 0.9 well
Initial purge water highly turbid. Purged to bucket w/ flow thru cell in attempt to clear turbidity. Water level dropped ± 19' Slowed controller flow rate to

FIELD ANALYSES

VOLUME PURGED (gallons)	0	2	5		5.1						
TIME (military)	1235	1251	Water level drop		1317						
pH (S.U.)		7.15	hit top of		6.87						
Sp. Cond. (µmhos/cm)		0.960	pump before		0.888						
Water Temp. (°C)		29.92	hitting water		29.64						
Turbidity (NTUs)		928	Cut pump &		308						
Dissolved Oxygen (mg/l)		10.72	allowed it		3.57						
~~Eh~~ (mV) ORP		79	to recover		47						
~~Ferrous Iron~~ (mg/l) DTW	17.0	19									

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS Sample @ 1315

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EARTH TECH

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FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

Page ____ of ____

Date (yr/mo/day) 04/6/28

Field Personnel N Hicks

Site Name GE Pittsfield

Earth Tech Job #

Well ID # P-17D

____ Upgradient ____ Downgradient

Weather Conditions

Air Temperature ____ °F

Total Well Depth (TWD) = 63.5 1/100 ft

Depth to Ground Water (DGW) = 10.80 1/100 ft

Length of Water Column (LWC) = TWD - DGW = ____ 1/100 ft

1 Casing Volume (OCV) = LWC x ____ = ____ gal

3 Casing Volumes = ____ gal = Standard Evacuation Volume

Method of Well Evacuation Bladder Pump

Method of Sample Collection Bladder Pump

Total Volume of Water Removed ____ gal

Casing Diameter ____ inches

Casing Material

Measuring Point Elevation ____ 1/100 ft

Height of Riser (above land surface) ____ 1/100 ft

Land Surface Elevation ____ 1/100 ft

Screened Interval ____ 1/100 ft

Dedicated Pump or Bailer YES ___ NO ___ Type ___

Steel Guard Pipe Around Casing YES ___ NO ___

Locking Cap YES ___ NO ___

Protective Post/Abutment YES ___ NO ___

Well Integrity Satisfactory YES ___ NO ___

Well Yield LOW ___ MODERATE ___ HIGH ___

Comments/Observations Sampled @ 0935
2min 15sec 750ml = ~350 ml/min
HNU 0.7 background 0.5 in well

FIELD ANALYSES

VOLUME PURGED (gallons)	0											
TIME (military)	900	905	910	915	920	925	930					
pH (S.U.)	6.74	6.86	6.87	6.87	6.85	6.83						
Sp. Cond. (µmhos/cm)	0.749	0.743	0.743	0.743	0.741	0.742						
Water Temp. (°C)	29.07	28.91	29.01	29.02	29.17	29.15						
Turbidity (NTUs)	128	52.7	56.4	49.1	36.5	36.7						
Dissolved Oxygen (mg/l)	4.49	0.67	0.75	0.70	0.63	0.59						
Eh (mV)	115	86	67	56	48	43						
~~Ferrous Iron (mg/l)~~ DTW	10.80	10.95	10.92	10.92	10.95	10.88						

Sulfide 0.0

IRON 0.0

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS

Rev. 4/93

EARTH TECH

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FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

Date (yr/mo/day) 2004/06/29
Field Personnel L Alexander, J. Stepp
Site Name GE Pittsfield
Earth Tech Job #
Well ID # P-18S
____ Upgradient ____ Downgradient
Weather Conditions hot, humid, sunny
Air Temperature 90° °F
Total Well Depth (TWD) = 19.1 1/100 ft
Depth to Ground Water (DGW) = 12.55 1/100 ft
Length of Water Column (LWC) = TWD - DGW = 6.55 1/100 ft
1 Casing Volume (OCV) = LWC x 0.167 = 1.09 gal
3 Casing Volumes = 3.28 gal = Standard Evacuation Volume
Method of Well Evacuation purge w/ bladder pump
Method of Sample Collection purge w/ bladder pump
Total Volume of Water Removed 2.5 gal

Casing Diameter 2 inches
Casing Material PVC
Measuring Point Elevation ____ 1/100 ft
Height of Riser (above land surface) ____ 1/100 ft
Land Surface Elevation ____ 1/100 ft
Screened Interval ____ 1/100 ft
Dedicated Pump or Bailer YES ~~X~~ NO X Type ____
Steel Guard Pipe Around Casing YES X NO ____
Locking Cap YES X NO ____
Protective Post/Abutment YES X NO ____
Well Integrity Satisfactory YES ____ NO X
Well Yield LOW ____ MODERATE ____ HIGH ____

Comments/Observations
1035 Begin purging P-18S - water is clear
* water is crystal clear - bubbles are causing turbidity to be elevated

200 ml/min = 0.05 gpm

FIELD ANALYSES

VOLUME PURGED (gallons)	0.35	0.55	0.75	0.95	1.15	1.35	1.55	1.75	1.95		
TIME (military)	1042	1047	1052	1057	1102	1107	1112	1117	1122		
pH (S.U.)	6.25	6.25	6.23	6.24	6.23	6.24	6.23	6.24	6.23		
Sp. Cond. (~~µmhos/cm~~ mS/cm)	0.512	0.513	0.513	0.513	0.513	0.513	0.512	0.512	0.512		
Water Temp. (°C)	28.16	28.09	28.12	28.05	28.04	28.01	28.05	28.09	28.09		
Turbidity (NTUs) *	265	237	237	244	250	264	267	278	283		
Dissolved Oxygen (mg/l)	2.88	1.97	1.74	1.63	1.54	1.41	1.37	1.33	1.26		
~~Eh~~ (mV) ORP	117	119	123	125	127	130	131	132	133		
~~Ferrous Iron (mg/l)~~ DTW (ft BTOC)	12.55	12.55	12.55	12.56	12.56	12.56	12.56	12.56	12.56		

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS 1125 GW sample P-18S collected
ferrous iron = 10 mg/L ; hydrogen sulfide = 0 mg/L

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

Page 1 of 1

Date (yr/mo/day) 2004/06/29
Field Personnel LAlexandr
Site Name GE Patillas
Earth Tech Job #
Well ID # P-18D
____ Upgradient ____ Downgradient
Weather Conditions Sunny, hot, humid
Air Temperature 90 °F
Total Well Depth (TWD) = 47.9 1/100 ft
Depth to Ground Water (DGW) = 12.72 1/100 ft
Length of Water Column (LWC) = TWD - DGW = 35.18 1/100 ft
1 Casing Volume (OCV) = LWC x 0.167 = 5.88 gal
3 Casing Volumes = 17.63 gal = Standard Evacuation Volume
Method of Well Evacuation purge w/ bladder pump
Method of Sample Collection purge w/ bladder pump
Total Volume of Water Removed ____ gal

Casing Diameter PVC 2 inch inches
Casing Material
Measuring Point Elevation ____ 1/100 ft
Height of Riser (above land surface) ____ 1/100 ft
Land Surface Elevation ____ 1/100 ft
Screened Interval ____ 1/100 ft
Dedicated Pump or Bailer YES ___ NO X Type ___
Steel Guard Pipe Around Casing YES X NO ___
Locking Cap YES X NO ___ - needs lock
Protective Post/Abutment YES X NO ___
Well Integrity Satisfactory YES X NO ___
Well Yield LOW ___ MODERATE ___ HIGH ___

Comments/Observations
0840 BSG - purging - water is clear
0915 Collect GW sample P-18D & duplicate P-18D-a

260 ml/min = 0.07

FIELD ANALYSES

VOLUME PURGED (gallons)	0.35	0.7	1.05	1.4	1.75	2.1					
TIME (military)	0845	0850	0855	0900	0905	0910					
pH (S.U.)	6.19	6.22	6.23	6.24	6.24	6.24					
Sp. Cond. (~~µmhos/cm~~ ms/cm)	0.519	0.518	0.516	0.514	0.514	0.514					
Water Temp. (°C)	28.12	28.14	28.16	28.19	28.24	28.26					
Turbidity (NTUs)	-10.0	-10.0	-10.0	-10.0	-10.0	-10					
Dissolved Oxygen (mg/l)	5.05	3.21	2.98	2.66	2.71	2.69					
~~Eh~~ (mV) ORP	146	140	138	137	138	139					
~~Ferrous Iron (mg/l)~~ DTW (FIELD)	12.75	12.75	12.75	12.75	12.75	1275					

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS Ferrous iron = 0 mg/L
hydrogen sulfide = 0 mg/L

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FIELD DATA INFORMATION LOG FOR GROUNDWATER SAMPLING

Date (yr/mo/day) 20041071o1
Field Personnel LAlexander
Site Name GE-Pittsfield
Earth Tech Job #
Well ID # P-19D
____ Upgradient ____ Downgradient
Weather Conditions p.sunny, hot, humid, light breeze
Air Temperature 85 °F
Total Well Depth (TWD) = 36.2 Ft BGS; 40.5 Ft BTOC 1/100 ft
Depth to Ground Water (DGW) = ~~13.69~~ 13.69 Ft BTOC 1/100 ft
Length of Water Column (LWC) = TWD - DGW = ~~22.51~~ 26.81 1/100 ft
1 Casing Volume (OCV) = LWC x 0.167 = ~~3.75~~ 4.5 gal
3 Casing Volumes = 13.5 gal = Standard Evacuation Volume
Method of Well Evacuation purge w/ bladder pump
Method of Sample Collection purge w/ bladder pump
Total Volume of Water Removed ____ gal

Casing Diameter 2 inches
Casing Material PVC
Measuring Point Elevation ____ 1/100 ft
Height of Riser (above land surface) ~~4.3 Ft~~ currently but no surface completion yet 1/100 ft
Land Surface Elevation ____ 1/100 ft
Screened Interval ____ 1/100 ft
Dedicated Pump or Bailer YES ___ NO X Type ___
Steel Guard Pipe Around Casing YES ___ NO ___ * surface completion to occur after GW sampling due to crews impending demob.
Locking Cap YES X NO ___
Protective Post/Abutment YES ___ NO ___
Well Integrity Satisfactory YES ___ NO ___
Well Yield LOW ___ MODERATE ___ HIGH ___

Comments/Observations
Due to short time after well installation & development, will perform an extended purge (5 well volumes) as discussed w/ Mike Bellotti to assure effects of drilling are removed before collecting for parameter stabilization.

~~450~~ ml/min 430 ml/min = 0.12 gpm

FIELD ANALYSES

VOLUME PURGED (gallons)	1.2	4.5	9.0	13.5	18	22.5	23.1	23.7	24.3				
TIME (military)	1020	1100	1140	1220	1300	1345	1350	1355	1400				
pH (S.U.)	5.90	6.10	6.11	6.10	6.10	6.11	6.11	6.11	6.10				
Sp. Cond. (~~µmhos/cm~~ mS/cm)	0.518	0.507	0.490	0.488	0.502	0.491	0.491	4.88	0.490				
Water Temp. (°C)	28.53	28.91	29.10	28.79	28.29	28.87	28.99	28.84	28.87				
Turbidity (NTUs)	14.3	3.5	4.7	5.1	5.2	1.6	1.4	2.3	2.3				
Dissolved Oxygen (mg/l)	7.31	1.71	1.51	1.39	1.37	1.37	1.38	1.40	1.41				
Eh (mV) ORP	98	76	73	72	67	71	70	69	69				
~~Ferrous Iron (mg/l)~~ DTW (Ft BTOC)	13.74	13.79	13.78	13.79	13.82	13.82	13.82	13.82	13.82				

* (1) Clear (2) Slight (3) Moderate (4) High

COMMENTS/OBSERVATIONS ~~1010~~ Begin purging at 430 ml/min
1405 Collect GW sample P-19D; ferrous iron = 0 mg/L; hydrogen sulfide = 0 mg/L

Appendix J-6
Summary of Field Parameters
GE Puerto Rico Investment, Inc, Facility
Patillas, Puerto Rico

AFIID	LOCID	LOGDATE	LOGTIME	MATRIX	LABCODE	ANMCODE	PARLABEL	Analyte Name	PARVAL	UNITS
GEPAT	P-01	6/11/2004	945	WG	FLD	Field	DO	Dissolved Oxygen	0.55	MG/L
GEPAT	P-01	6/11/2004	945	WG	FLD	HACH	FE(FS)	Ferrous Iron	0.2	MG/L
GEPAT	P-01	6/11/2004	945	WG	FLD	Field	ORP	Oxidation Reduction	171	MILLIVOLTS
GEPAT	P-01	6/11/2004	945	WG	FLD	Field	PH	pH	6.25	PH UNITS
GEPAT	P-01	6/11/2004	945	WG	FLD	HACH	S	Sulfid	0.02	MG/L
GEPAT	P-01	6/11/2004	945	WG	FLD	Field	SC	Specific	0.658	UMHOS/CM
GEPAT	P-01	6/11/2004	945	WG	FLD	Field	TEMP	Temperate	29.06	DEG C
GEPAT	P-01	6/11/2004	945	WG	FLD	Field	TURB	Turbidity	9.4	NTU
GEPAT	P-01A	6/11/2004	815	WG	FLD	Field	DO	Dissolved Oxygen	1.12	MG/L
GEPAT	P-01A	6/11/2004	815	WG	FLD	HACH	FE(FS)	Ferrous Iron	0.2	MG/L
GEPAT	P-01A	6/11/2004	815	WG	FLD	Field	ORP	Oxidation Reduction	110	MILLIVOLTS
GEPAT	P-01A	6/11/2004	815	WG	FLD	Field	PH	pH	6.47	PH UNITS
GEPAT	P-01A	6/11/2004	815	WG	FLD	HACH	S	Sulfid	0.02	MG/L
GEPAT	P-01A	6/11/2004	815	WG	FLD	Field	SC	Specific	0.605	UMHOS/CM
GEPAT	P-01A	6/11/2004	815	WG	FLD	Field	TEMP	Temperate	28.73	DEG C
GEPAT	P-01A	6/11/2004	815	WG	FLD	Field	TURB	Turbidity	13	NTU
GEPAT	P-04	6/10/2004	950	WG	FLD	Field	DO	Dissolved Oxygen	1.44	MG/L
GEPAT	P-04	6/10/2004	950	WG	FLD	HACH	FE(FS)	Ferrous Iron	0.2	MG/L
GEPAT	P-04	6/10/2004	950	WG	FLD	Field	ORP	Oxidation Reduction	183	MILLIVOLTS
GEPAT	P-04	6/10/2004	950	WG	FLD	Field	PH	pH	6.27	PH UNITS
GEPAT	P-04	6/10/2004	950	WG	FLD	HACH	S	Sulfid	0.02	MG/L
GEPAT	P-04	6/10/2004	950	WG	FLD	Field	SC	Specific	0.483	UMHOS/CM
GEPAT	P-04	6/10/2004	950	WG	FLD	Field	TEMP	Temperate	28.93	DEG C
GEPAT	P-04	6/10/2004	950	WG	FLD	Field	TURB	Turbidity	1.48	NTU
GEPAT	P-05	6/9/2004	1745	WG	FLD	Field	DO	Dissolved Oxygen	1.56	MG/L
GEPAT	P-05	6/9/2004	1745	WG	FLD	HACH	FE(FS)	Ferrous Iron	0.6	MG/L
GEPAT	P-05	6/9/2004	1745	WG	FLD	Field	ORP	Oxidation Reduction	150	MILLIVOLTS
GEPAT	P-05	6/9/2004	1745	WG	FLD	Field	PH	pH	6.33	PH UNITS
GEPAT	P-05	6/9/2004	1745	WG	FLD	HACH	S	Sulfid	0.02	MG/L
GEPAT	P-05	6/9/2004	1745	WG	FLD	Field	SC	Specific	0.583	UMHOS/CM
GEPAT	P-05	6/9/2004	1745	WG	FLD	Field	TEMP	Temperate	28.38	DEG C
GEPAT	P-05	6/9/2004	1745	WG	FLD	Field	TURB	Turbidity	1.57	NTU
GEPAT	P-05A	6/9/2004	1555	WG	FLD	Field	DO	Dissolved Oxygen	0.87	MG/L
GEPAT	P-05A	6/9/2004	1555	WG	FLD	HACH	FE(FS)	Ferrous Iron	0.2	MG/L
GEPAT	P-05A	6/9/2004	1555	WG	FLD	Field	ORP	Oxidation Reduction	117	MILLIVOLTS
GEPAT	P-05A	6/9/2004	1555	WG	FLD	Field	PH	pH	6.64	PH UNITS
GEPAT	P-05A	6/9/2004	1555	WG	FLD	HACH	S	Sulfid	0.02	MG/L
GEPAT	P-05A	6/9/2004	1555	WG	FLD	Field	SC	Specific	0.676	UMHOS/CM
GEPAT	P-05A	6/9/2004	1555	WG	FLD	Field	TEMP	Temperate	28.91	DEG C
GEPAT	P-05A	6/9/2004	1555	WG	FLD	Field	TURB	Turbidity	3.5	NTU
GEPAT	P-07	6/11/2004	1415	WG	FLD	Field	DO	Dissolved Oxygen	0.92	MG/L
GEPAT	P-07	6/11/2004	1415	WG	FLD	HACH	FE(FS)	Ferrous Iron	0.2	MG/L
GEPAT	P-07	6/11/2004	1415	WG	FLD	Field	ORP	Oxidation Reduction	169	MILLIVOLTS
GEPAT	P-07	6/11/2004	1415	WG	FLD	Field	PH	pH	6.22	PH UNITS
GEPAT	P-07	6/11/2004	1415	WG	FLD	HACH	S	Sulfid	0.02	MG/L
GEPAT	P-07	6/11/2004	1415	WG	FLD	Field	SC	Specific	0.492	UMHOS/CM
GEPAT	P-07	6/11/2004	1415	WG	FLD	Field	TEMP	Temperate	32.4	DEG C
GEPAT	P-07	6/11/2004	1415	WG	FLD	Field	TURB	Turbidity	2.9	NTU

Appendix J-6
Summary of Field Parameters
GE Puerto Rico Investment, Inc, Facility
Patillas, Puerto Rico

AFIID	LOCID	LOGDATE	LOGTIME	MATRIX	LABCODE	ANMCODE	PARLABEL	Analyte Name	PARVAL	UNITS
GEPAT	P-07A	6/11/2004	1300	WG	FLD	Field	DO	Dissolved Oxygen	0.55	MG/L
GEPAT	P-07A	6/11/2004	1300	WG	FLD	HACH	FE(FS)	Ferrous Iron	0.2	MG/L
GEPAT	P-07A	6/11/2004	1300	WG	FLD	Field	ORP	Oxidation Reduction	172	MILLIVOLTS
GEPAT	P-07A	6/11/2004	1300	WG	FLD	Field	PH	pH	6.4	PH UNITS
GEPAT	P-07A	6/11/2004	1300	WG	FLD	HACH	S	Sulfid	0.02	MG/L
GEPAT	P-07A	6/11/2004	1300	WG	FLD	Field	SC	Specific	0.64	UMHOS/CM
GEPAT	P-07A	6/11/2004	1300	WG	FLD	Field	TEMP	Temperate	30.73	DEG C
GEPAT	P-07A	6/11/2004	1300	WG	FLD	Field	TURB	Turbidity	6.2	NTU
GEPAT	P-08	6/28/2004	1515	WG	FLD	Field	DO	Dissolved Oxygen	0.89	MG/L
GEPAT	P-08	6/28/2004	1515	WG	FLD	HACH	FE(FS)	Ferrous Iron	0	MG/L
GEPAT	P-08	6/28/2004	1515	WG	FLD	Field	ORP	Oxidation Reduction	123	MILLIVOLTS
GEPAT	P-08	6/28/2004	1515	WG	FLD	Field	PH	pH	6.12	PH UNITS
GEPAT	P-08	6/28/2004	1515	WG	FLD	HACH	S	Sulfid	0	MG/L
GEPAT	P-08	6/28/2004	1515	WG	FLD	Field	SC	Specific	0.507	UMHOS/CM
GEPAT	P-08	6/28/2004	1515	WG	FLD	Field	TEMP	Temperate	27.28	DEG C
GEPAT	P-08	6/28/2004	1515	WG	FLD	Field	TURB	Turbidity	92.8	NTU
GEPAT	P-09	6/28/2004	1155	WG	FLD	Field	DO	Dissolved Oxygen	1.61	MG/L
GEPAT	P-09	6/28/2004	1155	WG	FLD	HACH	FE(FS)	Ferrous Iron	0	MG/L
GEPAT	P-09	6/28/2004	1155	WG	FLD	Field	ORP	Oxidation Reduction	173	MILLIVOLTS
GEPAT	P-09	6/28/2004	1155	WG	FLD	Field	PH	pH	6.05	PH UNITS
GEPAT	P-09	6/28/2004	1155	WG	FLD	HACH	S	Sulfid	0	MG/L
GEPAT	P-09	6/28/2004	1155	WG	FLD	Field	SC	Specific	0.432	UMHOS/CM
GEPAT	P-09	6/28/2004	1155	WG	FLD	Field	TEMP	Temperate	30.52	DEG C
GEPAT	P-09	6/28/2004	1155	WG	FLD	Field	TURB	Turbidity	0	NTU
GEPAT	P-10A	6/10/2004	1455	WG	FLD	Field	DO	Dissolved Oxygen	0.53	MG/L
GEPAT	P-10A	6/10/2004	1455	WG	FLD	HACH	FE(FS)	Ferrous Iron	0.2	MG/L
GEPAT	P-10A	6/10/2004	1455	WG	FLD	Field	ORP	Oxidation Reduction	127	MILLIVOLTS
GEPAT	P-10A	6/10/2004	1455	WG	FLD	Field	PH	pH	6.66	PH UNITS
GEPAT	P-10A	6/10/2004	1455	WG	FLD	HACH	S	Sulfid	0.02	MG/L
GEPAT	P-10A	6/10/2004	1455	WG	FLD	Field	SC	Specific	0.652	UMHOS/CM
GEPAT	P-10A	6/10/2004	1455	WG	FLD	Field	TEMP	Temperate	29.74	DEG C
GEPAT	P-10A	6/10/2004	1455	WG	FLD	Field	TURB	Turbidity	4.75	NTU
GEPAT	P-11	6/28/2004	1255	WG	FLD	Field	DO	Dissolved Oxygen	0.25	MG/L
GEPAT	P-11	6/28/2004	1255	WG	FLD	HACH	FE(FS)	Ferrous Iron	0	MG/L
GEPAT	P-11	6/28/2004	1255	WG	FLD	Field	ORP	Oxidation Reduction	118	MILLIVOLTS
GEPAT	P-11	6/28/2004	1255	WG	FLD	Field	PH	pH	6.07	PH UNITS
GEPAT	P-11	6/28/2004	1255	WG	FLD	HACH	S	Sulfid	0	MG/L
GEPAT	P-11	6/28/2004	1255	WG	FLD	Field	SC	Specific	0.525	UMHOS/CM
GEPAT	P-11	6/28/2004	1255	WG	FLD	Field	TEMP	Temperate	30.3	DEG C
GEPAT	P-11	6/28/2004	1255	WG	FLD	Field	TURB	Turbidity	1.97	NTU
GEPAT	P-15DD	6/28/2004	1210	WG	FLD	Field	DO	Dissolved Oxygen	1.6	MG/L
GEPAT	P-15DD	6/28/2004	1210	WG	FLD	HACH	FE(FS)	Ferrous Iron	NR	MG/L
GEPAT	P-15DD	6/28/2004	1210	WG	FLD	Field	ORP	Oxidation Reduction	45	MILLIVOLTS
GEPAT	P-15DD	6/28/2004	1210	WG	FLD	Field	PH	pH	6.8	PH UNITS
GEPAT	P-15DD	6/28/2004	1210	WG	FLD	HACH	S	Sulfid	NR	MG/L
GEPAT	P-15DD	6/28/2004	1210	WG	FLD	Field	SC	Specific	0.584	UMHOS/CM
GEPAT	P-15DD	6/28/2004	1210	WG	FLD	Field	TEMP	Temperate	30.24	DEG C
GEPAT	P-15DD	6/28/2004	1210	WG	FLD	Field	TURB	Turbidity	13.7	NTU

Appendix J-6
Summary of Field Parameters
GE Puerto Rico Investment, Inc, Facility
Patillas, Puerto Rico

AFIID	LOCID	LOGDATE	LOGTIME	MATRIX	LABCODE	ANMCODE	PARLABEL	Analyte Name	PARVAL	UNITS
GEPAT	P-16S	6/29/2004	1317	WG	FLD	Field	DO	Dissolved Oxygen	3.57	MG/L
GEPAT	P-16S	6/29/2004	1317	WG	FLD	HACH	FE(FS)	Ferrous Iron	NR	MG/L
GEPAT	P-16S	6/29/2004	1317	WG	FLD	Field	ORP	Oxidation Reduction	47	MILLIVOLTS
GEPAT	P-16S	6/29/2004	1317	WG	FLD	Field	PH	pH	6.87	PH UNITS
GEPAT	P-16S	6/29/2004	1317	WG	FLD	HACH	S	Sulfid	NR	MG/L
GEPAT	P-16S	6/29/2004	1317	WG	FLD	Field	SC	Specific	0.888	UMHOS/CM
GEPAT	P-16S	6/29/2004	1317	WG	FLD	Field	TEMP	Temperate	29.64	DEG C
GEPAT	P-16S	6/29/2004	1317	WG	FLD	Field	TURB	Turbidity	308	NTU
GEPAT	P-17D	6/29/2004	925	WG	FLD	Field	DO	Dissolved Oxygen	0.59	MG/L
GEPAT	P-17D	6/29/2004	925	WG	FLD	HACH	FE(FS)	Ferrous Iron	0	MG/L
GEPAT	P-17D	6/29/2004	925	WG	FLD	Field	ORP	Oxidation Reduction	43	MILLIVOLTS
GEPAT	P-17D	6/29/2004	925	WG	FLD	Field	PH	pH	6.83	PH UNITS
GEPAT	P-17D	6/29/2004	925	WG	FLD	HACH	S	Sulfid	0	MG/L
GEPAT	P-17D	6/29/2004	925	WG	FLD	Field	SC	Specific	0.742	UMHOS/CM
GEPAT	P-17D	6/29/2004	925	WG	FLD	Field	TEMP	Temperate	29.15	DEG C
GEPAT	P-17D	6/29/2004	925	WG	FLD	Field	TURB	Turbidity	36.7	NTU
GEPAT	P-18D	6/29/2004	910	WG	FLD	Field	DO	Dissolved Oxygen	6.29	MG/L
GEPAT	P-18D	6/29/2004	910	WG	FLD	HACH	FE(FS)	Ferrous Iron	0	MG/L
GEPAT	P-18D	6/29/2004	910	WG	FLD	Field	ORP	Oxidation Reduction	139	MILLIVOLTS
GEPAT	P-18D	6/29/2004	910	WG	FLD	Field	PH	pH	6.24	PH UNITS
GEPAT	P-18D	6/29/2004	910	WG	FLD	HACH	S	Sulfid	0	MG/L
GEPAT	P-18D	6/29/2004	910	WG	FLD	Field	SC	Specific	0.514	UMHOS/CM
GEPAT	P-18D	6/29/2004	910	WG	FLD	Field	TEMP	Temperate	28.26	DEG C
GEPAT	P-18D	6/29/2004	910	WG	FLD	Field	TURB	Turbidity	-10	NTU
GEPAT	P-18S	6/29/2004	1122	WG	FLD	Field	DO	Dissolved Oxygen	1.26	MG/L
GEPAT	P-18S	6/29/2004	1122	WG	FLD	HACH	FE(FS)	Ferrous Iron	0	MG/L
GEPAT	P-18S	6/29/2004	1122	WG	FLD	Field	ORP	Oxidation Reduction	133	MILLIVOLTS
GEPAT	P-18S	6/29/2004	1122	WG	FLD	Field	PH	pH	6.23	PH UNITS
GEPAT	P-18S	6/29/2004	1122	WG	FLD	HACH	S	Sulfid	0	MG/L
GEPAT	P-18S	6/29/2004	1122	WG	FLD	Field	SC	Specific	0.512	UMHOS/CM
GEPAT	P-18S	6/29/2004	1122	WG	FLD	Field	TEMP	Temperate	28.09	DEG C
GEPAT	P-18S	6/29/2004	1122	WG	FLD	Field	TURB	Turbidity	283	NTU
GEPAT	P-19D	7/1/2004	1400	WG	FLD	Field	DO	Dissolved Oxygen	1.41	MG/L
GEPAT	P-19D	7/1/2004	1400	WG	FLD	HACH	FE(FS)	Ferrous Iron	0	MG/L
GEPAT	P-19D	7/1/2004	1400	WG	FLD	Field	ORP	Oxidation Reduction	69	MILLIVOLTS
GEPAT	P-19D	7/1/2004	1400	WG	FLD	Field	PH	pH	6.1	PH UNITS
GEPAT	P-19D	7/1/2004	1400	WG	FLD	HACH	S	Sulfid	0	MG/L
GEPAT	P-19D	7/1/2004	1400	WG	FLD	Field	SC	Specific	0.49	UMHOS/CM
GEPAT	P-19D	7/1/2004	1400	WG	FLD	Field	TEMP	Temperate	28.87	DEG C
GEPAT	P-19D	7/1/2004	1400	WG	FLD	Field	TURB	Turbidity	2.3	NTU
GEPAT	P-19S	6/29/2004	1010	WG	FLD	Field	DO	Dissolved Oxygen	1.04	MG/L
GEPAT	P-19S	6/29/2004	1010	WG	FLD	HACH	FE(FS)	Ferrous Iron	0	MG/L
GEPAT	P-19S	6/29/2004	1010	WG	FLD	Field	ORP	Oxidation Reduction	186	MILLIVOLTS
GEPAT	P-19S	6/29/2004	1010	WG	FLD	Field	PH	pH	6.41	PH UNITS
GEPAT	P-19S	6/29/2004	1010	WG	FLD	HACH	S	Sulfid	0	MG/L
GEPAT	P-19S	6/29/2004	1010	WG	FLD	Field	SC	Specific	0.364	UMHOS/CM
GEPAT	P-19S	6/29/2004	1010	WG	FLD	Field	TEMP	Temperate	29.43	DEG C
GEPAT	P-19S	6/29/2004	1010	WG	FLD	Field	TURB	Turbidity	21	NTU

APPENDIX K

PHOTOGRAPHS OF THE SRFI FIELDWORK

Client: GE

Site: Patillas, PR

Project: Suppl. RFI

Project No. 76058

Date: 6/29/04

Photo #: 1

Taken by: L. Alexander

Description:

Installing well tag at well P-19S

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

Client: GE

Site: Patillas, PR

Project: Suppl. RFI

Project No. 76058

Date: 6/29/04

Photo #: 2

Taken by: L. Alexander

Description:

ODEX drill bit

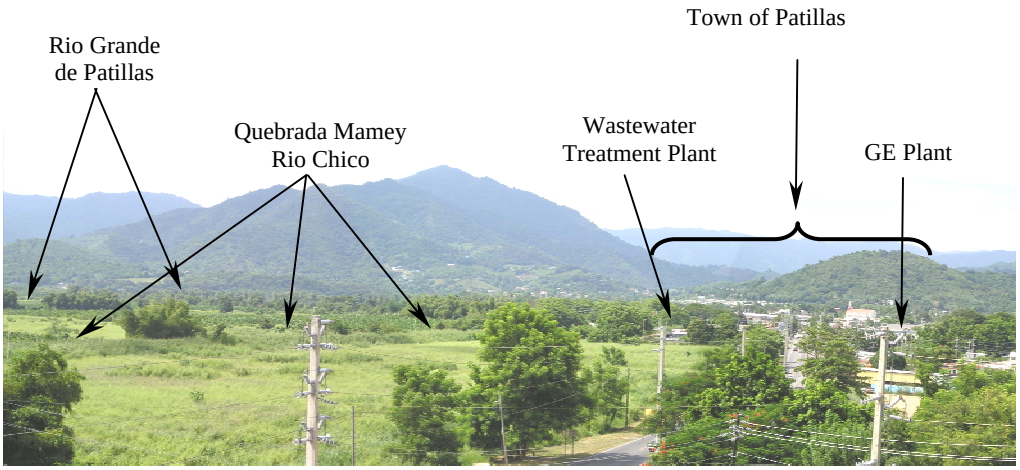
EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

Client:	GE
Site:	Patillas, PR
Project:	Suppl. RFI
Project No.	76058
Date:	6/30/04
Photo #:	3
Taken by:	L. Alexander
Description:	Drilling with ODEX rig at P-19D

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

Client:	GE
Site:	Patillas, PR
Project:	Suppl. RFI
Project No.	76058
Date:	6/29/04
Photo #:	4
Taken by:	L. Alexander
Description:	Drilling with ODEX rig at P-19D (P-19S in foreground)

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY



Client:	GE
Site:	Patillas, PR
Project:	Suppl. RFI
Project No.	76058
Date:	October 2003
Photo #:	5
Taken by:	AM Pelletier

Description:

Overlook of the project Site, looking northwest

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

Client:	GE
Site:	Patillas, PR
Project:	Suppl. RFI
Project No.	76058
Date:	October 2003
Photo #:	6
Taken by:	AM Pelletier

Description:

Nearby outcrop of alluvial materials

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

Client:	GE
Site:	Patillas, PR
Project:	Suppl. RFI
Project No.	76058
Date:	October 2003
Photo #:	7
Taken by:	AM Pelletier

Description:

Street in front of the GE Plant, looking west from the GE parking lot

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

Wastewater facility lab/office with open louvers instead of windows.

Client:	GE
Site:	Patillas, PR
Project:	Suppl. RFI
Project No.	76058
Date:	October 2003
Photo #:	8
Taken by:	AM Pelletier

Description:

Wastewater Treatment Plant office from the GE driveway, looking southwest.

EARTH TECH
A tyco INTERNATIONAL LTD. COMPANY

APPENDIX L

ANALYTICAL DATA QUALITY REPORT FOR JUNE 2004 SAMPLING EVENT

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LIST OF ACRONYMS

DAR	Data Assessment Report
DQCR	Daily Quality Control Report
DQO	Data Quality Objective
Earth Tech	Earth Tech, Inc.
GE	General Electric, Inc.
LCS/LCSD	Laboratory Control Samples/Laboratory Control Sample Duplicates
MS/MSD	Matrix Spike/Matrix Spike Duplicate
PARCC	Precision, Accuracy, Representativeness, Completeness, and Comparability
QC	Quality Control
RPD	Relative Percent Difference
Site	GE Puerto Rico Investment, Inc. Facility, Patillas, Puerto Rico
SOW	Statement of Work
TDS	Total Dissolved Solids
TOC	Total Organic Carbon
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

1.0 DATA VALIDATION

Earth Tech, Inc. (Earth Tech) has performed independent quality control (QC) checks of the field and laboratory procedures that were used in collecting and analyzing the data from the June 2004 and July 2004 sampling event at General Electric's (GE) Puerto Rico Investment, Inc. facility (Site) at Patillas, Puerto Rico. The QC checks verify that the data collected are of appropriate quality for the intended data use and that the Data Quality Objectives (DQOs) were met. All packages were certified by Ralph Abbondanza of Analytical Services, Inc. (located in Jessup, Maryland), a certified chemist for Puerto Rico. Copies of the certification for all data packages are provided in Attachment A. The analytical procedures, where appropriate, were evaluated with respect to the United States Environmental Protection Agency (USEPA) document entitled *Test Methods for Evaluating Solid Waste (SW-846), Update III* (USEPA, June 1997). The field activities and laboratory procedures are discussed in the following sections.

1.1 ASSESSMENT OF DATA QUALITY INDICATORS

The assessment of the data quality indicators determines the data usability. The assessment of data quality indicators for either sampling or analysis involves the evaluation of five indicators: precision, accuracy, representativeness, completeness, and comparability (PARCC). The indicators are commonly referred to as the PARCC parameters.

1.1.1 Sampling

Precision measures the reproducibility of measurements under a given set of conditions. Sampling precision may be determined by collecting and analyzing duplicate field samples. Two duplicate groundwater samples were collected in a groundwater sampling program of 16 wells.

Accuracy measures the bias in a measurement system. In order to monitor these potential sources of error, certain QC samples are analyzed at the laboratory. Laboratory control samples, surrogates, matrix spike samples, and laboratory blanks are used to monitor the overall performance of all steps in the analysis, including sample preparation.

The measure of completeness is useful for data collection and analysis management. Any decrease in the number of samples may affect the final results. The completeness for collection of groundwater samples was 100%.

1.1.2 Analytical

The completeness for analytical data is defined as the number of chemical-specific data results that are determined acceptable after data review. The off-site laboratory obtained an analytical completeness of 100% of requested analyses for obtainable groundwater samples for all methods.

Comparability is a very important qualitative data indicator for analytical assessment and is a critical parameter when considering the combination of data sets from different analyses for the same chemicals of potential concern. The analytical methods used provided common analytical parameters, identical units of measure, and similar detection limits. There were no comparability issues observed.

The representativeness of the data is determined by the degree to which the data meet the performance standards of the method and to which the analysis represents the sample submitted to the laboratory. Holding times, sample preservation, and results from analyses of blanks all affect the representativeness of analytical data. The samples in this investigation were properly preserved and analyzed within their respective holding times.

Precision is a measure of the repeatability of a single measurement and is evaluated from the results of duplicate samples. Low precision can be caused by poor instrument performance; inconsistent application of method protocols; or a difficult, heterogeneous sample matrix. The off-site laboratory performed the analysis of laboratory control samples/laboratory control sample duplicates (LCS/LCSD) to evaluate the precision of the laboratory. More information on precision as it applies to this data set is provided in Section 1.2.

Accuracy is a measure of overestimation or underestimation of reported concentrations and is evaluated from the results of spiked samples. More information on accuracy as it applies to this data set is provided in Section 1.2.

1.2 LABORATORY PROCEDURES

The purpose of this section is to provide a data validation summary of the analytical procedures performed at the off-site laboratory. The QC procedures performed at the off-site laboratory included method blanks, LCS/LCSDs, matrix spike/matrix spike duplicates (MS/MSDs), and surrogate recoveries. Where applicable, data evaluation procedures were performed in accordance with the *Test Methods for Evaluating Solid Waste (SW-846), Update III* (USEPA, June 1997).

As discussed in the *USEPA Contract Laboratory Program: Statement of Work (SOW) for Organics Analysis* (USEPA, August 2004) and *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA, October 1999), acetone, 2-butanone (methyl ethyl ketone), methylene chloride, and phthalate esters are considered by the USEPA to be common laboratory contaminants. In accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA, October 1999), the sample results for these compounds should be considered as positive results (i.e., site-related) only if the concentrations in the sample exceed ten times the maximum amount of corresponding common laboratory artifacts detected in any blank. If the blank contains detectable levels of one or more organic chemicals that are not considered by USEPA to be common laboratory contaminants, then site sample results are considered positive only if the concentration of the analyte in the site sample exceeds five times the maximum amount detected in any blank. Only those results indicating concentrations exceeding the blank concentration determined by the

five or ten times rules, as appropriate, are considered to be potentially site-related. Chloroform was detected in the associated trip blank. Chloroform, vinyl chloride, iron, and manganese were detected in the groundwater samples and associated method blanks. The results were qualified accordingly.

Duplicate samples were collected in the field to provide precision information for the entire measurement system including sample acquisition, homogeneity, handling, shipping, storage, preparation, and analysis. The comparison between the primary and duplicate sample is performed by computing the relative percent difference (RPD). The RPD is a measure of precision and is determined by the following formula:

$$RPD = [(A-B)/((A+B)/2)] * 100$$

where: A = Result of Primary Sample
B = Result of Duplicate Sample

An RPD is not computed if a data set contained a value estimated by the analytical laboratory, the results were determined to be an effect of laboratory contamination, or a data set contained a non-detect. The RPD for all analytes were within their respective established criteria; therefore, no data qualifiers were added as a result of the RPD between the primary and duplicate sample exceeding the established review criteria.

Analyses of MS/MSDs were conducted for each laboratory batch. MS/MSDs are generated to determine precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The MS is used to evaluate the effect of the sample matrix on the accuracy of the analysis. The MSD samples are processed separately, and the results are compared to determine the effects of the matrix on the precision and accuracy of the analysis. Results are expressed as RPD and percent recovery. These data alone cannot be used to evaluate the precision and accuracy of individual samples. For this site, no data qualifiers were added as a result of MS/MSDs analysis.

The off-site laboratory also conducted analyses on LCS/LCSDs as another measure of precision. The precision between these samples is calculated using the same RPD formula as stated previously. For this site, no data qualifiers were added as a result of laboratory control sample analysis.

Surrogate recoveries are determined by the laboratory in order to evaluate sample matrix interference. The recoveries can be used as an indicator of the accuracy of the results; however, surrogate recoveries alone cannot be used to evaluate the analytical procedures. No data qualifiers were added as a result of surrogate recoveries.

The MS/MSD, LCS/LCSD, and surrogate recoveries are all reviewed as part of the data validation process. Results of these reviews are included in the Data Assessment Reports (DARs).

1.3 DATA PRESENTATION AND EVALUATION

The investigation included the collection of groundwater samples. Samples collected as part of this investigation were analyzed for volatile organic compounds (VOCs) by Method 8260B, metals by Methods 6010B, hardness by Method E130.2, total dissolved solids (TDS) by Method E160.1, alkalinity by Method E310.1, chloride by Method E325.2, ammonia by Method E350.1, nitrate by Method E353.2, sulfate by Method E375.4, and total organic carbon (TOC) by Method E415.1. A summary of chemical analyses performed in this investigation is provided in Table L-1. The analytical program was performed by Kemron Environmental Services located in Marietta, Ohio. Field QC samples included field duplicates, trip blank samples, rinsate blank samples, and MS/MSD samples. Analytical QC samples included method blanks, LCSs (i.e., single and duplicate), and MS/MSD samples. All samples for organic analyses were spiked with surrogate compounds.

Samples are grouped and tracked using laboratory batch numbers, as listed in Table L-2. Analytical performance information for each sample result, including method blank detections, is tracked using these batch numbers.

The results of the data validation process are documented by the addition of data qualifiers. Tabulations of analytical results contain three flag fields following the associated numerical value. The flag fields are separated by slashes ("/"). The first field is reserved for qualifiers added to the data by the laboratory. The second and third flag fields contain result and analysis qualifiers, respectively; both are added by Earth Tech. The result qualifiers define the overall validity and usability of the data. Analytical qualifiers indicate a specific QC problem.

Trip blank, rinsate blank, and duplicate sample results are summarized L-3 through L-5. Analytical results for samples collected at the GE Site are summarized in Tables L-6 through L-8. Data flags added to the samples during this investigation are defined in Table L-9. For more information about the specific qualifiers added to the samples at this site, refer to the individual analytical DARs provided in Attachment B. Certificates of analysis are included in Attachment C (on CD only).

2.0 SUMMARY AND CONCLUSIONS

The environmental data obtained in this investigation met the project-specific DQOs, and the data can be used for their intended purpose.

REFERENCES

Earth Tech, June 2003, *Final Work Plan for Supplemental Groundwater Sampling Activities,* Patillas, Puerto Rico.

United States Environmental Protection Agency (USEPA), June 1997. *Test Methods for Evaluating Solid Waste (SW-846), Update III*.

United States Environmental Protection Agency (USEPA), October 1999. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review.* Publication #EPA540/R-99/008.

United States Environmental Protection Agency (USEPA), August 2004. *USEPA Contract Laboratory Program: Statement of Work (SOW) for Organics Analysis.*

TABLES

Table L-1
Summary of Chemical Analyses
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Analytical Fraction		Hardness	Total Dissolved Solids	Alkalinity	Chloride	Nitrate	Ammonia	Sulfate	Total Organic Carbon	Metals	Volatile Organic Carbon
Analytical Method		**E130.2**	**E160.1**	**E310.1**	**E325.2**	**E353.2**	**E350.1**	**E375.4**	**E415.1**	**SW6010B**	**SW8260B**
P-01	6/11/2004	*	*	*	*	*	*	*	*	*	
P-01A	6/11/2004	*	*	*	*	*	*	*	*	*	
P-01A-c	6/11/2004										*
P-04	6/10/2004	*	*	*	*	*	*	*	*	*	*
P-04-ms	6/10/2004										*
P-04-msd	6/10/2004										*
P-05	6/9/2004	*	*	*	*	*	*	*	*	*	*
P-05A	6/9/2004	*	*	*	*	*	*	*	*	*	*
P-07	6/11/2004	*	*	*	*	*	*	*	*	*	*
P-07A	6/11/2004	*	*	*	*	*	*	*	*	*	*
P-08	6/28/2004	*	*	*	*	*	*	*	*	*	*
P-09	6/28/2004	*	*	*	*	*	*	*	*	*	*
P-09-a	6/28/2004	*	*	*	*	*	*	*	*	*	*
P-09-c	6/28/2004										*
P-10A	6/10/2004	*	*	*	*	*	*	*	*	*	*
P-11	6/28/2004	*	*	*	*	*	*	*	*	*	*
P-15DD	6/28/2004	*	*	*	*	*	*	*	*	*	*
P-16S	6/29/2004	*	*	*	*	*	*	*	*	*	*
P-17D	6/29/2004	*	*	*	*	*	*	*	*	*	*
P-18D	6/29/2004	*	*	*	*	*	*	*	*	*	*
P-18D-a	6/29/2004	*	*	*	*	*	*	*	*	*	*
P-18D-c	6/29/2004										*
P-18S	6/29/2004	*	*	*	*	*	*	*	*	*	*
P-18S-d	6/29/2004										*
P-19D	7/1/2004	*	*	*	*	*	*	*	*	*	*
P-19D-c	7/1/2004										*
P-19S	6/29/2004	*	*	*	*	*	*	*	*	*	*

Table L-2
Summary of Sample Batch Information
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Batch ID	Date Collected	Sample ID
L0406242	6/10/2004	P-04
	6/10/2004	P-04-ms
	6/10/2004	P-04-msd
	6/10/2004	P-10A
L0406256	6/11/2004	P-01
	6/11/2004	P-01A
	6/11/2004	P-01A-c
	6/11/2004	P-07
	6/11/2004	P-07A
L0406578	6/28/2004	P-08
	6/28/2004	P-09
	6/28/2004	P-09-a
	6/28/2004	P-09-c
	6/28/2004	P-11
	6/28/2004	P-15DD
L0406598	6/29/2004	P-16S
	6/29/2004	P-17D
	6/29/2004	P-18D
	6/29/2004	P-18D-a
	6/29/2004	P-18D-c
	6/29/2004	P-18S
	6/29/2004	P-18S-d
	6/29/2004	P-19S
L0407056	7/1/2004	P-19D
	7/1/2004	P-19D-c

Table L-3
Summary of Analytical Results in Trip Blank Samples
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Sample ID	P-1A-c	P-9-c	P-18D-c	P-19D-c
Date Collected	6/11/2004	6/28/2004	6/29/2004	7/1/2004
Lab Sample ID	L0406256	L0406578	L0406598	L0407056
Volatile Organic Compounds by Method SW8260B (µg/L)				
1,1,1-Trichloroethane	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	< 1	< 1	< 1	< 1
1,1-Dichloroethane	< 1	< 1	< 1	< 1
1,1-Dichloroethene	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	< 1	< 1	< 1	< 1
1,2-Dichloroethane	< 1	< 1	< 1	< 1
1,2-Dichloropropane	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	< 1	< 1	< 1	< 1
2-Butanone	< 10	< 10	< 10	< 10
2-Hexanone	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	< 10	< 10	< 10	< 10
Acetone	< 10	< 10	< 10	< 10
Benzene	< 1	< 1	< 1	< 1
Bromochloromethane	< 1	< 1	< 1	< 1
Bromodichloromethane	< 1	< 1	< 1	< 1
Bromoform	< 1	< 1	< 1	< 1
Bromomethane	< 1	< 1	< 1	< 1
Carbon disulfide	< 1	< 1	< 1	< 1
Carbon tetrachloride	< 1	< 1	< 1	< 1
Chlorobenzene	< 1	< 1	< 1	< 1
Chloroethane	< 1	< 1	< 1	< 1
Chloroform	**0.145 J/B/K**	< 1	< 1	< 1
Chloromethane	< 1	< 1	< 1	< 1
cis-1,2-Dichloroethene	< 1	< 1	< 1	< 1
cis-1,3-Dichloropropene	< 1	< 1	< 1	< 1
Dibromochloromethane	< 1	< 1	< 1	< 1
Ethylbenzene	< 1	< 1	< 1	< 1
Methylene chloride	< 5	< 5	< 5	< 5
Styrene	< 1	< 1	< 1	< 1
Tetrachloroethene	< 1	< 1	< 1	< 1
Toluene	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	< 1	< 1	< 1	< 1
trans-1,3-Dichloropropene	< 1	< 1	< 1	< 1
Trichloroethene	< 1	< 1	< 1	< 1
Vinyl chloride	< 1	< 1	< 1	< 1
Xylenes, Total	< 1	< 1	< 1	< 1

Notes:
-c - Indicates trip blank sample.
Shading indicates the analyte was detected.
See Table L-9 or explanation of data qualifiers.

Table L-4
Summary of Analytical Results in Rinsate Blank Sample
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Sample ID	P-18S-d		
Date Collected	6/29/2004		
Lab Sample ID	L0406598		
Volatile Organic Compounds by Method SW8260B (µg/L)			
1,1,1-Trichloroethane	<	1	
1,1,2,2-Tetrachloroethane	<	1	
1,1,2-Trichloroethane	<	1	
1,1-Dichloroethane	<	1	
1,1-Dichloroethene	<	1	
1,2-Dichlorobenzene	<	1	
1,2-Dichloroethane	<	1	
1,2-Dichloropropane	<	1	
1,3-Dichlorobenzene	<	1	
1,4-Dichlorobenzene	<	1	
2-Butanone	<	10	
2-Hexanone	<	10	
4-Methyl-2-pentanone	<	10	
Acetone	<	10	
Benzene	<	1	
Bromochloromethane	<	1	
Bromodichloromethane	<	1	
Bromoform	<	1	
Bromomethane	<	1	
Carbon disulfide		**11.8**	
Carbon tetrachloride	<	1	
Chlorobenzene	<	1	
Chloroethane	<	1	
Chloroform	<	1	
Chloromethane	<	1	
cis-1,2-Dichloroethene	<	1	
Cis-1,3-dichloropropene	<	1	
Dibromochloromethane	<	1	
Ethylbenzene	<	1	
Methylene chloride		**0.314**	**J//**
Styrene		**0.749**	**J//**
Tetrachloroethene	<	1	
Toluene		**0.358**	**J//**
trans-1,2-Dichloroethene	<	1	
Trans-1,3-dichloropropene	<	1	
Trichloroethene	<	1	
Vinyl chloride	<	1	
Xylenes, Total	<	1	

Notes:
-d - Indicates rinsate blank.
Shading indicates the analyte was detected.
See Table L-9 for explanation of data qualifiers.

Table L-5
Summary of Calculated RPDs in Groundwater Field Duplicate Samples
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Sample ID	P-9	P-9-a	Relative	P-18D	P-18D-a	Relative
Date Collected	6/28/2004	6/28/2004	Percent	6/29/2004	6/29/2004	Percent
Lab Sample ID	L0406578	L0406578	Difference	L0406598	L0406598	Difference
Volatile Organic Compounds by Method SW8260B (µg/L)						
1,1,1-Trichloroethane	< 1	< 1	NC	**1.17**	**1.13**	3
1,1,2,2-Tetrachloroethane	< 1	< 1	NC	< 1	< 1	NC
1,1,2-Trichloroethane	< 1	< 1	NC	< 1	< 1	NC
1,1-Dichloroethane	**0.816 J//**	**0.905 J//**	NC	**2.11**	**2.13**	1
1,1-Dichloroethene	**6.32**	**6.61**	4	**64.6**	**65.9**	2
1,2-Dichlorobenzene	< 1	< 1	NC	< 1	< 1	NC
1,2-Dichloroethane	< 1	< 1	NC	< 1	< 1	NC
1,2-Dichloropropane	< 1	< 1	NC	< 1	< 1	NC
1,3-Dichlorobenzene	< 1	< 1	NC	< 1	< 1	NC
1,4-Dichlorobenzene	< 1	< 1	NC	< 1	< 1	NC
2-Butanone	< 10	< 10	NC	< 10	< 10	NC
2-Hexanone	< 10	< 10	NC	< 10	< 10	NC
4-Methyl-2-pentanone	< 10	< 10	NC	< 10	< 10	NC
Acetone	< 10	< 10	NC	< 10	< 10	NC
Benzene	< 1	< 1	NC	< 1	< 1	NC
Bromochloromethane	< 1	< 1	NC	< 1	< 1	NC
Bromodichloromethane	< 1	< 1	NC	< 1	< 1	NC
Bromoform	< 1	< 1	NC	< 1	< 1	NC
Bromomethane	< 1	< 1	NC	< 1	< 1	NC
Carbon disulfide	< 1	< 1	NC	< 1	< 1	NC
Carbon tetrachloride	< 1	< 1	NC	< 1	< 1	NC
Chlorobenzene	< 1	< 1	NC	< 1	< 1	NC
Chloroethane	< 1	< 1	NC	< 1	< 1	NC
Chloroform	< 1	< 1	NC	**0.871 J//**	**0.915 J//**	NC
Chloromethane	< 1	< 1	NC	< 1	< 1	NC
cis-1,2-Dichloroethene	< 1	< 1	NC	< 1	< 1	NC
Cis-1,3-dichloropropene	< 1	< 1	NC	< 1	< 1	NC
Dibromochloromethane	< 1	< 1	NC	< 1	< 1	NC
Ethylbenzene	< 1	< 1	NC	< 1	< 1	NC
Methylene chloride	< 5	< 5	NC	< 5	< 5	NC
Styrene	< 1	< 1	NC	< 1	< 1	NC
Tetrachloroethene	< 1	< 1	NC	< 1	< 1	NC
Toluene	< 1	< 1	NC	< 1	< 1	NC
trans-1,2-Dichloroethene	< 1	< 1	NC	< 1	< 1	NC
Trans-1,3-dichloropropene	< 1	< 1	NC	< 1	< 1	NC
Trichloroethene	< 1	< 1	NC	< 1	< 1	NC
Vinyl chloride	< 1	< 1	NC	< 1	< 1	NC
Xylenes, Total	< 1	< 1	NC	< 1	< 1	NC

Table L-5
Summary of Calculated RPDs in Groundwater Field Duplicate Samples
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Sample ID Date Collected Lab Sample ID	P-9 6/28/2004 L0406578	P-9-a 6/28/2004 L0406578	Relative Percent Difference	P-18D 6/29/2004 L0406598	P-18D-a 6/29/2004 L0406598	Relative Percent Difference
ICP Metals by Method SW6010B (µg/L)						
Calcium	**26800**	**25800**	4	**28100**	**27300**	3
Iron	**60.2 /B/K**	**58.2 /B/K**	NC	< 40	< 40	NC
Magnesium	**13900**	**13400**	4	**15400**	**14900**	3
Manganese	< 10	< 10	NC	**3.4 J/B/K**	**3.5 J/B/K**	NC
Potassium	**310 J//**	**283 J//**	NC	**388 J//**	**387 J//**	NC
Sodium	**33100**	**31500**	5	**40200**	**38900**	3
Hardness as CaCO3 by Method E130.2 (µg/L)						
Hardness (as CaCO3)	**127000**	**126000**	1	**140000**	**136000**	3
TDS by Method E160.1 (µg/L)						
Total Dissolved Solids	**206000**	**198000**	4	**284000**	**292000**	3
Alkalinity by Method E310.1 (µg/L)						
Alkalinity, Bicarbonate (AS CACO3)	**133000**	**134000**	1	**159000**	**158000**	1
Alkalinity, Carbonate (as CACO3)	< 10000	< 10000	NC	< 10000	< 10000	NC
Chloride by Method E325.2 (µg/L)						
Chloride	**22300**	**20700**	7	**24900**	**24900**	0
Nitrogen, Ammonia (as N) by Method E350.1 (µg/L)						
Ammonia	**147**	**121**	19	**76 J//**	**123**	NC
Nitrate-Nitrite by Method E353.2 (µg/L)						
Nitrate	**2810**	**2870**	2	**2370**	**2460**	4
Sulfate by Method E375.4 (µg/L)						
Sulfate (as SO4)	**31400**	**31200**	1	**36200**	**37600**	4
TOC by Method E415.1 (µg/L)						
Total Organic Carbon	**1800**	**1830**	2	**3240**	**2810**	14

Notes:
-a - Indicates field duplicate sample.
NC - Not Calculated.
Shading indicates the analyte was detected.
See Table L-9 for explanation of data qualifiers.

Table L-6
Summary of Volatile Organic Compounds in Groundwater Samples
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Sample ID	P-04	P-07	P-07A	P-08	P-09	P-10A	P-11
Date Collected	6/10/2004	6/11/2004	6/11/2004	6/28/2004	6/28/2004	6/10/2004	6/28/2004
Lab Sample ID	L0406242	L0406256	L0406256	L0406578	L0406578	L0406242	L0406578
Volatile Organic Compounds by Method SW8260B (µg/L)							
Acetone	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromochloromethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromodichloromethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromomethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Butanone, 2-	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Carbon Disulfide	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Carbon Tetrachloride	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroform	**0.258 J/B/K**	< 1	< 1	< 1	< 1	**1.69**	< 1
Chloromethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dibromochloromethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorobenzene, 1,2-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorobenzene, 1,3-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorobenzene, 1,4-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichloroethane, 1,1-	< 1	< 1	**1.18**	**60.8**	**0.816 J//**	**22.5**	**0.176 J//**
Dichloroethane, 1,2-	< 1	< 1	< 1	< 1	< 1	**2.03**	< 1
Dichloroethene, 1,1-	< 1	< 1	**14.1**	**360**	**6.32**	**1230**	< 1
Dichloroethene, cis-1,2-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichloroethene, trans-1,2-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichloropropane, 1,2-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichloropropene, cis-1,3-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichloropropene, trans-1,3-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Ethylbenzene	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Hexanone, 2-	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Methylene Chloride	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Pentanone, 4-Methyl-2-	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Styrene	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrachloroethane, 1,1,2,2-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrachloroethene	< 1	< 1	< 1	**5.94**	< 1	**0.404 J//**	< 1
Toluene	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trichloroethane, 1,1,1-	< 1	< 1	**0.35 J//**	**586**	< 1	**1.28**	< 1
Trichloroethane, 1,1,2-	< 1	< 1	< 1	< 1	< 1	**0.641 J//**	< 1
Trichloroethene	< 1	< 1	< 1	**3.53**	< 1	**0.424 J//**	**0.435 J//**
Vinyl Chloride	< 1	< 1	< 1	**2.14 /B/K**	< 1	< 1	< 1
Xylenes, Total	< 1	< 1	< 1	< 1	< 1	< 1	< 1

Table L-6
Summary of Volatile Organic Compounds in Groundwater Samples
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Sample ID	P-15DD	P-16S	P-17D	P-18D	P-18S	P-19D	P-19S
Date Collected	6/28/2004	6/29/2004	6/29/2004	6/29/2004	6/29/2004	7/1/2004	6/29/2004
Lab Sample ID	L0406578	L0406598	L0406598	L0406598	L0406598	L0407056	L0406598
Volatile Organic Compounds by Method SW8260B (µg/L)							
Acetone	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	< 1	**0.211 J//**	< 1	< 1	< 1	< 1	< 1
Bromochloromethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromodichloromethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromomethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Butanone, 2-	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Carbon Disulfide	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Carbon Tetrachloride	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroform	< 1	**0.21 J//**	< 1	**0.871 J//**	**1.06**	**2.16**	**0.934 J//**
Chloromethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dibromochloromethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorobenzene, 1,2-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorobenzene, 1,3-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorobenzene, 1,4-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichloroethane, 1,1-	**2.07**	**5.31**	**2.14**	**2.11**	**2.29**	**0.658 J//**	**0.323 J//**
Dichloroethane, 1,2-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichloroethene, 1,1-	**104**	**13.2**	**163**	**64.6**	**63.8**	**14.5**	**5.4**
Dichloroethene, cis-1,2-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichloroethene, trans-1,2-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichloropropane, 1,2-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichloropropene, cis-1,3-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichloropropene, trans-1,3-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Ethylbenzene	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Hexanone, 2-	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Methylene Chloride	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Pentanone, 4-Methyl-2-	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Styrene	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrachloroethane, 1,1,2,2-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tetrachloroethene	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Toluene	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trichloroethane, 1,1,1-	**0.513 J//**	**0.423 J//**	< 1	**1.17**	**1.63**	**1.12**	**0.44 J//**
Trichloroethane, 1,1,2-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trichloroethene	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Vinyl Chloride	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Xylenes, Total	< 1	< 1	< 1	< 1	< 1	< 1	< 1

Notes:
Shading indicates the analyte was detected
See Table L-9 for explanation of data qualifiers.

Table L-7
Summary of Metals in Groundwater Samples
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Sample ID	P-01	P-01A	P-04	P-07	P-07A	P-08	P-09	P-10A
Date Collected	6/11/2004	6/11/2004	6/10/2004	6/11/2004	6/11/2004	6/28/2004	6/28/2004	6/10/2004
Lab Sample ID	L0406256	L0406256	L0406242	L0406256	L0406256	L0406578	L0406578	L0406242
ICP Metals by Method SW6010B (;g/L)								
Calcium	**35600**	**29100**	**26100**	**25900**	**34300**	**35500**	**26800**	**36500**
Iron	**274**	**555**	< 40	**212**	**312**	**10200**	**60.2 /B/K**	**347**
Magnesium	**17900**	**18900**	**15100**	**15800**	**16700**	**15000**	**13900**	**18700**
Manganese	< 10	**22.7**	< 10	< 10	**32.7**	**1020**	< 10	**5.9 J//**
Potassium	**353 J//**	**389 J//**	**382 J//**	< 1000	**296 J//**	**639 J//**	**310 J//**	**449 J//**
Sodium	**42600**	**40900**	**32800**	**27500**	**41700**	**32100**	**33100**	**43500**

Sample ID	P-11	P-15DD	P-16S	P-17D	P-18D	P-18S	P-19D	P-19S
Date Collected	6/28/2004	6/28/2004	6/29/2004	6/29/2004	6/29/2004	6/29/2004	7/1/2004	6/29/2004
Lab Sample ID	L0406578	L0406578	L0406598	L0406598	L0406598	L0406598	L0407056	L0406598
ICP Metals by Method SW6010B (µg/L)								
Calcium	**28100**	**33400**	**48600**	**31900**	**28100**	**28400**	**32700**	**19600**
Iron	**224**	**193**	**6230**	**718**	< 40	< 40	**91.1**	**1570**
Magnesium	**15700**	**17600**	**20300**	**15300**	**15400**	**15800**	**17500**	**10000**
Manganese	**750**	**34.8**	**1810**	**31.1**	**3.4 J/B/K**	**1.7 J/B/K**	**279**	**639**
Potassium	**314 J//**	**442 J//**	**1220**	**437 J//**	**388 J//**	**382 J//**	**553 J//**	**463 J//**
Sodium	**33700**	**59400**	**58200**	**65900**	**40200**	**38800**	**44900**	**31700**

Notes:
Shading indicates the analyte was detected
See Table L-9 for explanation of data qualifiers.

