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The Port Authority of New York and New Jersey

Site Investigation and Conceptual Remedial Workplan

Site 2A/2B (VCP 00674-2)

HHMT - Port Ivory Facility

September 2004

40 Western Avenue, Staten Island, New York

STATE OF NEW YORK
DEPARTMENT OF HEALTH

Flanigan Square, 547 River Street, Troy, New York 12180-2216

Antonia C. Novello, M.D., M.P.H., Dr.P.H.
Commissioner

Dennis P. Whalen
Executive Deputy Commissioner

December 22, 2004

Mr. Tom Gibbons
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway – 11th Floor
Albany, NY 12233-70

Re: HHMT – Port Ivory Facility
Operable Unit 2 (OU-2)
Site # V006742
Staten Island, Richmond County

Dear Mr. Gibbons:

I have reviewed the September 2004*Site Investigation and Conceptual Remedial Workplan* and the December 2004 *Substructure Soil Gas and Ambient and Indoor Air Sampling Plan* for the above-referenced site and offer the following comments:

Site Investigation and Conceptual Remedial Workplan

1) Section 10.2, page 247 states "…detected in sediment samples in excess of the Human Health Bioaccumulation criteria during the Remedial Investigation." Provide further explanation of this criteria.

2) Section 6.4, page 172 – replace "SVG" with SGV to reflect Standard Guidance Values.

3) Section 11, page 251, states that during the removal of UST –7, petroleum impacted soil was encountered during the excavation, please indicate whether end point samples were collected and analyzed.

Substructure Soil Gas and Ambient and Indoor Air Sampling Plan

1) Collect **two** subsurface soil gas samples from Building 40.

2) Please note that flow rates for purging and collecting soil gas samples must not exceed 0.2 liters per minute.

If you have any comments, please contact me at (518) 402-7860.

Sincerely,

Julia M. Guastella
Public Health Specialist I
Bureau of Environmental Exposure Investigation

cc: G. Litwin / G. Laccetti / file
B. Devine – MARO
J. Prudhomme – NYCDOH
R. Cozzy – NYSDEC
D. Walsh – NYSDEC, Reg. 2
D. Greeley – NYCDEP

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Hatch Mott
MacDonald

Infrastructure and Environment
27 Bleeker Street
Millburn, NJ 07041-1008
T 973.379.3400 www.hatchmott.com

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REMEDIAL BUREAU B

September 22, 2004

Mr. Thomas Gibbons
Project Manager
New York State Department of Environmental Conservation
Remedial Bureau B, Section D
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-9773

RE: Report Submission
HHMT – Port Ivory Facility
40 Western Avenue
State Island, New York
ID #'s V00615, V00674, V00675

Dear Mr. Gibbons:

By way of this correspondence, Hatch Mott MacDonald (HMM), on behalf of the Port Authority of New York and New Jersey (the Port Authority) respectfully submits the initial reports required pursuant to the Voluntary Cleanup Program (VCP) Agreements executed for the HHMT-Port Ivory Facility. As per the above referenced VCP Agreements, please find enclosed four copies (3 bound and 1 unbound) of the *Revised - Site Investigation and Conceptual Remedial Workplan* for Site 1(VCP Site 00615-2) dated September 2004 and the *Site Investigation and Conceptual Remedial Workplan* for Site 2A/2B (VCP Site 00674-2) dated September 2004. As per the agreement, copies are being forwarded concurrently to the New York State Department of Health as well as to the Project Attorney at the New York State Department of Environmental Conservation (NYSDEC). As per our letter dated September 15, 2004, the summary report for Site 3 will be submitted on September 30, 2004.

Please note, the NYSDEC Marine Resources Program is currently involved with a wetland restoration project situated south of the HHMT-Port Ivory Facility. The NYSDEC has contacted the Port Authority with regard to certain actions, which may be undertaken at Bridge Creek. The NYSDEC's project includes sampling at Bridge Creek and the Port Authority has requested information generated from the NYSDEC's project. HMM/Port Authority will be reviewing analytical data and other information, as made available by NYSDEC, to determine if the findings have any bearing on conditions present at the HHMT-Port Ivory Facility. Pertinent information related to the Port Authority's compliance with the VCP Program will be forwarded to your attention.

If you have questions or need further information, please contact me at 973.912.2475.

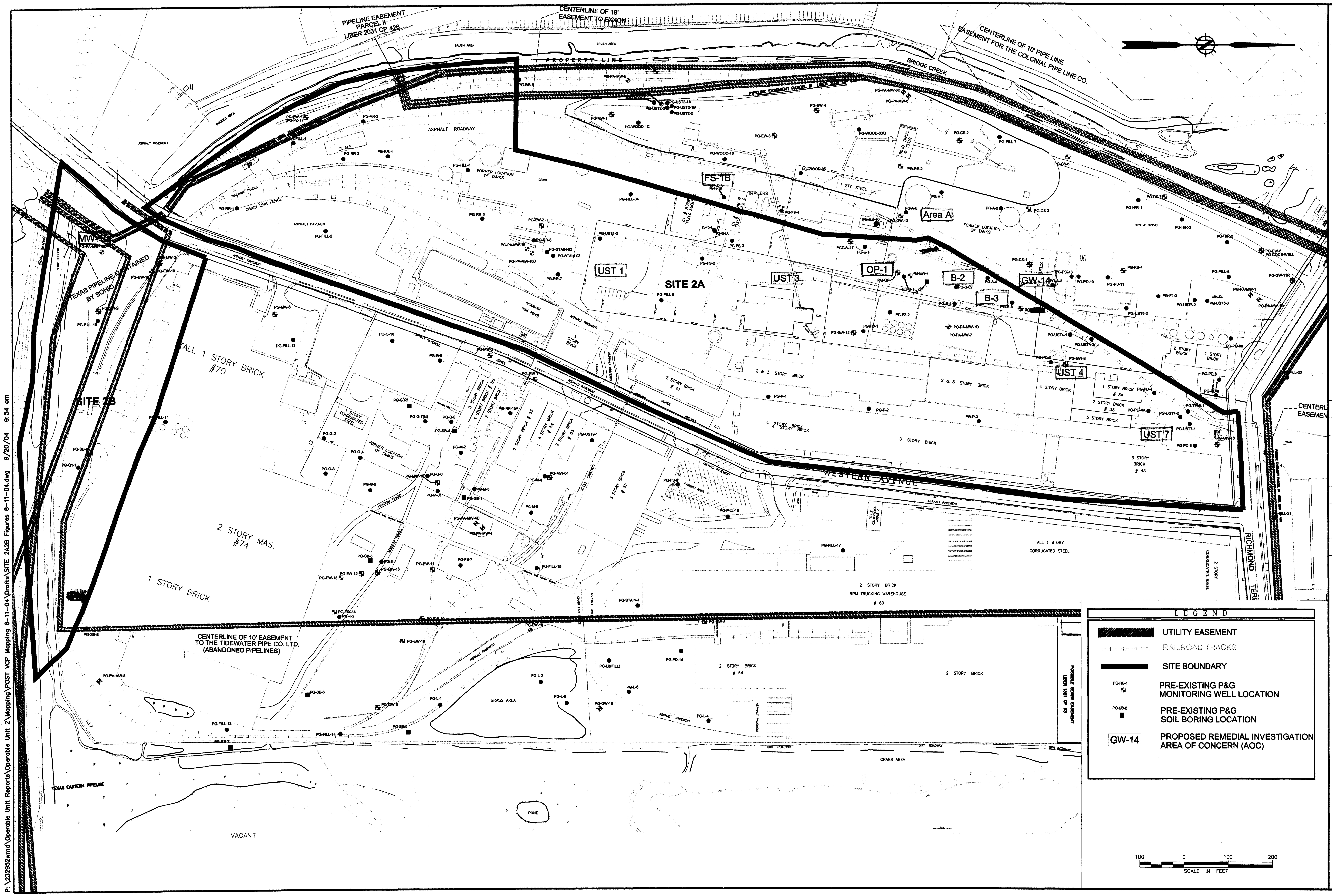
Very truly yours,

Hatch Mott MacDonald

Jennifer Nulty Kohlsaat

Jennifer Nulty Kohlsaat
Associate
T 973.912.2475 F 973.912.2400
jennifer.kohlsaat@hatchmott.com

cc: G. Laccetti, NYSDOH (w/enc. via US Mail)
D. D'Ambrosio, NYSDEC (w/enc. via US Mail)
E. Aldrich, PANYNJ (w/enc. via US Mail)



P:\232952wmd\Operable Unit Reports\Operable Unit 2\Mapping\POST VCP Mapping 8-11-04\Drafts\SITE 2A2B Figures 8-11-04.dwg 9/20/04 9:54 am

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THE PORT AUTHORITY OF NY & NJ

ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

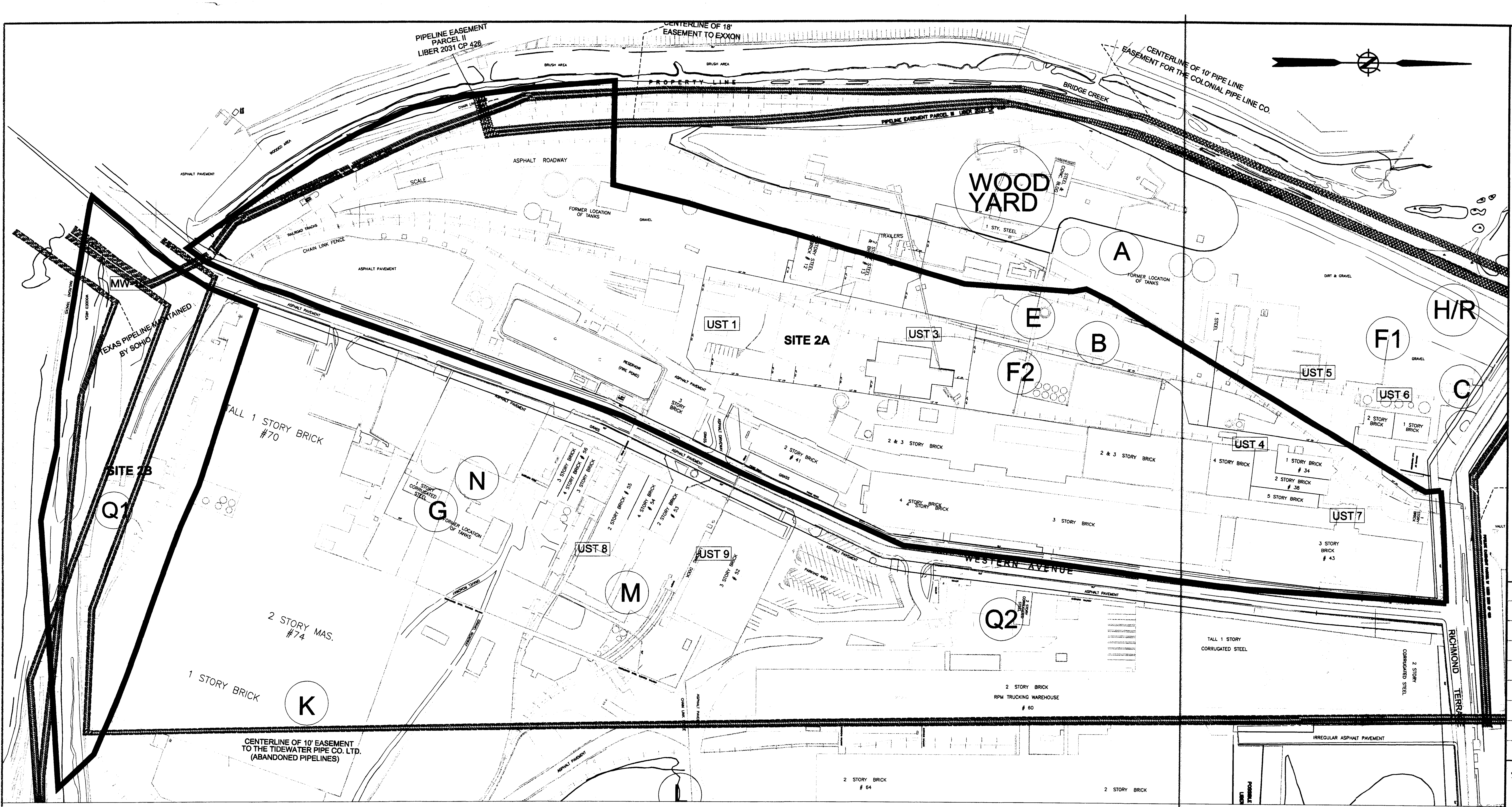
SITE 2A/2B PROPOSED REMEDIAL INVESTIGATION (AOCs), PETROLEUM/NON-PETROLEUM AREAS AND POTENTIAL UST AREAS

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number **FIGURE 17**



Areas of Concern (As denoted by P&G)			
Area A	West Tank Field (Southwest of Building 16)/Block 1400	Areas H&R(H/R)	H: Former Rosin Storage Area/Block 1400 R: Northwest Corner of Soap Manufacturing Area (Suspected Calcium Carbonate Fill Area)/Block 1400
Area B	**Former Raw Product and By-Product AST Areas/Block 1400**	Area I	Fly Ash Storage Area/Block 1309
Area C	Former Oleum AST Area/Block 1400	Area K	Former Landfill/Suspected Calcium Carbonate Fill Area/Block 1338
Area D	Fuel Oil AST Area/Area 1309	Area L	Filled Area (Southeast of Building 64)/Block 1338
Area E	**S&S Tank Field Area/Fat Trap/Block 1400**	Area M	East of Edible Oils Buildings 52-56/Block 1338
Area F1	Spent Nickel Catalyst Drum Storage Area/Block 1400	Area N	Super Fat Trap Area/Block 1338
Area F2	**Waste Oil Drum Storage Area/Block 1400**	Area O	Railroad switch (Not shown on map - specific location information not provided by P&G)
Area G	Former Vegetable Oil AST Area/Block 1338	**Area P**	**Former Product Unloading Pit/Block 1400**
		Area Q1	**Existing Scale Pit/Block 1338**
		Area Q2	Former Truck Scale/Block 1338

Notes:

1. P&G AREAS OF CONCERN LOCATED ON SITE 2A/2B ARE PRESENTED IN BOLD TYPE.

2. ADDITIONAL AREAS OF CONCERN IDENTIFIED THROUGH THE PHASE 1 ESA INCLUDE: RAILROAD TRACKS AND SIDINGS, PITS AND DRAINS, FORMER STRUCTURES, FILL MATERIAL, STAINING, GROUNDWATER, AND POTENTIAL UST AREAS.

3. GENERAL LOCATIONS OF POTENTIAL UST AREAS ARE SHOWN ON THIS MAP.

LEGEND

▨	UTILITY EASEMENT
┼┼┼	RAILROAD TRACKS
▬	SITE BOUNDARY
(P)	AREA OF CONCERN
UST 7	POTENTIAL UST AREAS

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ENGINEERING DEPARTMENT

Title

(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

SITE 2A/2B AREAS OF CONCERN (AOC) MAP

This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without its written consent.

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number **FIGURE 6**

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(all figures are provided in text by order of reference)

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(all tables are provided in text in order of first reference)

List of Tables
(continued)

1.0 EXECUTIVE SUMMARY

The Port Authority of New York and New Jersey (Port Authority) is currently redeveloping the former Procter & Gamble (P&G) Port Ivory Facility located at 40 Western Avenue in Staten Island, Richmond County New York. On behalf of the Port Authority, Hatch Mott MacDonald (HMM) has performed assessment and investigation activities to characterize site conditions and delineate historic fill material and contaminants in environmental media at the site. These efforts have been undertaken based upon a commercial/industrial end use for Port Ivory. Specifically, the Port Authority intends to utilize the 40 Western Avenue facility, now known as the Howland Hook Marine Terminal (HHMT) - Port Ivory Facility for a container terminal and intermodal facility in conjunction with the adjacent Howland Hook Marine Terminal.

As part of the overall site redevelopment, the Port Authority entered into the New York State Department of Environmental Conservation (NYSDEC) Voluntary Cleanup Program (VCP) in July 2004 (VCP Agreement Site V-00674-2, VCP Index Number W2-0986-02-04). The Port Authority's objective for entering into the VCP program with NYSDEC is to address the presence of contamination due to prior site activities unrelated to the Port Authority. To accommodate the redevelopment schedule for the northwestern portion of the HHMT-Port Ivory Facility, the NYSDEC has agreed to expedite the review of information pertaining to certain portions of the HHMT-Port Ivory Facility. Thus, the Port Authority agreed to address the HHMT-Port Ivory Facility as four individual "Sites" and present assessment, investigation and remedial action information/documentation for each individual Site. This report addresses Site 2A/2B, which consists of the eastern and southern portion of Block 1400, Lot 1 and the southern portion of Block 1338, Lot 1.

Overall, the assessment and investigation activities undertaken at Site 2A/2B have revealed the presence of historic fill material; and several contaminants at relatively low concentrations in samples collected from soil and groundwater at Site 2A/2B. The presence of the historic fill material and contaminants in environmental media is consistent with the highly urbanized and historically industrial nature of the site and surrounding area. Subsequent investigative efforts successfully delineated potential petroleum-impacted areas and accessible petroleum-impacted areas have been addressed through source area excavation and removal; the removal of petroleum-impact soil was performed in conjunction with ongoing site redevelopment activities, prior to entering the VCP Program. Based on the results of the assessment, site investigation and remedial investigation activities, the Port Authority's planned usage of the site as an intermodal facility and container terminal is not inconsistent with the levels of contamination noted to be present in site soil and groundwater. To address structural issues presented by the presence of fill material, the Port Authority's development plan includes a process of surcharging portions of Site 1 and Site 2A/2B, with geotechnically suitable clean fill, to achieve a stable base for future construction. Thus, the proposed development plan will result in the use of engineering controls (an environmental cap), which will minimize potential impacts to human health and the environment. As part of the geotechnical site preparation work, the Port Authority performed a surcharge pilot study at an area of Site 1 in 2002/2203. The study included the systematic placement of soil/fill over an area measuring approximately 75 feet by 75 feet and the measurement of settlement. The pilot study included a review of potential environmental impacts to groundwater and Bridge Creek. The environmental evaluation performed as part of the pilot study did not reveal any adverse impacts as a result of the compaction process. Although the pilot study did not reveal the presence of adverse impacts to groundwater or Bridge Creek, additional monitoring efforts are proposed to confirm the findings of the pilot study.

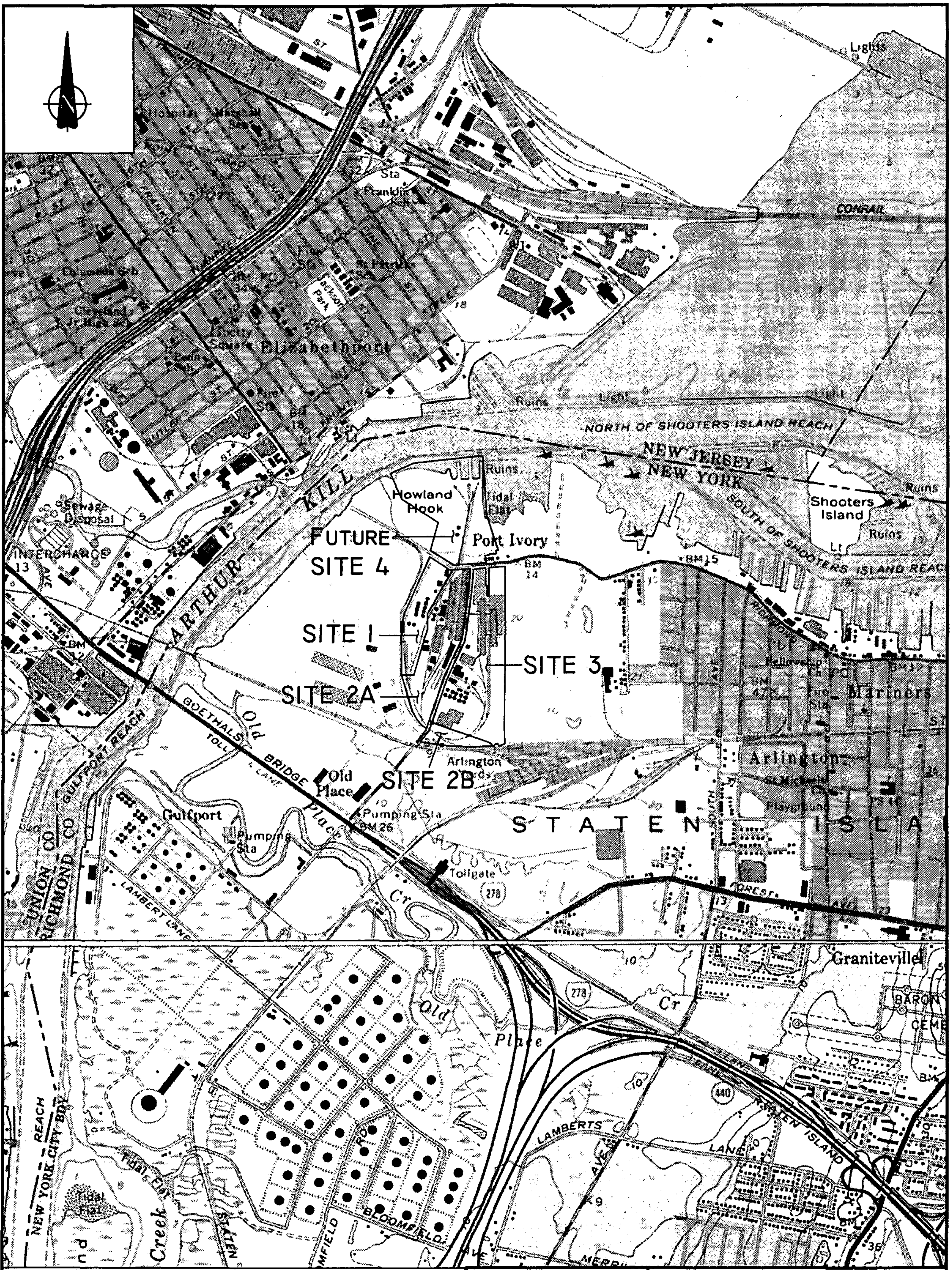
2.0 INTRODUCTION

At the request of the Port Authority of New York and New Jersey (Port Authority), Hatch Mott MacDonald (HMM) performed assessment, investigation and remedial actions at the now former Procter & Gamble (P&G) Port Ivory Facility located at 40 Western Avenue in Staten Island, Richmond County New York. The location of the subject site is presented on Figure 1. The initial phase of the project consisted of the performance of a Phase I Environmental Site Assessment (ESA) and a supplemental file review of the entire facility. The Phase I ESA was performed in accordance with the Standard Practice for Environmental Site Assessment E1527: Phase I ESA Process, as set forth by the American Society for Testing and Materials (ASTM). Performance of the ESA and the supplemental file review identified numerous recognized and/or potential environmental conditions, as defined by ASTM E1527, at the above referenced site. Upon completion of the Phase I ESA and the supplemental file review, the Port Authority requested that HMM prepare an Environmental Site Investigation Workplan (ESIW) to evaluate the Areas of Concern (AOCs) and subsequently, to implement the proposed Site Investigation (SI) activities for the entire facility. The purpose of the SI was to assess current (year 2000) environmental conditions at this facility.

for entire site? or just site 2?

Based on the findings of the SI and subsequent to the Port Authority's purchase of the P&G Port Ivory Facility at 40 Western Avenue Site), HMM prepared a remedial investigation workplan (RIW) designed to evaluate potential issues related to petroleum, which were identified through prior assessment and investigation. The RIW also included review of nine potential UST areas; four of the potential UST Areas were identified at Site 2A and no potential UST Areas were identified at Site 2B. The objective of the delineation was to resolve these issues in preparation for redevelopment of the entire P&G Port Ivory Facility; upon transfer of ownership the property/facility was designated as the Howland Hook Marine Terminal (HHMT) – Port Ivory Facility. The remedial investigation (RI) of petroleum/non-petroleum areas was performed during the spring/summer of 2002. Although building demolition and other construction related activities impeded the installation of test pits as part of proposed RI efforts for potential UST Areas (UST1, UST3, UST4 and UST7) at Site 2A, further assessment of some of the areas was accomplished through the performance of certain demolition actions including removal of concrete pads and building footings. The potential UST Areas were evaluated in the fall/winter 2002 through the Spring 2003. As described later in this report, the activities at the UST1,

If just site 2 – don't add up



SOURCE:
UNITED STATES GEOLOGICAL SURVEY
7.5 MINUTE SERIES TOPOGRAPHIC QUADRANGLES
ELIZABETH AND ARTHUR KILL, NY-NJ,
1967, PHOTOREVISED 1981

NOTES:
HHMT – PORT IVORY FACILITY
CONSISTS OF SITES 1 THROUGH 4

2000 0 2000 4000
SCALE IN FEET
1" = 2000'
CONTOUR INTERVAL = 10 FEET

Hatch Mott MacDonald
Certificate No. 24GA28075000

27 Bleeker Street
Millburn, New Jersey 07041

PORT AUTHORITY OF NY AND NJ
40 WESTERN AVENUE, STATEN ISLAND, NY

FIGURE I
SITE LOCATION MAP
HHMT - PORT IVORY FACILITY

Designed	Drawn	Checked	Approved	Date

P:\232952wmd\Operable Unit Reports\Operable Unit 3\Post VCP Revisions\Figures\POST VCP Mapping 8-11-04\Drafts\Figure 1.Site Location Plan 8-11-04.dwg 9/13/04 3:59 pm

UST3, and UST4 Area did not reveal the presence of any USTs and the activities at the UST7 Area identified the presence of two USTs. The RI successfully delineated the horizontal and vertical extent of petroleum/non-petroleum oils in soil accessible areas of Site 2A/2B. Based on the field screening and analytical results from the RI, hot-spot excavation has been identified as the appropriate remedial action (RA) for the identified petroleum/non-petroleum-impacted areas. The remainder of the areas will be addressed through site redevelopment. To accommodate site redevelopment efforts, hot-spot excavation at certain potential petroleum-impacted areas has been implemented and information pertaining to excavation and post-excavation (confirmation) sampling is presented herein (See Section 12). The remaining residual contaminants will be addressed through site redevelopment, which will include engineering controls such as the placement of environmental caps (soil, gravel, asphalt, concrete, etc.). To the extent feasible, the Port Authority has performed assessment, investigation and remediation activities in accordance with NYSDEC requirements and is committed to redeveloping this site in a manner which ensures human health and the environment given the proposed site usage

As part of the overall site redevelopment, the Port Authority entered into the New York State Department Environment Conservation (NYSDEC) Voluntary Cleanup Program (VCP) in July 2004. The Port Authority's objective for entering into the VCP program with NYSDEC was to address the identified contamination due to prior site activities unrelated to the Port Authority. Prior to entering the VCP program, the Port Authority performed assessment, investigation and remedial activities to address the subject site (known after December 2000 as the HHMT – Port Ivory Facility) in its entirety. During discussions with the NYSDEC, the Port Authority identified that it had established different redevelopment schedules for the individual site parcels. As a result, the NYSDEC has agreed to expedite the review of information pertaining to certain portions of this site and the Port Authority agreed to address the HHMT-Port Ivory Facility as four individual sites, thereby, presenting assessment, investigation and remedial action information/documentation for each individual site. The four units or sites have been defined as follows: Site 1 consists of the northwestern portion of Block 1400, Lot 1; Site 2A/2B consists of the eastern and southern portions, known as Site 2A and a small area of the southern portion of Block 1338, Lot 1 referred to as Site 2B; Site 3 consists of the northern portion of Block 1338, Lot 1; and Future Site 4 consists of Block 1309, Lot 10. Block 1309, Lot 10 has been designated as "Site 4" on mapping provided in the VCP Agreements for Sites 1, 2A/2B and 3. However, the Port Authority has not executed a VCP Agreement for Block 1309, Lot 10. As such, the Block 1309, Lot 10 parcel will be referenced as "Future Site 4" for this report.

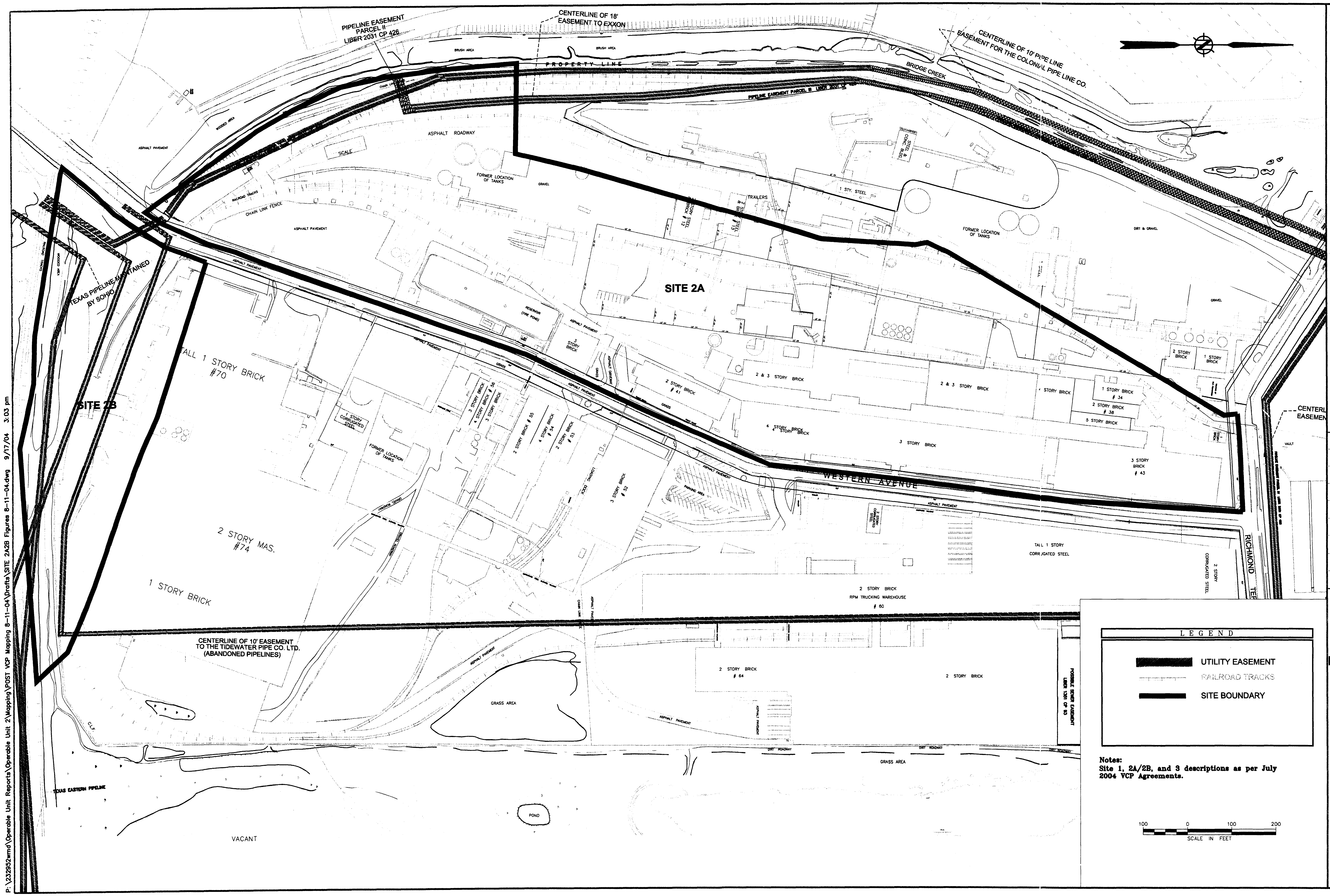
This report addresses Site 2A/2B pursuant to the July VCP Agreement (VCP Agreement Site V-00674-2). The limits of Site 2A/2B in relation to the remainder of the HHMT-Port Ivory Facility, including the designations of the three other Sites are presented in Figure 2. The map also depicts the easements located on Site 2A/2B as well as the remainder of the site.