Table L-8
Summary of General Chemistry Parameters in Groundwater Samples
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Sample ID	P-01	P-01A	P-04	P-07	P-07A	P-08	P-09	P-10A
Date Collected	6/11/2004	6/11/2004	6/10/2004	6/11/2004	6/11/2004	6/28/2004	6/28/2004	6/10/2004
Lab Sample ID	L0406256	L0406256	L0406242	L0406256	L0406256	L0406578	L0406578	L0406242
Hardness as CaCO3 by Method E130.2 (ug/L)								
Hardness (as CaCO3)	**152000**	**142000**	**124000**	**119000**	**155000**	**163000**	**127000**	**167000**
TDS by Method E160.1 (ug/L)								
Total Dissolved Solids	**294000**	**294000**	**278000**	**320000**	**288000**	**264000**	**206000**	**324000**
Alkalinity by Method E310.1 (ug/L)								
Alkalinity, Bicarbonate (AS CACO3)	**148000**	**151000**	**130000**	**106000**	**181000**	**178000**	**133000**	**185000**
Alkalinity, Carbonate (as CACO3)	< 10000	< 10000	< 10000	< 10000	< 10000	< 10000	< 10000	< 10000
Chloride by Method E325.2 (ug/L)								
Chloride	**31300**	**23200**	**19600**	**25100**	**45000**	**61000**	**22300**	**28000**
Nitrogen, Ammonia (as N) by Method E350.1 (ug/L)								
Ammonia	**80 J//**	< 100	< 100	**66 J//**	**69 J//**	**161**	**147**	**72 J//**
Nitrate-Nitrite by Method E353.2 (ug/L)								
Nitrate	**2450**	**2990**	**2210**	**5340**	**1620**	**81.1**	**2810**	**2690**
Sulfate by Method E375.4 (ug/L)								
Sulfate (as SO4)	**57700**	**44200**	**32700**	**43000**	**31200**	**21900**	**31400**	**50600**
TOC by Method E415.1 (ug/L)								
Total Organic Carbon	**6410**	**4410**	**2920**	**4580**	**6240**	**3800**	**1800**	**3690**

Sample ID	P-11	P-15DD	P-16S	P-17D	P-18D	P-18S	P-19D	P-19S
Date Collected	6/28/2004	6/28/2004	6/29/2004	6/29/2004	6/29/2004	6/29/2004	7/1/2004	6/29/2004
Lab Sample ID	L0406578	L0406578	L0406598	L0406598	L0406598	L0406598	L0407056	L0406598
Hardness as CaCO3 by Method E130.2 (ug/L)								
Hardness (as CaCO3)	**140000**	**155000**	**231000**	**150000**	**140000**	**140000**	**142000**	**93700**
TDS by Method E160.1 (ug/L)								
Total Dissolved Solids	**252000**	**278000**	**384000**	**384000**	**284000**	**290000**	**296000**	**222000**
Alkalinity by Method E310.1 (ug/L)								
Alkalinity, Bicarbonate (AS CACO3)	**149000**	**208000**	**296000**	**219000**	**159000**	**158000**	**160000**	**109000**
Alkalinity, Carbonate (as CACO3)	< 10000	< 10000	< 10000	< 10000	< 10000	< 10000	< 10000	< 10000
Chloride by Method E325.2 (ug/L)								
Chloride	**25200**	**25200**	**17100**	**27300**	**24900**	**22700**	**24600**	**18600**
Nitrogen, Ammonia (as N) by Method E350.1 (ug/L)								
Ammonia	**149**	**227**	**168**	**141**	**76 J//**	**136**	**56 J//**	**151**
Nitrate-Nitrite by Method E353.2 (ug/L)								
Nitrate	**2250**	**2210**	< 50	**1470**	**2370**	**2300**	**2390**	**803**
Sulfate by Method E375.4 (ug/L)								
Sulfate (as SO4)	**33200**	**41200**	**44600**	**51900**	**36200**	**38400**	**40600**	**25600**
TOC by Method E415.1 (ug/L)								
Total Organic Carbon	**3380**	**2330**	**5520**	**3570**	**3240**	**3020**	**1330**	**3540**

Notes:
NA - Not Analyzed
Shading indicates the analyte was detected
See Table L-9 for explanation of data qualifiers.

Table L-9
Summary of Added Data Qualifiers
GE Puerto Rico Investment, Inc. Facility
Patillas, Puerto Rico

Modifier	Description
<	Indicates not detected at the reporting limit indicated.
"/"	Separates the laboratory-added data qualifiers from the validation data qualifiers. The laboratory-added data qualifiers precede the first "/". The result qualifiers (a product of the data validation process) follow the first "/", and the analysis qualifiers (defines the type of QC excursion) follow the second "/".

Laboratory Data Qualifiers

Qualifier	Description
J	The analyte was positively identified; the quantitation is an estimation.

Result Data Qualifiers

Qualifier	Description
B	The analyte was found in an associated blank as well as in the sample.

Analysis Data Qualifiers

Qualifier	Description
K	An analyte was detected in the sample at a concentration less than or equal to five times the concentration detected in the associated method blank. Professional judgment must be used to determine if the detected analyte is site-related.

ATTACHMENT A

DATA CERTIFICATIONS

ANALYTICAL SERVICES, INC.

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DATA CERTIFICATION

The attached laboratory report L0406242 consisting of 73 pages, has been certified by David E. Vandenburg, Laboratory Director, Kemron Environmental Services. The data contained herein was completed in accordance with the requirements of the NELAP standards and other applicable contract terms and conditions.

I hereby certify that this laboratory report and associated documentation has been reviewed and approved.

Ralph Abbondanza, REM
Environmental Specialist
PR Chemist's License #3803

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DATA CERTIFICATION

The attached laboratory report L0406256 consisting of 82 pages, has been certified by David E. Vandenburg, Laboratory Director, Kemron Environmental Services. The data contained herein was completed in accordance with the requirements of the NELAP standards and other applicable contract terms and conditions.

I hereby certify that this laboratory report and associated documentation has been reviewed and approved.

Ralph Abbondanza, REM
Environmental Specialist
PR Chemist's License #3803

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DATA CERTIFICATION

The attached laboratory report L0406578 consisting of 94 pages, has been certified by David E. Vandenburg, Laboratory Director, Kemron Environmental Services. The data contained herein was completed in accordance with the requirements of the NELAP standards and other applicable contract terms and conditions.

I hereby certify that this laboratory report and associated documentation has been reviewed and approved.

Ralph Abbondanza, REM
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DATA CERTIFICATION

The attached laboratory report L0406598 consisting of 94 pages, has been certified by David E. Vandenburg, Laboratory Director, Kemron Environmental Services. The data contained herein was completed in accordance with the requirements of the NELAP standards and other applicable contract terms and conditions.

I hereby certify that this laboratory report and associated documentation has been reviewed and approved.

Ralph Abbondanza, REM
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DATA CERTIFICATION

The attached laboratory report L0407056 consisting of 65 pages, has been certified by David E. Vandenburg, Laboratory Director, Kemron Environmental Services. The data contained herein was completed in accordance with the requirements of the NELAP standards and other applicable contract terms and conditions.

I hereby certify that this laboratory report and associated documentation has been reviewed and approved.

Ralph Abbondanza, REM
Environmental Specialist
PR Chemist's License #3803

ATTACHMENT B

DATA ASSESSMENT REPORTS

DATA ASSESSMENT REPORT

Data assessment is a systematic process for reviewing a body of data against a predefined set of criteria to provide assurance that the data meet project Data Quality Objective (DQO) requirements. The purpose of the data assessment process is to determine if and how the usability of the analytical data is affected by the overall analytical processes and sample collection and handling procedures. If specific DQOs are not met, the data are qualified (i.e., data flags are assigned to sample results) in accordance with guidelines established by the United States Environmental Protection Agency (USEPA). Data assessment allows the data user to adequately determine if the data can be used for its intended purpose. The data acceptance criteria are established according to Standard Operating Procedures (SOPs) and Statements of Work (SOWs) provided to the contracted analytical laboratory. The assessment of data quality and usability involves five components, as described below.

1) **Field Sampling Check** is a process to ensure that all samples were collected and the laboratory analyses were performed as stipulated in the applicable site-specific Work Plan or Field Sampling Plan (FSP). Inspection of sample preservation procedures, sample handling, analysis requested, sample description and ID, cooler receipt forms, holding time evaluation, and Chain of Custody procedures are all evaluated to ensure that the evidentiary nature of the samples and the resulting analytical data have not been compromised.

2) **Data Verification** is a process for determining the completeness, correctness, consistency, and compliance of a data package in accordance with requirements contained in the applicable SOW and/or contract-specific requirements. This is a review of the data package, electronic data deliverable (EDD), and invoice received from the contract laboratory to ensure that the contract required information is present and complete prior to data validation.

3) **Data Review** is a process of reviewing the primary quality control (QC) data provided by the laboratory and the results of any internal quality assurance (QA)/QC samples, such as field blanks, trip blanks, equipment blanks or ambient blanks, field split samples, and duplicate samples, to ascertain any effect the laboratory's procedures or the sample collection process has on the data.

4) **Data Evaluation** is a process to determine if the data meet project-specific DQOs and contract requirements. This evaluation may involve a review of field sampling and sample management procedures, laboratory audits, Performance Evaluation (PE) sample results, and any other data quality indicators that are available.

5) **Data Validation** is a process to determine the accuracy and precision of analytical data generated and to identify any anomalies encountered. The validation process is performed in accordance with USEPA regional or national functional guidelines, project-specific guidelines, and

compliance with the requirements of each analytical method. Two major components of data validation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance for each analytical method to determine if the samples were analyzed within the prescribed acceptance criteria of the method. Evaluation of matrix interferences involves the analysis of surrogate spike recoveries, matrix spike recoveries, and duplicate sample results. Data not meeting project-specific DQOs or the requirements of the analytical method are qualified with data flags according to referenced guidelines.

Data Assessment Procedures

Earth Tech performed independent QC checks of field and laboratory procedures that were used in collecting and analyzing the data. The QC checks verify that the data collected are of appropriate quality for the intended data use and that the DQOs were met. The steps and guidelines followed during the data validation process were modeled on the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (USEPA, July 2004), *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA, October 1999), and *Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services* (USEPA, July 1999). In addition, method-specific criteria set forth in the compendium of analytical methods found in the *Test Methods for Evaluation Solid Waste (SW-846*), *Update III* (USEPA, June 1997) are also evaluated during the validation process. This validation process has been adapted to meet the DQO requirements for generation of definitive critical data.

Data Validation Results

The analytical data (3 groundwater samples) and no QA/QC data were collected on June 10, 2004 for GE Industrial Systems, Inc. The analytical data were validated according to the procedures outlined above. Where data flags have been applied to this data set, they are separated by a slash "/" and presented in the following format:

Laboratory Flag / Result Flags / Analysis Flags

- Laboratory Flag: This flag precedes the first slash and is added by the laboratory as a result of QC excursions from the analytical method. These flags are laboratory-specific and are described in the associated laboratory report.

- Result Flags: These are presented after the first slash and are added by Earth Tech based on data validation procedures and guidelines. They tell how and if the data should be used.

- Analysis Flags: These flags are presented after the second slash and are added by Earth Tech to inform the data user of any specific QA/QC problems that were encountered.

Any data requiring qualification as a result of the validation process were assigned data flags, as discussed below. The validation flags indicate how any QC excursions may have impacted the usability of the data.

Volatile Organic Compounds by EPA Method SW-846 8260B

Results of chloroform (associated with prep batch WG168170) less than 0.735 µg/L were qualified "/B/K" due to contamination in the associated method blank. These qualifiers indicate that the analyte was detected in the method blank as well as the sample. Professional judgment must be used to determine if the detected concentration of this analyte is site-related.

Metals by EPA Method SW-846 6010B

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Hardness by EPA Method E130.2

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Total Dissolved Solids (TDS) by EPA Method E160.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Alkalinity by EPA Method E310.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Chloride by EPA Method E325.2

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Nitrate by EPA Method E353.2

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Ammonia by EPA Method E350.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Sulfate by EPA Method E375.4

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Total Organic Carbon (TOC) by EPA Method E415.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Data Summary and Usability

None of the QC excursions encountered during the validation of this data set resulted in any of the data being rejected. Therefore, the data associated with this laboratory batch should be considered compliant and adequate for its intended use.

References

United States Environmental Protection Agency (USEPA), June 1997. *Test Methods for Evaluating Solid Waste (SW-846), 3rd Edition, Update III.*

United States Environmental Protection Agency (USEPA), July 1999. *Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services, Revision 2.1,* EPA Region IV.

United States Environmental Protection Agency (USEPA), October 1999. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review.* Publication #EPA540/R-99/008.

United States Environmental Protection Agency (USEPA), July 2004. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. Publication #EPA540/R-04/004.

DATA ASSESSMENT REPORT

Data assessment is a systematic process for reviewing a body of data against a predefined set of criteria to provide assurance that the data meet project Data Quality Objective (DQO) requirements. The purpose of the data assessment process is to determine if and how the usability of the analytical data is affected by the overall analytical processes and sample collection and handling procedures. If specific DQOs are not met, the data are qualified (i.e., data flags are assigned to sample results) in accordance with guidelines established by the United States Environmental Protection Agency (USEPA). Data assessment allows the data user to adequately determine if the data can be used for its intended purpose. The data acceptance criteria are established according to Standard Operating Procedures (SOPs) and Statements of Work (SOWs) provided to the contracted analytical laboratory. The assessment of data quality and usability involves five components, as described below.

1) **Field Sampling Check** is a process to ensure that all samples were collected and the laboratory analyses were performed as stipulated in the applicable site-specific Work Plan or Field Sampling Plan (FSP). Inspection of sample preservation procedures, sample handling, analysis requested, sample description and ID, cooler receipt forms, holding time evaluation, and Chain of Custody procedures are all evaluated to ensure that the evidentiary nature of the samples and the resulting analytical data have not been compromised.

2) **Data Verification** is a process for determining the completeness, correctness, consistency, and compliance of a data package in accordance with requirements contained in the applicable SOW and/or contract-specific requirements. This is a review of the data package, electronic data deliverable (EDD), and invoice received from the contract laboratory to ensure that the contract required information is present and complete prior to data validation.

3) **Data Review** is a process of reviewing the primary quality control (QC) data provided by the laboratory and the results of any internal quality assurance (QA)/QC samples, such as field blanks, trip blanks, equipment blanks or ambient blanks, field split samples, and duplicate samples, to ascertain any effect the laboratory's procedures or the sample collection process has on the data.

4) **Data Evaluation** is a process to determine if the data meet project-specific DQOs and contract requirements. This evaluation may involve a review of field sampling and sample management procedures, laboratory audits, Performance Evaluation (PE) sample results, and any other data quality indicators that are available.

5) **Data Validation** is a process to determine the accuracy and precision of analytical data generated and to identify any anomalies encountered. The validation process is performed in accordance with USEPA regional or national functional guidelines, project-specific guidelines, and

compliance with the requirements of each analytical method. Two major components of data validation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance for each analytical method to determine if the samples were analyzed within the prescribed acceptance criteria of the method. Evaluation of matrix interferences involves the analysis of surrogate spike recoveries, matrix spike recoveries, and duplicate sample results. Data not meeting project-specific DQOs or the requirements of the analytical method are qualified with data flags according to referenced guidelines.

Data Assessment Procedures

Earth Tech performed independent QC checks of field and laboratory procedures that were used in collecting and analyzing the data. The QC checks verify that the data collected are of appropriate quality for the intended data use and that the DQOs were met. The steps and guidelines followed during the data validation process were modeled on the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (USEPA, July 2004), *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA, October 1999), and *Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services* (USEPA, July 1999). In addition, method-specific criteria set forth in the compendium of analytical methods found in the *Test Methods for Evaluation Solid Waste (SW-846*), *Update III* (USEPA, June 1997) are also evaluated during the validation process. This validation process has been adapted to meet the DQO requirements for generation of definitive critical data.

Data Validation Results

The analytical data (4 groundwater samples) plus QA/QC data (1 trip blank sample) were collected on June 11, 2004 for GE Industrial Systems, Inc. The analytical data were validated according to the procedures outlined above. Where data flags have been applied to this data set, they are separated by a slash "/" and presented in the following format:

Laboratory Flag / Result Flags / Analysis Flags

- Laboratory Flag: This flag precedes the first slash and is added by the laboratory as a result of QC excursions from the analytical method. These flags are laboratory-specific and are described in the associated laboratory report.

- Result Flags: These are presented after the first slash and are added by Earth Tech based on data validation procedures and guidelines. They tell how and if the data should be used.

- Analysis Flags: These flags are presented after the second slash and are added by Earth Tech to inform the data user of any specific QA/QC problems that were encountered.

Any data requiring qualification as a result of the validation process were assigned data flags, as discussed below. The validation flags indicate how any QC excursions may have impacted the usability of the data.

Volatile Organic Compounds by EPA Method SW-846 8260B

Results of chloroform (associated with prep batch WG168170) less than 0.735 µg/L were qualified "/B/K" due to contamination in the associated method blank. These qualifiers indicate that the analyte was detected in the method blank as well as the sample. Professional judgment must be used to determine if the detected concentration of this analyte is site-related.

Metals by EPA Method SW-846 6010B

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Hardness by EPA Method E130.2

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Total Dissolved Solids (TDS) by EPA Method E160.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Alkalinity by EPA Method E310.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Chloride by EPA Method E325.2

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Nitrate by EPA Method E353.2

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Ammonia by EPA Method E350.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Sulfate by EPA Method E375.4

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Total Organic Carbon (TOC) by EPA Method E415.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Data Summary and Usability

None of the QC excursions encountered during the validation of this data set resulted in any of the data being rejected. Therefore, the data associated with this laboratory batch should be considered compliant and adequate for its intended use.

References

United States Environmental Protection Agency (USEPA), June 1997. *Test Methods for Evaluating Solid Waste (SW-846), 3rd Edition, Update III.*

United States Environmental Protection Agency (USEPA), July 1999. *Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services, Revision 2.1*, EPA Region IV.

United States Environmental Protection Agency (USEPA), October 1999. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review.* Publication #EPA540/R-99/008.

United States Environmental Protection Agency (USEPA), July 2004. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. Publication #EPA540/R-04/004.

DATA ASSESSMENT REPORT

Data assessment is a systematic process for reviewing a body of data against a predefined set of criteria to provide assurance that the data meet project Data Quality Objective (DQO) requirements. The purpose of the data assessment process is to determine if and how the usability of the analytical data is affected by the overall analytical processes and sample collection and handling procedures. If specific DQOs are not met, the data are qualified (i.e., data flags are assigned to sample results) in accordance with guidelines established by the United States Environmental Protection Agency (USEPA). Data assessment allows the data user to adequately determine if the data can be used for its intended purpose. The data acceptance criteria are established according to Standard Operating Procedures (SOPs) and Statements of Work (SOWs) provided to the contracted analytical laboratory. The assessment of data quality and usability involves five components, as described below.

1) **Field Sampling Check** is a process to ensure that all samples were collected and the laboratory analyses were performed as stipulated in the applicable site-specific Work Plan or Field Sampling Plan (FSP). Inspection of sample preservation procedures, sample handling, analysis requested, sample description and ID, cooler receipt forms, holding time evaluation, and Chain of Custody procedures are all evaluated to ensure that the evidentiary nature of the samples and the resulting analytical data have not been compromised.

2) **Data Verification** is a process for determining the completeness, correctness, consistency, and compliance of a data package in accordance with requirements contained in the applicable SOW and/or contract-specific requirements. This is a review of the data package, electronic data deliverable (EDD), and invoice received from the contract laboratory to ensure that the contract required information is present and complete prior to data validation.

3) **Data Review** is a process of reviewing the primary quality control (QC) data provided by the laboratory and the results of any internal quality assurance (QA)/QC samples, such as field blanks, trip blanks, equipment blanks or ambient blanks, field split samples, and duplicate samples, to ascertain any effect the laboratory's procedures or the sample collection process has on the data.

4) **Data Evaluation** is a process to determine if the data meet project-specific DQOs and contract requirements. This evaluation may involve a review of field sampling and sample management procedures, laboratory audits, Performance Evaluation (PE) sample results, and any other data quality indicators that are available.

5) **Data Validation** is a process to determine the accuracy and precision of analytical data generated and to identify any anomalies encountered. The validation process is performed in accordance with USEPA regional or national functional guidelines, project-specific guidelines, and

compliance with the requirements of each analytical method. Two major components of data validation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance for each analytical method to determine if the samples were analyzed within the prescribed acceptance criteria of the method. Evaluation of matrix interferences involves the analysis of surrogate spike recoveries, matrix spike recoveries, and duplicate sample results. Data not meeting project-specific DQOs or the requirements of the analytical method are qualified with data flags according to referenced guidelines.

Data Assessment Procedures

Earth Tech performed independent QC checks of field and laboratory procedures that were used in collecting and analyzing the data. The QC checks verify that the data collected are of appropriate quality for the intended data use and that the DQOs were met. The steps and guidelines followed during the data validation process were modeled on the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (USEPA, July 2004), *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA, October 1999), and *Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services* (USEPA, July 1999). In addition, method-specific criteria set forth in the compendium of analytical methods found in the *Test Methods for Evaluation Solid Waste (SW-846*), *Update III* (USEPA, June 1997) are also evaluated during the validation process. This validation process has been adapted to meet the DQO requirements for generation of definitive critical data.

Data Validation Results

The analytical data (3 groundwater samples) plus QA/QC data (1 trip blank sample and 1 field duplicate sample) were collected on June 28, 2004 for GE Industrial Systems, Inc. The analytical data were validated according to the procedures outlined above. Where data flags have been applied to this data set, they are separated by a slash "/" and presented in the following format:

Laboratory Flag / Result Flags / Analysis Flags

- Laboratory Flag: This flag precedes the first slash and is added by the laboratory as a result of QC excursions from the analytical method. These flags are laboratory-specific and are described in the associated laboratory report.

- Result Flags: These are presented after the first slash and are added by Earth Tech based on data validation procedures and guidelines. They tell how and if the data should be used.

- Analysis Flags: These flags are presented after the second slash and are added by Earth Tech to inform the data user of any specific QA/QC problems that were encountered.

Any data requiring qualification as a result of the validation process were assigned data flags, as discussed below. The validation flags indicate how any QC excursions may have impacted the usability of the data.

Volatile Organic Compounds by EPA Method SW-846 8260B

Results of vinyl chloride (associated with prep batch WG169731) less than 2.59 µ/L were qualified "/B/K" due to contamination in the associated method blank. These qualifiers indicate that the analyte was detected in the method blank as well as the sample. Professional judgment must be used to determine if the detected concentration of this analyte is site-related.

Metals by EPA Method SW-846 6010B

Results of iron (associated with prep batch WG169421) less than 0.1715 mg/L were qualified "/B/K" due to contamination in the associated method blank. These qualifiers indicate that the analyte was detected in the method blank as well as the sample. Professional judgment must be used to determine if the detected concentration of this analyte is site-related.

Hardness by EPA Method E130.2

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Total Dissolved Solids (TDS) by EPA Method E160.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Alkalinity by EPA Method E310.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Chloride by EPA Method E325.2

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Nitrate by EPA Method E353.2

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Ammonia by EPA Method E350.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Sulfate by EPA Method E375.4

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Total Organic Carbon (TOC) by EPA Method E415.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Data Summary and Usability

None of the QC excursions encountered during the validation of this data set resulted in any of the data being rejected. Therefore, the data associated with this laboratory batch should be considered compliant and adequate for its intended use.

References

United States Environmental Protection Agency (USEPA), June 1997. *Test Methods for Evaluating Solid Waste (SW-846), 3rd Edition, Update III.*

United States Environmental Protection Agency (USEPA), July 1999. *Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services, Revision 2.1,* EPA Region IV.

United States Environmental Protection Agency (USEPA), October 1999. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review.* Publication #EPA540/R-99/008.

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1) **Field Sampling Check** is a process to ensure that all samples were collected and the laboratory analyses were performed as stipulated in the applicable site-specific Work Plan or Field Sampling Plan (FSP). Inspection of sample preservation procedures, sample handling, analysis requested, sample description and ID, cooler receipt forms, holding time evaluation, and Chain of Custody procedures are all evaluated to ensure that the evidentiary nature of the samples and the resulting analytical data have not been compromised.

2) **Data Verification** is a process for determining the completeness, correctness, consistency, and compliance of a data package in accordance with requirements contained in the applicable SOW and/or contract-specific requirements. This is a review of the data package, electronic data deliverable (EDD), and invoice received from the contract laboratory to ensure that the contract required information is present and complete prior to data validation.

3) **Data Review** is a process of reviewing the primary quality control (QC) data provided by the laboratory and the results of any internal quality assurance (QA)/QC samples, such as field blanks, trip blanks, equipment blanks or ambient blanks, field split samples, and duplicate samples, to ascertain any effect the laboratory's procedures or the sample collection process has on the data.

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Data Assessment Procedures

Earth Tech performed independent QC checks of field and laboratory procedures that were used in collecting and analyzing the data. The QC checks verify that the data collected are of appropriate quality for the intended data use and that the DQOs were met. The steps and guidelines followed during the data validation process were modeled on the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (USEPA, July 2004), *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA, October 1999), and *Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services* (USEPA, July 1999). In addition, method-specific criteria set forth in the compendium of analytical methods found in the *Test Methods for Evaluation Solid Waste (SW-846*), *Update III* (USEPA, June 1997) are also evaluated during the validation process. This validation process has been adapted to meet the DQO requirements for generation of definitive critical data.

Data Validation Results

The analytical data (5 groundwater samples) plus QA/QC data (1 trip blank sample, 1 rinsate blank sample, and 1 field duplicate sample) were collected on June 29, 2004 for GE Industrial Systems, Inc. The analytical data were validated according to the procedures outlined above. Where data flags have been applied to this data set, they are separated by a slash "/" and presented in the following format:

Laboratory Flag / Result Flags / Analysis Flags

- Laboratory Flag: This flag precedes the first slash and is added by the laboratory as a result of QC excursions from the analytical method. These flags are laboratory-specific and are described in the associated laboratory report.

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Any data requiring qualification as a result of the validation process were assigned data flags, as discussed below. The validation flags indicate how any QC excursions may have impacted the usability of the data.

Volatile Organic Compounds by EPA Method SW-846 8260B

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Metals by EPA Method SW-846 6010B

Results of manganese (associated with prep batch WG169493) less than 0.005 mg/L were qualified "/B/K" due to contamination in the associated method blank. These qualifiers indicate that the analyte was detected in the method blank as well as the sample. Professional judgment must be used to determine if the detected concentration of this analyte is site-related.

Hardness by EPA Method E130.2

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Total Dissolved Solids (TDS) by EPA Method E160.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Alkalinity by EPA Method E310.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Chloride by EPA Method E325.2

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Nitrate by EPA Method E353.2

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Ammonia by EPA Method E350.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Sulfate by EPA Method E375.4

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Total Organic Carbon (TOC) by EPA Method E415.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Data Summary and Usability

None of the QC excursions encountered during the validation of this data set resulted in any of the data being rejected. Therefore, the data associated with this laboratory batch should be considered compliant and adequate for its intended use.

References

United States Environmental Protection Agency (USEPA), June 1997. *Test Methods for Evaluating Solid Waste (SW-846), 3rd Edition, Update III.*

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compliance with the requirements of each analytical method. Two major components of data validation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance for each analytical method to determine if the samples were analyzed within the prescribed acceptance criteria of the method. Evaluation of matrix interferences involves the analysis of surrogate spike recoveries, matrix spike recoveries, and duplicate sample results. Data not meeting project-specific DQOs or the requirements of the analytical method are qualified with data flags according to referenced guidelines.

Data Assessment Procedures

Earth Tech performed independent QC checks of field and laboratory procedures that were used in collecting and analyzing the data. The QC checks verify that the data collected are of appropriate quality for the intended data use and that the DQOs were met. The steps and guidelines followed during the data validation process were modeled on the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (USEPA, July 2004), *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA, October 1999), and *Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services* (USEPA, July 1999). In addition, method-specific criteria set forth in the compendium of analytical methods found in the *Test Methods for Evaluation Solid Waste (SW-846*), *Update III* (USEPA, June 1997) are also evaluated during the validation process. This validation process has been adapted to meet the DQO requirements for generation of definitive critical data.

Data Validation Results

The analytical data (1 groundwater samples) plus QA/QC data (1 trip blank sample) were collected on July 1, 2004 for GE Industrial Systems, Inc. The analytical data were validated according to the procedures outlined above. Where data flags have been applied to this data set, they are separated by a slash "/" and presented in the following format:

Laboratory Flag / Result Flags / Analysis Flags

- Laboratory Flag: This flag precedes the first slash and is added by the laboratory as a result of QC excursions from the analytical method. These flags are laboratory-specific and are described in the associated laboratory report.

- Result Flags: These are presented after the first slash and are added by Earth Tech based on data validation procedures and guidelines. They tell how and if the data should be used.

- Analysis Flags: These flags are presented after the second slash and are added by Earth Tech to inform the data user of any specific QA/QC problems that were encountered.

Any data requiring qualification as a result of the validation process were assigned data flags, as discussed below. The validation flags indicate how any QC excursions may have impacted the usability of the data.

Volatile Organic Compounds by EPA Method SW-846 8260B

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Metals by EPA Method SW-846 6010B

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Hardness by EPA Method E130.2

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Total Dissolved Solids (TDS) by EPA Method E160.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Alkalinity by EPA Method E310.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Chloride by EPA Method E325.2

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Nitrate by EPA Method E353.2

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Ammonia by EPA Method E350.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Sulfate by EPA Method E375.4

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Total Organic Carbon (TOC) by EPA Method E415.1

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Data Summary and Usability

None of the QC excursions encountered during the validation of this data set resulted in any of the data being rejected. Therefore, the data associated with this laboratory batch should be considered compliant and adequate for its intended use.

References

United States Environmental Protection Agency (USEPA), June 1997. *Test Methods for Evaluating Solid Waste (SW-846), 3rd Edition, Update III.*

United States Environmental Protection Agency (USEPA), July 1999. *Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services, Revision 2.1*, EPA Region IV.

United States Environmental Protection Agency (USEPA), October 1999. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review.* Publication #EPA540/R-99/008.

United States Environmental Protection Agency (USEPA), July 2004. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. Publication #EPA540/R-04/004.

ATTACHMENT C

CERTIFICATES OF ANALYSIS

(on CD only)

KEMRON
ENVIRONMENTAL SERVICES

156 Starlite Drive ▪ Marietta, OH 45750 ▪ Telephone (740) 373-4071 ▪ FAX (740) 373-4835

Laboratory Report Number: L0406242

Please find enclosed the analytical results for the samples you submitted to Kemron Environmental Services.

Review and compilation of your report was completed by Kemron's Sales and Service Team 2. If you have questions, comments or require further assistance please contact one of our team members at 800-373-4071. We can also be reached at the e-mail addresses listed below.

Cheryl Koelsch – Team Chemist/Data Specialist
ckoelsch@kemron-lab.com

Nina Scott – Customer Service/Invoicing Specialist
ascott@kemron-lab.com

Kathy Albertson – Team Chemist/Data Specialist
kalbertson@kemron-lab.com

Debra Elliott – Team Leader
delliott@kemron-lab.com

This report was reviewed by: _____ Date: 7/7/04

I certify that all test results meet all of the requirements of the NELAP standards and other applicable contract terms and conditions. All results for soil samples are reported on a "dry-weight" basis unless specified otherwise. Analytical results for water and wastes are reported on an "as received" basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of KEMRON Environmental Services.

Certified by: David E. Vandenberg
David E. Vandenberg
Laboratory Director

FLDOH NELAP Id: E87551

This report contains a total of 73 pages.

LABORATORY REPORT

L0406242

06/23/04 16:37

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta, Ohio 45750
(740)373-4071

For

Account Name: EARTH TECH
10 Patewood Drive
Suite 500 Building VI
Greenville, SC 29615
Attention: Juanita Edwards

Account Number: 664-831
Work ID: RFI @ CARBIDE GE

Sample Summary

Client ID	Lab ID	Date Collected	Date Received
P-4	L0406242-02	10-JUN-04	11-JUN-04
P-10A	L0406242-03	10-JUN-04	11-JUN-04
P-4-MS	L0406242-04	10-JUN-04	12-JUN-04
P-4-MSD	L0406242-05	10-JUN-04	12-JUN-04

KEMRON ENVIRONMENTAL SERVICES
REPORT NARRATIVE

L0406242

SHIPMENT CONDITIONS:

The chain of custody was received sealed in a cooler. Chain of custody number is 10-06-2004-01.

SAMPLE MANAGEMENT:

The samples were received intact. Cooler temperatures were 3 and 5 degrees C. Cooler A was received one day late due to shipping problems. Sample P-4 and P-4MSD were swapped in order to log in a parent sample on the first day coolers arrived.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

REVIEWED: _____ DATE: 6/15/04

REPORT NARRATIVE
METALS

KEMRON Login No: L0406242

METHOD

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.
Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial calibrations: All acceptance criteria were met.
Alternate Source Standards: All acceptance criteria were met.
Continuing Calibration : All acceptance criteria were met.
Internal Check Standard: WG168124(6010) - The ICSA analyzed initially on 15-JUN-2004 at 09:03 yielded noncompliant results for lead. The ICSA was reanalyzed at 09:21 prior to sample analysis and was compliant for all elements of concern.

BATCH QA/QC

Method Blank: All acceptance criteria were met.
Laboratory Control Sample: All acceptance criteria were met.
Serial Dilution/Post Digestion Spike: WG168124(6010) - All acceptance criteria were met.

SAMPLES

WG168124(6010) - All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analyst: KHR REVIEWED: Maren Beery DATE: 06/18/04

Rev. 6/00

REPORT NARRATIVE
GENERAL CHEMISTRY

KEMRON Login No: L0406242

METHOD

Analysis: See report for method reference.

HOLDING TIMES

Sample Preparation: All holding times were met.
Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.
Laboratory Control Sample: All acceptance criteria were met
Duplicates: All acceptance criteria were met
Matrix Spikes: All acceptance criteria were met.

SAMPLES

Nitrate

Nitrate is analyzed by subtracting the nitrite result from the nitrate-nitrite result. The nitrite was analyzed within the 48 hour hold time. Nitrate-nitrite has a 28 day hold, so the analysis was performed within hold.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analyst: dih REVIEWED: dih DATE: 6/30/04

Rev. 6/00

Report Number: **L0406242**
Report Date : **June 23, 2004**

Sample Number: **L0406242-02** | Prep Method: **160.1** | Instrument: **OVEN**
Client ID: **P-4** | Analytical Method: **160.1** | Prep Date: **06/14/2004 13:55**
Matrix: **Water** | Analyst: **TMM** | Cal Date:
Workgroup Number: **WG168059** | Dilution: **1** | Run Date: **06/14/2004 13:55**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **EN.0406141355-11**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		278		20.0	10.0

Sample Number: **L0406242-02** | Prep Method: **130.2** | Instrument: **BURET**
Client ID: **P-4** | Analytical Method: **130.2** | Prep Date: **06/16/2004 09:10**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG168326** | Dilution: **1** | Run Date: **06/16/2004 09:10**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **ET.0406160910-04**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		124		10.0	5.00

Sample Number: **L0406242-02** | Prep Method: **325.2** | Instrument: **SMARTCHEM**
Client ID: **P-4** | Analytical Method: **325.2** | Prep Date: **06/11/2004 12:49**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG167971** | Dilution: **1** | Run Date: **06/11/2004 12:49**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **EM04061116342615**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	16887-00-6	19.6		2.00	1.00

Sample Number: **L0406242-02** | Prep Method: **A2320B** | Instrument: **BURET**
Client ID: **P-4** | Analytical Method: **A2320B** | Prep Date: **06/15/2004 09:35**
Matrix: **Water** | Analyst: **DLP** | Cal Date:
Workgroup Number: **WG168149** | Dilution: **1** | Run Date: **06/15/2004 09:35**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **ET.0406150935-04**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		130		10.0	5.00

Report Number: **L0406242**
Report Date : **June 23, 2004**

Sample Number: **L0406242-02** | Prep Method: **375.4** | Instrument: **SMARTCHEM**
Client ID: **P-4** | Analytical Method: **375.4** | Prep Date: **06/18/2004 07:45**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG168401** | Dilution: **1** | Run Date: **06/18/2004 07:45**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **EM04061814074402**

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	14808-79-8	32.7		5.00	2.50

Sample Number: **L0406242-02** | Prep Method: **350.1** | Instrument: **TRAACS-800**
Client ID: **P-4** | Analytical Method: **350.1** | Prep Date: **06/17/2004 10:41**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG168449** | Dilution: **1** | Run Date: **06/17/2004 10:41**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **0004061816120703**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7		U	0.100	0.0500

U This analyte was not detected in the sample.

Sample Number: **L0406242-02** | Prep Method: **353.2** | Instrument: **SMARTCHEM**
Client ID: **P-4** | Analytical Method: **353.2** | Prep Date: **06/18/2004 10:59**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG168437** | Dilution: **1** | Run Date: **06/18/2004 10:59**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **EM04061816225512**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	14797-55-8	2.21		0.0500	0.0250

Sample Number: **L0406242-02** | Prep Method: **415.1** | Instrument: **TOC-VWP**
Client ID: **P-4** | Analytical Method: **415.1** | Prep Date: **06/14/2004 09:38**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG168146** | Dilution: **1** | Run Date: **06/14/2004 09:38**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **WP04061515181113**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		2.92		1.00	0.500

Report Number: **L0406242**
Report Date : **June 23, 2004**

Sample Number: **L0406242-02**
Client ID: **P-4**
Matrix: **Water**
Workgroup Number: **WG168124**
Collect Date: **10-JUN-04**
Sample Tag: **01**

Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP**
Prep Date: **06/14/2004 08:05**
Cal Date: **06/15/2004 08:47**
Run Date: **06/15/2004 13:11**
File ID: **PE.061504.131129**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	26.1		0.200	0.100
Iron, Total	7439-89-6		U	0.0400	0.0200
Potassium, Total	7440-09-7	0.382	J	1.00	0.250
Magnesium, Total	7439-95-4	15.1		0.500	0.250
Manganese, Total	7439-96-5		U	0.0100	0.00100
Sodium, Total	7440-23-5	32.8		0.500	0.250

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406242-02**
Client ID: **P-4**
Matrix: **Water**
Workgroup Number: **WG168170**
Collect Date: **10-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/16/2004 16:53**
Cal Date: **06/14/2004 19:09**
Run Date: **06/16/2004 16:53**
File ID: **6M44439**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	0.258	J,B	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Report Number: **L0406242**
Report Date : **June 23, 2004**

Sample Number: **L0406242-02** | Prep Method: **5030B** | Instrument: **HPMS6**
Client ID: **P-4** | Analytical Method: **8260B** | Prep Date: **06/16/2004 16:53**
Matrix: **Water** | Analyst: **CMS** | Cal Date: **06/14/2004 19:09**
Workgroup Number: **WG168170** | Dilution: **1** | Run Date: **06/16/2004 16:53**
Collect Date: **10-JUN-04** | Units: **ug/L** | File ID: **6M44439**
Sample Tag: **01**

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	107	86	118	
1,2-Dichloroethane-d4	104	80	120	
Toluene-d8	102	88	110	
4-Bromofluorobenzene	102	86	115	

J,B J,B
U This analyte was not detected in the sample.

Sample Number: **L0406242-02** | Prep Method: **A2320B** | Instrument: **BURET**
Client ID: **P-4** | Analytical Method: **A2320B** | Prep Date: **06/15/2004 09:35**
Matrix: **Water** | Analyst: **DLP** | Cal Date:
Workgroup Number: **WG168149** | Dilution: **1** | Run Date: **06/15/2004 09:35**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **ET.0406150935-04**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

Sample Number: **L0406242-03** | Prep Method: **160.1** | Instrument: **OVEN**
Client ID: **P-10A** | Analytical Method: **160.1** | Prep Date: **06/14/2004 13:55**
Matrix: **Water** | Analyst: **TMM** | Cal Date:
Workgroup Number: **WG168059** | Dilution: **1** | Run Date: **06/14/2004 13:55**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **EN.0406141355-12**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		324		20.0	10.0

Sample Number: **L0406242-03** | Prep Method: **130.2** | Instrument: **BURET**
Client ID: **P-10A** | Analytical Method: **130.2** | Prep Date: **06/16/2004 09:10**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG168326** | Dilution: **1** | Run Date: **06/16/2004 09:10**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **ET.0406160910-05**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		167		10.0	5.00

Report Number: **L0406242**
Report Date : **June 23, 2004**

Sample Number: **L0406242-03** | Prep Method: **325.2** | Instrument: **SMARTCHEM**
Client ID: **P-10A** | Analytical Method: **325.2** | Prep Date: **06/11/2004 12:49**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG167971** | Dilution: **1** | Run Date: **06/11/2004 12:49**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **EM04061116342616**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	16887-00-6	28.0		2.00	1.00

Sample Number: **L0406242-03** | Prep Method: **A2320B** | Instrument: **BURET**
Client ID: **P-10A** | Analytical Method: **A2320B** | Prep Date: **06/15/2004 09:35**
Matrix: **Water** | Analyst: **DLP** | Cal Date:
Workgroup Number: **WG168149** | Dilution: **1** | Run Date: **06/15/2004 09:35**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **ET.0406150935-05**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		185		10.0	5.00

Sample Number: **L0406242-03** | Prep Method: **375.4** | Instrument: **SMARTCHEM**
Client ID: **P-10A** | Analytical Method: **375.4** | Prep Date: **06/18/2004 07:45**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG168401** | Dilution: **2** | Run Date: **06/18/2004 07:45**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **EM04061814074403**

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	14808-79-8	50.6		10.0	5.00

Sample Number: **L0406242-03** | Prep Method: **350.1** | Instrument: **TRAACS-800**
Client ID: **P-10A** | Analytical Method: **350.1** | Prep Date: **06/17/2004 10:41**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG168449** | Dilution: **1** | Run Date: **06/17/2004 10:41**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **0004061816120704**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.0720	J	0.100	0.0500

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Report Number: **L0406242**
Report Date : **June 23, 2004**

Sample Number: **L0406242-03** | Prep Method: **353.2** | Instrument: **SMARTCHEM**
Client ID: **P-10A** | Analytical Method: **353.2** | Prep Date: **06/18/2004 10:59**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG168437** | Dilution: **1** | Run Date: **06/18/2004 10:59**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **EM04061816225513**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	14797-55-8	2.69		0.0500	0.0250

Sample Number: **L0406242-03** | Prep Method: **415.1** | Instrument: **TOC-VWP**
Client ID: **P-10A** | Analytical Method: **415.1** | Prep Date: **06/14/2004 09:38**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG168146** | Dilution: **1** | Run Date: **06/14/2004 09:38**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **WP04061515181114**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		3.69		1.00	0.500

Sample Number: **L0406242-03** | Prep Method: **3005A** | Instrument: **PE-ICP**
Client ID: **P-10A** | Analytical Method: **6010B** | Prep Date: **06/14/2004 08:05**
Matrix: **Water** | Analyst: **KHR** | Cal Date: **06/15/2004 08:47**
Workgroup Number: **WG168124** | Dilution: **1** | Run Date: **06/15/2004 13:16**
Collect Date: **10-JUN-04** | Units: **mg/L** | File ID: **PE.061504.131641**
Sample Tag: **01**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	36.5		0.200	0.100
Iron, Total	7439-89-6	0.347		0.0400	0.0200
Potassium, Total	7440-09-7	0.449	J	1.00	0.250
Magnesium, Total	7439-95-4	18.7		0.500	0.250
Manganese, Total	7439-96-5	0.00592	J	0.0100	0.00100
Sodium, Total	7440-23-5	43.5		0.500	0.250

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: **L0406242-03** | Prep Method: **5030B** | Instrument: **HPMS6**
Client ID: **P-10A** | Analytical Method: **8260B** | Prep Date: **06/16/2004 18:26**
Matrix: **Water** | Analyst: **CMS** | Cal Date: **06/14/2004 19:09**
Workgroup Number: **WG168170** | Dilution: **1** | Run Date: **06/16/2004 18:26**
Collect Date: **10-JUN-04** | Units: **ug/L** | File ID: **6M44442**
Sample Tag: **01**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50

Report Number: **L0406242**
Report Date : **June 23, 2004**

Sample Number: **L0406242-03**
Client ID: **P-10A**
Matrix: **Water**
Workgroup Number: **WG168170**
Collect Date: **10-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/16/2004 18:26**
Cal Date: **06/14/2004 19:09**
Run Date: **06/16/2004 18:26**
File ID: **6M44442**

Analyte	CAS. Number	Result	Qual	RL	MDL
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	1.69		1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3	22.5		1.00	0.125
1,2-Dichloroethane	107-06-2	2.03		1.00	0.250
1,1-Dichloroethene	75-35-4	934	I	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4	0.404	J	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6	1.28		1.00	0.250
1,1,2-Trichloroethane	79-00-5	0.641	J	1.00	0.250
Trichloroethene	79-01-6	0.424	J	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	104	86	118	
1,2-Dichloroethane-d4	96.0	80	120	
Toluene-d8	105	88	110	
4-Bromofluorobenzene	105	86	115	

I Semiquantitative result (out of instrument calibration range)
J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406242-03**
Client ID: **P-10A**
Matrix: **Water**
Workgroup Number: **WG168271**
Collect Date: **10-JUN-04**
Sample Tag: **DL01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **10**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/17/2004 10:58**
Cal Date: **06/14/2004 19:09**
Run Date: **06/17/2004 10:58**
File ID: **6M44452**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	100	25.0
Benzene	71-43-2		U	10.0	1.25
Bromochloromethane	74-97-5		U	10.0	2.00
Bromodichloromethane	75-27-4		U	10.0	2.50
Bromoform	75-25-2		U	10.0	5.40
Bromomethane	74-83-9		U	10.0	5.00
2-Butanone	78-93-3		U	100	25.0
Carbon disulfide	75-15-0		U	10.0	5.00
Carbon tetrachloride	56-23-5		U	10.0	2.50

Report Number: **L0406242**
Report Date : **June 23, 2004**

Sample Number: **L0406242-03**
Client ID: **P-10A**
Matrix: **Water**
Workgroup Number: **WG168271**
Collect Date: **10-JUN-04**
Sample Tag: **DL01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **10**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/17/2004 10:58**
Cal Date: **06/14/2004 19:09**
Run Date: **06/17/2004 10:58**
File ID: **6M44452**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chlorobenzene	108-90-7		U	10.0	1.25
Dibromochloromethane	124-48-1		U	10.0	2.50
Chloroethane	75-00-3		U	10.0	5.00
Chloroform	67-66-3	3.04	J	10.0	1.25
Chloromethane	74-87-3		U	10.0	2.50
1,2-Dichlorobenzene	95-50-1		U	10.0	1.25
1,3-Dichlorobenzene	541-73-1		U	10.0	2.50
1,4-Dichlorobenzene	106-46-7		U	10.0	1.25
1,1-Dichloroethane	75-34-3	20.5		10.0	1.25
1,2-Dichloroethane	107-06-2		U	10.0	2.50
1,1-Dichloroethene	75-35-4	1230		10.0	5.00
cis-1,2-Dichloroethene	156-59-2		U	10.0	2.50
trans-1,2-Dichloroethene	156-60-5		U	10.0	2.50
1,2-Dichloropropane	78-87-5		U	10.0	1.25
cis-1,3-Dichloropropene	10061-01-5		U	10.0	2.50
trans-1,3-Dichloropropene	10061-02-6		U	10.0	5.00
Ethylbenzene	100-41-4		U	10.0	2.50
2-Hexanone	591-78-6		U	100	25.0
4-Methyl-2-pentanone	108-10-1		U	100	25.0
Methylene chloride	75-09-2		U	50.0	2.50
Styrene	100-42-5		U	10.0	1.25
1,1,2,2-Tetrachloroethane	79-34-5		U	10.0	1.25
Tetrachloroethene	127-18-4		U	10.0	2.50
Toluene	108-88-3		U	10.0	2.50
1,1,1-Trichloroethane	71-55-6		U	10.0	2.50
1,1,2-Trichloroethane	79-00-5		U	10.0	2.50
Trichloroethene	79-01-6		U	10.0	2.50
Vinyl chloride	75-01-4		U	10.0	2.50
Xylenes (total)	1330-20-7		U	10.0	2.50

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	98.3	86	118	
1,2-Dichloroethane-d4	90.2	80	120	
Toluene-d8	107	88	110	
4-Bromofluorobenzene	102	86	115	

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406242-03**
Client ID: **P-10A**
Matrix: **Water**
Workgroup Number: **WG168149**
Collect Date: **10-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DLP**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **06/15/2004 09:35**
Cal Date:
Run Date: **06/15/2004 09:35**
File ID: **ET.0406150935-05**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

Report Number: **L0406242**
Report Date : **June 23, 2004**

Sample Number: **L0406242-04**
Client ID: **P-4-MS**
Matrix: **Water**
Workgroup Number: **WG168170**
Collect Date: **10-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/16/2004 17:24**
Cal Date: **06/14/2004 19:09**
Run Date: **06/16/2004 17:24**
File ID: **6M44440**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1	19.5		10.0	2.50
Benzene	71-43-2	21.1		1.00	0.125
Bromochloromethane	74-97-5	20.7		1.00	0.200
Bromodichloromethane	75-27-4	25.0		1.00	0.250
Bromoform	75-25-2	17.7		1.00	0.540
Bromomethane	74-83-9	21.3		1.00	0.500
2-Butanone	78-93-3	20.1		10.0	2.50
Carbon disulfide	75-15-0	20.3		1.00	0.500
Carbon tetrachloride	56-23-5	18.6		1.00	0.250
Chlorobenzene	108-90-7	21.0		1.00	0.125
Dibromochloromethane	124-48-1	18.5		1.00	0.250
Chloroethane	75-00-3	22.7		1.00	0.500
Chloroform	67-66-3	22.4		1.00	0.125
Chloromethane	74-87-3	22.2		1.00	0.250
1,2-Dichlorobenzene	95-50-1	19.4		1.00	0.125
1,3-Dichlorobenzene	541-73-1	20.4		1.00	0.250
1,4-Dichlorobenzene	106-46-7	19.5		1.00	0.125
1,1-Dichloroethane	75-34-3	22.7		1.00	0.125
1,2-Dichloroethane	107-06-2	22.7		1.00	0.250
1,1-Dichloroethene	75-35-4	23.3		1.00	0.500
cis-1,2-Dichloroethene	156-59-2	20.9		1.00	0.250
trans-1,2-Dichloroethene	156-60-5	21.7		1.00	0.250
1,2-Dichloropropane	78-87-5	20.8		1.00	0.125
cis-1,3-Dichloropropene	10061-01-5	21.6		1.00	0.250
trans-1,3-Dichloropropene	10061-02-6	24.3		1.00	0.500
Ethylbenzene	100-41-4	20.8		1.00	0.250
2-Hexanone	591-78-6	20.4		10.0	2.50
4-Methyl-2-pentanone	108-10-1	17.8		10.0	2.50
Methylene chloride	75-09-2	20.9		5.00	0.250
Styrene	100-42-5	21.1		1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5	19.1		1.00	0.125
Tetrachloroethene	127-18-4	20.4		1.00	0.250
Toluene	108-88-3	21.0		1.00	0.250
1,1,1-Trichloroethane	71-55-6	22.9		1.00	0.250
1,1,2-Trichloroethane	79-00-5	19.6		1.00	0.250
Trichloroethene	79-01-6	21.4		1.00	0.250
Vinyl chloride	75-01-4	25.7		1.00	0.250
Xylenes (total)	1330-20-7	62.0		1.00	0.250

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	109	86	118	
1,2-Dichloroethane-d4	103	80	120	
Toluene-d8	105	88	110	
4-Bromofluorobenzene	100	86	115	

Sample Number: **L0406242-05**
Client ID: **P-4-MSD**
Matrix: **Water**
Workgroup Number: **WG168170**
Collect Date: **10-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/16/2004 17:55**
Cal Date: **06/14/2004 19:09**
Run Date: **06/16/2004 17:55**
File ID: **6M44441**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1	17.8		10.0	2.50
Benzene	71-43-2	20.5		1.00	0.125
Bromochloromethane	74-97-5	20.4		1.00	0.200
Bromodichloromethane	75-27-4	24.5		1.00	0.250
Bromoform	75-25-2	17.0		1.00	0.540

Report Number: **L0406242**
Report Date : **June 23, 2004**

Sample Number: **L0406242-05**
Client ID: **P-4-MSD**
Matrix: **Water**
Workgroup Number: **WG168170**
Collect Date: **10-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/16/2004 17:55**
Cal Date: **06/14/2004 19:09**
Run Date: **06/16/2004 17:55**
File ID: **6M44441**

Analyte	CAS. Number	Result	Qual	RL	MDL
Bromomethane	74-83-9	21.7		1.00	0.500
2-Butanone	78-93-3	18.9		10.0	2.50
Carbon disulfide	75-15-0	20.8		1.00	0.500
Carbon tetrachloride	56-23-5	18.1		1.00	0.250
Chlorobenzene	108-90-7	20.7		1.00	0.125
Dibromochloromethane	124-48-1	18.2		1.00	0.250
Chloroethane	75-00-3	22.1		1.00	0.500
Chloroform	67-66-3	21.6		1.00	0.125
Chloromethane	74-87-3	21.3		1.00	0.250
1,2-Dichlorobenzene	95-50-1	19.5		1.00	0.125
1,3-Dichlorobenzene	541-73-1	20.5		1.00	0.250
1,4-Dichlorobenzene	106-46-7	19.7		1.00	0.125
1,1-Dichloroethane	75-34-3	22.3		1.00	0.125
1,2-Dichloroethane	107-06-2	21.6		1.00	0.250
1,1-Dichloroethene	75-35-4	22.6		1.00	0.500
cis-1,2-Dichloroethene	156-59-2	20.7		1.00	0.250
trans-1,2-Dichloroethene	156-60-5	21.3		1.00	0.250
1,2-Dichloropropane	78-87-5	20.3		1.00	0.125
cis-1,3-Dichloropropene	10061-01-5	20.9		1.00	0.250
trans-1,3-Dichloropropene	10061-02-6	23.6		1.00	0.500
Ethylbenzene	100-41-4	20.9		1.00	0.250
2-Hexanone	591-78-6	18.7		10.0	2.50
4-Methyl-2-pentanone	108-10-1	16.1		10.0	2.50
Methylene chloride	75-09-2	20.6		5.00	0.250
Styrene	100-42-5	20.8		1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5	19.5		1.00	0.125
Tetrachloroethene	127-18-4	20.4		1.00	0.250
Toluene	108-88-3	20.7		1.00	0.250
1,1,1-Trichloroethane	71-55-6	22.4		1.00	0.250
1,1,2-Trichloroethane	79-00-5	19.2		1.00	0.250
Trichloroethene	79-01-6	20.7		1.00	0.250
Vinyl chloride	75-01-4	22.7		1.00	0.250
Xylenes (total)	1330-20-7	61.2		1.00	0.250

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	103	86	118	
1,2-Dichloroethane-d4	97.6	80	120	
Toluene-d8	105	88	110	
4-Bromofluorobenzene	101	86	115	

WORKGROUP SUMMARY BY METHOD

WORKGROUP SUMMARY BY METHOD

Analysis: Chloride
Analytical Method: 325.2
Workgroup: WG167971

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-02	P-4			06/11/04 12:49		SMARTCHEM	DIH
L0406242-03	P-10A			06/11/04 12:49		SMARTCHEM	DIH

Analysis: Metals Analysis
Extraction Method: 3005A
Workgroup: WG168005

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-02	P-4		06/14/04 08:05			HOT BLOCK	TLM
L0406242-03	P-10A		06/14/04 08:05			HOT BLOCK	TLM

Analysis: Total Dissolved Solids
Analytical Method: 160.1
Workgroup: WG168059

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-02	P-4			06/14/04 13:55		OVEN	TMM
L0406242-03	P-10A			06/14/04 13:55		OVEN	TMM

Analysis: Metals Analysis
Analytical Method: 6010B
Workgroup: WG168124

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-02	P-4		06/14/04 08:05	06/15/04 13:11	01	PE-ICP	KHR
L0406242-03	P-10A		06/14/04 08:05	06/15/04 13:16	01	PE-ICP	KHR

WORKGROUP SUMMARY BY METHOD

Analysis: Total Organic Carbon
Analytical Method: 415.1
Workgroup: WG168146

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-02	P-4			06/14/04 09:38		TOC-VWP	DIH
L0406242-03	P-10A			06/14/04 09:38		TOC-VWP	DIH

Analysis: Alkalinity, Bicarbonate
Analytical Method: A2320B
Workgroup: WG168149

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-02	P-4			06/15/04 09:35		BURET	DLP
L0406242-02	P-4			06/15/04 09:35		BURET	DLP
L0406242-03	P-10A			06/15/04 09:35		BURET	DLP
L0406242-03	P-10A			06/15/04 09:35		BURET	DLP

Analysis: Alkalinity, Bicarbonate
Extraction Method: METHOD
Workgroup: WG168149

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-02	P-4			06/15/04 09:35		BURET	DLP
L0406242-03	P-10A			06/15/04 09:35		BURET	DLP

Analysis: Volatile Organics
Analytical Method: 8260B
Workgroup: WG168170

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-02	P-4			06/16/04 16:53	01	HPMS6	CMS
L0406242-03	P-10A			06/16/04 18:26	01	HPMS6	CMS
L0406242-04	P-4-MS			06/16/04 17:24	01	HPMS6	CMS
L0406242-05	P-4-MSD			06/16/04 17:55	01	HPMS6	CMS

WORKGROUP SUMMARY BY METHOD

Analysis: Volatile Organics
Extraction Method: 5030B
Workgroup: WG168170

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-02	P-4				168170	HPMS6	CMS
L0406242-03	P-10A				168170	HPMS6	CMS
L0406242-04	P-4-MS				168170	HPMS6	CMS
L0406242-04	P-4-MS				168170	HPMS6	CMS
L0406242-05	P-4-MSD				168170	HPMS6	CMS
L0406242-05	P-4-MSD				168170	HPMS6	CMS

Analysis: Volatile Organics
Analytical Method: 8260B
Workgroup: WG168271

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-03	P-10A			06/17/04 10:58	DL01	HPMS6	CMS

Analysis: Volatile Organics
Extraction Method: 5030B
Workgroup: WG168271

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-03	P-10A				168271	HPMS6	CMS

Analysis: Hardness
Analytical Method: 130.2
Workgroup: WG168326

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-02	P-4			06/16/04 09:10		BURET	DR
L0406242-03	P-10A			06/16/04 09:10		BURET	DR

WORKGROUP SUMMARY BY METHOD

Analysis: Hardness
Extraction Method: 130.2
Workgroup: WG168326

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-02	P-4			06/16/04 09:10		BURET	DR
L0406242-03	P-10A			06/16/04 09:10		BURET	DR

Analysis: Sulfate
Analytical Method: 375.4
Workgroup: WG168401

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-02	P-4			06/18/04 07:45		SMARTCHEM	DIH
L0406242-03	P-10A			06/18/04 07:45		SMARTCHEM	DIH

Analysis: Nitrogen, Nitrate
Analytical Method: 353.2
Workgroup: WG168437

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-02	P-4			06/18/04 10:59		SMARTCHEM	DIH
L0406242-03	P-10A			06/18/04 10:59		SMARTCHEM	DIH

Analysis: Nitrogen, Ammonia
Analytical Method: 350.1
Workgroup: WG168449

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-02	P-4			06/17/04 10:41		TRAACS-800	DR
L0406242-03	P-10A			06/17/04 10:41		TRAACS-800	DR

WORKGROUP SUMMARY BY METHOD

Analysis: Nitrogen, Ammonia
Extraction Method: METHOD
Workgroup: WG168449

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406242-04	P-4-MS		06/17/04 10:41			TRAACS-800	DR
L0406242-05	P-4-MSD		06/17/04 10:41			TRAACS-800	DR

Kemron Environmental Services
Analyst Listing
Monday, June 28 2004

AJF - AMANDA J. FICKIESEN
ALB - ANNIE L. BOCK
ALT - ANN L. THAYER
ARS - ANGELINA R. SCOTT
ART - AMANDA R. THOMPSON
BRG - BRENDA R. GREGORY
CAB - CASSIE A. BAKER
CAF - CHERYL A. FLOWERS
CAK - CHERYL A. KOELSCH
CEB - CHAD E. BARNES
CIS - CASHUS I. STONE
CLC - CHRYS L. CRAWFORD
CLK - CARL L. KING
CLS - CARA L. STRICKLER
CLW - CHARISSA L. WINTERS
CM - CHARLIE MARTIN
CMS - CRYSTAL M. STEVENS
CPD - CHAD P. DAVIS
CRC - CARLA R. COCHRAN
CSH - CHRIS S. HILL
DAS - DALLAS A. SULLIVAN
DD - DIANE M. DENNIS
DDE - DEBRA D. ELLIOTT
DEL - DON E. LIGHTFRITZ
DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER
DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE
DLR - DIANNA L. RAUCH
DMV - DAVID M. VANDEVELDE
DP - DEANNA L. PIERSON
DR - DEANNA ROBERTS
DRB - DOUG R. BARNETT
DSM - DAVID S. MOSSOR
DST - DENNIS S. TEPE
ECL - ERIC C. LAWSON
EED - EMILY E. DECKER
ELW - ERICA L. WEBB
HV - HEMA VILASAGAR
JAL - JOHN A. LENT
JJG - JOHN J. GREUEY
JKW - JANE K. THOMPSON
JLS - JANICE L. SCHIMMEL
JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES
JYH - JI Y. HU
KHR - KIM H. RHODES
KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF
LLL - LONNIE L. LEWIS
LSA - LUCINDA S. ARNOLD
LSB - LESLIE S. BUCINA
MAH - MICALYN A. HARRIS
MDA - MICHAEL D. ALBERTSON
MDC - MICHAEL D. COCHRAN
MEF - MIKE E. FLANAGAN
MES - MARY E. SCHILLING
MKZ - MARILYN K. ZUMBRO
MLR - MARY L. ROCHOTTE
MLS - MICHAEL L. SCHIMMEL
MMB - MAREN M. BEERY
MSW - MATT S. WILSON
NJB - NATALIE J. BOOTH
OGT - OKEY G. TUCKER
PAS - PATRICK A. STREET
RDC - REBECCA D. CUTLIP
REK - ROBERT E. KYER
RJW - RHONDA J. WITTEKIND
RWC - ROD W. CAMPBELL
SCM - SUSAN C. MOELLENDICK
SH - SHAUNA M. HYDE
SK - SANDRA KEENER
SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF
TD - TIMOTHY DYSERT
TJH - TIM J. HOEFLICH
TLM - TIFFINI L. MCDONALD
TMM - TAMMY M. MORRIS
VC - VICKI COLLIER
VKL - VICKY K. LAUER

KEMRON FORMS: JUL-25-02
Printed: JUN-28-04 09:25:34

KEMRON Environmental Services, Inc
List of Valid Qualifiers
August 5, 2002

Standard Qualifiers

These are KEMRON's Standard Report Qualifiers

B	Present in the method blank
C	Confirmed by GC/MS
CG	Confluent growth
D	The analyte was quantified at a secondary dilution factor
DL	Surrogate or spike was diluted out
E	Estimated concentration due to sample matrix interference
FL	Free liquid
I	Semi-quantitative result, out of instrument calibration range
J	Present below nominal reporting limit
L	Sample reporting limits elevated due to matrix interference
N	Tentatively Identified Compound (TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit (RL)
NF	Not found
NFL	No free liquid
NI	Non-ignitable
NS	Not spiked
P	Concentration >40% difference between The two GC columns
QNS	Quantity not sufficient to perform analysis
RA	Re analysis confirms reported results
RE	Re analysis confirms sample matrix interference
S	Analyzed by method of standard addition
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TNTC	Too numerous to count
U	Analyzed for but not detected
W	Post-digestion spike for furnace AA out o f control limits
X	Exceeds regulatory limit
Z	Can not be resolved from isomer.***
+	Correlation coefficient for the MSA is less than 0.995
<	Less than
>	Greater than
*	Surrogate or spike compound out of range

***** Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene
3. N-nitrosodiphenylamine cannot be separated from diphenylamine
4. 3-Methyphenol and 4-Methyphenol are unresolvable compounds
5. m-Xylene and p-Xylene are unresolvable compounds
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent

AFCEE Qualifiers

These are KEMRON's AFCEE Report Qualifiers

J	The analyte was positively identified, the quantitation is an estimation
U	The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL
F	The analyte was positively identified but the associated numerical value is below the RL
R	The data is unusable due to deficiencies in the ability to analyze the sample and meet QC criteria
B	The analyte was found in an associated blank, as well as in the sample
M	The matrix effect was present
S	To be applied to all field screening data
T	Tentatively identified compound (using GC/MS)

H:\DATA\COMMON\Qualifier List 08-05-02.doc

ORGANIC QA/QC

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method:8260B AAB#:WG168170

Login Number:L0406242

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-10A	06/10/04	06/11/04	06/16/04	14	6.14	06/16/04	14	6.14	
P-4	06/10/04	06/11/04	06/16/04	14	6.28	06/16/04	14	6.28	
P-4-MS	06/10/04	06/12/04	06/16/04	14	6.30	06/16/04	14	6.30	
P-4-MSD	06/10/04	06/12/04	06/16/04	14	6.32	06/16/04	14	6.32	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method:8260B AAB#:WG168271

Login Number:L0406242

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-10A	06/10/04	06/11/04	06/17/04	14	6.83	06/17/04	14	6.83	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406242
Blank File ID: 6M44424
Date Analyzed: 06/16/04
Time Analyzed: 08:28
Analyst: CMS

Work Group: WG168170
Blank Sample ID: WG168170-01
Instrument ID: HPMS6
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG168170-02	6M44425	06/16/04 08:59	01
LCS2	WG168170-03	6M44426	06/16/04 09:30	01
P-4	L0406242-02	6M44439	06/16/04 16:53	01
P-4-MS	L0406242-04	6M44440	06/16/04 17:24	01
P-4-MSD	L0406242-05	6M44441	06/16/04 17:55	01
P-10A	L0406242-03	6M44442	06/16/04 18:26	01

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406242
Blank File ID: 6M44448
Date Analyzed: 06/17/04
Time Analyzed: 08:54
Analyst: CMS

Work Group: WG168271
Blank Sample ID: WG168271-01
Instrument ID: HPMS6
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG168271-02	6M44449	06/17/04 09:25	01
LCS2	WG168271-03	6M44450	06/17/04 09:56	01
P-10A	L0406242-03	6M44452	06/17/04 10:58	DL01

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406242 Run Date: 06/16/2004 Sample ID: WG168170-01
Instrument ID: HPMS6 Run Time: 08:28 Prep Method: 5030B
File ID: 6M44424 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG168170 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS6-14-JUN-04

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.540	1.00	0.540	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Dibromochloromethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.147	1	J
Chloromethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.125	1.00	0.125	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes (total)	0.250	1.00	0.250	1	U

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406242 Run Date: 06/16/2004 Sample ID: WG168170-01
Instrument ID: HPMS6 Run Time: 08:28 Prep Method: 5030B
File ID: 6M44424 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG168170 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS6-14-JUN-04

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	104	86 - 118	PASS
1,2-Dichloroethane-d4	101	80 - 120	PASS
Toluene-d8	102	88 - 110	PASS
4-Bromofluorobenzene	99.0	86 - 115	PASS

* Analyte detected above RDL
ND Analyte Not detected at or above reporting limit

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406242 Run Date: 06/17/2004 Sample ID: WG168271-01
Instrument ID: HPMS6 Run Time: 08:54 Prep Method: 5030B
File ID: 6M44448 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG168271 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS6-14-JUN-04

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.540	1.00	0.540	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Dibromochloromethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.125	1.00	0.125	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes (total)	0.250	1.00	0.250	1	U

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406242 Run Date: 06/17/2004 Sample ID: WG168271-01
Instrument ID: HPMS6 Run Time: 08:54 Prep Method: 5030B
File ID: 6M44448 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG168271 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS6-14-JUN-04

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	99.4	86 - 118	PASS
1,2-Dichloroethane-d4	89.2	80 - 120	PASS
Toluene-d8	107	88 - 110	PASS
4-Bromofluorobenzene	102	86 - 115	PASS

* Analyte detected above RDL
ND Analyte Not detected at or above reporting limit

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/07/2004 13:32

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number:L0406242 Analyst:CMS Prep Method:5030B
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG168170 Units:ug/L
Sample ID:WG168170-02 LCS File ID:6M44425 Run Date:06/16/2004 08:59
Sample ID:WG168170-03 LCS2 File ID:6M44426 Run Date:06/16/2004 09:30

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	22.2	111	20.0	21.7	108	2.47	40 - 142	63	
Benzene	20.0	21.6	108	20.0	21.3	107	1.02	80 - 121	21	
Bromochloromethane	20.0	22.3	112	20.0	21.8	109	2.23	80 - 124	20	
Bromodichloromethane	20.0	25.4	127	20.0	25.9	129	1.96	80 - 131	25	
Bromoform	20.0	19.0	94.8	20.0	19.6	98.0	3.32	74 - 130	35	
Bromomethane	20.0	21.4	107	20.0	21.2	106	.926	61 - 151	56	
2-Butanone	20.0	22.6	113	20.0	22.8	114	.54	58 - 149	56	
Carbon disulfide	20.0	22.3	111	20.0	21.7	108	2.83	58 - 138	49	
Carbon tetrachloride	20.0	20.5	102	20.0	19.9	99.6	2.7	80 - 137	32	
Chlorobenzene	20.0	21.1	106	20.0	21.2	106	.398	80 - 120	16	
Dibromochloromethane	20.0	19.4	96.8	20.0	19.8	99.1	2.34	80 - 127	26	
Chloroethane	20.0	22.5	113	20.0	22.9	114	1.53	77 - 133	34	
Chloroform	20.0	22.1	111	20.0	21.9	110	.911	80 - 125	23	
Chloromethane	20.0	21.8	109	20.0	21.4	107	1.93	60 - 130	43	
1,2-Dichlorobenzene	20.0	19.9	99.7	20.0	20.2	101	1.11	80 - 125	15	
1,3-Dichlorobenzene	20.0	20.7	103	20.0	20.6	103	.507	80 - 120	16	
1,4-Dichlorobenzene	20.0	19.9	99.4	20.0	20.0	99.8	.401	80 - 120	15	
1,1-Dichloroethane	20.0	22.6	113	20.0	22.3	111	1.48	80 - 125	21	
1,2-Dichloroethane	20.0	23.0	115	20.0	23.0	115	.0201	80 - 129	29	
1,1-Dichloroethene	20.0	25.5	127	20.0	24.4	122	4.29	80 - 132	26	
cis-1,2-Dichloroethene	20.0	21.1	106	20.0	21.1	105	.303	80 - 121	19	
trans-1,2-Dichloroethene	20.0	23.0	115	20.0	22.2	111	3.38	80 - 127	24	
1,2-Dichloropropane	20.0	21.5	108	20.0	21.4	107	.369	80 - 120	20	
cis-1,3-Dichloropropene	20.0	23.0	115	20.0	23.0	115	.194	80 - 132	26	
trans-1,3-Dichloropropene	20.0	25.6	128	20.0	25.8	129	1.09	80 - 130	25	
Ethylbenzene	20.0	21.5	108	20.0	21.3	107	.84	80 - 122	20	
2-Hexanone	20.0	22.3	111	20.0	22.8	114	2.51	56 - 136	49	
4-Methyl-2-pentanone	20.0	20.2	101	20.0	20.8	104	2.81	64 - 140	47	
Methylene chloride	20.0	21.6	108	20.0	21.9	109	1.13	80 - 123	22	
Styrene	20.0	21.8	109	20.0	21.7	109	.155	80 - 123	20	
1,1,2,2-Tetrachloroethane	20.0	20.6	103	20.0	21.3	106	3.21	79 - 125	28	
Tetrachloroethene	20.0	21.6	108	20.0	21.5	108	.169	80 - 124	22	
Toluene	20.0	21.4	107	20.0	21.2	106	1.1	80 - 124	22	
1,1,1-Trichloroethane	20.0	24.6	123	20.0	23.6	118	4.3	80 - 134	28	
1,1,2-Trichloroethane	20.0	21.2	106	20.0	21.4	107	.861	80 - 125	20	
Trichloroethene	20.0	22.6	113	20.0	22.1	110	2.24	80 - 122	21	
Vinyl chloride	20.0	24.8	124	20.0	23.4	117	5.83	65 - 140	46	
Xylenes (total)	60.0	63.9	107	60.0	63.3	105	.986	80 - 121	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/07/2004 13:36

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406242 Analyst: CMS Prep Method: 5030B
Instrument ID: HPMS6 Matrix: Water Method: 8260B
Workgroup (AAB#): WG168170 Units: ug/L
Sample ID: WG168170-02 LCS File ID: 6M44425 Run Date: 06/16/2004 08:59
Sample ID: WG168170-03 LCS2 File ID: 6M44426 Run Date: 06/16/2004 09:30

Surogates	LCS % Recovery	LCS2 % Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	106	107	86 - 118	PASS
1,2-Dichloroethane-d4	104	105	80 - 120	PASS
Toluene-d8	103	104	88 - 110	PASS
4-Bromofluorobenzene	97.6	98.6	86 - 115	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number:L0406242 Analyst:CMS Prep Method:5030B
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG168271 Units:ug/L
Sample ID:WG168271-02 LCS File ID:6M44449 Run Date:06/17/2004 09:25
Sample ID:WG168271-03 LCS2 File ID:6M44450 Run Date:06/17/2004 09:56

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	18.0	90.0	20.0	17.1	85.3	5.35	40 - 142	63	
Benzene	20.0	20.6	103	20.0	21.8	109	5.65	80 - 121	21	
Bromochloromethane	20.0	19.0	94.8	20.0	19.3	96.7	1.92	80 - 124	20	
Bromodichloromethane	20.0	23.4	117	20.0	24.0	120	2.57	80 - 131	25	
Bromoform	20.0	15.8	79.2	20.0	16.0	80.2	1.31	74 - 130	35	
Bromomethane	20.0	22.0	110	20.0	24.1	120	9.24	61 - 151	56	
2-Butanone	20.0	18.0	90.2	20.0	18.0	90.0	.176	58 - 149	56	
Carbon disulfide	20.0	22.7	113	20.0	24.2	121	6.4	58 - 138	49	
Carbon tetrachloride	20.0	20.1	101	20.0	21.7	109	7.82	80 - 137	32	
Chlorobenzene	20.0	19.9	99.6	20.0	20.6	103	3.59	80 - 120	16	
Dibromochloromethane	20.0	16.8	84.1	20.0	17.0	85.2	1.35	80 - 127	26	
Chloroethane	20.0	23.5	118	20.0	24.9	124	5.51	77 - 133	34	
Chloroform	20.0	20.8	104	20.0	21.7	108	4.12	80 - 125	23	
Chloromethane	20.0	22.1	110	20.0	23.3	116	5.41	60 - 130	43	
1,2-Dichlorobenzene	20.0	19.2	96.2	20.0	19.7	98.3	2.22	80 - 125	15	
1,3-Dichlorobenzene	20.0	20.0	100	20.0	20.2	101	.815	80 - 120	16	
1,4-Dichlorobenzene	20.0	19.0	94.9	20.0	19.5	97.3	2.52	80 - 120	15	
1,1-Dichloroethane	20.0	21.7	108	20.0	23.0	115	6.14	80 - 125	21	
1,2-Dichloroethane	20.0	19.8	98.9	20.0	20.3	101	2.43	80 - 129	29	
1,1-Dichloroethene	20.0	24.8	124	20.0	26.6	133	7.19	80 - 132	26	*
cis-1,2-Dichloroethene	20.0	19.7	98.5	20.0	20.8	104	5.22	80 - 121	19	
trans-1,2-Dichloroethene	20.0	21.5	107	20.0	22.9	114	6.16	80 - 127	24	
1,2-Dichloropropane	20.0	19.8	98.8	20.0	20.3	102	2.85	80 - 120	20	
cis-1,3-Dichloropropene	20.0	20.2	101	20.0	20.9	105	3.66	80 - 132	26	
trans-1,3-Dichloropropene	20.0	21.7	109	20.0	22.2	111	2.06	80 - 130	25	
Ethylbenzene	20.0	21.0	105	20.0	21.8	109	3.92	80 - 122	20	
2-Hexanone	20.0	18.0	89.9	20.0	17.5	87.7	2.5	56 - 136	49	
4-Methyl-2-pentanone	20.0	16.5	82.6	20.0	16.1	80.6	2.42	64 - 140	47	
Methylene chloride	20.0	19.8	99.2	20.0	20.5	102	3.13	80 - 123	22	
Styrene	20.0	19.7	98.7	20.0	20.6	103	4.12	80 - 123	20	
1,1,2,2-Tetrachloroethane	20.0	17.7	88.7	20.0	17.3	86.5	2.46	79 - 125	28	
Tetrachloroethene	20.0	21.8	109	20.0	22.6	113	3.74	80 - 124	22	
Toluene	20.0	20.6	103	20.0	21.8	109	5.64	80 - 124	22	
1,1,1-Trichloroethane	20.0	23.5	117	20.0	25.0	125	6.16	80 - 134	28	
1,1,2-Trichloroethane	20.0	16.9	84.6	20.0	17.0	85.1	.591	80 - 125	20	
Trichloroethene	20.0	21.3	107	20.0	22.9	115	7.43	80 - 122	21	
Vinyl chloride	20.0	26.2	131	20.0	26.3	132	.668	65 - 140	46	
Xylenes (total)	60.0	60.4	101	60.0	63.6	106	5.17	80 - 121	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/07/2004 13:36

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406242 Analyst: CMS Prep Method: 5030B
Instrument ID: HPMS6 Matrix: Water Method: 8260B
Workgroup (AAB#): WG168271 Units: ug/L
Sample ID: WG168271-02 LCS File ID: 6M44449 Run Date: 06/17/2004 09:25
Sample ID: WG168271-03 LCS2 File ID: 6M44450 Run Date: 06/17/2004 09:56

Surogates	LCS % Recovery	LCS2 % Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	102	103	86 - 118	PASS
1,2-Dichloroethane-d4	93.3	91.7	80 - 120	PASS
Toluene-d8	106	105	88 - 110	PASS
4-Bromofluorobenzene	99.1	99.4	86 - 115	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON ENVIRONMENTAL SERVICES
MS/MSD REPORT

Loginnum:L0406242 Cal ID:HPMS6-14-JUN-04 Worknum:WG168170
Instrument ID:HPMS6 Contract #: Prep Method:5030B
Parent ID:L0406242-02 File ID:6M44439 Dil:1 Method:8260B
Sample ID:L0406242-04 MS File ID:6M44440 Dil:1 Matrix:Water
Sample ID:L0406242-05 MSD File ID:6M44441 Dil:1 Units:ug/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Acetone	U	20.0	19.5	97.7	20.0	17.8	89.1	9.19	40 - 142	63	
Benzene	U	20.0	21.1	105	20.0	20.5	102	2.80	80 - 121	21	
Bromochloromethane	U	20.0	20.7	103	20.0	20.4	102	1.55	80 - 124	20	
Bromodichloromethane	U	20.0	25.0	125	20.0	24.5	123	1.92	80 - 131	25	
Bromoform	U	20.0	17.7	88.4	20.0	17.0	85.2	3.66	74 - 130	35	
Bromomethane	U	20.0	21.3	107	20.0	21.7	108	1.45	61 - 151	56	
2-Butanone	U	20.0	20.1	101	20.0	18.9	94.5	6.33	58 - 149	56	
Carbon disulfide	U	20.0	20.3	101	20.0	20.8	104	2.73	58 - 138	49	
Carbon tetrachloride	U	20.0	18.6	93.1	20.0	18.1	90.7	2.64	80 - 137	32	
Chlorobenzene	U	20.0	21.0	105	20.0	20.7	103	1.52	80 - 120	16	
Dibromochloromethane	U	20.0	18.5	92.4	20.0	18.2	90.9	1.65	80 - 127	26	
Chloroethane	U	20.0	22.7	114	20.0	22.1	111	2.60	77 - 133	34	
Chloroform	0.258	20.0	22.4	111	20.0	21.6	107	3.71	80 - 125	23	
Chloromethane	U	20.0	22.2	111	20.0	21.3	107	4.00	60 - 130	43	
1,2-Dichlorobenzene	U	20.0	19.4	97.2	20.0	19.5	97.7	0.468	80 - 125	15	
1,3-Dichlorobenzene	U	20.0	20.4	102	20.0	20.5	102	0.212	80 - 120	16	
1,4-Dichlorobenzene	U	20.0	19.5	97.6	20.0	19.7	98.7	1.10	80 - 120	15	
1,1-Dichloroethane	U	20.0	22.7	114	20.0	22.3	111	2.06	80 - 125	21	
1,2-Dichloroethane	U	20.0	22.7	113	20.0	21.6	108	4.83	80 - 129	29	
1,1-Dichloroethene	U	20.0	23.3	117	20.0	22.6	113	2.97	80 - 132	26	
cis-1,2-Dichloroethene	U	20.0	20.9	105	20.0	20.7	104	0.885	80 - 121	19	
trans-1,2-Dichloroethene	U	20.0	21.7	109	20.0	21.3	106	2.06	80 - 127	24	
1,2-Dichloropropane	U	20.0	20.8	104	20.0	20.3	101	2.70	80 - 120	20	
cis-1,3-Dichloropropene	U	20.0	21.6	108	20.0	20.9	105	3.22	80 - 132	26	
trans-1,3-Dichloropropene	U	20.0	24.3	121	20.0	23.6	118	2.71	80 - 130	25	
Ethylbenzene	U	20.0	20.8	104	20.0	20.9	105	0.479	80 - 122	20	
2-Hexanone	U	20.0	20.4	102	20.0	18.7	93.7	8.22	56 - 136	49	
4-Methyl-2-pentanone	U	20.0	17.8	89.2	20.0	16.1	80.4	10.4	64 - 140	47	
Methylene chloride	U	20.0	20.9	105	20.0	20.6	103	1.67	80 - 123	22	
Styrene	U	20.0	21.1	106	20.0	20.8	104	1.76	80 - 123	20	
1,1,2,2-Tetrachloroethane	U	20.0	19.1	95.7	20.0	19.5	97.3	1.71	79 - 125	28	
Tetrachloroethene	U	20.0	20.4	102	20.0	20.4	102	0.197	80 - 124	22	
Toluene	U	20.0	21.0	105	20.0	20.7	104	1.43	80 - 124	22	
1,1,1-Trichloroethane	U	20.0	22.9	115	20.0	22.4	112	2.14	80 - 134	28	
1,1,2-Trichloroethane	U	20.0	19.6	97.8	20.0	19.2	96.1	1.71	80 - 125	20	
Trichloroethene	U	20.0	21.4	107	20.0	20.7	103	3.29	80 - 122	21	
Vinyl chloride	U	20.0	25.7	129	20.0	22.7	113	12.5	65 - 140	46	
Xylenes (total)	U	60.0	62.0	103	60.0	61.2	102	1.24	80 - 121	20	

KEMRON FORMS - Modified 05/12/2004
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KEMRON ENVIRONMENTAL SERVICES
SURROGATE STANDARDS

Login Number: L0406242
Instrument Id: HPMS6
Workgroup (AAB#): WG168170

Method: 8260
CAL ID: HPMS6-14-JUN-04
Matrix: WATER

Sample Number	Dilution	Tag	1	2	3	4
L0406242-02	1.00	01	104	107	102	102
L0406242-03	1.00	01	96.0	104	105	105
L0406242-04	1.00	01	103	109	100	105
L0406242-05	1.00	01	97.6	103	101	105
WG168170-01	1.00	01	101	104	99.0	102
WG168170-02	1.00	01	104	106	97.6	103
WG168170-03	1.00	01	105	107	98.6	104

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out

ND = surrogate not detected

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KEMRON ENVIRONMENTAL SERVICES
SURROGATE STANDARDS

Login Number:L0406242
Instrument Id:HPMS6
Workgroup (AAB#):WG168271

Method:8260
CAL ID: HPMS6-14-JUN-04
Matrix:WATER

Sample Number	Dilution	Tag	1	2	3	4
L0406242-03	10.0	DL01	90.2	98.3	102	107
WG168271-01	1.00	01	89.2	99.4	102	107
WG168271-02	1.00	01	93.3	102	99.1	106
WG168271-03	1.00	01	91.7	103	99.4	105

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

KEMRON FORMS - Modified 02/25/2004
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Inorganic QC Summary

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6010B

AAB#: WG168124

Login Number: L0406242

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-10A	06/10/04	06/11/04	06/14/04	180	3.71	06/15/04	180	1.22	
P-4	06/10/04	06/11/04	06/14/04	180	3.91	06/15/04	180	1.21	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406242
Work Group: WG168124
Blank File ID: PE.061504.114910
Blank Sample ID: WG168005-02
Date Analyzed: 06/15/04
Instrument ID: PE-ICP
Time Analyzed: 11:49
Method: 6010B
Analyst: KHR

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG168005-03	PE.061504.115417	06/15/04 11:54	01
P-4	L0406242-02	PE.061504.131129	06/15/04 13:11	01
P-10A	L0406242-03	PE.061504.131641	06/15/04 13:16	01

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406242 Run Date: 06/15/2004 Sample ID: WG168005-02
Instrument ID: PE-ICP Run Time: 11:49 Prep Method: 3005A
File ID: PE.061504.114910 Analyst: KHR Method: 6010B
Workgroup (AAB#): WG168124 Matrix: Water Units: mg/L
Contract #: Cal ID: PE-ICP-15-JUN-04

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Calcium	0.100	0.200	0.100	1	U
Iron	0.0200	0.0400	0.0214	1	J
Potassium	0.250	1.00	0.250	1	U
Magnesium	0.250	0.500	0.250	1	U
Manganese	0.00100	0.0100	0.00100	1	U
Sodium	0.250	0.500	0.250	1	U

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406242 Run Date: 06/15/2004 Sample ID: WG168005-03
Instrument ID: PE-ICP Run Time: 11:54 Prep Method: 3005A
File ID: PE.061504.115417 Analyst: KHR Method: 6010B
Workgroup (AAB#): WG168124 Matrix: Water Units: mg/L
Contract #: Cal ID: PE-ICP-15-JUN-2004 08:47

Analytes	Expected	Found	% Rec	LCS Limits	Q
Calcium	5.00	4.75	95.0	80 - 120	
Iron	2.00	1.99	99.5	80 - 120	
Potassium	25.0	25.1	101	80 - 120	
Magnesium	5.00	4.97	99.4	80 - 120	
Manganese	0.250	0.262	105	80 - 120	
Sodium	25.0	24.2	96.7	80 - 120	

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 375.4

AAB#: WG168401

Login Number: L0406242

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-10A	06/10/04	06/11/04	06/18/04	28	7.70	06/18/04	28	7.70	
P-4	06/10/04	06/11/04	06/18/04	28	7.90	06/18/04	28	7.90	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406242 Run Date: 06/18/2004 Sample ID: WG168401-03
Instrument ID: SMARTCHEM Run Time: 07:45 Prep Method: 375.4
File ID: EM04061814074415 Analyst: DIH Method: 375.4
Workgroup (AAB#): WG168401 Matrix: Water Units: mg/L
Contract #: Cal ID: SMARTC-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Sulfate	2.50	5.00	4.00	1	J

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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406242 Analyst: DIH Prep Method: 375.4
Instrument ID: SMARTCHEM Matrix: Water Method: 375.4
Workgroup (AAB#): WG168401 Units: mg/L
Sample ID: WG168401-04 LCS File ID: EM04061814074416 Run Date: 06/18/2004 07:45
Sample ID: WG168401-05 LCS2 File ID: EM04061814074417 Run Date: 06/18/2004 07:45

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Sulfate	20.0	19.4	96.8	20.0	19.6	98.2	1.38	85 - 115	10	

* FAILS %REC LIMIT

FAILS RPD LIMIT

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Version 1.3 PDF File ID:
Report generated 06/20/2004 07:01

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

AAB#: WG167971

Analytical Method: 325.2

Login Number: L0406242

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-10A	06/10/04	06/11/04	06/11/04	28	0.909	06/11/04	28	0.909	
P-4	06/10/04	06/11/04	06/11/04	28	1.11	06/11/04	28	1.11	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406242 Run Date: 06/11/2004 Sample ID: WG167971-02
Instrument ID: SMARTCHEM Run Time: 12:49 Prep Method: 325.2
File ID: EM04061116342618 Analyst: DIH Method: 325.2
Workgroup (AAB#): WG167971 Matrix: Water Units: mg/L
Contract #: Cal ID: SMARTC-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	1.00	2.00	1.00	1	U

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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406242 Analyst: DIH Prep Method: 325.2
Instrument ID: SMARTCHEM Matrix: Water Method: 325.2
Workgroup (AAB#): WG167971 Units: mg/L
Sample ID: WG167971-03 LCS File ID: EM04061116342619 Run Date: 06/11/2004 12:49
Sample ID: WG167971-04 LCS2 File ID: EM04061116342620 Run Date: 06/11/2004 12:49

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Chloride	50.0	48.4	96.8	50.0	48.8	97.6	.823	90 - 110	10	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 415.1 AAB#: WG168146

Login Number: L0406242

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-10A	06/10/04	06/11/04	06/14/04	28	3.78	06/14/04	28	3.78	
P-4	06/10/04	06/11/04	06/14/04	28	3.98	06/14/04	28	3.98	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

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Version 1.3 PDF File ID:
Report generated 06/15/2004 16:28

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406242 Run Date: 06/14/2004 Sample ID: WG168146-02
Instrument ID: TOC-VWP Run Time: 09:38 Prep Method: 415.1
File ID: WP04061515181122 Analyst: DIH Method: 415.1
Workgroup (AAB#): WG168146 Matrix: Water Units: mg/L
Contract #: Cal ID: TOC-VW-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U

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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406242 Analyst: DIH Prep Method: 415.1
Instrument ID: TOC-VWP Matrix: Water Method: 415.1
Workgroup (AAB#): WG168146 Units: mg/L
Sample ID: WG168146-03 LCS File ID: WP04061515181123 Run Date: 06/14/2004 09:38
Sample ID: WG168146-04 LCS2 File ID: WP04061515181124 Run Date: 06/14/2004 09:38

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	28.3	113	25.0	26.0	104	8.69	85 - 115	15	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 06/15/2004 16:28

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 160.1 AAB#: WG168059

Login Number: L0406242

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-10A	06/10/04	06/11/04	06/14/04	7	3.96	06/14/04	7	3.96	
P-4	06/10/04	06/11/04	06/14/04	7	4.16	06/14/04	7	4.16	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406242 Run Date: 06/14/2004 Sample ID: WG168059-02
Instrument ID: OVEN Run Time: 13:55 Prep Method: 160.1
File ID: EN.0406141355-01 Analyst: TMM Method: 160.1
Workgroup (AAB#): WG168059 Matrix: Water Units: mg/L
Contract #: Cal ID: OVEN-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Total Dissolved Solids	5.00	10.0	5.00	1	U

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Version 1.3 PDF File ID:
Report generated 06/17/2004 14:33

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406242 Analyst: TMM Prep Method: 160.1
Instrument ID: OVEN Matrix: Water Method: 160.1
Workgroup (AAB#): WG168059 Units: mg/L
Sample ID: WG168059-03 LCS File ID: EN.0406141355-02 Run Date: 06/14/2004 13:55
Sample ID: WG168059-04 LCS2 File ID: EN.0406141355-03 Run Date: 06/14/2004 13:55

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Total Dissolved Solids	500	482	96.4	500	498	99.6	3.27	80 - 120	25	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 130.2 AAB#: WG168326

Login Number: L0406242

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-10A	06/10/04	06/11/04	06/16/04	180	5.76	06/16/04	180	5.76	
P-4	06/10/04	06/11/04	06/16/04	180	5.96	06/16/04	180	5.96	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406242 Run Date: 06/16/2004 Sample ID: WG168326-03
Instrument ID: BURET Run Time: 09:10 Prep Method: 130.2
File ID: ET.0406160910-01 Analyst: DR Method: 130.2
Workgroup (AAB#): WG168326 Matrix: Water Units: mg/L
Contract #: Cal ID: BURET-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Hardness	2.50	5.00	2.50	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 06/17/2004 16:38

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406242 Run Date: 06/16/2004 Sample ID: WG168326-04
Instrument ID: BURET Run Time: 09:10 Prep Method: 130.2
File ID: ET.0406160910-02 Analyst: DR Method: 130.2
Workgroup (AAB#): WG168326 Matrix: Water Units: mg/L
Contract #: Cal ID: BURET-

Analytes	Expected	Found	% Rec	LCS Limits	Q
Hardness	100	101	101	90 - 110	

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 06/17/2004 16:38

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method:A2320B

AAB#:WG168149

Login Number:L0406242

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-10A	06/10/04	06/11/04	06/15/04	14	4.77	06/15/04	14	4.77	
P-4	06/10/04	06/11/04	06/15/04	14	4.98	06/15/04	14	4.98	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406242 Run Date: 06/15/2004 Sample ID: WG168149-02
Instrument ID: BURET Run Time: 09:35 Prep Method: A2320B
File ID: ET.0406150935-01 Analyst: DLP Method: A2320B
Workgroup (AAB#): WG168149 Matrix: Water Units: mg/L
Contract #: Cal ID: BURET-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Alkalinity, Bicarbonate	5.00	10.0	5.00	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 06/30/2004 07:12

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406242 Analyst: DLP Prep Method: A2320B
Instrument ID: BURET Matrix: Water Method: A2320B
Workgroup (AAB#): WG168149 Units: mg/L
Sample ID: WG168149-03 LCS File ID: ET.0406150935-02 Run Date: 06/15/2004 09:35
Sample ID: WG168149-04 LCS2 File ID: ET.0406150935-03 Run Date: 06/15/2004 09:35

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Alkalinity, Bicarbonate	100	98.5	98.5	100	97.5	97.5	1.02	90 - 110	10	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 06/30/2004 07:13

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 350.1 AAB#: WG168449

Login Number: L0406242

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-10A	06/10/04	06/11/04	06/17/04	28	6.82	06/17/04	28	6.82	
P-4	06/10/04	06/11/04	06/17/04	28	7.02	06/17/04	28	7.02	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406242 Run Date: 06/17/2004 Sample ID: WG168449-03
Instrument ID: TRAACS-800 Run Time: 10:41 Prep Method: 350.1
File ID: 0004061816120722 Analyst: DR Method: 350.1
Workgroup (AAB#): WG168449 Matrix: Water Units: mg/L
Contract #: Cal ID: TRAACS-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Nitrogen, Ammonia	0.0500	0.100	0.0500	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 06/20/2004 07:07

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406242 Run Date: 06/17/2004 Sample ID: WG168449-04
Instrument ID: TRAACS-800 Run Time: 10:41 Prep Method: 350.1
File ID: 0004061816120723 Analyst: DR Method: 350.1
Workgroup (AAB#): WG168449 Matrix: Water Units: mg/L
Contract #: Cal ID: TRAACS-

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrogen, Ammonia	2.00	2.05	102	70 - 125	

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 06/20/2004 07:07

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method:353.2 AAB#:WG168437

Login Number:L0406242

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-10A	06/10/04	06/11/04	06/18/04	2	7.83	06/18/04	2	7.83	*ANAL
P-4	06/10/04	06/11/04	06/18/04	2	8.03	06/18/04	2	8.03	*ANAL

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406242 Run Date: 06/18/2004 Sample ID: WG168437-02
Instrument ID: SMARTCHEM Run Time: 10:59 Prep Method: 353.2
File ID: EM04061816225520 Analyst: DIH Method: 353.2
Workgroup (AAB#): WG168437 Matrix: Water Units: mg/L
Contract #: Cal ID: SMARTC-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Nitrate	0.0250	0.0500	0.0250	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 06/20/2004 07:05

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406242 Run Date: 06/18/2004 Sample ID: WG168437-03
Instrument ID: SMARTCHEM Run Time: 10:59 Prep Method: 353.2
File ID: EM04061816225521 Analyst: DIH Method: 353.2
Workgroup (AAB#): WG168437 Matrix: Water Units: mg/L
Contract #: Cal ID: SMARTC-

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrate	1.00	1.08	108	90 - 110	

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 06/20/2004 07:05

EARTH TECH
A TETRA TECH INTERNATIONAL LTD. COMPANY

Chain of Custody and Analytical Request

Page: 1 of 1
Project Number: 76058.03
WBS Number: NA
Chain of Custody Number: 10-Jun-2004-01
LIMS Number: NA

Facility ID: (5 Characters Max) GEP01
Project Name / Site Name: RFI at Caribe General Electric Products, Patillas, Puerto Rico
Client Name: GE Industrial Systems, Inc.
Collected by: J. Stepp, J. Murphy

A. Field Sample ID (30 Characters Max)	B. LOCID (15 Characters Max)	C. Date Collected (dd-MMM-yyyy)	D. Time Collected (Military - HHMM)	E. Sample Depth (top - bottom)	F. SA Code	G. Sample Number	H. Sample Matrix	I. Sample Analysis Requested (state method requested, plus the number of containers enclosed): Total Number of Containers per Line	Temperature Blank 1 x 100 mL PI	VOCs (8260B) 2 x 40 ml GI HCl	TOC, NH3 (see Comments) 1 x 250 mL GI H2SO4	Hardness (E130.2) 1 x 250 mL PI HNO3	Alkilinity (SM 2320B) 1 x 250 mL PI	Cl, NO3, SO4 (see Comments) 1 x 500 mL PI	Ca,Fe,Mg,Mn,K,Na, (6010B) 1x500 mL PI HNO3	TDS (E160.1) 1 x 500 mL PI	J. Quality Assurance Samples: Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
1. P-5A	P-5A	09-Jun-2004	1610	0.0	N	01	WG	8		2	1	1	1	1	1	1		NO SK recd		A
2. P-5	P-5	09-Jun-2004	1755	0.0	N	01	WG	8		2	1	1	1	1	1	1				B
3. P-4	P-4	10-Jun-2004	1010	0.0	N	01	WG	8		2	1	1	1	1	1	1				M
4. P-4 MS	P-4MS	10-Jun-2004	1010	0.0	MS	01	WG	8		2	1	1	1	1	1	1		NO SK recd		A
5. P-4 MSD	P-4-MSD	10-Jun-2004	1010	0.0	SD	01	WG	8		2	1	1	1	1	1	1		V	bg 6-11-04	B
6. P-10A	P-10A	10-Jun-2004	1500	0.0	N	01	WG	8		2	1	1	1	1	1	1				B
7.				-																
8.				-																
9.				-																
10.				-																
11.				-																
12.				-																
13.				-																
15.				-																
16.				-																
17. TEMPERATURE BLANK				0-0	N	01	W		1											

Comments: 1) TOC by method E415.1 and ammonia by method E350.1. 2) Chloride by method E325.2, Nitrate by method E353.2, and Sulfate by method E375.4,
3) Total Metals: Total Calcium, Total Iron, Total Magnesium, Total Manganese, Total Potassium, and Total Sodium.

Chain of Custody Number = date collected + custody form sequence number for that day (e.g. 09-02-1999-01, then -02, etc., for additional chains for that day.)

F. Sample Type (SA) Codes:
N = Normal
FD = Field Duplicate (-a)
FR = Field Replicate (-b)
TB = Trip Blank (-c)
EB = Equipment Blank (-d)
MS = Matrix Spike
SD = Matrix Spike Duplicate

G. Sample Number: Enter 01, unless on a single day you collect either:
a) multiple samples from the same location, or
b) multiple QA samples of a single type.
In that case, enter 02 for the second sample, 03 for the third, etc.

H. Matrix Codes:
GS = Soil Gas
WG = Ground Water
WS = Surface Water
WQ = Water Quality Blank (trip, equip., ambient)
SO = Soil
SS = Surface Soil
SE = Sediment
SL = Sludge
SQ = Soil Quality Blank

J. Quality Assurance Lot Control Numbers are produced by adding the sample number (Column G) to the date collected (Column C), without spaces or dashes. (e.g. Enter 10050401 in the Equipment Blank Lot Control column for every sample that was associated with the first equipment blank collected on May 10, 2004.)

Custody Transfers Prior to Receipt by Laboratory

	Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1.	Jeffery Stepp	10-Jun-2004	1610	FED EX	10-Jun-2004	1610
2.				Brenda Cuevas	6-11-04	1006
3.						

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Yes ____ No ____ Shipped: Yes ____ No ____
Analytical Lab Name: ____ Method of Shipment: ____
Lab Location: ____ Airbill #: ____
Lab Recipient: ____ Date and Time: ____

etc dated
SK intact
Cooler temp
5
bg

Resend 6-9-04; 4:48PM; 2348973 # 2/3

EARTH TECH
A TETRA TECH INTERNATIONAL LTD. COMPANY

Chain of Custody and Analytical Request

Page: 1 of 1
Project Number: 76058.03
WBS Number: NA
Chain of Custody Number: 10-Jun-2004-01
LIMS Number: NA

Facility ID: (5 Characters Max) GEP01
Project Name / Site Name: RFI at Caribe General Electric Products, Patillas, Puerto Rico
Client Name: GE Industrial Systems, Inc.
Collected by: J. Stepp, J. Murphy

A. Field Sample ID (30 Characters Max)	B. LOCID (15 Characters Max)	C. Date Collected (dd-MMM-yyyy)	D. Time Collected (Military - HHMM)	E. Sample Depth (top - bottom)	F. SA Code	G. Sample Number	H. Sample Matrix	I. Sample Analysis Requested (state method requested, plus the number of containers enclosed): Total Number of Containers per Line	Temperature Blank 1 x 100 mL PI	VOCs (8260B) 2 x 40 ml GI HCl	TOC, NH3 (see Comments) 1 x 250 mL GI H2SO4	Hardness (E130.2) 1 x 250 mL PI HNO3	Alkalinity (SM 2320B) 1 x 250 mL PI	Cl, NO3, SO4 (see Comments) 1 x 500 mL PI	Ca,Fe,Mg,Mn,K,Na (6010B) 1x500 mL PI HNO3	TDS (E160.1) 1 x 500 mL PI	J. Quality Assurance Samples: Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
1. P-5A	P-5A	09-Jun-2004	1610	0.0	N	01	WG	8		2	1	1	1	1	1	1				A
2. P-5	P-5	09-Jun-2004	1755	0.0	N	01	WG	8		2	1	1	1	1	1	1				B
3. P-4	P-4	10-Jun-2004	1010	0.0	N	01	WG	8		2	1	1	1	1	1	1				M
4. P-4-MS	P-4MS	10-Jun-2004	1010	0.0	MS	01	WG	8		2	1	1	1	1	1	1				A
5. P-4-MSD	P-4-MSD	10-Jun-2004	1010	0.0	SD	01	WG	8		2	1	1	1	1	1	1				B
6. P-10A	P-10A	10-Jun-2004	1500	0.0	N	01	WG	8		2	1	1	1	1	1	1	609	6/12/04	609	B
7.				-																
8.				-																
9.				-																
10.				-																
11.				-																
12.				-																
13.				-																
15.				-																
16.				-																
17. TEMPERATURE BLANK				0 - 0	N	01	W		1											

609 6/12/04 609
P4 VOA only
MS/MSD per Client/CK
609 6-12-04

Comments: 1) TOC by method E415.1 and ammonia by method E350.1. 2) Chloride by method E325.2, Nitrate by method E353.2, and Sulfate by method E375.4,
3) Total Metals: Total Calcium, Total Iron, Total Magnesium, Total Manganese, Total Potassium, and Total Sodium.

Chain of Custody Number = date collected + custody form sequence number for that day (e.g. 09-02-1999-01, then -02, etc., for additional chains for that day.)

F. Sample Type (SA) Codes:
N = Normal
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TB = Trip Blank (-c)
EB = Equipment Blank (-d)
MS = Matrix Spike
SD = Matrix Spike Duplicate

G. Sample Number: Enter 01, unless on a single day you collect either:
a) multiple samples from the same location, or
b) multiple QA samples of a single type.
In that case, enter 02 for the second sample, 03 for the third, etc.

H. Matrix Codes:
GS = Soil Gas
WG = Ground Water
WS = Surface Water
WQ = Water Quality Blank (trip, equip., ambient)
SO = Soil
SS = Surface Soil
SE = Sediment
SL = Sludge
SQ = Soil Quality Blank

J. Quality Assurance Lot Control Numbers are produced by adding the sample number (Column G) to the date collected (Column C), without spaces or dashes, (e.g. Enter 10050401 in the Equipment Blank Lot Control column for every sample that was associated with the first equipment blank collected on May 10, 2004.)

Custody Transfers Prior to Receipt by Laboratory

	Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1.	Jeffrey Stepp	10-Jun-2004	1610	FED EX	10-Jun-2004	1610
2.				Burda Gregory	6-12-04	0923
3.						

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Yes ____ No ____ Shipped: Yes ____ No ____
Analytical Lab Name: ____ Method of Shipment: ____
Lab Location: ____ Airbill #: ____
Lab Recipient: ____ Date and Time: ____

c/c dated
SD intact
Cooler temp 3
609

Resend 6-9-04; 4:48PM; ;2348973 # 2/ 3

KEMRON Internal Laboratory Chain of Custody

Work Order: L040624-2 **Client:** GE-PR **# of Samples:** 3,4-5 (no 01) Cancelled BLG 4-11-04 **Due Date:** _____ **Page:** _____

Sample #	Analysis	Reason	Removed By ADT	Removed From	Moved To	Reliq. by	Ret'd By ADT	Ret'd To	Rec'd By	Reason
1-3	CL	test	dwh 6/11/1100	leq-in	wet	BLG	dwh 6/18/1715	A-2	CHD	A2
1-3	Met	DIG	BLG 6/14/04 0655	W-1	met	CES	DLC 6/14/04 1650	A2	BLG	A2
1-2	TOC	test	dwh 6/14/0735	W-1	wet	CHD	DLP 06-17-04	A-2	BLG	A2
2,3	TDS	test	tmm 6/14/04 910	W-1	wet	BLG	tmm 6/17/04 TD50	A-2	CHD	A-2
2-5	8260	analysis	GS 6/14/04 1325	VI	out	CHD	GMS 6-30-04 @1445	A2	BLG	A2
2,3	Alk TI	And	DLP 06-15-04 830	W-1	wet	BLG	DLP 06-16-04 830	A-2	CHD	A-2
2,3	hard	anal	DR 6/16/04 @0830	W-1	wet	CHD	DR 6/23/04 @0810	A-2	CHD	A-2

SAMPLE RECEIPT FORM

KEMRON ENVIRONMENTAL SERVICES
156 STARLITE DRIVE
MARIETTA, OH
45750
(740) 373-4071

Date: 6-11-04 Client: GE-ETech 1004

Shipped By: ( ) Fed-Ex ( ) UPS ( )Airborne ( ) KEMRON ( ) Client ( ) Other

Opened By: BLG

Logged By: BLG Login #: L04 06242

IR Temp Gun: ( ) D (✓) F

COOLER INFORMATION

Number	Cooler ID	Temp °C	Airbill#	COC#	Other
1	KL1206	5	832729644891		
2					
3					
4					
5					
6					

Were all coolers sealed?	(Y)	N	N/A
Were custody seals used on all coolers?	(Y)	N	N/A
Were custody seals intact?	(Y)	N	N/A
Was visible ice present?	(Y)	N	N/A
Were all coolers in the temperature range of 2-6C? (>6C*)	(Y)	N	N/A
Were the samples frozen?*	Y	(N)	N/A
Were COC papers provided?	(Y)	N	N/A
Were all sample containers intact?*	(Y)	N	N/A
Were all sample labels intact?	(Y)	N	N/A
Were all sample labels legible?*	(Y)	N	N/A
Did all sample labels match the COC?*	(Y)	N	N/A
Was the label information complete?*	(Y)	N	N/A
Were the correct containers used?*	(Y)	N	N/A
Were the correct preservatives added to water samples?*	(Y)	N	N/A
Was the pH tested on preserved water samples?	(Y)	N	N/A
Were pH ranges acceptable?*	(Y)	N	N/A
Was sufficient amount of sample provided?*	(Y)	N	N/A
Were bubbles present in VOA samples?*	Y	(N)	N/A
Were COC's signed and dated?	(Y)	N	N/A
Did samples arrive before hold time expired?*	(Y)	N	N/A
Are discrepancy forms attached?	Y	N	(N/A)

**Requires a discrepancy form*

Comments:_____

CRF #1
Revised 8/22/03

SAMPLE RECEIPT FORM

KEMRON ENVIRONMENTAL SERVICES
156 STARLITE DRIVE
MARIETTA, OH
45750
(740) 373-4071

Date: 6/12/04 Client: GE-ETech (1 day late)

Shipped By: (✓) Fed-Ex ( ) UPS ( )Airborne ( ) KEMRON ( ) Client ( ) Other

Opened By: BLG

Logged By: BLG Login #: L04 06242

IR Temp Gun: (✓) D ( ) F

COOLER INFORMATION

Number	Cooler ID	Temp °C	Airbill#	COC#	Other
1	KL1491	3	832729644880		
2					
3					
4					
5					
6					

Were all coolers sealed?	(Y)	N	N/A
Were custody seals used on all coolers?	(Y)	N	N/A
Were custody seals intact?	(Y)	N	N/A
Was visible ice present?	(Y)	N	N/A
Were all coolers in the temperature range of 2-6C? (>6C*)	(Y)	N	N/A
Were the samples frozen?*	Y	(N)	N/A
Were COC papers provided?	(Y)	N	N/A
Were all sample containers intact?*	(Y)	N	N/A
Were all sample labels intact?	(Y)	N	N/A
Were all sample labels legible?*	(Y)	N	N/A
Did all sample labels match the COC?*	(Y)	N	N/A
Was the label information complete?*	(Y)	N	N/A
Were the correct containers used?*	(Y)	N	N/A
Were the correct preservatives added to water samples?*	(Y)	N	N/A
Was the pH tested on preserved water samples?	Y	N	(N/A)
Were pH ranges acceptable?*	Y	N	(N/A)
Was sufficient amount of sample provided?*	(Y)	N	N/A
Were bubbles present in VOA samples?*	Y	(N)	N/A
Were COC's signed and dated?	(Y)	N	N/A
Did samples arrive before hold time expired?*	(Y)	N	N/A
Are discrepancy forms attached?	Y	N	(N/A)

**Requires a discrepancy form*

Comments:_____

CRF #1
Revised 8/22/03

KEMRON
ENVIRONMENTAL SERVICES

156 Starlite Drive ▪ Marietta, OH 45750 ▪ Telephone (740) 373-4071 ▪ FAX (740) 373-4835

Laboratory Report Number: L0406256

Please find enclosed the analytical results for the samples you submitted to Kemron Environmental Services.

Review and compilation of your report was completed by Kemron's Sales and Service Team 2. If you have questions, comments or require further assistance please contact one of our team members at 800-373-4071. We can also be reached at the e-mail addresses listed below.

Cheryl Koelsch – Team Chemist/Data Specialist
ckoelsch@kemron-lab.com

Nina Scott – Customer Service/Invoicing Specialist
ascott@kemron-lab.com

Kathy Albertson – Team Chemist/Data Specialist
kalbertson@kemron-lab.com

Debra Elliott – Team Leader
delliott@kemron-lab.com

This report was reviewed by: _____ Date: 7/7/04

I certify that all test results meet all of the requirements of the NELAP standards and other applicable contract terms and conditions. All results for soil samples are reported on a "dry-weight" basis unless specified otherwise. Analytical results for water and wastes are reported on an "as received" basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of KEMRON Environmental Services.

Certified by: David E. Vandenberg
David E. Vandenberg
Laboratory Director

FLDOH NELAP Id: E87551

This report contains a total of 82 pages.

LABORATORY REPORT

L0406256

06/24/04 15:02

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta, Ohio 45750
(740)373-4071

For

Account Name: EARTH TECH
10 Patewood Drive
Suite 500 Building VI
Greenville, SC 29615
Attention: Juanita Edwards

Account Number: 664-831
Work ID: RFI @ CARIBE GE

Sample Summary

Client ID	Lab ID	Date Collected	Date Received
P-1A	L0406256-01	11-JUN-04	12-JUN-04
P-1A-C	L0406256-02	11-JUN-04	12-JUN-04
P-1	L0406256-03	11-JUN-04	12-JUN-04
P-7A	L0406256-04	11-JUN-04	12-JUN-04
P-7	L0406256-05	11-JUN-04	12-JUN-04

KEMRON ENVIRONMENTAL SERVICES
REPORT NARRATIVE

L0406256

SHIPMENT CONDITIONS:

The chain of custody was received sealed in a cooler. Chain of custody number is 11-06-2004-01.

SAMPLE MANAGEMENT:

The samples were received intact. Cooler temperature was 1 degrees C.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

REVIEWED: _____ DATE: 6/15/04

REPORT NARRATIVE
METALS

KEMRON Login No: L0406256

METHOD

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.
Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial calibrations: All acceptance criteria were met.
Alternate Source Standards: All acceptance criteria were met.
Continuing Calibration : All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.
Laboratory Control Sample: All acceptance criteria were met.
Serial Dilution/Post Digestion Spike: WG168298(6010) - All acceptance criteria were met.

SAMPLES

All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analyst:KHR REVIEWED: Maren Beery DATE: 06/25/04

Rev. 6/00

REPORT NARRATIVE
GENERAL CHEMISTRY

KEMRON Login No: L0406256

METHOD

Analysis: See report for method reference.

HOLDING TIMES

Sample Preparation: All holding times were met.
Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.
Laboratory Control Sample: All acceptance criteria were met
Duplicates: All acceptance criteria were met
Matrix Spikes: All acceptance criteria were met.

SAMPLES

Nitrate

Nitrate is analyzed by subtracting the nitrite result from the nitrate-nitrite result. The nitrite was analyzed within the 48 hour hold time. Nitrate-nitrite has a 28 day hold, so the analysis was performed within hold.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analyst: dih REVIEWED: dih DATE: 6/30/04

Rev. 6/00

Report Number: **L0406256**
Report Date : **June 24, 2004**

Sample Number: **L0406256-01** | Prep Method: **160.1** | Instrument: **OVEN**
Client ID: **P-1A** | Analytical Method: **160.1** | Prep Date: **06/14/2004 13:55**
Matrix: **Water** | Analyst: **TMM** | Cal Date:
Workgroup Number: **WG168059** | Dilution: **1** | Run Date: **06/14/2004 13:55**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **EN.0406141355-13**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		294		20.0	10.0

Sample Number: **L0406256-01** | Prep Method: **130.2** | Instrument: **BURET**
Client ID: **P-1A** | Analytical Method: **130.2** | Prep Date: **06/16/2004 09:10**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG168326** | Dilution: **1** | Run Date: **06/16/2004 09:10**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **ET.0406160910-06**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		142		10.0	5.00

Sample Number: **L0406256-01** | Prep Method: **A2320B** | Instrument: **BURET**
Client ID: **P-1A** | Analytical Method: **A2320B** | Prep Date: **06/15/2004 09:35**
Matrix: **Water** | Analyst: **DLP** | Cal Date:
Workgroup Number: **WG168149** | Dilution: **1** | Run Date: **06/15/2004 09:35**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **ET.0406150935-06**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		151		10.0	5.00

Sample Number: **L0406256-01** | Prep Method: **325.2** | Instrument: **SMARTCHEM**
Client ID: **P-1A** | Analytical Method: **325.2** | Prep Date: **06/17/2004 14:38**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG168333** | Dilution: **1** | Run Date: **06/17/2004 14:38**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **EM04061807550804**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	16887-00-6	23.2		2.00	1.00

Report Number: **L0406256**
Report Date : **June 24, 2004**

Sample Number:	L0406256-01	Prep Method:	375.4	Instrument:	SMARTCHEM
Client ID:	P-1A	Analytical Method:	375.4	Prep Date:	06/18/2004 07:45
Matrix:	Water	Analyst:	DIH	Cal Date:	
Workgroup Number:	WG168401	Dilution:	2	Run Date:	06/18/2004 07:45
Collect Date:	11-JUN-04	Units:	mg/L	File ID:	EM04061814074404

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	14808-79-8	44.2		10.0	5.00

Sample Number:	L0406256-01	Prep Method:	350.1	Instrument:	TRAACS-800
Client ID:	P-1A	Analytical Method:	350.1	Prep Date:	06/17/2004 10:41
Matrix:	Water	Analyst:	DR	Cal Date:	
Workgroup Number:	WG168449	Dilution:	1	Run Date:	06/17/2004 10:41
Collect Date:	11-JUN-04	Units:	mg/L	File ID:	0004061816120711

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7		U	0.100	0.0500

U This analyte was not detected in the sample.

Sample Number:	L0406256-01	Prep Method:	353.2	Instrument:	SMARTCHEM
Client ID:	P-1A	Analytical Method:	353.2	Prep Date:	06/18/2004 10:59
Matrix:	Water	Analyst:	DIH	Cal Date:	
Workgroup Number:	WG168437	Dilution:	1	Run Date:	06/18/2004 10:59
Collect Date:	11-JUN-04	Units:	mg/L	File ID:	EM04061816225515

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	14797-55-8	2.99		0.0500	0.0250

Sample Number:	L0406256-01	Prep Method:	415.1	Instrument:	TOC-VWP
Client ID:	P-1A	Analytical Method:	415.1	Prep Date:	06/14/2004 09:38
Matrix:	Water	Analyst:	DIH	Cal Date:	
Workgroup Number:	WG168146	Dilution:	1	Run Date:	06/14/2004 09:38
Collect Date:	11-JUN-04	Units:	mg/L	File ID:	WP04061515181117

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		4.41		1.00	0.500

Report Number: **L0406256**
Report Date : **June 24, 2004**

Sample Number: **L0406256-01** | Prep Method: **3005A** | Instrument: **PE-ICP**
Client ID: **P-1A** | Analytical Method: **6010B** | Prep Date: **06/16/2004 09:30**
Matrix: **Water** | Analyst: **KHR** | Cal Date: **06/17/2004 09:19**
Workgroup Number: **WG168298** | Dilution: **1** | Run Date: **06/17/2004 15:15**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **PE.061704.151517**
Sample Tag: **01**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	29.1		0.200	0.100
Iron, Total	7439-89-6	0.555		0.0400	0.0200
Potassium, Total	7440-09-7	0.389	J	1.00	0.250
Magnesium, Total	7439-95-4	18.9		0.500	0.250
Manganese, Total	7439-96-5	0.0227		0.0100	0.00100
Sodium, Total	7440-23-5	40.9		0.500	0.250

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: **L0406256-01** | Prep Method: **A2320B** | Instrument: **BURET**
Client ID: **P-1A** | Analytical Method: **A2320B** | Prep Date: **06/15/2004 09:35**
Matrix: **Water** | Analyst: **DLP** | Cal Date:
Workgroup Number: **WG168149** | Dilution: **1** | Run Date: **06/15/2004 09:35**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **ET.0406150935-06**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

Sample Number: **L0406256-02** | Prep Method: **5030B** | Instrument: **HPMS6**
Client ID: **P-1A-C** | Analytical Method: **8260B** | Prep Date: **06/16/2004 18:57**
Matrix: **Water** | Analyst: **CMS** | Cal Date: **06/14/2004 19:09**
Workgroup Number: **WG168170** | Dilution: **1** | Run Date: **06/16/2004 18:57**
Collect Date: **11-JUN-04** | Units: **ug/L** | File ID: **6M44443**
Sample Tag: **01**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	0.145	J,B	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250

Report Number: **L0406256**
Report Date : **June 24, 2004**

Sample Number: **L0406256-02**
Client ID: **P-1A-C**
Matrix: **Water**
Workgroup Number: **WG168170**
Collect Date: **11-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/16/2004 18:57**
Cal Date: **06/14/2004 19:09**
Run Date: **06/16/2004 18:57**
File ID: **6M44443**

Analyte	CAS. Number	Result	Qual	RL	MDL
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	101	86	118	
1,2-Dichloroethane-d4	95.9	80	120	
Toluene-d8	104	88	110	
4-Bromofluorobenzene	104	86	115	

J,B J,B
U This analyte was not detected in the sample.

Sample Number: **L0406256-03**
Client ID: **P-1**
Matrix: **Water**
Workgroup Number: **WG168059**
Collect Date: **11-JUN-04**

Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **06/14/2004 13:55**
Cal Date:
Run Date: **06/14/2004 13:55**
File ID: **EN.0406141355-14**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		294		20.0	10.0

Sample Number: **L0406256-03**
Client ID: **P-1**
Matrix: **Water**
Workgroup Number: **WG168326**
Collect Date: **11-JUN-04**

Prep Method: **130.2**
Analytical Method: **130.2**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **06/16/2004 09:10**
Cal Date:
Run Date: **06/16/2004 09:10**
File ID: **ET.0406160910-07**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		152		10.0	5.00

Report Number: **L0406256**
Report Date : **June 24, 2004**

Sample Number: **L0406256-03** | Prep Method: **A2320B** | Instrument: **BURET**
Client ID: **P-1** | Analytical Method: **A2320B** | Prep Date: **06/15/2004 09:35**
Matrix: **Water** | Analyst: **DLP** | Cal Date:
Workgroup Number: **WG168149** | Dilution: **1** | Run Date: **06/15/2004 09:35**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **ET.0406150935-07**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		148		10.0	5.00

Sample Number: **L0406256-03** | Prep Method: **325.2** | Instrument: **SMARTCHEM**
Client ID: **P-1** | Analytical Method: **325.2** | Prep Date: **06/17/2004 14:38**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG168333** | Dilution: **1** | Run Date: **06/17/2004 14:38**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **EM04061807550805**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	16887-00-6	31.3		2.00	1.00

Sample Number: **L0406256-03** | Prep Method: **375.4** | Instrument: **SMARTCHEM**
Client ID: **P-1** | Analytical Method: **375.4** | Prep Date: **06/18/2004 07:45**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG168401** | Dilution: **2** | Run Date: **06/18/2004 07:45**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **EM04061814074405**

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	14808-79-8	57.7		10.0	5.00

Sample Number: **L0406256-03** | Prep Method: **350.1** | Instrument: **TRAACS-800**
Client ID: **P-1** | Analytical Method: **350.1** | Prep Date: **06/17/2004 10:41**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG168449** | Dilution: **1** | Run Date: **06/17/2004 10:41**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **0004061816120712**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.0800	J	0.100	0.0500

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Report Number: **L0406256**
Report Date : **June 24, 2004**

Sample Number: **L0406256-03** | Prep Method: **353.2** | Instrument: **SMARTCHEM**
Client ID: **P-1** | Analytical Method: **353.2** | Prep Date: **06/18/2004 10:59**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG168437** | Dilution: **1** | Run Date: **06/18/2004 10:59**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **EM04061816225516**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	14797-55-8	2.45		0.0500	0.0250

Sample Number: **L0406256-03** | Prep Method: **415.1** | Instrument: **TOC-VWP**
Client ID: **P-1** | Analytical Method: **415.1** | Prep Date: **06/14/2004 09:38**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG168146** | Dilution: **1** | Run Date: **06/14/2004 09:38**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **WP04061515181118**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		6.41		1.00	0.500

Sample Number: **L0406256-03** | Prep Method: **3005A** | Instrument: **PE-ICP**
Client ID: **P-1** | Analytical Method: **6010B** | Prep Date: **06/16/2004 09:30**
Matrix: **Water** | Analyst: **KHR** | Cal Date: **06/17/2004 09:19**
Workgroup Number: **WG168298** | Dilution: **1** | Run Date: **06/17/2004 15:20**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **PE.061704.152029**
Sample Tag: **01**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	35.6		0.200	0.100
Iron, Total	7439-89-6	0.274		0.0400	0.0200
Potassium, Total	7440-09-7	0.353	J	1.00	0.250
Magnesium, Total	7439-95-4	17.9		0.500	0.250
Manganese, Total	7439-96-5		U	0.0100	0.00100
Sodium, Total	7440-23-5	42.6		0.500	0.250

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406256-03** | Prep Method: **A2320B** | Instrument: **BURET**
Client ID: **P-1** | Analytical Method: **A2320B** | Prep Date: **06/15/2004 09:35**
Matrix: **Water** | Analyst: **DLP** | Cal Date:
Workgroup Number: **WG168149** | Dilution: **1** | Run Date: **06/15/2004 09:35**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **ET.0406150935-07**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

Report Number: **L0406256**
Report Date : **June 24, 2004**

Sample Number: **L0406256-04** | Prep Method: **160.1** | Instrument: **OVEN**
Client ID: **P-7A** | Analytical Method: **160.1** | Prep Date: **06/14/2004 13:55**
Matrix: **Water** | Analyst: **TMM** | Cal Date:
Workgroup Number: **WG168059** | Dilution: **1** | Run Date: **06/14/2004 13:55**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **EN.0406141355-15**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		288		20.0	10.0

Sample Number: **L0406256-04** | Prep Method: **130.2** | Instrument: **BURET**
Client ID: **P-7A** | Analytical Method: **130.2** | Prep Date: **06/16/2004 09:10**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG168326** | Dilution: **1** | Run Date: **06/16/2004 09:10**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **ET.0406160910-08**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		155		10.0	5.00

Sample Number: **L0406256-04** | Prep Method: **A2320B** | Instrument: **BURET**
Client ID: **P-7A** | Analytical Method: **A2320B** | Prep Date: **06/15/2004 09:35**
Matrix: **Water** | Analyst: **DLP** | Cal Date:
Workgroup Number: **WG168149** | Dilution: **1** | Run Date: **06/15/2004 09:35**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **ET.0406150935-08**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		181		10.0	5.00

Sample Number: **L0406256-04** | Prep Method: **325.2** | Instrument: **SMARTCHEM**
Client ID: **P-7A** | Analytical Method: **325.2** | Prep Date: **06/17/2004 14:38**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG168333** | Dilution: **1** | Run Date: **06/17/2004 14:38**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **EM04061807550806**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	16887-00-6	45.0		2.00	1.00

Report Number: **L0406256**
Report Date : **June 24, 2004**

Sample Number:	L0406256-04	Prep Method:	375.4	Instrument:	SMARTCHEM
Client ID:	P-7A	Analytical Method:	375.4	Prep Date:	06/18/2004 07:45
Matrix:	Water	Analyst:	DIH	Cal Date:	
Workgroup Number:	WG168401	Dilution:	1	Run Date:	06/18/2004 07:45
Collect Date:	11-JUN-04	Units:	mg/L	File ID:	EM04061814074406

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	14808-79-8	31.2		5.00	2.50

Sample Number:	L0406256-04	Prep Method:	350.1	Instrument:	TRAACS-800
Client ID:	P-7A	Analytical Method:	350.1	Prep Date:	06/17/2004 10:41
Matrix:	Water	Analyst:	DR	Cal Date:	
Workgroup Number:	WG168449	Dilution:	1	Run Date:	06/17/2004 10:41
Collect Date:	11-JUN-04	Units:	mg/L	File ID:	0004061816120713

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.0690	J	0.100	0.0500

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number:	L0406256-04	Prep Method:	353.2	Instrument:	SMARTCHEM
Client ID:	P-7A	Analytical Method:	353.2	Prep Date:	06/18/2004 10:59
Matrix:	Water	Analyst:	DIH	Cal Date:	
Workgroup Number:	WG168437	Dilution:	1	Run Date:	06/18/2004 10:59
Collect Date:	11-JUN-04	Units:	mg/L	File ID:	EM04061816225517

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	14797-55-8	1.62		0.0500	0.0250

Sample Number:	L0406256-04	Prep Method:	415.1	Instrument:	TOC-VWP
Client ID:	P-7A	Analytical Method:	415.1	Prep Date:	06/14/2004 09:38
Matrix:	Water	Analyst:	DIH	Cal Date:	
Workgroup Number:	WG168146	Dilution:	1	Run Date:	06/14/2004 09:38
Collect Date:	11-JUN-04	Units:	mg/L	File ID:	WP04061515181119

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		6.24		1.00	0.500

Report Number: **L0406256**
Report Date : **June 24, 2004**

Sample Number: **L0406256-04**
Client ID: **P-7A**
Matrix: **Water**
Workgroup Number: **WG168298**
Collect Date: **11-JUN-04**
Sample Tag: **01**

Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **KHR**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP**
Prep Date: **06/16/2004 09:30**
Cal Date: **06/17/2004 09:19**
Run Date: **06/17/2004 15:25**
File ID: **PE.061704.152541**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	34.3		0.200	0.100
Iron, Total	7439-89-6	0.312		0.0400	0.0200
Potassium, Total	7440-09-7	0.296	J	1.00	0.250
Magnesium, Total	7439-95-4	16.7		0.500	0.250
Manganese, Total	7439-96-5	0.0327		0.0100	0.00100
Sodium, Total	7440-23-5	41.7		0.500	0.250

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: **L0406256-04**
Client ID: **P-7A**
Matrix: **Water**
Workgroup Number: **WG168271**
Collect Date: **11-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **06/17/2004 15:34**
Cal Date: **06/14/2004 19:09**
Run Date: **06/17/2004 15:34**
File ID: **6M44461**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3	1.18		1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4	14.1		1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6	0.350	J	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Report Number: **L0406256**
Report Date : **June 24, 2004**

Sample Number: **L0406256-04** | Prep Method: **5030B** | Instrument: **HPMS6**
Client ID: **P-7A** | Analytical Method: **8260B** | Prep Date: **06/17/2004 15:34**
Matrix: **Water** | Analyst: **CMS** | Cal Date: **06/14/2004 19:09**
Workgroup Number: **WG168271** | Dilution: **1** | Run Date: **06/17/2004 15:34**
Collect Date: **11-JUN-04** | Units: **ug/L** | File ID: **6M44461**
Sample Tag: **01**

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	99.1	86	118	
1,2-Dichloroethane-d4	89.9	80	120	
Toluene-d8	113	88	110	*
4-Bromofluorobenzene	103	86	115	

***** Surrogate or spike compound out of range
J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406256-04** | Prep Method: **A2320B** | Instrument: **BURET**
Client ID: **P-7A** | Analytical Method: **A2320B** | Prep Date: **06/15/2004 09:35**
Matrix: **Water** | Analyst: **DLP** | Cal Date:
Workgroup Number: **WG168149** | Dilution: **1** | Run Date: **06/15/2004 09:35**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **ET.0406150935-08**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

Sample Number: **L0406256-05** | Prep Method: **160.1** | Instrument: **OVEN**
Client ID: **P-7** | Analytical Method: **160.1** | Prep Date: **06/14/2004 13:55**
Matrix: **Water** | Analyst: **TMM** | Cal Date:
Workgroup Number: **WG168059** | Dilution: **1** | Run Date: **06/14/2004 13:55**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **EN.0406141355-16**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		320		20.0	10.0

Sample Number: **L0406256-05** | Prep Method: **130.2** | Instrument: **BURET**
Client ID: **P-7** | Analytical Method: **130.2** | Prep Date: **06/16/2004 09:10**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG168326** | Dilution: **1** | Run Date: **06/16/2004 09:10**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **ET.0406160910-09**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		119		10.0	5.00

Report Number: **L0406256**
Report Date : **June 24, 2004**

Sample Number: **L0406256-05** | Prep Method: **A2320B** | Instrument: **BURET**
Client ID: **P-7** | Analytical Method: **A2320B** | Prep Date: **06/15/2004 09:35**
Matrix: **Water** | Analyst: **DLP** | Cal Date:
Workgroup Number: **WG168149** | Dilution: **1** | Run Date: **06/15/2004 09:35**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **ET.0406150935-09**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		106		10.0	5.00

Sample Number: **L0406256-05** | Prep Method: **325.2** | Instrument: **SMARTCHEM**
Client ID: **P-7** | Analytical Method: **325.2** | Prep Date: **06/17/2004 14:38**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG168333** | Dilution: **1** | Run Date: **06/17/2004 14:38**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **EM04061807550807**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	16887-00-6	25.1		2.00	1.00

Sample Number: **L0406256-05** | Prep Method: **375.4** | Instrument: **SMARTCHEM**
Client ID: **P-7** | Analytical Method: **375.4** | Prep Date: **06/18/2004 07:45**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG168401** | Dilution: **2** | Run Date: **06/18/2004 07:45**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **EM04061814074407**

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	14808-79-8	43.0		10.0	5.00

Sample Number: **L0406256-05** | Prep Method: **350.1** | Instrument: **TRAACS-800**
Client ID: **P-7** | Analytical Method: **350.1** | Prep Date: **06/17/2004 10:41**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG168449** | Dilution: **1** | Run Date: **06/17/2004 10:41**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **0004061816120714**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.0660	J	0.100	0.0500

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Report Number: **L0406256**
Report Date : **June 24, 2004**

Sample Number: **L0406256-05** | Prep Method: **353.2** | Instrument: **SMARTCHEM**
Client ID: **P-7** | Analytical Method: **353.2** | Prep Date: **06/18/2004 10:59**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG168437** | Dilution: **1** | Run Date: **06/18/2004 10:59**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **EM04061816225518**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	14797-55-8	5.34		0.0500	0.0250

Sample Number: **L0406256-05** | Prep Method: **415.1** | Instrument: **TOC-VWP**
Client ID: **P-7** | Analytical Method: **415.1** | Prep Date: **06/14/2004 09:38**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG168146** | Dilution: **1** | Run Date: **06/14/2004 09:38**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **WP04061515181120**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		4.58		1.00	0.500

Sample Number: **L0406256-05** | Prep Method: **3005A** | Instrument: **PE-ICP**
Client ID: **P-7** | Analytical Method: **6010B** | Prep Date: **06/16/2004 09:30**
Matrix: **Water** | Analyst: **KHR** | Cal Date: **06/17/2004 09:19**
Workgroup Number: **WG168298** | Dilution: **1** | Run Date: **06/17/2004 15:30**
Collect Date: **11-JUN-04** | Units: **mg/L** | File ID: **PE.061704.153054**
Sample Tag: **01**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	25.9		0.200	0.100
Iron, Total	7439-89-6	0.212		0.0400	0.0200
Potassium, Total	7440-09-7		U	1.00	0.250
Magnesium, Total	7439-95-4	15.8		0.500	0.250
Manganese, Total	7439-96-5		U	0.0100	0.00100
Sodium, Total	7440-23-5	27.5		0.500	0.250

U This analyte was not detected in the sample.