2.1 Objective

The objective of this report is to describe the actions undertaken at this site to characterize, delineate and address contamination present in environmental media at Site 2A/2B. This report also includes a summary of analytical data as well as field observations generated through the performance of sampling and other evaluation efforts. Analytical data from the site and remedial investigations, as well as from remedial actions performed to date, is presented in tabular form and pertinent information is provided on maps and described in applicable text sections. This report also includes a summary of remedial actions that were undertaken at certain petroleum-impacted areas. These efforts were performed prior to entering the VCP Program and were done to proactively address areas as part of active site demolition activities. Please note, to facilitate review of the assessment, investigation and remedial actions described herein, an overview of site history focusing on Site 2A/2B has been included in Section 3.1 of this report. The specific sampling and remedial actions described in this report were developed based on a predetermined end-use for the HHMT-Port Ivory Facility including Site 2A/2B. The Port Authority is redeveloping this former industrial site for use as an intermodal/container storage facility with Site 2A functioning primarily as the intermodal component of the facility.

2.2 Site Location and Description

As previously stated, the overall subject site is located at 40 Western Avenue, Staten Island, Richmond County, New York and is comprised of the three following tax blocks/lots: Block 1309, Lot 10, Block 1338, Lot 1 and Block 1400, Lot 1. The latitude/longitude of the site, as determined from the HHMT-Port Ivory Facility center, is 40 degrees 38 minutes 15 seconds (N)/74 degrees 10 minutes 50 seconds (W). This report addresses Site 2A and 2B, which consists of the eastern portion of Block 1400, Lot 1 and the southern portion of Block 1338, Lot 1, south of building 70 and 74. At the time of the Phase I and SI activities, the entire facility was owned by P&G; the Port Authority purchased the site from P&G in December 2000 and the site is now known as the HHMT - Port Ivory Facility. Subsequent to the



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LEGEND

▨	UTILITY EASEMENT
┼┼┼	RAILROAD TRACKS
▬	SITE BOUNDARY

Notes:
Site 1, 2A/2B, and 3 descriptions as per July 2004 VCP Agreements.

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THE PORT AUTHORITY
OF NY & NJ

ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

(BLOCK 1400, LOT 1 AND
BLOCK 1338, LOT 1)
HHMT-PORT IVORY FACILITY

SITE SITE 2A/2B
LAYOUT

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number **FIGURE 2**

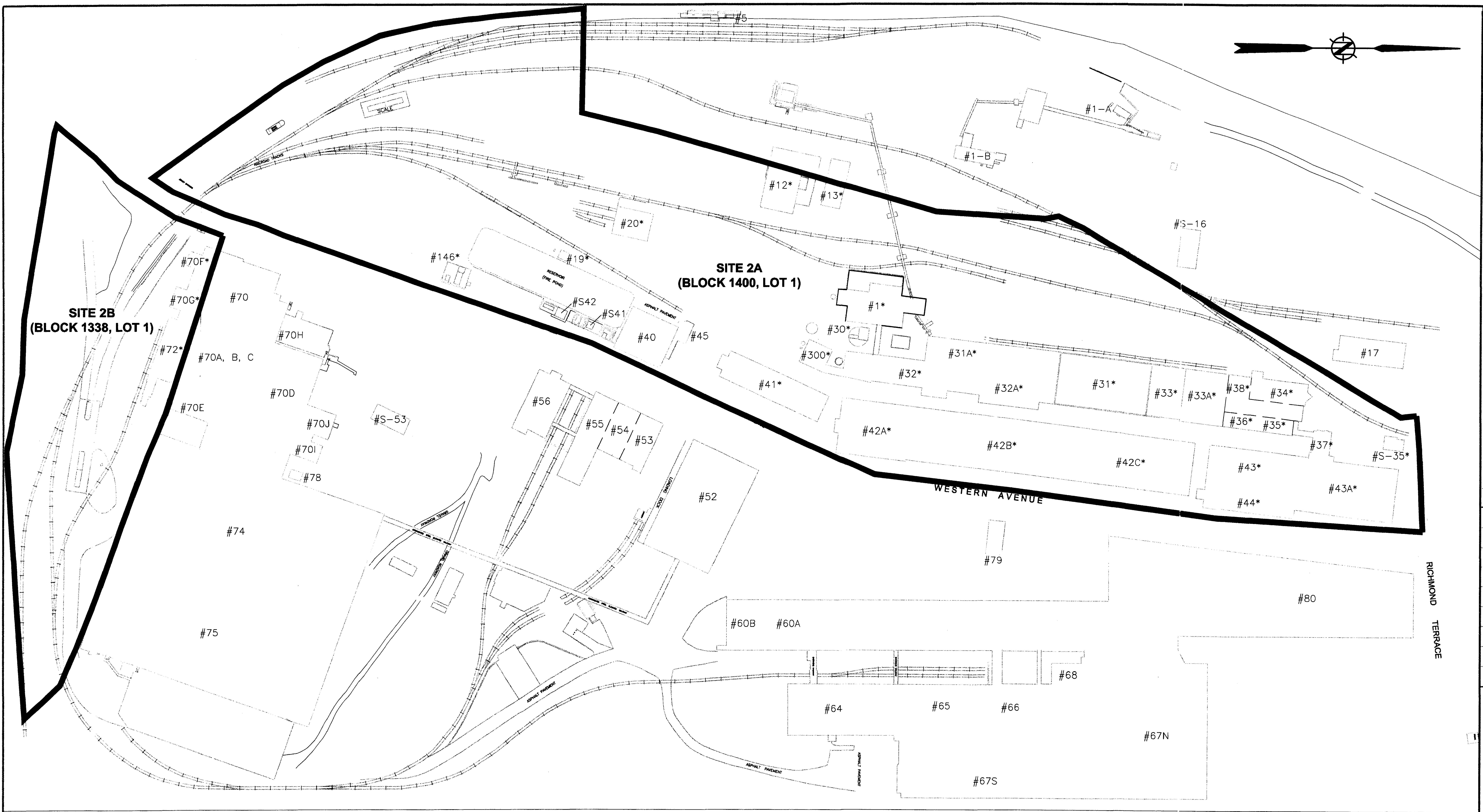
purchase of the site, the Port Authority performed RI activities. The Port Authority has also addressed some of the petroleum-impacted areas and certain of the tank areas (tanks formerly used by P&G). Generally, the excavation activities were undertaken in conjunction with site demolition and redevelopment efforts and were performed prior to entering the VCP Program.

Site 2A/2B encompasses 28.6 acres of the 124.31 acre former manufacturing facility and is comprised of Site 2A (23.94 acres) and Site 2B (4.66 acres). At the time of the purchase by the Port Authority, the HHMT- Port Ivory Facility site was improved by 68 buildings. Site 2A included the following buildings: 30-Series Buildings; 40-Series Buildings; Building 1; Building 20; Building S-35 and portions of Buildings 12 and 13. The locations of the site buildings (Year 2000) are presented on Figure 3. The site was formerly utilized for the manufacturing of consumer products including soap, detergent and foodstuffs. Reportedly P&G initiated manufacturing operations in the early 1900s and ceased operations in approximately 1991. Generally, Site 2A was utilized for offices, boiler buildings, furnace structures, manufacturing and development buildings, locomotive maintenance, security stations, cafeteria, sewage treatment plant and the reservoir for fire protection. Site 2A was home to product delivery, several underground storage tanks (USTs), former aboveground storage tanks (ASTs), and an underground network of piping for drainage control. Site 2B encompasses the areas south of the 70-Series Buildings and includes the southern portion of part of the 70's building complex: southern portion of Buildings 70, 70 A/B/C, 70F, 70G and 72. The Site 2B/Site 3 boundary line extends along the southern building wall of Buildings 74 and 75 such that Site 2B does not include the interior of Buildings 74 and 75 but includes exterior areas to the south of the buildings. Site 2B was utilized for storage and warehousing of finished products, production and packaging of orange juice and is characterized by the presence of railroad tracks. A summary of the site buildings present during the Phase I ESA and Year 2000 SI is provided in Table 1.

2A

2B

Site entrance/exit ways are located along Western Avenue and Richmond Terrace. Western Avenue extends in a north-south direction between Block 1400, Lot 1 (Sites 1 and 2A) and Block 1338, Lot 1 (Sites 2B and 3) and terminates at Richmond Terrace. One of the three parcels, Block 1309, Lot 10 (Future Site 4) is situated north of Richmond Terrace and the two remaining parcels, Block 1400, Lot 1 (Sites 1 and 2A) and Block 1338, Lot 1 (Sites 2B and 3), are situated south of Richmond Terrace. The overall layout of Site 2 as well as the remainder of the HHMT-Port Ivory Facility is presented on Figure 2.



***BUILDING 1**	**WOODBURNING BOILER**	***BUILDING 36**	**COMET WAREHOUSE**	BUILDING 64	WAREHOUSE BUILDING	BUILDING 56	OIL REFINERY
BUILDING 1A	WOOD PROCESS	***BUILDING 38**	**LIQUIDS MAKING (HSC)**	BUILDING 65	WAREHOUSE BUILDING	BUILDING 60	WAREHOUSE BUILDING
BUILDING 1B	WOOD RECLAIM	**BUILDING 40**	**CAFETERIA**	BUILDING 66	WAREHOUSE BUILDING	BUILDING 60A	WAREHOUSE BUILDING
BUILDING 5	RAILROAD SCALE HOUSE	**BUILDING 41**	**OFFICES**	BUILDING 67N	WAREHOUSE BUILDING	BUILDING 60B	WAREHOUSE BUILDING
***BUILDING 12**	**MACHINE SHOP**	**BUILDING S-41**	**NATURAL GAS METER HOUSE**	BUILDING 67S	WAREHOUSE BUILDING		
***BUILDING 13**	**ENGINEERING**	**BUILDING S-42**	**TRANSFORMER SHELTER**	BUILDING 70	CITRUS OFFICE		
BUILDING S-16	BAR SOAP SHOP	***BUILDING 42A**	**BAR SOAP STORAGE**	BUILDING 70A	DHBM MAKING		
BUILDING 17	OFFICES AT STU SHOP	***BUILDING 42B**	**BAR SOAP PROCESSING/PACKAGING**	BUILDING 70B	DHBM PACKING		
***BUILDING 19**	**FIRE PUMP HOUSE**	***BUILDING 42C**	**LIQUIDS/SOLO PACKING AND STORAGE**	BUILDING 70 C & 70D	WAREHOUSE		
***BUILDING 20**	**LOCOMOTIVE HOUSE**	***BUILDING 43**	**LSP GRANULES**	***BUILDING 70F**	**DHBM KITCHEN**		
***BUILDING 30**	**FRESH WATER PUMP HOUSE**	***BUILDING 43A**	**LSP GRANULES**	***BUILDING 70G**	**DHBM COTACTOR BUILDING**		
***BUILDING 31**	**COMET WAREHOUSE**	***BUILDING 44**	**LSP GRANULES**	BUILDING 70I	PERSONNEL		
***BUILDING 31A**	**GLYCERINE HOUSE**	**BUILDING 45**	**MAIN GATE GUARD HOUSE**	BUILDING 70J	CITRUS SHOP		
***BUILDING 32**	**BOILER HOUSE**	BUILDING 46	SEWAGE PUMP STATION	***BUILDING 72**	**DHBM LOADING DOCK**		
***BUILDING 32A**	**BOILER HOUSE**	***BUILDING 300**	**WATER TREATMENT**	BUILDING 74	WAREHOUSE BUILDING		
***BUILDING 33**	**KETTLE HOUSE #1**	BUILDING 52	FINISHED PRODUCTS	BUILDING 75	WAREHOUSE BUILDING		
***BUILDING 33A**	**COMET MAKING (KETTLE HOUSE #3)**	BUILDING 53	FOOD OFFICE/LOCKER ROOM	BUILDING 78	COMPRESSOR BUILDING		
***BUILDING 34**	**COMET WAREHOUSE**	BUILDING S-53	TEMPORARY STORAGE	BUILDING 79	OFFICE		
***BUILDING 35**	**COMET PACKING**	BUILDING 54	DEODORIZER	BUILDING 80	WAREHOUSE BUILDING		
***BUILDING S-35**	**NORTH GATE HOUSE**	BUILDING 55	HARDENING				

NOTES:
1. THIS MAP REPRESENTS YEAR 2000 SITE CONDITIONS.
2 BUILDINGS LOCATED ON SITE 2A/2B ARE PRESENTED IN BOLD TEXT
3 BUILDINGS THAT HAVE BEEN DEMOLISHED ARE IDENTIFIED BY AN ASTERISK (*).

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ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title
(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

SITE 2A/2B EXISTING BUILDING LOCATION PLAN (YEAR 2000)

Designed by
Drawn by
Checked by RP
Date
Contract Number
Drawing Number **FIGURE 3**

P:\23952wmd\Operable Unit Reports\Operable Unit 2\Mapping\POST VCP Mapping 8-11-04\Drafts\Figure 3 Building Location Plan 8-11-04.dwg 9/20/04 9:52 am

Table 1
Summary of Site Buildings
Site 2A/2B: HHMT - Port Ivory Facility

Building Identification	Reported Information	Observations/Comments
Building 1/ Woodburning Boiler	This seven-story building, encompassing 50,337 square feet, was built in 1983 in response to rising oil prices. Building 1 houses a wood burning boiler and associated wood storage hopper. The boiler (south end) and storage hopper (north end) comprise the majority of the building area. The boiler is suspended from the ceiling structure to allow for the expansion and contraction of the interior steam tubes. Former storage areas for parts, materials and equipment utilized in the operation of the boiler are located on the first and second floor of the structure. Wood is reported to have been processed in a building (Building 1A) located to the northwest of Building 1 and stored in an area to the south of Building 1B. Wood is reported to have been supplied to Building 1 via a conveyor belt system. The conveyor belt initiated at the wood storage area located to the southwest of Building 1B and entered Building 1 at the northwestern corner of the seventh floor.	The building is constructed with a concrete floor and sheet metal walls and ceiling. Parts and equipment utilized in the operation of the boiler unit were stored in this building at the time of the assessment and investigation activities.
Building 12/ Machine Shop (Partially located on Site 2A)	Building 12 is a two-story building which occupies 15,128 square feet and was built in 1918. According to P&G, this building was utilized as the "central" machine shop for the facility, contained typical equipment for a machine shop (i.e., grinders, lathers, saws, presses, etc.) and was used (2nd floor) for the storage of parts, equipment, and machinery.	The first floor and the eastern portion of the second floor are constructed with a concrete floor, brick walls and a concrete ceiling. The western portion of the second floor (i.e., the Locker Room) is constructed with a ceramic tile floor, a combination of sheet rock and ceramic tile floors and a drop panel (2' x 2' tile) ceiling. Overhead loading dock doors providing access to the exterior are located along the northern and western walls of Building 13.
Building 13/ Engineering (Partially located on Site 2A)	This two-story 6,040 square foot building was built in 1916 to have been used solely for office/administrative purposes including, in particular, housing the Engineering Department.	The building is constructed with a combination of ceramic tile/linoleum or concrete flooring, sheet rock walls and a drop (2' x 2' tile) panel ceiling. An Electric Room is located on the second floor of this building. Inspection of this room noted the presence of several wall-mounted transformer units and electrical panels. This room was constructed with a 9"x 9" vinyl tile floor. Two office trailers, formerly utilized for additional office space, were noted to be situated in the area located immediately north of Building 13.

Table 1
Summary of Site Buildings
Site 2A/2B: HHMT - Port Ivory Facility

Building Identification	Reported Information	Observations/Comments
Building 19/ Fire Pump House	This one-story 252 square foot building was built in 1962, and was utilized to house pumps associated with the facility's fire suppression system. Fire suppression water is maintained in a 2.5 million gallon reservoir located immediately adjacent to (east of) this building. This building is reported to be connected, via underground piping, to a second water reservoir and pump house (i.e., Building 30). According to P&G, no chemicals were added to the fire suppression system. The 2.5 million gallon water storage reservoir is reported to be filled on an as-needed basis through pipe connections to the City of New York water supply system.	Building 19 is constructed with concrete floor and walls and a metal deck ceiling. Inspection of this building noted the presence of an oil-fired (diesel) generator. Staining was noted along the underside of the generator and the underlying concrete floor. Inspection of the underlying concrete floor noted same to be intact and free of breaches in its integrity. Based on the construction of the building and the fact that the floor is set at a lower elevation than the doorway, it is unlikely that discharges, if any, from the generator could migrate to the exterior area surrounding this building. Diesel fuel utilized in the operation of the generator unit is stored in a 500-gallon AST located along the southern exterior of the building. The AST is situated inside of a containment dike constructed with a concrete floor and masonry walls. Visual inspection of the containment dike did not reveal the presence of any indications that a discharge has occurred within same.
Building 20/ Locomotive House	This one-story 3,4000 square foot building was built in 1913 and was used as a maintenance garage for the facility's railroad locomotives.	Building 20 is constructed with a combination concrete and bare soil flooring, brick walls and a concrete ceiling. The building is divided into three bays with overhead doors along the southern wall of the building providing access to the railroad sidings at the exterior. Inspection of the soil floor in the eastern and western bays noted the presence of staining in several areas. A subsurface maintenance pit constructed of concrete is located in the central bay of this building. At the time of the assessment and investigation activities, snow removal equipment, an air compressor, hoses and parts as well as several small containers (i.e., five-gallons or less) of various lubricants, oils and other petroleum products were noted to be present in this building. Concrete pads are located along the western and northern sides of this building. A non-paved, gravel covered area measuring approximately 50 feet by 100 feet was noted on the eastern side of Building 20. No staining was noted on the gravel surface.
Thirty Series Buildings		

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Table 1
Summary of Site Buildings
Site 2A/2B: HHMT - Port Ivory Facility

Building Identification	Reported Information	Observations/Comments
Building 30/Fresh Water Pump House	This one-story, 740 square foot structure was built in 1915 and formerly functioned as one of the two, on-site pump houses associated with the facility fire suppression system. The building is located immediately to the north of a concrete lined water reservoir with a reported capacity of approximately 50,000-gallons. This pump house is reported to be connected, via underground piping, to the main pump house, Building 19.	Building 30 is constructed with a concrete floor, a combination of concrete and brick walls and a concrete ceiling. The building is divided into two levels, separated by a metal grate floor/ceiling. Metal steps provide access to the lower level of Building 30. Visual inspection of the building noted the presence of a diesel oil-fired generator and two large pump units. Diesel oil associated with the generator unit is stored in a 1,000-gallon (approximate) AST suspended underneath the metal grate floor. The fill and vent pipe system associated with the AST extends through the eastern wall of the building. Staining was noted on the generator unit as well as on the underlying concrete pad. However, staining was noted to be limited to the concrete pad.
Building 31/Comet Warehouse	This one-story, 9,000 square foot building was constructed in 1909 and was utilized for storage.	The building was constructed with a concrete floor, brick walls and wood ceilings. Due to potential safety concerns, no access to this building was provided to HMM. As a result of the building's deteriorated condition, this building, as well as Building 33 and 33A did not have a roof at the time of inspection.
Building 31A/ Glycerine House	This two-story building occupies 8,000 square feet and was constructed in 1909. According to a representative of P&G, this building was utilized as a storage area for equipment and parts associated with the boiler house. The first floor of the building was used for miscellaneous storage and the second floor of the building was utilized for office space.	Building 31A is constructed with a concrete floor, brick walls and a wooden roof. A fenced-in storage area is located along the exterior of the western wall of Building 31A. The storage area is underlain with concrete and separated into storage areas via masonry walls. Based on the signage on the fencing, this area was formerly utilized to store (empty and full) pressurized gas cylinders (i.e., acetylene, oxygen, etc.). A pad-mounted compactor is located along the exterior of the southwestern corner of this building. Inspection of same proved unremarkable.

Table 1
Summary of Site Buildings
Site 2A/2B: HHMT - Port Ivory Facility

Building Identification	Reported Information	Observations/Comments
Building 32/ Boiler House	This two level (one floor and a basement), 29,860 square foot building was built in 1909 and was utilized to house two boiler units (i.e., natural gas and diesel oil) as well as the main and two secondary generator units. The generators are reported to be powered by steam manufactured during the operation of the boiler units. According to P&G, the two boiler units were removed from the northern portion of this building (the floor cut-out was noted at the time of the inspection). Natural gas is reported to be provided by Con-Edison. Diesel fuel is reported to have been stored in an UST formerly located along the eastern exterior of the building.	Building 32 is constructed with a concrete floor, brick walls and a metal deck ceiling. Reportedly, the cut-outs present in the flooring/ceiling were to allow for equipment clearance. The main electric room for the facility is situated in Building 32. This room is constructed with a concrete floor, a combination of concrete and brick walls and a metal deck ceiling. Inspection of this room noted the presence of several pad-mounted switch and breaker box units. Four 55-gallon drums of Sunoco TH Fluid were noted to be stored along the eastern wall of the electric room. The main generator (7500 kva) and two secondary generators (1500 kva) are located in Building 32. These generators are seated on the concrete floor in the basement and protrude through to the first floor via the floor cut-outs.
Building 32A/ Boiler House	This two level (one floor and a basement), 3,200 square foot building was built in 1909 and was utilized to house a diesel oil-fired generator unit used on weekends and during maintenance of the boilers located in Building 32. Diesel fuel is reported to have been stored in an UST formerly located along the eastern exterior of the building.	Inspection of the building noted similar construction to Building 32. Some staining was noted on the concrete flooring. However, the flooring was noted to be intact. A 3,000-gallon AST (approximate) is located in the northwestern corner of the basement of this building. The AST is reported to be associated with a cooling tower located on the roof of this building.
Building 33/ Kettle House 1	This three-story, 54,000 square foot building was built in 1909 and was utilized in soap manufacturing. Specifically, a large kettle utilized in the melting of soap was located in this building. The kettle was heated via steam generated in the Boiler House (i.e., Buildings 32 and 32A). The kettle was described as a large tank that extended to the second floor of the building. The upper floors were utilized for storage purposes as well as to monitor the kettle operations.	Due to potential safety concerns, HMM was not provided access to this building. As a result of the building's deteriorated condition, this building, as well as Building 31 and 33A did not have a roof at the time of inspection. The building was noted to be constructed with a concrete floor, brick walls and wood ceilings.

Table 1
Summary of Site Buildings
Site 2A/2B: HHMT - Port Ivory Facility

Building Identification	Reported Information	Observations/Comments
Building 33A/ Comet Making (Kettle House #3)	This three-story, 20,100 square foot building was built in 1909 and was utilized for activities associated with soap and Comet cleanser manufacturing. A large kettle utilized in the melting of soap and the manufacture of Comet cleanser was formerly located in this building. The kettle was heated via steam generated in the Boiler House (i.e., Buildings 32 and 32A). The kettle was described as a large tank that extended to the second floor of the building. The upper floors were utilized for storage purposes as well as to monitor the kettle operations.	HMM was not provided access to this building. As a result of the building's deteriorated condition, this building, as well as Building 31 and 33 did not have a roof at the time of inspection. The building was noted to be constructed with a concrete floor, brick walls and wood ceilings.
Building 34/ Comet Warehouse	Building 34, a one-story 8,568 square foot structure, was built in 1929 and was utilized for the storage of cardboard packaging for Comet cleanser.	Inspection of this building noted same to be constructed with concrete floors, brick walls and a wood ceiling.
Building 35/ Comet Packing	This three-story (two floors and a basement) 25,336 square foot structure was built in 1909 and was utilized for packaging activities for Comet cleanser. A bridge, located in the southeastern corner of the second floor, connects this building to Building 42C. This bridge was utilized to transfer manufactured liquids stored in this building (manufactured in Building 38) to the packaging facility located in Building 42C. An elevated area located in the southwestern corner of the second floor is reported to have been utilized for the storage of packaging materials as well as spare parts for the packaging machinery.	Visual inspection of this building noted same to be constructed with a combination of concrete and wooden floors, brick and masonry walls and wooden ceilings.
Building S-35/ North Gate House	This one-story 336 square foot building was constructed in 1930 and was utilized as a Guard House (security station).	Visual reconnaissance of the building noted the northern portion to be utilized as a Guard House and the southern portion to be utilized to house electrical equipment (i.e., transformers, switch boxes, breaker boxes, etc.)
Building 36/ Comet Warehouse	This five-story (plus partial basement) 26,390 square foot building was built in 1923 and was utilized to warehouse packaging materials associated with the Comet cleanser line. According to P&G, a conveyor system in a tunnel in the the basement was utilized to transport finished Comet product to Building 43A.	Visual inspection of this building noted that all five floors were constructed with wooden floors, brick walls and wooden ceilings. No access was provided to the tunnel at the time of inspection.
Building 38/Liquids Making (HSC)	This two-story 2,992 square foot building was built in 1927 and was utilized for the manufacturing of Solo liquid detergent. The manufacturing process is reported to have consisted of blending operations. Mixing vats are reported to have been situated on the first floor of the building and to have protruded, through "cut-outs", to the second floor of the building.	This building is constructed with wooden floors, brick walls and a wooden ceiling. Inspection of the building noted two circular "cut-outs" in the second floor. These "cut-outs" appear to denote the locations of the former blending vats.

Table 1
Summary of Site Buildings
Site 2A/2B: HHMT - Port Ivory Facility

Building Identification	Reported Information	Observations/Comments
Forty Series Buildings		
Building 40/ Cafeteria	Building 40 is a three-story (i.e., two floor plus a basement) 25,608 square foot structure constructed in 1916 and utilized for cafeteria activities, office/administrative tasks and for employee training activities (i.e., classrooms/ demonstration rooms).	The building is constructed with a ceramic tile floor (some portions), concrete walls and wooden ceilings. A sump pump system and a gas-fired heating unit were noted in the basement. The sump system is reported to discharge, via aboveground piping and hoses, to the southeastern exterior of the building and eventually, Western Avenue.
Building 41/Offices	This two-story 21,500 square foot building was constructed in 1907 and was utilized for office/administrative purposes as well as locker rooms (northeastern corner of the first floor).	The building is constructed with carpeted and linoleum floors, sheet rock walls, and drop panel ceilings. A HVAC room with a single HVAC unit and transformer is located on the second floor of Building 41.
Building S-41/ Natural Gas Meter House	This one-story 588 square foot structure was built in 1955 and formerly housed components of the natural gas entry system. The system was shut down and replaced by new connections from the street into the individual buildings.	Inspection of this structure noted same to be constructed of concrete (i.e., floor, walls and ceiling). The structure is divided into two rooms (north and south) which contain the natural gas piping, valves and meters.
Building S-42/ Transformer Shelter	This one-story 315 square foot structure was built in 1927 and houses the main electrical switches and breaker boxes.	This building is constructed with a concrete floor, brick walls and a concrete ceiling. At the time of the May 2000 site reconnaissance, this structure contained six breaker boxes, several switch boxes and several back-up batteries. A concrete dike system is located along the southern exterior of Building 42. This dike contains five exterior transformer units. No staining was noted on the units or the concrete base of the containment dike.
Building 42A/ Bar Soap Storage	This four-story 63,200 square foot structure was built in 1918 and was utilized for the manufacture and packaging, including the storage of packaging materials, of Coast Soap.	Building 42 was noted to be constructed with a combination of tile, wood and concrete floors, masonry and brick walls and wood and/or concrete ceilings. Two circular "cut-outs" in the ceiling of the first floor of Building 42A denote the locations of two former ASTs or circular storage vessels. The tanks are reported to have been utilized to store scrap soap which was collected for re-use. A floor drain was noted in the southwestern corner of the first floor of Building 42A. According to P&G, all interior drains were/are connected into the sanitary sewer system or, in the case of drains that collected materials from process operations, connected to process systems.

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Table 1
Summary of Site Buildings
Site 2A/2B: HHMT - Port Ivory Facility

Building Identification	Reported Information	Observations/Comments
Building 42B/Bar Soap Processing/ Packaging	This three-story 81,300 square foot structure was built in 1908 and was utilized for the processing and packaging of finished bars of Ivory Soap and a machine shop for packaging equipment. A "dry house" was located on the eastern side of this floor. The "dry house" consisted of a conveyor belt system that traversed through a heat enclosure. After exiting the "dry house", the bars were cut, stamped and packaged.	Inspection of this building noted same to be constructed with concrete floors, masonry walls and wooden ceilings. A machine shop, utilized to maintain the packaging machines located in Buildings 42A, 42B and 42C was formerly located along the eastern side of the first floor of this building. The northern side of this building is open to the second story and formerly housed a large storage tank which contained liquid Ivory soap. The liquid soap was transferred to this location from the Hydrolizer Building which was formerly located to the north of Building 16; the Hydrolizer was demolished prior to the May 2000 site reconnaissance. The liquid soap was then pumped from this AST to the third floor of the building for drying, shaping, cutting and packaging. Several floor drains were noted on the third floor of this building. These drains were utilized to collect water from the plotter stamps which transferred the "Ivory" stamp onto the soap bars. This representative added that water collected via these drains was re-blended and recycled.
Building 42C/ Liquids/Solo Packing and Storage	This three-story 81,300 square foot structure was built in 1908 and was utilized for the storage of cardboard packaging for the finished soap products and for packaging activities for Mr. Clean products.	The building is constructed with concrete floors, a combination of masonry and brick walls and wooden ceilings. An electrical room containing a transformer unit and other wall-mounted electrical panels is located in this building. Inspection of the third floor of this building noted the presence of several square pads surrounded by trench drain systems. According to P&G, machinery associated with the packaging of Mr. Clean cleaning solution was formerly located on these pads. The trench drain systems were utilized to collect any spilled cleaning solution and transfer same back into the process.