Sample Number: **L0406256-05** | Prep Method: **5030B** | Instrument: **HPMS11**
Client ID: **P-7** | Analytical Method: **8260B** | Prep Date: **06/16/2004 14:10**
Matrix: **Water** | Analyst: **JLS** | Cal Date: **06/09/2004 14:51**
Workgroup Number: **WG168179** | Dilution: **1** | Run Date: **06/16/2004 14:10**
Collect Date: **11-JUN-04** | Units: **ug/L** | File ID: **11M21981**
Sample Tag: **01**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50

Report Number: **L0406256**
Report Date : **June 24, 2004**

Sample Number: **L0406256-05**
Client ID: **P-7**
Matrix: **Water**
Workgroup Number: **WG168179**
Collect Date: **11-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **JLS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **06/16/2004 14:10**
Cal Date: **06/09/2004 14:51**
Run Date: **06/16/2004 14:10**
File ID: **11M21981**

Analyte	CAS. Number	Result	Qual	RL	MDL
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	98.1	86	118	
1,2-Dichloroethane-d4	92.5	80	120	
Toluene-d8	106	88	110	
4-Bromofluorobenzene	107	86	115	

U This analyte was not detected in the sample.

Sample Number: **L0406256-05**
Client ID: **P-7**
Matrix: **Water**
Workgroup Number: **WG168149**
Collect Date: **11-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DLP**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **06/15/2004 09:35**
Cal Date:
Run Date: **06/15/2004 09:35**
File ID: **ET.0406150935-09**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

WORKGROUP SUMMARY BY METHOD

WORKGROUP SUMMARY BY METHOD

Analysis: Total Dissolved Solids
Analytical Method: 160.1
Workgroup: WG168059

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-01	P-1A			06/14/04 13:55		OVEN	TMM
L0406256-03	P-1			06/14/04 13:55		OVEN	TMM
L0406256-04	P-7A			06/14/04 13:55		OVEN	TMM
L0406256-05	P-7			06/14/04 13:55		OVEN	TMM

Analysis: Total Organic Carbon
Analytical Method: 415.1
Workgroup: WG168146

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-01	P-1A			06/14/04 09:38		TOC-VWP	DIH
L0406256-03	P-1			06/14/04 09:38		TOC-VWP	DIH
L0406256-04	P-7A			06/14/04 09:38		TOC-VWP	DIH
L0406256-05	P-7			06/14/04 09:38		TOC-VWP	DIH

Analysis: Alkalinity, Bicarbonate
Analytical Method: A2320B
Workgroup: WG168149

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-01	P-1A			06/15/04 09:35		BURET	DLP
L0406256-01	P-1A			06/15/04 09:35		BURET	DLP
L0406256-03	P-1			06/15/04 09:35		BURET	DLP
L0406256-03	P-1			06/15/04 09:35		BURET	DLP
L0406256-04	P-7A			06/15/04 09:35		BURET	DLP
L0406256-04	P-7A			06/15/04 09:35		BURET	DLP
L0406256-05	P-7			06/15/04 09:35		BURET	DLP
L0406256-05	P-7			06/15/04 09:35		BURET	DLP

Analysis: Alkalinity, Bicarbonate
Extraction Method: METHOD
Workgroup: WG168149

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-01	P-1A			06/15/04 09:35		BURET	DLP
L0406256-03	P-1			06/15/04 09:35		BURET	DLP
L0406256-04	P-7A			06/15/04 09:35		BURET	DLP
L0406256-05	P-7			06/15/04 09:35		BURET	DLP

WORKGROUP SUMMARY BY METHOD

Analysis: Volatile Organics
Analytical Method: 8260B
Workgroup: WG168170

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-02	P-1A-C			06/16/04 18:57	01	HPMS6	CMS

Analysis: Volatile Organics
Extraction Method: 5030B
Workgroup: WG168170

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-02	P-1A-C				168170	HPMS6	CMS

Analysis: Volatile Organics
Analytical Method: 8260B
Workgroup: WG168179

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-05	P-7			06/16/04 14:10	01	HPMS11	JLS

Analysis: Volatile Organics
Extraction Method: 5030B
Workgroup: WG168179

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-05	P-7				168179	HPMS11	JLS

WORKGROUP SUMMARY BY METHOD

Analysis: Metals Analysis
Extraction Method: 3005A
Workgroup: WG168219

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-01	P-1A		06/16/04 09:30			HOT BLOCK	TLM
L0406256-03	P-1		06/16/04 09:30			HOT BLOCK	TLM
L0406256-04	P-7A		06/16/04 09:30			HOT BLOCK	TLM
L0406256-05	P-7		06/16/04 09:30			HOT BLOCK	TLM

Analysis: Volatile Organics
Analytical Method: 8260B
Workgroup: WG168271

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-04	P-7A			06/17/04 15:34	01	HPMS6	CMS

Analysis: Volatile Organics
Extraction Method: 5030B
Workgroup: WG168271

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-04	P-7A				168271	HPMS6	CMS

Analysis: Metals Analysis
Analytical Method: 6010B
Workgroup: WG168298

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-01	P-1A		06/16/04 09:30	06/17/04 15:15	01	PE-ICP	KHR
L0406256-03	P-1		06/16/04 09:30	06/17/04 15:20	01	PE-ICP	KHR
L0406256-04	P-7A		06/16/04 09:30	06/17/04 15:25	01	PE-ICP	KHR
L0406256-05	P-7		06/16/04 09:30	06/17/04 15:30	01	PE-ICP	KHR

WORKGROUP SUMMARY BY METHOD

Analysis: Hardness
Analytical Method: 130.2
Workgroup: WG168326

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-01	P-1A			06/16/04 09:10		BURET	DR
L0406256-03	P-1			06/16/04 09:10		BURET	DR
L0406256-04	P-7A			06/16/04 09:10		BURET	DR
L0406256-05	P-7			06/16/04 09:10		BURET	DR

Analysis: Hardness
Extraction Method: 130.2
Workgroup: WG168326

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-01	P-1A			06/16/04 09:10		BURET	DR
L0406256-03	P-1			06/16/04 09:10		BURET	DR
L0406256-04	P-7A			06/16/04 09:10		BURET	DR
L0406256-05	P-7			06/16/04 09:10		BURET	DR

Analysis: Chloride
Analytical Method: 325.2
Workgroup: WG168333

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-01	P-1A			06/17/04 14:38		SMARTCHEM	DIH
L0406256-03	P-1			06/17/04 14:38		SMARTCHEM	DIH
L0406256-04	P-7A			06/17/04 14:38		SMARTCHEM	DIH
L0406256-05	P-7			06/17/04 14:38		SMARTCHEM	DIH

Analysis: Sulfate
Analytical Method: 375.4
Workgroup: WG168401

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-01	P-1A			06/18/04 07:45		SMARTCHEM	DIH
L0406256-03	P-1			06/18/04 07:45		SMARTCHEM	DIH
L0406256-04	P-7A			06/18/04 07:45		SMARTCHEM	DIH
L0406256-05	P-7			06/18/04 07:45		SMARTCHEM	DIH

WORKGROUP SUMMARY BY METHOD

Analysis: Nitrogen, Nitrate
Analytical Method: 353.2
Workgroup: WG168437

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-01	P-1A			06/18/04 10:59		SMARTCHEM	DIH
L0406256-03	P-1			06/18/04 10:59		SMARTCHEM	DIH
L0406256-04	P-7A			06/18/04 10:59		SMARTCHEM	DIH
L0406256-05	P-7			06/18/04 10:59		SMARTCHEM	DIH

Analysis: Nitrogen, Ammonia
Analytical Method: 350.1
Workgroup: WG168449

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406256-01	P-1A			06/17/04 10:41		TRAACS-800	DR
L0406256-03	P-1			06/17/04 10:41		TRAACS-800	DR
L0406256-04	P-7A			06/17/04 10:41		TRAACS-800	DR
L0406256-05	P-7			06/17/04 10:41		TRAACS-800	DR

Kemron Environmental Services
Analyst Listing
Monday, June 28 2004

AJF - AMANDA J. FICKIESEN
ALB - ANNIE L. BOCK
ALT - ANN L. THAYER
ARS - ANGELINA R. SCOTT
ART - AMANDA R. THOMPSON
BRG - BRENDA R. GREGORY
CAB - CASSIE A. BAKER
CAF - CHERYL A. FLOWERS
CAK - CHERYL A. KOELSCH
CEB - CHAD E. BARNES
CIS - CASHUS I. STONE
CLC - CHRYS L. CRAWFORD
CLK - CARL L. KING
CLS - CARA L. STRICKLER
CLW - CHARISSA L. WINTERS
CM - CHARLIE MARTIN
CMS - CRYSTAL M. STEVENS
CPD - CHAD P. DAVIS
CRC - CARLA R. COCHRAN
CSH - CHRIS S. HILL
DAS - DALLAS A. SULLIVAN
DD - DIANE M. DENNIS
DDE - DEBRA D. ELLIOTT
DEL - DON E. LIGHTFRITZ
DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER
DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE
DLR - DIANNA L. RAUCH
DMV - DAVID M. VANDEVELDE
DP - DEANNA L. PIERSON
DR - DEANNA ROBERTS
DRB - DOUG R. BARNETT
DSM - DAVID S. MOSSOR
DST - DENNIS S. TEPE
ECL - ERIC C. LAWSON
EED - EMILY E. DECKER
ELW - ERICA L. WEBB
HV - HEMA VILASAGAR
JAL - JOHN A. LENT
JJG - JOHN J. GREUEY
JKW - JANE K. THOMPSON
JLS - JANICE L. SCHIMMEL
JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES
JYH - JI Y. HU
KHR - KIM H. RHODES
KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF
LLL - LONNIE L. LEWIS
LSA - LUCINDA S. ARNOLD
LSB - LESLIE S. BUCINA
MAH - MICALYN A. HARRIS
MDA - MICHAEL D. ALBERTSON
MDC - MICHAEL D. COCHRAN
MEF - MIKE E. FLANAGAN
MES - MARY E. SCHILLING
MKZ - MARILYN K. ZUMBRO
MLR - MARY L. ROCHOTTE
MLS - MICHAEL L. SCHIMMEL
MMB - MAREN M. BEERY
MSW - MATT S. WILSON
NJB - NATALIE J. BOOTH
OGT - OKEY G. TUCKER
PAS - PATRICK A. STREET
RDC - REBECCA D. CUTLIP
REK - ROBERT E. KYER
RJW - RHONDA J. WITTEKIND
RWC - ROD W. CAMPBELL
SCM - SUSAN C. MOELLENDICK
SH - SHAUNA M. HYDE
SK - SANDRA KEENER
SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF
TD - TIMOTHY DYSERT
TJH - TIM J. HOEFLICH
TLM - TIFFINI L. MCDONALD
TMM - TAMMY M. MORRIS
VC - VICKI COLLIER
VKL - VICKY K. LAUER

KEMRON FORMS: JUL-25-02
Printed: JUN-28-04 09:25:34

KEMRON Environmental Services, Inc
List of Valid Qualifiers
August 5, 2002

Standard Qualifiers

These are KEMRON's Standard Report Qualifiers

B	Present in the method blank
C	Confirmed by GC/MS
CG	Confluent growth
D	The analyte was quantified at a secondary dilution factor
DL	Surrogate or spike was diluted out
E	Estimated concentration due to sample matrix interference
FL	Free liquid
I	Semi-quantitative result, out of instrument calibration range
J	Present below nominal reporting limit
L	Sample reporting limits elevated due to matrix interference
N	Tentatively Identified Compound (TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit (RL)
NF	Not found
NFL	No free liquid
NI	Non-ignitable
NS	Not spiked
P	Concentration >40% difference between The two GC columns
QNS	Quantity not sufficient to perform analysis
RA	Re analysis confirms reported results
RE	Re analysis confirms sample matrix interference
S	Analyzed by method of standard addition
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TNTC	Too numerous to count
U	Analyzed for but not detected
W	Post-digestion spike for furnace AA out o f control limits
X	Exceeds regulatory limit
Z	Can not be resolved from isomer.***
+	Correlation coefficient for the MSA is less than 0.995
<	Less than
>	Greater than
*	Surrogate or spike compound out of range

***** Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene
3. N-nitrosodiphenylamine cannot be separated from diphenylamine
4. 3-Methyphenol and 4-Methyphenol are unresolvable compounds
5. m-Xylene and p-Xylene are unresolvable compounds
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent

AFCEE Qualifiers

These are KEMRON's AFCEE Report Qualifiers

J	The analyte was positively identified, the quantitation is an estimation
U	The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL
F	The analyte was positively identified but the associated numerical value is below the RL
R	The data is unusable due to deficiencies in the ability to analyze the sample and meet QC criteria
B	The analyte was found in an associated blank, as well as in the sample
M	The matrix effect was present
S	To be applied to all field screening data
T	Tentatively identified compound (using GC/MS)

H:\DATA\COMMON\Qualifier List 08-05-02.doc

ORGANIC QA/QC

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8260B

AAB#: WG168170

Login Number: L0406256

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-1A-C	06/11/04	06/12/04	06/16/04	14	5.43	06/16/04	14	5.43	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method:8260B AAB#:WG168179

Login Number:L0406256

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-7	06/11/04	06/12/04	06/16/04	14	4.99	06/16/04	14	4.99	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method:8260B AAB#:WG168271

Login Number:L0406256

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-7A	06/11/04	06/12/04	06/17/04	14	6.10	06/17/04	14	6.10	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406256
Blank File ID: 6M44424
Date Analyzed: 06/16/04
Time Analyzed: 08:28
Analyst: CMS

Work Group: WG168170
Blank Sample ID: WG168170-01
Instrument ID: HPMS6
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG168170-02	6M44425	06/16/04 08:59	01
LCS2	WG168170-03	6M44426	06/16/04 09:30	01
P-1A-C	L0406256-02	6M44443	06/16/04 18:57	01

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406256
Blank File ID: 11M21974
Date Analyzed: 06/16/04
Time Analyzed: 10:32
Analyst: JLS

Work Group: WG168179
Blank Sample ID: WG168179-01
Instrument ID: HPMS11
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG168179-02	11M21975	06/16/04 11:03	01
P-7	L0406256-05	11M21981	06/16/04 14:10	01

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406256
Blank File ID: 6M44448
Date Analyzed: 06/17/04
Time Analyzed: 08:54
Analyst: CMS

Work Group: WG168271
Blank Sample ID: WG168271-01
Instrument ID: HPMS6
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG168271-02	6M44449	06/17/04 09:25	01
LCS2	WG168271-03	6M44450	06/17/04 09:56	01
P-7A	L0406256-04	6M44461	06/17/04 15:34	01

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406256 Run Date: 06/16/2004 Sample ID: WG168170-01
Instrument ID: HPMS6 Run Time: 08:28 Prep Method: 5030B
File ID: 6M44424 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG168170 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS6-14-JUN-04

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.540	1.00	0.540	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Dibromochloromethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.147	1	J
Chloromethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.125	1.00	0.125	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes (total)	0.250	1.00	0.250	1	U

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406256 Run Date: 06/16/2004 Sample ID: WG168170-01
Instrument ID: HPMS6 Run Time: 08:28 Prep Method: 5030B
File ID: 6M44424 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG168170 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS6-14-JUN-04

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	104	86 - 118	PASS
1,2-Dichloroethane-d4	101	80 - 120	PASS
Toluene-d8	102	88 - 110	PASS
4-Bromofluorobenzene	99.0	86 - 115	PASS

* Analyte detected above RDL
ND Analyte Not detected at or above reporting limit

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406256 Run Date: 06/16/2004 Sample ID: WG168179-01
Instrument ID: HPMS11 Run Time: 10:32 Prep Method: 5030B
File ID: 11M21974 Analyst: JLS Method: 8260B
Workgroup (AAB#): WG168179 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS11-09-JUN-04

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.540	1.00	0.540	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Dibromochloromethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.125	1.00	0.125	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes (total)	0.250	1.00	0.250	1	U

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406256 Run Date: 06/16/2004 Sample ID: WG168179-01
Instrument ID: HPMS11 Run Time: 10:32 Prep Method: 5030B
File ID: 11M21974 Analyst: JLS Method: 8260B
Workgroup (AAB#): WG168179 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS11-09-JUN-04

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	96.3	86 - 118	PASS
1,2-Dichloroethane-d4	88.3	80 - 120	PASS
Toluene-d8	106	88 - 110	PASS
4-Bromofluorobenzene	108	86 - 115	PASS

* Analyte detected above RDL
ND Analyte Not detected at or above reporting limit

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406256 Run Date: 06/17/2004 Sample ID: WG168271-01
Instrument ID: HPMS6 Run Time: 08:54 Prep Method: 5030B
File ID: 6M44448 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG168271 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS6-14-JUN-04

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.540	1.00	0.540	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Dibromochloromethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.125	1.00	0.125	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes (total)	0.250	1.00	0.250	1	U

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406256 Run Date: 06/17/2004 Sample ID: WG168271-01
Instrument ID: HPMS6 Run Time: 08:54 Prep Method: 5030B
File ID: 6M44448 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG168271 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS6-14-JUN-04

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	99.4	86 - 118	PASS
1,2-Dichloroethane-d4	89.2	80 - 120	PASS
Toluene-d8	107	88 - 110	PASS
4-Bromofluorobenzene	102	86 - 115	PASS

* Analyte detected above RDL
ND Analyte Not detected at or above reporting limit

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406256 | Run Date: 06/16/2004 | Sample ID: WG168170-02
Instrument ID: HPMS6 | Run Time: 08:59 | Prep Method: 5030B
File ID: 6M44425 | Analyst: CMS | Method: 8260B
Workgroup (AAB#): WG168170 | Matrix: Water | Units: ug/L
Contract #: | Cal ID: HPMS6-14-JUN-2004 19:09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Acetone	20.0	22.2	111	40 - 142	
Benzene	20.0	21.6	108	80 - 121	
Bromochloromethane	20.0	22.3	112	80 - 124	
Bromodichloromethane	20.0	25.4	127	80 - 131	
Bromoform	20.0	19.0	94.8	74 - 130	
Bromomethane	20.0	21.4	107	61 - 151	
2-Butanone	20.0	22.6	113	58 - 149	
Carbon disulfide	20.0	22.3	111	58 - 138	
Carbon tetrachloride	20.0	20.5	102	80 - 137	
Chlorobenzene	20.0	21.1	106	80 - 120	
Dibromochloromethane	20.0	19.4	96.8	80 - 127	
Chloroethane	20.0	22.5	113	77 - 133	
Chloroform	20.0	22.1	111	80 - 125	
Chloromethane	20.0	21.8	109	60 - 130	
1,2-Dichlorobenzene	20.0	19.9	99.7	80 - 125	
1,3-Dichlorobenzene	20.0	20.7	103	80 - 120	
1,4-Dichlorobenzene	20.0	19.9	99.4	80 - 120	
1,1-Dichloroethane	20.0	22.6	113	80 - 125	
1,2-Dichloroethane	20.0	23.0	115	80 - 129	
1,1-Dichloroethene	20.0	25.5	127	80 - 132	
cis-1,2-Dichloroethene	20.0	21.1	106	80 - 121	
trans-1,2-Dichloroethene	20.0	23.0	115	80 - 127	
1,2-Dichloropropane	20.0	21.5	108	80 - 120	
cis-1,3-Dichloropropene	20.0	23.0	115	80 - 132	
trans-1,3-Dichloropropene	20.0	25.6	128	80 - 130	
Ethylbenzene	20.0	21.5	108	80 - 122	
2-Hexanone	20.0	22.3	111	56 - 136	
4-Methyl-2-pentanone	20.0	20.2	101	64 - 140	
Methylene chloride	20.0	21.6	108	80 - 123	
Styrene	20.0	21.8	109	80 - 123	
1,1,2,2-Tetrachloroethane	20.0	20.6	103	79 - 125	
Tetrachloroethene	20.0	21.6	108	80 - 124	
Toluene	20.0	21.4	107	80 - 124	
1,1,1-Trichloroethane	20.0	24.6	123	80 - 134	
1,1,2-Trichloroethane	20.0	21.2	106	80 - 125	
Trichloroethene	20.0	22.6	113	80 - 122	
Vinyl chloride	20.0	24.8	124	65 - 140	
Xylenes (total)	60.0	63.9	107	80 - 121	

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406256 Run Date: 06/16/2004 Sample ID: WG168170-02
Instrument ID: HPMS6 Run Time: 08:59 Prep Method: 5030B
File ID: 6M44425 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG168170 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS6-14-JUN-2004 19:09

Surrogates	% Recovery	Surrogate Limits			Qualifier
Dibromofluoromethane	106	86	-	118	PASS
1,2-Dichloroethane-d4	104	80	-	120	PASS
Toluene-d8	103	88	-	110	PASS
4-Bromofluorobenzene	97.6	86	-	115	PASS

* Analyte outside control limits

NS Analyte not spiked

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/07/2004 14:07

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406256 Analyst: CMS Prep Method: 5030B
Instrument ID: HPMS6 Matrix: Water Method: 8260B
Workgroup (AAB#): WG168170 Units: ug/L
Sample ID: WG168170-02 LCS File ID: 6M44425 Run Date: 06/16/2004 08:59
Sample ID: WG168170-03 LCS2 File ID: 6M44426 Run Date: 06/16/2004 09:30

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	22.2	111	20.0	21.7	108	2.47	40 - 142	63	
Benzene	20.0	21.6	108	20.0	21.3	107	1.02	80 - 121	21	
Bromochloromethane	20.0	22.3	112	20.0	21.8	109	2.23	80 - 124	20	
Bromodichloromethane	20.0	25.4	127	20.0	25.9	129	1.96	80 - 131	25	
Bromoform	20.0	19.0	94.8	20.0	19.6	98.0	3.32	74 - 130	35	
Bromomethane	20.0	21.4	107	20.0	21.2	106	.926	61 - 151	56	
2-Butanone	20.0	22.6	113	20.0	22.8	114	.54	58 - 149	56	
Carbon disulfide	20.0	22.3	111	20.0	21.7	108	2.83	58 - 138	49	
Carbon tetrachloride	20.0	20.5	102	20.0	19.9	99.6	2.7	80 - 137	32	
Chlorobenzene	20.0	21.1	106	20.0	21.2	106	.398	80 - 120	16	
Dibromochloromethane	20.0	19.4	96.8	20.0	19.8	99.1	2.34	80 - 127	26	
Chloroethane	20.0	22.5	113	20.0	22.9	114	1.53	77 - 133	34	
Chloroform	20.0	22.1	111	20.0	21.9	110	.911	80 - 125	23	
Chloromethane	20.0	21.8	109	20.0	21.4	107	1.93	60 - 130	43	
1,2-Dichlorobenzene	20.0	19.9	99.7	20.0	20.2	101	1.11	80 - 125	15	
1,3-Dichlorobenzene	20.0	20.7	103	20.0	20.6	103	.507	80 - 120	16	
1,4-Dichlorobenzene	20.0	19.9	99.4	20.0	20.0	99.8	.401	80 - 120	15	
1,1-Dichloroethane	20.0	22.6	113	20.0	22.3	111	1.48	80 - 125	21	
1,2-Dichloroethane	20.0	23.0	115	20.0	23.0	115	.0201	80 - 129	29	
1,1-Dichloroethene	20.0	25.5	127	20.0	24.4	122	4.29	80 - 132	26	
cis-1,2-Dichloroethene	20.0	21.1	106	20.0	21.1	105	.303	80 - 121	19	
trans-1,2-Dichloroethene	20.0	23.0	115	20.0	22.2	111	3.38	80 - 127	24	
1,2-Dichloropropane	20.0	21.5	108	20.0	21.4	107	.369	80 - 120	20	
cis-1,3-Dichloropropene	20.0	23.0	115	20.0	23.0	115	.194	80 - 132	26	
trans-1,3-Dichloropropene	20.0	25.6	128	20.0	25.8	129	1.09	80 - 130	25	
Ethylbenzene	20.0	21.5	108	20.0	21.3	107	.84	80 - 122	20	
2-Hexanone	20.0	22.3	111	20.0	22.8	114	2.51	56 - 136	49	
4-Methyl-2-pentanone	20.0	20.2	101	20.0	20.8	104	2.81	64 - 140	47	
Methylene chloride	20.0	21.6	108	20.0	21.9	109	1.13	80 - 123	22	
Styrene	20.0	21.8	109	20.0	21.7	109	.155	80 - 123	20	
1,1,2,2-Tetrachloroethane	20.0	20.6	103	20.0	21.3	106	3.21	79 - 125	28	
Tetrachloroethene	20.0	21.6	108	20.0	21.5	108	.169	80 - 124	22	
Toluene	20.0	21.4	107	20.0	21.2	106	1.1	80 - 124	22	
1,1,1-Trichloroethane	20.0	24.6	123	20.0	23.6	118	4.3	80 - 134	28	
1,1,2-Trichloroethane	20.0	21.2	106	20.0	21.4	107	.861	80 - 125	20	
Trichloroethene	20.0	22.6	113	20.0	22.1	110	2.24	80 - 122	21	
Vinyl chloride	20.0	24.8	124	20.0	23.4	117	5.83	65 - 140	46	
Xylenes (total)	60.0	63.9	107	60.0	63.3	105	.986	80 - 121	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/07/2004 14:39

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number:L0406256 Analyst:CMS Prep Method:5030B
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG168170 Units:ug/L
Sample ID:WG168170-02 LCS File ID:6M44425 Run Date:06/16/2004 08:59
Sample ID:WG168170-03 LCS2 File ID:6M44426 Run Date:06/16/2004 09:30

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
Dibromofluoromethane	106	107	86 - 118	PASS
1,2-Dichloroethane-d4	104	105	80 - 120	PASS
Toluene-d8	103	104	88 - 110	PASS
4-Bromofluorobenzene	97.6	98.6	86 - 115	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/07/2004 14:39

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406256 Run Date: 06/16/2004 Sample ID: WG168179-02
Instrument ID: HPMS11 Run Time: 11:03 Prep Method: 5030B
File ID: 11M21975 Analyst: JLS Method: 8260B
Workgroup (AAB#): WG168179 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS11-09-JUN-2004 14:51

Analytes	Expected	Found	% Rec	LCS Limits	Q
Acetone	20.0	15.9	79.7	40 - 142	
Benzene	20.0	19.8	98.8	80 - 121	
Bromochloromethane	20.0	19.2	95.8	80 - 124	
Bromodichloromethane	20.0	20.9	105	80 - 131	
Bromoform	20.0	16.8	84.1	74 - 130	
Bromomethane	20.0	17.7	88.7	61 - 151	
2-Butanone	20.0	17.4	86.8	58 - 149	
Carbon disulfide	20.0	21.1	106	58 - 138	
Carbon tetrachloride	20.0	25.9	130	80 - 137	
Chlorobenzene	20.0	21.4	107	80 - 120	
Dibromochloromethane	20.0	19.5	97.6	80 - 127	
Chloroethane	20.0	22.2	111	77 - 133	
Chloroform	20.0	21.9	109	80 - 125	
Chloromethane	20.0	20.3	101	60 - 130	
1,2-Dichlorobenzene	20.0	18.6	93.1	80 - 125	
1,3-Dichlorobenzene	20.0	20.5	102	80 - 120	
1,4-Dichlorobenzene	20.0	21.9	109	80 - 120	
1,1-Dichloroethane	20.0	22.0	110	80 - 125	
1,2-Dichloroethane	20.0	19.8	99.2	80 - 129	
1,1-Dichloroethene	20.0	22.7	113	80 - 132	
cis-1,2-Dichloroethene	20.0	21.3	107	80 - 121	
trans-1,2-Dichloroethene	20.0	22.6	113	80 - 127	
1,2-Dichloropropane	20.0	19.5	97.4	80 - 120	
cis-1,3-Dichloropropene	20.0	20.0	99.9	80 - 132	
trans-1,3-Dichloropropene	20.0	21.2	106	80 - 130	
Ethylbenzene	20.0	21.8	109	80 - 122	
2-Hexanone	20.0	16.2	81.0	56 - 136	
4-Methyl-2-pentanone	20.0	15.6	78.0	64 - 140	
Methylene chloride	20.0	19.3	96.3	80 - 123	
Styrene	20.0	20.5	102	80 - 123	
1,1,2,2-Tetrachloroethane	20.0	16.5	82.7	79 - 125	
Tetrachloroethene	20.0	21.6	108	80 - 124	
Toluene	20.0	21.8	109	80 - 124	
1,1,1-Trichloroethane	20.0	22.8	114	80 - 134	
1,1,2-Trichloroethane	20.0	17.7	88.6	80 - 125	
Trichloroethene	20.0	21.2	106	80 - 122	
Vinyl chloride	20.0	22.8	114	65 - 140	
Xylenes (total)	60.0	64.2	107	80 - 121	

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406256 Run Date: 06/16/2004 Sample ID: WG168179-02
Instrument ID: HPMS11 Run Time: 11:03 Prep Method: 5030B
File ID: 11M21975 Analyst: JLS Method: 8260B
Workgroup (AAB#): WG168179 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS11-09-JUN-2004 14:51

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	96.8	86 - 118	PASS
1,2-Dichloroethane-d4	88.7	80 - 120	PASS
Toluene-d8	106	88 - 110	PASS
4-Bromofluorobenzene	106	86 - 115	PASS

* Analyte outside control limits

NS Analyte not spiked

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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number:L0406256 Analyst:CMS Prep Method:5030B
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG168271 Units:ug/L
Sample ID:WG168271-02 LCS File ID:6M44449 Run Date:06/17/2004 09:25
Sample ID:WG168271-03 LCS2 File ID:6M44450 Run Date:06/17/2004 09:56

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	18.0	90.0	20.0	17.1	85.3	5.35	40 - 142	63	
Benzene	20.0	20.6	103	20.0	21.8	109	5.65	80 - 121	21	
Bromochloromethane	20.0	19.0	94.8	20.0	19.3	96.7	1.92	80 - 124	20	
Bromodichloromethane	20.0	23.4	117	20.0	24.0	120	2.57	80 - 131	25	
Bromoform	20.0	15.8	79.2	20.0	16.0	80.2	1.31	74 - 130	35	
Bromomethane	20.0	22.0	110	20.0	24.1	120	9.24	61 - 151	56	
2-Butanone	20.0	18.0	90.2	20.0	18.0	90.0	.176	58 - 149	56	
Carbon disulfide	20.0	22.7	113	20.0	24.2	121	6.4	58 - 138	49	
Carbon tetrachloride	20.0	20.1	101	20.0	21.7	109	7.82	80 - 137	32	
Chlorobenzene	20.0	19.9	99.6	20.0	20.6	103	3.59	80 - 120	16	
Dibromochloromethane	20.0	16.8	84.1	20.0	17.0	85.2	1.35	80 - 127	26	
Chloroethane	20.0	23.5	118	20.0	24.9	124	5.51	77 - 133	34	
Chloroform	20.0	20.8	104	20.0	21.7	108	4.12	80 - 125	23	
Chloromethane	20.0	22.1	110	20.0	23.3	116	5.41	60 - 130	43	
1,2-Dichlorobenzene	20.0	19.2	96.2	20.0	19.7	98.3	2.22	80 - 125	15	
1,3-Dichlorobenzene	20.0	20.0	100	20.0	20.2	101	.815	80 - 120	16	
1,4-Dichlorobenzene	20.0	19.0	94.9	20.0	19.5	97.3	2.52	80 - 120	15	
1,1-Dichloroethane	20.0	21.7	108	20.0	23.0	115	6.14	80 - 125	21	
1,2-Dichloroethane	20.0	19.8	98.9	20.0	20.3	101	2.43	80 - 129	29	
1,1-Dichloroethene	20.0	24.8	124	20.0	26.6	133	7.19	80 - 132	26	*
cis-1,2-Dichloroethene	20.0	19.7	98.5	20.0	20.8	104	5.22	80 - 121	19	
trans-1,2-Dichloroethene	20.0	21.5	107	20.0	22.9	114	6.16	80 - 127	24	
1,2-Dichloropropane	20.0	19.8	98.8	20.0	20.3	102	2.85	80 - 120	20	
cis-1,3-Dichloropropene	20.0	20.2	101	20.0	20.9	105	3.66	80 - 132	26	
trans-1,3-Dichloropropene	20.0	21.7	109	20.0	22.2	111	2.06	80 - 130	25	
Ethylbenzene	20.0	21.0	105	20.0	21.8	109	3.92	80 - 122	20	
2-Hexanone	20.0	18.0	89.9	20.0	17.5	87.7	2.5	56 - 136	49	
4-Methyl-2-pentanone	20.0	16.5	82.6	20.0	16.1	80.6	2.42	64 - 140	47	
Methylene chloride	20.0	19.8	99.2	20.0	20.5	102	3.13	80 - 123	22	
Styrene	20.0	19.7	98.7	20.0	20.6	103	4.12	80 - 123	20	
1,1,2,2-Tetrachloroethane	20.0	17.7	88.7	20.0	17.3	86.5	2.46	79 - 125	28	
Tetrachloroethene	20.0	21.8	109	20.0	22.6	113	3.74	80 - 124	22	
Toluene	20.0	20.6	103	20.0	21.8	109	5.64	80 - 124	22	
1,1,1-Trichloroethane	20.0	23.5	117	20.0	25.0	125	6.16	80 - 134	28	
1,1,2-Trichloroethane	20.0	16.9	84.6	20.0	17.0	85.1	.591	80 - 125	20	
Trichloroethene	20.0	21.3	107	20.0	22.9	115	7.43	80 - 122	21	
Vinyl chloride	20.0	26.2	131	20.0	26.3	132	.668	65 - 140	46	
Xylenes (total)	60.0	60.4	101	60.0	63.6	106	5.17	80 - 121	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406256 Analyst: CMS Prep Method: 5030B
Instrument ID: HPMS6 Matrix: Water Method: 8260B
Workgroup (AAB#): WG168271 Units: ug/L
Sample ID: WG168271-02 LCS File ID: 6M44449 Run Date: 06/17/2004 09:25
Sample ID: WG168271-03 LCS2 File ID: 6M44450 Run Date: 06/17/2004 09:56

Surogates	LCS % Recovery	LCS2 % Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	102	103	86 - 118	PASS
1,2-Dichloroethane-d4	93.3	91.7	80 - 120	PASS
Toluene-d8	106	105	88 - 110	PASS
4-Bromofluorobenzene	99.1	99.4	86 - 115	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON ENVIRONMENTAL SERVICES
SURROGATE STANDARDS

Login Number:L0406256
Instrument Id:HPMS6
Workgroup (AAB#):WG168170

Method:8260
CAL ID: HPMS6-14-JUN-04
Matrix:WATER

Sample Number	Dilution	Tag	1	2	3	4
L0406256-02	1.00	01	95.9	101	104	104
WG168170-01	1.00	01	101	104	99.0	102
WG168170-02	1.00	01	104	106	97.6	103
WG168170-03	1.00	01	105	107	98.6	104

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

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KEMRON ENVIRONMENTAL SERVICES
SURROGATE STANDARDS

Login Number: L0406256
Instrument Id: HPMS11
Workgroup (AAB#): WG168179

Method: 8260
CAL ID: HPMS11-09-JUN-04
Matrix: WATER

Sample Number	Dilution	Tag	1	2	3	4
L0406256-05	1.00	01	92.5	98.1	107	106
WG168179-01	1.00	01	88.3	96.3	108	106
WG168179-02	1.00	01	88.7	96.8	106	106

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out

ND = surrogate not detected

KEMRON ENVIRONMENTAL SERVICES
SURROGATE STANDARDS

Login Number: L0406256
Instrument Id: HPMS6
Workgroup (AAB#): WG168271

Method: 8260
CAL ID: HPMS6-14-JUN-04
Matrix: WATER

Sample Number	Dilution	Tag	1	2	3	4
L0406256-04	1.00	01	89.9	99.1	103	113
WG168271-01	1.00	01	89.2	99.4	102	107
WG168271-02	1.00	01	93.3	102	99.1	106
WG168271-03	1.00	01	91.7	103	99.4	105

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

KEMRON FORMS - Modified 02/25/2004
Version 1.2
Report generated 07/07/2004 14:50

Inorganic QC Summary

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method:6010B AAB#:WG168298

Login Number:L0406256

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-1	06/11/04	06/12/04	06/16/04	180	4.98	06/17/04	180	1.24	
P-1A	06/11/04	06/12/04	06/16/04	180	5.05	06/17/04	180	1.24	
P-7	06/11/04	06/12/04	06/16/04	180	4.80	06/17/04	180	1.25	
P-7A	06/11/04	06/12/04	06/16/04	180	4.85	06/17/04	180	1.25	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406256
Blank File ID: PE.061704.135318
Date Analyzed: 06/17/04
Time Analyzed: 13:53
Analyst: KHR

Work Group: WG168298
Blank Sample ID: WG168219-02
Instrument ID: PE-ICP
Method: 6010B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG168219-03	PE.061704.135829	06/17/04 13:58	01
P-1A	L0406256-01	PE.061704.151517	06/17/04 15:15	01
P-1	L0406256-03	PE.061704.152029	06/17/04 15:20	01
P-7A	L0406256-04	PE.061704.152541	06/17/04 15:25	01
P-7	L0406256-05	PE.061704.153054	06/17/04 15:30	01

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406256 Run Date: 06/17/2004 Sample ID: WG168219-02
Instrument ID: PE-ICP Run Time: 13:53 Prep Method: 3005A
File ID: PE.061704.135318 Analyst: KHR Method: 6010B
Workgroup (AAB#): WG168298 Matrix: Water Units: mg/L
Contract #: Cal ID: PE-ICP-17-JUN-04

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Calcium	0.100	0.200	0.100	1	U
Iron	0.0200	0.0400	0.0200	1	U
Potassium	0.250	1.00	0.250	1	U
Magnesium	0.250	0.500	0.250	1	U
Manganese	0.00100	0.0100	0.00100	1	U
Sodium	0.250	0.500	0.250	1	U

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406256 Run Date: 06/17/2004 Sample ID: WG168219-03
Instrument ID: PE-ICP Run Time: 13:58 Prep Method: 3005A
File ID: PE.061704.135829 Analyst: KHR Method: 6010B
Workgroup (AAB#): WG168298 Matrix: Water Units: mg/L
Contract #: Cal ID: PE-ICP-17-JUN-2004 09:19

Analytes	Expected	Found	% Rec	LCS Limits	Q
Calcium	5.00	4.82	96.4	80 - 120	
Iron	2.00	1.90	95.2	80 - 120	
Potassium	25.0	25.4	102	80 - 120	
Magnesium	5.00	5.08	102	80 - 120	
Manganese	0.250	0.259	104	80 - 120	
Sodium	25.0	24.7	98.8	80 - 120	

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 353.2

AAB#: WG168437

Login Number: L0406256

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-1	06/11/04	06/12/04	06/18/04	2	7.04	06/18/04	2	7.04	*ANAL
P-1A	06/11/04	06/12/04	06/18/04	2	7.11	06/18/04	2	7.11	*ANAL
P-7	06/11/04	06/12/04	06/18/04	2	6.86	06/18/04	2	6.86	*ANAL
P-7A	06/11/04	06/12/04	06/18/04	2	6.91	06/18/04	2	6.91	*ANAL

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406256 Run Date: 06/18/2004 Sample ID: WG168437-02
Instrument ID: SMARTCHEM Run Time: 10:59 Prep Method: 353.2
File ID: EM04061816225520 Analyst: DIH Method: 353.2
Workgroup (AAB#): WG168437 Matrix: Water Units: mg/L
Contract #: Cal ID: SMARTC-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Nitrate	0.0250	0.0500	0.0250	1	U

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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406256 Run Date: 06/18/2004 Sample ID: WG168437-03
Instrument ID: SMARTCHEM Run Time: 10:59 Prep Method: 353.2
File ID: EM04061816225521 Analyst: DIH Method: 353.2
Workgroup (AAB#): WG168437 Matrix: Water Units: mg/L
Contract #: Cal ID: SMARTC-

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrate	1.00	1.08	108	90 - 110	

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 06/20/2004 07:06

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

AAB#: WG168333

Analytical Method: 325.2

Login Number: L0406256

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-1	06/11/04	06/12/04	06/17/04	28	6.20	06/17/04	28	6.20	
P-1A	06/11/04	06/12/04	06/17/04	28	6.26	06/17/04	28	6.26	
P-7	06/11/04	06/12/04	06/17/04	28	6.01	06/17/04	28	6.01	
P-7A	06/11/04	06/12/04	06/17/04	28	6.06	06/17/04	28	6.06	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406256 Run Date: 06/17/2004 Sample ID: WG168333-03
Instrument ID: SMARTCHEM Run Time: 14:38 Prep Method: 325.2
File ID: EM04061807550817 Analyst: DIH Method: 325.2
Workgroup (AAB#): WG168333 Matrix: Water Units: mg/L
Contract #: Cal ID: SMARTC-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	1.00	2.00	1.00	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 06/18/2004 12:34

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406256 Analyst: DIH Prep Method: 325.2
Instrument ID: SMARTCHEM Matrix: Water Method: 325.2
Workgroup (AAB#): WG168333 Units: mg/L
Sample ID: WG168333-04 LCS File ID: EM04061807550818 Run Date: 06/17/2004 14:38
Sample ID: WG168333-05 LCS2 File ID: EM04061807550819 Run Date: 06/17/2004 14:38

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Chloride	50.0	50.8	102	50.0	50.4	101	.791	90 - 110	10	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 06/18/2004 12:34

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 375.4

Login Number: L0406256

AAB#: WG168401

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-1	06/11/04	06/12/04	06/18/04	28	6.91	06/18/04	28	6.91	
P-1A	06/11/04	06/12/04	06/18/04	28	6.97	06/18/04	28	6.97	
P-7	06/11/04	06/12/04	06/18/04	28	6.72	06/18/04	28	6.72	
P-7A	06/11/04	06/12/04	06/18/04	28	6.77	06/18/04	28	6.77	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 06/20/2004 07:01

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406256 Run Date: 06/18/2004 Sample ID: WG168401-03
Instrument ID: SMARTCHEM Run Time: 07:45 Prep Method: 375.4
File ID: EM04061814074415 Analyst: DIH Method: 375.4
Workgroup (AAB#): WG168401 Matrix: Water Units: mg/L
Contract #: Cal ID: SMARTC-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Sulfate	2.50	5.00	4.00	1	J

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 06/20/2004 07:01

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406256 Analyst: DIH Prep Method: 375.4
Instrument ID: SMARTCHEM Matrix: Water Method: 375.4
Workgroup (AAB#): WG168401 Units: mg/L
Sample ID: WG168401-04 LCS File ID: EM04061814074416 Run Date: 06/18/2004 07:45
Sample ID: WG168401-05 LCS2 File ID: EM04061814074417 Run Date: 06/18/2004 07:45

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Sulfate	20.0	19.4	96.8	20.0	19.6	98.2	1.38	85 - 115	10	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 06/20/2004 07:01

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 415.1

AAB#: WG168146

Login Number: L0406256

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-1	06/11/04	06/12/04	06/14/04	28	2.99	06/14/04	28	2.99	
P-1A	06/11/04	06/12/04	06/14/04	28	3.05	06/14/04	28	3.05	
P-7	06/11/04	06/12/04	06/14/04	28	2.80	06/14/04	28	2.80	
P-7A	06/11/04	06/12/04	06/14/04	28	2.85	06/14/04	28	2.85	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406256 Run Date: 06/14/2004 Sample ID: WG168146-02
Instrument ID: TOC-VWP Run Time: 09:38 Prep Method: 415.1
File ID: WP04061515181122 Analyst: DIH Method: 415.1
Workgroup (AAB#): WG168146 Matrix: Water Units: mg/L
Contract #: Cal ID: TOC-VW-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U

KEMRON FORMS - Modified 05/26/2004
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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406256 Analyst: DIH Prep Method: 415.1
Instrument ID: TOC-VWP Matrix: Water Method: 415.1
Workgroup (AAB#): WG168146 Units: mg/L
Sample ID: WG168146-03 LCS File ID: WP04061515181123 Run Date: 06/14/2004 09:38
Sample ID: WG168146-04 LCS2 File ID: WP04061515181124 Run Date: 06/14/2004 09:38

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	28.3	113	25.0	26.0	104	8.69	85 - 115	15	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 06/15/2004 16:29

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 160.1 AAB#: WG168059

Login Number: L0406256

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-1	06/11/04	06/12/04	06/14/04	7	3.17	06/14/04	7	3.17	
P-1A	06/11/04	06/12/04	06/14/04	7	3.23	06/14/04	7	3.23	
P-7	06/11/04	06/12/04	06/14/04	7	2.98	06/14/04	7	2.98	
P-7A	06/11/04	06/12/04	06/14/04	7	3.03	06/14/04	7	3.03	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406256 Run Date: 06/14/2004 Sample ID: WG168059-02
Instrument ID: OVEN Run Time: 13:55 Prep Method: 160.1
File ID: EN.0406141355-01 Analyst: TMM Method: 160.1
Workgroup (AAB#): WG168059 Matrix: Water Units: mg/L
Contract #: Cal ID: OVEN-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Total Dissolved Solids	5.00	10.0	5.00	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 06/17/2004 14:33

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406256 Analyst: TMM Prep Method: 160.1
Instrument ID: OVEN Matrix: Water Method: 160.1
Workgroup (AAB#): WG168059 Units: mg/L
Sample ID: WG168059-03 LCS File ID: EN.0406141355-02 Run Date: 06/14/2004 13:55
Sample ID: WG168059-04 LCS2 File ID: EN.0406141355-03 Run Date: 06/14/2004 13:55

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Total Dissolved Solids	500	482	96.4	500	498	99.6	3.27	80 - 120	25	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 06/17/2004 14:33

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 130.2 AAB#: WG168326

Login Number: L0406256

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-1	06/11/04	06/12/04	06/16/04	180	4.97	06/16/04	180	4.97	
P-1A	06/11/04	06/12/04	06/16/04	180	5.03	06/16/04	180	5.03	
P-7	06/11/04	06/12/04	06/16/04	180	4.78	06/16/04	180	4.78	
P-7A	06/11/04	06/12/04	06/16/04	180	4.83	06/16/04	180	4.83	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406256 Run Date: 06/16/2004 Sample ID: WG168326-03
Instrument ID: BURET Run Time: 09:10 Prep Method: 130.2
File ID: ET.0406160910-01 Analyst: DR Method: 130.2
Workgroup (AAB#): WG168326 Matrix: Water Units: mg/L
Contract #: Cal ID: BURET-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Hardness	2.50	5.00	2.50	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 06/17/2004 16:38

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406256 Run Date: 06/16/2004 Sample ID: WG168326-04
Instrument ID: BURET Run Time: 09:10 Prep Method: 130.2
File ID: ET.0406160910-02 Analyst: DR Method: 130.2
Workgroup (AAB#): WG168326 Matrix: Water Units: mg/L
Contract #: Cal ID: BURET-

Analytes	Expected	Found	% Rec	LCS Limits	Q
Hardness	100	101	101	90 - 110	

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 06/17/2004 16:38

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method:A2320B

AAB#:WG168149

Login Number:L0406256

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-1	06/11/04	06/12/04	06/15/04	14	3.99	06/15/04	14	3.99	
P-1A	06/11/04	06/12/04	06/15/04	14	4.05	06/15/04	14	4.05	
P-7	06/11/04	06/12/04	06/15/04	14	3.80	06/15/04	14	3.80	
P-7A	06/11/04	06/12/04	06/15/04	14	3.85	06/15/04	14	3.85	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406256 Run Date: 06/15/2004 Sample ID: WG168149-02
Instrument ID: BURET Run Time: 09:35 Prep Method: A2320B
File ID: ET.0406150935-01 Analyst: DLP Method: A2320B
Workgroup (AAB#): WG168149 Matrix: Water Units: mg/L
Contract #: Cal ID: BURET-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Alkalinity, Bicarbonate	5.00	10.0	5.00	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 06/30/2004 07:14

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406256 Analyst: DLP Prep Method: A2320B
Instrument ID: BURET Matrix: Water Method: A2320B
Workgroup (AAB#): WG168149 Units: mg/L
Sample ID: WG168149-03 LCS File ID: ET.0406150935-02 Run Date: 06/15/2004 09:35
Sample ID: WG168149-04 LCS2 File ID: ET.0406150935-03 Run Date: 06/15/2004 09:35

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Alkalinity, Bicarbonate	100	98.5	98.5	100	97.5	97.5	1.02	90 - 110	10	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 06/30/2004 07:14

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 350.1 AAB#: WG168449

Login Number: L0406256

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-1	06/11/04	06/12/04	06/17/04	28	6.03	06/17/04	28	6.03	
P-1A	06/11/04	06/12/04	06/17/04	28	6.09	06/17/04	28	6.09	
P-7	06/11/04	06/12/04	06/17/04	28	5.84	06/17/04	28	5.84	
P-7A	06/11/04	06/12/04	06/17/04	28	5.90	06/17/04	28	5.90	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406256 Run Date: 06/17/2004 Sample ID: WG168449-03
Instrument ID: TRAACS-800 Run Time: 10:41 Prep Method: 350.1
File ID: 0004061816120722 Analyst: DR Method: 350.1
Workgroup (AAB#): WG168449 Matrix: Water Units: mg/L
Contract #: Cal ID: TRAACS-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Nitrogen, Ammonia	0.0500	0.100	0.0500	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 06/20/2004 07:07

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406256 Run Date: 06/17/2004 Sample ID: WG168449-04
Instrument ID: TRAACS-800 Run Time: 10:41 Prep Method: 350.1
File ID: 0004061816120723 Analyst: DR Method: 350.1
Workgroup (AAB#): WG168449 Matrix: Water Units: mg/L
Contract #: Cal ID: TRAACS-

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrogen, Ammonia	2.00	2.05	102	70 - 125	

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 06/20/2004 07:07

EARTH TECH
A TetraTech International Ltd. Company

Chain of Custody and Analytical Request

Page: ___ of ___
Project Number: 76058.03
WBS Number: NA
Chain of Custody Number: 11-Jun-2004-01
LIMS Number: NA

Facility ID: (5 Characters Max) GEP01

Project Name / Site Name: RFI at Caribe General Electric Products, Patillas, Puerto Rico

Client Name: GE Industrial Systems, Inc.

Collected by: J. Stepp, J. Murphy

A. Field Sample ID (30 Characters Max)	B. LOCID (15 Characters Max)	C. Date Collected (dd-MMM-yyyy)	D. Time Collected (Military - HHMM)	E. Sample Depth (top - bottom)	F. SA Code	G. Sample Number	H. Sample Matrix	I. Sample Analysis Requested: Total Number of Containers per Line	Temperature Blank 1 x 100 mL PI	VOCs (8260B) 2 x 40 ml GI HCl	TOC, NH3 (see Comments) 1 x 250 mL GI H2SO4	Hardness (E130.2) 1 x 250 mL PI HNO3	Alkalinity (SM 2320B) 1 x 250 mL PI	Cl, NO3, SO4 (see Comments) 1 x 500 mL PI	Ca,Fe,Mg,Mn,K,Na (6010B) 1x500 mL PI HNO3	TDS (E160.1) 1 x 500 mL PI	J. Quality Assurance Samples: Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
1. P-1A	P-1A	11-Jun-2004	0825	0-0	N	01	WG	6		3	1	1	1	1	1	1				A
2. P-1A-C	P-1A	11-Jun-2004	0835	0.0	TB	0.1	WG	2		2									Trip Blank 06/11/04	A
3. P-1	P-1	11-Jun-2004	0955	0-0	N	01	WG	6		3	1	1	1	1	1	1				A
4. P-7A	P-7A	11-Jun-2004	1310	0.0	N	01	WG	8		2	1	1	1	1	1	1				A
5. P-7	P-7	11-Jun-2004	1325	0.0	N	01	WG	8		2	1	1	1	1	1	1				A
6.				-																
7.				-																
8.				-																
9.				-																
10.				-																
11.				-																
12.				-																
13.				-																
15.				-																
16.				-																
17. TEMPERATURE BLANK				0 - 0	N	01	W		1											

Comments: 1) TOC, and NH3 by methods E415.1, and E350.1. 2) Anions: Chloride, Nitrate, and Sulfate by methods E325.2, E353.2, and E375.4.
3) Total Metals: Total Calcium, Total Iron, Total Magnesium, Total Manganese, Total Potassium, and Total Sodium.

Chain of Custody Number
= date collected + custody form sequence number for that day (e.g. 09-02-1999-01, then -02, etc., for additional chains for that day.)

F. Sample Type (SA) Codes:
N = Normal
FD = Field Duplicate (-a)
FR = Field Replicate (-b)
TB = Trip Blank (-c)
EB = Equipment Blank (-d)
MS = Matrix Spike
SD = Matrix Spike Duplicate

G. Sample Number:
Enter 01, unless on a single day you collect either:
a) multiple samples from the same location, or
b) multiple QA samples of a single type.
In that case, enter 02 for the second sample, 03 for the third, etc.

H. Matrix Codes:
GS = Soil Gas
WG = Ground Water
WS = Surface Water
WQ = Water Quality Blank (trip, equip., ambient)
SO = Soil
SS = Surface Soil
SE = Sediment
SL = Sludge
SQ = Soil Quality Blank

J. Quality Assurance Lot Control Numbers
are produced by adding the sample number (Column G) to the date collected (Column C), without spaces or dashes. (e.g. Enter 10050401 in the Equipment Blank Lot Control column for every sample that was associated with the first equipment blank collected on May 10, 2004.)

Custody Transfers Prior to Receipt by Laboratory

	Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1.	[signature]	11-Jun-2004	1600	1. FEDEX	11-Jun-2004	1600
2.				2. [signature]	14/12/04	0923
3.				3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Yes ___ No ___ Shipped: Yes ___ No ___
Analytical Lab Name: ___ Method of Shipment: ___
Lab Location: ___ Airbill #: ___
Lab Recipient: ___ Date and Time: ___

Ice Packed
Subcontract
Cooler Temp
Leg

KEMRON Internal Laboratory Chain of Custody

Work Order: L0406256 **Client:** GE-GTech **# of Samples:** 5 **Due Date:** 6/28/04 **Page:**

Sample #	Analysis	Reason	Removed By ADT	Removed From	Moved To	Reliq. by	Ret'd By ADT	Ret'd To	Rec'd By	Reason
1,3-5	NO3	test	dmh 6/12/1040	W-1	wet	BLG	dmh 6/18/1715	A-2	CHD	A2
1,3-5	TOC	test	dmh 6/14/0735	W-1	wet	CHD	VCC 6/17/04 825	A2	BLG	A2
1,3-5	MET	BLG	BLG 6/14/04 0856	W-1	MET	CHD	DR 06-17-04 830	A2	BLG	A2
1,3-5	TDS	test	6/14/04 910	W-1	wet	BLG	6/17/04 1050	A-2	CHD	A-2
2,4,5	8260	Analysis	QAS 6/14/04 @ 1325	VI	04,4	CHD	CMS 6/30/04 @ 1144	A2	BLG	A2
1,3,4,5	Alk-T1	Anal	DR 06-15-04 820	W-1	Wet	BLG	DR 6-16-04 800	A-2	CHD	A-2
1,3,4,5	hard	anal	DR 6/16/04 @ 0830	W-1	wet	CHD	@ 0810 DR 6/23/04	A-2	CHD	A-2

SAMPLE RECEIPT FORM

KEMRON ENVIRONMENTAL SERVICES
156 STARLITE DRIVE
MARIETTA, OH
45750
(740) 373-4071

Date: 6/12/04 Client: GE-ETech

Shipped By: (✓) Fed-Ex ( ) UPS ( )Airborne ( ) KEMRON ( ) Client ( ) Other

Opened By: BLG

Logged By: BLG Login #: L04 06256

IR Temp Gun: (✓) D ( ) F

COOLER INFORMATION

Number	Cooler ID	Temp °C	Airbill#	COC#	Other
1	KL1388	1	832729644939		
2					
3					
4					
5					
6					

Were all coolers sealed?	(Y)	N	N/A
Were custody seals used on all coolers?	(Y)	N	N/A
Were custody seals intact?	(Y)	N	N/A
Was visible ice present?	(Y)	N	N/A
Were all coolers in the temperature range of 2-6C? (>6C*)	Y	(N)	N/A
Were the samples frozen?*	Y	(N)	N/A
Were COC papers provided?	(Y)	N	N/A
Were all sample containers intact?*	(Y)	N	N/A
Were all sample labels intact?	(Y)	N	N/A
Were all sample labels legible?*	(Y)	N	N/A
Did all sample labels match the COC?*	(Y)	N	N/A
Was the label information complete?*	(Y)	N	N/A
Were the correct containers used?*	(Y)	N	N/A
Were the correct preservatives added to water samples?*	(Y)	N	N/A
Was the pH tested on preserved water samples?	(Y)	N	N/A
Were pH ranges acceptable?*	(Y)	N	N/A
Was sufficient amount of sample provided?*	(Y)	N	N/A
Were bubbles present in VOA samples?*	Y	(N)	N/A
Were COC's signed and dated?	(Y)	N	N/A
Did samples arrive before hold time expired?*	(Y)	N	N/A
Are discrepancy forms attached?	Y	N	(N/A)

**Requires a discrepancy form*

Comments:_____

CRF #1
Revised 8/22/03

KEMRON
ENVIRONMENTAL SERVICES

156 Starlite Drive ▪ Marietta, OH 45750 ▪ Telephone (740) 373-4071 ▪ FAX (740) 373-4835

Laboratory Report Number: L0406578

Please find enclosed the analytical results for the samples you submitted to Kemron Environmental Services.

Review and compilation of your report was completed by Kemron's Sales and Service Team 2. If you have questions, comments or require further assistance please contact one of our team members at 800-373-4071. We can also be reached at the e-mail addresses listed below.