Table 1
Summary of Site Buildings
Site 2A/2B: HHMT - Port Ivory Facility

Building Identification	Reported Information	Observations/Comments
Building 43/ LSP Granules	This three-story 37,380 square foot structure was built in 1927 and was utilized for the packaging of synthetic granule type soaps and detergents (i.e., Ivory Snow and Ivory Flakes). Soap granules were separated based on their size and then placed into the buggies which dumped same, through floor openings in the northern portion of this building, into hoppers located on the second floor. The various sized granules were blended together to prepare Ivory Snow and Ivory Flakes.	Inspection of this building noted same to be constructed with a concrete floor, masonry walls and combination of steel and wood ceilings. Inspection of the first floor of Building 43 noted the presence of a concrete pad along the northern wall of the building and a trench drain situated on the southern side of the pad. Further, the entrance/exit of a subsurface tunnel was noted in the northern portion of the building. According to a representative of P&G, the tunnel formerly housed a conveyor belt system, which was utilized to transfer raw product from the "forty series" buildings to Building 43 for packaging. No access to the tunnel was provided at the time of the inspection.
Building 43A/ LSP Granules	This three-story 55,296 square foot structure was built in 1927 and was utilized for the packaging of synthetic granule type soaps and detergents (i.e., Ivory Snow and Ivory Flakes).	Inspection of this building noted same to be constructed with a concrete floor, masonry walls and combination of steel and wood ceilings.
Building 44/ LSP Granules	This four-story 24,176 square foot structure was built in 1912 and was utilized for the packaging of synthetic granule type soaps and detergents.	Inspection of this building noted same to be constructed with a combination concrete and ceramic tile floor, masonry walls and concrete ceilings.
Building 45/Main Gate Guard House	Building 45, a one-story 344 square foot structure, is utilized as a security house for the main gate of the facility. The structure was built in 1982.	Inspection of this building noted same to be constructed with non-slip floor tiles over concrete, a combination of masonry and glass walls and a drop panel ceiling (2' x 2' tiles).
Building 46/Sewage Pump Station	This structure was built in 1970. Although given a building designation, the Sewerage Pump Station is a covered concrete pit. The structure was never occupied by employees. The pump station is utilized to house the piping, pumps and valves associated with the transfer of sanitary sewage from the facility and to the New York City sanitary sewer system.	The facility's sanitary sewage holding and pre-treatment system is located west of Building 46. Sanitary flow from the facility, via gravity flow, is directed to two concrete pits with wastes pumped into two 71,000-gallon holding tanks located within a concrete dike. P&G's pretreatment of the wastes consisted of pH adjustment/correction via the addition of either sulfuric acid or sodium hydroxide. These materials were noted to be stored in three 250-gallon plastic tote-type storage tanks The tanks are located over a sloped concrete pad which leads into the diked area. After pre-treatment, the wastes are pumped to the NYC sanitary sewer system via the piping located within Building 46. Building 46 reportedly contains a mechanically actuated valve system which monitors pH and closes the system in the event of a problem.

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Table 1
Summary of Site Buildings
Site 2A/2B: HHMT - Port Ivory Facility

Building Identification	Reported Information	Observations/Comments
Building 300/ Water Treatment	This two-story 3,268 square foot structure (one floor and a basement) was constructed in 1929. Operations in this building are reported to have consisted of the treatment of water utilized in process operations.	This building is constructed with a concrete floor, brick walls and a metal deck ceiling. Equipment utilized in the water treatment operations was noted to be present in this building. Two ASTs, located in a concrete containment area along the southern exterior wall of this building, and a third AST, situated on a concrete pad along the southwestern corner of the building, were also noted to be present. The two tanks, located within the containment area are reported to contain acid and caustic utilized in the water treatment process. The third AST is reported to be utilized to store treated "neutralized" water. A sump is located within the concrete containment berm associated with the two exterior tanks. Several floor and trench drains were noted around the water treatment equipment. These drains are reported to transfer collected liquids to the sanitary sewer system.
Seventy Series Buildings		
Building 70/ Citrus Office (Boundary line of Sites 2B and 3 runs along the southern building wall of this Building)	Building 70 is a one- story 8,000 square foot structure built in 1959 and utilized for office/administration activities for Citrus Hill and Duncan Hines Bake Mix (DHBM) Division.	Inspection of this building was impeded by lack of lighting. The building appeared to be constructed with concrete floors, masonry walls and a concrete ceiling. Floor drains in the bathroom, locker room and shower areas are reported to be connected to the sanitary sewer system.
Building 70A/ DHBM Making (Boundary line of Sites 2B and 3 runs along the southern building wall of this Building)	This one-story 1,220 square foot structure was built in approximately 1959 and was utilized for the blending and mixing the various dry ingredients used in the formulation of Duncan Hines Bake Mixes. The dry ingredients (i.e., sugar, flour, etc.) are reported to have been transferred to the building via a rail siding located along the southern side of this building. The ingredients were "blown" into the building and placed into large mixing vats.	This building is constructed with concrete floors, masonry walls and concrete ceilings. The building contains a mezzanine level which is reported to have been utilized to fill and monitor the blending vats. Several sealed overhead doorways were noted along the northern wall of this building. These doorways were formerly utilized to transfer the blended cake mixes into the adjacent building, Building 70B, for packaging. A large pad-mounted transformer unit as well as other pad-mounted electrical equipment was noted along the southwestern corner of this building. A concrete truck ramp is located along the southeastern corner of Building 70A. Tank saddles were noted along the western side of the ramp. No indications of staining were noted on or adjacent to the tank saddles.

Table 1
Summary of Site Buildings
Site 2A/2B: HHMT - Port Ivory Facility

Building Identification	Reported Information	Observations/Comments
Building 70B/ DHBM Packing (Boundary line of Sites 2B and 3 runs along the southern building wall of this Building)	This two-story 14,140 square foot building was built in 1959 and was used for the packing of the cake mixes and the storage of cardboard packing materials.	Building 70B is constructed with a combination of concrete and vinyl tile flooring, masonry walls and a concrete ceiling. The eastern portion of this building was noted to consist of a single floor which included a hoist system. The system is reported to have been used to transfer packaging materials from the second floor storage area to the first floor packing area. Inspection of the second floor of the facility noted several floor drains and a mop well. These drains are reported to be connected to the sanitary sewer system servicing the subject site. Minor staining was noted on the concrete flooring in these areas. However, the flooring was noted to be intact.
Buildings 70C and 70D/Warehouse (Boundary line of Sites 2B and 3 runs along the southern building wall of Building 70C)	These two building designations are combined into a single one-story warehouse structure reported to have been built in 1959. Building 70C occupies 14,271 square feet and 70D occupies 34,829 feet. These building are reported to have been utilized for warehousing purposes as well as the packaging of Citrus Hill orange juice (eastern portion of the warehouse area).	This building is constructed with concrete floors, masonry walls and a metal deck ceiling. Electrical equipment, a hot water heater and a transformer are located along the western wall of this area. Several trench drains are located in the eastern portion of this building. According to P&G, these trench drain systems formerly surrounded the packaging equipment associated with the packaging of Citrus Hill orange juice. These floor drains, as well as the remainder of the floor drains located in the facility, are either connected to the sanitary sewer system, or in the case of drains that collect liquids from process operations, are connected back into the process.
Building 70F/ DHBM Kitchen (Partially located in Site 2B)	This one-story structure was constructed in 1978 and occupies 644 square feet. According to a representative P&G, this building was utilized for the testing of the DHBM.	This area was constructed with a ceramic tile floor, masonry walls and a metal deck ceiling. Inspection of this building noted counter top areas along the eastern side of this area.
Building 70G/ DHBM Cotactor Building (Partially located in Site 2B)	This two-story 1,804 square foot structure was constructed in 1978 and was utilized for the storage of compressors associated with the operations formerly conducted in Building 70A.	This building designation appears to correspond with an alcove located along the southern wall of Building 70A. Construction of this area proved similar to that noted in Building 70A.

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Table 1
Summary of Site Buildings
Site 2A/2B: HHMT - Port Ivory Facility

Building Identification	Reported Information	Observations/Comments
Building 72/ DHBM Loading Dock (Partially located in Site 2B)	This one-story 3,100 square foot loading dock structure is reported to have been built in 1962. Building 72 is not actually a building as it does not maintain any exterior walls. The north side of the structure is bounded by the southern wall of Building 70A. The southern side is open to allow for the loading and unloading of materials associated with the making of the Duncan Hines Bake Mixes.	The structure was constructed of concrete. No indications of staining were noted with regard to the concrete loading dock.
Building 74/ Warehouse Building (Boundary line of Sites 2B and 3 runs along the southern building wall of this Building)	This one-story 103,400 square foot building was constructed in 1980 and is reported to have been utilized for the warehousing of various P&G manufactured (finished) products.	This building was noted to be constructed with a concrete floor, masonry walls and a metal deck ceiling. Three overhead doors, providing access to the adjacent warehouse building to the east (i.e., Building 75), are located along the eastern wall of this building. An elevated mezzanine area is located in the western portion of this building. In addition, a raised concrete pad with a masonry room is located immediately to the east of this mezzanine area. These areas are reported to have been associated with the packaging operation of the Citrus Hill orange juice conducted in the adjacent Buildings 70C and 70D. Inspection of these areas noted the presence of air chilling/handling equipment to be located on the second floor mezzanine area. This equipment appeared to have been utilized to supply cold air to the aforementioned masonry room. A large switch box/breaker box is located west of the masonry/cold room. Floor drains were noted to be present in a concrete diked area in the northeastern corner of the raised concrete area. The floor drains are reportedly tied to the sanitary system.
Building 75/ Warehouse Building (Boundary line of Sites 2B and 3 runs along the southern building wall of this Building)	This one-story 103,400 square foot building was constructed in 1980 and is reported to have been utilized for the warehousing and distribution of the various P&G manufactured products.	This building is constructed with a concrete floor, masonry walls and a metal deck ceiling. Approximately twenty overhead loading dock doors are located along the eastern wall of this building. These doors provide access to the loading/unloading dock area located to the east of Building 75. In addition, three overhead doors are located along the western wall of this building and provide access to the adjacent warehouse building (i.e., Building 74). A transformer unit is mounted on a metal support bracket in the southwestern corner of this building. A masonry room is

Table 1
Summary of Site Buildings
Site 2A/2B: HHMT - Port Ivory Facility

Building Identification	Reported Information	Observations/Comments
		located in the northeastern corner of this building. According to P&G, this room was utilized as a climate control room in the Crisco food oils manufacturing process. A concrete sub-level is located in the southwestern corner of Building 75. Inspection of this area noted the presence of an electric hot water heater, an approximately 3,000-gallon AST and a sump and pump system servicing an adjacent bathroom facility. The AST is utilized to store hot water, heated by a solar panel on the roof of the building.

<u>NOTES:</u>

(1) Buildings are located on Site 2A unless otherwise noted.

(2) All facility buildings are reported to have been heated by steam fired heating units. Steam was provided to the individual buildings by the facility's boiler houses.

(3) Several of the facility buildings contain freight elevators. All of the facility elevators are reported to be cable operated and do not contain any hydraulic pistons. The cable operation system is reported to be located on the roofs of the respective buildings.

(4) Several floor drains and trench drain system were noted in several of the on-site buildings. According to P&G, all floor/trench drain systems are either connected into the sanitary sewer system servicing the subject site or direct collected materials back (recycled) into the process operations.

(5) All bathrooms are reported to be connected into the sanitary sewer system servicing the subject site. According to P&G, no septic systems or dry wells are currently or have ever been located on the subject site.

(6) The subject site buildings are to be serviced via sprinkler systems for fire protection. According to a representative of P&G, the fire suppression system is a "water-only" system. Water utilized in this system is stored in two reservoirs located adjacent to Building 19 and Building 30. The reservoirs are supplied with water via the New York City water supply system.

(7) The P&G representative who accompanied HMM on the site inspection was unable to provide any information with regard to the storage and/or usage of petroleum products and/or hazardous materials in subject site buildings.

The entire HHMT-Port Ivory Facility is and has been serviced by connections to the potable water and sanitary sewer system of New York City. No septic systems, potable water wells or dry wells are reported to be or ever to have been located on the subject site. Stormwater generated on the site is directed via sheet flow to on-site catch basins. These catch basins discharge, through the facility's underground stormwater sewer system including permitted outfalls, to the adjacent waterways, roadways and marshland areas. Electrical service is supplied to the subject site via connection to the Consolidated Edison system servicing this section of Staten Island.

In addition, several utility easements and pipelines traverse the HHMT-Port Ivory Facility; these easements predated the Port Authority's ownership of the facility. With regard to Site 2A/2B, Colonial Pipeline and Exxon (now known as ExxonMobil) maintain easements. Colonial Pipeline maintains a 10-foot pipeline easement that initiates south of Site 2B, extends through the western portion of Site 2B and continues in a north/south direction along the western property boundary of Site 2A. The easement, traverses through Site 2A entering the southwestern corner of Site 1, continuing across Richmond Terrace and through the western portion of Future Site 4 (Block 1309, Lot 10). The easement terminates at the northern end of Future Site 4 (Block 1309, Lot 10). ExxonMobil maintains an 18-foot easement that is located primarily to the east of the Colonial Pipeline easement. The easement initiates to the west of Site 2A and the Colonial Easement, and continues to the east for approximately 90 feet where it turns to the north through Site 2A. This easement parallels the Colonial Pipeline easement throughout Site 1, however, this easement extends in an easterly direction along the southern boundary of Block 1309, Lot 10 beyond Richmond Terrace. Texas Pipeline is noted as having an easement of unknown width traversing east/west through Site 2B. The easement originates to the south extending into Site 2B and is maintained by SOHIO. Texas Eastern Pipeline is also noted as having an easement of unknown width that parallels the Texas Pipeline. The presence of an abandoned 10-foot easement formerly maintained by Tidewater Pipe Co. LTD. traverses Site 2B as well. The pipeline originates to the west of Site 2B and traverses the length of the site before turning to the north extending through Site 3 and the eastern portion of Future Site 4. The termination point of the Tidewater easement is unknown. The locations of the easements are presented on Figure 2.

3.0 BACKGROUND

In the early 1900s, P&G developed portions of the HHMT-Port Ivory Facility for use as a consumer goods manufacturing facility. The initial development included portions of Sites 1, 2A and 4. Over the years, P&G acquired additional acreage (Site 2B and 3) and emplaced fill materials at low-lying areas of Sites 1 and 2 (2A) and Future Site 4 expanding the original facility (i.e., the original P&G/Port Ivory Facility) to include the current HHMT-Port Ivory Facility limits, as shown on Figures 1 and 2. The site was utilized for consumer goods manufacturing from development until 1991. The specific consumer goods produced at the facility and the operations/activities performed at specific site areas changed based upon corporate requirements. A discussion of the current and historical physical setting of Site 2A/2B, including a summary of historical operations specific to Site 2A/2B are included herein.

3.1 Site 2A/2B History

According to representatives of P&G and information provided in reports supplied by same, P&G constructed the initial Port Ivory manufacturing facility at this site in 1906-1907. The original 77-acre facility included Sites 1 and 2A (Block 1400, Lot 1) and Future Site 4 (Block 1309, Lot 10) and was developed on an open, vegetated, marshy area. Additional acreage is reported to have been gained through the acquisition of Site 2B and 3 (Block 1338, Lot 1) as well as the filling of additional marshlands at all four Sites. The fill used by P&G in conjunction with site development is reported to have included the following: sand, silt, gravel mixed with debris, cinders generated from on-site coal-fired boilers, calcium carbonate and other carbonate salts generated as a by-product from soap manufacturing processes, spent diatomaceous filter earth from vegetable oil refining operations, and carbonaceous filter material from glycerin recovery operations. Visual review of subsurface conditions during SI and RI activities indicates that all of the above listed materials may have been emplaced at Site 2A; limited fill materials are reported to have been placed at Site 2B. It should be noted that the presence of fill material is considered an existing condition with regard to the HHMT-Port Ivory Facility.

Historical information sources indicate some variability in the operations performed at specific site locations throughout the operation of the facility. However, in general, Sites 1 and 2A (Block 1400, Lot 1) were utilized as a single facility for soap, comet, and glycerin manufacturing and utility functions (i.e., boiler houses, wood processing for the boilers, locomotive maintenance, etc.). Site 2A was the location of the manufacturing buildings, the boilers, the rail yard, locomotive maintenance buildings, raw product manufacturing/storage, and other activities associated with the processing, packaging, and storage of products from the early 1900's to the closure of activities. Other buildings included the offices, cafeterias, sewage treatment facility, fire suppression systems, and the chimneystack were reported to have operated and existed on Site 2A. Portions of the inactive railway system remain at Site 2A.

Historical information sources also identified structures and ASTs that were not present at the site during initial assessment activities. With regard to Site 2A, structures were noted to be present north of Buildings 12 and 13 and west of the 30-Series Buildings. A structure referenced as the Kettle House was located northeast of the former processing building and south of Building 17. This building appeared to be situated on both Site 1 and Site 2A. Historical mapping shows buildings identified as Building 10, Building 11, Building 10A, Building 22, Building 23 and Building 14 (Lye) in the open area north of Building 12 and 13, south of Building 17 and west of the 30-Series Buildings. In addition, mapping identified the presence of ASTs located adjacent to Buildings 11, 23, and 14. Further, historical mapping shows the positioning of a network of railroad tracks running adjacent to the former 20-Series Buildings as well as additional tracking alongside existing buildings. Historical mapping did not identify the presence of former structures or tanks at Site 2B.

Based on historical mapping and information provided in reports prepared by P&G, the following materials were stored in ASTs present and/or maintained at storage areas located at Site 2A: caustics, various vegetable and fish oils, fuel oil, waste oil, soap, spent acids, spent nickel catalyst, grease, coke and resin. The storage methods are not identified on the maps. Several ASTs on the Block 1400, Lot 1 parcel (Sites 1 and 2A) were labeled on historical Sanborn Maps as being "hydrogen holders". Historical maps also identify the use of underground storage tanks (USTs) at the site including four areas (referenced as UST1, UST3, UST4 and UST7 in the SI and RI) on Site 2A. Historical information indicates the following tank contents: variations in grades of oil in one or more tanks at Areas UST1, UST3, UST4 and UST7. Tanks containing ethanol and enzymes are also reported to be present at Site 2A, generally at locations north/northeast of Building 13 and west of Building 31.

Historical aerial photos and mapping before the 1900's, indicate that Site 2B was characterized by marshland prior to development by P&G. Previous site activities performed at Site 2B consisted primarily of railway. Buildings 70-75, primarily situated on Site 3, were used in process operations performed by the Citrus Hill and Duncan Hines divisions of P&G. The Citrus Hill Division formulated/packaged orange juice and operations centered in Buildings 70, 70C, 70D, and 70J (citrus shop). The Duncan Hines Baking Mix (DHBM) operations were located in Buildings 70A (productions), 70B (packaging), 70F (kitchen), 70G (contractor), 70I (personnel), 72 (loading dock), 74 (warehouse), and 75 (warehousing). The 70-Series Buildings were constructed in the late 1950's, with modifications and additional construction from the late 1970's to the mid-1980's.

3.2 Hydrogeologic Setting

Hydrogeologic provinces within Staten Island include both the Atlantic Coastal plain and the Triassic lowlands section of the Piedmont physiographic province. The Precambrian-Cretaceous unconformity defines the boundary between these two physiographic provinces extending northeastward from Fresh Kills to north of Stapleton, continuing eastward across Long Island. The low-lying plain in extreme northwest Staten Island consists of glacial outwash deposits and tidal marsh. Outwash deposits consist chiefly of stratified fine to coarse sand and gravel, while shore and marsh deposits consist of sand, organic clays and silts. These deposits are generally thin and probably no thicker than 15 feet.

The subsurface unconsolidated deposits at Site 2A/2B, as well as the remainder of the site, include a complex of stratified drift, glacial till, and tidal marsh deposits consisting of glacial outwash, marsh deposits, and artificial (non-indigenous) fill. In general, the following six soil and rock strata have been identified at the subject site area (listed from ground surface to top of bedrock): (1) non-indigenous fill consisting of sand, silt, clay, and gravel in a generally loose condition covering most of the subject site with a maximum thickness of about 19.5 feet; (2) organic clays and peats, consisting of soft and highly compressible tidal marsh deposits, to a maximum thickness of approximately 27 feet; (3) sand deposits consisting of loose to medium dense sand from marine or glacio-fluvial deposits extending eastward across the site and ranging in thickness from 5 to 16 feet; (4) glacial clay, silt, sand and gravel, deposits (primarily of clay and silt) ranging in thickness from less than 10 to 60 feet; (5) weathered shale, partially decomposed or weathered shale; and (6) generally unweathered, competent shale, located at depths of 45 to 72 feet below sea level. A deep bedrock-aquifer monitoring well (LF-DW-1) was installed on the Future Site 4 by P&G prior to May 1993 in conjunction with landfill closure procedures. Bedrock of the Passaic Formation was encountered at approximately 47 feet below ground surface (bgs). Soil borings installed as part of the SI (November and December of 2000) and the RI (2002/2003) confirmed the five upper soil and rock strata; the SI and RI did not include an evaluation of competent bedrock. However, as part of the SI for groundwater at Site 2 three wells, MW-7D, MW-10D,and MW-15D were installed to evaluate the deeper aquifer (Section 3.2.2 and 6.1.2). At locations MW-7D and MW-15D, bedrock was present at a depth of approximately 70 feet bgs in Site 2A, while bedrock was encountered at 40 feet bgs in ~~Site 2B at~~ the PG-MW-10D location.

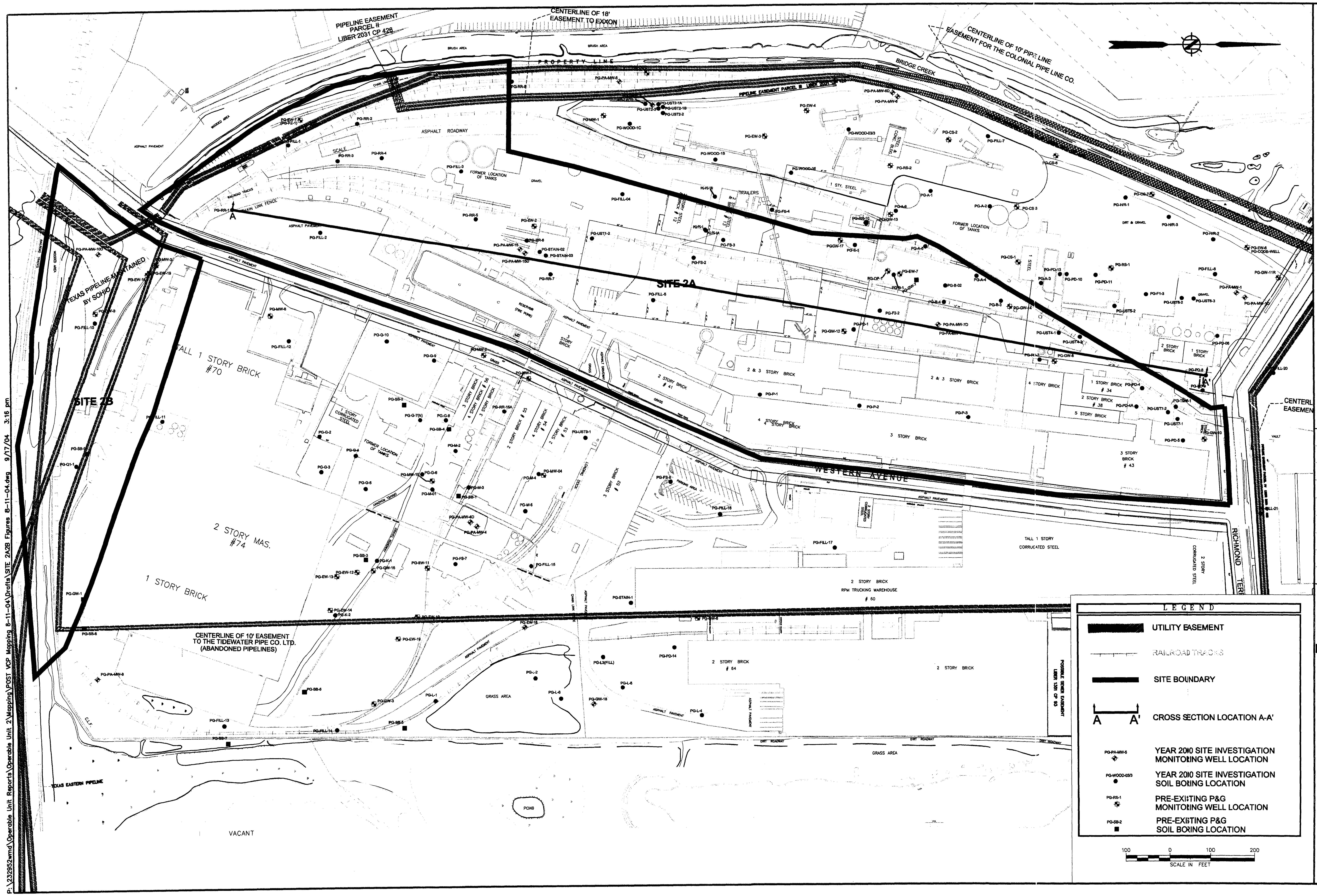
The Passaic Formation underlies Site 2A/2B, as well as the remainder of the subject site, and consists of reddish-brown to greyish-red siltstone and shale, with a maximum thickness of 3,600 meters. Dense by its nature, the Passaic Formation exhibits very little primary porosity. However, characteristic vertical or near vertical joints and fractures provide for limited transmission and storage of water. These openings decrease with depth, resulting in decreased permeability and specific yield with distance from the surface. Separations between bedding planes also allows for limited permeability as well as limited transmissivity and storage of water. According to available technical literature, the Passaic Formation exhibits a regional bedding strike of north 50 degrees east and a dip of 9 to 15 degrees to the northwest.

3.2.1 *Soils*

The three shallowest units described in the above paragraph constitute the soils of the subject site area (i.e., non-indigenous fill on top of organic clays and peat or sand deposits). Essentially, the SI and the RI confirmed that fill material was placed upon tidal salt-marsh or sand deposits at Site 2A/2B to raise the elevation of the land to allow for development. Activities associated with the SI and RI indicated that the soil strata of the site was consistent with that documented in the site area. The presence of fill material at this site is further described in Sections 6.1.1 and 7.4. To provide a visual presentation of Site 1 soil conditions, HMM prepared a cross section diagram based on upon the points identified on Figure 4. Soil conditions are presented geo-spatially in Figure 5, Cross-Section.

3.2.2 *Groundwater*

Groundwater was encountered at depths ranging from approximately 2 to 12 feet bgs across Site 2A and ~~2B;~~ groundwater depth was estimated based upon information gained through recording water levels in existing and newly installed monitoring wells. The depth to groundwater at Site 2A/2B is consistent with conditions noted at the remainder of the site with the exception of PAMW-11D located on the northeast corner of Site 3 (Block 1338). Groundwater was encountered at a depth of approximately 22 feet bgs, coinciding with the higher topographic location, as compared to the rest of the site. In the shallow



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THE PORT AUTHORITY OF NY & NJ

ENGINEERING PROGRAM MANAGER

No. Date Revision Approved

ENGINEERING DEPARTMENT

Title

(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

SITE 2A/2B CROSS-SECTION LOCATION MAP

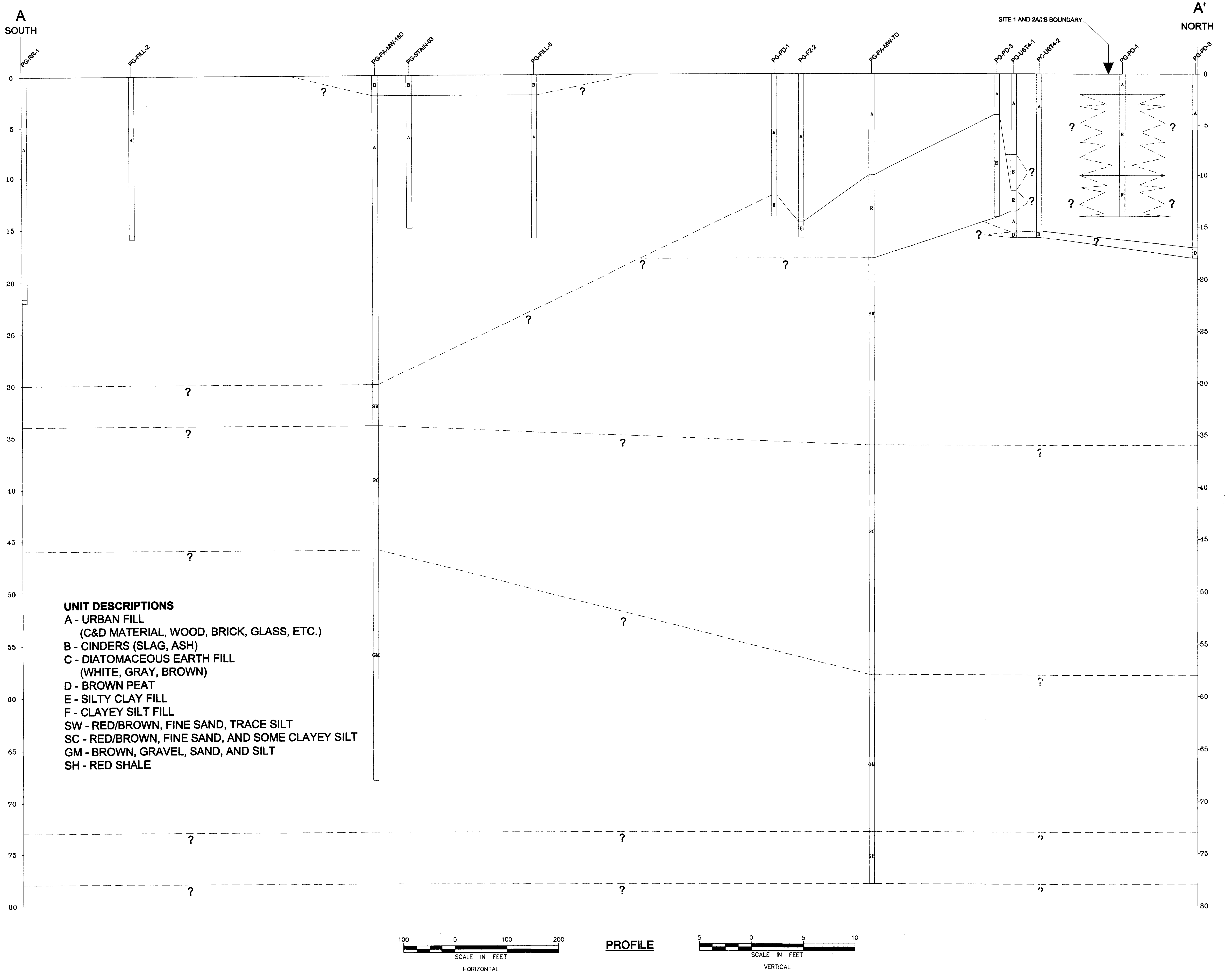
This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without its written consent.

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number **FIGURE 4**



UNIT DESCRIPTIONS

A - URBAN FILL
(C&D MATERIAL, WOOD, BRICK, GLASS, ETC.)
B - CINDERS (SLAG, ASH)
C - DIATOMACEOUS EARTH FILL
(WHITE, GRAY, BROWN)
D - BROWN PEAT
E - SILTY CLAY FILL
F - CLAYEY SILT FILL
SW - RED/BROWN, FINE SAND, TRACE SILT
SC - RED/BROWN, FINE SAND, AND SOME CLAYEY SILT
GM - BROWN, GRAVEL, SAND, AND SILT
SH - RED SHALE

PROFILE

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THE PORT AUTHORITY
OF NY & NJ

ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

SITE 2A/2B CROSS-SECTION A-A'

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number **FIGURE 5**

sections of bedrock in the area (+/- 150 feet bgs), groundwater is stored within bedding-plane separation and secondary porosity developed by fractures (e.g., joints and faults). Water in the Newark Supergroup of Staten Island occurs under unconfined or confined conditions, depending on the degree of confinement in the overlying deposits and the hydraulic interconnections within the shale and sandstone. Generally, groundwater occurrence in unconsolidated deposits in the site area depends on the sand, silt, and clay compositions of the glacial outwash and non-indigenous fill. Information from the groundwater investigation component of the SI indicates groundwater conditions are generally consistent with that of the area. According to previous environmental investigations (performed by P&G) as well as limited information from the SI (performed by the Port Authority), tidally influenced potentiometric fluctuations were not observed in on-site monitoring stations with the exception of monitoring points directly adjacent to the Kill Van Kull. However, the SI included only a limited review of this issue. Observations during excavation activities associated with building demolition and utility repair/removal indicates the potential for tidal influences at Site 2A.

Movement of fresh groundwater on Staten Island is seaward. Although the unconsolidated deposits and bedrock are hydraulically connected, most of the flow occurs horizontally within the glacial deposits due to their greater hydraulic conductivity. The horizontal flow is estimated to range from less than 0.1 to approximately 1.5 feet/day in glacial deposits comprised of sand and gravel. Estimates of recharge rates on Staten Island are comparable to Kings and Queens Counties, approximately 0.25 to 0.5 million gallons per day per square mile.

Groundwater is not currently used for public water supply on Staten Island. Before 1970, however, the surface water supply from upstate New York was supplemented by pumping a maximum of 5 million gallons per day of groundwater from aquifers beneath Staten Island. Higher pumping rates induced saline groundwater infiltration. Due to saline intrusion of aquifers in the area caused by increased withdrawal, future development of aquifers for potable purposes in the general area is unlikely.

4.0 ENVIRONMENTAL SITE INVESTIGATION WORKPLAN

As previously stated, HMM performed a Phase I ESA of the entire HHMT-Port Ivory Facility. This effort identified AOCs based upon several site inspections, interviews of available representatives of P&G, review of historical information sources (site plans, aerial photographs, Sanborn Fire Insurance Maps) and review of an electronic database search. The AOCs included both site-wide AOCs and area specific AOCs. Thus, an ESIW was developed to address the entire HHMT-Port Ivory Facility including both area-specific AOCs and site-wide AOC as well as to provide information on current environmental conditions at the site for the purpose of acquisition. The information provided in the following section focuses on efforts undertaken at Site 2A/2B. However, given the site-wide perspective of the ESIW, the information presented in this section also includes or references efforts undertaken at other Sites, as appropriate. Such information is presented for completeness and is provided to convey the comprehensive nature of the SI effort.

4.1 Previous Environmental Investigation Efforts

HMM reviewed documents pertaining to site history and previous environmental investigations in conjunction with the performance of the Phase I ESA and a supplemental file review. The documents included in the review were limited to those made available by P&G. Overall, the documents identified a number of AOCs that were evaluated, to varying degrees, by the prior site owner, P&G. The AOCs involved soil and groundwater, USTs (underground storage tanks) and the presence of a white precipitate material along the eastern bank of Bridge Creek, which runs along the western border of Sites 1 and 2A (Block 1400, Lot 1). A list of the documents included in the review and ~~a~~ brief summary of the contents of same are provided in Table 2. The information provided in Table 2 reflects all documents and reports and, therefore, provides information pertaining to the entire site. To facilitate review, information pertaining to Site 2A/2B has been presented in bold type. In addition, an environmental database report was obtained as part of the Phase I ESA. The electronic database search performed by Environmental Data Resources, Inc. identified that the subject site was included in several American Society of Testing and Materials (ASTM) standard and non-standard environmental record sources. These sources include the following:

- The United States Protection Agency (USEPA), Resource Conservation Recovery Information System (RCRIS) Facilities - Large Quantity Generators (LQG) List, December 12, 1999;
- The New York State Department of Environmental Conservation (NYSDEC) Inventory of State Hazardous Disposal Sites (SHWS) List, February 4, 2000;
- NYSDEC, Leaking Underground Storage Tank Incident Reports (LTANKS) List, January 2000;
- NYSDEC, Petroleum Bulk Storage Database (UST) List, January 2000;
- NYSDEC, Chemical Bulk Storage Database (CBS UST) List, January 2000;
- NYSDEC, Chemical Bulk Storage Database (CBS AST) List, January 2000;
- NYSDEC, Major Oil Storage Facilities Database (MOSF UST) List, January 2000;
- NYSDEC, Major Oil Storage Facilities Database (MOSF AST) List, January 2000;
- USEPA Facility Index System (FINDS) List, dated October 1999; and,
- NYSDEC Spills Information Database (Spills) List dated January 2000.

Table 2
Summary of Historical Environmental Reports and Information
Site 2A/2B: HHMT - Port Ivory Facility(1)

Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results(2)	Report Conclusions
Phase II Environmental Assessment - Wood Yard, McLaren Hart/Hart Environmental Engineering Corp., prepared for Owl Energy Resources, Inc., November 19, 1991	A 1 to 2 acre wood yard is reported to have been present at the site prior to the 1950s. Further, a water gas holder, four gas purifiers and a coke storage area are reported to have been located at the wood yard. The area is reported to contain coal tars and residues. This report describes an investigation of soil and groundwater at the former wood yard and an attempt to identify the presence of an underlying clay "liner/layer" at this portion of the site.	The investigation included the installation and sampling of four soil borings and the completion of three of the four borings as monitoring wells. Also, four borings were installed for geotechnical purposes. The soil borings did not identify the presence of a clay "liner" beneath the Wood Yard area. TPHC and BN compounds, mostly TICs, are reported to have been detected in one or more soil samples one from soil boring. Also, VO compounds and/or VO TICs, below regulatory criteria were detected in samples from this boring. The report references that the TPHC detected in soil may be from a leaking hydraulic lift. Di-n-butyl phthalate is reported to have been detected in all soil samples. According to the report, this compound is often detected in soils high in organics and therefore does not pose a threat. The investigation revealed the presence of wood as well as cinder fill. Some elevated readings were recorded on field instrumentation. Analytical results from groundwater samples identify TPHC and BN-TICs in the sample from one well; the same location as the elevated soil results. A sheen was noted on water in this well. Also, all groundwater samples are reported to have revealed elevated concentrations of phenols.	The levels of contaminants detected in soil and groundwater were not regarded as an area of concern. Elevated field readings were attributed to the presence of marshlands and underlying peat. The report noted a potential reporting requirement with regard to TPHC. No additional actions are proposed with regard to soil and additional sampling is recommended to further evaluate phenols in groundwater.

Table 2
Summary of Historical Environmental Reports and Information
Site 2A/2B: HHMT - Port Ivory Facility(1)

Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results(2)	Report Conclusions
***Final Report, Tax Block 1400,* Dames & Moore, January 24, 1992**	**This report presents a summary of investigative activities performed to address nine AOCs identified on this parcel:** Area A West Tank Field (southwest of Building 16), **Area B S&S Tank Field,** Area C Oleum Tank Field, **Area E S&S Fat Trap**, Area F1 Spent Nickel Catalyst, **Area F2 Waste Oil Drum Storage**, Area H Former Rosin Area, Area R Northwest Corner of Soap Manufacturing Area (suspected calcium carbonate fill area), **and Area P Former Product Unloading Pit. This report also provides information pertaining to the placement of fill materials at Block 1400. The by-products identified at this parcel include the following: spent zinc and nickel catalyst recovered from fat processing operations (hydrolyzer); spent carbonaceous filter material from glycerine purification; turpentine from recovery of resin from tree soap; coke ash from hydrogen making operations; waste oils from servicing vehicles, locomotives and equipment, and kettle bottoms.** The report also identifies that a site plan notes a "rosin storage area" at the northwest corner of the soap manufacturing area. The area identified as the "rosin storage area" is noted to be unpaved at the time of the investigation. **Waste oil is reported to have been used to lubricate rail switches on this parcel. There is some reference but no resolution to UST issues.**	**Installed and sampled soil borings and wells to investigate the listed areas.** The investigation is reported to have revealed the presence of fill material from 2 to 17 feet at areas on the western/northwestern portion of Block 1400. **A geophysical survey is reported to have been unsuccessful due to metal interference. A groundwater mound is noted along the northwest portion of this parcel in the area of GW-8, GW-14,** CS1 and CS3. **Groundwater flows radially off the mound. The mounding is attributed to the presence of a thick layer of low permeability calcium carbonate at the western portion of Block 1400, Lot 1.**	**No specific conclusions are provided in report.**
	Area A: ASTs containing caustics and vegetable oil were formerly located southwest of Building #16.	Installed and sampled soil borings and one well to evaluate this area. During drilling, indications of fat, oil, grease (FOG) and TPHC are noted to extend to the groundwater table. Analytical results confirm the presence of varying concentrations of FOG and TPHC in soil. pH was recorded at levels ranging from above 9 to almost 12. pH of the calcium carbonate material was recorded at 9.99 for all sampled intervals.	No specific conclusions are provided in report.

Table 2
Summary of Historical Environmental Reports and Information
Site 2A/2B: HHMT - Port Ivory Facility(1)

Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results(2)	Report Conclusions
***Continued - Final Report, Tax Block 1400,* Dames & Moore, January 24, 1992**	**Area B: ASTs containing vegetable oils, tallow and tailings/soap bottoms from hydrolyzer were located south of hydrolyzer and east of west tank field. The tank field area was not equipped with a containment berm and surface runoff from this area flowed to unpaved areas including overflowing of a zipper drain located along the western boundary. An AST containing phenol alkane was formerly located southwest of the S&S tank field.**	**Installed and sampled 6 soil borings and one well to evaluate this area. Elevated levels of FOG and TPHC are reported to have been detected in all borings, extending to groundwater. A floating hydrocarbon layer is was noted at GW-14 and a sheen was noted with regard to GW-7. Zinc is reported to have been detected in soil samples. No calcium carbonate materials is reported to have been identified in borings from this area.**	**Report identifies a railroad siding and former oil tanks as potential sources of petroleum in soil. Catalyst material is identified as the likely source of the zinc.**
	Area C: An AST used for oleum, waste sulfuric acid and acid wastewater was located northwest of Building #17. A former toluene tank (closed in place in December 1989) is reported to be located in the vicinity of Area C.	Installed and sampled 2 soil borings and 1 well to evaluate this area. Calcium carbonate detected at this area. pH levels are reported to increase with depth, over 8 to over 12.	Conclude washwater did not impact area. pH levels (elevated) are attributed to migration from upgradient sources.
	Area E: A steel UST designed t collect and trap oil and grease present in wastewater stream is located southwest of the S&S Tank Field, near the phenol storage area. Historical information indicates elevated zinc concentrations in wastewater flowing to this trap.	**Installed and sampled 3 borings and a well. Investigation indicates that vegetable oil is visibly present in the saturated zone and that FOG and TPHC were detected at varying concentrations in soil samples. Nickel and zinc were detected above background concentrations in soil samples. pH is reported to have been recorded at slightly acidic levels in soil samples.**	**Conclude that FOG, TPHC and metals are likely to be associated with trap usage. No conclusion is provided for slightly acidic pH.**
	Area F1: Open drums containing spent nickel catalyst and an unknown liquid were noted northwest of Building #16. The asphalt surface in this area was noted to be cracked, stained and deteriorated. A paint shed is reported to have been located west of the drum storage pad.	Miscellaneous fill including calcium carbonate fill is reported to have been identified at this area. pH is recorded between 9 and slightly over 12. FOG and TPHC are reported to have been detected in samples from unsaturated zone. PCBs are reported to have been detected in at least one soil sample.	FOG, TPHC, pH attributed to former activities including caustics/alkaline zones found in the calcium carbonate. Recommend excavation to address PCBs.

Table 2
Summary of Historical Environmental Reports and Information
Site 2A/2B: HHMT - Port Ivory Facility(1)

Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results(2)	Report Conclusions
Continued - Final Report, Tax Block 1400, Dames & Moore, January 24, 1992	**Area F2: Open drums were noted to be present on an asphalt storage pad located east of product unloading terminal and south of fatty acid storage tanks. The asphalt surface in this area was noted to be cracked, stained and deteriorated.**	**Investigation revealed black staining of soil and elevated readings were recorded during field screening. FOG and TPHC are reported to have been detected in soil samples from the unsaturated zone.**	**The report concludes that waste oil storage may have impacted this area.**
	Area H and Area R (Area H/R): Site plans reportedly identified an area at the northeast corner of the main soap manufacturing area as a rosin storage area. Rosin was produced through the separation of resin from turpentine. A surface water body was originally located at this area and filled with calcium carbonate.	Calcium carbonate material was identified ranging in thickness from 15.5 to 17 feet. Elevated pH levels were recorded in samples and were noted to increase with depth. No turpentine related compounds are reported to have been detected and nickel concentrations are reported to be consistent with background.	Conclude that the highly alkaline zones were the cause of the elevated pH.
	Area P: Pits, used for unloading raw materials from tankers and rail cars, are reported to have been located in alleyways next to the main soap building. The pits are reported to have been closed.	**FOG is reported to have been detected and slightly elevated pH levels (approximately 9) recorded in soil samples.**	**Conclude that the levels of FOG and pH may be from former transfer operations conducted at this area.**
	Groundwater: Groundwater was identified as an issue with regard to the southern portion of Block 1400.	**Installed and sampled monitoring wells at various locations on Block 1400. FOG and TPHC reported to have been detected in samples from Areas A, B, C,** E, F1, **F2** & H/R. **Free product is reported to have been noted at GW-14 and a sheen was noted on the water surface of GW-10,** GW-13, **GW-14, GW-17** and CS-1. An elevated pH level was recorded in the sample from CS-1. **Lead, nickel and zinc were reported to have been detected in samples from certain wells.**	**Recommend a groundwater treatment system including pH adjustment, oil/water separation to remove free product, clarification and settling to remove solids and precipitates, and liquid phase carbon adsorption to reduce PHC levels.**

Table 2

Summary of Historical Environmental Reports and Information
Site 2A/2B: HHMT - Port Ivory Facility(1)

Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results(2)	Report Conclusions
Final Report Soil Environmental Investigation, Tax Block 1309, Dames & Moore, April 20, 1992	This report presents a summary of investigative activities performed to address two AOCs identified on this parcel: Area D Oil Pump House (Bldg S-29) and Area I Fly Ash Storage Area. This report also identifies a 1988 Memorandum of Understanding (MOU) which was executed between Procter & Gamble and the NYSDEC regarding the discharge from the pipe rupture and the referenced "oil lens". This report also provides historical information including information pertaining to the placement of fill materials at Block 1309, Lot 1.	Installed and sampled soil borings installed at Area D and test pits at Area I. Analytical results are compared to "background levels". Groundwater encountered from 2.2 to 9 ft bsg. Generally the groundwater noted to exist in fill material and silt layers.	No specific conclusions provided in report.
	Area D is located south of two fuel oil ASTs in dock area. The ASTs are located in a diked area described as being lined with a synthetic geotextile material. Area D is in the vicinity of previously performed investigation associated with a leak in fuel oil transfer piping at the eastern portion of dock. This report references a BB&L Report describing the efforts undertaken to address the fuel oil rupture. The pipe is reported to have been repaired and the contamination associated with the pipe rupture to have been addressed.	Area D: Samples were analyzed for TPHC, FOG, nickel and pH. Nickel and pH were included in the analyses due to information indicating that the pump house area was filled with diatomaceious earth from vegetable oil operations at the site. Results indicated varying concentrations of FOG and TPHC in both unsaturated and saturated zone. Nickel detected in samples. pH recorded at the 8 to 9 range.	Report noted higher concentrations of TPHC and FOG present in upper two feet. Nickel referenced as being at concentrations below levels of concern.
	Area I is located at the northern portion of this parcel and is the location of a temporary fly ash stockpile area. Investigation initiated in response to elevated concentrations of lead (exceeded extraction procedure toxicity) in samples from fly ash. Assert that the elevated lead is from demolition debris containing lead based paint.	Test pits were installed from surface to 3 ft bsg. Fill material (silt, sand mixed with ash, gravel, bricks overlying calcium carbonate) was noted in test pits from this area. Samples from the test pits were analyzed for pH, zinc and lead. pH was recorded at levels of 9 to 10 in fill samples. Zinc and lead also were detected in soil samples.	Zinc and lead referenced as being at concentrations below levels of concern. Elevated pH attributed to fill, including calcium carbonate.

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Table 2
Summary of Historical Environmental Reports and Information
Site 2A/2B: HHMT - Port Ivory Facility(1)

Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results(2)	Report Conclusions
Final Report Soil and Groundwater Environmental Investigation, Tax Block 1338S, **Dames & Moore, April 20, 1992**	This report presents a summary of investigative activities performed to address 6 AOCs identified on the southern portion of the Block 1338 parcel: Area G Former Vegetable Oil Tank Farm, Area K Fill Area and Coal Storage, Area M Area East of Edible Oils Buildings #52-56, Area N Former Vegetable Oil Fat Trap, Area P1 Former Product Unloading Pit **and Area Q1 Existing Scale Pit.** The report also provides historical information including information pertaining to the placement of fill materials at the southern portion of Block 1338 and identifies that spent diatomaceous earth from edible oil refining and spent nickel catalyst from edible oils are the by-products of the "food area". The report references a geophysical survey performed by Blackhawk Geosciences which identified USTs at Area M, specifically east of Buildings #53/54 and east of Building #56.	**Soil and groundwater investigation consisting of the installation and sampling of soil borings and wells is reported to have been performed at each of these AOCs. Based on the groundwater investigation performed at the southern portion of Block 1338, groundwater at this portion of the site is reported to exist at depths ranging from 2.2 to 9 feet bsg and to flow toward Bridge Creek**	**No specific conclusions provided in report.**
	Area G: ASTs containing vegetable oil and caustics were formerly located at this area. Nickel catalyst was stored in this area after tanks were dismantled. An investigation is reported to have been undertaken due to cracking and expansion joints in the concrete pad at this area.	Investigative efforts did not reveal any free phase vegetable oil but did identify black staining of soil in this area. Nickel, lead and zinc are reported to have been detected below background levels. pH was recorded at levels of 9 to 10 in surface and subsurface samples.	No specific conclusions provided in report.
	Area K: Fill is reported to have been placed in the southeastern portion of this parcel in the area of Buildings #74 and #75. In addition, this area is reported to have been used for coal storage. Also, an unknown black material was found during the foundation investigation for Buildings #74 and #75.	Installed and sampled soil borings and wells.	No specific conclusions provided in report.
	Area M: ASTs containing vegetable oil and caustics were present at the area east and southeast of Buildings #52 and #56. Also, unloading pits and railroad sidings are reported to have been present at this area. Fill is reported to have been placed at this area. UST(s) may also have been present in this area.	Installed and sampled 5 soil borings and 1 well at this area. Analytical results revealed the presence of low levels of TPHC and FOG in soil samples. Nickel is not reported to have been detected at an elevated concentration and pH was recorded at levels ranging from 8 to above 10. The report does not identify the location(s) of any UST(s) at this area.	No specific conclusions provided in report.

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Summary of Historical Environmental Reports and Information
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Report Identification	**Report Topic Area(s) Of Concern**	**Description of Activities and Analytical Results$^{(2)}$**	**Report Conclusions**
Continued - Final Report Soil and Groundwater Environmental Investigation, Tax Block 1338S, **Dames & Moore, April 20, 1992**	Area N: A vegetable oil fat trap, "super fat trap", is located south of Building #56. An oil/water separator system including a UST, now filled with coarse aggregate, also is located in this area.	Installed and sampled soil borings which revealed the presence of black staining of soil. FOG was detected in soil samples and pH was recorded at relatively neutral levels. Nickel was detected below background.	No specific conclusions provided in report.
	Area P1 - Concrete pits were formerly located at the bottom of the rail siding unloading area, east of the Edible Oils Building. The pits were filled in and capped with asphalt/concrete.	Area P1: Low concentrations of TPHC and FOG were detected in soil samples. pH was recorded at levels ranging from almost 7 to slightly over 9.	No specific conclusions provided in report.
	Area O: This area is an existing scale pit and includes equipment for weighing trailers and rail cars at the site. Construction records indicate that the pit is constructed of concrete and is 10 feet deep.	Area O: TPHC and FOG were detected in soil samples and pH was generally recorded in the 7 to slightly above 8 range.	No specific conclusions provided in report.
	Groundwater was considered of concern with regard to the southern portion of Block 1338.	**Groundwater: Installed and sampled 5 wells at the southern portion of Block 1338. Samples were analyzed for TPHC, FOG, zinc, lead, nickel, and pH. Report identifies isolated incidences of elevated TPHC concentrations and notes that higher concentrations are away from the production areas of this portion of Block 1338. Elevated concentration of lead and zinc. One monitoring well, PG-PA-MW-10D was included within The Operable Unit 2 report.**	**States that the presence of TPHC in wells upgradient of production areas suggests that contaminants may be from off -site sources. State that TPHC has had a limited impact on groundwater. Overall Remedial Approach included in report states that the tar-like material with elevated levels of TPHC may be impacting groundwater.**

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Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results(2)	Report Conclusions
Final Report Soil and Groundwater Environmental Investigation, Tax Block 1338N, Dames & Moore, April 20, 1992	This report presents investigative actions performed at two AOCs: Area L Filled Area (southeast of Building #64) and Area Q2 Former Scale Pit located at the northern portion of Block 1338. The report indicates that paints and solvents were likely used in refurbishing operations at an old copper shop. Recent operations are identified as warehousing in Buildings #80, #60, #67N and #67S.	Investigation included the installation and sampling of soil borings and wells. Also performed a geophysical survey to identify USTs. The survey is not successful due to metallic interference from railroad tracks, metal piping, etc. Groundwater at the portion of the site occurs at 5.5-8.5 feet bsg and primarily in miscellaneous fill. Groundwater flow is reported to be to the southwest.	No remedial action is proposed to address either AOC or the northern portion of Block 1338.
	Area L: A sludge pond is reported to have been located south of Building #67 and southeast of Building #64. The report indicated that investigation was necessary to evaluate the type of materials utilized to fill the sludge pond. Also, investigation efforts were undertaken to evaluate impacts from a copper shop.	Installed and sampled two soil borings and a monitoring well. Some petroleum staining of soil is noted in one boring. The report references the recording of elevated pH levels in soil samples.	The report concludes that the investigation did not identify impacts to the area from former uses and did not support that the areas had been used as a sludge pond. Also concludes that the elevated pH may be associated with caustics.
	Area Q2: A truck scale was previously operated at the area west of Building #60. The scale is reported to be constructed of concrete.	Results do not identify the presence of TPHC or FOG and pH was recorded in the 6 to 8 range.	No remedial action is proposed based on analytical results.
	Groundwater was considered an area of concern with regard to the northern portion of Block 1338.	Wells were installed and sampled. TPHC and FOG were not detected at elevated concentrations in groundwater. Nickel, lead and zinc were detected in one site monitoring well (GW-5) from this area.	No remedial action proposed for groundwater.

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Summary of Historical Environmental Reports and Information
Site 2A/2B: HHMT - Port Ivory Facility[1]

Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results[2]	Report Conclusions
Results of Sampling for Toluene and Metals, Recon Systems, Inc., December 11, 1992	**The report presents and summarizes sampling performed to delineate toluene and TPHC contamination in groundwater and to supplement a previously completed feasibility study.**	**In December 1992 samples were collected from 10 wells: GW-7, GW-10,** GW-11R, **GW-12, GW-14,** GW-17, RS-1, CS-3, Code Well and MW-5 (across Richmond Terrace). **Samples from 5 wells (GW-10,** GW-11R, RS-1, Code Well and MW-5) **were analyzed for VO. Field measurements (pH, temperature and conductivity) were recorded for all 10 wells and dissolved oxygen was recorded for five wells.**	**This report concludes that this round of sampling confirms the results of previous sampling rounds and states that the presence of toluene will be addressed as part of the groundwater treatability study. No further action is proposed for metals as concentrations are below NYC sewer discharge levels.**
	VO analysis of groundwater samples.	**Toluene was detected in samples from 3 of the well samples tested for VO compounds.**	The report states that the December 1992 sampling round indicates that toluene contamination is centered at GW-11R.
	Metals analysis of groundwater samples.	**Samples from all 10 wells were analyzed for cadmium, chromium, copper, cyanide, lead, mercury, nickel and zinc. Low concentrations of copper and zinc are reported to have been detected in all wells. Chromium and nickel are reported to have been detected in some of the wells.**	**All concentrations of metals are reported to have been below NYC sewer discharge levels.**
	pH assessment of groundwater samples.	**The level of pH is reported to have been outside the acceptable federal drinking water range of 6.5-8.5 in four wells:** Code Well, RS-1, CS-3 and **GW-14.**	**The results are reported to confirm previous sampling rounds with regard to pH.**

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Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results(2)	Report Conclusions
Continued - Results of Sampling for Toluene and Metals, **Recon Systems, Inc., December 11, 1992**	**TPHC analysis of groundwater samples.**	**Samples from two wells, GW-12 and GW-17 were analyzed for TPHC. TPHC was detected in the sample from GW-12** and was not detected in the sample from GW-17. **(NOTE): Insufficient information was made available to identify the locations on former locations of all above listed wells. Generally, wells are/were located on the northern portion of Operable Unit 1, central portion of Operable Unit 2 and southwestern portion of Operable Unit 4.**	**The level and extent of the TPHC is reported to be consistent with results of previous investigations.**
UST Storage Tank Removal and Site Assessment Report, Recon Systems, Inc., February 19, 1993 (Draft Version)	**This report provides a summary of removal efforts for nine USTs. The report also includes an Appendix, which consists of information associated with five of the nine tank removals performed by CODE Environmental. The CODE report is listed as a separate report in this table. The Recon report also includes a letter from Recon to the NYSDEC informing them of the intended removal of three tanks (one 8,000 gallon tank at Building #20** and two 10,000 gallon tanks at Building #56), which had never been included on the tank registration for the facility. These tanks are reported to have been identified through a review of historical site plans. It appears likely that these tanks identified in the letter were removed as part of the closure effort described in this report. It should be noted that the two 10,000 gallon tanks identified in the letter to NYSDEC were the 12,500 gallons described in this report. **According to the report, a representative of the NYSDEC Water Program witnessed the closure efforts for all tanks.**	**The following USTs are reported to have been closed: one 8,000 gallon No. 6 oil UST at Building #20;** two 8,000 gallon No. 6 oil USTs and one 8,000 gallon No. 2 oil UST at Building #56; one 1,000 gallon diesel fuel UST at Building #1B (Excavation A); **one 2,000 gallon unleaded gas UST at Building #12 (Excavation B); one 3,000 gallon diesel UST at Building #32 (Excavation C); and, one 12,500 gallon No. 6 oil UST and one 12,500 gallon No. 2 oil UST at Building #32A (Excavation D). The closure included removal of tanks, removal of soil (based on field screening), the collection and analysis of post-excavation samples and the restoration of each tank area via the placement of clean fill. Some dewatering is reported to have been performed and resultant materials collected and transported from the site for disposal at an appropriate facility.**	**The report states that all accessible contaminated soil was removed from tank areas. No exceedences are reported with regard to VO compounds and only a few exceedences are reported with regard to CPAH compounds.**

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Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results(2)	Report Conclusions
***Continued - UST Storage Tank Removal and Site Assessment Report, Recon Systems,* Inc., February 19, 1993 (Draft Version) –**	**Removal of one 8,000 gallon UST containing No. 6 oil from the Building #20 Area.**	**Building #20 Excavation: A 8,000 gallon UST formerly containing No. 6 oil located in a concrete vault was removed. Based on the presence of stained soil and free product around the supply line, 200 tons of soil were removed from the tank area. Soil was excavated to groundwater but due to the proximity of the building, a portion of the vault and some contaminated soil was left in place. The matter was assigned NYSDEC Number 920-3451. Four post-excavation samples were collected from the interval immediately above groundwater and analyzed for BN+15. Analytical results revealed the presence of CPAH compounds in excess of NYSDEC standards in three of the four samples.**	**No additional actions were recommended for this area.**
	Removal of two 8,000 gallon UST containing No. 6 oil and one 8,000 gallon tank containing No. 2 oil from the Building #56 Area.	Building #56 Excavation: Two 8,000 gallon USTs containing No. 6 oil and one 8,000 gallon UST containing No. 2 oil were removed. Based on the presence of stained soil and oil sheen on the groundwater, 325 tons of soil were removed from the tank area. Due to the presence of electric lines, some contaminated soil was left in place. The matter was assigned NYSDEC Number 920-3754. Six post-excavation samples were collected from the interval immediately above groundwater and analyzed for BN+15. Analytical results from the sample collected below the electric line revealed the presence of CPAH compounds in excess of NYSDEC standards. BN compounds were either not detected or were detected below cleanup standards in the other samples.	No additional actions were recommended for this area.

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Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results(2)	Report Conclusions
***Continued - UST Storage Tank Removal and Site Assessment Report, Recon Systems,* Inc., February 19, 1993 (Draft Version)**	Removal of one 1,000 gallon UST containing diesel fuel from the Building #1B Area.	Building #1B Excavation: A 1,000 gallon UST, containing diesel fuel was removed. Contaminated soil was encountered during the removal effort and approximately 50 tons of soil is reported to have been removed from the tank area. The matter was assigned NYSDEC Number 920-3697. Four post-excavation samples were collected from the interval immediately above groundwater and analyzed for BN+15 and VO+15. Analytical results revealed the presence of CPAH compounds in excess of NYSDEC standards in two of the four samples.	No additional actions were recommended for this area.
	Removal of one 2,000 gallon UST containing unleaded gas from the Building #12 Area.	**Building #12 Excavation: A 2,000 gallon UST containing unleaded gasoline was removed. No contaminated soil or holes were observed during the removal. Four post-excavation samples were collected (three from the excavation and one from along the supply line) and analyzed for VO. The concentrations are reported to have been below cleanup standards.**	**No additional actions were recommended for this area.**
	Removal of one 3,000 gallon UST containing diesel fuel from the Building #32 Area.	**Building #32 Excavation: A 3,000 gallon UST enclosed in a vault was removed and approximately 50 tons of soil were removed from the tank area. The matter was assigned NYSDEC Number 920-3697 (same number as Building 1 Excavation). The excavation was extended to groundwater and is reported to have been limited by the presence of an electric line along the eastern portion of the tank area. Two post-excavation samples were collected from the interval immediately above groundwater and analyzed for BN+15 and VO+15. No targeted BN or VO compounds were detected. Low concentrations of VO TICs were detected.**	**No additional actions were recommended for this area.**

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Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results[2]	Report Conclusions
Continued - UST Storage Tank Removal and Site Assessment Report, Recon Systems, Inc., February 19, 1993 (Draft Version)	Removal of one 12,500 gallon UST containing No. 6 oil and one 12,500 gallon UST containing No. 2 oil from the Building #32A Area.	Building #32A Excavation: Two 12,500 gallon USTs were removed and approximately 75 tons of soil were removed from the area surrounding the tank. The matter was assigned NYSDEC Number 920-4269. The excavation was extended to groundwater and is reported to have been limited by the presence of buildings on three sides and an electric line. All accessible contaminated soil is reported to have been removed. Four post-excavation samples were collected from the interval immediately above groundwater and analyzed for BN+15 and VO+15. No targeted BN compounds were detected. Low concentrations of target VO compounds, below regulatory levels, were detected in one sample.	No additional actions were recommended for this area.