Cheryl Koelsch – Team Chemist/Data Specialist
ckoelsch@kemron-lab.com

Nina Scott – Customer Service/Invoicing Specialist
ascott@kemron-lab.com

Kathy Albertson – Team Chemist/Data Specialist
kalbertson@kemron-lab.com

Debra Elliott – Team Leader
delliott@kemron-lab.com

This report was reviewed by: _____ Date: 7/27/04

I certify that all test results meet all of the requirements of the NELAP standards and other applicable contract terms and conditions. All results for soil samples are reported on a "dry-weight" basis unless specified otherwise. Analytical results for water and wastes are reported on an "as received" basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of KEMRON Environmental Services.

Certified by: _____
David E. Vandenberg
Laboratory Director

NYDOH NELAP Id: 10861

This report contains a total of 94 pages.

LABORATORY REPORT

L0406578

07/16/04 08:12

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta, Ohio 45750
(740)373-4071

For

Account Name: EARTH TECH, Inc
10 Patewood Drive
Suite 500 Building VI
Greenville, SC 29615
Attention: Juanita Edwards

Account Number: 664-831
Work ID: RFI @ CARIBE GE

P.O. Number: 76058-d

Sample Summary

Client ID	Lab ID	Date Collected	Date Received
P-9	L0406578-01	28-JUN-04	29-JUN-04
P-9-C	L0406578-02	28-JUN-04	29-JUN-04
P-9-A	L0406578-03	28-JUN-04	29-JUN-04
P-15DD	L0406578-04	28-JUN-04	29-JUN-04
P-11	L0406578-05	28-JUN-04	29-JUN-04
P-8	L0406578-06	28-JUN-04	29-JUN-04

KEMRON ENVIRONMENTAL SERVICES
REPORT NARRATIVE

L0406578

CHAIN OF CUSTODY:

The chain of custody number was 28-JUNE-2004-01.

SHIPMENT CONDITIONS:

The chain of custody forms were received sealed in a cooler. The cooler temperatures were 3 and 5°C.

SAMPLE MANAGEMENT:

The samples were received intact, packed in ice.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

REVIEWED: _____ DATE: 6/30/04

REPORT NARRATIVE
GC/MS VOLATILE ORGANICS

KEMRON Login No: L0406578

METHOD

Preparation: SW-846 5030B
Analysis: SW-846 8260B

HOLDING TIMES

Sample Preparation: All holding times were met.
Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial calibrations: For all compounds which yielded a %RSD greater than 15%, linear or higher order equations were applied or if the mean %RSD for all analytes was less than 15% the average response factors were used. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Samples: Carbon tetrachloride exceeded the upper advisory limit in the LCS analyzed 7/9/04. All other acceptance criteria were met.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group (SDG).

SAMPLES

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Samples: Sample 06 required a dilution analysis to obtain results within the calibrated range of the instrument.

MANUAL INTEGRATION REASON CODES

KEMRON laboratory management has identified four general cases with valid reasons supporting the use of manual integration techniques.

Reason #1: Data System Fails to Select Correct Peak

In some cases the chromatography system selects and integrates the "wrong peak". In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak.

Approved: July 25, 2004

This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds.

This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline

There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous

Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analyst: CMS

Rev. 07/08/04

Approved: July 25, 2004

REPORT NARRATIVE
METALS

KEMRON Login No: L0406578

METHOD

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.
Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial calibrations: All acceptance criteria were met.
Alternate Source Standards: All acceptance criteria were met.
Continuing Calibration : WG169421(6010) - The batch QA/QC associated with client samples 01, 03, 04, 05, and 06 was reanalyzed later in the analytical run due to too many samples between continuing calibration standards.

BATCH QA/QC

Method Blank: All acceptance criteria were met.
Laboratory Control Sample: All acceptance criteria were met.
Serial Dilution/Post Digestion Spike: WG169421(6010) - All acceptance criteria were met.

SAMPLES

All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analyst:SLP

Approved: July 23, 2004

REPORT NARRATIVE
GENERAL CHEMISTRY

KEMRON Login No: L0406578

METHOD

Analysis: See report for method reference.

HOLDING TIMES

Sample Preparation: All holding times were met.
Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.
Laboratory Control Sample: All acceptance criteria were met
Duplicates: All acceptance criteria were met
Matrix Spikes: All acceptance criteria were met.

SAMPLES

Nitrate

Nitrate is analyzed by subtracting the nitrite result from the nitrate-nitrite result. The nitrite was analyzed within the 48 hour hold time. Nitrate-nitrite has a 28 day hold, so the analysis was performed within hold.

, TOC

Some samples were diluted to reduce chloride interference. The reporting limit is elevated accordingly.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analyst: dih

REVIEWED: dih DATE: 7/19/04

Rev. 6/00

Report Number: **L0406578**
Report Date : **July 16, 2004**

Sample Number: **L0406578-01**
Client ID: **P-9**
Matrix: **Water**
Workgroup Number: **WG169194**
Collect Date: **28-JUN-04**

Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **06/29/2004 14:20**
Cal Date:
Run Date: **06/29/2004 14:20**
File ID: **EN.0406291420-14**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		**206**		**20.0**	**10.0**

Sample Number: **L0406578-01**
Client ID: **P-9**
Matrix: **Water**
Workgroup Number: **WG169596**
Collect Date: **28-JUN-04**

Prep Method: **130.2**
Analytical Method: **130.2**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 13:50**
Cal Date:
Run Date: **07/01/2004 13:50**
File ID: **ET.0407011350-03**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		**127**		**10.0**	**5.00**

Sample Number: **L0406578-01**
Client ID: **P-9**
Matrix: **Water**
Workgroup Number: **WG169608**
Collect Date: **28-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 08:30**
Cal Date:
Run Date: **07/01/2004 08:30**
File ID: **ET.0407010830-04**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		**133**		**10.0**	**5.00**

Sample Number: **L0406578-01**
Client ID: **P-9**
Matrix: **Water**
Workgroup Number: **WG169687**
Collect Date: **28-JUN-04**

Prep Method: **375.4**
Analytical Method: **375.4**
Analyst: **DIH**
Dilution: **2**
Units: **mg/L**

Instrument: **SMARTCHEM**
Prep Date: **07/07/2004 13:52**
Cal Date:
Run Date: **07/07/2004 13:52**
File ID: **EM04070913372804**

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	**14808-79-8**	**31.4**		**10.0**	**5.00**

Report Number: **L0406578**
Report Date : **July 16, 2004**

Sample Number:	L0406578-01	Prep Method:	325.2	Instrument:	SMARTCHEM
Client ID:	P-9	Analytical Method:	325.2	Prep Date:	07/08/2004 15:11
Matrix:	Water	Analyst:	DIH	Cal Date:	
Workgroup Number:	WG169838	Dilution:	1	Run Date:	07/08/2004 15:11
Collect Date:	28-JUN-04	Units:	mg/L	File ID:	EM04071209333401

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	16887-00-6	22.3		2.00	1.00

Sample Number:	L0406578-01	Prep Method:	353.2	Instrument:	TRAACS-800
Client ID:	P-9	Analytical Method:	353.2	Prep Date:	07/13/2004 08:46
Matrix:	Water	Analyst:	DIH	Cal Date:	
Workgroup Number:	WG170058	Dilution:	2	Run Date:	07/13/2004 08:46
Collect Date:	28-JUN-04	Units:	mg/L	File ID:	0004071311433903

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	14797-55-8	2.81		0.100	0.0500

Sample Number:	L0406578-01	Prep Method:	350.1	Instrument:	TRAACS-800
Client ID:	P-9	Analytical Method:	350.1	Prep Date:	07/13/2004 14:08
Matrix:	Water	Analyst:	JWR	Cal Date:	
Workgroup Number:	WG170113	Dilution:	1	Run Date:	07/13/2004 14:08
Collect Date:	28-JUN-04	Units:	mg/L	File ID:	0004071408591801

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.147		0.100	0.0500

Sample Number:	L0406578-01	Prep Method:	415.1	Instrument:	TOC-VWP
Client ID:	P-9	Analytical Method:	415.1	Prep Date:	06/30/2004 16:43
Matrix:	Water	Analyst:	DR	Cal Date:	
Workgroup Number:	WG169360	Dilution:	1	Run Date:	06/30/2004 16:43
Collect Date:	28-JUN-04	Units:	mg/L	File ID:	WP04070115050814

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		1.80		1.00	0.500

Report Number: **L0406578**
Report Date : **July 16, 2004**

Sample Number: **L0406578-01**
Client ID: **P-9**
Matrix: **Water**
Workgroup Number: **WG169421**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **SLP**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP**
Prep Date: **06/30/2004 08:15**
Cal Date: **07/06/2004 12:46**
Run Date: **07/06/2004 16:31**
File ID: **PE.070604.163130**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	26.8		0.200	0.100
Iron, Total	7439-89-6	0.0602		0.0400	0.0200
Potassium, Total	7440-09-7	0.310	J	1.00	0.250
Magnesium, Total	7439-95-4	13.9		0.500	0.250
Manganese, Total	7439-96-5		U	0.0100	0.00100
Sodium, Total	7440-23-5	33.1		0.500	0.250

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406578-01**
Client ID: **P-9**
Matrix: **Water**
Workgroup Number: **WG169731**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **JLS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **07/08/2004 17:46**
Cal Date: **06/09/2004 14:51**
Run Date: **07/08/2004 17:46**
File ID: **11M22316**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3	0.816	J	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4	6.32		1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Report Number: **L0406578**
Report Date : **July 16, 2004**

Sample Number: **L0406578-01**
Client ID: **P-9**
Matrix: **Water**
Workgroup Number: **WG169731**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **JLS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **07/08/2004 17:46**
Cal Date: **06/09/2004 14:51**
Run Date: **07/08/2004 17:46**
File ID: **11M22316**

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	104	86	118	
1,2-Dichloroethane-d4	109	80	120	
Toluene-d8	103	88	110	
4-Bromofluorobenzene	101	86	115	

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406578-01**
Client ID: **P-9**
Matrix: **Water**
Workgroup Number: **WG169608**
Collect Date: **28-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 08:30**
Cal Date:
Run Date: **07/01/2004 08:30**
File ID: **ET.0407010830-04**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

Sample Number: **L0406578-02**
Client ID: **P-9-C**
Matrix: **Water**
Workgroup Number: **WG169731**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **JLS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **07/08/2004 18:18**
Cal Date: **06/09/2004 14:51**
Run Date: **07/08/2004 18:18**
File ID: **11M22317**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500

Sample Number: **L0406578-02**
Client ID: **P-9-C**
Matrix: **Water**
Workgroup Number: **WG169731**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **JLS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **07/08/2004 18:18**
Cal Date: **06/09/2004 14:51**
Run Date: **07/08/2004 18:18**
File ID: **11M22317**

Analyte	CAS. Number	Result	Qual	RL	MDL
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	108	86	118	
1,2-Dichloroethane-d4	114	80	120	
Toluene-d8	107	88	110	
4-Bromofluorobenzene	105	86	115	

U This analyte was not detected in the sample.

Sample Number: **L0406578-03**
Client ID: **P-9-A**
Matrix: **Water**
Workgroup Number: **WG169194**
Collect Date: **28-JUN-04**

Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **06/29/2004 14:20**
Cal Date:
Run Date: **06/29/2004 14:20**
File ID: **EN.0406291420-15**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		198		20.0	10.0

Sample Number: **L0406578-03**
Client ID: **P-9-A**
Matrix: **Water**
Workgroup Number: **WG169596**
Collect Date: **28-JUN-04**

Prep Method: **130.2**
Analytical Method: **130.2**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 13:50**
Cal Date:
Run Date: **07/01/2004 13:50**
File ID: **ET.0407011350-04**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		126		10.0	5.00

Sample Number: **L0406578-03** | Prep Method: **A2320B** | Instrument: **BURET**
Client ID: **P-9-A** | Analytical Method: **A2320B** | Prep Date: **07/01/2004 08:30**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG169608** | Dilution: **1** | Run Date: **07/01/2004 08:30**
Collect Date: **28-JUN-04** | Units: **mg/L** | File ID: **ET.0407010830-05**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		134		10.0	5.00

Sample Number: **L0406578-03** | Prep Method: **375.4** | Instrument: **SMARTCHEM**
Client ID: **P-9-A** | Analytical Method: **375.4** | Prep Date: **07/07/2004 13:52**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG169687** | Dilution: **2** | Run Date: **07/07/2004 13:52**
Collect Date: **28-JUN-04** | Units: **mg/L** | File ID: **EM04070913372805**

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	14808-79-8	31.2		10.0	5.00

Sample Number: **L0406578-03** | Prep Method: **325.2** | Instrument: **SMARTCHEM**
Client ID: **P-9-A** | Analytical Method: **325.2** | Prep Date: **07/08/2004 15:11**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG169838** | Dilution: **1** | Run Date: **07/08/2004 15:11**
Collect Date: **28-JUN-04** | Units: **mg/L** | File ID: **EM04071209333402**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	16887-00-6	20.7		2.00	1.00

Sample Number: **L0406578-03** | Prep Method: **353.2** | Instrument: **TRAACS-800**
Client ID: **P-9-A** | Analytical Method: **353.2** | Prep Date: **07/13/2004 08:46**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG170058** | Dilution: **2** | Run Date: **07/13/2004 08:46**
Collect Date: **28-JUN-04** | Units: **mg/L** | File ID: **0004071311433904**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	14797-55-8	2.87		0.100	0.0500

Report Number: **L0406578**
Report Date : **July 16, 2004**

Sample Number: **L0406578-03**
Client ID: **P-9-A**
Matrix: **Water**
Workgroup Number: **WG170113**
Collect Date: **28-JUN-04**

Prep Method: **350.1**
Analytical Method: **350.1**
Analyst: **JWR**
Dilution: **1**
Units: **mg/L**

Instrument: **TRAACS-800**
Prep Date: **07/13/2004 14:08**
Cal Date:
Run Date: **07/13/2004 14:08**
File ID: **0004071408591802**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.121		0.100	0.0500

Sample Number: **L0406578-03**
Client ID: **P-9-A**
Matrix: **Water**
Workgroup Number: **WG169360**
Collect Date: **28-JUN-04**

Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **06/30/2004 16:43**
Cal Date:
Run Date: **06/30/2004 16:43**
File ID: **WP04070115050815**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		1.83		1.00	0.500

Sample Number: **L0406578-03**
Client ID: **P-9-A**
Matrix: **Water**
Workgroup Number: **WG169421**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **SLP**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP**
Prep Date: **06/30/2004 08:15**
Cal Date: **07/06/2004 12:46**
Run Date: **07/06/2004 16:36**
File ID: **PE.070604.163637**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	25.8		0.200	0.100
Iron, Total	7439-89-6	0.0582		0.0400	0.0200
Potassium, Total	7440-09-7	0.283	J	1.00	0.250
Magnesium, Total	7439-95-4	13.4		0.500	0.250
Manganese, Total	7439-96-5		U	0.0100	0.00100
Sodium, Total	7440-23-5	31.5		0.500	0.250

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406578-03**
Client ID: **P-9-A**
Matrix: **Water**
Workgroup Number: **WG169731**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **JLS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **07/08/2004 18:49**
Cal Date: **06/09/2004 14:51**
Run Date: **07/08/2004 18:49**
File ID: **11M22318**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500

Report Number: **L0406578**
Report Date : **July 16, 2004**

Sample Number: **L0406578-03**
Client ID: **P-9-A**
Matrix: **Water**
Workgroup Number: **WG169731**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **JLS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **07/08/2004 18:49**
Cal Date: **06/09/2004 14:51**
Run Date: **07/08/2004 18:49**
File ID: **11M22318**

Analyte	CAS. Number	Result	Qual	RL	MDL
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3	0.905	J	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4	6.61		1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	107	86	118	
1,2-Dichloroethane-d4	115	80	120	
Toluene-d8	108	88	110	
4-Bromofluorobenzene	105	86	115	

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406578-03**
Client ID: **P-9-A**
Matrix: **Water**
Workgroup Number: **WG169608**
Collect Date: **28-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 08:30**
Cal Date:
Run Date: **07/01/2004 08:30**
File ID: **ET.0407010830-05**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

Report Number: **L0406578**
Report Date : **July 16, 2004**

Sample Number: **L0406578-04**
Client ID: **P-15DD**
Matrix: **Water**
Workgroup Number: **WG169194**
Collect Date: **28-JUN-04**

Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **06/29/2004 14:20**
Cal Date:
Run Date: **06/29/2004 14:20**
File ID: **EN.0406291420-16**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		**278**		**20.0**	**10.0**

Sample Number: **L0406578-04**
Client ID: **P-15DD**
Matrix: **Water**
Workgroup Number: **WG169596**
Collect Date: **28-JUN-04**

Prep Method: **130.2**
Analytical Method: **130.2**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 13:50**
Cal Date:
Run Date: **07/01/2004 13:50**
File ID: **ET.0407011350-05**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		**155**		**10.0**	**5.00**

Sample Number: **L0406578-04**
Client ID: **P-15DD**
Matrix: **Water**
Workgroup Number: **WG169608**
Collect Date: **28-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 08:30**
Cal Date:
Run Date: **07/01/2004 08:30**
File ID: **ET.0407010830-06**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		**208**		**10.0**	**5.00**

Sample Number: **L0406578-04**
Client ID: **P-15DD**
Matrix: **Water**
Workgroup Number: **WG169687**
Collect Date: **28-JUN-04**

Prep Method: **375.4**
Analytical Method: **375.4**
Analyst: **DIH**
Dilution: **2**
Units: **mg/L**

Instrument: **SMARTCHEM**
Prep Date: **07/07/2004 13:52**
Cal Date:
Run Date: **07/07/2004 13:52**
File ID: **EM04070913372806**

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	**14808-79-8**	**41.2**		**10.0**	**5.00**

Sample Number: **L0406578-04** | Prep Method: **325.2** | Instrument: **SMARTCHEM**
Client ID: **P-15DD** | Analytical Method: **325.2** | Prep Date: **07/08/2004 15:11**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG169838** | Dilution: **1** | Run Date: **07/08/2004 15:11**
Collect Date: **28-JUN-04** | Units: **mg/L** | File ID: **EM04071209333403**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	**16887-00-6**	**25.2**		**2.00**	**1.00**

Sample Number: **L0406578-04** | Prep Method: **353.2** | Instrument: **TRAACS-800**
Client ID: **P-15DD** | Analytical Method: **353.2** | Prep Date: **07/13/2004 08:46**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG170058** | Dilution: **2** | Run Date: **07/13/2004 08:46**
Collect Date: **28-JUN-04** | Units: **mg/L** | File ID: **0004071311433905**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	**14797-55-8**	**2.21**		**0.100**	**0.0500**

Sample Number: **L0406578-04** | Prep Method: **350.1** | Instrument: **TRAACS-800**
Client ID: **P-15DD** | Analytical Method: **350.1** | Prep Date: **07/13/2004 14:08**
Matrix: **Water** | Analyst: **JWR** | Cal Date:
Workgroup Number: **WG170113** | Dilution: **1** | Run Date: **07/13/2004 14:08**
Collect Date: **28-JUN-04** | Units: **mg/L** | File ID: **0004071408591803**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	**7664-41-7**	**0.227**		**0.100**	**0.0500**

Sample Number: **L0406578-04** | Prep Method: **415.1** | Instrument: **TOC-VWP**
Client ID: **P-15DD** | Analytical Method: **415.1** | Prep Date: **06/30/2004 16:43**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG169360** | Dilution: **1** | Run Date: **06/30/2004 16:43**
Collect Date: **28-JUN-04** | Units: **mg/L** | File ID: **WP04070115050816**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		**2.33**		**1.00**	**0.500**

Report Number: **L0406578**
Report Date : **July 16, 2004**

Sample Number: **L0406578-04**
Client ID: **P-15DD**
Matrix: **Water**
Workgroup Number: **WG169421**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **SLP**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP**
Prep Date: **06/30/2004 08:15**
Cal Date: **07/06/2004 12:46**
Run Date: **07/06/2004 16:41**
File ID: **PE.070604.164144**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	33.4		0.200	0.100
Iron, Total	7439-89-6	0.193		0.0400	0.0200
Potassium, Total	7440-09-7	0.442	J	1.00	0.250
Magnesium, Total	7439-95-4	17.6		0.500	0.250
Manganese, Total	7439-96-5	0.0348		0.0100	0.00100
Sodium, Total	7440-23-5	59.4		0.500	0.250

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: **L0406578-04**
Client ID: **P-15DD**
Matrix: **Water**
Workgroup Number: **WG169731**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **JLS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **07/08/2004 19:20**
Cal Date: **06/09/2004 14:51**
Run Date: **07/08/2004 19:20**
File ID: **11M22319**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3	2.07		1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4	104		1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6	0.513	J	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Sample Number: **L0406578-04**
Client ID: **P-15DD**
Matrix: **Water**
Workgroup Number: **WG169731**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **JLS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **07/08/2004 19:20**
Cal Date: **06/09/2004 14:51**
Run Date: **07/08/2004 19:20**
File ID: **11M22319**

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	110	86	118	
1,2-Dichloroethane-d4	118	80	120	
Toluene-d8	107	88	110	
4-Bromofluorobenzene	107	86	115	

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406578-04**
Client ID: **P-15DD**
Matrix: **Water**
Workgroup Number: **WG169608**
Collect Date: **28-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 08:30**
Cal Date:
Run Date: **07/01/2004 08:30**
File ID: **ET.0407010830-06**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

Sample Number: **L0406578-05**
Client ID: **P-11**
Matrix: **Water**
Workgroup Number: **WG169194**
Collect Date: **28-JUN-04**

Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **06/29/2004 14:20**
Cal Date:
Run Date: **06/29/2004 14:20**
File ID: **EN.0406291420-17**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		252		20.0	10.0

Sample Number: **L0406578-05**
Client ID: **P-11**
Matrix: **Water**
Workgroup Number: **WG169596**
Collect Date: **28-JUN-04**

Prep Method: **130.2**
Analytical Method: **130.2**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 13:50**
Cal Date:
Run Date: **07/01/2004 13:50**
File ID: **ET.0407011350-06**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		140		10.0	5.00

Sample Number: **L0406578-05** | Prep Method: **A2320B** | Instrument: **BURET**
Client ID: **P-11** | Analytical Method: **A2320B** | Prep Date: **07/01/2004 08:30**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG169608** | Dilution: **1** | Run Date: **07/01/2004 08:30**
Collect Date: **28-JUN-04** | Units: **mg/L** | File ID: **ET.0407010830-07**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		149		10.0	5.00

Sample Number: **L0406578-05** | Prep Method: **375.4** | Instrument: **SMARTCHEM**
Client ID: **P-11** | Analytical Method: **375.4** | Prep Date: **07/07/2004 13:52**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG169687** | Dilution: **2** | Run Date: **07/07/2004 13:52**
Collect Date: **28-JUN-04** | Units: **mg/L** | File ID: **EM04070913372807**

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	14808-79-8	33.2		10.0	5.00

Sample Number: **L0406578-05** | Prep Method: **325.2** | Instrument: **SMARTCHEM**
Client ID: **P-11** | Analytical Method: **325.2** | Prep Date: **07/08/2004 15:11**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG169838** | Dilution: **1** | Run Date: **07/08/2004 15:11**
Collect Date: **28-JUN-04** | Units: **mg/L** | File ID: **EM04071209333404**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	16887-00-6	25.2		2.00	1.00

Sample Number: **L0406578-05** | Prep Method: **353.2** | Instrument: **TRAACS-800**
Client ID: **P-11** | Analytical Method: **353.2** | Prep Date: **07/13/2004 08:46**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG170058** | Dilution: **2** | Run Date: **07/13/2004 08:46**
Collect Date: **28-JUN-04** | Units: **mg/L** | File ID: **0004071311433906**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	14797-55-8	2.25		0.100	0.0500

Report Number: **L0406578**
Report Date : **July 16, 2004**

Sample Number: **L0406578-05**
Client ID: **P-11**
Matrix: **Water**
Workgroup Number: **WG170113**
Collect Date: **28-JUN-04**

Prep Method: **350.1**
Analytical Method: **350.1**
Analyst: **JWR**
Dilution: **1**
Units: **mg/L**

Instrument: **TRAACS-800**
Prep Date: **07/13/2004 14:08**
Cal Date:
Run Date: **07/13/2004 14:08**
File ID: **0004071408591804**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.149		0.100	0.0500

Sample Number: **L0406578-05**
Client ID: **P-11**
Matrix: **Water**
Workgroup Number: **WG169360**
Collect Date: **28-JUN-04**

Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **06/30/2004 16:43**
Cal Date:
Run Date: **06/30/2004 16:43**
File ID: **WP04070115050817**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		3.38		1.00	0.500

Sample Number: **L0406578-05**
Client ID: **P-11**
Matrix: **Water**
Workgroup Number: **WG169421**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **SLP**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP**
Prep Date: **06/30/2004 08:15**
Cal Date: **07/06/2004 12:46**
Run Date: **07/06/2004 16:46**
File ID: **PE.070604.164651**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	28.1		0.200	0.100
Iron, Total	7439-89-6	0.224		0.0400	0.0200
Potassium, Total	7440-09-7	0.314	J	1.00	0.250
Magnesium, Total	7439-95-4	15.7		0.500	0.250
Manganese, Total	7439-96-5	0.750		0.0100	0.00100
Sodium, Total	7440-23-5	33.7		0.500	0.250

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: **L0406578-05**
Client ID: **P-11**
Matrix: **Water**
Workgroup Number: **WG169731**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **JLS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **07/08/2004 19:51**
Cal Date: **06/09/2004 14:51**
Run Date: **07/08/2004 19:51**
File ID: **11M22320**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50

Report Number: **L0406578**
Report Date : **July 16, 2004**

Sample Number: **L0406578-05**
Client ID: **P-11**
Matrix: **Water**
Workgroup Number: **WG169731**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **JLS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **07/08/2004 19:51**
Cal Date: **06/09/2004 14:51**
Run Date: **07/08/2004 19:51**
File ID: **11M22320**

Analyte	CAS. Number	Result	Qual	RL	MDL
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3	0.176	J	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	0.435	J	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	106	86	118	
1,2-Dichloroethane-d4	113	80	120	
Toluene-d8	107	88	110	
4-Bromofluorobenzene	105	86	115	

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406578-05**
Client ID: **P-11**
Matrix: **Water**
Workgroup Number: **WG169608**
Collect Date: **28-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 08:30**
Cal Date:
Run Date: **07/01/2004 08:30**
File ID: **ET.0407010830-07**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

Report Number: **L0406578**
Report Date : **July 16, 2004**

Sample Number: **L0406578-06**
Client ID: **P-8**
Matrix: **Water**
Workgroup Number: **WG169194**
Collect Date: **28-JUN-04**

Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **06/29/2004 14:20**
Cal Date:
Run Date: **06/29/2004 14:20**
File ID: **EN.0406291420-18**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		**264**		**20.0**	**10.0**

Sample Number: **L0406578-06**
Client ID: **P-8**
Matrix: **Water**
Workgroup Number: **WG169596**
Collect Date: **28-JUN-04**

Prep Method: **130.2**
Analytical Method: **130.2**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 13:50**
Cal Date:
Run Date: **07/01/2004 13:50**
File ID: **ET.0407011350-07**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		**163**		**10.0**	**5.00**

Sample Number: **L0406578-06**
Client ID: **P-8**
Matrix: **Water**
Workgroup Number: **WG169608**
Collect Date: **28-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 08:30**
Cal Date:
Run Date: **07/01/2004 08:30**
File ID: **ET.0407010830-08**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		**178**		**10.0**	**5.00**

Sample Number: **L0406578-06**
Client ID: **P-8**
Matrix: **Water**
Workgroup Number: **WG169687**
Collect Date: **28-JUN-04**

Prep Method: **375.4**
Analytical Method: **375.4**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **SMARTCHEM**
Prep Date: **07/07/2004 13:52**
Cal Date:
Run Date: **07/07/2004 13:52**
File ID: **EM04070913372808**

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	**14808-79-8**	**21.9**		**5.00**	**2.50**

Sample Number: **L0406578-06** | Prep Method: **325.2** | Instrument: **SMARTCHEM**
Client ID: **P-8** | Analytical Method: **325.2** | Prep Date: **07/08/2004 15:11**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG169838** | Dilution: **1** | Run Date: **07/08/2004 15:11**
Collect Date: **28-JUN-04** | Units: **mg/L** | File ID: **EM04071209333405**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	16887-00-6	61.0		2.00	1.00

Sample Number: **L0406578-06** | Prep Method: **353.2** | Instrument: **TRAACS-800**
Client ID: **P-8** | Analytical Method: **353.2** | Prep Date: **07/12/2004 15:45**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG170055** | Dilution: **1** | Run Date: **07/12/2004 15:45**
Collect Date: **28-JUN-04** | Units: **mg/L** | File ID: **0004071311515004**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	14797-55-8	0.0811		0.0500	0.0250

Sample Number: **L0406578-06** | Prep Method: **350.1** | Instrument: **TRAACS-800**
Client ID: **P-8** | Analytical Method: **350.1** | Prep Date: **07/13/2004 14:08**
Matrix: **Water** | Analyst: **JWR** | Cal Date:
Workgroup Number: **WG170113** | Dilution: **1** | Run Date: **07/13/2004 14:08**
Collect Date: **28-JUN-04** | Units: **mg/L** | File ID: **0004071408591805**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.161		0.100	0.0500

Sample Number: **L0406578-06** | Prep Method: **415.1** | Instrument: **TOC-VWP**
Client ID: **P-8** | Analytical Method: **415.1** | Prep Date: **06/30/2004 16:43**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG169360** | Dilution: **1** | Run Date: **06/30/2004 16:43**
Collect Date: **28-JUN-04** | Units: **mg/L** | File ID: **WP04070115050818**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		3.80		1.00	0.500

Report Number: **L0406578**
Report Date : **July 16, 2004**

Sample Number: **L0406578-06**
Client ID: **P-8**
Matrix: **Water**
Workgroup Number: **WG169421**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **SLP**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP**
Prep Date: **06/30/2004 08:15**
Cal Date: **07/06/2004 12:46**
Run Date: **07/06/2004 16:51**
File ID: **PE.070604.165159**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	35.5		0.200	0.100
Iron, Total	7439-89-6	10.2		0.0400	0.0200
Potassium, Total	7440-09-7	0.639	J	1.00	0.250
Magnesium, Total	7439-95-4	15.0		0.500	0.250
Manganese, Total	7439-96-5	1.02		0.0100	0.00100
Sodium, Total	7440-23-5	32.1		0.500	0.250

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: **L0406578-06**
Client ID: **P-8**
Matrix: **Water**
Workgroup Number: **WG169731**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **JLS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **07/08/2004 20:22**
Cal Date: **06/09/2004 14:51**
Run Date: **07/08/2004 20:22**
File ID: **11M22321**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3	60.8		1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4	358	I	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4	5.94		1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6	580	I	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6	3.53		1.00	0.250
Vinyl chloride	75-01-4	2.14		1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Report Number: **L0406578**
Report Date : **July 16, 2004**

Sample Number: **L0406578-06**
Client ID: **P-8**
Matrix: **Water**
Workgroup Number: **WG169731**
Collect Date: **28-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **JLS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **07/08/2004 20:22**
Cal Date: **06/09/2004 14:51**
Run Date: **07/08/2004 20:22**
File ID: **11M22321**

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	110	86	118	
1,2-Dichloroethane-d4	118	80	120	
Toluene-d8	107	88	110	
4-Bromofluorobenzene	107	86	115	

I Semiquantitative result (out of instrument calibration range)
U This analyte was not detected in the sample.

Sample Number: **L0406578-06**
Client ID: **P-8**
Matrix: **Water**
Workgroup Number: **WG169776**
Collect Date: **28-JUN-04**
Sample Tag: **DL01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **JLS**
Dilution: **10**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **07/09/2004 12:18**
Cal Date: **06/09/2004 14:51**
Run Date: **07/09/2004 12:18**
File ID: **11M22328**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	100	25.0
Benzene	71-43-2		U	10.0	1.25
Bromochloromethane	74-97-5		U	10.0	2.00
Bromodichloromethane	75-27-4		U	10.0	2.50
Bromoform	75-25-2		U	10.0	5.40
Bromomethane	74-83-9		U	10.0	5.00
2-Butanone	78-93-3		U	100	25.0
Carbon disulfide	75-15-0		U	10.0	5.00
Carbon tetrachloride	56-23-5		U	10.0	2.50
Chlorobenzene	108-90-7		U	10.0	1.25
Dibromochloromethane	124-48-1		U	10.0	2.50
Chloroethane	75-00-3		U	10.0	5.00
Chloroform	67-66-3		U	10.0	1.25
Chloromethane	74-87-3		U	10.0	2.50
1,2-Dichlorobenzene	95-50-1		U	10.0	1.25
1,3-Dichlorobenzene	541-73-1		U	10.0	2.50
1,4-Dichlorobenzene	106-46-7		U	10.0	1.25
1,1-Dichloroethane	75-34-3	56.4		10.0	1.25
1,2-Dichloroethane	107-06-2		U	10.0	2.50
1,1-Dichloroethene	75-35-4	360		10.0	5.00
cis-1,2-Dichloroethene	156-59-2		U	10.0	2.50
trans-1,2-Dichloroethene	156-60-5		U	10.0	2.50
1,2-Dichloropropane	78-87-5		U	10.0	1.25
cis-1,3-Dichloropropene	10061-01-5		U	10.0	2.50
trans-1,3-Dichloropropene	10061-02-6		U	10.0	5.00
Ethylbenzene	100-41-4		U	10.0	2.50
2-Hexanone	591-78-6		U	100	25.0
4-Methyl-2-pentanone	108-10-1		U	100	25.0
Methylene chloride	75-09-2		U	50.0	2.50
Styrene	100-42-5		U	10.0	1.25
1,1,2,2-Tetrachloroethane	79-34-5		U	10.0	1.25
Tetrachloroethene	127-18-4	6.04	J	10.0	2.50
Toluene	108-88-3		U	10.0	2.50
1,1,1-Trichloroethane	71-55-6	586		10.0	2.50
1,1,2-Trichloroethane	79-00-5		U	10.0	2.50
Trichloroethene	79-01-6	2.91	J	10.0	2.50
Vinyl chloride	75-01-4		U	10.0	2.50
Xylenes (total)	1330-20-7		U	10.0	2.50

Sample Number: **L0406578-06**
Client ID: **P-8**
Matrix: **Water**
Workgroup Number: **WG169776**
Collect Date: **28-JUN-04**
Sample Tag: **DL01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **JLS**
Dilution: **10**
Units: **ug/L**

Instrument: **HPMS11**
Prep Date: **07/09/2004 12:18**
Cal Date: **06/09/2004 14:51**
Run Date: **07/09/2004 12:18**
File ID: **11M22328**

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	107	86	118	
1,2-Dichloroethane-d4	114	80	120	
Toluene-d8	108	88	110	
4-Bromofluorobenzene	107	86	115	

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406578-06**
Client ID: **P-8**
Matrix: **Water**
Workgroup Number: **WG169608**
Collect Date: **28-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 08:30**
Cal Date:
Run Date: **07/01/2004 08:30**
File ID: **ET.0407010830-08**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

WORKGROUP SUMMARY BY METHOD

WORKGROUP SUMMARY BY METHOD

Analysis: Total Dissolved Solids
Analytical Method: 160.1
Workgroup: WG169194

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-01	P-9			06/29/04 14:20		OVEN	TMM
L0406578-03	P-9-A			06/29/04 14:20		OVEN	TMM
L0406578-04	P-15DD			06/29/04 14:20		OVEN	TMM
L0406578-05	P-11			06/29/04 14:20		OVEN	TMM
L0406578-06	P-8			06/29/04 14:20		OVEN	TMM

Analysis: Metals Analysis
Extraction Method: 3005A
Workgroup: WG169238

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-01	P-9		06/30/04 08:15			HOT BLOCK	REK
L0406578-03	P-9-A		06/30/04 08:15			HOT BLOCK	REK
L0406578-04	P-15DD		06/30/04 08:15			HOT BLOCK	REK
L0406578-05	P-11		06/30/04 08:15			HOT BLOCK	REK
L0406578-06	P-8		06/30/04 08:15			HOT BLOCK	REK

Analysis: Total Organic Carbon
Analytical Method: 415.1
Workgroup: WG169360

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-01	P-9			06/30/04 16:43		TOC-VWP	DR
L0406578-03	P-9-A			06/30/04 16:43		TOC-VWP	DR
L0406578-04	P-15DD			06/30/04 16:43		TOC-VWP	DR
L0406578-05	P-11			06/30/04 16:43		TOC-VWP	DR
L0406578-06	P-8			06/30/04 16:43		TOC-VWP	DR

Analysis: Metals Analysis
Analytical Method: 6010B
Workgroup: WG169421

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-01	P-9		06/30/04 08:15	07/06/04 16:31	01	PE-ICP	SLP
L0406578-03	P-9-A		06/30/04 08:15	07/06/04 16:36	01	PE-ICP	SLP
L0406578-04	P-15DD		06/30/04 08:15	07/06/04 16:41	01	PE-ICP	SLP
L0406578-05	P-11		06/30/04 08:15	07/06/04 16:46	01	PE-ICP	SLP
L0406578-06	P-8		06/30/04 08:15	07/06/04 16:51	01	PE-ICP	SLP

WORKGROUP SUMMARY BY METHOD

Analysis: Hardness
Analytical Method: 130.2
Workgroup: WG169596

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-01	P-9			07/01/04 13:50		BURET	DR
L0406578-03	P-9-A			07/01/04 13:50		BURET	DR
L0406578-04	P-15DD			07/01/04 13:50		BURET	DR
L0406578-05	P-11			07/01/04 13:50		BURET	DR
L0406578-06	P-8			07/01/04 13:50		BURET	DR

Analysis: Hardness
Extraction Method: 130.2
Workgroup: WG169596

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-01	P-9			07/01/04 13:50		BURET	DR
L0406578-03	P-9-A			07/01/04 13:50		BURET	DR
L0406578-04	P-15DD			07/01/04 13:50		BURET	DR
L0406578-05	P-11			07/01/04 13:50		BURET	DR
L0406578-06	P-8			07/01/04 13:50		BURET	DR

Analysis: Alkalinity, Bicarbonate
Analytical Method: A2320B
Workgroup: WG169608

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-01	P-9			07/01/04 08:30		BURET	DR
L0406578-01	P-9			07/01/04 08:30		BURET	DR
L0406578-03	P-9-A			07/01/04 08:30		BURET	DR
L0406578-03	P-9-A			07/01/04 08:30		BURET	DR
L0406578-04	P-15DD			07/01/04 08:30		BURET	DR
L0406578-04	P-15DD			07/01/04 08:30		BURET	DR
L0406578-05	P-11			07/01/04 08:30		BURET	DR
L0406578-05	P-11			07/01/04 08:30		BURET	DR
L0406578-06	P-8			07/01/04 08:30		BURET	DR
L0406578-06	P-8			07/01/04 08:30		BURET	DR

Analysis: Alkalinity, Bicarbonate
Extraction Method: METHOD
Workgroup: WG169608

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-01	P-9			07/01/04 08:30		BURET	DR
L0406578-03	P-9-A			07/01/04 08:30		BURET	DR
L0406578-04	P-15DD			07/01/04 08:30		BURET	DR
L0406578-05	P-11			07/01/04 08:30		BURET	DR
L0406578-06	P-8			07/01/04 08:30		BURET	DR

WORKGROUP SUMMARY BY METHOD

Analysis: Sulfate
Analytical Method: 375.4
Workgroup: WG169687

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-01	P-9			07/07/04 13:52		SMARTCHEM	DIH
L0406578-03	P-9-A			07/07/04 13:52		SMARTCHEM	DIH
L0406578-04	P-15DD			07/07/04 13:52		SMARTCHEM	DIH
L0406578-05	P-11			07/07/04 13:52		SMARTCHEM	DIH
L0406578-06	P-8			07/07/04 13:52		SMARTCHEM	DIH

Analysis: Volatile Organics
Analytical Method: 8260B
Workgroup: WG169731

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-01	P-9			07/08/04 17:46	01	HPMS11	JLS
L0406578-02	P-9-C			07/08/04 18:18	01	HPMS11	JLS
L0406578-03	P-9-A			07/08/04 18:49	01	HPMS11	JLS
L0406578-04	P-15DD			07/08/04 19:20	01	HPMS11	JLS
L0406578-05	P-11			07/08/04 19:51	01	HPMS11	JLS
L0406578-06	P-8			07/08/04 20:22	01	HPMS11	JLS

Analysis: Volatile Organics
Extraction Method: 5030B
Workgroup: WG169731

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-01	P-9				169731	HPMS11	JLS
L0406578-02	P-9-C				169731	HPMS11	JLS
L0406578-03	P-9-A				169731	HPMS11	JLS
L0406578-04	P-15DD				169731	HPMS11	JLS
L0406578-05	P-11				169731	HPMS11	JLS
L0406578-06	P-8				169731	HPMS11	JLS

Analysis: Volatile Organics
Analytical Method: 8260B
Workgroup: WG169776

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-06	P-8			07/09/04 12:18	DL01	HPMS11	JLS

WORKGROUP SUMMARY BY METHOD

Analysis: Volatile Organics
Extraction Method: 5030B
Workgroup: WG169776

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-06	P-8				69776	HPMS11	JLS

Analysis: Chloride
Analytical Method: 325.2
Workgroup: WG169838

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-01	P-9			07/08/04 15:11		SMARTCHEM	DIH
L0406578-03	P-9-A			07/08/04 15:11		SMARTCHEM	DIH
L0406578-04	P-15DD			07/08/04 15:11		SMARTCHEM	DIH
L0406578-05	P-11			07/08/04 15:11		SMARTCHEM	DIH
L0406578-06	P-8			07/08/04 15:11		SMARTCHEM	DIH

Analysis: Nitrogen, Nitrate
Analytical Method: 353.2
Workgroup: WG170055

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-06	P-8			07/12/04 15:45		TRAACS-800	DIH

Analysis: Nitrogen, Nitrate
Analytical Method: 353.2
Workgroup: WG170058

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-01	P-9			07/13/04 08:46		TRAACS-800	DIH
L0406578-03	P-9-A			07/13/04 08:46		TRAACS-800	DIH
L0406578-04	P-15DD			07/13/04 08:46		TRAACS-800	DIH
L0406578-05	P-11			07/13/04 08:46		TRAACS-800	DIH

WORKGROUP SUMMARY BY METHOD

Analysis: Nitrogen, Ammonia
Analytical Method: 350.1
Workgroup: WG170113

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406578-01	P-9			07/13/04 14:08		TRAACS-800	JWR
L0406578-03	P-9-A			07/13/04 14:08		TRAACS-800	JWR
L0406578-04	P-15DD			07/13/04 14:08		TRAACS-800	JWR
L0406578-05	P-11			07/13/04 14:08		TRAACS-800	JWR
L0406578-06	P-8			07/13/04 14:08		TRAACS-800	JWR

Kemron Environmental Services
Analyst Listing
Tuesday, June 29 2004

AJF - AMANDA J. FICKIESEN
ALB - ANNIE L. BOCK
ALT - ANN L. THAYER
ARS - ANGELINA R. SCOTT
ART - AMANDA R. THOMPSON
BRG - BRENDA R. GREGORY
CAB - CASSIE A. BAKER
CAF - CHERYL A. FLOWERS
CAK - CHERYL A. KOELSCH
CEB - CHAD E. BARNES
CIS - CASHUS I. STONE
CLC - CHRYS L. CRAWFORD
CLK - CARL L. KING
CLS - CARA L. STRICKLER
CLW - CHARISSA L. WINTERS
CM - CHARLIE MARTIN
CMS - CRYSTAL M. STEVENS
CPD - CHAD P. DAVIS
CRC - CARLA R. COCHRAN
CSH - CHRIS S. HILL
DAS - DALLAS A. SULLIVAN
DD - DIANE M. DENNIS
DDE - DEBRA D. ELLIOTT
DEL - DON E. LIGHTFRITZ
DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER
DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE
DLR - DIANNA L. RAUCH
DMV - DAVID M. VANDEVELDE
DP - DEANNA L. PIERSON
DR - DEANNA ROBERTS
DRB - DOUG R. BARNETT
DSM - DAVID S. MOSSOR
DST - DENNIS S. TEPE
ECL - ERIC C. LAWSON
EED - EMILY E. DECKER
ELW - ERICA L. WEBB
HV - HEMA VILASAGAR
JAL - JOHN A. LENT
JJG - JOHN J. GREUEY
JKW - JANE K. THOMPSON
JLS - JANICE L. SCHIMMEL
JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES
JYH - JI Y. HU
KHR - KIM H. RHODES
KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF
LLL - LONNIE L. LEWIS
LSA - LUCINDA S. ARNOLD
LSB - LESLIE S. BUCINA
MAH - MICALYN A. HARRIS
MDA - MICHAEL D. ALBERTSON
MDC - MICHAEL D. COCHRAN
MEF - MIKE E. FLANAGAN
MES - MARY E. SCHILLING
MKZ - MARILYN K. ZUMBRO
MLR - MARY L. ROCHOTTE
MLS - MICHAEL L. SCHIMMEL
MMB - MAREN M. BEERY
MSW - MATT S. WILSON
NJB - NATALIE J. BOOTH
OGT - OKEY G. TUCKER
PAS - PATRICK A. STREET
RDC - REBECCA D. CUTLIP
REK - ROBERT E. KYER
RJW - RHONDA J. WITTEKIND
RWC - ROD W. CAMPBELL
SCM - SUSAN C. MOELLENDICK
SH - SHAUNA M. HYDE
SK - SANDRA KEENER
SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF
TD - TIMOTHY DYSERT
TJH - TIM J. HOEFLICH
TLM - TIFFINI L. MCDONALD
TMM - TAMMY M. MORRIS
VC - VICKI COLLIER
VKL - VICKY K. LAUER

KEMRON FORMS: JUL-25-02
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KEMRON Environmental Services, Inc
List of Valid Qualifiers
August 5, 2002

Standard Qualifiers

These are KEMRON's Standard Report Qualifiers

B	Present in the method blank
C	Confirmed by GC/MS
CG	Confluent growth
D	The analyte was quantified at a secondary dilution factor
DL	Surrogate or spike was diluted out
E	Estimated concentration due to sample matrix interference
FL	Free liquid
I	Semi-quantitative result, out of instrument calibration range
J	Present below nominal reporting limit
L	Sample reporting limits elevated due to matrix interference
N	Tentatively Identified Compound (TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit (RL)
NF	Not found
NFL	No free liquid
NI	Non-ignitable
NS	Not spiked
P	Concentration >40% difference between The two GC columns
QNS	Quantity not sufficient to perform analysis
RA	Re analysis confirms reported results
RE	Re analysis confirms sample matrix interference
S	Analyzed by method of standard addition
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TNTC	Too numerous to count
U	Analyzed for but not detected
W	Post-digestion spike for furnace AA out o f control limits
X	Exceeds regulatory limit
Z	Can not be resolved from isomer.***
+	Correlation coefficient for the MSA is less than 0.995
<	Less than
>	Greater than
*	Surrogate or spike compound out of range

*** Special Notes for Organic Analytes

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene
3. N-nitrosodiphenylamine cannot be separated from diphenylamine
4. 3-Methyphenol and 4-Methyphenol are unresolvable compounds
5. m-Xylene and p-Xylene are unresolvable compounds
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent

AFCEE Qualifiers

These are KEMRON's AFCEE Report Qualifiers

J	The analyte was positively identified, the quantitation is an estimation
U	The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL
F	The analyte was positively identified but the associated numerical value is below the RL
R	The data is unusable due to deficiencies in the ability to analyze the sample and meet QC criteria
B	The analyte was found in an associated blank, as well as in the sample
M	The matrix effect was present
S	To be applied to all field screening data
T	Tentatively identified compound (using GC/MS)

H:\DATA\COMMON\Qualifier List 08-05-02.doc

ORGANIC QA/QC

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8260B

AAB#: WG169731

Login Number: L0406578

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-11	06/28/04	06/29/04	07/08/04	14	10.3	07/08/04	14	10.3	
P-15DD	06/28/04	06/29/04	07/08/04	14	10.3	07/08/04	14	10.3	
P-8	06/28/04	06/29/04	07/08/04	14	10.2	07/08/04	14	10.2	
P-9	06/28/04	06/29/04	07/08/04	14	10.2	07/08/04	14	10.2	
P-9-A	06/28/04	06/29/04	07/08/04	14	10.3	07/08/04	14	10.3	
P-9-C	06/28/04	06/29/04	07/08/04	14	10.3	07/08/04	14	10.3	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8260B AAB#: WG169776

Login Number: L0406578

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-8	06/28/04	06/29/04	07/09/04	14	10.9	07/09/04	14	10.9	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 07/19/2004
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KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406578
Work Group: WG169731
Blank File ID: 11M22303
Blank Sample ID: WG169731-01
Date Analyzed: 07/08/04
Instrument ID: HPMS11
Time Analyzed: 11:01
Method: 8260B
Analyst: JLS

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG169731-02	11M22304	07/08/04 11:32	01
P-9	L0406578-01	11M22316	07/08/04 17:46	01
P-9-C	L0406578-02	11M22317	07/08/04 18:18	01
P-9-A	L0406578-03	11M22318	07/08/04 18:49	01
P-15DD	L0406578-04	11M22319	07/08/04 19:20	01
P-11	L0406578-05	11M22320	07/08/04 19:51	01
P-8	L0406578-06	11M22321	07/08/04 20:22	01

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406578
Blank File ID: 11M22326
Date Analyzed: 07/09/04
Time Analyzed: 11:16
Analyst: JLS

Work Group: WG169776
Blank Sample ID: WG169776-01
Instrument ID: HPMS11
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG169776-02	11M22327	07/09/04 11:47	01
P-8	L0406578-06	11M22328	07/09/04 12:18	DL01

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406578 Run Date: 07/08/2004 Sample ID: WG169731-01
Instrument ID: HPMS11 Run Time: 11:01 Prep Method: 5030B
File ID: 11M22303 Analyst: JLS Method: 8260B
Workgroup (AAB#): WG169731 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS11-09-JUN-04

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.540	1.00	0.540	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Dibromochloromethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.407	1	J
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.125	1.00	0.125	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.518	1	J
Xylenes (total)	0.250	1.00	0.250	1	U

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406578 Run Date: 07/08/2004 Sample ID: WG169731-01
Instrument ID: HPMS11 Run Time: 11:01 Prep Method: 5030B
File ID: 11M22303 Analyst: JLS Method: 8260B
Workgroup (AAB#): WG169731 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS11-09-JUN-04

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	99.3	86 - 118	PASS
1,2-Dichloroethane-d4	100	80 - 120	PASS
Toluene-d8	109	88 - 110	PASS
4-Bromofluorobenzene	104	86 - 115	PASS

* Analyte detected above RDL
ND Analyte Not detected at or above reporting limit

KEMRON FORMS - Modified 05/26/2004
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KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406578 Run Date: 07/09/2004 Sample ID: WG169776-01
Instrument ID: HPMS11 Run Time: 11:16 Prep Method: 5030B
File ID: 11M22326 Analyst: JLS Method: 8260B
Workgroup (AAB#): WG169776 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS11-09-JUN-04

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.540	1.00	0.540	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Dibromochloromethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.125	1.00	0.125	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes (total)	0.250	1.00	0.250	1	U

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406578 Run Date: 07/09/2004 Sample ID: WG169776-01
Instrument ID: HPMS11 Run Time: 11:16 Prep Method: 5030B
File ID: 11M22326 Analyst: JLS Method: 8260B
Workgroup (AAB#): WG169776 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS11-09-JUN-04

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	106	86 - 118	PASS
1,2-Dichloroethane-d4	107	80 - 120	PASS
Toluene-d8	109	88 - 110	PASS
4-Bromofluorobenzene	104	86 - 115	PASS

* Analyte detected above RDL
ND Analyte Not detected at or above reporting limit

KEMRON FORMS - Modified 05/26/2004
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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406578 Run Date: 07/08/2004 Sample ID: WG169731-02
Instrument ID: HPMS11 Run Time: 11:32 Prep Method: 5030B
File ID: 11M22304 Analyst: JLS Method: 8260B
Workgroup (AAB#): WG169731 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS11-09-JUN-2004 14:51

Analytes	Expected	Found	% Rec	LCS Limits	Q
Acetone	20.0	20.9	105	40 - 142	
Benzene	20.0	19.1	95.4	80 - 121	
Bromochloromethane	20.0	20.6	103	80 - 124	
Bromodichloromethane	20.0	21.6	108	80 - 131	
Bromoform	20.0	20.9	105	74 - 130	
Bromomethane	20.0	18.7	93.3	61 - 151	
2-Butanone	20.0	21.6	108	58 - 149	
Carbon disulfide	20.0	19.3	96.5	58 - 138	
Carbon tetrachloride	20.0	26.1	131	80 - 137	
Chlorobenzene	20.0	21.5	108	80 - 120	
Dibromochloromethane	20.0	21.5	108	80 - 127	
Chloroethane	20.0	20.8	104	77 - 133	
Chloroform	20.0	21.0	105	80 - 125	
Chloromethane	20.0	17.9	89.6	60 - 130	
1,2-Dichlorobenzene	20.0	20.2	101	80 - 125	
1,3-Dichlorobenzene	20.0	20.1	100	80 - 120	
1,4-Dichlorobenzene	20.0	22.0	110	80 - 120	
1,1-Dichloroethane	20.0	20.7	103	80 - 125	
1,2-Dichloroethane	20.0	21.8	109	80 - 129	
1,1-Dichloroethene	20.0	21.7	108	80 - 132	
cis-1,2-Dichloroethene	20.0	20.9	105	80 - 121	
trans-1,2-Dichloroethene	20.0	21.2	106	80 - 127	
1,2-Dichloropropane	20.0	19.9	99.4	80 - 120	
cis-1,3-Dichloropropene	20.0	21.1	105	80 - 132	
trans-1,3-Dichloropropene	20.0	23.0	115	80 - 130	
Ethylbenzene	20.0	21.5	107	80 - 122	
2-Hexanone	20.0	21.2	106	56 - 136	
4-Methyl-2-pentanone	20.0	21.5	108	64 - 140	
Methylene chloride	20.0	19.6	97.9	80 - 123	
Styrene	20.0	21.4	107	80 - 123	
1,1,2,2-Tetrachloroethane	20.0	20.1	101	79 - 125	
Tetrachloroethene	20.0	21.0	105	80 - 124	
Toluene	20.0	21.0	105	80 - 124	
1,1,1-Trichloroethane	20.0	21.8	109	80 - 134	
1,1,2-Trichloroethane	20.0	20.2	101	80 - 125	
Trichloroethene	20.0	20.7	104	80 - 122	
Vinyl chloride	20.0	19.3	96.5	65 - 140	
Xylenes (total)	60.0	63.6	106	80 - 121	

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406578 Run Date: 07/08/2004 Sample ID: WG169731-02
Instrument ID: HPMS11 Run Time: 11:32 Prep Method: 5030B
File ID: 11M22304 Analyst: JLS Method: 8260B
Workgroup (AAB#): WG169731 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS11-09-JUN-2004 14:51

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	102	86 - 118	PASS
1,2-Dichloroethane-d4	99.9	80 - 120	PASS
Toluene-d8	105	88 - 110	PASS
4-Bromofluorobenzene	104	86 - 115	PASS

* Analyte outside control limits

NS Analyte not spiked

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406578 Run Date: 07/09/2004 Sample ID: WG169776-02
Instrument ID: HPMS11 Run Time: 11:47 Prep Method: 5030B
File ID: 11M22327 Analyst: JLS Method: 8260B
Workgroup (AAB#): WG169776 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS11-09-JUN-2004 14:51

Analytes	Expected	Found	% Rec	LCS Limits	Q
Acetone	20.0	20.1	100	40 - 142	
Benzene	20.0	18.7	93.4	80 - 121	
Bromochloromethane	20.0	21.4	107	80 - 124	
Bromodichloromethane	20.0	22.5	112	80 - 131	
Bromoform	20.0	21.7	108	74 - 130	
Bromomethane	20.0	20.7	103	61 - 151	
2-Butanone	20.0	20.8	104	58 - 149	
Carbon disulfide	20.0	19.3	96.5	58 - 138	
Carbon tetrachloride	20.0	28.1	140	80 - 137	*
Chlorobenzene	20.0	20.8	104	80 - 120	
Dibromochloromethane	20.0	22.7	114	80 - 127	
Chloroethane	20.0	20.7	104	77 - 133	
Chloroform	20.0	21.4	107	80 - 125	
Chloromethane	20.0	18.1	90.7	60 - 130	
1,2-Dichlorobenzene	20.0	19.8	99.1	80 - 125	
1,3-Dichlorobenzene	20.0	19.6	98.0	80 - 120	
1,4-Dichlorobenzene	20.0	21.5	108	80 - 120	
1,1-Dichloroethane	20.0	20.8	104	80 - 125	
1,2-Dichloroethane	20.0	22.8	114	80 - 129	
1,1-Dichloroethene	20.0	21.3	107	80 - 132	
cis-1,2-Dichloroethene	20.0	20.4	102	80 - 121	
trans-1,2-Dichloroethene	20.0	21.3	107	80 - 127	
1,2-Dichloropropane	20.0	19.8	98.8	80 - 120	
cis-1,3-Dichloropropene	20.0	21.2	106	80 - 132	
trans-1,3-Dichloropropene	20.0	23.3	116	80 - 130	
Ethylbenzene	20.0	20.1	101	80 - 122	
2-Hexanone	20.0	20.2	101	56 - 136	
4-Methyl-2-pentanone	20.0	20.3	102	64 - 140	
Methylene chloride	20.0	20.0	99.9	80 - 123	
Styrene	20.0	20.5	102	80 - 123	
1,1,2,2-Tetrachloroethane	20.0	20.3	102	79 - 125	
Tetrachloroethene	20.0	20.3	102	80 - 124	
Toluene	20.0	19.8	99.1	80 - 124	
1,1,1-Trichloroethane	20.0	22.4	112	80 - 134	
1,1,2-Trichloroethane	20.0	19.5	97.5	80 - 125	
Trichloroethene	20.0	20.8	104	80 - 122	
Vinyl chloride	20.0	21.4	107	65 - 140	
Xylenes (total)	60.0	61.1	102	80 - 121	

KEMRON FORMS - Modified 03/24/2004
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Report generated 07/27/2004 10:30

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406578 Run Date: 07/09/2004 Sample ID: WG169776-02
Instrument ID: HPMS11 Run Time: 11:47 Prep Method: 5030B
File ID: 11M22327 Analyst: JLS Method: 8260B
Workgroup (AAB#): WG169776 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS11-09-JUN-2004 14:51

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	106	86 - 118	PASS
1,2-Dichloroethane-d4	106	80 - 120	PASS
Toluene-d8	102	88 - 110	PASS
4-Bromofluorobenzene	102	86 - 115	PASS

* Analyte outside control limits

NS Analyte not spiked

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KEMRON ENVIRONMENTAL SERVICES
SURROGATE STANDARDS

Login Number: L0406578
Instrument Id: HPMS11
Workgroup (AAB#): WG169731

Method: 8260
CAL ID: HPMS11-09-JUN-04
Matrix: WATER

Sample Number	Dilution	Tag	1	2	3	4
L0406578-01	1.00	01	109	104	101	103
L0406578-02	1.00	01	114	108	105	107
L0406578-03	1.00	01	115	107	105	108
L0406578-04	1.00	01	118	110	107	107
L0406578-05	1.00	01	113	106	105	107
L0406578-06	1.00	01	118	110	107	107
WG169731-01	1.00	01	100	99.3	104	109
WG169731-02	1.00	01	99.9	102	104	105

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out

ND = surrogate not detected

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KEMRON ENVIRONMENTAL SERVICES
SURROGATE STANDARDS

Login Number: L0406578
Instrument Id: HPMS11
Workgroup (AAB#): WG169776

Method: 8260
CAL ID: HPMS11-09-JUN-04
Matrix: WATER

Sample Number	Dilution	Tag	1	2	3	4
L0406578-06	10.0	DL01	114	107	107	108
WG169776-01	1.00	01	107	106	104	109
WG169776-02	1.00	01	106	106	102	102

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

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Inorganic QC Summary

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6010B

AAB#: WG169421

Login Number: L0406578

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-11	06/28/04	06/29/04	06/30/04	180	1.80	07/06/04	180	6.36	
P-15DD	06/28/04	06/29/04	06/30/04	180	1.82	07/06/04	180	6.35	
P-8	06/28/04	06/29/04	06/30/04	180	1.70	07/06/04	180	6.36	
P-9	06/28/04	06/29/04	06/30/04	180	1.84	07/06/04	180	6.34	
P-9-A	06/28/04	06/29/04	06/30/04	180	1.84	07/06/04	180	6.35	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406578
Blank File ID: PE.070604.171935
Date Analyzed: 07/06/04
Time Analyzed: 17:19
Analyst: SLP

Work Group: WG169421
Blank Sample ID: WG169238-03
Instrument ID: PE-ICP
Method: 6010B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-9	L0406578-01	PE.070604.163130	07/06/04 16:31	01
P-9-A	L0406578-03	PE.070604.163637	07/06/04 16:36	01
P-15DD	L0406578-04	PE.070604.164144	07/06/04 16:41	01
P-11	L0406578-05	PE.070604.164651	07/06/04 16:46	01
P-8	L0406578-06	PE.070604.165159	07/06/04 16:51	01
LCS	WG169238-04	PE.070604.172441	07/06/04 17:24	01
DUP	WG169238-06	PE.070604.174010	07/06/04 17:40	01

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406578 Run Date: 07/06/2004 Sample ID: WG169238-03
Instrument ID: PE-ICP Run Time: 17:19 Prep Method: 3005A
File ID: PE.070604.171935 Analyst: SLP Method: 6010B
Workgroup (AAB#): WG169421 Matrix: Water Units: mg/L
Contract #: Cal ID: PE-ICP-06-JUL-04

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Calcium	0.100	0.200	0.100	1	U
Iron	0.0200	0.0400	0.0343	1	J
Potassium	0.250	1.00	0.250	1	U
Magnesium	0.250	0.500	0.250	1	U
Manganese	0.00100	0.0100	0.00100	1	U
Sodium	0.250	0.500	0.250	1	U

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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406578 Run Date: 07/06/2004 Sample ID: WG169238-04
Instrument ID: PE-ICP Run Time: 17:24 Prep Method: 3005A
File ID: PE.070604.172441 Analyst: SLP Method: 6010B
Workgroup (AAB#): WG169421 Matrix: Water Units: mg/L
Contract #: Cal ID: PE-ICP-06-JUL-2004 12:46

Analytes	Expected	Found	% Rec	LCS Limits	Q
Calcium	5.00	4.71	94.2	80 - 120	
Iron	2.00	1.86	93.0	80 - 120	
Potassium	25.0	23.7	94.7	80 - 120	
Magnesium	5.00	4.70	94.0	80 - 120	
Manganese	0.250	0.249	99.6	80 - 120	
Sodium	25.0	22.8	91.1	80 - 120	

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KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 325.2

AAB#: WG169838

Login Number: L0406578

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-11	06/28/04	06/29/04	07/08/04	28	10.1	07/08/04	28	10.1	
P-15DD	06/28/04	06/29/04	07/08/04	28	10.1	07/08/04	28	10.1	
P-8	06/28/04	06/29/04	07/08/04	28	9.99	07/08/04	28	9.99	
P-9	06/28/04	06/29/04	07/08/04	28	10.1	07/08/04	28	10.1	
P-9-A	06/28/04	06/29/04	07/08/04	28	10.1	07/08/04	28	10.1	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON FORMS - Modified 05/12/2004
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KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406578
Blank File ID: EM04071209333421
Date Analyzed: 07/08/04
Time Analyzed: 15:11
Analyst: DIH

Work Group: WG169838
Blank Sample ID: WG169838-02
Instrument ID: SMARTCHEM
Method: 325.2