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Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results(2)	Report Conclusions
Site Assessment Summary Report Closure of Underground Storage Tank Systems, **CODE Environmental Services, September 1992 (included in Appendix 1 of Recon UST Report, dated February 19, 1993)**	**This report provides a summary of the removal efforts undertaken for 5 USTs:** one 1,000 gallon UST formerly used to store diesel oil; **one 2,000 gallon UST storing gasoline; one 3,000 gallon UST containing diesel oil; one 12,500 gallon UST containing fuel oil; and one 12,500 gallon UST containing fuel oil. This report references a different sampling regime than described in the February 1993 Recon report. The report identifies a closure approval dated June 22, 1992. This report is provided as an appendix to the February 1993 Recon report.**	Tanks and impacted soil, if any, were removed from five site locations in June/July 1992. One 1,000 gallon steel tank formerly used to store diesel fuel was removed. Approximately 160-170 gallons of diesel fuel and sludge present in the vault encasing the UST were removed and drummed for disposal. Samples are reported to have been collected from the sides and bottom of the excavation and analyzed for TPHC. **One 2,000 gallon steel tank located at Building #12 and used to store gasoline was removed. The tank was encased in concrete with concrete and soil overlying same. Samples are reported to have been collected from the sides and bottom of the excavation and analyzed for TPHC and BTEX. The NYSDEC ordered the excavation backfilled in July 1992.** **One 3,000 gallon steel tank located at Building #32 and used to store diesel fuel was removed. During excavation activities, it was determined that a leak from the feed lines had impacted surrounding soil. The NYSDEC was notified (920-3697) of the discharge and the excavation was backfilled at the direction of the NYSDEC No reference to sampling is included in the discussion.** **Two 12,500 gallon steel tanks, one used to store No. 2 fuel oil and one used to store No. 6 oil, were removed. The tanks were encased as well as being horizontally cross-braced with large steel I beams. The No. 6 oil tank was grouted and embedded in the building abutment.**	No conclusions were provided in the report. results? ← ?

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Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results(2)	Report Conclusions
Area F Soil Remediation Report, Recon Systems, Inc., March 16, 1993	This report describes soil excavation and sampling performed to address previously delineated PCB contamination in soil at Area F. The report states that Area F was first identified as an area of concern during a SI performed by Dames & Moore and subsequently the extent of the PCB contamination was delineated through a soil boring investigation performed by Recon in 1992. A report documenting the delineation activities is reported to have been prepared and submitted to P&G in June 1992.	Excavation activities were performed in February 1993. The excavation boundaries are reported to have been based upon the results of a soil boring investigation performed in 1992 and to have been centered about sample FB-3 which reported the highest PCB concentration of 150 ppm. The excavation was extended to a depth of approximately 3 feet bsg. Approximately 150 cubic yards (221 tons) of soil was excavated and nine post-excavation samples were collected from the resultant excavation area. PCBs were either not detected or were detected below the minimum detection limit in 5 samples. Detectable levels of Aroclor-1254 were identified in the remaining four samples with the highest concentration recorded at 0.49 ppm, below the NYSDEC standard for PCBs of 1 ppm.	No further action was proposed for Area F.
Site Assessment, Soils Delineation and Impact to Groundwater in Area K at the Port Ivory Facility, Recon Systems, Inc., October 15, 1993	Report describes a groundwater investigation undertaken to determine if groundwater in monitoring wells near Area K (GW-16 and 1) had been impacted. The report states that soil investigations performed by Dames & Moore and Recon identified TPHC, VOCs and BNs in soil samples from Area K. This report references a November 1992 report by Recon Results of Soil Investigation in Areas F and K. This report was not provided for HMM's review. However, the October 1993 report states that the 1992 report provides a summary of delineation efforts at Area K. The delineation efforts at Area K are reported to have included 54 test pits, field screening and collection/analysis of 17 soil samples. The effort revealed the presence of "elevated" levels of TPHC in soil samples collected from areas exhibiting a black tar-like substance. The October 1993 report reiterated the conclusion of the 1992 report and stated that the noted hydrocarbons were likely to be immobile due to their high viscosity but indicated that a groundwater investigation was necessary to confirm this conclusion.	In December 1992, Recon obtained samples from wells GW-16 and GW-1. Samples were analyzed for PP+40 including cyanides and phenols. Analytical results are reported to have been below NYSDEC action levels except for cyanides, 2(1,1-dimethyl)phenol, arsenic, chromium, copper, lead and zinc. The levels of the above listed contaminants are reported to have been within one order of magnitude of corresponding NYSDEC action levels. To confirm results, the wells were re-sampled in March 1993 for cyanide, arsenic, chromium, copper, lead and zinc. Analytical results revealed similar levels of the noted contaminants.	The report asserted that residential exposure from the subsurface contamination would be minimal so long as the soil was not disturbed. Also, stated that soil bound hydrocarbons have not impacted groundwater at this portion of the site. Further, states that the metals in groundwater may be from fill rather than industrial activities. No further action is proposed for groundwater since it is not used for potable purposes.

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Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results(2)	Report Conclusions
Environmental Site Assessment Summary Report of Tax Block 1400, Recon Environmental Group, October 18, 1994	According to this report, environmental due diligence studies were performed to characterize environmental conditions of this parcel and that all issues have been addressed at this parcel. The report states that P&G has completed several projects to eliminate site contamination and that the one remaining active project is a groundwater remediation project which is described in this report. The report indicates that the proposed groundwater recovery system would induce a constant flow across the site thereby mobilizing compounds that are adsorbed to soil. These mobilized compounds can be recovered and treated thereby remediating soil.	The previously identified concerns and response actions, as presented and described in this report, are as follows: **Bridge Creek Calcium Deposits**; **Former Raw Product and By-product AST Areas; Wastewater Treatment; Drum Storage;** Former Rosin Storage Area; **Representative Railroad Switch and Equipment Areas; Product Unloading Areas; Closure of UST Systems**; Wood Yard; **Building 20;** and **Groundwater Sampling and Analysis.**	**Groundwater remediation is the only proposed action.**
	Bridge Creek Calcium Deposits	**Two investigations were performed to determine the sources and extent of the white precipitate in Bridge Creek. Studies involved sediment and groundwater sampling and analysis. Results of both studies revealed high pH levels and the conclusion was that the material was calcium carbonate.**	**This report states that the high pH will be addressed through the proposed groundwater remediation program.**
	Former Raw Product and By-product AST Areas	**Three AST Areas** (*Areas A*, **B** *& C*) **were investigated by Dames & Moore in 1992. Each area is reported to have been investigated with soil borings and at least one monitoring well. Analytical results from soil samples are reported to have indicated levels of FOG, TPHC, pH and zinc. Groundwater results are reported to have indicated elevated levels of FOG, TPHC, pH, zinc and lead. All ASTs are reported to have been removed. This report also comments that a UST used to hold toluene near Area C was closed in-place and filled with concrete in 1989.**	**The report states that elevated concentrations of contaminants in groundwater will be addressed through the proposed groundwater remediation program.**

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Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results(2)	Report Conclusions
Continued - Environmental Site Assessment Summary Report of Tax Block 1400, **Recon Environmental Group, October 18, 1994**	**Wastewater Treatment Drum Storage**	**The S&S Fat Trap (Area E) handled wastewater from the hydrolyzer building. Soil borings and a well were installed at this area. Analytical results revealed the presence of elevated concentrations of FOG, TPHC, nickel and zinc.**	**The report states that elevated concentrations of contaminants in groundwater will be addressed through the proposed groundwater remediation program.**
	Drum Storage	*Area F1 (Spent Nickel Catalyze Drum Storage Area)* and **Area F2 (Waste Oil Drum Storage Area)** were evaluated through the installation and sampling of soil borings and wells. Analytical results from Area F1 revealed the presence of elevated levels of pH, TPHC, FOG, zinc and PCBs. **Analytical results from Area F2 revealed elevated levels of FOG and TPHC.** Additional sampling was performed to delineate the extent of the PCBs detected in soil at Area F1. Subsequently, soil excavation was performed to address the PCBs.	PCB contaminated soil was removed and no further action is necessary based on post-excavation sampling.
	Former Rosin Storage Area	This area, Area H, was investigated through the installation and sampling of soil borings and a well. Elevated pH is reported to have been recorded in soil and groundwater.	This report states that the high pH will be addressed through the proposed groundwater remediation program.
	Representative Railroad Switch and Equipment Areas	**Representative railroad switch, tie and equipment (Area O) is reported to have been sampled by Dames & Moore. Reportedly, the investigation did not identify any negative impact associated with the railroad equipment.** **The specific sample location was not identified.**	**No actions are proposed for railroad equipment on this parcel.**

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Continued - Environmental Site Assessment Summary Report of Tax Block 1400, **Recon Environmental Group, October 18, 1994**	**Product Unloading Areas**	**Concrete lined pits which have been filled in and capped with asphalt or concrete were formerly used for unloading raw product from tankers and rail cars. These pits were evaluated through the collection of soil samples. Analytical results indicated elevated levels of FOG and pH.**	**Conclude that induced groundwater flow from the groundwater treatment system will remediate these soils.**
	Closure of UST Systems	**The report states that Recon and CODE supervised and documented the decommissioning of the following USTs:** 1,000 gallon diesel (B1B), **2,000 gallon gasoline (B12), 3,000 gallon diesel (B32), 12,500 gallon #2 (353) 12,500 gallon #6 (354) and a 8,000 gallon #6 (Building #20). Impacted soil is reported to have been removed from the former** *B1B*, **B32, 353, and 354 and some impacted soil is** reported to have been left in place adjacent to Buildings #20, #32, #32A and #56 due to the presence of buildings and/or utilities.	**Conclude that no further action is necessary given that the source(s) and the majority of the contaminated soil was removed.**
	Wood Yard	Historical maps are reported to identify a 1 to 2 acre wood yard which had contained a coal gasification raw material storage area prior to the 1950s. This is reported to be discussed in a 1991 McLaren Hart report which was not provided to HMM during the document review. The area is reported to have been investigated to determine if any coal tar residue had impacted soil or groundwater. The investigation revealed elevated levels of TPHC, VO and BN in soil and TPHC, BN and phenols in groundwater.	Groundwater quality will be addressed in the proposed groundwater remediation program.

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Continued - Environmental Site Assessment Summary Report of Tax Block 1400, Recon Environmental Group, October 18, 1994	Building #20	Building 20 is reported to have been utilized as a locomotive repair shop. Analysis of samples from the stained soil floor indicated elevated levels of TPHC, VO, BN, metals and low levels of PCBs. A McLaren Hart report (1992) is reported to have concluded that the sampling results did not contain any contaminants above cleanup guidance values or that would pose a threat to human health. The 1992 McLaren Hart report was not provided to Killam during the document review.	No actions were proposed for this area.
	Groundwater Sampling and Analysis	Floating product is reported to have been observed on the water surface of wells on Block 1400 and elevated levels of pH are reported to have been recorded with regard to groundwater samples. Reportedly, Dames & Moore and McLaren Hart recommended a groundwater investigation and remediation program (free-phase product removal and pH neutralization) and, Recon performed an investigation which included testing to delineate the high pH, toluene and product plumes on this parcel and a pump test to evaluate hydraulic parameters for use in a preliminary design.	Conclude that groundwater remediation (coalescing oil/water separator, air stripper and acid addition to address TPHC, toluene and high pH) is warranted.

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	Groundwater Contamination	Groundwater remediation: This report states that Recon was going to develop a preliminary treatment design to be utilized in permit negotiations with New York City. The proposed design scheme was to include 10 recovery wells pumping water to 3 input wells in the treatment system. Water from three wells contaminated with TPHC was to be pumped to an oil/water separator and water from the two wells exhibiting elevated levels of toluene was to be pump to an equalization tank. The effluent from the oil/water separator and the air stripper was to be mixed, in an equalization tank, with water from the wells from the area with high pH. From the equalization tank, the water was to be pumped to an existing pH control system. An inline static mixer was to be added along with an acid addition system as the primary pH control and the existing pH control system was to be used as a backup. It was proposed to discharge the treated effluent to the sewer.	Report concludes that groundwater remediation is needed to address TPHC, toluene and pH.

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Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results(2)	Report Conclusions
Landfill Closure Construction Certification Report, Levine-Fricke-Recon (LFR), July 18, 1997	Documents the field procedures implemented to achieve physical closure of the P&G landfill in accordance with 6 NYCRR Part 360 and the landfill closure plan dated January 1997. This report also includes permits, correspondence, disposal documentation and cover material certification associated with the landfill closure. The report states that P&G previously demonstrated the non-hazardous condition of the landfill and, as allowed on a case-by-case basis, P&G had demonstrated that specific landfill closure requirements in Section 360-2.15 Landfill Closure and Post Closure Criteria were not applicable. Therefore, NYSDEC is reported to have addressed the closure according to Section 360-2.14 Industrial/Commercial Waste Monofills which allows for closure requirements to be modified based on pollution potential of waste.	The approved closure activities included site clearing to remove surface debris, brush clearing, placement of one foot of cover and the establishment of vegetation. Materials removed from the landfill area included the following: scrap metal, tires, telephone poles, railroad ties, vegetative debris and one box of sharps.	No additional actions are proposed for the landfill with the exception of the post-closure groundwater monitoring and maintenance.
Landfill Cover Maintenance Manual and Groundwater Monitoring Plan, LFR, April 14, 1998	Describes maintenance and groundwater monitoring for closure of the C&D Landfill located on Block 1309. This report provides maps which depict the landfill area, the locations of 7 wells and groundwater contours.	No investigative actions are included in this report. The report sets forth a five year sampling and maintenance program including all 7 monitoring wells (MW-1,2,3,4,5,6 and DW-1) located within the landfill. The proposed maintenance plan includes a semi-annual inspection to ensure the integrity of soil cover and vegetation.	No conclusions are provided in this report.
Landfill Closure Plan, LFR, April 14, 1998	This report documents the closure of the landfill at the Port Ivory facility in accordance with NYCRR Part 360. The report states previous investigation(s) revealed that soil and groundwater are free of significant contamination and therefore do not pose a threat to human health or the environment.	No activities performed in conjunction with this report.	Closure will include a deed restriction

Table 2
Summary of Historical Environmental Reports and Information
Site 2A/2B: HHMT - Port Ivory Facility(1)

Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results(2)	Report Conclusions
Update on the Report on the Recommended Treatment System for Groundwater Contaminated with NAPL, Toluene and High pH, Recon Systems, Inc. March 28, 1995 *Amendment to Remove Economic Information*, May 13, 1999	The report presents updated information pertaining to the proposed treatment system for groundwater contaminated with NAPL, toluene and high pH.	The report does not include any additional testing activities. Rather, the report provides an updated design based on data generated since issuance of previous design report in 1993. The changes to the design system include fewer recovery wells due to a reported NAPL dissipation (one area of concern remaining) and diminished extent of the high pH area as well as increased water hardness.	The report concludes that recent sampling results necessitate revision to the previously described treatment system. The revised design calls for fewer recovery wells, elimination of the oil/water separator , addition of a sludge thickening system (if needed due to recent high hardness measurements) and a scaled down stripper system. Also, economic information is referenced as having been removed from this report.
Investigation of Calcium Deposits, Blasland, Bouck & Lee, September 1999	According to this report an area on the western side of the site, along Bridge Creek, was formerly occupied by calcium carbonate drying beds. In addition, several ASTs containing caustic materials were located approximately 250 feet east of Outfall G. White precipitate is reported to have been noticed several times along the banks. In response to the noted precipitate, P&G is reported to have initiated a pH level monitoring program. The purpose of this investigation was to identify and map the extent of the precipitate occurrences in Bridge Creek and attempt to determine the source area of the precipitate.	The investigation/study included the following: collection and analysis of sediment samples from the bed of Bridge Creek; collection of water samples from selected outfalls that intermittently discharge to the creek; installation and sampling of 7 wells; water table measurements hydraulic conductivity testing; hydrochemical sampling (pH, conductivity and temperature); and review of previously recorded pH values. Samples collected as part of this investigation were analyzed for indicator inorganic constituents (chloride, sulfate, nitrate, fluoride, chromium, arsenic, barium, cadmium, calcium, cyanide, iron,	The report concludes that groundwater with an elevated pH exists over much of the study area and that the flow of the high pH groundwater through the subsurface lime deposits has resulted in the dissolution of the deposits and the release of calcium products.

Table 2
Summary of Historical Environmental Reports and Information
Site 2A/2B: HHMT - Port Ivory Facility[1]

Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results[2]	Report Conclusions
		lead, manganese, mercury, copper, silver, sodium, zinc and selenium). The report also includes calculations estimating potential rate of discharge to groundwater into Bridge Creek. Two areas of elevated pH were identified through this study, Outfall G Area and an area 500 feet north of Outfall G. The second area is presumed to be associated with a groundwater seepage point. The levels of pH recorded between 1986 and 1989 were generally similar. Investigation revealed that pH of Bridge Creek was historically elevated and that the levels had been declining since 1985/6 due to a delayed response to the installation of an underground piping system at the AST area in 1984. Given the similarity in pH levels between 1986 and 1989, it was concluded that the precipitate either stabilized or is forming at a slow rate.	The discharging of this calcium enriched groundwater into surface water exhibiting a lower pH may cause the precipitation and deposition of calcium salts. Furthermore, the soils and groundwater reflect many of the chemical parameters indicative of the saline to brackish waters natural to Bridge Creek.

NOTES:

(1) Information provided in this table is as presented in the listed reports.

(2) Activities and results are as described in the reports. All activities were performed by or on behalf of P&G.

A summary of the listings as well as commentary regarding the basis for the listings, as feasible and appropriate, is provided in Table 3. It should be noted that HMM contacted the NYSDEC with regard to the site's inclusion on the NYSDEC Inventory of SHWS. Based on the discussion, it was determined that the site had been included on the SHWS Inventory based on the presence of a "potential" C&D landfill situated on Future Site 4. As P&G characterized and closed the C&D landfill in accordance with NYSDEC regulations, it did not appear appropriate for the site to be included in the SHWS inventory based on the criteria for that database. As such, HMM requested that NYSDEC provide written confirmation of the delisting of the subject site from the NYS database. A copy of the correspondence issued by the NYSDEC was included in Appendix A of the Site 1 Report.

The NYSDEC LTANKS List includes listings for five UST removals within Site 2A. No USTs are reported to have been present at Site 2B. The tank removal efforts at Site 2A were performed by P&G, several years before the transfer of ownership to the Port Authority. The locations of the former USTs are as follows: east of Building 20 (case number 920-3451); south of Building 12 (no case number); east of Building 32 (case number 920-3697), and two USTs located east of Building 32A (case number 920-4269). The UST in the vicinity of Building 20 had a capacity of 8,000 gallons, contained #6 heating oil and was situated within a concrete vault. Approximately 200 tons of soil is reported to have been removed from the tank area to address impacted soil. Soil is reported to have been excavated to the groundwater table; however, due to the proximity of Building 20 a portion of the vault and some contaminated soil was left in place. A 2,000 gallon unleaded gasoline UST was removed from the Building 12 Area. No discharge or impacted soil is reported to have been observed at this area. A 3,000 gallon UST containing diesel fuel was removed from the Building 32 Area and two USTs, (one 12,500 gallon UST containing #6 oil and one 12,500 gallon UST containing #2 oil), were removed from the Building 32A area. As the UST removals were reported to have been performed in accordance with NYSDEC procedures and with NYSDEC oversight, as appropriate, no additional investigative efforts were included in the SI. Please note, a discussion of former UST issues is provided in Section 4.2.1. The inclusion of the subject site on the remainder of the above listed databases will be addressed as part of overall HHMT-Port Ivory Facility redevelopment.

*A
UST
@
2A

4.2 Sampling Program

The AOCs identified at the site through performance of the Phase I ESA are as follows: USTs, Fill Material, Previously Identified Soil and Groundwater Contamination (i.e., AOCs identified and investigated by P&G and described in environmental reports prepared for P&G), the Closed C&D

Table 3
Summary of Environmental Database Listings
Site 2A/2B: HHMT - Port Ivory Facility

Database	Database Date	Additional Information
USEPA, Resource Conservation Recovery Information System (RCRIS) Facilities - Large Quantity Generators (LQG) List	*December 12, 1999*	*The subject site is listed on the USEPA, RCRIS Facilities - LQG List dated December 12, 1999. Review of this site listing notes that P&G is permitted as a LQG (Record Date August 13, 1980) and assigned USEPA ID Number NYD000249961. One violation appears to be associated with this site listing and is associated with the requirements Compliance Evaluation Inspection. P&G is reported to have complied with these requirements on September 25, 1986. Based on review of the site listing, it appears that no outstanding violations are associated with the site's listing as a LQG.*
The NYSDEC Inventory of Hazardous Disposal Sites (SHWS) List	*April 1999*	*The subject site's inclusion on NYSDEC, HSWDS List dated April 1999 is associated with the presence of the C&D Landfill on Block 1309. This listing also identifies that P&G maintains an USEPA Identification Number NYD980507537 and operates a wastewater treatment system to control pH in the sanitary waste stream. After some acidulation occurs, the sludge from the treatment system is reported to be removed from the subject site. No other off-site disposal activities are identified in this listing. The listing comments that the abandoned landfill reported to be on-site does not have a liner or a leachate collection system and that P&G disposed of wastes, generated from their manufacturing processes, on-site. A consent order, executed in March 1992, is identified in this listing. Further, the consent order is reported to have required site investigation and closure (in accordance with Part 360) of the landfill. This investigation is reported to be currently under review. Although information provided by representatives of DEC have confirmed that the landfill was closed in accordance with prevailing regulations and that the case is considered closed by the Department. Post-monitoring requirements were performed by P&G and are currently being performed by the Port Authority. HMM has contacted the NYSDEC regarding the site's inclusion on this list and has been informed that the site should no longer be included in the SHWS Inventory. At the request of HMM, the NYSDEC has issued a letter stating that the site should be de-listed.*
NYSDEC, Petroleum Bulk Storage Database (UST) List	April 2000	**The listing identifies three USTs (PBS Number 2-600767) formerly located on the subject site. One 8,000 gallon and two 10,000 gallon USTs containing 1,2 or 4 fuel oil are reported to have been closed/removed in August 1992. Tanks are reported to have been constructed of steel/carbon and associated piping is reported to have been constructed of steel/iron.**
NYSDEC, Chemical Bulk Storage Database (CBS UST) List	*January 2000*	*This listing notes that P&G formerly utilized one 10,000-gallon UST, was registered under CBS Registration Number 2-000128, for the storage of toluene. The tank is reported to have been installed in January 1950 and its current status is noted as "temporarily out of service/closed-in place". No date for the closing of the tank was*

Table 3
Summary of Environmental Database Listings
Site 2A/2B: HHMT - Port Ivory Facility

Database	Database Date	Additional Information
		provided in the EDR Listing. The tank and piping are reported to be constructed of steel/carbon steel and situated within a secondary containment vault. According to P&G, contamination was identified in conjunction with the former toluene tank area. Please note, the toluene tank was not specifically evaluated as part of the site investigation since P&G indicated it was a closed issue with the NYSDEC. However, investigation actions were performed in the vicinity of the former toluene tank.
NYSDEC, Chemical Bulk Storage Database (CBS AST) List	January 2000	This listing notes the subject site formerly maintained nine ASTs under CBS Registration Number 2-000128. All tanks are reported to have been closed.
NYSDEC, Major Oil Storage Facilities Database (MOSF UST) List	**January 2000**	**This listing notes the subject site formerly maintained eight USTs under MOSF Facility Identification Number 2-2160. The facility status is listed as inactive. The tanks ranged in size from 550 gallons to 12,000 gallons and all are reported to have contained petroleum products (fuel oil, diesel or unleaded gasoline). The listing indicates that all of the USTs were removed with NYSDEC oversight and does not identify any outstanding required actions.**
YSDEC, Major Oil Storage Facilities Database (MOSF AST) List	*January 2000*	*This listing notes the subject site formerly maintained five ASTs under MOSF Facility Identification Number 2-2160. The facility status is listed as inactive. Three tanks with capacities of 550, 275 and 250 gallons are reported to have contained diesel fuel and two tanks, each with a capacity of 420,000 gallons are reported to have contained No. 1, 2 and 4 fuel oil.* ?
USEPA Facility Index System (FINDS) List	October 1999	*The FINDS List typically contains "pointers" and information indicating that the site is listed on other database sources within RCRIS. Review of this site listing notes other pertinent environmental site listings to include listings on the Aerometric Information Retrieval System , Facility System (AIRS/FS), Enforcement Docket System (DOCKET), National Compliance Database (NCDB) and Section Seven Tracking System (SSTS).*
NYSDEC Spills Information Database (Spills) List	January 2000	*The site is listed on the NYSDEC SPILLS three times. The first case, Spill Number 8907474, is associated with a discharge that occurred on October 26, 1989. The spill is reported to be associated with the detection of toluene contamination discovered during the analysis of soil samples obtained from the toluene tank area during closure of the UST. The listing identifies that the NYSDEC was informed of the discharge and that this agency closed the spill case citing that same did not pose an immediate danger to health and the environment; the spill case was closed on August 14, 1990. The listing comments that P&G asserted that the contamination was confined to an upper aquifer situated on top of a limestone layer. The second spill, Spill Number 8605160, occurred on November 28, 1986 and involved the discharge of an unreported amount of an unreported material from a vessel into the Kill Van Kull. A cleanup contractor is reported to have been called to the site and handled the*

Table 3
Summary of Environmental Database Listings
Site 2A/2B: HHMT - Port Ivory Facility

Database	Database Date	Additional Information
		remediation of same. The spill case was closed by the NYSDEC on November 28, 1986. The third spill, Spill Number 8906834, was noted to be associated with a simulated exercise involving P&G, the New York City Police Department and the NYSDEC conducted on October 12, 1989. No actual materials are reported to have been discharged to environmental media. The spill case was closed the same day. As all three of the above spill cases were reported to the NYSDEC, investigated by same and eventually closed by this agency, no site investigation activities appear to be warranted with regard to the spills. Please note, this workplan includes the performance of investigative activities in the area of the former toluene tank.

Notes: Database information is provided in an electronic database search, performed by EDR in May 2000.

Landfill, Railroad Tracks and Sidings, Surface Staining, Pits and Drains, Former Structures, Listing of the Site (P&G Port Ivory Facility) in Environmental Databases, Area Sites of Concern (i.e., sites of known environmental concern in the vicinity of the subject site), Wetlands, Asbestos-Containing Materials, and Lead-Based Paint. The objective of the investigative/sampling effort was to develop a better understanding of year 2000 site conditions, including levels of contaminants present in various environmental media (soil, groundwater, sediment and surface water). A description of the individual AOCs present within the limits of Site 2A/2B and the investigative actions proposed to evaluate each AOC are provided in the following sections. In addition, descriptions are provided for site-wide AOCs to the extent that such are relevant to Site 2A/2B. Please note, no investigative efforts were included for three AOCs identified in the Phase I ESA: (1) Area Sites (i.e., sites of known environmental concern in the vicinity of the subject site); (2) Wetlands; and, (3) Asbestos-Containing Materials/Lead-Based Paint. The Port Authority will be addressing these items in conjunction with design and site development. In addition, the Port Authority has addressed issues associated with the site's inclusion in environmental databases as part of the overall acquisition of the property. Further, no efforts were undertaken for the Closed C&D Landfill since this AOC is not related to Site 2A/2B.

The SI for soil included the collection of discrete 6-inch samples and, to the extent possible, the SI soil boring and well locations were biased toward areas exhibiting indications of contamination and sample selection was based upon the results of field screening with a bias toward the interval(s) exhibiting indications of contamination. The SI also included the collection and analysis of soil samples from beneath the water table due to unique strata identified only below saturated depths at certain locations.

4.2.1 USTs

According to P&G, no active USTs or oil/water separators were present at the HHMT-Port Ivory Facility site in 2000. However, USTs were formerly utilized at the subject site to store toluene and various petroleum products including ethanol, diesel fuel, No. 2 fuel oil, No. 6 fuel oil and unleaded gasoline. P&G also utilized grease traps and oil/water separators in process operations. The environmental database report indicates that P&G closed or removed eight USTs containing various fuel products; five of these tanks were located at Site 2A. Based on the information in reports provided by P&G, five USTs were removed (12,500 gallon #2 oil; 12,500 gallon #6 oil; 8,000 gallon #6 Oil; 2,000 gallon unleaded gasoline: and a 3,000 gallon diesel) from Site 2A (by P&G). According to P&G, the tank closures for Site 2A were performed in accordance with NYSDEC regulations and with NYSDEC oversight, as appropriate. A summary of the tank information included in the database report for the HHMT-Port Ivory

Facility is provided in Table 3. In addition, UST removal/closure efforts undertaken for tanks located at Site 2A are described below. Information provided in P&G reports is presented in Table 2. Given that the removal/abandonment actions were performed with NYSDEC oversight, no SI actions were proposed for soil at the former UST areas. However, the site-wide groundwater investigation included a review of groundwater quality at locations throughout Site 2A.

Former Tank Areas

- Building 20: One concrete vaulted 8,000-gallon UST containing #6 oil was removed from the area east of Building 20. The presence of stained soil was observed during the tank removal and was addressed through the removal of approximately 200 tons of impacted soil from the tank area. NYSDEC assigned case number 920-3451 to the closure/removal effort. Due to the proximity of the tank to the foundation of Building 20, some impacted soil and a portion of the containment vault were left in place. Four post-excavation samples were collected from the 0-6 inch interval above the groundwater table and analyzed for BN+15. Analytical results revealed the presence of CPAH compounds in excess of NYSDEC standards (NYSDEC Standards/guidance in place at the time of removal) in three out of four samples. The excavation is reported to have been backfilled with clean soil. *

- Building 12: One 2,000-gallon steel UST containing unleaded gasoline was removed from the area south of Building 12. No contaminated soil was observed during the tank removal and no holes were observed in the tank upon it removal. Post-excavation samples confirmed concentrations below applicable cleanup standards. The P&G report did not recommend any additional efforts with regard to the tank removal. The excavation was backfilled with clean soil.

- Building 32: One 3,000-gallon concrete vaulted UST containing diesel fuel was removed from the area east of Building 32. Approximately 50 tons of soil was removed from the area surrounding the UST based upon visual signs of staining. The closure was assigned case number #920-3697. The excavation was extended to the groundwater table to address impacted soil. However, remedial efforts were limited due to the proximity of underground utilities along the eastern sidewall and building foundations. Two post-excavation samples were collected from the 0-6 inch interval above the groundwater table and analyzed for volatile organics compounds (VOCs) and semi-volatile organic compounds (SVOCs). No contaminants are reported to have been detected at concentrations in excess of NYSDEC standards. The excavation was backfilled with clean soil.

- Building 32A: Two 12,500-gallon USTs were removed east of Building 32A. One UST was utilized for the storage of #6 oil and the other was utilized to store #2 oil. Approximately 75 tons of soil were removed from the area surrounding the USTs to address visually impacted soil. The closure was assigned case number #920-4269. The excavation was extended to the groundwater table to address visually impacted soil. However, remedial efforts were limited due to the presence of building foundations and underground utilities. All accessible impacted soil was reported to have been removed. Four post-excavation samples were collected from the 0-6 inch interval above the groundwater table. The samples were analyzed for BN+15 and VO+15. No targeted BN compounds were detected. Low concentrations of target VO compounds, below regulatory levels, were detected in one sample. The excavation was backfilled with clean soil.

As previously presented, P&G stated that the five UST closure were performed in accordance with NYSDEC procedures and with NYSDEC oversight, as applicable. Tanks containing ethanol and enzymes were also reported to be present at Site 2A, generally at locations north/northeast of Building 13 and west of Building 31. No closure documentation was provided by P&G, however, information obtained from P&G representatives indicated that these tanks had been removed and that no discharges had been reported with respect to the tanks. Based on historical mapping, it appeared that the locations of the tanks might correspond with one of the potential UST Areas, UST3. Thus, the area was to be reviewed in conjunction with the UST3 Area investigation described below.

In addition to "known" former tank areas, HMM's review of reports and Sanborn Maps revealed the potential for additional USTs to be present at nine (9) locations across the entire site (UST1-UST9). Four of the potential tank areas, UST1, UST3, UST4 and UST7 were identified at Site 2A. Therefore, based on available information, it was proposed to perform a ground penetrating radar (GPR)/electromagnetic (EM) survey at each of the nine potential UST areas (multiple tanks were identified at five of the nine potential tank areas). The proposed SI also included the installation and sampling of soil borings at areas where the GPR/EM survey identified potential tanks. The need to perform laboratory analyses for soil samples was to be based upon the results of field screening and the type of analysis was to be based upon former tank contents, if known. In those instances where the contents of potential tanks could not be established, it was proposed to analyze samples for total petroleum hydrocarbons (TPHC) and the target compounds list (TCL) including volatiles and semi-volatiles, target analyte list (TAL) metals, and polychlorinated biphenyls (PCBs). Although a site-wide groundwater investigation was proposed as part

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of the SI for this site (Section 4.2.9), it was proposed to perform groundwater investigation activities, as necessary, at potential UST Areas. Specifically, it was proposed to convert one soil boring per potential tank area to a temporary well, as necessary and feasible, to assess groundwater conditions in the vicinity of any identified USTs. Analysis of groundwater samples from temporary wells was to be based on former contents of the tanks. However, in the absence of such information, it was proposed to analyze groundwater samples for TPHC and TCL. The nine potential tanks areas, UST1 through UST9, are identified on Figure 6. The potential UST Areas located within Site 2A are: UST1, UST3, UST4, and UST7. The specific SI activities implemented for soil at the four potential tank areas, located within Site 2 are described in Sections 5.2 and 5.3.1.

4.2.2 Precipitate at Bridge Creek

Reports provided by P&G identified the presence of one or more types of precipitates along the banks of Bridge Creek and described various efforts (inspection of the creek bed, performance of chemical and physical testing of the noted precipitates) undertaken to evaluate the noted precipitates. Bridge Creek extends along the western border of Site 1 and the western border of the southern portion of Site 2A. The reports provided by P&G indicated that the noted material had the potential to be associated with prior filling activities at the site. The reports did not identify a significant environmental issue with regard to the presence of the precipitate. However, precipitate at Bridge Creek was included in the proposed SI to evaluate current (year 2000) conditions relative to this issue. Specifically, it was proposed to evaluate current conditions with regard to the noted precipitate through visual review and the collection and laboratory analysis of sediment/precipitate samples and surface water. The initial phase of the proposed investigation was to include a visual reconnaissance of the creek bed at both low and high tides on two separate occasions (i.e., two low tide and two high tide inspections). In addition, it was proposed to obtain representative samples of precipitate, if any, noted to be present and to obtain surface water samples from Bridge Creek to identify current (year 2000) water quality. The number and location of precipitate and surface water samples were to be dependent upon the conditions observed during the proposed visual reconnaissance. All samples, precipitate and surface water, were to be submitted for TAL Metals and pH analysis. The initial SI activities performed to evaluate this AOC are presented in Section 5.6. As precipitate was only observed at locations adjacent to Site 1, no samples were from Site 2A as part of the SI. Thus, a discussion of analytical results from the Year 2000 SI is provided in the Site 1 Report. However, additional efforts were undertaken to evaluate Bridge Creek as part of the RI for Site 2A/2B. These additional efforts were performed proximate to Site 2A and, thus, results are presented herein. Please refer to Section 8.3 for proposed remedial investigation sampling and to Section 9.3 for analytical results associated with the proposed surface water and sediment sampling at Bridge Creek.

4.2.3 Previously Identified Soil and Groundwater Contamination (P&G AOCs)

Reports provided by P&G identified numerous AOCs. Table 2, Summary of Historical Environmental Reports and Information, provides pertinent information associated with the AOCs identified by P&G. The reports identify and describe remedial efforts undertaken by P&G with regard to the following areas/issues: the C&D Landfill, the presence of PCBs in soil at Area F1, USTs and a groundwater investigation including PG-GW-1. The C&D Landfill, situated on Future Site 4 (Block 1309, Lot 10), is not included as part of the VCP Program as regulatory oversight is provided by the NYSDEC Division of Solid Waste pursuant to the landfill closure. Area F1 is situated on Site 1 and a discussion of actions undertaken by P&G at Area F1 is provided in the Site 1 Report. Overall, the reports provided by P&G identified that contaminants and/or elevated pH were detected/recorded in one or more soil and/or groundwater samples collected from the majority of these AOCs. In addition, some of the available reports commented upon the presence of black staining in the soil and free-phase floating product on the water surface in monitoring wells.

Previous reports referenced the closure and removal of underground storage tanks located site wide and specifically at Site 2A. As previously presented in this report, the closure efforts for the USTs at Site 2A include: a 10,000 gallon #6 tank (Building 20); a 2,000 gallon unleaded gasoline UST (Building 12); one 3,000 gallon diesel UST (Building 32); one 12,500 gallon #6 oil UST (Building 32A); and one 12,500 gallon #2 oil (Building 32A). Actions taken in regards to these UST areas are described in Section 4.2.1.

Except as detailed for USTs, the P&G reports do not identify or describe any remedial actions undertaken, by P&G, to address contaminants identified in soil at Site 2A; P&G did not specifically identify the presence of contamination in soil or groundwater at Site 2B. Rather, P&G asserted in reports, that the contaminants detected in soil at Site 2A, as well as the rest of the site, are relatively immobile and that residential (human) exposure would be minimal so long as the soil was undisturbed (i.e., contaminants in soil do not present a risk with regard to contact). The elevated pH levels in groundwater were attributed to certain fill material and free-phase product (free product) was attributed to prior usage of vegetable oils and other petroleum products. Overall, P&G indicated that no actions were necessary with regard to site groundwater given that groundwater was not utilized for potable purposes at the site or in the immediate surrounding area. However, a few of the reports from the early 1990s included recommendations to address product and elevated pH in groundwater at Block 1400 (Sites 1 and 2A) including the central and southern portions of Site 2A.

not on map

Given the identification of contaminants in soil and groundwater at the site and the length of time that had elapsed since P&G's investigative efforts (the majority of sampling was performed in the early 1990s), it was proposed to perform SI sampling activities for both soil and groundwater at the areas identified as AOCs by P&G. The AOC designations that are located in Site 2A are as follows: Area B, Area E, Area F2, Area P, the eastern portion of Area A, and the Rail Yard. The AOC designation that is located in Site 2B is Area Q1. The locations of the P&G AOCs are presented on Figure 6. The number of samples proposed for each of P&G's AOCs was based upon the contaminants detected during P&G's investigations, the level of completeness of reports relating to individual AOCs, historical information provided through review of Sanborn Maps and historic aerial photographs and site conditions at the time of the Phase I ESA. Please note, the identification letters/names assigned to the AOCs by P&G have been utilized in this report to provide easy reference to investigative efforts described in P&G reports. Table 2 provides a summary of information contained in previous environmental reports.

For the purposes of the SI, fill material was regarded as a separate site issue. A discussion of site-wide fill material and investigative efforts proposed to address same, as related to Site 2A/2B, are presented in Section 4.2.8. Given the presence of fill throughout the site, the SI was designed to integrate the evaluation of the fill material with P&G AOCs as well as other AOCs identified as part of the Phase I ESA.

Typically, the depth of an investigative soil boring would be based upon the type of issue(s) identified at each AOC. However, given the presence of fill material, the SI utilized all soil borings to evaluate and characterize fill material and individual AOCs. As such, the SI included the installation of soil borings to a depth of approximately 15 feet below surface grade, regardless of AOC, to evaluate fill material. This approximate depth was deemed sufficient given that no information had been obtained to indicate that contaminants at the P&G AOCs exist at depths greater than 15 feet. Although it was proposed to base the analytical suite for each AOC upon the results of field screening, it was assumed that the samples would be analyzed for TCL volatiles organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs), TAL metals, pesticides, PCBs, TPHC, oil & grease (O/G), pH, total cyanide and phenolics.

With regard to previously identified contaminants in groundwater, it was proposed to obtain and analyze groundwater samples to establish current (year 2000) groundwater quality. The groundwater component of the SI is presented in Section 4.2.9.

4.2.4 Railroad Tracks and Sidings

Visual inspection of the site identified the presence of railroad tracks and sidings. In addition, review of historical records revealed that additional tracks and sidings were formerly present at the HHMT-Port Ivory Facility. A 1994 summary report stated that some limited testing was performed to evaluate representative railroad switches, ties and equipment. The reports concluded that testing of the representative railroad equipment did not reveal any “negative impact”. However, insufficient information was provided in available reports to determine if prior evaluations adequately assessed railroad tracks and sidings. As such, it was proposed to obtain samples from locations adjacent to representative portions of the on-site railroad system to confirm that the railroad system had not impacted soil at the HHMT-Port Ivory Facility. The NYSDEC does not have an established program for the evaluation of current or former railroad systems, therefore, it was proposed to select sample locations based on current conditions as well as information presented on Sanborn Maps and aerial photographs sets.

To maximize the time and cost efficiency of the proposed sampling effort, it was proposed to integrate the sampling for this AOC with that designed for other AOCs and the site-wide fill evaluation. The SI included the installation and sampling of approximately 27 soil borings to evaluate this AOC. The sampling program established that 17 of the 26 borings proposed to evaluate this AOC would also be utilized to evaluate other AOCs. All 27 soil borings would be utilized as part of the site-wide fill evaluation.

Based on the current and former locations of railroad tracks and sidings, the SI proposed to install 12 of the 27 soil borings at Site 2A and one of the 26 soil borings at Site 2B. As previously stated, it was proposed to install all soil borings to a depth of approximately 15 feet below surface grade. The sampling proposed for this AOC included the collection of samples from a discrete 6-inch interval within the upper four feet of soil. The sampling program included an analytical suite comprised of TPHC, VO+10, base neutral (BN) compounds, PCBs and TAL metals.

4.2.5 Staining

Visual inspection of the site revealed the presence of staining adjacent to and on the soil flooring within Building 20 (Site 2A) and adjacent to Building 60B (Site 3). Based on visual observations, the proposed SI included the collection of representative samples from each visually stained area including two locations within Building 20. It was proposed to collect a minimum of one sample per stained area. It was proposed to install 5 of the 6 soil borings proposed for this AOC on Site 2A/2B. Specifically, all 5 soil borings are proposed to be installed on Site 2A. The sampling program included an analytical suite comprised of TCL volatiles organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs), TAL metals, pesticides, PCBs, TPHC, oil & grease (O/G), pH, total cyanide and phenolics.

4.2.6 Pits and Drains

Pits and drains, most sealed or filled with gravel, were noted at both interior and exterior site locations. In addition, P&G reports identified the presence of oil/water separator systems and described limited investigative efforts performed to evaluate conditions at and near oil/water separator systems. These reports identified the presence of contaminants in environmental media in samples from the oil/water separator areas but concluded that the concentrations of contaminants detected did not warrant remedial actions. Given the aforementioned, the SI included a review of pits and drains through visual inspection, as possible, as well as through the installation and sampling of soil borings.

Sampling was proposed at 28 locations at or adjacent to pits and drains identified in the field and/or through review of reports and historical information sources. Eleven soils borings were to be installed at Site 2A. It was acknowledged that it would not be possible to accomplish the proposed soil sampling at a portion of the 28 locations due to the presence of structures and utilities. As described in previous sections, it was proposed to integrate the sampling program for pits and drains with the sampling programs designed to address other AOCs and the fill evaluation. Specifically, it was proposed to utilize all soil borings for the fill evaluation and 11 of the 28 soil borings for other AOC investigations. As proposed for other AOC investigations, all soil borings were to be installed to a depth of 15 feet below surface grade as part of the fill evaluation. With regard to soil sampling for pits and drains, it was proposed to obtain representative samples from a discrete 6-inch interval within the upper six feet of the soil. Soil samples would be analyzed for TPHC, TCL, pH and oil and grease. Specific sample selection within the designated interval was to be based upon the results of field screening.

4.2.7 Former Structures

Review of Sanborn Maps and aerial photographs revealed the presence of former structures, ASTs and railroad tracks and sidings at various locations throughout the subject site. With regard to Site 2, review of historical information sources revealed the following: the presence of additional structures (buildings and tanks) at the Rail Yard; the presence of buildings and structures east and south of Buildings 12 and 13; existing buildings and structures (Building 30s and 40s); Building 100 (Furnace); and the former structure, Building S-35. In addition, review of historical information sources also revealed the presence of discolored areas, debris piles and possible fill material at various site locations. The discolored areas, debris piles and fill material are addressed under Section 4.2.8, Fill Material. Concerns associated with former railroad tracks and sidings are discussed in Section 4.2.4. The stained areas noted in Building 20 are discussed in Section 4.2.5.

Given the above, the SI included the installation and sampling of soil borings at former building and AST areas. The purpose of the sampling proposed for this AOC was to evaluate areas formerly utilized as part of process operations as identified through the presence of structures, storage areas, etc. It should also be noted that some of the P&G AOCs include areas of former structures, in particular, ASTs. Sampling efforts for P&G AOCs are described in Section 4.2.3 of this report. As with other AOCs, the sampling proposed to evaluate former structures was integrated with the proposed sampling for other AOCs and fill material. Please note, the vast majority of the sampling proposed for other AOCs represented investigation of prior activities including some type of structure (ASTs, structures, etc.). However, based on the locations of former structures and debris piles, it was proposed to install and sample nine additional soil borings to address this AOC. Three of the nine additional soil borings (FS-1, FS-2 and FS-3) were to be installed at Site 2A; the location of proposed soil boring FS-1 was located in close proximity to the boundary line between Site 1 and Site 2A. With regard to sample selection for former structures, it was proposed to obtain representative samples from a discrete 6-inch interval within the upper four feet of the soil and to analyze the samples for TPHC, TCL, pH and oil and grease. As previously stated, it was proposed to utilize all soil borings for the evaluation of site-wide fill material. Therefore, it was proposed to advance all soil borings installed to evaluate this AOC to a depth of 15 feet below surface grade. Specific sample selection within the designated interval was to be based upon the results of field screening.

4.2.8 Historic Fill Material

According to representatives of P&G and information provided in reports, P&G placed a variety of fill material at the HHMT-Port Ivory Facility to raise the grade for site development. The fill materials present at the site include non-native soil/sand, construction debris (wood, bricks, glass, concrete); ash, from the furnace operations, slag, vegetative debris; and by-products from on-site production activities (calcium carbonate, spent diatomaceous filter earth, and spent carbonaceous filter material). The specific composition of the fill is reported to vary with location. Information from P&G's investigations indicate that elevated pH as well as some contaminants detected in samples from the site, both soil and groundwater, may be attributable to the fill material. Reports provided by P&G also describe the presence of black staining at a few locations throughout the HHMT-Port Ivory Facility.

No comprehensive report has been provided which summarized the locations and concentrations of fill material, contaminants both related and unrelated to fill material, and/or the reasoning behind the occurrences of "black staining". Thus, the SI included a site-wide sampling program to assess current site soil conditions and to identify the limit(s) of fill material. As the NYSDEC guidance documents do not provide sampling frequency and/or analytical requirements for the investigation of fill, the sampling program referenced the New Jersey Department of Environmental Protection (NJDEP) program for general guidance.

The NJDEP has stipulated a minimum frequency of four samples per acre to establish the presence of fill material. However, the NJDEP guidance documents recognize that on larger sites a lower frequency of samples provides sufficient site coverage with regard to the evaluation of fill. In most cases, the NJDEP has accepted a sampling frequency of one sample per acre at larger sites. Given the number of soil borings being installed to evaluate other AOCs and the intent to utilize all of these borings for information pertaining to fill material, it was proposed to install and sample soil borings at locations not otherwise evaluated through the overall sampling program. Specifically, it was proposed to install and sample 25 additional soil borings to provide adequate site-wide coverage with regard to fill. Five of the additional 25 soil borings (Fill-1 through Fill-5) were to be installed in Site 2A while two (Fill-9 and Fill-10) of the additional 25 soil borings were to be installed in Site 2B. In total, the evaluation of other AOCs included the installation and sampling of 97 soil borings. Therefore, the site-wide fill evaluation included a total of 120 soil borings; the total did not include those proposed for UST areas as the number and locations of those soil borings are to be based upon GPR/EM survey results (See Section 4.2.1). Additionally, the five borings slated for visual review of the former sludge pond at Area L at Site 3 were not included in the evaluation of fill material.

Forty soil borings were proposed to evaluate fill at Site 2A/2B. Based on information provided in P&G reports, it was proposed to advance soil borings to a depth of approximately 15 feet below surface grade. To determine the types and extent of fill material at the site, it was proposed to perform a visual assessment of soil conditions at each soil boring location. Further, it was proposed to obtain samples from each type of fill material and submit for laboratory analysis to determine contaminants, if any, that may be present within the fill material. The goal of the fill evaluation program was to determine the extent and nature of the various fill material reported to be present at the site. As such, the proposed program included the analysis of a representative number of samples from each type of fill material noted to be present at the site, regardless if the fill was situated within the saturated zone.

4.2.9 Groundwater

Previous investigative efforts performed at the site identified the presence of contaminants and elevated pH in site groundwater. In addition, the presence of free product and/or a sheen on groundwater was identified at a few locations on Site 2A. As the majority of the groundwater sampling presented in the P&G reports was collected in the early 1990s, it was proposed to perform a groundwater investigation for the purpose of identifying current groundwater quality.

The initial phase of the groundwater investigation program proposed for the overall site included the sampling of a representative number of existing wells and the installation and sampling of additional groundwater wells. To establish the number of useable wells at the site, it was proposed to perform a physical inspection of existing wells as well as to identify the presence of free product and to record, to the extent possible, water levels for all existing wells. The groundwater sampling program assumed that a minimum of 12 monitoring wells would be determined to be in adequate condition (i.e., suitable for sampling).

Based on information regarding groundwater quality and the presence of fill material provided in P&G reports, it was proposed to install and sample 15 shallow monitoring wells at locations at the interior and around the perimeter of the site. Five of the 15 wells were to be located on Site 2A. In addition, given that information provided by P&G indicates that a confining layer exists below the noted fill material at locations throughout the site, it was also proposed to install eight deeper monitoring wells to evaluate groundwater quality below the confining layer. The deeper wells were to be situated, to the extent possible, adjacent to eight of the proposed shallow wells to establish well couplets at eight site locations. Two of the well pairs were to be installed on Site 2A and one of the well pairs was to be installed at Site 2B. Upon completion of well installation activities, it was proposed to collect samples from a portion of the existing wells (assumed to be 12 site wells including 4 wells on Site 2A and one well on Site 2B) and all newly installed wells (assumed to be 23 wells with 4 wells installed on Site 2A and one well to be installed on Site 2B). Prior to the performance of sampling, it was proposed to redevelop existing monitoring wells included in the proposed sampling program. The groundwater samples would be analyzed for TPHC, TCL, oil and grease and pH. *

As stated in Section 4.2.1, temporary wells proposed for UST areas were based upon the results of GPR/EM and soil investigation activities. The groundwater investigation described above does not include temporary wells installed to evaluate potential UST areas.

4.3 QA/QC and Health and Safety

The Port Authority has developed protocols for field sampling, which are designed to protect the health and safety of on-site personnel and minimize public exposure. These protocols ensure that data generated from field efforts meet required QA/QC standards and result in data that is reproducible, accurate, representative, comparable and complete. The protocols are presented in the Port Authority's *Field Standard Operating Procedures Manual* dated January 1995. Thus, the ESIW proposed to perform all field-sampling activities in accordance with the Port Authority's QA/QC and Health and Safety protocol's as presented in the Port Authority *Field Standard Operating Procedures Manual* dated January 1995. If desired by the NYSDEC pursuant to the VCP Program, the Port Authority will provide a copy of the *Field Standard Operating Procedures Manual.*

In accordance with Port Authority protocols, it was proposed to utilize Hampton-Clarke, Inc./Veritech Laboratories (NY certification number 11408) of Fairfield, New Jersey for laboratory services associated with the SI. As appropriate, field protocols for the SI are described and/or referenced in Section 5.0. In accordance with NYSDEC requirements, data will be evaluated with Division of Environmental Remediation Data Usability Summary Report (DUSR) guidelines. The DUSR associated with the SI will be provided under separate cover.

5.0 SI - FIELD INVESTIGATION

This section describes the SI activities undertaken to evaluate the AOCs identified at Site 2A/2B. Due to the site-wide nature of many of the AOCs, numerous sample locations were utilized to evaluate multiple AOCs at Site 2A/2B. Based on information from historical sources and previous environmental reports, a variety of fill material was placed at the site. As such, all soil borings installed at Site 2A/2B were utilized as part of the site-wide fill evaluation. The investigation also included the laboratory analysis of a number of samples collected from intervals below the water table. As stated in Section 4.2, the purpose of sampling below the water table was to better characterize historic fill material present at the site sampling unique strata situated below the saturated zone.

This SI included investigation of soil and groundwater at Site 2A/2B. Samples were collected from sediment and surface water of Bridge Creek as part of the site-wide SI, however, as previously stated the samples were collected adjacent to Site 1. Thus, the results of the SI surface water and sediment sampling were presented in the Site 1 Report. The soil component of the Site 2A/2B SI consisted of the installation of 40 soil borings and the collection of 74 soil samples for laboratory analysis, excluding UST area samples. Due to the presence of reinforced concrete and/or utilities, it was not possible to fully install and sample seven of the soil borings proposed for Site 2A/2B. The soil borings that could not be fully installed and sampled were as follows: Fill-6, FS-2, RR-12, RR-13 and RR-14 from Site 2A and Q1-2 and PA-MW-10 from Site 2B. Given the comprehensive nature of the SI and the overall sampling frequency at Site 2A/2B, the Port Authority proposed to review field information and analytical results and determine if additional efforts would be necessary at these seven locations.

The potential UST investigation included the performance of a GPR/EM survey, the installation of seven soil borings resulted in the collection of 12 soil samples from the soil borings installed at the four potential UST areas on Site 2A/2B. One temporary monitoring well was installed and sampled as part of the UST investigation. In total, the SI for soil at Site 2A/2B included the installation of 47 soil borings and the collection of 86 soil samples. *

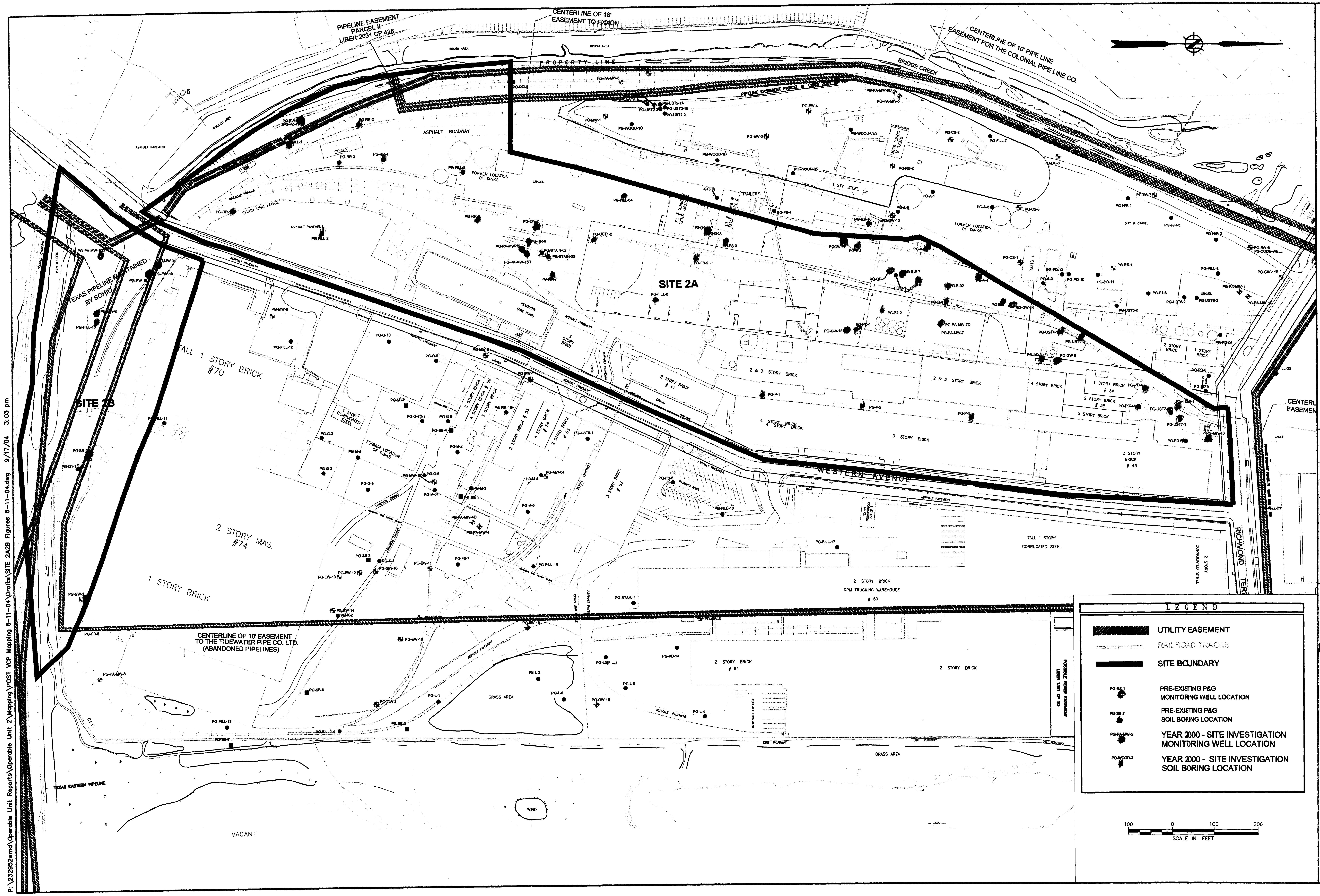
A minimum of one sample was collected and submitted for laboratory analysis from all soil borings with the exception of the temporary well and the two deeper wells installed at locations PAMW-7D and PAMW-15D. The purpose of the temporary well was to obtain information regarding groundwater quality at the potential UST area. The installation of the deeper wells was to establish shallow/deep well pairs at certain site locations for use in the groundwater evaluation effort. Given the close proximity of other soil borings to the three well locations (i.e., PA-TMW-01, PAMW-7D, PAMW-15D), no additional soil sampling was deemed warranted. Please note, soils were reviewed during boring/well installation activities and no unusual soil conditions were noted with regard to these locations.

The groundwater portion of this investigation included converting 5 soil borings into groundwater monitoring wells, installing one temporary monitoring well, recording water levels from all newly installed wells and four existing wells, reviewing wells for the presence of free product and the collection and laboratory analysis of 10 groundwater samples from five newly installed wells, four existing wells, and one temporary well. Two samples were obtained and analyzed from PG-PAMW-15D due to the presence of sediment. Traditional groundwater samples were not obtained from monitoring wells GW-14 and OP-1 due to the presence of free product, however, samples of the free product were submitted for identification.

A summary of the investigative actions and sampling activities performed as part of this SI is presented in Table 4. Please note, the table is organized by AOC and includes a brief summary of the types of issues identified through the performance of the Phase I and the supplemental file review, identification of the actions and sampling efforts undertaken to evaluate each AOC, soil boring and sample reference/identification numbers and, as appropriate, analytical parameters. Soil boring and well locations for Site 2A/2B, as feasible, are presented on Figure 7.

All sampling and field investigation activities were performed in accordance with the Port Authority's *Field Standard Operating Procedures Manual* dated January 1995 and NYSDEC protocols. All sample analyses were performed by a New York State certified analytical laboratory (Hampton-Clarke, Inc./Veritech Laboratories (NY certification number 11408). Field screening for VO vapors utilizing a photo-ionization detector (PID) was performed during the sampling activities and was utilized in sample selection as well as in overall site characterization.

It should be reiterated that the site was not in operation at the time of the inspection; therefore the sampling program was based, to a large extent, on information from documents provided by P&G. HMM did not observe operations and therefore could not assess issues associated with daily operating practices including housekeeping, hazardous material and petroleum storage, etc.