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-9	L0406578-01	EM04071209333401	07/08/04 15:11	
P-9-A	L0406578-03	EM04071209333402	07/08/04 15:11	
P-15DD	L0406578-04	EM04071209333403	07/08/04 15:11	
P-11	L0406578-05	EM04071209333404	07/08/04 15:11	
P-8	L0406578-06	EM04071209333405	07/08/04 15:11	
LCS	WG169838-03	EM04071209333422	07/08/04 15:11	
LCS2	WG169838-04	EM04071209333423	07/08/04 15:11	
DUP	WG169838-05	EM04071209333424	07/08/04 15:11	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406578 Run Date: 07/08/2004 Sample ID: WG169838-02
Instrument ID: SMARTCHEM Run Time: 15:11 Prep Method: 325.2
File ID: EM04071209333421 Analyst: DIH Method: 325.2
Workgroup (AAB#): WG169838 Matrix: Water Units: mg/L
Contract #: Cal ID: SMARTC-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	1.00	2.00	1.00	1	U

KEMRON FORMS - Modified 05/26/2004
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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406578 Analyst: DIH Prep Method: 325.2
Instrument ID: SMARTCHEM Matrix: Water Method: 325.2
Workgroup (AAB#): WG169838 Units: mg/L
Sample ID: WG169838-03 LCS File ID: EM04071209333422 Run Date: 07/08/2004 15:11
Sample ID: WG169838-04 LCS2 File ID: EM04071209333423 Run Date: 07/08/2004 15:11

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Chloride	50.0	50.2	100	50.0	51.0	102	1.58	90 - 110	10	

* FAILS %REC LIMIT

FAILS RPD LIMIT

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KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 353.2

AAB#: WG170055

Login Number: L0406578

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-8	06/28/04	06/29/04	07/12/04	2	14.0	07/12/04	2	14.0	*ANAL

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

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KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 353.2

AAB#: WG170058

Login Number: L0406578

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-11	06/28/04	06/29/04	07/13/04	2	14.8	07/13/04	2	14.8	*ANAL
P-15DD	06/28/04	06/29/04	07/13/04	2	14.8	07/13/04	2	14.8	*ANAL
P-9	06/28/04	06/29/04	07/13/04	2	14.9	07/13/04	2	14.9	*ANAL
P-9-A	06/28/04	06/29/04	07/13/04	2	14.9	07/13/04	2	14.9	*ANAL

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406578
Blank File ID: 0004071311515012
Date Analyzed: 07/12/04
Time Analyzed: 15:45
Analyst: DIH

Work Group: WG170055
Blank Sample ID: WG170055-02
Instrument ID: TRAACS-800
Method: 353.2

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-8	L0406578-06	0004071311515004	07/12/04 15:45	
LCS	WG170055-03	0004071311515013	07/12/04 15:45	
LCS2	WG170055-04	0004071311515014	07/12/04 15:45	
DUP	WG170055-05	0004071311515015	07/12/04 15:45	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406578
Blank File ID: 0004071311433926
Date Analyzed: 07/13/04
Time Analyzed: 08:46
Analyst: DIH

Work Group: WG170058
Blank Sample ID: WG170058-02
Instrument ID: TRAACS-800
Method: 353.2

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-9	L0406578-01	0004071311433903	07/13/04 08:46	
P-9-A	L0406578-03	0004071311433904	07/13/04 08:46	
P-15DD	L0406578-04	0004071311433905	07/13/04 08:46	
P-11	L0406578-05	0004071311433906	07/13/04 08:46	
LCS	WG170058-03	0004071311433921	07/13/04 08:46	
LCS2	WG170058-04	0004071311433922	07/13/04 08:46	
DUP	WG170058-05	0004071311433923	07/13/04 08:46	

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KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406578 Run Date: 07/12/2004 Sample ID: WG170055-02
Instrument ID: TRAACS-800 Run Time: 15:45 Prep Method: 353.2
File ID: 0004071311515012 Analyst: DIH Method: 353.2
Workgroup (AAB#): WG170055 Matrix: Water Units: mg/L
Contract #: Cal ID: TRAACS-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Nitrate	0.0250	0.0500	0.0250	1	U

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KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406578 Run Date: 07/13/2004 Sample ID: WG170058-02
Instrument ID: TRAACS-800 Run Time: 08:46 Prep Method: 353.2
File ID: 0004071311433926 Analyst: DIH Method: 353.2
Workgroup (AAB#): WG170058 Matrix: Water Units: mg/L
Contract #: Cal ID: TRAACS-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Nitrate	0.0250	0.0500	0.0250	1	U

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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406578
Instrument ID: TRAACS-800
File ID: 0004071311515013
Workgroup (AAB#): WG170055
Contract #:

Run Date: 07/12/2004
Run Time: 15:45
Analyst: DIH
Matrix: Water
Cal ID: TRAACS-

Sample ID: WG170055-03
Prep Method: 353.2
Method: 353.2
Units: mg/L

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrate	1.00	1.08	108	90 - 110	

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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406578 Run Date: 07/13/2004 Sample ID: WG170058-03
Instrument ID: TRAACS-800 Run Time: 08:46 Prep Method: 353.2
File ID: 0004071311433921 Analyst: DIH Method: 353.2
Workgroup (AAB#): WG170058 Matrix: Water Units: mg/L
Contract #: Cal ID: TRAACS-

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrate	1.00	1.05	105	90 - 110	

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KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

AAB#: WG169360

Analytical Method: 415.1

Login Number: L0406578

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-11	06/28/04	06/29/04	06/30/04	28	2.15	06/30/04	28	2.15	
P-15DD	06/28/04	06/29/04	06/30/04	28	2.18	06/30/04	28	2.18	
P-8	06/28/04	06/29/04	06/30/04	28	2.06	06/30/04	28	2.06	
P-9	06/28/04	06/29/04	06/30/04	28	2.20	06/30/04	28	2.20	
P-9-A	06/28/04	06/29/04	06/30/04	28	2.20	06/30/04	28	2.20	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406578
Blank File ID: WP04070115050821
Date Analyzed: 06/30/04
Time Analyzed: 16:43
Analyst: DR

Work Group: WG169360
Blank Sample ID: WG169360-03
Instrument ID: TOC-VWP
Method: 415.1

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-9	L0406578-01	WP04070115050814	06/30/04 16:43	
P-9-A	L0406578-03	WP04070115050815	06/30/04 16:43	
P-15DD	L0406578-04	WP04070115050816	06/30/04 16:43	
P-11	L0406578-05	WP04070115050817	06/30/04 16:43	
P-8	L0406578-06	WP04070115050818	06/30/04 16:43	
LCS	WG169360-04	WP04070115050822	06/30/04 16:43	
LCS2	WG169360-05	WP04070115050823	06/30/04 16:43	
DUP	WG169360-06	WP04070115050824	06/30/04 16:43	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406578
Instrument ID: TOC-VWP
File ID: WP04070115050821
Workgroup (AAB#): WG169360
Contract #:

Run Date: 06/30/2004
Run Time: 16:43
Analyst: DR
Matrix: Water
Cal ID: TOC-VW-

Sample ID: WG169360-03
Prep Method: 415.1
Method: 415.1
Units: mg/L

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:02

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406578 Analyst: DR Prep Method: 415.1
Instrument ID: TOC-VWP Matrix: Water Method: 415.1
Workgroup (AAB#): WG169360 Units: mg/L
Sample ID: WG169360-04 LCS File ID: WP04070115050822 Run Date: 06/30/2004 16:43
Sample ID: WG169360-05 LCS2 File ID: WP04070115050823 Run Date: 06/30/2004 16:43

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	26.1	104	25.0	25.9	104	.539	85 - 115	15	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:03

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: A2320B

AAB#: WG169608

Login Number: L0406578

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-11	06/28/04	06/29/04	07/01/04	14	2.81	07/01/04	14	2.81	
P-15DD	06/28/04	06/29/04	07/01/04	14	2.83	07/01/04	14	2.83	
P-8	06/28/04	06/29/04	07/01/04	14	2.72	07/01/04	14	2.72	
P-9	06/28/04	06/29/04	07/01/04	14	2.85	07/01/04	14	2.85	
P-9-A	06/28/04	06/29/04	07/01/04	14	2.85	07/01/04	14	2.85	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:01

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406578
Blank File ID: ET.0407010830-01
Date Analyzed: 07/01/04
Time Analyzed: 08:30
Analyst: DR

Work Group: WG169608
Blank Sample ID: WG169608-02
Instrument ID: BURET
Method: A2320B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG169608-03	ET.0407010830-02	07/01/04 08:30	
LCS2	WG169608-04	ET.0407010830-03	07/01/04 08:30	
P-9	L0406578-01	ET.0407010830-04	07/01/04 08:30	
P-9	L0406578-01	ET.0407010830-04	07/01/04 08:30	
P-9-A	L0406578-03	ET.0407010830-05	07/01/04 08:30	
P-9-A	L0406578-03	ET.0407010830-05	07/01/04 08:30	
P-15DD	L0406578-04	ET.0407010830-06	07/01/04 08:30	
P-15DD	L0406578-04	ET.0407010830-06	07/01/04 08:30	
P-11	L0406578-05	ET.0407010830-07	07/01/04 08:30	
P-11	L0406578-05	ET.0407010830-07	07/01/04 08:30	
P-8	L0406578-06	ET.0407010830-08	07/01/04 08:30	
P-8	L0406578-06	ET.0407010830-08	07/01/04 08:30	
DUP	WG169608-05	ET.0407010830-15	07/01/04 08:30	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406578 Run Date: 07/01/2004 Sample ID: WG169608-02
Instrument ID: BURET Run Time: 08:30 Prep Method: A2320B
File ID: ET.0407010830-01 Analyst: DR Method: A2320B
Workgroup (AAB#): WG169608 Matrix: Water Units: mg/L
Contract #: Cal ID: BURET-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Alkalinity, Bicarbonate	5.00	10.0	5.00	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:01

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406578 Analyst: DR Prep Method: A2320B
Instrument ID: BURET Matrix: Water Method: A2320B
Workgroup (AAB#): WG169608 Units: mg/L
Sample ID: WG169608-03 LCS File ID: ET.0407010830-02 Run Date: 07/01/2004 08:30
Sample ID: WG169608-04 LCS2 File ID: ET.0407010830-03 Run Date: 07/01/2004 08:30

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Alkalinity, Bicarbonate	100	98.0	98.0	100	97.5	97.5	.514	90 - 110	10	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:01

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 130.2

AAB#: WG169596

Login Number: L0406578

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-11	06/28/04	06/29/04	07/01/04	180	3.03	07/01/04	180	3.03	
P-15DD	06/28/04	06/29/04	07/01/04	180	3.06	07/01/04	180	3.06	
P-8	06/28/04	06/29/04	07/01/04	180	2.94	07/01/04	180	2.94	
P-9	06/28/04	06/29/04	07/01/04	180	3.08	07/01/04	180	3.08	
P-9-A	06/28/04	06/29/04	07/01/04	180	3.08	07/01/04	180	3.08	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406578
Blank File ID: ET.0407011350-01
Date Analyzed: 07/01/04
Time Analyzed: 13:50
Analyst: DR

Work Group: WG169596
Blank Sample ID: WG169596-03
Instrument ID: BURET
Method: 130.2

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG169596-04	ET.0407011350-02	07/01/04 13:50	
P-9	L0406578-01	ET.0407011350-03	07/01/04 13:50	
P-9-A	L0406578-03	ET.0407011350-04	07/01/04 13:50	
P-15DD	L0406578-04	ET.0407011350-05	07/01/04 13:50	
P-11	L0406578-05	ET.0407011350-06	07/01/04 13:50	
P-8	L0406578-06	ET.0407011350-07	07/01/04 13:50	
DUP	WG169596-05	ET.0407011350-14	07/01/04 13:50	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406578 Run Date: 07/01/2004 Sample ID: WG169596-03
Instrument ID: BURET Run Time: 13:50 Prep Method: 130.2
File ID: ET.0407011350-01 Analyst: DR Method: 130.2
Workgroup (AAB#): WG169596 Matrix: Water Units: mg/L
Contract #: Cal ID: BURET-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Hardness	2.50	5.00	2.50	1	U

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Version 1.3 PDF File ID:
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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406578 | Run Date: 07/01/2004 | Sample ID: WG169596-04
Instrument ID: BURET | Run Time: 13:50 | Prep Method: 130.2
File ID: ET.0407011350-02 | Analyst: DR | Method: 130.2
Workgroup (AAB#): WG169596 | Matrix: Water | Units: mg/L
Contract #: | Cal ID: BURET-

Analytes	Expected	Found	% Rec	LCS Limits	Q
Hardness	100	102	102	90 - 110	

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Version 1.3 PDF File ID:
Report generated 07/16/2004 17:02

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 375.4

AAB#: WG169687

Login Number: L0406578

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-11	06/28/04	06/29/04	07/07/04	28	9.04	07/07/04	28	9.04	
P-15DD	06/28/04	06/29/04	07/07/04	28	9.06	07/07/04	28	9.06	
P-8	06/28/04	06/29/04	07/07/04	28	8.94	07/07/04	28	8.94	
P-9	06/28/04	06/29/04	07/07/04	28	9.08	07/07/04	28	9.08	
P-9-A	06/28/04	06/29/04	07/07/04	28	9.08	07/07/04	28	9.08	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406578
Blank File ID: EM04070913372820
Date Analyzed: 07/07/04
Time Analyzed: 13:52
Analyst: DIH

Work Group: WG169687
Blank Sample ID: WG169687-02
Instrument ID: SMARTCHEM
Method: 375.4

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-9	L0406578-01	EM04070913372804	07/07/04 13:52	
P-9-A	L0406578-03	EM04070913372805	07/07/04 13:52	
P-15DD	L0406578-04	EM04070913372806	07/07/04 13:52	
P-11	L0406578-05	EM04070913372807	07/07/04 13:52	
P-8	L0406578-06	EM04070913372808	07/07/04 13:52	
LCS	WG169687-03	EM04070913372821	07/07/04 13:52	
LCS2	WG169687-04	EM04070913372822	07/07/04 13:52	
DUP	WG169687-05	EM04070913372823	07/07/04 13:52	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406578
Instrument ID: SMARTCHEM
File ID: EM04070913372820
Workgroup (AAB#): WG169687
Contract #:

Run Date: 07/07/2004
Run Time: 13:52
Analyst: DIH
Matrix: Water
Cal ID: SMARTC-

Sample ID: WG169687-02
Prep Method: 375.4
Method: 375.4
Units: mg/L

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Sulfate	2.50	5.00	2.50	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:02

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406578 Analyst: DIH Prep Method: 375.4
Instrument ID: SMARTCHEM Matrix: Water Method: 375.4
Workgroup (AAB#): WG169687 Units: mg/L
Sample ID: WG169687-03 LCS File ID: EM04070913372821 Run Date: 07/07/2004 13:52
Sample ID: WG169687-04 LCS2 File ID: EM04070913372822 Run Date: 07/07/2004 13:52

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Sulfate	20.0	22.4	112	20.0	23.0	115	2.64	85 - 115	10	

* FAILS %REC LIMIT

FAILS RPD LIMIT

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KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 160.1 AAB#: WG169194

Login Number: L0406578

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-11	06/28/04	06/29/04	06/29/04	7	1.06	06/29/04	7	1.06	
P-15DD	06/28/04	06/29/04	06/29/04	7	1.08	06/29/04	7	1.08	
P-8	06/28/04	06/29/04	06/29/04	7	0.959	06/29/04	7	0.959	
P-9	06/28/04	06/29/04	06/29/04	7	1.10	06/29/04	7	1.10	
P-9-A	06/28/04	06/29/04	06/29/04	7	1.10	06/29/04	7	1.10	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:01

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406578
Blank File ID: EN.0406291420-01
Date Analyzed: 06/29/04
Time Analyzed: 14:20
Analyst: TMM

Work Group: WG169194
Blank Sample ID: WG169194-03
Instrument ID: OVEN
Method: 160.1

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG169194-04	EN.0406291420-02	06/29/04 14:20	
LCS2	WG169194-05	EN.0406291420-03	06/29/04 14:20	
P-9	L0406578-01	EN.0406291420-14	06/29/04 14:20	
P-9-A	L0406578-03	EN.0406291420-15	06/29/04 14:20	
P-15DD	L0406578-04	EN.0406291420-16	06/29/04 14:20	
P-11	L0406578-05	EN.0406291420-17	06/29/04 14:20	
P-8	L0406578-06	EN.0406291420-18	06/29/04 14:20	
DUP	WG169194-06	EN.0406291420-21	06/29/04 14:20	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406578 Run Date: 06/29/2004 Sample ID: WG169194-03
Instrument ID: OVEN Run Time: 14:20 Prep Method: 160.1
File ID: EN.0406291420-01 Analyst: TMM Method: 160.1
Workgroup (AAB#): WG169194 Matrix: Water Units: mg/L
Contract #: Cal ID: OVEN-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Total Dissolved Solids	5.00	10.0	5.00	1	U

KEMRON FORMS - Modified 05/26/2004
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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406578 Analyst: TMM Prep Method: 160.1
Instrument ID: OVEN Matrix: Water Method: 160.1
Workgroup (AAB#): WG169194 Units: mg/L
Sample ID: WG169194-04 LCS File ID: EN.0406291420-02 Run Date: 06/29/2004 14:20
Sample ID: WG169194-05 LCS2 File ID: EN.0406291420-03 Run Date: 06/29/2004 14:20

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Total Dissolved Solids	500	460	92.0	500	472	94.4	2.58	80 - 120	25	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
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KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 350.1

AAB#: WG170113

Login Number: L0406578

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-11	06/28/04	06/29/04	07/13/04	28	15.0	07/13/04	28	15.0	
P-15DD	06/28/04	06/29/04	07/13/04	28	15.1	07/13/04	28	15.1	
P-8	06/28/04	06/29/04	07/13/04	28	15.0	07/13/04	28	15.0	
P-9	06/28/04	06/29/04	07/13/04	28	15.1	07/13/04	28	15.1	
P-9-A	06/28/04	06/29/04	07/13/04	28	15.1	07/13/04	28	15.1	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:02

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406578
Blank File ID: 0004071408591820
Date Analyzed: 07/13/04
Time Analyzed: 14:08
Analyst: JWR

Work Group: WG170113
Blank Sample ID: WG170113-01
Instrument ID: TRAACS-800
Method: 350.1

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-9	L0406578-01	0004071408591801	07/13/04 14:08	
P-9-A	L0406578-03	0004071408591802	07/13/04 14:08	
P-15DD	L0406578-04	0004071408591803	07/13/04 14:08	
P-11	L0406578-05	0004071408591804	07/13/04 14:08	
P-8	L0406578-06	0004071408591805	07/13/04 14:08	
LCS	WG170113-02	0004071408591821	07/13/04 14:08	
DUP	WG170113-04	0004071408591823	07/13/04 14:08	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406578
Instrument ID: TRAACS-800
File ID: 0004071408591820
Workgroup (AAB#): WG170113
Contract #:

Run Date: 07/13/2004
Run Time: 14:08
Analyst: JWR
Matrix: Water

Sample ID: WG170113-01
Prep Method: 350.1
Method: 350.1
Units: mg/L
Cal ID: TRAACS-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Nitrogen, Ammonia	0.0500	0.100	0.0500	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:02

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406578
Instrument ID: TRAACS-800
File ID: 0004071408591821
Workgroup (AAB#): WG170113
Contract #:

Run Date: 07/13/2004
Run Time: 14:08
Analyst: JWR
Matrix: Water
Cal ID: TRAACS-

Sample ID: WG170113-02
Prep Method: 350.1
Method: 350.1
Units: mg/L

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrogen, Ammonia	2.00	1.74	86.9	70 - 125	

KEMRON FORMS - Modified 03/24/2004
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Report generated 07/16/2004 17:02

Chain of Custody and Analytical Request

Page: 1 of 1
Project Number: 76058.03
WBS Number: NA
Chain of Custody Number: 28-JUN-2004-01
LIMS Number: NA

Facility ID: (5 Character Max) GEP01
Project Name / Site Name: RFI at Caribe General Electric Products, Patillas, Puerto Rico
Client Name: GE Industrial Systems, Inc.
Collected by: J. Stepp, N. Hicks, L. Alexander, R. Reynolds

A. Field Sample ID (30 Characters Max)	B. LOCID (15 Characters Max)	C. Date Collected (dd-MMM-yyyy)	D. Time Collected (Military - HHMM)	E. Sample Depth (top - bottom)	F. SA Code	G. Sample Number	H. Sample Matrix	I. Sample Analysis Requested: Total Number of Containers per Line	Temperature Blank 1 x 100 mL PI	VOCs (8260B) 3 x 40 ml GI HCl	TOC, NH3 (see Comments) 1 x 250 mL GI H2SO4	Hardness (E130.2); 1 x 250 mL PI HNO3	Alkalinity (SM 2320B) 1 x 250 mL PI	Cl, NO3, SO4 (see Comments) 1 x 500 mL PI	Ca,Fe,Mg,Mn,K,Na (6010B) 1x500 mL PI HNO3	TDS (E160.1) 1 x 500 mL PI	J. Quality Assurance Samples: Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
1. P-9	P-9	28-JUN-2004	1200	0-0	N	01	WG	8		2	1	1	1	1	1	1			28062004 01	B
2. P-9-C	P-9 Field QC	28-JUN-2004	1200	0-0	TB	01	WQ	2		2									28062004 10	B
3. P-9-A	P-9	28-JUN-2004	1200	0-0	FD	01	WG	8		2	1	1	1	1	1	1			28062004 01	A
4. P-15D	P-15D	28-JUN-2004	1230	0-0	N	01	WG	8		2	1	1	1	1	1	1			28062004 01	B
5. P-11	P-11	28-JUN-2004	1300	0-0	N	01	WG	8		2	1	1	1	1	1	1			28062004 01	A
6. P-8	P-8	28-JUN-2004	1520	0-0	N	01	WG	8		2	1	1	1	1	1	1			28062004 01	A
7.				-																
8.				-																
9.				-																
10.				-																
11.				-																
12.				-																
13.				-																
15.				-																
16.				-																
17. TEMPERATURE BLANK				0 - 0	N	01	W		2											

L. Sample Analysis Requested (state method requested, plus the number of containers enclosed)
J. Quality Assurance Samples

Comments: 1) TOC, and NH3 by methods E415.1, and E350.1. 2) Anions: Chloride, Nitrate, and Sulfate by methods E325.2, E353.2, and E375.4.
3) Total Metals: Total Calcium, Total Iron, Total Magnesium, Total Manganese, Total Potassium, and Total Sodium.

L. Alexander 6/28/04

Chain of Custody Number = date collected + custody form sequence number for that day (e.g. 09-02-1999-01, then -02, etc., for additional chains for that day.)

F. Sample Type (SA) Codes:
N = Normal
FD = Field Duplicate (-a)
FR = Field Replicate (-b)
TB = Trip Blank (-c)
EB = Equipment Blank (-d)
MS = Matrix Spike
SD = Matrix Spike Duplicate

G. Sample Number: Enter 01, unless on a single day you collect either:
a) multiple samples from the same location, or
b) multiple QA samples of a single type.
In that case, enter 02 for the second sample, 03 for the third, etc.

H. Matrix Codes:
GS = Soil Gas
WG = Ground Water
WS = Surface Water
WQ = Water Quality Blank (trip, equip., ambient)
SO = Soil
SS = Surface Soil
SE = Sediment
SL = Sludge
SQ = Soil Quality Blank

J. Quality Assurance Lot Control Numbers are produced by adding the sample number (Column G) to the date collected (Column C), without spaces or dashes. (e.g. Enter 10050401 in the Equipment Blank Lot Control column for every sample that was associated with the first equipment blank collected on May 10, 2004.)

Custody Transfers Prior to Receipt by Laboratory

	Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1.		28-Jun-2004	1600	1. FEDEX	28-Jun-2004	1600
2.				2. Brenda Melendez	6-29-04	@1315
3.				3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Yes ____ No ____
Analytical Lab Name: ____
Lab Location: ____
Lab Recipient: ____

Shipped: Yes ____ No ____
Method of Shipment: FEDEX Air
Airbill #: 832729644906
Date and Time: ____

* Note: all VOCs are in Cooler A

C/C sealed & intact 6/28/04 / 1600
cooler temp 5/3 bag

KEMRON Internal Laboratory Chain of Custody

Work Order: L0406578 Client: GE-PR # of Samples: 6 Due Date: 7/13/04 Page: ____

Sample #	Analysis	Reason	Removed By ADT	Removed From	Moved To	Reliq. by	Ret'd By ADT	Ret'd To	Rec'd By	Reason
1,3-6	NO3	An	timm 6/29/04 @1510	login	wet	BLG	dwn 7/8/1100	A-2	CHD	A-2
1,3-6	TDS	test	timm 6/29/04 @1510	log in	wet	CHD	timm 7/1/04 @1410	A-2	BLG	A-2
1,3,6	met	Dig	1st 4/30/04 @0630	W-1	met	TLT	TLM 6-30-04 @10:30	A-2	CHD	A-2
1,3-6	TOC	anal	@0815 DRC 6/30/04	W-1	wet	CHD	CIS 7/12/04@1350	A-2	BLG	A-2
1-6	8260	anal	CMS 6-30-04 @1500	VI	org	BLG	CIS 7/22/04@1425	A-2	BLG	A-2
1,3-6	Alk-Br-Cl	Anal	CIS @0845 7/1/04	W-1	Wet	BLG	CIS 7/1/04 1145	A-2	BLG	A-2
1,3-6	Hard	Anal	CIS 7/1/04@1145	W-1	wet	BLG	CIS 7/1/04 1355	A-2	BLG	A-2

SAMPLE RECEIPT FORM

(GE)

Date: 6-29-04 Client: ESECh-PR 115

Shipped By: (✓) Fed-Ex ( ) UPS ( )Airborne ( ) KEMRON ( ) Client ( ) Other

Opened By: BLG

Logged By: BLG Login #: L04 06578

IR Temp Gun: ( ) D (✓) F

KEMRON ENVIRONMENTAL SERVICES
156 STARLITE DRIVE
MARIETTA, OH
45750
(740) 373-4071

COOLER INFORMATION

Number	Cooler ID	Temp °C	Airbill#	COC#	Other
1	KL1087	5	832729644906		master
2	KL654	3	8444 8683 1362		
3					
4					
5					
6					

Were all coolers sealed?	(Y)	N	N/A
Were custody seals used on all coolers?	(Y)	N	N/A
Were custody seals intact?	(Y)	N	N/A
Was visible ice present?	(Y)	N	N/A
Were all coolers in the temperature range of 2-6C? (>6C*)	(Y)	N	N/A
Were the samples frozen?*	Y	(N)	N/A
Were COC papers provided?	(Y)	N	N/A
Were all sample containers intact?*	(Y)	N	N/A
Were all sample labels intact?	(Y)	N	N/A
Were all sample labels legible?*	(Y)	N	N/A
Did all sample labels match the COC?*	(Y)	N	N/A
Was the label information complete?*	(Y)	N	N/A
Were the correct containers used?*	(Y)	N	N/A
Were the correct preservatives added to water samples?*	(Y)	N	N/A
Was the pH tested on preserved water samples?	(Y)	N	N/A
Were pH ranges acceptable?*	(Y)	N	N/A
Was sufficient amount of sample provided?*	(Y)	N	N/A
Were bubbles present in VOA samples?*	Y	(N)	N/A
Were COC's signed and dated?	(Y)	N	N/A
Did samples arrive before hold time expired?*	(Y)	N	N/A
Are discrepancy forms attached?	Y	N	(N/A)

**Requires a discrepancy form*

Comments:_____

CRF #1
Revised 8/22/03

KEMRON
ENVIRONMENTAL SERVICES

156 Starlite Drive ▪ Marietta, OH 45750 ▪ Telephone (740) 373-4071 ▪ FAX (740) 373-4835

Laboratory Report Number: L0406598

Please find enclosed the analytical results for the samples you submitted to Kemron Environmental Services.

Review and compilation of your report was completed by Kemron's Sales and Service Team 2. If you have questions, comments or require further assistance please contact one of our team members at 800-373-4071. We can also be reached at the e-mail addresses listed below.

Cheryl Koelsch – Team Chemist/Data Specialist
ckoelsch@kemron-lab.com

Nina Scott – Customer Service/Invoicing Specialist
ascott@kemron-lab.com

Kathy Albertson – Team Chemist/Data Specialist
kalbertson@kemron-lab.com

Debra Elliott – Team Leader
delliott@kemron-lab.com

This report was reviewed by: _____ Date: 7/27/04

I certify that all test results meet all of the requirements of the NELAP standards and other applicable contract terms and conditions. All results for soil samples are reported on a "dry-weight" basis unless specified otherwise. Analytical results for water and wastes are reported on an "as received" basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of KEMRON Environmental Services.

Certified by: David E. Vandenberg
David E. Vandenberg
Laboratory Director

FLDOH NELAP Id: E87551

This report contains a total of 94 pages.

LABORATORY REPORT

L0406598

07/14/04 10:47

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta, Ohio 45750
(740)373-4071

For

Account Name: EARTH TECH, Inc
10 Patewood Drive
Suite 500 Building VI
Greenville, SC 29615
Attention: Juanita Edwards

Account Number: 664-831
Work ID: RFI @ CARIBE GE

P.O. Number: 76058-d

Sample Summary

Client ID	Lab ID	Date Collected	Date Received
P-18D	L0406598-01	29-JUN-04	30-JUN-04
P-18D-A	L0406598-02	29-JUN-04	30-JUN-04
P-18D-C	L0406598-03	29-JUN-04	30-JUN-04
P-18S-D	L0406598-04	29-JUN-04	30-JUN-04
P-17D	L0406598-05	29-JUN-04	30-JUN-04
P-19S	L0406598-06	29-JUN-04	30-JUN-04
P-18S	L0406598-07	29-JUN-04	30-JUN-04
P-16S	L0406598-08	29-JUN-04	30-JUN-04

KEMRON ENVIRONMENTAL SERVICES
REPORT NARRATIVE

L0406598

SHIPMENT CONDITIONS:

The chain of custody was received sealed in the cooler. The cooler temperatures were both 2° C.

SAMPLE MANAGEMENT:

The samples were received intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

REVIEWED: _____ DATE: 7/6/04

REPORT NARRATIVE
GC/MS VOLATILE ORGANICS

KEMRON Login No: L0406598

METHOD

Preparation: SW-846 5030B
Analysis: SW-846 8260B

HOLDING TIMES

Sample Preparation: All holding times were met.
Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial calibrations: For all compounds which yielded a %RSD greater than 15%, linear or higher order equations were applied or if the mean %RSD for all analytes was less than 15% the average response factors were used. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Samples: All acceptance criteria were met.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group (SDG).

SAMPLES

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Samples: All acceptance criteria were met.

MANUAL INTEGRATION REASON CODES

KEMRON laboratory management has identified four general cases with valid reasons supporting the use of manual integration techniques.

Reason #1: Data System Fails to Select Correct Peak

In some cases the chromatography system selects and integrates the "wrong peak". In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak.

Approved: July 26, 2004

This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds.

This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline

There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous

Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

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Analyst: MES

Rev. 07/08/04

Approved: July 26, 2004

REPORT NARRATIVE
METALS

KEMRON Login No: L0406598

METHOD

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.
Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial calibrations: All acceptance criteria were met.
Alternate Source Standards: All acceptance criteria were met.
Continuing Calibration : All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.
Laboratory Control Sample: All acceptance criteria were met.
Serial Dilution/Post Digestion Spike: WG169493-(6010) - All acceptance criteria were met.

SAMPLES

All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analys:CRC___ REVIEWED: Maren Beery DATE: 07/15/04

REPORT NARRATIVE
GENERAL CHEMISTRY

KEMRON Login No: L0406598

METHOD

Analysis: See report for method reference.

HOLDING TIMES

Sample Preparation: All holding times were met.
Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.
Laboratory Control Sample: All acceptance criteria were met
Duplicates: All acceptance criteria were met
Matrix Spikes: All acceptance criteria were met.

SAMPLES

Nitrate

Nitrate is analyzed by subtracting the nitrite result from the nitrate-nitrite result. The nitrite was analyzed within the 48 hour hold time. Nitrate-nitrite has a 28 day hold, so the analysis was performed within hold.

.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analyst: dih

REVIEWED: dlh DATE: 7/19/04

Rev. 6/00

Report Number: **L0406598**
Report Date : **July 14, 2004**

Sample Number: **L0406598-01**
Client ID: **P-18D**
Matrix: **Water**
Workgroup Number: **WG169596**
Collect Date: **29-JUN-04**

Prep Method: **130.2**
Analytical Method: **130.2**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 13:50**
Cal Date:
Run Date: **07/01/2004 13:50**
File ID: **ET.0407011350-08**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		**140**		**10.0**	**5.00**

Sample Number: **L0406598-01**
Client ID: **P-18D**
Matrix: **Water**
Workgroup Number: **WG169477**
Collect Date: **29-JUN-04**

Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **07/02/2004 15:35**
Cal Date:
Run Date: **07/02/2004 15:35**
File ID: **EN.0407021535-04**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		**284**		**20.0**	**10.0**

Sample Number: **L0406598-01**
Client ID: **P-18D**
Matrix: **Water**
Workgroup Number: **WG169608**
Collect Date: **29-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 08:30**
Cal Date:
Run Date: **07/01/2004 08:30**
File ID: **ET.0407010830-09**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		**159**		**10.0**	**5.00**

Sample Number: **L0406598-01**
Client ID: **P-18D**
Matrix: **Water**
Workgroup Number: **WG169687**
Collect Date: **29-JUN-04**

Prep Method: **375.4**
Analytical Method: **375.4**
Analyst: **DIH**
Dilution: **2**
Units: **mg/L**

Instrument: **SMARTCHEM**
Prep Date: **07/07/2004 13:52**
Cal Date:
Run Date: **07/07/2004 13:52**
File ID: **EM04070913372809**

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	**14808-79-8**	**36.2**		**10.0**	**5.00**

Report Number: **L0406598**
Report Date : **July 14, 2004**

Sample Number:	L0406598-01	Prep Method:	325.2	Instrument:	SMARTCHEM
Client ID:	P-18D	Analytical Method:	325.2	Prep Date:	07/08/2004 15:11
Matrix:	Water	Analyst:	DIH	Cal Date:	
Workgroup Number:	WG169838	Dilution:	1	Run Date:	07/08/2004 15:11
Collect Date:	29-JUN-04	Units:	mg/L	File ID:	EM04071209333406

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	16887-00-6	24.9		2.00	1.00

Sample Number:	L0406598-01	Prep Method:	353.2	Instrument:	TRAACS-800
Client ID:	P-18D	Analytical Method:	353.2	Prep Date:	07/13/2004 08:46
Matrix:	Water	Analyst:	DIH	Cal Date:	
Workgroup Number:	WG170058	Dilution:	2	Run Date:	07/13/2004 08:46
Collect Date:	29-JUN-04	Units:	mg/L	File ID:	0004071311433907

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	14797-55-8	2.37		0.100	0.0500

Sample Number:	L0406598-01	Prep Method:	350.1	Instrument:	TRAACS-800
Client ID:	P-18D	Analytical Method:	350.1	Prep Date:	07/13/2004 14:08
Matrix:	Water	Analyst:	JWR	Cal Date:	
Workgroup Number:	WG170113	Dilution:	1	Run Date:	07/13/2004 14:08
Collect Date:	29-JUN-04	Units:	mg/L	File ID:	0004071408591806

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.0760	J	0.100	0.0500

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number:	L0406598-01	Prep Method:	415.1	Instrument:	TOC-VWP
Client ID:	P-18D	Analytical Method:	415.1	Prep Date:	07/12/2004 16:28
Matrix:	Water	Analyst:	DIH	Cal Date:	
Workgroup Number:	WG170028	Dilution:	1	Run Date:	07/12/2004 16:28
Collect Date:	29-JUN-04	Units:	mg/L	File ID:	WP04071311224107

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		3.24		1.00	0.500

Report Number: **L0406598**
Report Date : **July 14, 2004**

Sample Number: **L0406598-01**
Client ID: **P-18D**
Matrix: **Water**
Workgroup Number: **WG169493**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **CRC**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **07/01/2004 08:15**
Cal Date: **07/02/2004 21:29**
Run Date: **07/03/2004 02:43**
File ID: **P2.070304.024331**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	28.1		0.200	0.100
Iron, Total	7439-89-6		U	0.0400	0.0200
Potassium, Total	7440-09-7	0.388	J	1.00	0.250
Magnesium, Total	7439-95-4	15.4		0.500	0.250
Manganese, Total	7439-96-5	0.00347	J	0.0100	0.00100
Sodium, Total	7440-23-5	40.2		0.500	0.250

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406598-01**
Client ID: **P-18D**
Matrix: **Water**
Workgroup Number: **WG169760**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/08/2004 16:34**
Cal Date: **07/07/2004 17:01**
Run Date: **07/08/2004 16:34**
File ID: **6M44647**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	0.871	J	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3	2.11		1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4	64.6		1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6	1.17		1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Sample Number: **L0406598-01**
Client ID: **P-18D**
Matrix: **Water**
Workgroup Number: **WG169760**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/08/2004 16:34**
Cal Date: **07/07/2004 17:01**
Run Date: **07/08/2004 16:34**
File ID: **6M44647**

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	100	86	118	
1,2-Dichloroethane-d4	97.6	80	120	
Toluene-d8	103	88	110	
4-Bromofluorobenzene	102	86	115	

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406598-01**
Client ID: **P-18D**
Matrix: **Water**
Workgroup Number: **WG169608**
Collect Date: **29-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 08:30**
Cal Date:
Run Date: **07/01/2004 08:30**
File ID: **ET.0407010830-09**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

Sample Number: **L0406598-02**
Client ID: **P-18D-A**
Matrix: **Water**
Workgroup Number: **WG169596**
Collect Date: **29-JUN-04**

Prep Method: **130.2**
Analytical Method: **130.2**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 13:50**
Cal Date:
Run Date: **07/01/2004 13:50**
File ID: **ET.0407011350-09**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		136		10.0	5.00

Sample Number: **L0406598-02**
Client ID: **P-18D-A**
Matrix: **Water**
Workgroup Number: **WG169477**
Collect Date: **29-JUN-04**

Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **07/02/2004 15:35**
Cal Date:
Run Date: **07/02/2004 15:35**
File ID: **EN.0407021535-05**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		292		20.0	10.0

Sample Number: **L0406598-02** | Prep Method: **A2320B** | Instrument: **BURET**
Client ID: **P-18D-A** | Analytical Method: **A2320B** | Prep Date: **07/01/2004 08:30**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG169608** | Dilution: **1** | Run Date: **07/01/2004 08:30**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **ET.0407010830-10**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		158		10.0	5.00

Sample Number: **L0406598-02** | Prep Method: **375.4** | Instrument: **SMARTCHEM**
Client ID: **P-18D-A** | Analytical Method: **375.4** | Prep Date: **07/07/2004 13:52**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG169687** | Dilution: **2** | Run Date: **07/07/2004 13:52**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **EM04070913372810**

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	14808-79-8	37.6		10.0	5.00

Sample Number: **L0406598-02** | Prep Method: **325.2** | Instrument: **SMARTCHEM**
Client ID: **P-18D-A** | Analytical Method: **325.2** | Prep Date: **07/08/2004 15:11**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG169838** | Dilution: **1** | Run Date: **07/08/2004 15:11**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **EM04071209333407**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	16887-00-6	24.9		2.00	1.00

Sample Number: **L0406598-02** | Prep Method: **353.2** | Instrument: **TRAACS-800**
Client ID: **P-18D-A** | Analytical Method: **353.2** | Prep Date: **07/13/2004 08:46**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG170058** | Dilution: **2** | Run Date: **07/13/2004 08:46**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **0004071311433908**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	14797-55-8	2.46		0.100	0.0500

Report Number: **L0406598**
Report Date : **July 14, 2004**

Sample Number: **L0406598-02**
Client ID: **P-18D-A**
Matrix: **Water**
Workgroup Number: **WG170113**
Collect Date: **29-JUN-04**

Prep Method: **350.1**
Analytical Method: **350.1**
Analyst: **JWR**
Dilution: **1**
Units: **mg/L**

Instrument: **TRAACS-800**
Prep Date: **07/13/2004 14:08**
Cal Date:
Run Date: **07/13/2004 14:08**
File ID: **0004071408591807**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.123		0.100	0.0500

Sample Number: **L0406598-02**
Client ID: **P-18D-A**
Matrix: **Water**
Workgroup Number: **WG170028**
Collect Date: **29-JUN-04**

Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **07/12/2004 16:28**
Cal Date:
Run Date: **07/12/2004 16:28**
File ID: **WP04071311224108**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		2.81		1.00	0.500

Sample Number: **L0406598-02**
Client ID: **P-18D-A**
Matrix: **Water**
Workgroup Number: **WG169493**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **CRC**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **07/01/2004 08:15**
Cal Date: **07/02/2004 21:29**
Run Date: **07/03/2004 02:49**
File ID: **P2.070304.024949**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	27.3		0.200	0.100
Iron, Total	7439-89-6		U	0.0400	0.0200
Potassium, Total	7440-09-7	0.387	J	1.00	0.250
Magnesium, Total	7439-95-4	14.9		0.500	0.250
Manganese, Total	7439-96-5	0.00358	J	0.0100	0.00100
Sodium, Total	7440-23-5	38.9		0.500	0.250

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406598-02**
Client ID: **P-18D-A**
Matrix: **Water**
Workgroup Number: **WG169760**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/08/2004 17:06**
Cal Date: **07/07/2004 17:01**
Run Date: **07/08/2004 17:06**
File ID: **6M44648**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500

Report Number: **L0406598**
Report Date : **July 14, 2004**

Sample Number: **L0406598-02**
Client ID: **P-18D-A**
Matrix: **Water**
Workgroup Number: **WG169760**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/08/2004 17:06**
Cal Date: **07/07/2004 17:01**
Run Date: **07/08/2004 17:06**
File ID: **6M44648**

Analyte	CAS. Number	Result	Qual	RL	MDL
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	0.915	J	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3	2.13		1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4	65.9		1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6	1.13		1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	99.8	86	118	
1,2-Dichloroethane-d4	99.0	80	120	
Toluene-d8	101	88	110	
4-Bromofluorobenzene	103	86	115	

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406598-02**
Client ID: **P-18D-A**
Matrix: **Water**
Workgroup Number: **WG169608**
Collect Date: **29-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 08:30**
Cal Date:
Run Date: **07/01/2004 08:30**
File ID: **ET.0407010830-10**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

Report Number: **L0406598**
Report Date : **July 14, 2004**

Sample Number: **L0406598-03**
Client ID: **P-18D-C**
Matrix: **Water**
Workgroup Number: **WG169760**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/08/2004 17:38**
Cal Date: **07/07/2004 17:01**
Run Date: **07/08/2004 17:38**
File ID: **6M44649**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	99.3	86	118	
1,2-Dichloroethane-d4	98.6	80	120	
Toluene-d8	102	88	110	
4-Bromofluorobenzene	105	86	115	

U This analyte was not detected in the sample.

Report Number: **L0406598**
Report Date : **July 14, 2004**

Sample Number: **L0406598-04**
Client ID: **P-18S-D**
Matrix: **Water**
Workgroup Number: **WG169760**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/08/2004 18:09**
Cal Date: **07/07/2004 17:01**
Run Date: **07/08/2004 18:09**
File ID: **6M44650**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0	11.8		1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2	0.314	J	5.00	0.250
Styrene	100-42-5	0.749	J	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3	0.358	J	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	99.4	86	118	
1,2-Dichloroethane-d4	100	80	120	
Toluene-d8	101	88	110	
4-Bromofluorobenzene	103	86	115	

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406598-05** | Prep Method: **130.2** | Instrument: **BURET**
Client ID: **P-17D** | Analytical Method: **130.2** | Prep Date: **07/01/2004 13:50**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG169596** | Dilution: **1** | Run Date: **07/01/2004 13:50**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **ET.0407011350-10**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		**150**		**10.0**	**5.00**

Sample Number: **L0406598-05** | Prep Method: **160.1** | Instrument: **OVEN**
Client ID: **P-17D** | Analytical Method: **160.1** | Prep Date: **07/02/2004 15:35**
Matrix: **Water** | Analyst: **TMM** | Cal Date:
Workgroup Number: **WG169477** | Dilution: **1** | Run Date: **07/02/2004 15:35**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **EN.0407021535-06**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		**384**		**20.0**	**10.0**

Sample Number: **L0406598-05** | Prep Method: **A2320B** | Instrument: **BURET**
Client ID: **P-17D** | Analytical Method: **A2320B** | Prep Date: **07/01/2004 08:30**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG169608** | Dilution: **1** | Run Date: **07/01/2004 08:30**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **ET.0407010830-11**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		**219**		**10.0**	**5.00**

Sample Number: **L0406598-05** | Prep Method: **375.4** | Instrument: **SMARTCHEM**
Client ID: **P-17D** | Analytical Method: **375.4** | Prep Date: **07/07/2004 13:52**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG169687** | Dilution: **2** | Run Date: **07/07/2004 13:52**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **EM04070913372811**

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	**14808-79-8**	**51.9**		**10.0**	**5.00**

Report Number: **L0406598**
Report Date : **July 14, 2004**

Sample Number: **L0406598-05**
Client ID: **P-17D**
Matrix: **Water**
Workgroup Number: **WG169838**
Collect Date: **29-JUN-04**

Prep Method: **325.2**
Analytical Method: **325.2**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **SMARTCHEM**
Prep Date: **07/08/2004 15:11**
Cal Date:
Run Date: **07/08/2004 15:11**
File ID: **EM04071209333408**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	**16887-00-6**	**27.3**		**2.00**	**1.00**

Sample Number: **L0406598-05**
Client ID: **P-17D**
Matrix: **Water**
Workgroup Number: **WG170055**
Collect Date: **29-JUN-04**

Prep Method: **353.2**
Analytical Method: **353.2**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TRAACS-800**
Prep Date: **07/12/2004 15:45**
Cal Date:
Run Date: **07/12/2004 15:45**
File ID: **0004071311515005**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	**14797-55-8**	**1.47**		**0.0500**	**0.0250**

Sample Number: **L0406598-05**
Client ID: **P-17D**
Matrix: **Water**
Workgroup Number: **WG170113**
Collect Date: **29-JUN-04**

Prep Method: **350.1**
Analytical Method: **350.1**
Analyst: **JWR**
Dilution: **1**
Units: **mg/L**

Instrument: **TRAACS-800**
Prep Date: **07/13/2004 14:08**
Cal Date:
Run Date: **07/13/2004 14:08**
File ID: **0004071408591808**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	**7664-41-7**	**0.141**		**0.100**	**0.0500**

Sample Number: **L0406598-05**
Client ID: **P-17D**
Matrix: **Water**
Workgroup Number: **WG170028**
Collect Date: **29-JUN-04**

Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **07/12/2004 16:28**
Cal Date:
Run Date: **07/12/2004 16:28**
File ID: **WP04071311224109**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		**3.57**		**1.00**	**0.500**

Sample Number: **L0406598-05**
Client ID: **P-17D**
Matrix: **Water**
Workgroup Number: **WG169493**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **CRC**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **07/01/2004 08:15**
Cal Date: **07/02/2004 21:29**
Run Date: **07/03/2004 02:56**
File ID: **P2.070304.025605**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	31.9		0.200	0.100
Iron, Total	7439-89-6	0.718		0.0400	0.0200
Potassium, Total	7440-09-7	0.437	J	1.00	0.250
Magnesium, Total	7439-95-4	15.3		0.500	0.250
Manganese, Total	7439-96-5	0.0311		0.0100	0.00100
Sodium, Total	7440-23-5	65.9		0.500	0.250

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: **L0406598-05**
Client ID: **P-17D**
Matrix: **Water**
Workgroup Number: **WG169760**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/08/2004 18:41**
Cal Date: **07/07/2004 17:01**
Run Date: **07/08/2004 18:41**
File ID: **6M44651**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3	2.14		1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4	163		1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Sample Number: **L0406598-05**
Client ID: **P-17D**
Matrix: **Water**
Workgroup Number: **WG169760**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/08/2004 18:41**
Cal Date: **07/07/2004 17:01**
Run Date: **07/08/2004 18:41**
File ID: **6M44651**

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	99.1	86	118	
1,2-Dichloroethane-d4	98.8	80	120	
Toluene-d8	101	88	110	
4-Bromofluorobenzene	104	86	115	

U This analyte was not detected in the sample.

Sample Number: **L0406598-05**
Client ID: **P-17D**
Matrix: **Water**
Workgroup Number: **WG169608**
Collect Date: **29-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 08:30**
Cal Date:
Run Date: **07/01/2004 08:30**
File ID: **ET.0407010830-11**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

Sample Number: **L0406598-06**
Client ID: **P-19S**
Matrix: **Water**
Workgroup Number: **WG169596**
Collect Date: **29-JUN-04**

Prep Method: **130.2**
Analytical Method: **130.2**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 13:50**
Cal Date:
Run Date: **07/01/2004 13:50**
File ID: **ET.0407011350-11**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		93.7		5.00	2.50

Sample Number: **L0406598-06**
Client ID: **P-19S**
Matrix: **Water**
Workgroup Number: **WG169477**
Collect Date: **29-JUN-04**

Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **07/02/2004 15:35**
Cal Date:
Run Date: **07/02/2004 15:35**
File ID: **EN.0407021535-07**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		222		20.0	10.0

Report Number: **L0406598**
Report Date : **July 14, 2004**

Sample Number: **L0406598-06**
Client ID: **P-19S**
Matrix: **Water**
Workgroup Number: **WG169608**
Collect Date: **29-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 08:30**
Cal Date:
Run Date: **07/01/2004 08:30**
File ID: **ET.0407010830-12**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		109		10.0	5.00

Sample Number: **L0406598-06**
Client ID: **P-19S**
Matrix: **Water**
Workgroup Number: **WG169687**
Collect Date: **29-JUN-04**

Prep Method: **375.4**
Analytical Method: **375.4**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **SMARTCHEM**
Prep Date: **07/07/2004 13:52**
Cal Date:
Run Date: **07/07/2004 13:52**
File ID: **EM04070913372812**

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	14808-79-8	25.6		5.00	2.50

Sample Number: **L0406598-06**
Client ID: **P-19S**
Matrix: **Water**
Workgroup Number: **WG169838**
Collect Date: **29-JUN-04**

Prep Method: **325.2**
Analytical Method: **325.2**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **SMARTCHEM**
Prep Date: **07/08/2004 15:11**
Cal Date:
Run Date: **07/08/2004 15:11**
File ID: **EM04071209333409**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	16887-00-6	18.6		2.00	1.00

Sample Number: **L0406598-06**
Client ID: **P-19S**
Matrix: **Water**
Workgroup Number: **WG170055**
Collect Date: **29-JUN-04**

Prep Method: **353.2**
Analytical Method: **353.2**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TRAACS-800**
Prep Date: **07/12/2004 15:45**
Cal Date:
Run Date: **07/12/2004 15:45**
File ID: **0004071311515006**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	14797-55-8	0.803		0.0500	0.0250

Report Number: **L0406598**
Report Date : **July 14, 2004**

Sample Number: **L0406598-06**
Client ID: **P-19S**
Matrix: **Water**
Workgroup Number: **WG170113**
Collect Date: **29-JUN-04**

Prep Method: **350.1**
Analytical Method: **350.1**
Analyst: **JWR**
Dilution: **1**
Units: **mg/L**

Instrument: **TRAACS-800**
Prep Date: **07/13/2004 14:08**
Cal Date:
Run Date: **07/13/2004 14:08**
File ID: **0004071408591809**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.151		0.100	0.0500

Sample Number: **L0406598-06**
Client ID: **P-19S**
Matrix: **Water**
Workgroup Number: **WG170028**
Collect Date: **29-JUN-04**

Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **07/12/2004 16:28**
Cal Date:
Run Date: **07/12/2004 16:28**
File ID: **WP04071311224110**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		3.54		1.00	0.500

Sample Number: **L0406598-06**
Client ID: **P-19S**
Matrix: **Water**
Workgroup Number: **WG169493**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **CRC**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **07/01/2004 08:15**
Cal Date: **07/02/2004 21:29**
Run Date: **07/03/2004 03:01**
File ID: **P2.070304.030123**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	19.6		0.200	0.100
Iron, Total	7439-89-6	1.57		0.0400	0.0200
Potassium, Total	7440-09-7	0.463	J	1.00	0.250
Magnesium, Total	7439-95-4	10.0		0.500	0.250
Manganese, Total	7439-96-5	0.639		0.0100	0.00100
Sodium, Total	7440-23-5	31.7		0.500	0.250

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: **L0406598-06**
Client ID: **P-19S**
Matrix: **Water**
Workgroup Number: **WG169760**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/08/2004 19:13**
Cal Date: **07/07/2004 17:01**
Run Date: **07/08/2004 19:13**
File ID: **6M44652**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50

Report Number: **L0406598**
Report Date : **July 14, 2004**

Sample Number: **L0406598-06**
Client ID: **P-19S**
Matrix: **Water**
Workgroup Number: **WG169760**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/08/2004 19:13**
Cal Date: **07/07/2004 17:01**
Run Date: **07/08/2004 19:13**
File ID: **6M44652**

Analyte	CAS. Number	Result	Qual	RL	MDL
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	0.934	J	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3	0.323	J	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4	5.40		1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6	0.440	J	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	102	86	118	
1,2-Dichloroethane-d4	102	80	120	
Toluene-d8	103	88	110	
4-Bromofluorobenzene	102	86	115	

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406598-06**
Client ID: **P-19S**
Matrix: **Water**
Workgroup Number: **WG169608**
Collect Date: **29-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 08:30**
Cal Date:
Run Date: **07/01/2004 08:30**
File ID: **ET.0407010830-12**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

Sample Number: **L0406598-07** | Prep Method: **130.2** | Instrument: **BURET**
Client ID: **P-18S** | Analytical Method: **130.2** | Prep Date: **07/01/2004 13:50**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG169596** | Dilution: **1** | Run Date: **07/01/2004 13:50**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **ET.0407011350-12**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		**140**		**10.0**	**5.00**

Sample Number: **L0406598-07** | Prep Method: **160.1** | Instrument: **OVEN**
Client ID: **P-18S** | Analytical Method: **160.1** | Prep Date: **07/02/2004 15:35**
Matrix: **Water** | Analyst: **TMM** | Cal Date:
Workgroup Number: **WG169477** | Dilution: **1** | Run Date: **07/02/2004 15:35**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **EN.0407021535-08**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		**290**		**20.0**	**10.0**

Sample Number: **L0406598-07** | Prep Method: **A2320B** | Instrument: **BURET**
Client ID: **P-18S** | Analytical Method: **A2320B** | Prep Date: **07/01/2004 08:30**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG169608** | Dilution: **1** | Run Date: **07/01/2004 08:30**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **ET.0407010830-13**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		**158**		**10.0**	**5.00**

Sample Number: **L0406598-07** | Prep Method: **375.4** | Instrument: **SMARTCHEM**
Client ID: **P-18S** | Analytical Method: **375.4** | Prep Date: **07/07/2004 13:52**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG169687** | Dilution: **2** | Run Date: **07/07/2004 13:52**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **EM04070913372813**

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	**14808-79-8**	**38.4**		**10.0**	**5.00**

Sample Number: **L0406598-07** | Prep Method: **325.2** | Instrument: **SMARTCHEM**
Client ID: **P-18S** | Analytical Method: **325.2** | Prep Date: **07/08/2004 15:11**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG169838** | Dilution: **1** | Run Date: **07/08/2004 15:11**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **EM04071209333410**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	**16887-00-6**	**22.7**		**2.00**	**1.00**

Sample Number: **L0406598-07** | Prep Method: **353.2** | Instrument: **TRAACS-800**
Client ID: **P-18S** | Analytical Method: **353.2** | Prep Date: **07/13/2004 08:46**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG170058** | Dilution: **2** | Run Date: **07/13/2004 08:46**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **0004071311433909**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	**14797-55-8**	**2.30**		**0.100**	**0.0500**

Sample Number: **L0406598-07** | Prep Method: **350.1** | Instrument: **TRAACS-800**
Client ID: **P-18S** | Analytical Method: **350.1** | Prep Date: **07/13/2004 14:08**
Matrix: **Water** | Analyst: **JWR** | Cal Date:
Workgroup Number: **WG170113** | Dilution: **1** | Run Date: **07/13/2004 14:08**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **0004071408591810**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	**7664-41-7**	**0.136**		**0.100**	**0.0500**

Sample Number: **L0406598-07** | Prep Method: **415.1** | Instrument: **TOC-VWP**
Client ID: **P-18S** | Analytical Method: **415.1** | Prep Date: **07/12/2004 16:28**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG170028** | Dilution: **1** | Run Date: **07/12/2004 16:28**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **WP04071311224111**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		**3.02**		**1.00**	**0.500**

Sample Number: **L0406598-07**
Client ID: **P-18S**
Matrix: **Water**
Workgroup Number: **WG169493**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **CRC**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **07/01/2004 08:15**
Cal Date: **07/02/2004 21:29**
Run Date: **07/03/2004 03:06**
File ID: **P2.070304.030644**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	28.4		0.200	0.100
Iron, Total	7439-89-6		U	0.0400	0.0200
Potassium, Total	7440-09-7	0.382	J	1.00	0.250
Magnesium, Total	7439-95-4	15.8		0.500	0.250
Manganese, Total	7439-96-5	0.00170	J	0.0100	0.00100
Sodium, Total	7440-23-5	38.8		0.500	0.250

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406598-07**
Client ID: **P-18S**
Matrix: **Water**
Workgroup Number: **WG169760**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/08/2004 19:44**
Cal Date: **07/07/2004 17:01**
Run Date: **07/08/2004 19:44**
File ID: **6M44653**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	1.06		1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3	2.29		1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4	63.8		1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6	1.63		1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Sample Number: **L0406598-07**
Client ID: **P-18S**
Matrix: **Water**
Workgroup Number: **WG169760**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/08/2004 19:44**
Cal Date: **07/07/2004 17:01**
Run Date: **07/08/2004 19:44**
File ID: **6M44653**

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	100	86	118	
1,2-Dichloroethane-d4	101	80	120	
Toluene-d8	101	88	110	
4-Bromofluorobenzene	103	86	115	

U This analyte was not detected in the sample.

Sample Number: **L0406598-07**
Client ID: **P-18S**
Matrix: **Water**
Workgroup Number: **WG169608**
Collect Date: **29-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 08:30**
Cal Date:
Run Date: **07/01/2004 08:30**
File ID: **ET.0407010830-13**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

Sample Number: **L0406598-08**
Client ID: **P-16S**
Matrix: **Water**
Workgroup Number: **WG169596**
Collect Date: **29-JUN-04**

Prep Method: **130.2**
Analytical Method: **130.2**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 13:50**
Cal Date:
Run Date: **07/01/2004 13:50**
File ID: **ET.0407011350-13**

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		231		10.0	5.00

Sample Number: **L0406598-08**
Client ID: **P-16S**
Matrix: **Water**
Workgroup Number: **WG169477**
Collect Date: **29-JUN-04**

Prep Method: **160.1**
Analytical Method: **160.1**
Analyst: **TMM**
Dilution: **1**
Units: **mg/L**

Instrument: **OVEN**
Prep Date: **07/02/2004 15:35**
Cal Date:
Run Date: **07/02/2004 15:35**
File ID: **EN.0407021535-09**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		384		20.0	10.0

Sample Number: **L0406598-08** | Prep Method: **A2320B** | Instrument: **BURET**
Client ID: **P-16S** | Analytical Method: **A2320B** | Prep Date: **07/01/2004 08:30**
Matrix: **Water** | Analyst: **DR** | Cal Date:
Workgroup Number: **WG169608** | Dilution: **1** | Run Date: **07/01/2004 08:30**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **ET.0407010830-14**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		296		10.0	5.00

Sample Number: **L0406598-08** | Prep Method: **375.4** | Instrument: **SMARTCHEM**
Client ID: **P-16S** | Analytical Method: **375.4** | Prep Date: **07/07/2004 13:52**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG169687** | Dilution: **2** | Run Date: **07/07/2004 13:52**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **EM04070913372814**

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	14808-79-8	44.6		10.0	5.00

Sample Number: **L0406598-08** | Prep Method: **325.2** | Instrument: **SMARTCHEM**
Client ID: **P-16S** | Analytical Method: **325.2** | Prep Date: **07/08/2004 15:11**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG169838** | Dilution: **1** | Run Date: **07/08/2004 15:11**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **EM04071209333411**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	16887-00-6	17.1		2.00	1.00

Sample Number: **L0406598-08** | Prep Method: **353.2** | Instrument: **TRAACS-800**
Client ID: **P-16S** | Analytical Method: **353.2** | Prep Date: **07/12/2004 15:45**
Matrix: **Water** | Analyst: **DIH** | Cal Date:
Workgroup Number: **WG170055** | Dilution: **1** | Run Date: **07/12/2004 15:45**
Collect Date: **29-JUN-04** | Units: **mg/L** | File ID: **0004071311515007**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	14797-55-8		U	0.0500	0.0250

U This analyte was not detected in the sample.