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THE PORT AUTHORITY OF NY & NJ

ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

SITE 2A/2B SITE INVESTIGATION SAMPLE LOCATIONS MAP

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number **FIGURE 7**

Hatch Mott MacDonald

Table 4
Summary of Investigative Actions and Sampling
Site 2A/2B: HHMT Port Ivory Facility

AOC	Description of Issues	Description of Actions and Sampling	Sampling Methodology
Potential USTs	Sanborn Maps identified nine areas which may include USTs.	GPR/EM Survey performed at each area to attempt to identify tanks. 16 soil borings at the site with 7 soil borings from site 2A/2B were installed: **UST1-2**, UST2-1, UST2-1A, UST2-1B, UST2-2, UST2-3, **UST4-1**, **UST4-2**, UST5-2, UST6-2, UST6-3, **UST7-1**, **UST7-1A**, **UST7-1B**, **UST7-2** and UST9-1. 30 soil samples from the site with 12 samples from site 2A/2B were submitted for laboratory analysis: **UST1-2(12-14)**, **UST1-2(2-4)**, UST2-1(6-7), UST2-1(8-10), UST2-1A(0-2), UST2-1B(2-4), UST2-1B(4-6), UST2-2(4-6), UST2-2(10-12), UST2-3(2-4), UST2-3(12-14), UST2-3(8-9), **UST4-1(14-15)**, **UST4-1(2-4)**, **UST4-1(10-11)**, **UST4-2(12-14)**, **UST4-2(4-6)**, UST5-2(4-6), UST6-2(4-6), UST6-2(8-10), UST6-2(16-18), UST6-3(14-16), UST6-3(1.5-2), **UST7-1(8-10)**, **UST7-1A(0-2)**, **UST7-1B(2-3.5)**, **UST7-2(8-10)**, **UST7-2(10-12)**, UST9-1(8-10) and UST9-1(2-4). 2 temporary wells from the site with 1 temporary well from site 2A/2B were installed and sampled. **TMW-01** and TMW-02	**Soil** E418.1, SW6010, SW7471, SW8081, SW8082, SW8260, SW8270, SW9014, SW9045, SW9065, SW9071 **Groundwater** E624, E625, E200.7, E245.2 E150.1, E418.1, E1664, E335.2, E420.1, E608
Precipitate at Bridge Creek	Investigative efforts by P&G identified the presence of a precipitate material along the banks of Bridge Creek.	The portion of Bridge Creek located along the western side of the site was visually reviewed during two low tide and two high tide periods. Sediment/precipitate samples and surface water samples were collected and analyzed. 5 sediment samples were submitted for laboratory analysis: SED-1, SED-2, SED-3, SED-4 and SED-5. 3 surface water samples were submitted for laboratory analysis: SW-1, SW-2 and SW-3.	**Sediment** SW6010, SW7471 **Surface Water** 200.7, E245.2, 335.2

Table 4
Summary of Investigative Actions and Sampling
Site 2A/2B: HHMT Port Ivory Facility

AOC	Description of Issues	Description of Actions and Sampling	Sampling Methodology
P&G AOCs	Historical reports identified AOCs at the subject site which had been evaluated, to some degree, by P&G. Information pertaining to AOCs (Areas A through I, Areas K through R and the Wood Yard) is described in Table 2. Soil borings were installed and sampled at these areas. The soil boring and sample references for each AOC are listed below. Groundwater actions are described under the groundwater AOC.	Soil borings were installed and sampled. 58 soil borings from the site with 13 soil borings from site 2A/2B were installed: A-1, A-2, A-3, **A-4, A-5**, A-6, **B-02, B-2 (B-02A), B-1, B-3, B-4**, PAMW-1, D-1, D-2, D-3, D-4, D-4A, **E-1,** F1-3, **F2-2**, G-2, G-3, G-4, G-5, G-5A, G-6, G-7(N), G-8, G-9, G-10, H/R-1, H/R-2, H-R-3, I-1, K-1, K-2, L-1, L-2, L3(FILL), L-4, L-5, L-6, M-01, M-2, M-3, M-4, M-5, MW-04, PAMW-4, **P-1, P-2, P-3, Q1-1**, WOOD-01C, WOOD-3, WOOD-5. 107 soil samples from the site with 25 soil samples from site 2A/2B were submitted for laboratory analysis: A-1(2-4), A-2(6-8), A-2(2-4), A-2(0-2), A-3(10-12), A-3(6-8), A-3(2-4), **A-4(12-14), A-4(6-8), A-5(2-4),** A-6(01-3), **B-1(2-4), B-1(6-8), B-1(9-10), B-02(2-4), B-02(6-8), B-02A(8-10), B-3(2-4), B-3(6-8), B-4(2-4),** PAMW-1(2-4), PAMW-1(4-6), PAMW-1(10-12), D-1(0-2), D-1(6-8), D-1(18-20), D-2(0-2), D-2(6-8), D-3(0-2), D-4(0-2), D-4A(6-8), **E-1(0.2-2), E-1(4-6), E-1(10-12),** F1-3(1-3), F1-3(3-5), **F2-2(2-4), F2-2(8-10)**, G-2(0-2), G-2(4-6), G-2(6-8), G-3(0-2), G-4(6-8), G-5(4-6), G-5A(8-10),G-6(4-6),G-6(6-8),G-7(N)(8-10), G-7(N)(10-12), G-8(1-2), G-8(6-7), G-9(4-6), G-10(2-4), H/R-1(1-3), H/R-1(3-4.5), H/R-2(0-1.5), H/R-2(1.5-3.5), H/R-3(0.3-1), H/R-3(1-3), I-1(0-2), I-1(2-4), K-1(2-4), K-1(5-6), K-2(0-2), K-2(2-4), L-1(2-4), L-1(6-8), L-2(8-10), L-2(10-12), L3FILL(2-4), L3FILL(8-10), L3FILL(12-14), L-4(0-2), L-4(6-8), L-5(2-4), L-5(8-10), L-6(6-7.5), L-6(7.5-8), M-01(0-2), M-01(2-4), M-2(2-4), M-2(4-6), M-3(2-4), M-4(2-4), M-4(6-8), M-5(6-6.5), MW-04(1-2), PAMW-4(0-2), PAMW-4(4-6), **P-1(2-4), P-1(8-10), P-2(2-4), P-2(4-6), P-3(2-4), P-3(6-8), Q1-1(2-4), Q1-1(4-6),** WOOD-01C(10-12), WOOD-3(0.5-2), WOOD-3(2-4), WOOD-3(4-6), WOOD-3(6-8), WOOD-5(0-2), WOOD-5(2-4), WOOD-5(4-6), WOOD-5(6-8), WOOD-5(8-10) and WOOD-5(14-16).	**Soil** E418.1, SW6010, SW7471, SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Area A West Tank Field (Southwest of Building 16)/Block 1400		6 soil borings from the site with 2 soil borings from site 2A/2B were installed: A-1, A-2, A-3, **A-4**, **A-5**, A-6, 10 samples from the site with 3 soil samples from site 2A/2B were submitted for laboratory analysis: A-1(2-4), A-2(0-2), A-2(2-4), A-3(2-4), A-3(6-8), A-3(10-12), **A-4(6-8), A-4(12-14), A-5(2-4)** and A-6(1-3) .	**Soil** E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Area B Former Raw Product and By-product AST Areas/Block 1400		**Area B investigation was performed in conjunction with Area A investigation.** 4 soil borings were installed on site 2A/2B: **B-1, B-02(B-02A), B-3, B-4**	**See sampling methodology for Area A.**

Table 4
Summary of Investigative Actions and Sampling
Site 2A/2B: HHMT Port Ivory Facility

AOC	Description of Issues	Description of Actions and Sampling	Sampling Methodology
		11 soil samples from site 2A/2B were submitted for laboratory analysis: **B-1(2-4), B-1(6-8), B-1(9-10), B-02(2-4), B-02(6-8), B-02A(8-10), B-3(2-4), B-3(6-8), B-4(2-4), B-4(5-6), and B-4(6-7).** Note: Samples **B-4(5-6) and B-4(6-7)** were analyzed for Volatile Organic Compounds only.	
Area C Former Oleum AST and Acid Wastewater Area/Block 1400		2 soil borings were installed: PA-MW-1 and PA-MW-1D 3 samples were submitted for laboratory analysis: PA-MW-1(2-4), PA-MW-1(3-4.5) and PA-MW-1(8-10). All samples submitted for analysis were from PAMW-1.	**Soil** E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Area D Fuel Oil AST Area/Block 1309		5 soil borings were installed: D-1, D-2, D-3, D-4 and D-4A. 8 samples were submitted for laboratory analysis: D-1(0-2), D-1(6-8), D-1(18-20), D-2(0-2), D-2(6-8), D-3(1-3), D-4(0-2) and D-4A(6-8).	**Soil** E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Area E S&S Tank Field, Super Fat Trap/Block 1400		1 soil boring was installed on site 2A/2B: **E-1.** 3 samples from site 2A/2B were submitted for laboratory analysis: **E-1(0.2-2), E-1(4-6) and E-1(10-12).**	**Soil** E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Area F1 Spent Nickel Catalyst Drum Storage Area/Block 1400		1 soil boring was installed: F1-3 2 samples were submitted for laboratory analysis: F1-3(1-3), F1-3(3-5).	Soil E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Area F2 Waste Oil Drum Storage Area/Block 1400		1 soil boring was installed on site 2A/2B: **F2-2.** 2 samples from site 2A/2B were submitted for laboratory analysis: **F2-2(2-4) and F2-2(8-10).**	Soil E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Area G Former Vegetable AST Area/Block 1338		10 soil borings were installed: G-2, G-3, G-4, G-5, G-5A, G-6, G-7(N), G-8, G-9 and G-10.	**Soil** E418.1, SW6010, SW7471

Table 4
Summary of Investigative Actions and Sampling
Site 2A/2B: HHMT Port Ivory Facility

AOC	Description of Issues	Description of Actions and Sampling	Sampling Methodology
		15 samples were submitted for laboratory analysis: G-2(0-2), G-2(4-6), G-2(6-8), G-3(0-2), G-4(6-8), G-5(4-6), G-5A(8-10), G-6(4-6), G-6(6-8), G-7(N)(8-10), G-7(N)(10-12), G-8(1-2), G-8(6-7), G-9(4-6) and G-10(2-4).	SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Area H and Area R (Area H/R) Former Rosin Storage Area/Block 1400		3 soil borings were installed: H/R-1, H/R-2 and H/R-3. 6 samples were submitted for laboratory analysis: H/R-1(1-3), H/R-1(3-4.5), H/R-2(0-1.5), H/R-2(1.5-3.5), H/R-3(0.3-1) and H/R-3(1-3).	**Soil** E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Area I Temporary Fly Ash Storage Area/Block 1309		1 soil boring was installed: I-1. 2 samples were submitted for laboratory analysis: I-1(0-2) and I-1(2-4).	**Soil** E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Area K /Block 1338		2 soil borings were installed: K-1 and K-2. 4 samples were submitted for laboratory analysis: K-1(2-4), K-1(5-6), K-2(0-2) and K-2(2-4).	**Soil** E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Area L Filled Area (southeast of Building 64)/Block 1338		6 soil borings were installed: L-1, L-2, L3(FILL), L-4, L-5 and L-6. 13 samples were submitted for laboratory analysis: L-1(2-4), L-1(6-8), L-2(8-10), L-2(10-12), L3(FILL)(2-4), L3(FILL)(8-10), L3(FILL)(12-14), L-4(0-2), L-4(6-8), L-5(2-4), L-5(8-10), L-6(6-7.5) and L-6(7.5-8).	**Soil** E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Area M Area East of Edible Oils Buildings 52-56/Block 1338		7 soil borings were installed: M-01, M-2, M-3, M-4, M-5, MW-04 and PAMW-4. 11 samples were submitted for laboratory analysis: M-01 (2-4), M-01 (0-2,) M-2 (2-4), M-2 (4-6), M-3 (2-4), M-4 (1-2), M-4 (2-4), M-4 (6-8), M-5 (6-6.5), PAMW-4 (0-2) and PA-MW-04 (4-6).	**Soil** E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Area N Super Fat Trap Area/Block 1338		Evaluation of this area has been included with evaluation of Area G.	See sampling methodology for Area G.

Table 4
Summary of Investigative Actions and Sampling
Site 2A/2B: HHMT Port Ivory Facility

Area P Former Product Unloading Pit/Block 1400		3 soil borings were installed on site 2A/2B: **P-1, P-2 and P-3.** 6 soil samples from site 2A/2B were submitted for laboratory analysis: **P-1(2-4), P-1(8-10), P-2(2-4), P-2(4-6), P-3(2-4) and P-3(6-8).**	**Soil** E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Area Q1 Existing Scale Pit/Block 1338		1 soil boring was installed on site 2A/2B: **Q1-1.** 2 samples from site 2A/2B were submitted for laboratory analysis: **Q1-1(2-4) and Q1-1(4-6).**	**Soil** **E418.1, SW6010, SW7471** **SW8081, SW8082, SW8260** **SW8270, SW9014, SW9045** **SW9065, SW9071**
Area R Northwest Corner of Soap Manufacturing Area (suspected calcium carbonate fill area)/Block 1400		Evaluation of this area has been included with evaluation of Area H	See sampling methodology for Area H.
Wood Yard		5 soil borings were installed: WOOD-1B(not sampled), WOOD-01C, WOOD-03, WOOD-3 and WOOD-05. 11 samples were submitted for laboratory analysis: WOOD-01C(10-12), WOOD-3(0.5-2), WOOD-3(2-4), WOOD-3(2-4), WOOD-3(6-8), WOOD-5(0-2), WOOD-5(2-4), WOOD-5(4-6), WOOD-5(6-8), WOOD-5(8-10) and WOOD-5(14-16).	**Soil** E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Closed C&D Landfill	P&G operated a construction and demolition (C&D) waste landfill at Block 1309. The landfill has been closed in accordance with applicable regulations. Post-closure requirements include both groundwater monitoring and landfill cap maintenance.	No actions were undertaken as part of the site investigation.	Not Applicable
Railroad Tracks and Sidings	Visual inspection of the site identified the presence of railroad tracks, sidings and equipment throughout the subject site. Investigative efforts were undertaken to document environmental quality.	Soil borings were installed and sampled. 27 soil borings at the site with 13 soil borings from site 2A/2B were installed: **RR-01, RR-02, RR-03, RR-04, RR-05, RR-06, RR-07**, RR-8, RR-10, RR-15, PAMW-5, PAMW-6, **A-4**, A-5, **B-4**, G-8, H/R-3, L-1, PAMW-4, MW-04, M-3, **P-1, P-3, P-2, Q1-1**, WOOD-1B(not sampled) and WOOD-01C.	**Soil** E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071

Table 4
Summary of Investigative Actions and Sampling
Site 2A/2B: HHMT Port Ivory Facility

		46 samples from the site with 24 samples from site 2A/2B were submitted for laboratory analysis: **RR-01(0-1.2), RR-01(1.2-2), RR-02(0-2), RR-03(1.5-2), RR-04(0-2), RR-04(2-4), RR-05(0-2), RR-05(2-4), RR-06(0-2), RR-06(2-4), RR-07(0-2), RR-07(2-4)**, RR-8(2-4), RR-8(6-8), RR-10(2-4), RR-10(8-10), RR-15(4-6), RR-15(0-2), PAMW-5(0-2), PAMW-6(0-2), PAMW-6(2-4), PAMW-6(4-6), PAMW-6(6-8), PAMW-6(8-10), **A-4(6-8), A-4(12-14)**, A-5(2-4),**B-4(2-4), B-4(5-6), B-4(6-7)**, G-8(1-2), G-8(6-7), H/R-3(0-2), L-1(2-4), L-1(6-8), M-4(2-4), PA-MW-04(6-8), M-3(2-4), **P-1(2-4), P-1(8-10), P-3(2-4), P-3(6-8), P-2(2-4), Q1-1(2-4), Q1-1(4-6)** and WOOD-01C(10-12).	
Staining	Staining was noted on the soil flooring in two bays of Building #20 as well as south of Building 60B.	Soil borings were installed and sampled. 6 soil borings at the site with 5 soil borings from site 2A/2B were installed: STAIN-1**, STAIN-02, STAIN-03, STAIN-3B, RR-06 and RR-07.** 12 samples from the site with 10 samples from site 2A/2B were submitted for laboratory analysis: STAIN-1(0-2), STAIN-1(4-6), **STAIN-02(1-2), STAIN-02(2-3), STAIN-03(1-1.5), STAIN-03(1.5-2.5), STAIN-3B(0-2), STAIN-3B(2-4), RR-06(0-2) RR-06(2-4), RR-07(0-2) and RR-07(2-4).**	**Soil** E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Pits and Drains	Pits and drains, some sealed with gravel, were noted at both interior and exterior site locations. In addition, reports identify the presence of oil/water separator systems. .	A visual inspection was performed, as feasible, to assess conditions at pits and drains. Soil borings were installed and sampled at and adjacent to current and former pits and drains. 21 soil borings at the site with 11 soil borings from site 2A/2B were installed: **PD-1, PD-3, PD-4, PD-4A (No sample collected), PD-5**, PD-6, PD-8, PD-9, PD-10, PD-11, PD-13(not sampled), PD-14, **A-4**, A-5, **P-1, P-3, P-2, RR-03**, RR-15, PAMW-5 and **STAIN-02.** 37 samples from the site with 22 samples from site 2A/2B were submitted for laboratory analysis: **PD-1(2-4), PD-1(10-12), PD-3(4-6), PD-4(8-10), PD-5(0-2), PD-5(2-4)**, PD-6(6-8), PD-6(12-14), PD-8(2-4), PD-8(8-10), PD-8(16-17), PD-9(4-6), PD-9(8-10), PD-10(2-4), PD-10(6-8), PD-11(4-6), PD-14(2-4), PD-14(6-8), **A-4(6-8), A-4(12-14), A-5(2-4), P-1(2-4), P-1(8-10), P-2(2-4), P-2(4-6), P-3(2-4), P-3(6-8), RR-03(0-2)**, RR-15(0-2), RR-15(4-6), **STAIN-02(1-2), STAIN-02(2-3), PAMW-7(2-4), PAMW-7(4-6), PAMW-7(6-8), PAMW-7(8-10)**, and PAMW-5(0-2).	**Soil** E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Former Structures	Review of Sanborn Maps and aerial photographs reveal the presence of former structures, ASTs, railroad tracks and sidings,	Soil borings were installed and sampled at areas formerly occupied by structures, debris piles and discolored areas. 26 soil borings at the site with 10 soil borings from site 2A/2B were installed: **FS-1 (No sample collected), FS-**	**Soil** E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014,

	at various locations throughout the subject site. Review of some of the historical sources also revealed the presence of discolored areas and/or debris piles.	**1A (No sample collected),** FS-1B, **FS-2, FS-3,** FS-4, FS-6, FS-7, FS-8, PAMW-4, **PAMW-7,** PAMW-8, A-3, M-3, WOOD-1B(not sampled), WOOD-01C, WOOD-3, WOOD-5, **RR-01, RR-04, RR-05, PD-1, PD-3,** PD-8, PD-9 and PD-11. 52 samples at the site with 16 from site 2A/2B were submitted for laboratory analysis: FS-1B(0-2), FS-1B(6-7), FS-1B(12-13.5), **FS-2(2-4), FS-2(8-10), FS-2(17-18), FS-3(2-4), FS-3(6-8)**, FS-4(0-2), FS-4(2-4), FS-6(0-2), FS-6(4-6), FS-7(2-4), FS-7(8-10), FS-8(0-2), PAMW-4(0-2), PAMW-4(4-6), **PAMW-7(2-4), PAMW-7(4-6), PAMW-7(6-8)**, PAMW-8(0-2), PAMW-8(4-6), A-3(2-4), A-3(6-8), A-3(10-12), M-3(2-4), WOOD-01C(10-12), WOOD-3(0-2), WOOD-3(2-4), WOOD-5(0-2), WOOD-5(2-4), WOOD-5(4-6), WOOD-5(6-8), WOOD-5(8-10), WOOD-5(8-10), WOOD-5(14-16), WOOD-3(2-4), WOOD-3(6-8), **RR-01(0-1.2), RR-01(1.2-2), RR-04(0-2), RR-04(2-4), RR-05(0-2), PD-1(2-4), PD-1(10-12), PD-3(4-6)**, PD-8(2-4), PD-8(8-10), PD-8(16-17), PD-9(4-6), PD-9(8-10) and PD-11(4-6).	SW9045 SW9065, SW9071
Fill Material	P&G placed a variety of fill material at the subject site. The fill materials present at the site include soil/sand, construction debris (wood, bricks, glass, concrete), ash from boiler operations, slag, vegetative debris and by-products from production activities (calcium carbonate, spent diatomaceous filter earth, and spent carbonaceous filter material). The presence of black staining of site soil was noted in P&G reports.	Soil borings were installed throughout the site to characterize the type and extent of fill material. Representative samples were submitted for laboratory analysis to determine the presence/absence of contaminants in fill materials. 23 soil borings at the site with 7 soil borings from site 2A/2B were installed: **Fill-1 (No sample collected), Fill-2, Fill-3, Fill-4, Fill-5,** Fill-7, Fill-8, **Fill-10**, Fill-11, Fill-12, Fill-13, Fill-14, Fill-15, Fill-16, Fill-17, Fill-20 Fill-21, Fill-25, **PAMW-10D(Fill-9)**, PAMW-11D(Fill18), PAMW-12(Fill-19), PAMW-13(Fill-23), and PAMW-14D(Fill-24). 60 samples at the site with 20 from site 2A/2B were submitted for laboratory analysis: **Fill-2(0.7-3.), Fill-3(0-2), Fill-3(2-4), Fill-3(4-6), Fill-4(0-2), Fill-4(2-4), Fill-4(4-6), Fill-4(6-8), Fill-5(2-4), Fill-5(6-8),** Fill-7(1.5-2.5), Fill-7(2.5-4), Fill-7(10-12), Fill-8(0-2), Fill-8(6-8), **Fill-10(3-4), Fill-10(6-8)**, Fill-11(0-2), Fill-11(2-4), Fill-12(0-2), Fill-13(1-3), Fill-13(3-5), Fill-14(4-6), Fill-14(6-8), Fill-15(4-6), Fill-15(12-13), Fill-16(2-4), Fill-17(0-2), Fill-17(2-4), Fill-20(0.2-2), Fill-20(2-4), Fill-20(4-6), Fill-20(6-8), Fill-20(8-10), Fill-20(10-12), Fill-20(12-14), Fill-20(14-15.5), Fill-20(15.5-16), Fill-21(2-4), Fill-21(8-10), Fill-25(0-2), Fill-25(4-6), Fill-25(8-10), **PAMW-7(2-4), PAMW-7(4-6), PAMW-7(6-8), PAMW-7(8-10), PAMW-10D(0-2), PAMW-10D(4-6), PAMW-10D(7-8), PAMW-10D(8-10),** PAMW-11(0-2), PAMW-12(0-2), PAMW-12(2-4), PAMW-12(4-6), PAMW-12(6-8), PAMW-13(0-2), PAMW-13(2-4), PAMW-14D(0-2) and PAMW-14D(4-6).	**Soil** E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071

Groundwater	P&G reports identified the presence of contaminants, elevated pH and free phase product in site monitoring wells.	Samples were obtained from a representative number of existing wells and additional wells were installed and sampled to evaluate current groundwater quality. All wells were examined for the presence of free product and samples of identified free product were submitted for fingerprinting. 17 wells at the site with 5 from site 2A/2B were installed and sampled: PAMW-14D, **PAMW-15, PAMW-15D** (two rounds of samples submitted for laboratory analysis), PAMW-1, PAMW-1D, PAMW-4, PAMW-04D, PAMW-5, PAMW-6, PAMW-6D, **PAMW-7, PAMW-7D,** PAMW-8, **PAMW-10D**, PAMW-11D, PAMW-12 and PAMW-13. 2 temporary wells at the site with 1 from site 2A/2B were installed and sampled: **TMW-01** and TMW-02. The following 14 existing wells at the site with 4 from site 2A/2B were included in the sampling effort: BW-13, CS-7, EW-3, EW-6, **GW-10**, GW-3, GW-5, **GW-7**, GW-9, **MW-3**, MW-04 (duplicate samples submitted), **PZ-1**, RS-1, and RS-2. Finger printing was performed on 4 wells at the site with 2 from site 2A/2B: **GW-14**, **OP-1**, GW-16 and EW-18.	**Groundwater** E624, E625, E200.7 E245.2, E150.1, E418.1 E1664, E335.2, E420.1 E608 **Free Product/Fingerprint** GCFID

(1): This table identifies samples collected to identify individual AOCs. Given that samples were utilized to address multiple AOCs, samples may be listed under more than one AOC. Thus, this table should **not** be utilized to calculate the total number of samples collected through the SI.
(2). Soil borings, wells and sample designations for Site 2A/2B are presented in bold type.
(3): The prefix "PG" has not been included for well designations.

5.1 Pre-Investigation Field Activities

Prior to the initiating sampling efforts, HMM performed a series of pre-investigative field tasks consisting of the following:

- Site walk
- Review of available Sanborn maps and information from the Phase I Environmental Site Assessment
- Field screening, cataloging and inspection of the existing monitoring wells on site. (Depth to water, total depth of well, presence of free phase product, physical condition of well and protective casing, etc.)
- Mark out of all soil boring and groundwater monitoring well locations in accordance with pre-determined AOCs.
- Met with site operations personnel as well as former P&G employees to discuss boring and monitoring well locations and possible underground utilities.
- Contact and met with representatives of the pipeline companies concerning the presence of various pipelines that transect the site.
- Contact and met with representatives of the local utility companies and authorities regarding the location of public utilities.
- Supervised the geophysical team from Hager-Richter Geoscience, Inc (Hager-Richter) who field screened all proposed soil boring and monitoring well locations for internal underground utilities as well as possible UST locations using geophysical techniques.

5.2 GPR/EM Survey - Potential UST Areas

The June 2000 Phase I ESA identified the potential presence of one or more USTs at four locations at Site 2A (UST1, UST3, UST4 and UST7); no potential USTs were identified at Site 2B. This conclusion was based upon a review of Sanborn Fire Insurance Maps, information in portions of reports provided by P&G and limited information provided by representatives of P&G. Based on the information obtained through the performance of the Phase I ESA, a geophysical and electromagnetic survey was performed at the following site areas:

- UST1 Area: North of Building 20;
- UST3 Area: North of the east of Building 13;
- UST4 Area: West of Buildings 34 and 38; and
- UST7 Area: West of Building 43A and South of Building S-35.

HMM retained Hager-Richter to perform a survey to evaluate the presence of USTs at the above listed locations. Hager-Richter utilized ground penetrating radar (GPR) and electromagnetic (EM) methods to assess the potential UST locations. The findings of the GPR/EM survey are presented in Section 6.2 and a copy of the Hager-Richter Geophysical Report is provided in Appendix A of this report.

5.3 Soil Boring Construction and Sampling

In November and December 2000, soil borings were installed to evaluate subsurface soil conditions and to determine the extent of fill material present on the subject site in accordance with ASTM D 1586-84 sampling protocol. Samples were field screened and visually reviewed to establish site lithology. Representative samples were submitted for chemical analysis to evaluate AOCs.

The first six feet of the boreholes were advanced using stainless steel hand augers. Any samples obtained from this interval and slated for chemical analysis were collected via a decontaminated hand auger. Upon reaching six feet bgs, the boreholes were advanced using a truck mounted drill rig with six-inch hollow stem augers (HSA). The boreholes were advanced continuously using HSAs with three-inch diameter split spoons from which the samples were obtained. Split spoons were taken from approximately six feet bgs to 16 feet bgs or until native material was encountered.

Soil samples were collected from the borings in the following manner. Samples collected for VOC analysis were immediately removed from the two-foot interval of the split spoon and placed in laboratory containers. Samples obtained for analysis other than VOC were homogenized in a stainless steel mixing bowl and transferred utilizing a stainless steel trowel to the appropriate laboratory containers. Upon completion of the soil boring, the abandoned borehole was pressure-grouted with cement-bentonite grout to ground surface.

The specifics of the SI for soil are presented by AOC in the following sections. A summary of the soil borings installed and samples collected as part of the SI of Site 2A/2B are presented in Table 4. Soil boring locations are presented on Figure 7. Analytical results for SI soil sampling are discussed in Section 6.3 and analytical summary tables for soil (Table 5A-5E) are provided subsequent to first reference, organized by specific classes of contaminants. Soil boring logs, including field screening information such as PID readings and visual observations, associated with the SI are provided in Appendix B. As previously stated, soil borings and samples were utilized to evaluate multiple AOCs at

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-A-4**	**PG-A-4**	**PG-A-5**	**PG-B-1**	**PG-B-1**	**PG-B-1**	**PG-B-02**	**PG-B-02**
Sample Date	**Soil**	11/16/2000	11/16/2000	11/14/2000	12/4/2000	12/4/2000	12/4/2000	11/16/2000	11/16/2000
Sample ID	**Cleanup**	PG-A-04	PG-A-04	PG-A-05	PG-B-01	PG-B-01	PG-B-01	PG-B-02	PG-A-02
Sample Depth	**Objective**	6-8'	12-14'	2-4'	2-4'	6-8'	9-10'	2-4'	6-8'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
1,1,2-TRICHLOROETHANE	6	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
1,1-DICHLOROETHANE	0.2	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
1,1-DICHLOROETHYLENE	0.4	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
1,2-DICHLOROETHANE	0.1	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
1,2-DICHLOROPROPANE	NS	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
2-CHLOROETHYL VINYL ETHER	NS	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
ACROLEIN	NS	0.021 U	0.16 U	0.019 U	0.017 U	0.018 U	0.019 U	0.018 U	0.021 U
ACRYLONITRILE	NS	0.0095 U	0.074 U	0.0086 U	0.0079 U	0.0083 U	0.0088 U	0.0082 U	0.0096 U
BENZENE	0.06	0.0014 U	0.011 U	0.0012 U	0.0011 U	0.0012 U	0.0013 U	0.0012 U	0.0014 U
BROMODICHLOROMETHANE	NS	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
BROMOFORM	NS	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
BROMOMETHANE	NS	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
CARBON TETRACHLORIDE	0.6	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
CHLOROBENZENE	1.7	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
CHLOROETHANE	1.9	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
CHLOROFORM	0.3	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
CHLOROMETHANE	NS	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
CIS-1,3-DICHLOROPROPENE	NS	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
DIBROMOCHLOROMETHANE	N/A	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
DICHLOROMETHANE	0.1	0.0029 JB	0.051 JB	0.0027 JB	0.0022 JB	0.0020 JB	0.0033 JB	0.0047 JB	0.013
ETHYLBENZENE	5.5	0.0014 U	0.011 U	0.0012 U	0.0011 U	0.0012 U	0.0013 U	0.0012 U	0.0075
M&P-XYLENES	1.2*	0.0027 U	0.021 U	0.0025 U	0.0023 U	0.0024 U	0.0025 U	0.0024 U	0.021
METHYLBENZENE	1.5	0.0014 U	0.011 U	0.0012 U	0.0011 U	0.0012 U	0.0013 U	0.0012 U	0.0058
O-XYLENE	1.2*	0.0014 U	0.011 U	0.0012 U	0.0011 U	0.0012 U	0.0013 U	0.0012 U	0.0072
TETRACHLOROETHYLENE	1.4	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
TRICHLOROETHYLENE	0.7	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
VINYL CHLORIDE	0.2	0.0068 U	0.053 U	0.0062 U	0.0057 U	0.0060 U	0.0063 U	0.0059 U	0.0069 U
TOTAL VOCs	10	0.0029	0.051	0.0027	0.0022	0.002	0.0033	0.0047	0.0545

U Undetectable Levels
ND Not Detectived
NS No Standard
* Total Xylene Recommended Cleanup Standard

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended Soil Cleanup Objective MG/KG**	**PG-B-02A** 11/16/2000 PG-B-02A 8-10' MG/KG	**PG-B-3** 12/4/2000 PG-B-03 2-4' MG/KG	**PG-B-3** 12/4/2000 PG-B-03 6-8' MG/KG	**PG-B-4** 12/4/2000 PG-B-04 2-4' MG/KG	**PG-B-4** 12/4/2000 PG-B-04 5-6' MG/KG	**PG-B-4** 12/4/2000 PG-B-04 6-7' MG/KG	**PG-E-1** 11/13/2000 PG-E-01 0.2-2' MG/KG	**PG-E-1** 11/13/2000 PG-E-01 4-6' MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
1,1,2-TRICHLOROETHANE	6	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
1,1-DICHLOROETHANE	0.2	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
1,1-DICHLOROETHYLENE	0.4	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
1,2-DICHLOROETHANE	0.1	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
1,2-DICHLOROPROPANE	NS	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
2-CHLOROETHYL VINYL ETHER	NS	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
ACROLEIN	NS	2.5 U	0.021 U	0.025 U	0.018 U	0.075 U	0.018 U	0.017 U	0.017 U
ACRYLONITRILE	NS	0.30 U	0.0096 U	0.011 U	0.0082 U	0.035 U	0.0082 U	0.0079 U	0.0081 U
BENZENE	0.06	0.16 U	0.0014 U	0.0016 U	0.0012 U	0.005 U	0.0012 U	0.0011 U	0.0012 U
BROMODICHLOROMETHANE	NS	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
BROMOFORM	NS	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
BROMOMETHANE	NS	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
CARBON TETRACHLORIDE	0.6	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
CHLOROBENZENE	1.7	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
CHLOROETHANE	1.9	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
CHLOROFORM	0.3	0.82 U	0.0069 U	0.0082 U	0.0016 J	0.025 U	0.0060 U	0.0057 U	0.0058 U
CHLOROMETHANE	NS	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
CIS-1,3-DICHLOROPROPENE	NS	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
DIBROMOCHLOROMETHANE	N/A	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
DICHLOROMETHANE	0.1	0.82 U	0.0042 JB	0.0031 JB	0.0044 JB	0.025 U	0.0035 JB	0.0057 U	0.0034 JB
ETHYLBENZENE	5.5	0.16 U	0.0014	0.0016 U	0.0012 U	0.005 U	0.0012 U	0.0011 U	0.0012 U
M&P-XYLENES	1.2*	0.33 U	0.0030	0.0033 U	0.0055	0.01 U	0.0024 U	0.0023 U	0.0023 U
METHYLBENZENE	1.5	0.16 U	0.0014 U	0.0016 U	0.0012 U	0.005 U	0.0012 U	0.0011 U	0.0012 U
O-XYLENE	1.2*	0.16 U	0.0014 U	0.0016 U	0.0014	0.005 U	0.0012 U	0.0011 U	0.0012 U
TETRACHLOROETHYLENE	1.4	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.82 U	0.0069 U	0.0082 U	0.0059 U	**0.43**	0.0060 U	0.0057 U	0.0058 U
TRICHLOROETHYLENE	0.7	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
VINYL CHLORIDE	0.2	0.82 U	0.0069 U	0.0082 U	0.0059 U	0.025 U	0.0060 U	0.0057 U	0.0058 U
TOTAL VOCs	10	ND	0.0086	0.0031	0.0129	0.43	0.0035	ND	0.0034