Report Number: **L0406598**
Report Date : **July 14, 2004**

Sample Number: **L0406598-08**
Client ID: **P-16S**
Matrix: **Water**
Workgroup Number: **WG170113**
Collect Date: **29-JUN-04**

Prep Method: **350.1**
Analytical Method: **350.1**
Analyst: **JWR**
Dilution: **1**
Units: **mg/L**

Instrument: **TRAACS-800**
Prep Date: **07/13/2004 14:08**
Cal Date:
Run Date: **07/13/2004 14:08**
File ID: **0004071408591811**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.168		0.100	0.0500

Sample Number: **L0406598-08**
Client ID: **P-16S**
Matrix: **Water**
Workgroup Number: **WG170028**
Collect Date: **29-JUN-04**

Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **07/12/2004 16:28**
Cal Date:
Run Date: **07/12/2004 16:28**
File ID: **WP04071311224112**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		5.52		1.00	0.500

Sample Number: **L0406598-08**
Client ID: **P-16S**
Matrix: **Water**
Workgroup Number: **WG169493**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **CRC**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **07/01/2004 08:15**
Cal Date: **07/02/2004 21:29**
Run Date: **07/03/2004 03:13**
File ID: **P2.070304.031302**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	48.6		0.200	0.100
Iron, Total	7439-89-6	6.23		0.0400	0.0200
Potassium, Total	7440-09-7	1.22		1.00	0.250
Magnesium, Total	7439-95-4	20.3		0.500	0.250
Manganese, Total	7439-96-5	1.81		0.0100	0.00100
Sodium, Total	7440-23-5	58.2		0.500	0.250

Sample Number: **L0406598-08**
Client ID: **P-16S**
Matrix: **Water**
Workgroup Number: **WG169760**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/08/2004 20:15**
Cal Date: **07/07/2004 17:01**
Run Date: **07/08/2004 20:15**
File ID: **6M44654**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2	0.211	J	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250

Sample Number: **L0406598-08**
Client ID: **P-16S**
Matrix: **Water**
Workgroup Number: **WG169760**
Collect Date: **29-JUN-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/08/2004 20:15**
Cal Date: **07/07/2004 17:01**
Run Date: **07/08/2004 20:15**
File ID: **6M44654**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	0.210	J	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3	5.31		1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4	13.2		1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6	0.423	J	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	102	86	118	
1,2-Dichloroethane-d4	101	80	120	
Toluene-d8	102	88	110	
4-Bromofluorobenzene	105	86	115	

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0406598-08**
Client ID: **P-16S**
Matrix: **Water**
Workgroup Number: **WG169608**
Collect Date: **29-JUN-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/01/2004 08:30**
Cal Date:
Run Date: **07/01/2004 08:30**
File ID: **ET.0407010830-14**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

WORKGROUP SUMMARY BY METHOD

WORKGROUP SUMMARY BY METHOD

Analysis: Metals Analysis
Extraction Method: 3005A
Workgroup: WG169340

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406598-01	P-18D		07/01/04 08:15			HOT BLOCK	REK
L0406598-02	P-18D-A		07/01/04 08:15			HOT BLOCK	REK
L0406598-05	P-17D		07/01/04 08:15			HOT BLOCK	REK
L0406598-06	P-19S		07/01/04 08:15			HOT BLOCK	REK
L0406598-07	P-18S		07/01/04 08:15			HOT BLOCK	REK
L0406598-08	P-16S		07/01/04 08:15			HOT BLOCK	REK

Analysis: Total Dissolved Solids
Analytical Method: 160.1
Workgroup: WG169477

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406598-01	P-18D			07/02/04 15:35		OVEN	TMM
L0406598-02	P-18D-A			07/02/04 15:35		OVEN	TMM
L0406598-05	P-17D			07/02/04 15:35		OVEN	TMM
L0406598-06	P-19S			07/02/04 15:35		OVEN	TMM
L0406598-07	P-18S			07/02/04 15:35		OVEN	TMM
L0406598-08	P-16S			07/02/04 15:35		OVEN	TMM

Analysis: Metals Analysis
Analytical Method: 6010B
Workgroup: WG169493

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406598-01	P-18D		07/01/04 08:15	07/03/04 02:43	01	PE-ICP2	CRC
L0406598-02	P-18D-A		07/01/04 08:15	07/03/04 02:49	01	PE-ICP2	CRC
L0406598-05	P-17D		07/01/04 08:15	07/03/04 02:56	01	PE-ICP2	CRC
L0406598-06	P-19S		07/01/04 08:15	07/03/04 03:01	01	PE-ICP2	CRC
L0406598-07	P-18S		07/01/04 08:15	07/03/04 03:06	01	PE-ICP2	CRC
L0406598-08	P-16S		07/01/04 08:15	07/03/04 03:13	01	PE-ICP2	CRC

Analysis: Hardness
Analytical Method: 130.2
Workgroup: WG169596

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406598-01	P-18D			07/01/04 13:50		BURET	DR
L0406598-02	P-18D-A			07/01/04 13:50		BURET	DR
L0406598-05	P-17D			07/01/04 13:50		BURET	DR
L0406598-06	P-19S			07/01/04 13:50		BURET	DR
L0406598-07	P-18S			07/01/04 13:50		BURET	DR
L0406598-08	P-16S			07/01/04 13:50		BURET	DR

WORKGROUP SUMMARY BY METHOD

Analysis: Hardness
Extraction Method: 130.2
Workgroup: WG169596

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406598-01	P-18D			07/01/04 13:50		BURET	DR
L0406598-02	P-18D-A			07/01/04 13:50		BURET	DR
L0406598-05	P-17D			07/01/04 13:50		BURET	DR
L0406598-06	P-19S			07/01/04 13:50		BURET	DR
L0406598-07	P-18S			07/01/04 13:50		BURET	DR
L0406598-08	P-16S			07/01/04 13:50		BURET	DR

Analysis: Alkalinity, Bicarbonate
Analytical Method: A2320B
Workgroup: WG169608

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406598-01	P-18D			07/01/04 08:30		BURET	DR
L0406598-01	P-18D			07/01/04 08:30		BURET	DR
L0406598-02	P-18D-A			07/01/04 08:30		BURET	DR
L0406598-02	P-18D-A			07/01/04 08:30		BURET	DR
L0406598-05	P-17D			07/01/04 08:30		BURET	DR
L0406598-05	P-17D			07/01/04 08:30		BURET	DR
L0406598-06	P-19S			07/01/04 08:30		BURET	DR
L0406598-06	P-19S			07/01/04 08:30		BURET	DR
L0406598-07	P-18S			07/01/04 08:30		BURET	DR
L0406598-07	P-18S			07/01/04 08:30		BURET	DR
L0406598-08	P-16S			07/01/04 08:30		BURET	DR
L0406598-08	P-16S			07/01/04 08:30		BURET	DR

Analysis: Alkalinity, Bicarbonate
Extraction Method: METHOD
Workgroup: WG169608

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406598-01	P-18D			07/01/04 08:30		BURET	DR
L0406598-02	P-18D-A			07/01/04 08:30		BURET	DR
L0406598-05	P-17D			07/01/04 08:30		BURET	DR
L0406598-06	P-19S			07/01/04 08:30		BURET	DR
L0406598-07	P-18S			07/01/04 08:30		BURET	DR
L0406598-08	P-16S			07/01/04 08:30		BURET	DR

WORKGROUP SUMMARY BY METHOD

Analysis: Sulfate
Analytical Method: 375.4
Workgroup: WG169687

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406598-01	P-18D			07/07/04 13:52		SMARTCHEM	DIH
L0406598-02	P-18D-A			07/07/04 13:52		SMARTCHEM	DIH
L0406598-05	P-17D			07/07/04 13:52		SMARTCHEM	DIH
L0406598-06	P-19S			07/07/04 13:52		SMARTCHEM	DIH
L0406598-07	P-18S			07/07/04 13:52		SMARTCHEM	DIH
L0406598-08	P-16S			07/07/04 13:52		SMARTCHEM	DIH

Analysis: Volatile Organics
Analytical Method: 8260B
Workgroup: WG169760

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406598-01	P-18D			07/08/04 16:34	01	HPMS6	MES
L0406598-02	P-18D-A			07/08/04 17:06	01	HPMS6	MES
L0406598-03	P-18D-C			07/08/04 17:38	01	HPMS6	MES
L0406598-04	P-18S-D			07/08/04 18:09	01	HPMS6	MES
L0406598-05	P-17D			07/08/04 18:41	01	HPMS6	MES
L0406598-06	P-19S			07/08/04 19:13	01	HPMS6	MES
L0406598-07	P-18S			07/08/04 19:44	01	HPMS6	MES
L0406598-08	P-16S			07/08/04 20:15	01	HPMS6	MES

Analysis: Volatile Organics
Extraction Method: 5030B
Workgroup: WG169760

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406598-01	P-18D				169760	HPMS6	CMS
L0406598-02	P-18D-A				169760	HPMS6	CMS
L0406598-03	P-18D-C				169760	HPMS6	CMS
L0406598-04	P-18S-D				169760	HPMS6	CMS
L0406598-05	P-17D				169760	HPMS6	CMS
L0406598-06	P-19S				169760	HPMS6	CMS
L0406598-07	P-18S				169760	HPMS6	CMS
L0406598-08	P-16S				169760	HPMS6	CMS

WORKGROUP SUMMARY BY METHOD

Analysis: Chloride
Analytical Method: 325.2
Workgroup: WG169838

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406598-01	P-18D			07/08/04 15:11		SMARTCHEM	DIH
L0406598-02	P-18D-A			07/08/04 15:11		SMARTCHEM	DIH
L0406598-05	P-17D			07/08/04 15:11		SMARTCHEM	DIH
L0406598-06	P-19S			07/08/04 15:11		SMARTCHEM	DIH
L0406598-07	P-18S			07/08/04 15:11		SMARTCHEM	DIH
L0406598-08	P-16S			07/08/04 15:11		SMARTCHEM	DIH

Analysis: Total Organic Carbon
Analytical Method: 415.1
Workgroup: WG170028

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406598-01	P-18D			07/12/04 16:28		TOC-VWP	DIH
L0406598-02	P-18D-A			07/12/04 16:28		TOC-VWP	DIH
L0406598-05	P-17D			07/12/04 16:28		TOC-VWP	DIH
L0406598-06	P-19S			07/12/04 16:28		TOC-VWP	DIH
L0406598-07	P-18S			07/12/04 16:28		TOC-VWP	DIH
L0406598-08	P-16S			07/12/04 16:28		TOC-VWP	DIH

Analysis: Nitrogen, Nitrate
Analytical Method: 353.2
Workgroup: WG170055

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406598-05	P-17D			07/12/04 15:45		TRAACS-800	DIH
L0406598-06	P-19S			07/12/04 15:45		TRAACS-800	DIH
L0406598-08	P-16S			07/12/04 15:45		TRAACS-800	DIH

Analysis: Nitrogen, Nitrate
Analytical Method: 353.2
Workgroup: WG170058

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406598-01	P-18D			07/13/04 08:46		TRAACS-800	DIH
L0406598-02	P-18D-A			07/13/04 08:46		TRAACS-800	DIH
L0406598-07	P-18S			07/13/04 08:46		TRAACS-800	DIH

WORKGROUP SUMMARY BY METHOD

Analysis: Nitrogen, Ammonia
Analytical Method: 350.1
Workgroup: WG170113

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0406598-01	P-18D			07/13/04 14:08		TRAACS-800	JWR
L0406598-02	P-18D-A			07/13/04 14:08		TRAACS-800	JWR
L0406598-05	P-17D			07/13/04 14:08		TRAACS-800	JWR
L0406598-06	P-19S			07/13/04 14:08		TRAACS-800	JWR
L0406598-07	P-18S			07/13/04 14:08		TRAACS-800	JWR
L0406598-08	P-16S			07/13/04 14:08		TRAACS-800	JWR

Kemron Environmental Services
Analyst Listing
Tuesday, June 29 2004

AJF - AMANDA J. FICKIESEN
ALB - ANNIE L. BOCK
ALT - ANN L. THAYER
ARS - ANGELINA R. SCOTT
ART - AMANDA R. THOMPSON
BRG - BRENDA R. GREGORY
CAB - CASSIE A. BAKER
CAF - CHERYL A. FLOWERS
CAK - CHERYL A. KOELSCH
CEB - CHAD E. BARNES
CIS - CASHUS I. STONE
CLC - CHRYS L. CRAWFORD
CLK - CARL L. KING
CLS - CARA L. STRICKLER
CLW - CHARISSA L. WINTERS
CM - CHARLIE MARTIN
CMS - CRYSTAL M. STEVENS
CPD - CHAD P. DAVIS
CRC - CARLA R. COCHRAN
CSH - CHRIS S. HILL
DAS - DALLAS A. SULLIVAN
DD - DIANE M. DENNIS
DDE - DEBRA D. ELLIOTT
DEL - DON E. LIGHTFRITZ
DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER
DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE
DLR - DIANNA L. RAUCH
DMV - DAVID M. VANDEVELDE
DP - DEANNA L. PIERSON
DR - DEANNA ROBERTS
DRB - DOUG R. BARNETT
DSM - DAVID S. MOSSOR
DST - DENNIS S. TEPE
ECL - ERIC C. LAWSON
EED - EMILY E. DECKER
ELW - ERICA L. WEBB
HV - HEMA VILASAGAR
JAL - JOHN A. LENT
JJG - JOHN J. GREUEY
JKW - JANE K. THOMPSON
JLS - JANICE L. SCHIMMEL
JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES
JYH - JI Y. HU
KHR - KIM H. RHODES
KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF
LLL - LONNIE L. LEWIS
LSA - LUCINDA S. ARNOLD
LSB - LESLIE S. BUCINA
MAH - MICALYN A. HARRIS
MDA - MICHAEL D. ALBERTSON
MDC - MICHAEL D. COCHRAN
MEF - MIKE E. FLANAGAN
MES - MARY E. SCHILLING
MKZ - MARILYN K. ZUMBRO
MLR - MARY L. ROCHOTTE
MLS - MICHAEL L. SCHIMMEL
MMB - MAREN M. BEERY
MSW - MATT S. WILSON
NJB - NATALIE J. BOOTH
OGT - OKEY G. TUCKER
PAS - PATRICK A. STREET
RDC - REBECCA D. CUTLIP
REK - ROBERT E. KYER
RJW - RHONDA J. WITTEKIND
RWC - ROD W. CAMPBELL
SCM - SUSAN C. MOELLENDICK
SH - SHAUNA M. HYDE
SK - SANDRA KEENER
SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF
TD - TIMOTHY DYSERT
TJH - TIM J. HOEFLICH
TLM - TIFFINI L. MCDONALD
TMM - TAMMY M. MORRIS
VC - VICKI COLLIER
VKL - VICKY K. LAUER

KEMRON FORMS: JUL-25-02
Printed: JUN-29-04 14:17:21

KEMRON Environmental Services, Inc
List of Valid Qualifiers
August 5, 2002

Standard Qualifiers

These are KEMRON's Standard Report Qualifiers

B	Present in the method blank
C	Confirmed by GC/MS
CG	Confluent growth
D	The analyte was quantified at a secondary dilution factor
DL	Surrogate or spike was diluted out
E	Estimated concentration due to sample matrix interference
FL	Free liquid
I	Semi-quantitative result, out of instrument calibration range
J	Present below nominal reporting limit
L	Sample reporting limits elevated due to matrix interference
N	Tentatively Identified Compound (TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit (RL)
NF	Not found
NFL	No free liquid
NI	Non-ignitable
NS	Not spiked
P	Concentration >40% difference between The two GC columns
QNS	Quantity not sufficient to perform analysis
RA	Re analysis confirms reported results
RE	Re analysis confirms sample matrix interference
S	Analyzed by method of standard addition
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TNTC	Too numerous to count
U	Analyzed for but not detected
W	Post-digestion spike for furnace AA out o f control limits
X	Exceeds regulatory limit
Z	Can not be resolved from isomer.***
+	Correlation coefficient for the MSA is less than 0.995
<	Less than
>	Greater than
*	Surrogate or spike compound out of range

*** Special Notes for Organic Analytes

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene
3. N-nitrosodiphenylamine cannot be separated from diphenylamine
4. 3-Methyphenol and 4-Methyphenol are unresolvable compounds
5. m-Xylene and p-Xylene are unresolvable compounds
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent

AFCEE Qualifiers

These are KEMRON's AFCEE Report Qualifiers

J	The analyte was positively identified, the quantitation is an estimation
U	The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL
F	The analyte was positively identified but the associated numerical value is below the RL
R	The data is unusable due to deficiencies in the ability to analyze the sample and meet QC criteria
B	The analyte was found in an associated blank, as well as in the sample
M	The matrix effect was present
S	To be applied to all field screening data
T	Tentatively identified compound (using GC/MS)

H:\DATA\COMMON\Qualifier List 08-05-02.doc

ORGANIC QA/QC

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8260B

AAB#: WG169760

Login Number: L0406598

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-16S	06/29/04	06/30/04	07/08/04	14	9.29	07/08/04	14	9.29	
P-17D	06/29/04	06/30/04	07/08/04	14	9.38	07/08/04	14	9.38	
P-18D	06/29/04	06/30/04	07/08/04	14	9.30	07/08/04	14	9.30	
P-18D-A	06/29/04	06/30/04	07/08/04	14	9.33	07/08/04	14	9.33	
P-18D-C	06/29/04	06/30/04	07/08/04	14	9.35	07/08/04	14	9.35	
P-18S	06/29/04	06/30/04	07/08/04	14	9.35	07/08/04	14	9.35	
P-18S-D	06/29/04	06/30/04	07/08/04	14	9.33	07/08/04	14	9.33	
P-19S	06/29/04	06/30/04	07/08/04	14	9.37	07/08/04	14	9.37	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406598
Work Group: WG169760
Blank File ID: 6M44636
Blank Sample ID: WG169760-01
Date Analyzed: 07/08/04
Instrument ID: HPMS6
Time Analyzed: 10:46
Method: 8260B
Analyst: MES

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG169760-02	6M44638	07/08/04 11:49	01
LCS2	WG169760-03	6M44639	07/08/04 12:20	01
P-18D	L0406598-01	6M44647	07/08/04 16:34	01
P-18D-A	L0406598-02	6M44648	07/08/04 17:06	01
P-18D-C	L0406598-03	6M44649	07/08/04 17:38	01
P-18S-D	L0406598-04	6M44650	07/08/04 18:09	01
P-17D	L0406598-05	6M44651	07/08/04 18:41	01
P-19S	L0406598-06	6M44652	07/08/04 19:13	01
P-18S	L0406598-07	6M44653	07/08/04 19:44	01
P-16S	L0406598-08	6M44654	07/08/04 20:15	01
BLANK2	WG169760-04	6M44660	07/08/04 23:25	01

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406598 Run Date: 07/08/2004 Sample ID: WG169760-01
Instrument ID: HPMS6 Run Time: 10:46 Prep Method: 5030B
File ID: 6M44636 Analyst: MES Method: 8260B
Workgroup (AAB#): WG169760 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS6-07-JUL-04

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.540	1.00	0.540	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Dibromochloromethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.125	1.00	0.125	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes (total)	0.250	1.00	0.250	1	U

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406598 Run Date: 07/08/2004 Sample ID: WG169760-01
Instrument ID: HPMS6 Run Time: 10:46 Prep Method: 5030B
File ID: 6M44636 Analyst: MES Method: 8260B
Workgroup (AAB#): WG169760 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS6-07-JUL-04

Surrogates	% Recovery	Surrogate Limits			Qualifier
Dibromofluoromethane	97.4	86	-	118	PASS
1,2-Dichloroethane-d4	93.8	80	-	120	PASS
Toluene-d8	102	88	-	110	PASS
4-Bromofluorobenzene	100	86	-	115	PASS

* Analyte detected above RDL
ND Analyte Not detected at or above reporting limit

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/27/2004 10:39

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406598 Run Date: 07/08/2004 Sample ID: WG169760-04
Instrument ID: HPMS6 Run Time: 23:25 Prep Method: 5030B
File ID: 6M44660 Analyst: MES Method: 8260B
Workgroup (AAB#): WG169760 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS6-07-JUL-04

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.540	1.00	0.540	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Dibromochloromethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.125	1.00	0.125	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes (total)	0.250	1.00	0.250	1	U

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406598 Run Date: 07/08/2004 Sample ID: WG169760-04
Instrument ID: HPMS6 Run Time: 23:25 Prep Method: 5030B
File ID: 6M44660 Analyst: MES Method: 8260B
Workgroup (AAB#): WG169760 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS6-07-JUL-04

Surrogates	% Recovery	Surrogate Limits			Qualifier
Dibromofluoromethane	102	86	-	118	PASS
1,2-Dichloroethane-d4	106	80	-	120	PASS
Toluene-d8	102	88	-	110	PASS
4-Bromofluorobenzene	102	86	-	115	PASS

* Analyte detected above RDL
ND Analyte Not detected at or above reporting limit

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/27/2004 10:39

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406598 Analyst: MES Prep Method: 5030B
Instrument ID: HPMS6 Matrix: Water Method: 8260B
Workgroup (AAB#): WG169760 Units: ug/L
Sample ID: WG169760-02 LCS File ID: 6M44638 Run Date: 07/08/2004 11:49
Sample ID: WG169760-03 LCS2 File ID: 6M44639 Run Date: 07/08/2004 12:20

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	20.7	103	20.0	20.4	102	1.4	40 - 142	63	
Benzene	20.0	21.9	109	20.0	21.3	106	2.83	80 - 121	21	
Bromochloromethane	20.0	22.2	111	20.0	21.3	106	4.24	80 - 124	20	
Bromodichloromethane	20.0	21.0	105	20.0	20.7	104	1.31	80 - 131	25	
Bromoform	20.0	20.0	100	20.0	19.8	98.8	1.28	74 - 130	35	
Bromomethane	20.0	23.6	118	20.0	22.3	112	5.69	61 - 151	56	
2-Butanone	20.0	21.6	108	20.0	21.7	108	.543	58 - 149	56	
Carbon disulfide	20.0	20.0	99.8	20.0	19.1	95.4	4.48	58 - 138	49	
Carbon tetrachloride	20.0	22.3	111	20.0	21.6	108	2.92	80 - 137	32	
Chlorobenzene	20.0	21.3	107	20.0	21.3	106	.0843	80 - 120	16	
Dibromochloromethane	20.0	21.4	107	20.0	21.5	107	.22	80 - 127	26	
Chloroethane	20.0	21.8	109	20.0	21.1	105	3.67	77 - 133	34	
Chloroform	20.0	21.2	106	20.0	21.0	105	1.34	80 - 125	23	
Chloromethane	20.0	17.0	85.0	20.0	16.2	81.0	4.83	60 - 130	43	
1,2-Dichlorobenzene	20.0	20.9	105	20.0	20.4	102	2.26	80 - 125	15	
1,3-Dichlorobenzene	20.0	20.7	103	20.0	20.5	103	.579	80 - 120	16	
1,4-Dichlorobenzene	20.0	20.3	102	20.0	20.1	100	1.27	80 - 120	15	
1,1-Dichloroethane	20.0	22.2	111	20.0	21.8	109	1.7	80 - 125	21	
1,2-Dichloroethane	20.0	21.8	109	20.0	21.0	105	3.71	80 - 129	29	
1,1-Dichloroethene	20.0	22.8	114	20.0	22.4	112	1.98	80 - 132	26	
cis-1,2-Dichloroethene	20.0	21.3	106	20.0	21.1	106	.818	80 - 121	19	
trans-1,2-Dichloroethene	20.0	23.7	119	20.0	22.8	114	4.1	80 - 127	24	
1,2-Dichloropropane	20.0	21.4	107	20.0	21.1	106	1.27	80 - 120	20	
cis-1,3-Dichloropropene	20.0	22.4	112	20.0	22.1	111	1.33	80 - 132	26	
trans-1,3-Dichloropropene	20.0	22.4	112	20.0	22.8	114	1.99	80 - 130	25	
Ethylbenzene	20.0	21.8	109	20.0	21.9	109	.529	80 - 122	20	
2-Hexanone	20.0	21.0	105	20.0	21.3	107	1.22	56 - 136	49	
4-Methyl-2-pentanone	20.0	19.7	98.6	20.0	20.0	99.8	1.22	64 - 140	47	
Methylene chloride	20.0	22.1	111	20.0	21.3	106	3.89	80 - 123	22	
Styrene	20.0	22.6	113	20.0	22.7	113	.172	80 - 123	20	
1,1,2,2-Tetrachloroethane	20.0	19.4	97.1	20.0	20.1	101	3.59	79 - 125	28	
Tetrachloroethene	20.0	22.2	111	20.0	21.7	108	2.5	80 - 124	22	
Toluene	20.0	21.6	108	20.0	21.7	108	.101	80 - 124	22	
1,1,1-Trichloroethane	20.0	21.7	109	20.0	21.4	107	1.74	80 - 134	28	
1,1,2-Trichloroethane	20.0	20.4	102	20.0	20.7	104	1.45	80 - 125	20	
Trichloroethene	20.0	21.9	110	20.0	21.4	107	2.35	80 - 122	21	
Vinyl chloride	20.0	19.7	98.4	20.0	19.1	95.7	2.8	65 - 140	46	
Xylenes (total)	60.0	66.2	110	60.0	66.0	110	.378	80 - 121	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/27/2004 10:45

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406598 Analyst: MES Prep Method: 5030B
Instrument ID: HPMS6 Matrix: Water Method: 8260B
Workgroup (AAB#): WG169760 Units: ug/L
Sample ID: WG169760-02 LCS File ID: 6M44638 Run Date: 07/08/2004 11:49
Sample ID: WG169760-03 LCS2 File ID: 6M44639 Run Date: 07/08/2004 12:20

Surogates	LCS % Recovery	LCS2 % Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	97.3	96.4	86 - 118	PASS
1,2-Dichloroethane-d4	93.9	91.9	80 - 120	PASS
Toluene-d8	102	101	88 - 110	PASS
4-Bromofluorobenzene	101	99.8	86 - 115	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/27/2004 10:45

KEMRON ENVIRONMENTAL SERVICES
SURROGATE STANDARDS

Login Number: L0406598
Instrument Id: HPMS6
Workgroup (AAB#): WG169760

Method: 8260
CAL ID: HPMS6-07-JUL-04
Matrix: WATER

Sample Number	Dilution	Tag	1	2	3	4
L0406598-01	1.00	01	97.6	100	102	103
L0406598-02	1.00	01	99.0	99.8	103	101
L0406598-03	1.00	01	98.6	99.3	105	102
L0406598-04	1.00	01	100	99.4	103	101
L0406598-05	1.00	01	98.8	99.1	104	101
L0406598-06	1.00	01	102	102	102	103
L0406598-07	1.00	01	101	100	103	101
L0406598-08	1.00	01	101	102	105	102
WG169760-01	1.00	01	93.8	97.4	100	102
WG169760-02	1.00	01	93.9	97.3	101	102
WG169760-03	1.00	01	91.9	96.4	99.8	101
WG169760-04	1.00	01	106	102	102	102

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

KEMRON FORMS - Modified 02/25/2004
Version 1.2
Report generated 07/27/2004 10:48

Inorganic QC Summary

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6010B

AAB#: WG169493

Login Number: L0406598

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-16S	06/29/04	06/30/04	07/01/04	180	1.79	07/03/04	180	1.79	
P-17D	06/29/04	06/30/04	07/01/04	180	1.94	07/03/04	180	1.78	
P-18D	06/29/04	06/30/04	07/01/04	180	1.96	07/03/04	180	1.77	
P-18D-A	06/29/04	06/30/04	07/01/04	180	1.96	07/03/04	180	1.77	
P-18S	06/29/04	06/30/04	07/01/04	180	1.87	07/03/04	180	1.79	
P-19S	06/29/04	06/30/04	07/01/04	180	1.92	07/03/04	180	1.78	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406598
Blank File ID: P2.070304.011056
Date Analyzed: 07/03/04
Time Analyzed: 01:10
Analyst: CRC

Work Group: WG169493
Blank Sample ID: WG169340-02
Instrument ID: PE-ICP2
Method: 6010B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG169340-03	P2.070304.011710	07/03/04 01:17	01
P-18D	L0406598-01	P2.070304.024331	07/03/04 02:43	01
P-18D-A	L0406598-02	P2.070304.024949	07/03/04 02:49	01
P-17D	L0406598-05	P2.070304.025605	07/03/04 02:56	01
P-19S	L0406598-06	P2.070304.030123	07/03/04 03:01	01
P-18S	L0406598-07	P2.070304.030644	07/03/04 03:06	01
P-16S	L0406598-08	P2.070304.031302	07/03/04 03:13	01
LCS	WG169340-03	P2.070704.141129	07/07/04 14:11	02

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406598
Blank File ID: P2.070704.140517
Date Analyzed: 07/07/04
Time Analyzed: 14:05
Analyst: SLP

Work Group: WG169493
Blank Sample ID: WG169340-02
Instrument ID: PE-ICP2
Method: 6010B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG169340-03	P2.070304.011710	07/03/04 01:17	01
P-18D	L0406598-01	P2.070304.024331	07/03/04 02:43	01
P-18D-A	L0406598-02	P2.070304.024949	07/03/04 02:49	01
P-17D	L0406598-05	P2.070304.025605	07/03/04 02:56	01
P-19S	L0406598-06	P2.070304.030123	07/03/04 03:01	01
P-18S	L0406598-07	P2.070304.030644	07/03/04 03:06	01
P-16S	L0406598-08	P2.070304.031302	07/03/04 03:13	01
LCS	WG169340-03	P2.070704.141129	07/07/04 14:11	02

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406598 Run Date: 07/03/2004 Sample ID: WG169340-02
Instrument ID: PE-ICP2 Run Time: 01:10 Prep Method: 3005A
File ID: P2.070304.011056 Analyst: CRC Method: 6010B
Workgroup (AAB#): WG169493 Matrix: Water Units: mg/L
Contract #: Cal ID: PE-ICP-02-JUL-04

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Calcium	0.100	0.200	0.100	1	U
Iron	0.0200	0.0400	0.0200	1	U
Potassium	0.250	1.00	0.250	1	U
Magnesium	0.250	0.500	0.250	1	U
Manganese	0.00100	0.0100	0.00110	1	J
Sodium	0.250	0.500	0.250	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/27/2004 11:17

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406598 Run Date: 07/03/2004 Sample ID: WG169340-03
Instrument ID: PE-ICP2 Run Time: 01:17 Prep Method: 3005A
File ID: P2.070304.011710 Analyst: CRC Method: 6010B
Workgroup (AAB#): WG169493 Matrix: Water Units: mg/L
Contract #: Cal ID: PE-ICP-02-JUL-2004 21:29

Analytes	Expected	Found	% Rec	LCS Limits	Q
Calcium	5.00	4.54	90.7	80 - 120	
Iron	2.00	1.84	92.2	80 - 120	
Potassium	25.0	23.1	92.3	80 - 120	
Magnesium	5.00	4.78	95.6	80 - 120	
Manganese	0.250	0.229	91.7	80 - 120	
Sodium	25.0	23.2	92.8	80 - 120	

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

AAB#: WG169838

Analytical Method: 325.2

Login Number: L0406598

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-16S	06/29/04	06/30/04	07/08/04	28	9.08	07/08/04	28	9.08	
P-17D	06/29/04	06/30/04	07/08/04	28	9.23	07/08/04	28	9.23	
P-18D	06/29/04	06/30/04	07/08/04	28	9.25	07/08/04	28	9.25	
P-18D-A	06/29/04	06/30/04	07/08/04	28	9.25	07/08/04	28	9.25	
P-18S	06/29/04	06/30/04	07/08/04	28	9.16	07/08/04	28	9.16	
P-19S	06/29/04	06/30/04	07/08/04	28	9.21	07/08/04	28	9.21	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406598
Blank File ID: EM04071209333421
Date Analyzed: 07/08/04
Time Analyzed: 15:11
Analyst: DIH

Work Group: WG169838
Blank Sample ID: WG169838-02
Instrument ID: SMARTCHEM
Method: 325.2

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-18D	L0406598-01	EM04071209333406	07/08/04 15:11	
P-18D-A	L0406598-02	EM04071209333407	07/08/04 15:11	
P-17D	L0406598-05	EM04071209333408	07/08/04 15:11	
P-19S	L0406598-06	EM04071209333409	07/08/04 15:11	
P-18S	L0406598-07	EM04071209333410	07/08/04 15:11	
P-16S	L0406598-08	EM04071209333411	07/08/04 15:11	
LCS	WG169838-03	EM04071209333422	07/08/04 15:11	
LCS2	WG169838-04	EM04071209333423	07/08/04 15:11	
DUP	WG169838-05	EM04071209333424	07/08/04 15:11	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406598 Run Date: 07/08/2004 Sample ID: WG169838-02
Instrument ID: SMARTCHEM Run Time: 15:11 Prep Method: 325.2
File ID: EM0407120933421 Analyst: DIH Method: 325.2
Workgroup (AAB#): WG169838 Matrix: Water Units: mg/L
Contract #: Cal ID: SMARTC-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	1.00	2.00	1.00	1	U

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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406598 Analyst: DIH Prep Method: 325.2
Instrument ID: SMARTCHEM Matrix: Water Method: 325.2
Workgroup (AAB#): WG169838 Units: mg/L
Sample ID: WG169838-03 LCS File ID: EM04071209333422 Run Date: 07/08/2004 15:11
Sample ID: WG169838-04 LCS2 File ID: EM04071209333423 Run Date: 07/08/2004 15:11

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Chloride	50.0	50.2	100	50.0	51.0	102	1.58	90 - 110	10	

* FAILS %REC LIMIT

FAILS RPD LIMIT

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KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 353.2

AAB#: WG170055

Login Number: L0406598

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-16S	06/29/04	06/30/04	07/12/04	2	13.1	07/12/04	2	13.1	*ANAL
P-17D	06/29/04	06/30/04	07/12/04	2	13.3	07/12/04	2	13.3	*ANAL
P-19S	06/29/04	06/30/04	07/12/04	2	13.2	07/12/04	2	13.2	*ANAL

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

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KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method:353.2 AAB#:WG170058

Login Number:L0406598

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-18D	06/29/04	06/30/04	07/13/04	2	14.0	07/13/04	2	14.0	*ANAL
P-18D-A	06/29/04	06/30/04	07/13/04	2	14.0	07/13/04	2	14.0	*ANAL
P-18S	06/29/04	06/30/04	07/13/04	2	13.9	07/13/04	2	13.9	*ANAL

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406598
Blank File ID: 0004071311515012
Date Analyzed: 07/12/04
Time Analyzed: 15:45
Analyst: DIH

Work Group: WG170055
Blank Sample ID: WG170055-02
Instrument ID: TRAACS-800
Method: 353.2

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-17D	L0406598-05	0004071311515005	07/12/04 15:45	
P-19S	L0406598-06	0004071311515006	07/12/04 15:45	
P-16S	L0406598-08	0004071311515007	07/12/04 15:45	
LCS	WG170055-03	0004071311515013	07/12/04 15:45	
LCS2	WG170055-04	0004071311515014	07/12/04 15:45	
DUP	WG170055-05	0004071311515015	07/12/04 15:45	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406598
Blank File ID: 0004071311433926
Date Analyzed: 07/13/04
Time Analyzed: 08:46
Analyst: DIH

Work Group: WG170058
Blank Sample ID: WG170058-02
Instrument ID: TRAACS-800
Method: 353.2

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-18D	L0406598-01	0004071311433907	07/13/04 08:46	
P-18D-A	L0406598-02	0004071311433908	07/13/04 08:46	
P-18S	L0406598-07	0004071311433909	07/13/04 08:46	
LCS	WG170058-03	0004071311433921	07/13/04 08:46	
LCS2	WG170058-04	0004071311433922	07/13/04 08:46	
DUP	WG170058-05	0004071311433923	07/13/04 08:46	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406598
Instrument ID: TRAACS-800
File ID: 0004071311515012
Workgroup (AAB#): WG170055
Contract #:

Run Date: 07/12/2004
Run Time: 15:45
Analyst: DIH
Matrix: Water
Cal ID: TRAACS-

Sample ID: WG170055-02
Prep Method: 353.2
Method: 353.2
Units: mg/L

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Nitrate	0.0250	0.0500	0.0250	1	U

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KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406598
Instrument ID: TRAACS-800
File ID: 0004071311433926
Workgroup (AAB#): WG170058
Contract #:

Run Date: 07/13/2004
Run Time: 08:46
Analyst: DIH
Matrix: Water
Cal ID: TRAACS-

Sample ID: WG170058-02
Prep Method: 353.2
Method: 353.2
Units: mg/L

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Nitrate	0.0250	0.0500	0.0250	1	U

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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406598
Instrument ID: TRAACS-800
File ID: 0004071311515013
Workgroup (AAB#): WG170055
Contract #:

Run Date: 07/12/2004
Run Time: 15:45
Analyst: DIH
Matrix: Water
Cal ID: TRAACS -

Sample ID: WG170055-03
Prep Method: 353.2
Method: 353.2
Units: mg/L

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrate	1.00	1.08	108	90 - 110	

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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406598
Instrument ID: TRAACS-800
File ID: 0004071311433921
Workgroup (AAB#): WG170058
Contract #:

Run Date: 07/13/2004
Run Time: 08:46
Analyst: DIH
Matrix: Water
Cal ID: TRAACS-

Sample ID: WG170058-03
Prep Method: 353.2
Method: 353.2
Units: mg/L

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrate	1.00	1.05	105	90 - 110	

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KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

AAB#: WG170028

Analytical Method: 415.1

Login Number: L0406598

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-16S	06/29/04	06/30/04	07/12/04	28	13.1	07/12/04	28	13.1	
P-17D	06/29/04	06/30/04	07/12/04	28	13.3	07/12/04	28	13.3	
P-18D	06/29/04	06/30/04	07/12/04	28	13.3	07/12/04	28	13.3	
P-18D-A	06/29/04	06/30/04	07/12/04	28	13.3	07/12/04	28	13.3	
P-18S	06/29/04	06/30/04	07/12/04	28	13.2	07/12/04	28	13.2	
P-19S	06/29/04	06/30/04	07/12/04	28	13.3	07/12/04	28	13.3	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406598
Blank File ID: WP04071311224125
Date Analyzed: 07/12/04
Time Analyzed: 16:28
Analyst: DIH

Work Group: WG170028
Blank Sample ID: WG170028-03
Instrument ID: TOC-VWP
Method: 415.1

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-18D	L0406598-01	WP04071311224107	07/12/04 16:28	
P-18D-A	L0406598-02	WP04071311224108	07/12/04 16:28	
P-17D	L0406598-05	WP04071311224109	07/12/04 16:28	
P-19S	L0406598-06	WP04071311224110	07/12/04 16:28	
P-18S	L0406598-07	WP04071311224111	07/12/04 16:28	
P-16S	L0406598-08	WP04071311224112	07/12/04 16:28	
LCS	WG170028-04	WP04071311224126	07/12/04 16:28	
LCS2	WG170028-05	WP04071311224127	07/12/04 16:28	
DUP	WG170028-06	WP04071311224128	07/12/04 16:28	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406598
Instrument ID: TOC-VWP
File ID: WP0407131122412S
Workgroup (AAB#): WG170028
Contract #:

Run Date: 07/12/2004
Run Time: 16:28
Analyst: DIH
Matrix: Water
Cal ID: TOC-VW-

Sample ID: WG170028-03
Prep Method: 415.1
Method: 415.1
Units: mg/L

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U

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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406598 Analyst: DIH Prep Method: 415.1
Instrument ID: TOC-VWP Matrix: Water Method: 415.1
Workgroup (AAB#): WG170028 Units: mg/L
Sample ID: WG170028-04 LCS File ID: WP04071311224126 Run Date: 07/12/2004 16:28
Sample ID: WG170028-05 LCS2 File ID: WP04071311224127 Run Date: 07/12/2004 16:28

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	25.3	101	25.0	26.2	105	3.65	85 - 115	15	

* FAILS %REC LIMIT

FAILS RPD LIMIT

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KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

AAB#: WG169608

Analytical Method: A2320B
Login Number: L0406598

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-16S	06/29/04	06/30/04	07/01/04	14	1.80	07/01/04	14	1.80	
P-17D	06/29/04	06/30/04	07/01/04	14	1.95	07/01/04	14	1.95	
P-18D	06/29/04	06/30/04	07/01/04	14	1.97	07/01/04	14	1.97	
P-18D-A	06/29/04	06/30/04	07/01/04	14	1.97	07/01/04	14	1.97	
P-18S	06/29/04	06/30/04	07/01/04	14	1.88	07/01/04	14	1.88	
P-19S	06/29/04	06/30/04	07/01/04	14	1.93	07/01/04	14	1.93	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

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KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406598
Blank File ID: ET.0407010830-01
Date Analyzed: 07/01/04
Time Analyzed: 08:30
Analyst: DR

Work Group: WG169608
Blank Sample ID: WG169608-02
Instrument ID: BURET
Method: A2320B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG169608-03	ET.0407010830-02	07/01/04 08:30	
LCS2	WG169608-04	ET.0407010830-03	07/01/04 08:30	
P-18D	L0406598-01	ET.0407010830-09	07/01/04 08:30	
P-18D	L0406598-01	ET.0407010830-09	07/01/04 08:30	
P-18D-A	L0406598-02	ET.0407010830-10	07/01/04 08:30	
P-18D-A	L0406598-02	ET.0407010830-10	07/01/04 08:30	
P-17D	L0406598-05	ET.0407010830-11	07/01/04 08:30	
P-17D	L0406598-05	ET.0407010830-11	07/01/04 08:30	
P-19S	L0406598-06	ET.0407010830-12	07/01/04 08:30	
P-19S	L0406598-06	ET.0407010830-12	07/01/04 08:30	
P-18S	L0406598-07	ET.0407010830-13	07/01/04 08:30	
P-18S	L0406598-07	ET.0407010830-13	07/01/04 08:30	
P-16S	L0406598-08	ET.0407010830-14	07/01/04 08:30	
P-16S	L0406598-08	ET.0407010830-14	07/01/04 08:30	
DUP	WG169608-05	ET.0407010830-15	07/01/04 08:30	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406598
Instrument ID: BURET
File ID: ET.0407010830-01
Workgroup (AAB#): WG169608
Contract #:

Run Date: 07/01/2004
Run Time: 08:30
Analyst: DR
Matrix: Water
Cal ID: BURET-

Sample ID: WG169608-02
Prep Method: A2320B
Method: A2320B
Units: mg/L

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Alkalinity, Bicarbonate	5.00	10.0	5.00	1	U

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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406598 Analyst: DR Prep Method: A2320B
Instrument ID: BURET Matrix: Water Method: A2320B
Workgroup (AAB#): WG169608 Units: mg/L
Sample ID: WG169608-03 LCS File ID: ET.0407010830-02 Run Date: 07/01/2004 08:30
Sample ID: WG169608-04 LCS2 File ID: ET.0407010830-03 Run Date: 07/01/2004 08:30

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Alkalinity, Bicarbonate	100	98.0	98.0	100	97.5	97.5	.514	90 - 110	10	

* FAILS %REC LIMIT

FAILS RPD LIMIT

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KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

AAB#: WG169477

Analytical Method: 160.1

Login Number: L0406598

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-16S	06/29/04	06/30/04	07/02/04	7	3.10	07/02/04	7	3.10	
P-17D	06/29/04	06/30/04	07/02/04	7	3.25	07/02/04	7	3.25	
P-18D	06/29/04	06/30/04	07/02/04	7	3.26	07/02/04	7	3.26	
P-18D-A	06/29/04	06/30/04	07/02/04	7	3.26	07/02/04	7	3.26	
P-18S	06/29/04	06/30/04	07/02/04	7	3.17	07/02/04	7	3.17	
P-19S	06/29/04	06/30/04	07/02/04	7	3.22	07/02/04	7	3.22	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

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Version 1.3 PDF File ID:
Report generated 07/16/2004 17:05

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406598
Blank File ID: EN.0407021535-01
Date Analyzed: 07/02/04
Time Analyzed: 15:35
Analyst: TMM

Work Group: WG169477
Blank Sample ID: WG169477-02
Instrument ID: OVEN
Method: 160.1

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG169477-03	EN.0407021535-02	07/02/04 15:35	
LCS2	WG169477-04	EN.0407021535-03	07/02/04 15:35	
P-18D	L0406598-01	EN.0407021535-04	07/02/04 15:35	
P-18D-A	L0406598-02	EN.0407021535-05	07/02/04 15:35	
P-17D	L0406598-05	EN.0407021535-06	07/02/04 15:35	
P-19S	L0406598-06	EN.0407021535-07	07/02/04 15:35	
P-18S	L0406598-07	EN.0407021535-08	07/02/04 15:35	
P-16S	L0406598-08	EN.0407021535-09	07/02/04 15:35	
DUP	WG169477-05	EN.0407021535-13	07/02/04 15:35	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406598
Instrument ID: OVEN
File ID: EN.0407021535-01
Workgroup (AAB#): WG169477
Contract #:

Run Date: 07/02/2004
Run Time: 15:35
Analyst: TMM
Matrix: Water
Cal ID: OVEN-

Sample ID: WG169477-02
Prep Method: 160.1
Method: 160.1
Units: mg/L

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Total Dissolved Solids	5.00	10.0	5.00	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
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KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406598 Analyst: TMM Prep Method: 160.1
Instrument ID: OVEN Matrix: Water Method: 160.1
Workgroup (AAB#): WG169477 Units: mg/L
Sample ID: WG169477-03 LCS File ID: EN.0407021535-02 Run Date: 07/02/2004 15:35
Sample ID: WG169477-04 LCS2 File ID: EN.0407021535-03 Run Date: 07/02/2004 15:35

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Total Dissolved Solids	500	504	101	500	498	99.6	1.2	80 - 120	25	

* FAILS %REC LIMIT

FAILS RPD LIMIT

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Version 1.3 PDF File ID:
Report generated 07/16/2004 17:05

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 130.2

AAB#: WG169596

Login Number: L0406598

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-16S	06/29/04	06/30/04	07/01/04	180	2.02	07/01/04	180	2.02	
P-17D	06/29/04	06/30/04	07/01/04	180	2.18	07/01/04	180	2.18	
P-18D	06/29/04	06/30/04	07/01/04	180	2.19	07/01/04	180	2.19	
P-18D-A	06/29/04	06/30/04	07/01/04	180	2.19	07/01/04	180	2.19	
P-18S	06/29/04	06/30/04	07/01/04	180	2.10	07/01/04	180	2.10	
P-19S	06/29/04	06/30/04	07/01/04	180	2.15	07/01/04	180	2.15	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:04

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406598
Blank File ID: ET.0407011350-01
Date Analyzed: 07/01/04
Time Analyzed: 13:50
Analyst: DR

Work Group: WG169596
Blank Sample ID: WG169596-03
Instrument ID: BURET
Method: 130.2

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG169596-04	ET.0407011350-02	07/01/04 13:50	
P-18D	L0406598-01	ET.0407011350-08	07/01/04 13:50	
P-18D-A	L0406598-02	ET.0407011350-09	07/01/04 13:50	
P-17D	L0406598-05	ET.0407011350-10	07/01/04 13:50	
P-19S	L0406598-06	ET.0407011350-11	07/01/04 13:50	
P-18S	L0406598-07	ET.0407011350-12	07/01/04 13:50	
P-16S	L0406598-08	ET.0407011350-13	07/01/04 13:50	
DUP	WG169596-05	ET.0407011350-14	07/01/04 13:50	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406598
Instrument ID: BURET
File ID: ET.0407011350-01
Workgroup (AAB#): WG169596
Contract #:

Run Date: 07/01/2004
Run Time: 13:50
Analyst: DR
Matrix: Water
Cal ID: BURET-

Sample ID: WG169596-03
Prep Method: 130.2
Method: 130.2
Units: mg/L

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Hardness	2.50	5.00	2.50	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:04

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406598
Instrument ID: BURET
File ID: ET.0407011350-02
Workgroup (AAB#): WG169596
Contract #:

Run Date: 07/01/2004
Run Time: 13:50
Analyst: DR
Matrix: Water
Cal ID: BURET-

Sample ID: WG169596-04
Prep Method: 130.2
Method: 130.2
Units: mg/L

Analytes	Expected	Found	% Rec	LCS Limits	Q
Hardness	100	102	102	90 - 110	

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:04

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

AAB#: WG169687

Analytical Method: 375.4

Login Number: L0406598

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-16S	06/29/04	06/30/04	07/07/04	28	8.03	07/07/04	28	8.03	
P-17D	06/29/04	06/30/04	07/07/04	28	8.18	07/07/04	28	8.18	
P-18D	06/29/04	06/30/04	07/07/04	28	8.19	07/07/04	28	8.19	
P-18D-A	06/29/04	06/30/04	07/07/04	28	8.19	07/07/04	28	8.19	
P-18S	06/29/04	06/30/04	07/07/04	28	8.10	07/07/04	28	8.10	
P-19S	06/29/04	06/30/04	07/07/04	28	8.15	07/07/04	28	8.15	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406598
Blank File ID: EM04070913372820
Date Analyzed: 07/07/04
Time Analyzed: 13:52
Analyst: DIH

Work Group: WG169687
Blank Sample ID: WG169687-02
Instrument ID: SMARTCHEM
Method: 375.4

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-18D	L0406598-01	EM04070913372809	07/07/04 13:52	
P-18D-A	L0406598-02	EM04070913372810	07/07/04 13:52	
P-17D	L0406598-05	EM04070913372811	07/07/04 13:52	
P-19S	L0406598-06	EM04070913372812	07/07/04 13:52	
P-18S	L0406598-07	EM04070913372813	07/07/04 13:52	
P-16S	L0406598-08	EM04070913372814	07/07/04 13:52	
LCS	WG169687-03	EM04070913372821	07/07/04 13:52	
LCS2	WG169687-04	EM04070913372822	07/07/04 13:52	
DUP	WG169687-05	EM04070913372823	07/07/04 13:52	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406598 Run Date: 07/07/2004 Sample ID: WG169687-02
Instrument ID: SMARTCHEM Run Time: 13:52 Prep Method: 375.4
File ID: EM04070913372820 Analyst: DIH Method: 375.4
Workgroup (AAB#): WG169687 Matrix: Water Units: mg/L
Contract #: Cal ID: SMARTC-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Sulfate	2.50	5.00	2.50	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:03

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0406598 Analyst: DIH Prep Method: 375.4
Instrument ID: SMARTCHEM Matrix: Water Method: 375.4
Workgroup (AAB#): WG169687 Units: mg/L
Sample ID: WG169687-03 LCS File ID: EM04070913372821 Run Date: 07/07/2004 13:52
Sample ID: WG169687-04 LCS2 File ID: EM04070913372822 Run Date: 07/07/2004 13:52

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Sulfate	20.0	22.4	112	20.0	23.0	115	2.64	85 - 115	10	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:03

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 350.1 AAB#: WG170113

Login Number: L0406598

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-16S	06/29/04	06/30/04	07/13/04	28	14.0	07/13/04	28	14.0	
P-17D	06/29/04	06/30/04	07/13/04	28	14.2	07/13/04	28	14.2	
P-18D	06/29/04	06/30/04	07/13/04	28	14.2	07/13/04	28	14.2	
P-18D-A	06/29/04	06/30/04	07/13/04	28	14.2	07/13/04	28	14.2	
P-18S	06/29/04	06/30/04	07/13/04	28	14.1	07/13/04	28	14.1	
P-19S	06/29/04	06/30/04	07/13/04	28	14.2	07/13/04	28	14.2	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:03

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0406598
Blank File ID: 0004071408591820
Date Analyzed: 07/13/04
Time Analyzed: 14:08
Analyst: JWR

Work Group: WG170113
Blank Sample ID: WG170113-01
Instrument ID: TRAACS-800
Method: 350.1

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-18D	L0406598-01	0004071408591806	07/13/04 14:08	
P-18D-A	L0406598-02	0004071408591807	07/13/04 14:08	
P-17D	L0406598-05	0004071408591808	07/13/04 14:08	
P-19S	L0406598-06	0004071408591809	07/13/04 14:08	
P-18S	L0406598-07	0004071408591810	07/13/04 14:08	
P-16S	L0406598-08	0004071408591811	07/13/04 14:08	
LCS	WG170113-02	0004071408591821	07/13/04 14:08	
DUP	WG170113-04	0004071408591823	07/13/04 14:08	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0406598
Instrument ID: TRAACS-800
File ID: 0004071408591820
Workgroup (AAB#): WG170113
Contract #:

Run Date: 07/13/2004
Run Time: 14:08
Analyst: JWR
Matrix: Water
Cal ID: TRAACS-

Sample ID: WG170113-01
Prep Method: 350.1
Method: 350.1
Units: mg/L

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Nitrogen, Ammonia	0.0500	0.100	0.0500	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:03

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0406598
Instrument ID: TRAACS-800
File ID: 0004071408591821
Workgroup (AAB#): WG170113
Contract #:

Run Date: 07/13/2004
Run Time: 14:08
Analyst: JWR
Matrix: Water
Cal ID: TRAACS-

Sample ID: WG170113-02
Prep Method: 350.1
Method: 350.1
Units: mg/L

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrogen, Ammonia	2.00	1.74	86.9	70 - 125	

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 17:03

EARTH TECH
A TETRA TECH INTERNATIONAL OIL COMPANY

Chain of Custody and Analytical Request

Page: 1 of 1
Project Number: 76058.03
WBS Number: NA
Chain of Custody Number: 21-JUN-2004.01
LIMS Number: NA

Facility ID: (5 Characters Max) GEP01

Project Name / Site Name: RFI at Caribe General Electric Products, Patillas, Puerto Rico

Client Name: GE Industrial Systems, Inc.

Collected by: L. Alexander, J. Stepp, R. Reynolds, N. Hicks

A. Field Sample ID (30 Characters Max)	B. LOCID (15 Characters Max)	C. Date Collected (dd-MMM-yyyy)	D. Time Collected (Military - HHMM)	E. Sample Depth (top - bottom)	F. SA Code	G. Sample Number	H. Sample Matrix	I. Sample Analysis Requested: Total Number of Containers per Line	Temperature Blank 1 x 100 mL PI	VOCs (SW8260) 2 x 40 ml GI HCl	TOC, NH3 (see Comments) 1 x 250 mL GI H2SO4	Hardness (E130.2) 1 x 250 mL PI HNO3	Alkalinity (SM 2320B) 1 x 250 mL PI	Cl, NO3, SO4 (see Comments) 1 x 500 mL PI	Ca,Fe,Mg,Mn,K,Na (6010B) 1x500 mL PI HNO3	TDS (E160.1) 1 x 500 mL PI	J. Quality Assurance Samples: Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
1. P-18D	P-18D	21-JUN-2004	0915	0-0	N	01	WG	8		2	1	1	1	1	1	1				B
2. P-18D-a	P-18D	21-JUN-2004	0915	0-0	FD	01	WG	8		2	1	1	1	1	1	1				B
3. P-18D-c	P-18D	21-JUN-2004	0915	0-0	TB	01	WQ	2		2										A
4. P-18S-d	P-18S	21-JUN-2004	1010	0-0	EB	01	WQ	2		2										A
5. P-17D	P-17D	21-JUN-2004	0935	0-0	N	01	WG	8		2	1	1	1	1	1	1				B
6. P-19S	P-19S	21-JUN-2004	1125	0-0	N	01	WG	8		2	1	1	1	1	1	1				B
7. P-18S	P-18S	21-JUN-2004	1125	0-0	N	01	WG	8		2	1	1	1	1	1	1				B
8. P-16S	P-16S	21-JUN-2004	1315	0-0	N	01	WG	8		2	1	1	1	1	1	1				B
9.				-																
10.				-																
11.				-																
12.				-																
13.				-																
15.				-																
16.				-																
17. TEMPERATURE BLANK				0 - 0	N	01	W		2											

Alexander 6/29/04

Comments: 1) TOC, and NH3 by methods E415.1, and E350.1. 2) Anions: Chloride, Nitrate, and Sulfate by methods E325.2, E353.2, and E375.4.

3) Total Metals: Total Calcium, Total Iron, Total Magnesium, Total Manganese, Total Potassium, and Total Sodium. Note: All VOCs are on Cooler "A"

Chain of Custody Number = date collected + custody form sequence number for that day (e.g. 09-02-1999-01, then -02, etc., for additional chains for that day.)

F. Sample Type (SA) Codes:
N = Normal
FD = Field Duplicate (-a)
FR = Field Replicate (-b)
TB = Trip Blank (-c)
EB = Equipment Blank (-d)
MS = Matrix Spike
SD = Matrix Spike Duplicate

G. Sample Number: Enter 01, unless on a single day you collect either:
a) multiple samples from the same location, or
b) multiple QA samples of a single type.
In that case, enter 02 for the second sample, 03 for the third, etc.

H. Matrix Codes:
GS = Soil Gas
WG = Ground Water
WS = Surface Water
WQ = Water Quality Blank (trip, equip., ambient)
SO = Soil
SS = Surface Soil
SE = Sediment
SL = Sludge
SQ = Soil Quality Blank

J. Quality Assurance Lot Control Numbers are produced by adding the sample number (Column G) to the date collected (Column C), without spaces or dashes. (e.g. Enter 10050401 in the Equipment Blank Lot Control column for every sample that was associated with the first equipment blank collected on May 10, 2004.)

Custody Transfers Prior to Receipt by Laboratory

	Relinquished By (Signed)	Date	Time		Received by (signed)	Date	Time
1.	L. Alexander	6/29/04	1545	1.	FedEx	6/29/04	1545
2.				2.			
3.				3.			

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Yes ____ No ____
Analytical Lab Name: ____
Lab Location: ____
Lab Recipient: ____

Shipped: Yes X No ____
Method of Shipment: FedEx 8327 2964 4917
Airbill #: ____
Date and Time: ____

EARTH TECH
A TETRA TECH COMPANY

Chain of Custody and Analytical Request

Page: 1 of 1
Project Number: 76058.03
WBS Number: NA
Chain of Custody Number: 29-JUN-2004-01
LIMS Number: NA

Facility ID: (5 Characters Max) GEP01

Project Name / Site Name: RFI at Caribe General Electric Products, Patillas, Puerto Rico

Client Name: GE Industrial Systems, Inc.

Collected by: L. Alexander, J. Stepp, R. Reynolds, N. Hicks

A. Field Sample ID (30 Characters Max)	B. LOCID (15 Characters Max)	C. Date Collected (dd-MMM-yyyy)	D. Time Collected (Military - HHMM)	E. Sample Depth (top - bottom)	F. SA Code	G. Sample Number	H. Sample Matrix	I. Sample Analysis Requested (state method requested, plus the number of containers enclosed): Total Number of Containers per Line	Temperature Blank 1 x 100 mL PI	VOCs (8260B) 2 x 40 ml GI HCl	TOC, NH3 (see Comments) 1 x 250 mL GI H2SO4	Hardness (E130.2) 1 x 250 mL PI HNO3	Alkalinity (SM 2320B) 1 x 250 mL PI	Cl, NO3, SO4 (see Comments) 1 x 500 mL PI	Ca, Fe, Mg, Mn, K, Na (6010B) 1x500 mL PI HNO3	TDS (E160.1) 1 x 500 mL PI	J. Quality Assurance Samples: Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
1. P-18D	P-18D	29-JUN-2004	0915	0-0	N	01	WG	8		2	1	1	1	1	1	1		29062004 01	29062004 01	B
2. P-18D-a	P-18D	29-JUN-2004	0915	0-0	FD	01	WG	8		2	1	1	1	1	1	1		29062004 01	29062004 01	B
3. P-18D-c	P-18D	29-JUN-2004	0915	0-0	TB	01	WQ	2		2								29062004 01	29062004 01	A
4. P-18S-d	P-18S	29-JUN-2004	1010	0-0	EB	01	WQ	2		2								29062004 01	29062004 01	A
5. P-17D	P-17D	29-JUN-2004	0935	0-0	N	01	WG	8		2	1	1	1	1	1	1		29062004 01	29062004 01	B
6. P-19S	P-19S	29-JUN-2004	1045	0-0	N	01	WG	8		2	1	1	1	1	1	1		29062004 01	29062004 01	A
7. P-18S	P-18S	29-JUN-2004	1125	0-0	N	01	WG	8		2	1	1	1	1	1	1		29062004 01	29062004 01	A
8. P-16S	P-16S	29-JUN-2004	1315	0-0	N	01	WG	8		2	1	1	1	1	1	1		29062004 01	29062004 01	B
9.				-																
10.				-																
11.				-																
12.				-																
13.				-																
15.				-																
16.				-																
17. TEMPERATURE BLANK				0 - 0	N	01	W		2											

R Alexander 6/29/04

Comments: 1) TOC, and NH3 by methods E415.1, and E350.1. 2) Anions: Chloride, Nitrate, and Sulfateby methods E325.2, E353.2, and E375.4.

3) Total Metals: Total Calcium, Total Iron, Total Magnesium, Total Manganese, Total Potassium, and Total Sodium. Note: All VOCs are in Cooler "A"

Chain of Custody Number = date collected + custody form sequence number for that day (e.g. 09-02-1999-01, then -02, etc., for additional chains for that day.)

F. Sample Type (SA) Codes:
N = Normal
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FR = Field Replicate (-b)
TB = Trip Blank (-c)
EB = Equipment Blank (-d)
MS = Matrix Spike
SD = Matrix Spike Duplicate

G. Sample Number: Enter 01, unless on a single day you collect either:
a) multiple samples from the same location, or
b) multiple QA samples of a single type.
In that case, enter 02 for the second sample, 03 for the third, etc.

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WG = Ground Water
WS = Surface Water
WQ = Water Quality Blank (trip, equip., ambient)
SO = Soil
SS = Surface Soil
SE = Sediment
SL = Sludge
SQ = Soil Quality Blank

J. Quality Assurance Lot Control Numbers are produced by adding the sample number (Column G) to the date collected (Column C), without spaces or dashes. (e.g. Enter 10050401 in the Equipment Blank Lot Control column for every sample that was associated with the first equipment blank collected on May 10, 2004.)

Custody Transfers Prior to Receipt by Laboratory

	Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1.	R Alexander	6/29/04	1545	1. To Fed Ex	6/29/04	1545
2.				2.		
3.				3. Cora Stricker	6/30/04	10:24

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Yes ____ No ____
Analytical Lab Name: ____
Lab Location: ____
Lab Recipient: ____

Shipped: Yes X No ____
Method of Shipment: FedEx 832729644917
Airbill #: ____
Date and Time: ____

COC sealed, Dx'd on ice, Cooler temps = 2°, 2° C&D

KEMRON Internal Laboratory Chain of Custody

Work Order: L0406598 **Client:** GE-Puerto Rico **# of Samples:** 8 **Due Date:** 7/14/04 **Page:** ____

Sample #	Analysis	Reason	Removed By ADT	Removed From	Moved To	Reliq. by	Ret'd By ADT	Ret'd To	Rec'd By	Reason
1,2,5-8	NO2	test	TMM 7/2/04 @1201	login	wet	TLM	dlh 7/13/1100	A-1	CJD	A1
1,2,5-8	Met	Dig	for 7/1/04 @0800	W-1	Met	Blg	TMM 7-7-04 @830	A-1	Blg	A-1
1,2,5-8	Alk Bi-Ct	Anal	CJS 7/1/04 @0845	W-1	wet	Blg	CJS 7/1/04 @1141 1355	A-1	Blg	A-1
1,2,5-8	Hard	Anal	CJS 7/1/04 @1145	W-1	wet	Blg	CJS 7/1/04	A-1	Blg	A-1
1,2,5-8	TDS	test	TMM 7/2/04 @815	W-1	wet	Blg	TMM 7/9/04 @825	A-1	CJD	A-1
1-8	8260	AN	MG 7/2/04 1515	V1	ORG-4	Blg				
1,2,5-8	NH_3	test	CJS 7/12/04 @ 0810	W-1	wet	CJD	dlh 7/13/1100	A-1	CJD	A-1

SAMPLE RECEIPT FORM

KEMRON ENVIRONMENTAL SERVICES
156 STARLITE DRIVE
MARIETTA, OH
45750
(740) 373-4071

Date: 6/30/04 Client: GE - Puerto Rico

Shipped By: (✓) Fed-Ex ( ) UPS ( )Airborne ( ) KEMRON ( ) Client ( ) Other 10.24

Opened By: CHD

Logged By: CHD Login #: L04 6-598

IR Temp Gun: (✓) D ( ) F

COOLER INFORMATION

Number	Cooler ID	Temp °C	Airbill#	COC#	Other
1	KL1281	2	832729644917		master
2	lg blue	2	8288 8348 5860		2 of 2
3					
4					
5					
6					

Were all coolers sealed?	(Y)	N	N/A
Were custody seals used on all coolers?	(Y)	N	N/A
Were custody seals intact?	(Y)	N	N/A
Was visible ice present?	(Y)	N	N/A
Were all coolers in the temperature range of 2-6C? (>6C*)	(Y)	N	N/A
Were the samples frozen?*	Y	(N)	N/A
Were COC papers provided?	(Y)	N	N/A
Were all sample containers intact?*	(Y)	N	N/A
Were all sample labels intact?	(Y)	N	N/A
Were all sample labels legible?*	(Y)	N	N/A
Did all sample labels match the COC?*	(Y)	N	N/A
Was the label information complete?*	(Y)	N	N/A
Were the correct containers used?*	(Y)	N	N/A
Were the correct preservatives added to water samples?*	(Y)	N	N/A
Was the pH tested on preserved water samples?	(Y)	N	N/A
Were pH ranges acceptable?*	(Y)	N	N/A
Was sufficient amount of sample provided?*	(Y)	N	N/A
Were bubbles present in VOA samples?*	Y	(N)	N/A
Were COC's signed and dated?	(Y)	N	N/A
Did samples arrive before hold time expired?*	(Y)	N	N/A
Are discrepancy forms attached?	Y	N	(N/A)

**Requires a discrepancy form*

CRF #1
Revised 8/22/03

Comments:_____

KEMRON
ENVIRONMENTAL SERVICES

156 Starlite Drive ▪ Marietta, OH 45750 ▪ Telephone (740) 373-4071 ▪ FAX (740) 373-4835

Laboratory Report Number: L0407056

Please find enclosed the analytical results for the samples you submitted to Kemron Environmental Services.

Review and compilation of your report was completed by Kemron's Sales and Service Team 2. If you have questions, comments or require further assistance please contact one of our team members at 800-373-4071. We can also be reached at the e-mail addresses listed below.

Cheryl Koelsch – Team Chemist/Data Specialist
ckoelsch@kemron-lab.com

Nina Scott -- Customer Service/Invoicing Specialist
ascott@kemron-lab.com

Kathy Albertson – Team Chemist/Data Specialist
kalbertson@kemron-lab.com

Debra Elliott – Team Leader
delliott@kemron-lab.com

This report was reviewed by: _____ Date: 7/27/04

I certify that all test results meet all of the requirements of the NELAP standards and other applicable contract terms and conditions. All results for soil samples are reported on a "dry-weight" basis unless specified otherwise. Analytical results for water and wastes are reported on an "as received" basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of KEMRON Environmental Services.

Certified by: David E. Vandenberg
David E. Vandenberg
Laboratory Director

FLDOH NELAP Id: E87551

This report contains a total of 65 pages.

LABORATORY REPORT

L0407056

07/27/04 14:45

Submitted By

KEMRON Environmental Services
156 Starlite Drive
Marietta, Ohio 45750
(740)373-4071

For

Account Name: EARTH TECH, Inc
10 Patewood Drive
Suite 500 Building VI
Greenville, SC 29615
Attention: Juanita Edwards

Account Number: 664-831
Work ID: RFI @ CARIBE GE

P.O. Number: 76058-d

Sample Summary

Client ID	Lab ID	Date Collected	Date Received
P-19D	L0407056-01	01-JUL-04	02-JUL-04
P-19D-C	L0407056-02	01-JUL-04	02-JUL-04

KEMRON ENVIRONMENTAL SERVICES
REPORT NARRATIVE

L0407056

SHIPMENT CONDITIONS:

The chain of custody was received sealed in the cooler. The cooler temperature was 2° C.

SAMPLE MANAGEMENT:

The samples were received intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

REVIEWED: _____ DATE: 7/6/04

REPORT NARRATIVE
GC/MS VOLATILE ORGANICS

KEMRON Login No: L0407056

METHOD

Preparation: SW-846 5030B
Analysis: SW-846 8260B

HOLDING TIMES

Sample Preparation: All holding times were met.
Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial calibrations: For all compounds which yielded a %RSD greater than 15%, linear or higher order equations were applied or if the mean %RSD for all analytes was less than 15% the average response factors were used. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Samples: 1,2-Dichloroethane exceeded the upper advisory limit in the LCS/LCSD. All other acceptance criteria were met.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group (SDG).

SAMPLES

Internal Standards: All acceptance criteria were met.

Surrogates: 1,2-Dichloroethane-d4 exceeded the upper control limit in sample 02. All other acceptance criteria were met.

Samples: All acceptance criteria were met.

MANUAL INTEGRATION REASON CODES

KEMRON laboratory management has identified four general cases with valid reasons supporting the use of manual integration techniques.

Reason #1: Data System Fails to Select Correct Peak

In some cases the chromatography system selects and integrates the "wrong peak". In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Approved: July 26, 2004

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak.

This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds.

This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline

There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous

Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analyst: CMS

Rev. 07/08/04

Approved: July 26, 2004

REPORT NARRATIVE
METALS

KEMRON Login No: L0407056

METHOD

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.
Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial calibrations: All acceptance criteria were met.
Alternate Source Standards: All acceptance criteria were met.
Continuing Calibration : All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.
Laboratory Control Sample: All acceptance criteria were met.
Serial Dilution/Post Digestion Spike: WG169689(6010) - All acceptance criteria were met.

SAMPLES

All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analyst: CRC REVIEWED: Maren Beery DATE: 07/16/04

Rev. 6/00

REPORT NARRATIVE
GENERAL CHEMISTRY

KEMRON Login No: L0407056

METHOD

Analysis: See report for method reference.

HOLDING TIMES

Sample Preparation: All holding times were met.
Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.
Laboratory Control Sample: All acceptance criteria were met
Duplicates: All acceptance criteria were met
Matrix Spikes: All acceptance criteria were met.

SAMPLES

Nitrate

Nitrate is analyzed by subtracting the nitrite result from the nitrate-nitrite result. The nitrite was analyzed within the 48 hour hold time. Nitrate-nitrite has a 28 day hold, so the analysis was performed within hold.

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I certify that this data package is in compliance with the terms and conditions agreed to by the client and KEMRON Environmental Services, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analyst: dih

REVIEWED: dih DATE: 7/19/04

Rev. 6/00

Report Number: **L0407056**
Report Date : **July 27, 2004**

Sample Number:	L0407056-01	Prep Method:	130.2	Instrument:	BURET
Client ID:	P-19D	Analytical Method:	130.2	Prep Date:	07/06/2004 08:40
Matrix:	Water	Analyst:	DR	Cal Date:	
Workgroup Number:	WG169597	Dilution:	1	Run Date:	07/06/2004 08:40
Collect Date:	01-JUL-04	Units:	mg/L	File ID:	ET.0407060840-04

Analyte	CAS. Number	Result	Qual	RL	MDL
Hardness		142		10.0	5.00

Sample Number:	L0407056-01	Prep Method:	160.1	Instrument:	OVEN
Client ID:	P-19D	Analytical Method:	160.1	Prep Date:	07/02/2004 15:35
Matrix:	Water	Analyst:	TMM	Cal Date:	
Workgroup Number:	WG169477	Dilution:	1	Run Date:	07/02/2004 15:35
Collect Date:	01-JUL-04	Units:	mg/L	File ID:	EN.0407021535-12

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Dissolved Solids		296		20.0	10.0

Sample Number:	L0407056-01	Prep Method:	A2320B	Instrument:	BURET
Client ID:	P-19D	Analytical Method:	A2320B	Prep Date:	07/06/2004 14:00
Matrix:	Water	Analyst:	DR	Cal Date:	
Workgroup Number:	WG169609	Dilution:	1	Run Date:	07/06/2004 14:00
Collect Date:	01-JUL-04	Units:	mg/L	File ID:	ET.0407061400-04

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Bicarbonate		160		10.0	5.00

Sample Number:	L0407056-01	Prep Method:	350.1	Instrument:	TRAACS-800
Client ID:	P-19D	Analytical Method:	350.1	Prep Date:	07/08/2004 14:40
Matrix:	Water	Analyst:	JWR	Cal Date:	
Workgroup Number:	WG169796	Dilution:	1	Run Date:	07/08/2004 14:40
Collect Date:	01-JUL-04	Units:	mg/L	File ID:	0004070912103310

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.0560	J	0.100	0.0500

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Report Number: **L0407056**
Report Date : **July 27, 2004**

Sample Number: **L0407056-01**
Client ID: **P-19D**
Matrix: **Water**
Workgroup Number: **WG169687**
Collect Date: **01-JUL-04**

Prep Method: **375.4**
Analytical Method: **375.4**
Analyst: **DIH**
Dilution: **2**
Units: **mg/L**

Instrument: **SMARTCHEM**
Prep Date: **07/07/2004 13:52**
Cal Date:
Run Date: **07/07/2004 13:52**
File ID: **EM04070913372815**

Analyte	CAS. Number	Result	Qual	RL	MDL
Sulfate	**14808-79-8**	**40.6**		**10.0**	**5.00**

Sample Number: **L0407056-01**
Client ID: **P-19D**
Matrix: **Water**
Workgroup Number: **WG169838**
Collect Date: **01-JUL-04**

Prep Method: **325.2**
Analytical Method: **325.2**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **SMARTCHEM**
Prep Date: **07/08/2004 15:11**
Cal Date:
Run Date: **07/08/2004 15:11**
File ID: **EM04071209333412**

Analyte	CAS. Number	Result	Qual	RL	MDL
Chloride	**16887-00-6**	**24.6**		**2.00**	**1.00**

Sample Number: **L0407056-01**
Client ID: **P-19D**
Matrix: **Water**
Workgroup Number: **WG170058**
Collect Date: **01-JUL-04**

Prep Method: **353.2**
Analytical Method: **353.2**
Analyst: **DIH**
Dilution: **2**
Units: **mg/L**

Instrument: **TRAACS-800**
Prep Date: **07/13/2004 08:46**
Cal Date:
Run Date: **07/13/2004 08:46**
File ID: **0004071311433910**

Analyte	CAS. Number	Result	Qual	RL	MDL
Nitrate	**14797-55-8**	**2.39**		**0.100**	**0.0500**

Sample Number: **L0407056-01**
Client ID: **P-19D**
Matrix: **Water**
Workgroup Number: **WG169894**
Collect Date: **01-JUL-04**

Prep Method: **415.1**
Analytical Method: **415.1**
Analyst: **DIH**
Dilution: **1**
Units: **mg/L**

Instrument: **TOC-VWP**
Prep Date: **07/09/2004 21:20**
Cal Date:
Run Date: **07/09/2004 21:20**
File ID: **WP04071209482017**

Analyte	CAS. Number	Result	Qual	RL	MDL
Total Organic Carbon		**1.33**		**1.00**	**0.500**

Report Number: **L0407056**
Report Date : **July 27, 2004**

Sample Number: **L0407056-01**
Client ID: **P-19D**
Matrix: **Water**
Workgroup Number: **WG169689**
Collect Date: **01-JUL-04**
Sample Tag: **01**

Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **CRC**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **07/06/2004 08:10**
Cal Date: **07/07/2004 19:19**
Run Date: **07/07/2004 21:09**
File ID: **P2.070704.210958**

Analyte	CAS. Number	Result	Qual	RL	MDL
Calcium, Total	7440-70-2	32.7		0.200	0.100
Iron, Total	7439-89-6	0.0911		0.0400	0.0200
Potassium, Total	7440-09-7	0.553	J	1.00	0.250
Magnesium, Total	7439-95-4	17.5		0.500	0.250
Manganese, Total	7439-96-5	0.279		0.0100	0.00100
Sodium, Total	7440-23-5	44.9		0.500	0.250

J This compound was detected at a level above the method detection limit, but below the reporting limit.

Sample Number: **L0407056-01**
Client ID: **P-19D**
Matrix: **Water**
Workgroup Number: **WG169900**
Collect Date: **01-JUL-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/12/2004 17:58**
Cal Date: **07/07/2004 17:01**
Run Date: **07/12/2004 17:58**
File ID: **6M44719**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3	2.16		1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3	0.658	J	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4	14.5		1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6	1.12		1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Report Number: **L0407056**
Report Date : **July 27, 2004**

Sample Number: **L0407056-01**
Client ID: **P-19D**
Matrix: **Water**
Workgroup Number: **WG169900**
Collect Date: **01-JUL-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/12/2004 17:58**
Cal Date: **07/07/2004 17:01**
Run Date: **07/12/2004 17:58**
File ID: **6M44719**

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	108	86	118	
1,2-Dichloroethane-d4	120	80	120	
Toluene-d8	100	88	110	
4-Bromofluorobenzene	107	86	115	

J This compound was detected at a level above the method detection limit, but below the reporting limit.
U This analyte was not detected in the sample.

Sample Number: **L0407056-01**
Client ID: **P-19D**
Matrix: **Water**
Workgroup Number: **WG169609**
Collect Date: **01-JUL-04**

Prep Method: **A2320B**
Analytical Method: **A2320B**
Analyst: **DR**
Dilution: **1**
Units: **mg/L**

Instrument: **BURET**
Prep Date: **07/06/2004 14:00**
Cal Date:
Run Date: **07/06/2004 14:00**
File ID: **ET.0407061400-04**

Analyte	CAS. Number	Result	Qual	RL	MDL
Alkalinity, Carbonate			U	10.0	5.00

U This analyte was not detected in the sample.

Sample Number: **L0407056-02**
Client ID: **P-19D-C**
Matrix: **Water**
Workgroup Number: **WG169900**
Collect Date: **01-JUL-04**
Sample Tag: **01**

Prep Method: **5030B**
Analytical Method: **8260B**
Analyst: **CMS**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **07/12/2004 18:29**
Cal Date: **07/07/2004 17:01**
Run Date: **07/12/2004 18:29**
File ID: **6M44720**

Analyte	CAS. Number	Result	Qual	RL	MDL
Acetone	67-64-1		U	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.540
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Dibromochloromethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.125
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500

Report Number: **L0407056**
Report Date : **July 27, 2004**

Sample Number:	L0407056-02	Prep Method:	5030B	Instrument:	HPMS6
Client ID:	P-19D-C	Analytical Method:	8260B	Prep Date:	07/12/2004 18:29
Matrix:	Water	Analyst:	CMS	Cal Date:	07/07/2004 17:01
Workgroup Number:	WG169900	Dilution:	1	Run Date:	07/12/2004 18:29
Collect Date:	01-JUL-04	Units:	ug/L	File ID:	6M44720
Sample Tag:	01				

Analyte	CAS. Number	Result	Qual	RL	MDL
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Styrene	100-42-5		U	1.00	0.125
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Vinyl chloride	75-01-4		U	1.00	0.250
Xylenes (total)	1330-20-7		U	1.00	0.250

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	109	86	118	
1,2-Dichloroethane-d4	121	80	120	*
Toluene-d8	100	88	110	
4-Bromofluorobenzene	107	86	115	

***** **Surrogate or spike compound out of range**
U **This analyte was not detected in the sample.**

WORKGROUP SUMMARY BY METHOD

WORKGROUP SUMMARY BY METHOD

Analysis: Total Dissolved Solids
Analytical Method: 160.1
Workgroup: WG169477

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0407056-01	P-19D			07/02/04 15:35		OVEN	TMM

Analysis: Metals Analysis
Extraction Method: 3005A
Workgroup: WG169544

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0407056-01	P-19D		07/06/04 08:10			HOT BLOCK	TLM

Analysis: Hardness
Analytical Method: 130.2
Workgroup: WG169597

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0407056-01	P-19D			07/06/04 08:40		BURET	DR

Analysis: Hardness
Extraction Method: 130.2
Workgroup: WG169597

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0407056-01	P-19D			07/06/04 08:40		BURET	DR

WORKGROUP SUMMARY BY METHOD

Analysis: Alkalinity, Bicarbonate
Analytical Method: A2320B
Workgroup: WG169609

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0407056-01	P-19D			07/06/04 14:00		BURET	DR
L0407056-01	P-19D			07/06/04 14:00		BURET	DR

Analysis: Alkalinity, Bicarbonate
Extraction Method: METHOD
Workgroup: WG169609

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0407056-01	P-19D			07/06/04 14:00		BURET	DR

Analysis: Sulfate
Analytical Method: 375.4
Workgroup: WG169687

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0407056-01	P-19D			07/07/04 13:52		SMARTCHEM	DIH

Analysis: Metals Analysis
Analytical Method: 6010B
Workgroup: WG169689

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0407056-01	P-19D		07/06/04 08:10	07/07/04 21:09	01	PE-ICP2	CRC

WORKGROUP SUMMARY BY METHOD

Analysis: Nitrogen, Ammonia
Analytical Method: 350.1
Workgroup: WG169796

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0407056-01	P-19D			07/08/04 14:40		TRAACS-800	JWR

Analysis: Chloride
Analytical Method: 325.2
Workgroup: WG169838

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0407056-01	P-19D			07/08/04 15:11		SMARTCHEM	DIH

Analysis: Total Organic Carbon
Analytical Method: 415.1
Workgroup: WG169894

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0407056-01	P-19D			07/09/04 21:20		TOC-VWP	DIH

Analysis: Volatile Organics
Analytical Method: 8260B
Workgroup: WG169900

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0407056-01	P-19D			07/12/04 17:58	01	HPMS6	CMS
L0407056-02	P-19D-C			07/12/04 18:29	01	HPMS6	CMS

WORKGROUP SUMMARY BY METHOD

Analysis: Volatile Organics
Extraction Method: 5030B
Workgroup: WG169900

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0407056-01	P-19D				169900	HPMS8	CMS
L0407056-02	P-19D-C				169900	HPMS8	CMS

Analysis: Nitrogen, Nitrate
Analytical Method: 353.2
Workgroup: WG170058

Lab ID	Client ID	Tclp Date	Prep Date	Analysis Date	Tag	Inst Id	Analyst
L0407056-01	P-19D			07/13/04 08:46		TRAACS-800	DIH

ORGANIC QA/QC

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 8260B

AAB#: WG169900

Login Number: L0407056

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-19D	07/01/04	07/02/04	07/12/04	14	11.2	07/12/04	14	11.2	
P-19D-C	07/01/04	07/02/04	07/12/04	14	11.2	07/12/04	14	11.2	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0407056
Blank File ID: 6M44701
Date Analyzed: 07/12/04
Time Analyzed: 08:27
Analyst: CMS

Work Group: WG169900
Blank Sample ID: WG169900-01
Instrument ID: HPMS6
Method: 8260B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG169900-02	6M44702	07/12/04 08:59	01
LCS2	WG169900-03	6M44703	07/12/04 09:30	01
P-19D	L0407056-01	6M44719	07/12/04 17:58	01
P-19D-C	L0407056-02	6M44720	07/12/04 18:29	01

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0407056 Run Date: 07/12/2004 Sample ID: WG169900-01
Instrument ID: HPMS6 Run Time: 08:27 Prep Method: 5030B
File ID: 6M44701 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG169900 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS6-07-JUL-04

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.540	1.00	0.540	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Dibromochloromethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.125	1.00	0.125	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
Xylenes (total)	0.250	1.00	0.250	1	U

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0407056 Run Date: 07/12/2004 Sample ID: WG169900-01
Instrument ID: HPMS6 Run Time: 08:27 Prep Method: 5030B
File ID: 6M44701 Analyst: CMS Method: 8260B
Workgroup (AAB#): WG169900 Matrix: Water Units: ug/L
Contract #: Cal ID: HPMS6-07-JUL-04

Surrogates	% Recovery	Surrogate Limits			Qualifier
Dibromofluoromethane	107	86	-	118	PASS
1,2-Dichloroethane-d4	113	80	-	120	PASS
Toluene-d8	102	88	-	110	PASS
4-Bromofluorobenzene	106	86	-	115	PASS

* Analyte detected above RDL
ND Analyte Not detected at or above reporting limit

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/27/2004 11:27

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0407056 Analyst: CMS Prep Method: 5030B
Instrument ID: HPMS6 Matrix: Water Method: 8260B
Workgroup (AAB#): WG169900 Units: ug/L
Sample ID: WG169900-02 LCS File ID: 6M44702 Run Date: 07/12/2004 08:59
Sample ID: WG169900-03 LCS2 File ID: 6M44703 Run Date: 07/12/2004 09:30

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	21.1	105	20.0	21.2	106	.717	40 - 142	63	
Benzene	20.0	21.5	108	20.0	22.4	112	3.96	80 - 121	21	
Bromochloromethane	20.0	22.1	110	20.0	22.8	114	3.07	80 - 124	20	
Bromodichloromethane	20.0	24.2	121	20.0	24.8	124	2.35	80 - 131	25	
Bromoform	20.0	21.6	108	20.0	22.1	110	2.06	74 - 130	35	
Bromomethane	20.0	22.4	112	20.0	23.7	118	5.44	61 - 151	56	
2-Butanone	20.0	21.1	106	20.0	21.2	106	.248	58 - 149	56	
Carbon disulfide	20.0	21.2	106	20.0	22.3	111	4.75	58 - 138	49	
Carbon tetrachloride	20.0	25.9	129	20.0	26.7	133	3.15	80 - 137	32	
Chlorobenzene	20.0	20.5	103	20.0	21.6	108	5.19	80 - 120	16	
Dibromochloromethane	20.0	22.9	115	20.0	23.4	117	1.92	80 - 127	26	
Chloroethane	20.0	22.4	112	20.0	23.7	119	5.69	77 - 133	34	
Chloroform	20.0	23.7	119	20.0	24.3	121	2.36	80 - 125	23	
Chloromethane	20.0	19.5	97.5	20.0	20.7	104	6.2	60 - 130	43	
1,2-Dichlorobenzene	20.0	20.1	101	20.0	20.4	102	1.69	80 - 125	15	
1,3-Dichlorobenzene	20.0	19.7	98.7	20.0	20.4	102	3.35	80 - 120	16	
1,4-Dichlorobenzene	20.0	19.5	97.5	20.0	20.2	101	3.49	80 - 120	15	
1,1-Dichloroethane	20.0	23.6	118	20.0	23.9	119	1.41	80 - 125	21	
1,2-Dichloroethane	20.0	26.1	131	20.0	26.2	131	.423	80 - 129	29	*
1,1-Dichloroethene	20.0	24.4	122	20.0	25.6	128	5.14	80 - 132	26	
cis-1,2-Dichloroethene	20.0	21.5	108	20.0	22.5	112	4.39	80 - 121	19	
trans-1,2-Dichloroethene	20.0	23.1	116	20.0	24.5	122	5.67	80 - 127	24	
1,2-Dichloropropane	20.0	21.0	105	20.0	21.7	108	3.16	80 - 120	20	
cis-1,3-Dichloropropene	20.0	23.7	118	20.0	24.2	121	2.23	80 - 132	26	
trans-1,3-Dichloropropene	20.0	24.8	124	20.0	25.3	127	1.91	80 - 130	25	
Ethylbenzene	20.0	21.3	106	20.0	22.0	110	3.32	80 - 122	20	
2-Hexanone	20.0	19.6	97.9	20.0	20.2	101	3.26	56 - 136	49	
4-Methyl-2-pentanone	20.0	19.4	97.2	20.0	19.5	97.5	.309	64 - 140	47	
Methylene chloride	20.0	21.7	108	20.0	22.5	113	3.95	80 - 123	22	
Styrene	20.0	22.0	110	20.0	22.5	113	2.33	80 - 123	20	
1,1,2,2-Tetrachloroethane	20.0	19.4	96.8	20.0	19.6	98.0	1.21	79 - 125	28	
Tetrachloroethene	20.0	21.7	109	20.0	22.7	114	4.5	80 - 124	22	
Toluene	20.0	20.8	104	20.0	21.9	109	5.28	80 - 124	22	
1,1,1-Trichloroethane	20.0	25.0	125	20.0	25.7	128	2.58	80 - 134	28	
1,1,2-Trichloroethane	20.0	20.6	103	20.0	21.2	106	2.82	80 - 125	20	
Trichloroethene	20.0	21.1	106	20.0	22.4	112	5.66	80 - 122	21	
Vinyl chloride	20.0	27.5	137	20.0	27.4	137	.383	65 - 140	46	
Xylenes (total)	60.0	64.0	107	60.0	66.9	111	4.47	80 - 121	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/27/2004 11:27

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number:L0407056 Analyst:CMS Prep Method:5030B
Instrument ID:HPMS6 Matrix:Water Method:8260B
Workgroup (AAB#):WG169900 Units:ug/L
Sample ID:WG169900-02 LCS File ID:6M44702 Run Date:07/12/2004 08:59
Sample ID:WG169900-03 LCS2 File ID:6M44703 Run Date:07/12/2004 09:30

Surogates	LCS % Recovery	LCS2 % Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	108	107	86 - 118	PASS
1,2-Dichloroethane-d4	115	112	80 - 120	PASS
Toluene-d8	99.9	99.1	88 - 110	PASS
4-Bromofluorobenzene	103	103	86 - 115	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/27/2004 11:27

KEMRON ENVIRONMENTAL SERVICES
SURROGATE STANDARDS

Login Number: L0407056
Instrument Id: HPMS6
Workgroup (AAB#): WG169900

Method: 8260
CAL ID: HPMS6-07-JUL-04
Matrix: WATER

Sample Number	Dilution	Tag	1	2	3	4
L0407056-01	1.00	01	120	108	107	100
L0407056-02	1.00	01	121	109	107	100
WG169900-01	1.00	01	113	107	106	102
WG169900-02	1.00	01	115	108	103	99.9
WG169900-03	1.00	01	112	107	103	99.1

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out

ND = surrogate not detected

KEMRON FORMS - Modified 02/25/2004
Version 1.2
Report generated 07/27/2004 11:28

Inorganic QC Summary

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6010B

AAB#: WG169689

Login Number: L0407056

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-19D	07/01/04	07/02/04	07/06/04	180	4.75	07/07/04	180	1.54	

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 07/19/2004
Version 1.3 PDF File ID:
Report generated 07/27/2004 11:26

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0407056
Work Group: WG169689
Blank File ID: P2.070704.200459
Blank Sample ID: WG169544-02
Date Analyzed: 07/07/04
Instrument ID: PE-ICP2
Time Analyzed: 20:04
Method: 6010B
Analyst: CRC

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG169544-03	P2.070704.201111	07/07/04 20:11	01
P-19D	L0407056-01	P2.070704.210958	07/07/04 21:09	01

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/27/2004 11:26

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0407056 Run Date: 07/07/2004 Sample ID: WG169544-02
Instrument ID: PE-ICP2 Run Time: 20:04 Prep Method: 3005A
File ID: P2.070704.200459 Analyst: CRC Method: 6010B
Workgroup (AAB#): WG169689 Matrix: Water Units: mg/L
Contract #: Cal ID: PE-ICP-07-JUL-04

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Calcium	0.100	0.200	0.100	1	U
Iron	0.0200	0.0400	0.0200	1	U
Potassium	0.250	1.00	0.250	1	U
Magnesium	0.250	0.500	0.250	1	U
Manganese	0.00100	0.0100	0.00100	1	U
Sodium	0.250	0.500	0.250	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/27/2004 11:26

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0407056 Run Date: 07/07/2004 Sample ID: WG169544-03
Instrument ID: PE-ICP2 Run Time: 20:11 Prep Method: 3005A
File ID: P2.070704.201111 Analyst: CRC Method: 6010B
Workgroup (AAB#): WG169689 Matrix: Water Units: mg/L
Contract #: Cal ID: PE-ICP-07-JUL-2004 19:19

Analytes	Expected	Found	% Rec	LCS Limits	Q
Calcium	5.00	4.88	97.5	80 - 120	
Iron	2.00	1.96	97.8	80 - 120	
Potassium	25.0	24.6	98.5	80 - 120	
Magnesium	5.00	5.02	100	80 - 120	
Manganese	0.250	0.243	97.2	80 - 120	
Sodium	25.0	25.0	99.8	80 - 120	

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/27/2004 11:26

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 325.2 AAB#: WG169838

Login Number: L0407056

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-19D	07/01/04	07/02/04	07/08/04	28	7.05	07/08/04	28	7.05	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:51

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0407056
Blank File ID: EM04071209333421
Date Analyzed: 07/08/04
Time Analyzed: 15:11
Analyst: DIH

Work Group: WG169838
Blank Sample ID: WG169838-02
Instrument ID: SMARTCHEM
Method: 325.2

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-19D	L0407056-01	EM04071209333412	07/08/04 15:11	
LCS	WG169838-03	EM04071209333422	07/08/04 15:11	
LCS2	WG169838-04	EM04071209333423	07/08/04 15:11	
DUP	WG169838-05	EM04071209333424	07/08/04 15:11	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0407056 Run Date: 07/08/2004 Sample ID: WG169838-02
Instrument ID: SMARTCHEM Run Time: 15:11 Prep Method: 325.2
File ID: EM04071209333421 Analyst: DIH Method: 325.2
Workgroup (AAB#): WG169838 Matrix: Water Units: mg/L
Contract #: Cal ID: SMARTC-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Chloride	1.00	2.00	1.00	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0407056 Analyst: DIH Prep Method: 325.2
Instrument ID: SMARTCHEM Matrix: Water Method: 325.2
Workgroup (AAB#): WG169838 Units: mg/L
Sample ID: WG169838-03 LCS File ID: EM04071209333422 Run Date: 07/08/2004 15:11
Sample ID: WG169838-04 LCS2 File ID: EM04071209333423 Run Date: 07/08/2004 15:11

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Chloride	50.0	50.2	100	50.0	51.0	102	1.58	90 - 110	10	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 353.2 AAB#: WG170058

Login Number: L0407056

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-19D	07/01/04	07/02/04	07/13/04	2	11.8	07/13/04	2	11.8	*ANAL

* EXT = SEE PROJECT QAPP REQUIREMENTS
*ANAL = SEE PROJECT QAPP REQUIREMENTS

KEMRON FORMS - Modified 07/19/2004
Version 1.3 PDF File ID:
Report generated 07/27/2004 11:32

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0407056
Blank File ID: 0004071311433926
Date Analyzed: 07/13/04
Time Analyzed: 08:46
Analyst: DIH

Work Group: WG170058
Blank Sample ID: WG170058-02
Instrument ID: TRAACS-800
Method: 353.2

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-19D	L0407056-01	0004071311433910	07/13/04 08:46	
LCS	WG170058-03	0004071311433921	07/13/04 08:46	
LCS2	WG170058-04	0004071311433922	07/13/04 08:46	
DUP	WG170058-05	0004071311433923	07/13/04 08:46	

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:51

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0407056 Run Date: 07/13/2004 Sample ID: WG170058-02
Instrument ID: TRAACS-800 Run Time: 08:46 Prep Method: 353.2
File ID: 0004071311433926 Analyst: DIH Method: 353.2
Workgroup (AAB#): WG170058 Matrix: Water Units: mg/L
Contract #: Cal ID: TRAACS-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Nitrate	0.0250	0.0500	0.0250	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:51

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0407056 Analyst: DIH Prep Method: 353.2
Instrument ID: TRAACS-800 Matrix: Water Method: 353.2
Workgroup (AAB#): WG170058 Units: mg/L
Sample ID: WG170058-03 LCS File ID: 0004071311433921 Run Date: 07/13/2004 08:46
Sample ID: WG170058-04 LCS2 File ID: 0004071311433922 Run Date: 07/13/2004 08:46

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Nitrate	1.00	1.05	105	1.00	1.03	103	1.54	90 - 110	15	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:51

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 415.1 AAB#: WG169894

Login Number: L0407056

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-19D	07/01/04	07/02/04	07/09/04	28	8.30	07/09/04	28	8.30	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0407056
Blank File ID: WP04071209482021
Date Analyzed: 07/09/04
Time Analyzed: 21:20
Analyst: DIH

Work Group: WG169894
Blank Sample ID: WG169894-03
Instrument ID: TOC-VWP
Method: 415.1

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-19D	L0407056-01	WP04071209482017	07/09/04 21:20	
LCS	WG169894-04	WP04071209482022	07/09/04 21:20	
LCS2	WG169894-05	WP04071209482023	07/09/04 21:20	
DUP	WG169894-06	WP04071209482024	07/09/04 21:20	

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0407056 Run Date: 07/09/2004 Sample ID: WG169894-03
Instrument ID: TOC-VWP Run Time: 21:20 Prep Method: 415.1
File ID: WP04071209482021 Analyst: DIH Method: 415.1
Workgroup (AAB#): WG169894 Matrix: Water Units: mg/L
Contract #: Cal ID: TOC-VW-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0407056 Analyst: DIH Prep Method: 415.1
Instrument ID: TOC-VWP Matrix: Water Method: 415.1
Workgroup (AAB#): WG169894 Units: mg/L
Sample ID: WG169894-04 LCS File ID: WP04071209482022 Run Date: 07/09/2004 21:20
Sample ID: WG169894-05 LCS2 File ID: WP04071209482023 Run Date: 07/09/2004 21:20

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	25.4	102	25.0	26.2	105	3.1	85 - 115	15	

* FAILS %REC LIMIT

FAILS RPD LIMIT

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:53

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 160.1 AAB#: WG169477

Login Number: L0407056

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-19D	07/01/04	07/02/04	07/02/04	7	1.06	07/02/04	7	1.06	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:51

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0407056
Blank File ID: EN.0407021535-01
Date Analyzed: 07/02/04
Time Analyzed: 15:35
Analyst: TMM

Work Group: WG169477
Blank Sample ID: WG169477-02
Instrument ID: OVEN
Method: 160.1

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG169477-03	EN.0407021535-02	07/02/04 15:35	
LCS2	WG169477-04	EN.0407021535-03	07/02/04 15:35	
P-19D	L0407056-01	EN.0407021535-12	07/02/04 15:35	
DUP	WG169477-05	EN.0407021535-13	07/02/04 15:35	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0407056 Run Date: 07/02/2004 Sample ID: WG169477-02
Instrument ID: OVEN Run Time: 15:35 Prep Method: 160.1
File ID: EN.0407021535-01 Analyst: TMM Method: 160.1
Workgroup (AAB#): WG169477 Matrix: Water Units: mg/L
Contract #: Cal ID: OVEN-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Total Dissolved Solids	5.00	10.0	5.00	1	U

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Version 1.3 PDF File ID:
Report generated 07/16/2004 16:51

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0407056 Analyst: TMM Prep Method: 160.1
Instrument ID: OVEN Matrix: Water Method: 160.1
Workgroup (AAB#): WG169477 Units: mg/L
Sample ID: WG169477-03 LCS File ID: EN.0407021535-02 Run Date: 07/02/2004 15:35
Sample ID: WG169477-04 LCS2 File ID: EN.0407021535-03 Run Date: 07/02/2004 15:35

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Total Dissolved Solids	500	504	101	500	498	99.6	1.2	80 - 120	25	

* FAILS %REC LIMIT

FAILS RPD LIMIT

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Version 1.3 PDF File ID:
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KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 375.4 AAB#: WG169687

Login Number: L0407056

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-19D	07/01/04	07/02/04	07/07/04	28	5.99	07/07/04	28	5.99	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0407056
Blank File ID: EM04070913372820
Date Analyzed: 07/07/04
Time Analyzed: 13:52
Analyst: DIH

Work Group: WG169687
Blank Sample ID: WG169687-02
Instrument ID: SMARTCHEM
Method: 375.4

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-19D	L0407056-01	EM04070913372815	07/07/04 13:52	
LCS	WG169687-03	EM04070913372821	07/07/04 13:52	
LCS2	WG169687-04	EM04070913372822	07/07/04 13:52	
DUP	WG169687-05	EM04070913372823	07/07/04 13:52	

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0407056 Run Date: 07/07/2004 Sample ID: WG169687-02
Instrument ID: SMARTCHEM Run Time: 13:52 Prep Method: 375.4
File ID: EM04070913372820 Analyst: DIH Method: 375.4
Workgroup (AAB#): WG169687 Matrix: Water Units: mg/L
Contract #: Cal ID: SMARTC-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Sulfate	2.50	5.00	2.50	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0407056 Analyst: DIH Prep Method: 375.4
Instrument ID: SMARTCHEM Matrix: Water Method: 375.4
Workgroup (AAB#): WG169687 Units: mg/L
Sample ID: WG169687-03 LCS File ID: EM04070913372821 Run Date: 07/07/2004 13:52
Sample ID: WG169687-04 LCS2 File ID: EM04070913372822 Run Date: 07/07/2004 13:52

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Sulfate	20.0	22.4	112	20.0	23.0	115	2.64	85 - 115	10	

* FAILS %REC LIMIT

FAILS RPD LIMIT

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Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 130.2

AAB#: WG169597

Login Number: L0407056

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-19D	07/01/04	07/02/04	07/06/04	180	4.77	07/06/04	180	4.77	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0407056
Blank File ID: ET.0407060840-01
Date Analyzed: 07/06/04
Time Analyzed: 08:40
Analyst: DR

Work Group: WG169597
Blank Sample ID: WG169597-03
Instrument ID: BURET
Method: 130.2

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG169597-04	ET.0407060840-02	07/06/04 08:40	
P-19D	L0407056-01	ET.0407060840-04	07/06/04 08:40	
DUP	WG169597-05	ET.0407060840-05	07/06/04 08:40	

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Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0407056 Run Date: 07/06/2004 Sample ID: WG169597-03
Instrument ID: BURET Run Time: 08:40 Prep Method: 130.2
File ID: ET.0407060840-01 Analyst: DR Method: 130.2
Workgroup (AAB#): WG169597 Matrix: Water Units: mg/L
Contract #: Cal ID: BURET-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Hardness	2.50	5.00	2.50	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0407056 Run Date: 07/06/2004 Sample ID: WG169597-04
Instrument ID: BURET Run Time: 08:40 Prep Method: 130.2
File ID: ET.0407060840-02 Analyst: DR Method: 130.2
Workgroup (AAB#): WG169597 Matrix: Water Units: mg/L
Contract #: Cal ID: BURET-

Analytes	Expected	Found	% Rec	LCS Limits	Q
Hardness	100	102	102	90 - 110	

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Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method:A2320B

AAB#:WG169609

Login Number:L0407056

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-19D	07/01/04	07/02/04	07/06/04	14	5.00	07/06/04	14	5.00	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:51

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0407056
Blank File ID: ET.0407061400-01
Date Analyzed: 07/06/04
Time Analyzed: 14:00
Analyst: DR

Work Group: WG169609
Blank Sample ID: WG169609-02
Instrument ID: BURET
Method: A2320B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG169609-03	ET.0407061400-02	07/06/04 14:00	
LCS2	WG169609-04	ET.0407061400-03	07/06/04 14:00	
P-19D	L0407056-01	ET.0407061400-04	07/06/04 14:00	
P-19D	L0407056-01	ET.0407061400-04	07/06/04 14:00	
DUP	WG169609-05	ET.0407061400-05	07/06/04 14:00	

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0407056 Run Date: 07/06/2004 Sample ID: WG169609-02
Instrument ID: BURET Run Time: 14:00 Prep Method: A2320B
File ID: ET.0407061400-01 Analyst: DR Method: A2320B
Workgroup (AAB#): WG169609 Matrix: Water Units: mg/L
Contract #: Cal ID: BURET-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Alkalinity, Bicarbonate	5.00	10.0	5.00	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:51

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLES

Login Number: L0407056 Analyst: DR Prep Method: A2320B
Instrument ID: BURET Matrix: Water Method: A2320B
Workgroup (AAB#): WG169609 Units: mg/L
Sample ID: WG169609-03 LCS File ID: ET.0407061400-02 Run Date: 07/06/2004 14:00
Sample ID: WG169609-04 LCS2 File ID: ET.0407061400-03 Run Date: 07/06/2004 14:00

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Limit	Q
	Known	Found	% REC	Known	Found	% REC				
Alkalinity, Bicarbonate	100	98.5	98.5	100	98.0	98.0	.512	90 - 110	10	

* FAILS %REC LIMIT

FAILS RPD LIMIT

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Version 1.3 PDF File ID:
Report generated 07/16/2004 16:51

KEMRON ENVIRONMENTAL SERVICES
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 350.1 AAB#: WG169796

Login Number: L0407056

Client ID	Date Collected	Date Received	Date Extracted	Max Hold Time Ext.	Time Held Ext.	Date Analyzed	Max Hold Time Anal	Time Held Anal.	Q
P-19D	07/01/04	07/02/04	07/08/04	28	7.02	07/08/04	28	7.02	

* EXT = MISSED EXTRACTION HOLD TIME
*ANAL = MISSED ANALYTICAL HOLD TIME

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK SUMMARY

Login Number: L0407056
Blank File ID: 0004070912103321
Date Analyzed: 07/08/04
Time Analyzed: 14:40
Analyst: JWR

Work Group: WG169796
Blank Sample ID: WG169796-03
Instrument ID: TRAACS-800
Method: 350.1

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
P-19D	L0407056-01	0004070912103310	07/08/04 14:40	
LCS	WG169796-04	0004070912103322	07/08/04 14:40	
DUP	WG169796-05	0004070912103323	07/08/04 14:40	

KEMRON FORMS - Modified 05/12/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

KEMRON ENVIRONMENTAL SERVICES
METHOD BLANK REPORT

Login Number: L0407056 Run Date: 07/08/2004 Sample ID: WG169796-03
Instrument ID: TRAACS-800 Run Time: 14:40 Prep Method: 350.1
File ID: 0004070912103321 Analyst: JWR Method: 350.1
Workgroup (AAB#): WG169796 Matrix: Water Units: mg/L
Contract #: Cal ID: TRAACS-

Analytes	MDL	RDL	Concentration	Dilution	Qualifier
Nitrogen, Ammonia	0.0500	0.100	0.0500	1	U

KEMRON FORMS - Modified 05/26/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

KEMRON ENVIRONMENTAL SERVICES
LABORATORY CONTROL SAMPLE

Login Number: L0407056 Run Date: 07/08/2004 Sample ID: WG169796-04
Instrument ID: TRAACS-800 Run Time: 14:40 Prep Method: 350.1
File ID: 0004070912103322 Analyst: JWR Method: 350.1
Workgroup (AAB#): WG169796 Matrix: Water Units: mg/L
Contract #: Cal ID: TRAACS-

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrogen, Ammonia	2.00	2.02	101	70 - 125	

KEMRON FORMS - Modified 03/24/2004
Version 1.3 PDF File ID:
Report generated 07/16/2004 16:52

EARTH TECH
A TETRA TECH INTERNATIONAL LTD. COMPANY

Chain of Custody and Analytical Request

Page: 1 of 1
Project Number: 76058.03
WBS Number: NA
Chain of Custody Number: 07-01-2004-01
LIMS Number: NA

Facility ID: (5 Characters Max) GEP01

Project Name / Site Name: RFI at Caribe General Electric Products, Patillas, Puerto Rico

Client Name: GE Industrial Systems, Inc.

Collected by: Leslee Alexander

A. Field Sample ID (30 Characters Max)	B. LOCID (15 Characters Max)	C. Date Collected (dd-MMM-yyyy)	D. Time Collected (Military - HHMM)	E. Sample Depth (top - bottom)	F. SA Code	G. Sample Number	H. Sample Matrix	I. Sample Analysis Requested (state method requested, plus the number of containers enclosed): Total Number of Containers per Line	Temperature Blank 1 x 100 mL PI	VOCs (8260B) 2 x 40 ml GI HCl	TOC, NH3 (see Comments) 1 x 250 mL GI H2SO4	Hardness (E130.2) 1 x 250 mL PI HNO3	Alkinity (SM 2320B) 1 x 250 mL PI	Cl, NO3, SO4 (see Comments) 1 x 500 mL PI	Ca,Fe,Mg,Mn,K,Na (6010B) 1x500 mL PI HNO3	TDS (E160.1) 1 x 500 mL PI	J. Quality Assurance Samples: Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
1. P-19D	P-19D	01-JUL-2004	1405	0 - 0	N	01	WG			2	1	1	1	1	1	1				
2. P-19D-C	Field QC	01-JUL-2004	1345	0 - 0	TB	01	WQ			2									07012004101	A
3.				-															07012004101	A
4.				-																
5.				-																
6.				-																
7.				-																
8.				-																
9.				-																
10.				-																
11.				-																
12.				-																
13.				-																
14.				-																
15.				-																
16.				-																
17. TEMPERATURE BLANK				0 - 0	N	01	W		1											

L Alexander 07/01/04

Comments: 1) TOC by method E415.1 and ammonia by method E350.1. 2) Chloride by method E325.2, Nitrate by method E353.2, and Sulfate by method E375.4.
3) Total Metals: Total Calcium, Total Iron, Total Magnesium, Total Manganese, Total Potassium, and Total Sodium.

cc Sealed Sample Cooler Temp 4°C

Chain of Custody Number = date collected + custody form sequence number for that day (e.g. 09-02-1999-01, then -02, etc., for additional chains for that day.)

F. Sample Type (SA) Codes:
N = Normal
FD = Field Duplicate (-a)
FR = Field Replicate (-b)
TB = Trip Blank (-c)
EB = Equipment Blank (-d)
MS = Matrix Spike
SD = Matrix Spike Duplicate

G. Sample Number:
Enter 01, unless on a single day you collect either:
a) multiple samples from the same location, or
b) multiple QA samples of a single type.
In that case, enter 02 for the second sample, 03 for the third, etc.

H. Matrix Codes:
GS = Soil Gas
WG = Ground Water
WS = Surface Water
WQ = Water Quality Blank (trip, equip., ambient)
SO = Soil
SS = Surface Soil
SE = Sediment
SL = Sludge
SQ = Soil Quality Blank

J. Quality Assurance Lot Control Numbers are produced by adding the sample number (Column G) to the date collected (Column C), without spaces or dashes. (e.g. Enter 10050401 in the Equipment Blank Lot Control column for every sample that was associated with the first equipment blank collected on May 10, 2004.)

Custody Transfers Prior to Receipt by Laboratory

	Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1.	Leslee Alexander	7/1/04	1600	To Fed EX	07/1/04	1600
2.				Brenda Gregory	7/2/04 @	1032
3.						

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Yes ____ No ____ Shipped: Yes X No ____
Analytical Lab Name: ____ Method of Shipment: Fed EX
Lab Location: ____ Airbill #: 84 28 12 81 8979
Lab Recipient: ____ Date and Time: 7/1/04 1600

KEMRON Internal Laboratory Chain of Custody

Work Order: L0407056 **Client:** GE-PR **# of Samples:** 2 **Due Date:** 7/16/04 **Page:**

Sample #	Analysis	Reason	Removed By ADT	Removed From	Moved To	Reliq. by	Ret'd By ADT	Ret'd To	Rec'd By	Reason
01	NO2	test	Tmm 7/2/04 @1330	MWGin	wet	BLG	Tmm 7/22/04 @1600	A-2	BLG	A-2
1,2	8260	AN	mg 7/12/04 1515	W1	ORG-4	BLG				
01	TDS	test	Tmm 7/2/04 @1530	W-1	wet	BLG	Tmm 7/15/04 @1625	A-2	CJD	A-2
01	Met	DIG	7/16/04 @0650	W-1	Met	CJS	TLA 7/6/04 @1330	A-2	CJD	A-2
1	Hard	Anal	CJS 7/6/04 @0820	W-1	Wet	CJD	CJS 7/6/04 @1210	A-2	BLG	A-2
1	Alk	Anal	CJS 7/6/04 @ 1400	W-1	Wet	BLG	Tmm 7/8/04 @1625	A-2	CJD	A-2
1	NH3	anal	@1745 OR 7/7/04	W-1	Wet	CJD	dm 7/13/04 @1100	A-2	CJD	A2

SAMPLE RECEIPT FORM

KEMRON ENVIRONMENTAL SERVICES
156 STARLITE DRIVE
MARIETTA, OH
45750
(740) 373-4071

Date: 07-02-04 Client: EarthTech 10:32

Shipped By: (✓) Fed-Ex ( ) UPS ( )Airborne ( ) KEMRON ( ) Client ( ) Other

Opened By: Ed

Logged By: BG Login #: L04 07056

IR Temp Gun: (✓) D ( ) F

COOLER INFORMATION

Number	Cooler ID	Temp °C	Airbill#	COC#	Other
1	KL-846	2	8428-1281-8979-0402		
2					
3					
4					
5					
6					

Were all coolers sealed?	(Y)	N	N/A
Were custody seals used on all coolers?	(Y)	N	N/A
Were custody seals intact?	(Y)	N	N/A
Was visible ice present?	(Y)	N	N/A
Were all coolers in the temperature range of 2-6C? (>6C*)	(Y)	N	N/A
Were the samples frozen?*	Y	(N)	N/A
Were COC papers provided?	(Y)	N	N/A
Were all sample containers intact?*	(Y)	N	N/A
Were all sample labels intact?	(Y)	N	N/A
Were all sample labels legible?*	(Y)	N	N/A
Did all sample labels match the COC?*	(Y)	N	N/A
Was the label information complete?*	(Y)	N	N/A
Were the correct containers used?*	(Y)	N	N/A
Were the correct preservatives added to water samples?*	(Y)	N	N/A
Was the pH tested on preserved water samples?	(Y)	N	N/A
Were pH ranges acceptable?*	(Y)	N	N/A
Was sufficient amount of sample provided?*	(Y)	N	N/A
Were bubbles present in VOA samples?*	Y	(N)	N/A
Were COC's signed and dated?	(Y)	N	N/A
Did samples arrive before hold time expired?*	(Y)	N	N/A
Are discrepancy forms attached?	Y	N	(N/A)

**Requires a discrepancy form*

Comments:

CRF #1
Revised 8/22/03

APPENDIX M

MNAtoolbox EVALUATION

Site Screening for Monitored Natural Attenuation with *MNAtoolbox*

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[4]Robert D. Waters, [1]Pengchu Zhang, [5]David J. Borns

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September 23, 1998

MNAtoolbox

Monitored natural attenuation (MNA) will only be considered as a remedial action if the following four conditions are found to hold:

1. There is a clear indication that the site currently poses no unacceptable risk to human health or the environment.
2. There is no active source term.
3. Plume contours are static or retreating.
4. Geochemical and/or hydrological data suggest a strong likelihood that attenuation processes are operative at the site, and that they may assure attainment of remedial goals in an acceptable time frame.

Acceptable risk, and static or retreating plumes, are often the direct result(s) of ongoing biogeochemical attenuation in the subsurface. However full-scale implementation will ultimately require a clear understanding of the specific processes that lead to those conditions by decreasing contaminant availability. Not only must the specific processes be identified, they must also be quantified to the extent that their long-term reliability can be assured. Natural attenuation pathways are typically contaminant- and site-specific. Moreover, their identification and quantification will involve a non-trivial investment of time and effort. It is, therefore, reasonable to focus MNA implementation efforts on only those sites where natural attenuation is likely to occur, and where it will account for a significant reduction in contaminant availability over time.
MNAtoolbox is a web-based tool that has been developed by DOE to assist site environmental managers and their staff and contractors to determine if MNA may be an appropriate remedial action for environmental restoration sites prior to collecting extensive characterization data. *MNAtoolbox* acts as a database for contaminant chemistry and degradation pathways and can be used to identify which phase transfer and degradation pathways are likely to be important.
MNAtoolbox helps focus consideration of MNA by:

1. Outlining the most likely attenuation pathways.
2. Pointing out the factors that will mitigate against MNA.

3. Identifying data needs for demonstrating attenuation.
4. Providing examples of regulatory acceptance of MNA for specific contaminants.

MNAtoolbox uses a scorecard that relies on user input site-specific data to provide a reasonably quick assessment of whether MNA is sufficiently effective to warrant its closer examination as a remedy for a particular site. It should be noted that, although site-specific, non-technical objections to reliance on MNA must be considered before implementation, the primary focus of *MNAtoolbox* is technical. Full documentation for *MNAtoolbox* is found in the technical guidance document that is linked to the *MNAtoolbox* home page. Below is a brief description.

Pathways and Mitigators

The MNA pathways section of *MNAtoolbox* builds on an extensive examination of the soil geochemistry literature and indicates the likely biogeochemical process(es) providing significant attenuation of mobile/bioavailable contaminant. For organic contaminants, degradation rates, breakdown pathways, and sorption coefficients (K_d's) are provided. For inorganics, the latter is provided. The extent of irreversible sorption of contaminants has been estimated for both organics and inorganics from either literature surveys (metals/radionuclides), or empirical correlation (organics) and is included in *MNAtoolbox*. Each contaminant module is also linked to the EPA CERCLA records of decision (RODs) involving that contaminant. MNA is not a panacea for all contaminants under all environmental conditions. The MNA mitigators section of *MNAtoolbox* provides information about the environmental conditions that may serve to hamper MNA for a specific contaminant.

CERCLA RODs

For each contaminant, summaries of the CERCLA RODs that contain natural attenuation as a remediation method are listed in the *MNAtoolbox* by EPA region and by state. These summaries contain information on the site description, history, and owner; contaminants of concern; and selected remedy. (Note that a complete listing of non-CERCLA sites relying on MNA would be much larger than that in *MNAtoolbox*.) Note also that, although the RODs are segregated by contaminant type on the basis of word searching, natural attenuation may have been relied on for contaminants other than the comingled metals. While the decision to select natural attenuation as a remediation alternative must be made on a site-specific basis, the RODs provide an indication of the level of technical detail that has been used to support past decisions to use MNA within each EPA region and state.

Scorecard

A Site Screening Scorecard is associated with each contaminant to help the site manager rapidly determine if natural attenuation may be possible under site-specific conditions prevailing at the site of interest. The Scorecard is subdivided into hydrologic and geochemical sections. Credit is given, or taken away, based on the presence of, respectively, favorable or unfavorable conditions. A high score approaching the maximum of 100 indicates that MNA is likely to be effective and should be investigated. A low score does not necessarily discourage consideration of MNA at a particular site; it may simply indicate that a greater level of effort to collect characterization data and conduct modeling is required to support MNA for a particular contaminant at a particular site.

The scorecard seeks to estimate the potential for natural attenuation by summing contaminant attenuation due to six factors: (1) hydrologic dilution, (2) sorption, (3) irreversible uptake by the soil matrix, (4) mineral formation (see below), (5) biodegradation, and (6) radioactive decay. In essence, the natural attenuation factor (NAF) is the sum of a hydrologic dilution factor (HDF), a sorption factor (SF), an irreversible uptake factor (R_{irv}), and a biodegradation/chemical transformation factor (BF):

$$NAF = HDF + SF + R_{irv} + BF \quad 1$$

The hydrologic dilution and sorption terms are both based, to the greatest extent possible, on the EPA soil screening procedures. Specifically, dilution factors are calculated according to the simple water balance and dilution model outlined in the EPA soil screening guidance. Calculation of the HDF requires the input of several site-specific hydrologic parameters including: the hydrologic conductivity, the hydrologic gradient, the mixing zone depth, the recharge rate, and the length of the source parallel to flow. The infiltration rate multiplied by the source area is the contaminant flux into the aquifer. Site

managers can estimate the infiltration rate in two ways; by simply using the natural value (if the site is uncapped) or by lowering this number accordingly if the site has some hydrologic barrier on top of it.

The sorption factor, SF, equals K_d/n_e ; where n_e is the soil porosity; is the bulk density (Kg/L) of the soil; and K_d is the sorption coefficient (ml/g). The sorption factor accounts for reversible sorption of contaminants onto the rock/soil matrix. For non-ionizable organic contaminants: default K_d's are estimated from octanol-water coefficients and soil organic content. Metal and radionuclide K_d's are typically pH-dependent because sorbing contaminants and mineral surfaces are ionizable, hence their net charge depends on pH. Distribution coefficients (K_d's) are not fundamental chemical parameters or constants but merely convenient descriptive statistics that result from several chemical processes and mineral-specific soil reactions. It should, therefore, be kept in mind that K_d's are not completely transferable among sites and are best used as a rule-of-thumb measure of the affinity of contaminants for specific soils. Because of the pH effect on soil-solution partitioning of contaminants, a significant amount of uncertainty in K_d values can be avoided by measuring and applying them only over similar and limited pH ranges. *MNAtoolbox* uses for default K_d's, wherever possible, the values of the EPA soil screening guidelines. Sorption coefficients for the various radionuclides and metals not considered in the EPA soil screening guidance have been taken from the literature. The latter values are less than or equal to draft default values being developed for EPA and are, therefore, thought to be conservative. Default K_d's for all contaminants were chosen from the low end of their respective ranges, in order to be conservative. Nevertheless, because of the accumulated uncertainties, site-specific K_d's are preferable as input into the site scoring section of *MNAtoolbox*. The latter values can easily be substituted for the default K_d's in the calculation.

Despite widespread evidence of irreversible uptake of contaminants by soils and soil minerals, existing transport codes (and for that matter, the EPA soil screening guidelines) do not typically account for irreversible uptake of contaminants by the rock/soil matrix. Because this sink often removes a major fraction of some organics, as well as metals and radionuclides, from soil and groundwaters, it is particularly critical that this sink be included in any site screening procedure. There is no universally agreed upon method for quantifying, or predicting, irreversible uptake. Measurement of the exchangeable fraction of soil contaminants and/or sequential soil extractions provide first-order estimates of the fraction of contaminant(s) available to biota and the residual fraction that is naturally attenuated or unavailable. As a first approximation, irreversible uptake is estimated in the Scorecard as $R_{irv} = X_{irv}K_d/n_e$ for metals and as a function of the octanol-water coefficient and soil organic fraction for organic contaminants. X_{irv}, for each contaminant is the average fraction of sorbed contaminant that cannot be exchanged from a contaminated laboratory or field sample. Default values of X_{irv} have been tabulated, or estimated, but since the processes controlling irreversible uptake are not completely describable from chemical data, a site-specific measurement of a contaminant X_{irv} is eminently preferable for use in the toolbox (these can be input manually).

Typically, biodegradation obeys a first order rate law; that is, breakdown rates are proportional to the amount of available contaminant. However, rate constants can vary by orders of magnitude depending upon redox state (nature and abundance of electron donors), nutrient supply, etc. In other words, degradation rate constants are site-specific. For the breakdown of most organic contaminants, the default rate constants in *MNAtoolbox* are set, where available, to the default values used in *Bioscreen*, an EPA-supported natural attenuation screening tool for fuel hydrocarbons. Default degradation rate constants for chlorinated organic contaminants, and others, have been taken from the literature. Alternatively, the AFCEE protocol can be used in *MNAtoolbox* to provide what we believe to be bounding estimates of biodegradation rates. The desirability of site-specific degradation rate constants cannot be overemphasized. The uncertainty associated with using generic, default values is likely to be very large.

Integration of a first-order degradation rate law for contaminant concentration C(t) gives the expression for the biodegradation/chemical transformation factor: $BF = C_o/C(t) -1 = e^{kt} -1 = e^{kx/v}-1$; where C_o is the initial concentration of contaminant present at time t = 0 yr; k is the degradation rate constant (yr^{-1}); and x is the distance (m) the contaminant travels in groundwater at velocity v (m/yr) to the nearest receptor. The latter substitution allows time-dependent breakdown to be expressed in terms of contaminant movement. Input is consequently taken either as an estimated travel time, or velocity and distance, to the nearest receptor. This approach assumes constant subsurface fluid velocities, hence constant potentiometric

gradients and infiltration rates. For radionuclides the BF term tracks radioactive decay. Rate constants and supporting documentation are linked to their respective contaminant modules in *MNAtoolbox*. The user can override the BF values in the toolbox with site-specific values. A more extensive discussion of the origins of the scorecard are in the technical guidelines document that is linked to the *MNAtoolbox* home page.

Score Interpretation

Each of the terms in the NAF expression (1) is equal to zero if there is no attenuation; i.e. HDF = 0 if there is no dilution; SF = 0 if the K_d is zero because there is no sorption, etc. Each term becomes greater than zero if attenuation is predicted to occur. In other words, if no attenuation is predicted, NAF is zero. If attenuation is predicted, NAF is greater than zero. The score that is initially calculated in the scorecard is:

$$\text{Score} = \text{NAF}(1-\text{NAF}/100); \quad 2$$

The object is to provide a score that linearly scales with the NAF at relatively low values of the latter, but asymptotically approaches 100 at very high values of NAF. This score is subsequently modified for many of the inorganic contaminants, to take into account the formation of insoluble solids, leading to a higher score. In the end, sites that score near 100 possess hydrogeochemical characteristics that are predicted to favor MNA. Low scores predict the opposite.

By outlining the pathways, as well as obstacles, to attenuation on a contaminant-specific basis, usage of *MNAtoolbox* provides site managers a clear identification of likely data needs for MNA implementation. Specifically, the data used as input for the scorecard (e.g., K_d's, degradation rates) are also the input needed to construct full conceptual models that are used by regulators to assess implementation of MNA. The sensitivity of the score to the various input factors consequently gives a rough indication of the importance of the respective pathway, and supporting data, to a full conceptual model.

FINAL CAVEATS

1. The scorecard should not be used to make risk-management decisions at sites (Thanks to Walt McNab and Dave Rice for pointing this out).
2. *MNAtoolbox* is intended to help sites develop and formulate conceptual model hypotheses that will then need to be confirmed or denied based on site-specific characterization (Thanks to Walt McNab and Dave Rice for pointing this out).
3. *MNAtoolbox* is only applicable to sites with no active source terms. It will say little useful about sites such as mine tailings that are actively fluxing contaminants into groundwaters (Thanks, Henry Kerfoot for pointing this out).
4. Anyone considering MNA of mercury should be exceedingly careful. The large number of reactions (some biologically mediated) and the high toxicity of mercury compounds is going to make an argument for MNA of mercury very hard to substantiate (Thanks, David Menne for pointing this out).
5. *MNAtoolbox* should not be used to consider MNA of separated phase contaminants, but rather was designed primarily for dissolved contaminants.
6. We (LLNL and Sandia) are in the process of calibrating *MNAtoolbox* with the Historical Case Analysis Databases developed at LLNL for fuel hydrocarbons and CVOCs (The present version of *MNAtoolbox* has not been field calibrated). SNL and LLNL are presently developing a similar database for metals and radionuclides.

http://www.sandia.gov/eesector/gs/gc/na/scorecardo.html

for 1,1,1-TCA

Hydraulic conductivity (m/y)	100
Hydraulic gradient (m/m)	0.025
Infiltration rate (m/y)	1
Length of source parallel to flow (m)	10
Aquifer depth (m)	12
Effective aquifer porosity (fraction)	0.3
Distribution coefficient (L/kg) - if this is not known, set it equal to zero, and the value will be calculated from the inputs below	0
Bulk density of soil (g/cm^3)	2.0
Fraction of organic carbon in soil	0.01
Octanol-water partition coefficient (L/kg) (PCE - 468; TCE - 512; TCA - 112-309; DCA - 30; DCE - 72-135; Cl-Benzene - 725; C-Tet - 537; Benzene - 134; Toluene - 562; Ethylbenzene - 1380; xylene - 1479; VC - 32; PCA - 245)	309
Distance to nearest receptor (m)	750
Half life (y) This is often a very large uncertainty. If biodegradation rates have not been measured at the site; 1. Chlorinated organics can be somewhat constrained through the use of the AFCEE scoring system , 2. For BTEX compounds, default half-lives of a month to a year are probably appropriate.	1.5
Maximum contaminant concentration at source (ppm)	5

CALCULATED VALUES:

NAF = 76259
Score = 100

Hydrologic Dilution (HDF) = 3
Sorption (SF) = 4
Biodegradation (BF) = 76247
Rirv = 4

K_d = 1

Potential for MNA

For 1,1-DCE

Hydraulic conductivity (m/y)	100
Hydraulic gradient (m/m)	0.025
Infiltration rate (m/y)	1
Length of source parallel to flow (m)	380
Aquifer depth (m)	12
Effective aquifer porosity (fraction)	0.3
Distribution coefficient (L/kg) - if this is not known, set it equal to zero, and the value will be calculated from the inputs below	0
Bulk density of soil (g/cm^3)	2.0
Fraction of organic carbon in soil	0.01
Octanol-water partition coefficient (L/kg) (PCE - 468; TCE - 512; TCA - 112-309; DCA - 30; DCE - 72-135; Cl-Benzene - 725; C-Tet - 537; Benzene - 134; Toluene - 562; Ethylbenzene - 1380; xylene - 1479; VC - 32; PCA - 245)	72
Distance to nearest receptor (m)	750
Half life (y) This is often a very large uncertainty. If biodegradation rates have not been measured at the site; 1. Chlorinated organics can be somewhat constrained through the use of the AFCEE scoring system , 2. For BTEX compounds, default half-lives of a month to a year are probably appropriate.	.35
Maximum contaminant concentration at source (ppm)	1.3

CALCULATED VALUES:

NAF = 1.3969323796979553e+47
Score = 100

Hydrologic Dilution (HDF) = 0
Sorption (SF) = 1
Biodegradation (BF) = 1.3969323796979553e+47
Rirv = 1

$K_d = 0$

Potential for MNA

For DCA:

Hydraulic conductivity (m/y)	100
Hydraulic gradient (m/m)	0.025
Infiltration rate (m/y)	1
Length of source parallel to flow (m)	10
Aquifer depth (m)	12
Effective aquifer porosity (fraction)	0.3
Distribution coefficient (L/kg) - if this is not known, set it equal to zero, and the value will be calculated from the inputs below	0
Bulk density of soil (g/cm^3)	2.0
Fraction of organic carbon in soil	0.01
Octanol-water partition coefficient (L/kg) (PCE - 468; TCE - 512; TCA - 112-309; DCA - 30; DCE - 72-135; Cl-Benzene - 725; C-Tet - 537; Benzene - 134; Toluene - 562; Ethylbenzene - 1380; xylene - 1479; VC - 32; PCA - 245)	30
Distance to nearest receptor (m)	750
Half life (y) This is often a very large uncertainty. If biodegradation rates have not been measured at the site; 1. Chlorinated organics can be somewhat constrained through the use of the AFCEE scoring system , 2. For BTEX compounds, default half-lives of a month to a year are probably appropriate.	1
Maximum contaminant concentration at source (ppm)	.06

CALCULATED VALUES:

NAF = 1.604606470800908e+23
Score = 100

Hydrologic Dilution (HDF) = 3
Sorption (SF) = 1
Biodegradation (BF) = 1.604606470800908e+23
Rirv = 1

$K_d = 0$

Potential for MNA