U Undetectable Levels
ND Not Detectived
NS No Standard
* Total Xylene Recommended Cleanup Standard

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended Soil Cleanup Objective** **MG/KG**	**PG-E-1** 11/13/2000 PG-E-01 10-12' MG/KG	**PG-F2-2** 11/20/2000 PG-F2-2 2-4' MG/KG	**PG-F2-2** 11/20/2000 PG-F2-2 8-10' MG/KG	**PG-P-1** 11/22/2000 PG-P-01 2-4' MG/KG	**PG-P-1** 11/22/2000 PG-P-01 8-10' MG/KG	**PG-P-2** 11/30/2000 PG-P-02 2-4' MG/KG	**PG-P-2** 11/30/2000 PG-P-02 4-6' MG/KG	**PG-P-3** 11/22/2000 PG-P-03 2-4' MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
1,1,2-TRICHLOROETHANE	6	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
1,1-DICHLOROETHANE	0.2	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
1,1-DICHLOROETHYLENE	0.4	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
1,2-DICHLOROETHANE	0.1	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
1,2-DICHLOROPROPANE	NS	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
2-CHLOROETHYL VINYL ETHER	NS	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
ACROLEIN	NS	0.028 U	0.016 U	0.017 U	0.016 U	0.019 U	0.017 U	0.018 U	0.017 U
ACRYLONITRILE	NS	0.013 U	0.0075 U	0.0081 U	0.0075 U	0.0088 U	0.0081 U	0.0082 U	0.0080 U
BENZENE	0.06	0.0019 U	0.0011 U	0.0012 U	0.0011 U	0.0013 U	0.0012 U	0.0012 U	0.0011 U
BROMODICHLOROMETHANE	NS	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
BROMOFORM	NS	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
BROMOMETHANE	NS	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
CARBON TETRACHLORIDE	0.6	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
CHLOROBENZENE	1.7	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
CHLOROETHANE	1.9	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
CHLOROFORM	0.3	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
CHLOROMETHANE	NS	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
CIS-1,3-DICHLOROPROPENE	NS	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
DIBROMOCHLOROMETHANE	N/A	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
DICHLOROMETHANE	0.1	0.0094 U	0.0048 J	0.0054 J	0.0035 JB	0.0030 JB	0.0087 B	0.0061 B	0.0043 JB
ETHYLBENZENE	5.5	0.0019 U	0.0011 U	0.0012 U	0.0011 U	0.0013 U	0.0012 U	0.0012 U	0.0011 U
M&P-XYLENES	1.2*	0.0038 U	0.0022 U	0.0023 U	0.0022 U	0.0025 U	0.0023 U	0.0024 U	0.0023 U
METHYLBENZENE	1.5	0.0019 U	0.0011 U	0.0012 U	0.0011 U	0.0013 U	0.0012 U	0.0012 U	0.0011 U
O-XYLENE	1.2*	0.0019 U	0.0011 U	0.0012 U	0.0011 U	0.0013 U	0.0012 U	0.0012 U	0.0011 U
TETRACHLOROETHYLENE	1.4	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
TRICHLOROETHYLENE	0.7	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
VINYL CHLORIDE	0.2	0.0094 U	0.0054 U	0.0058 U	0.0054 U	0.0063 U	0.0058 U	0.0060 U	0.0057 U
TOTAL VOCs	10	ND	0.0048	0.0054	0.0035	0.0030	0.0087	0.0061	0.0043

U Undetectable Levels
ND Not Detectived
NS No Standard
* Total Xylene Recommended Cleanup Standard

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-P-3**	**PG-PD-1**	**PG-PD-1**	**PG-PD-3**	**PG-PD-4**	**PG-PD-5**	**PG-PD-5**	**PG-Q1-1**
Sample Date	**Soil**	11/22/2000	11/21/2000	11/21/2000	11/29/2000	12/2/2000	12/2/2000	12/2/2000	11/30/2000
Sample ID	**Cleanup**	PG-P-03	PG-PD-01	PG-PD-01	PG-PD-3	PG-PD-4	PG-PD-5	PG-PD-5	PG-Q1-1
Sample Depth	**Objective**	4-6'	2-4'	10-12'	4-6'	8-10'	0-2'	2-4'	2-4'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
1,1,2-TRICHLOROETHANE	6	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
1,1-DICHLOROETHANE	0.2	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
1,1-DICHLOROETHYLENE	0.4	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
1,2-DICHLOROETHANE	0.1	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
1,2-DICHLOROPROPANE	NS	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
2-CHLOROETHYL VINYL ETHER	NS	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
ACROLEIN	NS	0.017 U	0.017 U	0.019 U	0.019 U	0.018 U	0.017 U	0.017 U	0.017 U
ACRYLONITRILE	NS	0.0080 U	0.0078 U	0.0088 U	0.0086 U	0.0085 U	0.0079 U	0.0078 U	0.0079 U
BENZENE	0.06	0.0011 U	0.0011 U	0.0013 U	0.0012 U	0.0012 U	0.0011 U	0.0011 U	0.0011 U
BROMODICHLOROMETHANE	NS	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
BROMOFORM	NS	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
BROMOMETHANE	NS	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
CARBON TETRACHLORIDE	0.6	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
CHLOROBENZENE	1.7	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
CHLOROETHANE	1.9	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
CHLOROFORM	0.3	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
CHLOROMETHANE	NS	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
CIS-1,3-DICHLOROPROPENE	NS	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
DIBROMOCHLOROMETHANE	N/A	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
DICHLOROMETHANE	0.1	0.0042 JB	0.0073	0.0026 JB	0.0045 JB	0.0063 B	0.0060 B	0.0050 JB	0.0064 B
ETHYLBENZENE	5.5	0.0011 U	0.0011 U	0.0013 U	0.0012 U	0.0012 U	0.0011 U	0.0011 U	0.0011 U
M&P-XYLENES	1.2*	0.0023 U	0.0022 U	0.0025 U	0.0025 U	0.0024 U	0.0023 U	0.0022 U	0.0023 U
METHYLBENZENE	1.5	0.0011 U	0.0011 U	0.0013 U	0.0012 U	0.0012 U	0.0011 U	0.0011 U	0.0011 U
O-XYLENE	1.2*	0.0011 U	0.0011 U	0.0013 U	0.0012 U	0.0012 U	0.0011 U	0.0011 U	0.0011 U
TETRACHLOROETHYLENE	1.4	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
TRICHLOROETHYLENE	0.7	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
VINYL CHLORIDE	0.2	0.0057 U	0.0056 U	0.0063 U	0.0062 U	0.0061 U	0.0057 U	0.0056 U	0.0057 U
TOTAL VOCs	10	0.0042	0.0073	0.0026	0.0045	0.0063	0.0060	0.0050	0.0064

U Undetectable Levels
ND Not Detectected
NS No Standard
* Total Xylene Recommended Cleanup Standard

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended Soil Cleanup Objective MG/KG**	**PG-Q1-1** 11/30/2000 PG-Q1-1 4-6' MG/KG	**PG-RR-1** 11/3/2000 PG-RR-01 0-1.2' MG/KG	**PG-RR-1** 11/3/2000 PG-RR-01 1.2-2' MG/KG	**PG-RR-2** 11/4/2000 PG-RR-02 0-2' MG/KG	**PG-RR-3** 11/3/2000 PG-RR-03 1.5-2' MG/KG	**PG-RR-4** 11/4/2000 PG-RR-04 0-2' MG/KG	**PG-RR-4** 11/4/2000 PG-RR-04 2-4' MG/KG	**PG-RR-5** 11/7/2000 PG-RR-05 0-2' MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
1,1,2-TRICHLOROETHANE	6	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
1,1-DICHLOROETHANE	0.2	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
1,1-DICHLOROETHYLENE	0.4	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
1,2-DICHLOROETHANE	0.1	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
1,2-DICHLOROPROPANE	NS	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
2-CHLOROETHYL VINYL ETHER	NS	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
ACROLEIN	NS	0.023 U	0.017 U	0.017 U	0.018 U	0.017 U	0.017 U	2.3 U	0.016 U
ACRYLONITRILE	NS	0.011 U	0.0081 U	0.0080 U	0.0082 U	0.0081 U	0.0078 U	1.1 U	0.0075 U
BENZENE	0.06	0.0015 U	0.0012 U	0.0011 U	0.0012 U	0.0012 U	0.0011 U	0.16 U	0.0011 U
BROMODICHLOROMETHANE	NS	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
BROMOFORM	NS	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
BROMOMETHANE	NS	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
CARBON TETRACHLORIDE	0.6	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
CHLOROBENZENE	1.7	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
CHLOROETHANE	1.9	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
CHLOROFORM	0.3	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
CHLOROMETHANE	NS	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
CIS-1,3-DICHLOROPROPENE	NS	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
DIBROMOCHLOROMETHANE	N/A	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
DICHLOROMETHANE	0.1	0.0096 B	0.011 B	0.0087 B	0.0051 JB	0.0082 B	0.017 B	0.78 U	0.0050 J
ETHYLBENZENE	5.5	0.0015 U	0.0012 U	0.0011 U	0.0012 U	0.0012 U	0.0011 U	0.16 U	0.0011 U
M&P-XYLENES	1.2*	0.0031 U	0.0023 U	0.0023 U	0.0024 U	0.0023 U	0.0022 U	0.31 U	0.0022 U
METHYLBENZENE	1.5	0.0015 U	0.0012 U	0.0011 U	0.0012 U	0.0012 U	0.0011 U	0.16 U	0.0011 U
O-XYLENE	1.2*	0.0015 U	0.0012 U	0.0011 U	0.0012 U	0.0012 U	0.0011 U	0.16 U	0.0011 U
TETRACHLOROETHYLENE	1.4	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
TRICHLOROETHYLENE	0.7	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
VINYL CHLORIDE	0.2	0.0077 U	0.0058 U	0.0057 U	0.0059 U	0.0058 U	0.0056 U	0.78 U	0.0054 U
TOTAL VOCs	10	0.0096	0.0110	0.0087	0.0051	0.0082	0.017	ND	0.005

U Undetectable Levels
ND Not Detectived
NS No Standard
* Total Xylene Recommended Cleanup Standard

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-RR-5**	**PG-RR-6**	**PG-RR-6**	**PG-RR-7**	**PG-RR-7**	**PG-STAIN-02**	**PG-STAIN-02**	**PG-STAIN-03**
Sample Date	**Soil**	11/7/2000	11/6/2000	11/6/2000	11/6/2000	11/6/2000	11/11/2000	11/11/2000	11/10/2000
Sample ID	**Cleanup**	PG-RR-05	PG-RR-06	PG-RR-06	PG-RR-07	PG-RR-07	PG-ST-02	PG-ST-02	PG-ST-03
Sample Depth	**Objective**	2-4'	0-2'	2-4'	0-2'	2-4'	1-2'	2-3'	1-1.5'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
1,1,2-TRICHLOROETHANE	6	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
1,1-DICHLOROETHANE	0.2	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
1,1-DICHLOROETHYLENE	0.4	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
1,2-DICHLOROETHANE	0.1	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
1,2-DICHLOROPROPANE	NS	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
2-CHLOROETHYL VINYL ETHER	NS	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
ACROLEIN	NS	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.018 U	0.018 U	2.2 U
ACRYLONITRILE	NS	0.0075 U	0.0075 U	0.0075 U	0.0075 U	0.0075 U	0.0082 U	0.0083 U	1.0 U
BENZENE	0.06	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0012 U	0.15 U
BROMODICHLOROMETHANE	NS	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
BROMOFORM	NS	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
BROMOMETHANE	NS	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
CARBON TETRACHLORIDE	0.6	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
CHLOROBENZENE	1.7	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
CHLOROETHANE	1.9	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
CHLOROFORM	0.3	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
CHLOROMETHANE	NS	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
CIS-1,3-DICHLOROPROPENE	NS	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
DIBROMOCHLOROMETHANE	N/A	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
DICHLOROMETHANE	0.1	0.0044 J	0.0057 B	0.0071 B	0.0054 JB	0.0061 B	0.0034 JB	0.0026 JB	**0.17 J**
ETHYLBENZENE	5.5	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0012 U	0.15 U
M&P-XYLENES	1.2*	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0024 U	0.0024 U	0.37
METHYLBENZENE	1.5	0.0011 U	0.0016	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0012 U	0.15 U
O-XYLENE	1.2*	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0012 U	0.24
TETRACHLOROETHYLENE	1.4	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
TRICHLOROETHYLENE	0.7	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
VINYL CHLORIDE	0.2	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0054 U	0.0059 U	0.0060 U	0.73 U
TOTAL VOCs	10	0.0044	0.0073	0.0071	0.0054	0.0061	0.0034	0.0026	0.78

U Undetectable Levels
ND Not Detectived
NS No Standard
* Total Xylene Recommended Cleanup Standard

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-STAIN-03**	**PG-STAIN-3B**	**PG-STAIN-3B**	**PG-FS-2**	**PG-FS-2**	**PG-FS-2**	**PG-FS-3**	**PG-FS-3**
Sample Date	**Soil**	11/10/2000	11/11/2000	11/11/2000	11/17/2000	11/17/2000	11/17/2000	11/15/2000	11/15/2000
Sample ID	**Cleanup**	PG-ST-03	PG-ST-3B	PG-ST-3B	PG-FS-02	PG-FS-02	PG-FS-02	PG-FS03	PG-FS03
Sample Depth	**Objective**	1.5-2.5'	0-2'	2-4'	2-4'	8-10'	17-18'	2-4'	6-8'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
1,1,2-TRICHLOROETHANE	6	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
1,1-DICHLOROETHANE	0.2	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
1,1-DICHLOROETHYLENE	0.4	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
1,2-DICHLOROETHANE	0.1	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
1,2-DICHLOROPROPANE	NS	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
2-CHLOROETHYL VINYL ETHER	NS	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
ACROLEIN	NS	2.4 U	0.016 U	0.016 U	0.017 U	0.018 U	0.017 U	0.017 U	0.018 U
ACRYLONITRILE	NS	1.1 U	0.0075 U	0.0075 U	0.0079 U	0.0085 U	0.0078 U	0.0080 U	0.0082 U
BENZENE	0.06	0.16 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0012 U
BROMODICHLOROMETHANE	NS	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
BROMOFORM	NS	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
BROMOMETHANE	NS	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
CARBON TETRACHLORIDE	0.6	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
CHLOROBENZENE	1.7	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
CHLOROETHANE	1.9	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
CHLOROFORM	0.3	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
CHLOROMETHANE	NS	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
CIS-1,3-DICHLOROPROPENE	NS	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
DIBROMOCHLOROMETHANE	N/A	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
DICHLOROMETHANE	0.1	0.79 U	0.0054 U	0.0026 JB	0.0024 JB	0.0049 JB	0.0029 JB	0.0021 JB	0.0059 U
ETHYLBENZENE	5.5	0.16 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0012 U
M&P-XYLENES	*1.2**	*0.19 J*	*0.0022 U*	*0.0022 U*	*0.0023 U*	*0.0024 U*	*0.0022 U*	*0.0023 U*	*0.0024 U*
METHYLBENZENE	1.5	0.16 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0012 U
O-XYLENE	1.2*	0.16 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0012 U
TETRACHLOROETHYLENE	1.4	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
TRICHLOROETHYLENE	0.7	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
VINYL CHLORIDE	0.2	0.79 U	0.0054 U	0.0054 U	0.0057 U	0.0061 U	0.0056 U	0.0057 U	0.0059 U
TOTAL VOCs	10	0.19	ND	0.0026	0.0024	0.0049	0.0029	0.0021	ND

U Undetectable Levels
ND Not Detectived
NS No Standard
* Total Xylene Recommended Cleanup Standard

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-FILL-02**	**PG-FILL-03**	**PG-FILL-03**	**PG-FILL-03**	**PG-FILL-04**	**PG-FILL-04**	**PG-FILL-04**
Sample Date	**Soil**	11/3/2000	11/4/2000	11/6/2000	11/6/2000	11/6/2000	11/6/2000	11/6/2000
Sample ID	**Cleanup**	PGFILL02	PGFILL03	PGFILL03	PGFILL03	PGFILL04	PGFILL04	PGFILL04
Sample Depth	**Objective**	0.7-3'	0-2'	2-4'	4-6'	0-2'	2-4'	4-6'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
1,1,2-TRICHLOROETHANE	6	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
1,1-DICHLOROETHANE	0.2	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
1,1-DICHLOROETHYLENE	0.4	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
1,2-DICHLOROETHANE	0.1	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
1,2-DICHLOROPROPANE	NS	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
2-CHLOROETHYL VINYL ETHER	NS	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
ACROLEIN	NS	0.019 U	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
ACRYLONITRILE	NS	0.0090 U	0.0075 U	0.0077 U	0.0077 U	0.0081 U	0.0078 U	0.0080 U
BENZENE	0.06	0.0013 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U
BROMODICHLOROMETHANE	NS	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
BROMOFORM	NS	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
BROMOMETHANE	NS	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
CARBON TETRACHLORIDE	0.6	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
CHLOROBENZENE	1.7	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
CHLOROETHANE	1.9	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
CHLOROFORM	0.3	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
CHLOROMETHANE	NS	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
CIS-1,3-DICHLOROPROPENE	NS	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
DIBROMOCHLOROMETHANE	N/A	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
DICHLOROMETHANE	0.1	0.012 B	0.0054 U	0.0027 J	0.0033 J	0.0054 J	0.0091 B	0.0075 B
ETHYLBENZENE	5.5	0.0013 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U
M&P-XYLENES	1.2*	0.0026 U	0.0022 U	0.0022 U	0.0022 U	0.0023 U	0.0022 U	0.0023 U
METHYLBENZENE	1.5	0.0013 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U
O-XYLENE	1.2*	0.0013 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U
TETRACHLOROETHYLENE	1.4	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
TRICHLOROETHYLENE	0.7	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
VINYL CHLORIDE	0.2	0.0065 U	0.0054 U	0.0056 U	0.0056 U	0.0058 U	0.0056 U	0.0057 U
TOTAL VOCs	10	0.0120	ND	0.0027	0.0033	0.0054	0.0091	0.0075

U Undetectable Levels
ND Not Detectived
NS No Standard
* Total Xylene Recommended Cleanup Standard

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-FILL-04**	**PG-FILL-5**	**PG-FILL-5**	**PG-FILL-10**	**PG-FILL-10**	**PG-UST1-2**	**PG-UST1-2**
Sample Date	**Soil**	11/6/2000	11/18/2000	11/18/2000	12/1/2000	12/1/2000	11/20/2000	11/20/2000
Sample ID	**Cleanup**	PGFILL04	PG-FILL-5	PG-FILL-5	PG-FILL10	PG-FILL10	PG-UST1-2	PG-UST1-2
Sample Depth	**Objective**	6-8'	2-4'	6-8'	3-4'	6-8'	2-4'	12-14'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
1,1,2-TRICHLOROETHANE	6	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
1,1-DICHLOROETHANE	0.2	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
1,1-DICHLOROETHYLENE	0.4	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
1,2-DICHLOROETHANE	0.1	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
1,2-DICHLOROPROPANE	NS	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
2-CHLOROETHYL VINYL ETHER	NS	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
ACROLEIN	NS	0.019 U	0.016 U	0.017 U	0.016 U	0.036 U	0.016 U	0.018 U
ACRYLONITRILE	NS	0.0087 U	0.0075 U	0.0081 U	0.0076 U	0.016 U	0.0075 U	0.0082 U
BENZENE	0.06	0.0012 U	0.0011 U	0.0012 U	0.0011 U	0.0024 U	0.0011 U	0.0012 U
BROMODICHLOROMETHANE	NS	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
BROMOFORM	NS	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
BROMOMETHANE	NS	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
CARBON TETRACHLORIDE	0.6	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
CHLOROBENZENE	1.7	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
CHLOROETHANE	1.9	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
CHLOROFORM	0.3	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
CHLOROMETHANE	NS	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
CIS-1,3-DICHLOROPROPENE	NS	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
DIBROMOCHLOROMETHANE	N/A	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
DICHLOROMETHANE	0.1	0.0066 B	0.0033 JB	0.0051 J	0.0096 B	0.023 B	0.0055	0.0049 J
ETHYLBENZENE	5.5	0.0012 U	0.0011 U	0.0012 U	0.0011 U	0.0024 U	0.0011 U	0.0012 U
M&P-XYLENES	1.2*	0.0025 U	0.0022 U	0.0023 U	0.0022 U	0.0048 U	0.0022 U	0.0024 U
METHYLBENZENE	1.5	0.0012 U	0.0011 U	0.0012 U	0.0011 U	0.0024 U	0.0011 U	0.0012 U
O-XYLENE	1.2*	0.0012 U	0.0011 U	0.0012 U	0.0011 U	0.0024 U	0.0011 U	0.0012 U
TETRACHLOROETHYLENE	1.4	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
TRICHLOROETHYLENE	0.7	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
VINYL CHLORIDE	0.2	0.0062 U	0.0054 U	0.0058 U	0.0055 U	0.012 U	0.0054 U	0.0060 U
TOTAL VOCs	10	0.0066	0.0033	0.0051	0.0096	0.023	0.0055	0.0049

U	Undetectable Levels
ND	Not Detected
NS	No Standard
*	Total Xylene Recommended Cleanup Standard

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-UST4-1**	**PG-UST4-1**	**PG-UST4-1**	**PG-UST4-2**	**PG-UST4-2**	**PG-UST7-1**	**PG-UST7-1A**
Sample Date	**Soil**	11/20/2000	11/20/2000	11/20/2000	11/20/2000	11/20/2000	11/28/2000	11/28/2000
Sample ID	**Cleanup**	PG-UST4-1	PG-UST4-1	PG-UST4-1	PG-UST4-2	PG-UST4-2	PG-UST7-1	PG-UST7-1A
Sample Depth	**Objective**	2-4'	10-11'	14-15'	4-6'	12-14'	8-10'	0-2'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
1,1,2-TRICHLOROETHANE	6	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
1,1-DICHLOROETHANE	0.2	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
1,1-DICHLOROETHYLENE	0.4	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
1,2-DICHLOROETHANE	0.1	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
1,2-DICHLOROPROPANE	NS	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
2-CHLOROETHYL VINYL ETHER	NS	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
ACROLEIN	NS	0.019 U	0.021 U	0.097 U	0.020 U	0.022 U	0.018 U	0.016 U
ACRYLONITRILE	NS	0.0088 U	0.0095 U	0.045 U	0.0092 U	0.010 U	0.0082 U	0.0075 U
BENZENE	0.06	0.0013 U	0.0014 U	0.0065 U	0.0013 U	0.0015 U	0.0012 U	0.0011 U
BROMODICHLOROMETHANE	NS	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
BROMOFORM	NS	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
BROMOMETHANE	NS	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
CARBON TETRACHLORIDE	0.6	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
CHLOROBENZENE	1.7	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
CHLOROETHANE	1.9	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
CHLOROFORM	0.3	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
CHLOROMETHANE	NS	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
CIS-1,3-DICHLOROPROPENE	NS	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
DIBROMOCHLOROMETHANE	N/A	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
DICHLOROMETHANE	0.1	0.0076 B	0.0078	0.030 J	0.0037 J	0.0038 JB	0.0075 B	0.0060 B
ETHYLBENZENE	5.5	0.0013 U	0.0014 U	0.0065 U	0.0013 U	0.0015 U	0.0012 U	0.0011 U
M&P-XYLENES	1.2*	0.0025 U	0.0027 U	0.013 U	0.0027 U	0.0030 U	0.0024 U	0.0022 U
METHYLBENZENE	1.5	0.0013 U	0.0026	0.0065 U	0.0013 U	0.0044	0.0012 U	0.0011 U
O-XYLENE	1.2*	0.0013 U	0.0014 U	0.0065 U	0.0013 U	0.0015 U	0.0012 U	0.0011 U
TETRACHLOROETHYLENE	1.4	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
TRICHLOROETHYLENE	0.7	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0013 J
VINYL CHLORIDE	0.2	0.0063 U	0.0068 U	0.032 U	0.0067 U	0.0075 U	0.0059 U	0.0054 U
TOTAL VOCs	10	0.0076	0.0104	0.0300	0.0037	0.0082	0.0075	0.0073

U	Undetectable Levels
ND	Not Detectived
NS	No Standard
*	Total Xylene Recommended Cleanup Standard

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-UST7-1B**	**PG-UST7-2**	**PG-UST7-2**	**PG-PA-MW-7**	**PG-PA-MW-7**	**PG-PA-MW-7**
Sample Date	**Soil**	11/28/2000	11/21/2000	11/21/2000	11/13/2000	11/13/2000	11/13/2000
Sample ID	**Cleanup**	PG-UST7-1B	PG-UST7-2	PG-UST7-2	PG-PAMW-07	PG-PAMW-07	PG-PAMW-07
Sample Depth	**Objective**	2-3.5'	8-10'	10-12'	2.5-4'	4-6'	6-8'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
1,1,2-TRICHLOROETHANE	6	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
1,1-DICHLOROETHANE	0.2	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
1,1-DICHLOROETHYLENE	0.4	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
1,2-DICHLOROETHANE	0.1	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
1,2-DICHLOROPROPANE	NS	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
2-CHLOROETHYL VINYL ETHER	NS	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
ACROLEIN	NS	0.017 U	0.086 U	0.090 U	0.017 U	0.017 U	0.018 U
ACRYLONITRILE	NS	0.0079 U	0.040 U	0.042 U	0.0077 U	0.0080 U	0.0083 U
BENZENE	0.06	0.0011 U	0.0057 U	0.0060 U	0.0011 U	0.0011 U	0.0012 U
BROMODICHLOROMETHANE	NS	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
BROMOFORM	NS	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
BROMOMETHANE	NS	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
CARBON TETRACHLORIDE	0.6	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
CHLOROBENZENE	1.7	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
CHLOROETHANE	1.9	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
CHLOROFORM	0.3	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
CHLOROMETHANE	NS	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
CIS-1,3-DICHLOROPROPENE	NS	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
DIBROMOCHLOROMETHANE	N/A	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
DICHLOROMETHANE	0.1	0.0075 B	0.016 JB	0.015 JB	0.0018 JB	0.0026 JB	0.0020 JB
ETHYLBENZENE	5.5	0.0011 U	0.0057 U	0.0060 U	0.0011 U	0.0011 U	0.0012 U
M&P-XYLENES	1.2*	0.0014 J	0.011 U	0.012 U	0.0022 U	0.0023 U	0.0024 U
METHYLBENZENE	1.5	0.0011 U	0.0057 U	0.0060 U	0.0011 U	0.0011 U	0.0012 U
O-XYLENE	1.2*	0.0024	0.0057 U	0.0060 U	0.0011 U	0.0011 U	0.0012 U
TETRACHLOROETHYLENE	1.4	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
TRICHLOROETHYLENE	0.7	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
VINYL CHLORIDE	0.2	0.0057 U	0.029 U	0.030 U	0.0056 U	0.0057 U	0.0060 U
TOTAL VOCs	10	0.0113	0.0160	0.0150	0.0018	0.0026	0.0020

U Undetectable Levels

ND Not Detectived

NS No Standard

* Total Xylene Recommended Cleanup Standard

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended Soil Cleanup Objective MG/KG**	**PG-PA-MW-7** 11/13/2000 PG-PAMW-07 8-10' MG/KG	**PG-PA-MW-10D** 11/27/2000 PG-PAMW10D 0.5-2' MG/KG	**PG-PA-MW-10D** 11/27/2000 PG-PAMW10D 4-6' MG/KG	**PG-MW10D** 11/27/2000 PG-MW10D 7-8' MG/KG	**PG-MW10D** 11/27/2000 PG-MW10D 8-10' MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
1,1,2-TRICHLOROETHANE	6	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
1,1-DICHLOROETHANE	0.2	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
1,1-DICHLOROETHYLENE	0.4	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
1,2-DICHLOROETHANE	0.1	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
1,2-DICHLOROPROPANE	NS	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
2-CHLOROETHYL VINYL ETHER	NS	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
ACROLEIN	NS	0.017 U	0.017 U	0.017 U	0.021 U	2.9 U
ACRYLONITRILE	NS	0.0079 U	0.0077 U	0.0079 U	0.0095 U	1.3 U
BENZENE	0.06	0.0011 U	0.0011 U	0.0011 U	0.0014 U	0.32
BROMODICHLOROMETHANE	NS	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
BROMOFORM	NS	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
BROMOMETHANE	NS	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
CARBON TETRACHLORIDE	0.6	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
CHLOROBENZENE	1.7	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
CHLOROETHANE	1.9	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
CHLOROFORM	0.3	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
CHLOROMETHANE	NS	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
CIS-1,3-DICHLOROPROPENE	NS	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
DIBROMOCHLOROMETHANE	N/A	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
DICHLOROMETHANE	0.1	0.0021 JB	0.0021 JB	0.0024 JB	0.010 B	0.96 U
ETHYLBENZENE	5.5	0.0011 U	0.0011 U	0.0011 U	0.0014 U	0.28
M&P-XYLENES	1.2*	0.0023 U	0.0022 U	0.0023 U	0.0027 U	0.72
METHYLBENZENE	1.5	0.0011 U	0.0011 U	0.0011 U	0.0027	0.43
O-XYLENE	1.2*	0.0011 U	0.0011 U	0.0011 U	0.0014 U	0.24
TETRACHLOROETHYLENE	1.4	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
TRICHLOROETHYLENE	0.7	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
VINYL CHLORIDE	0.2	0.0057 U	0.0056 U	0.0057 U	0.0068 U	0.96 U
TOTAL VOCs	10	0.0021	0.0021	0.0024	0.0127	1.99

U Undetectable Levels
ND Not Detectived
NS No Standard
* Total Xylene Recommended Cleanup Standard

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 2A/2B HHMT- Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** MG/KG	**PG-A-4** 11/16/2000 PG-A-04 6-8' MG/KG	**PG-A-4** 11/16/2000 PG-A-04 12-14' MG/KG	**PG-A-5** 11/14/2000 PG-A-05 2-4' MG/KG	**PG-B-1** 12/4/2000 PG-B-01 2-4' MG/KG	**PG-B-1** 12/4/2000 PG-B-01 6-8' MG/KG	**PG-B-1** 12/4/2000 PG-B-01 9-10' MG/KG	**PG-B-02** 11/16/2000 PG-B-02 2-4' MG/KG	**PG-B-02** 11/16/2000 PG-A-02 6-8' MG/KG	**PG-B-02A** 11/16/2000 PG-B-02A 8-10' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
1,2-BENZPHENANTHRACENE	NS	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
1,2-DICHLOROBENZENE	7.9	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
1,2-DIPHENYLHYDRAZINE	NS	0.046 U	0.071 U	1.6 U	0.038 U	0.040 U	0.042 U	0.039 U	1.9 U	0.044 U
1,4-DICHLOROBENZENE	8.5	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
2,4,6-TRICHLORORPHENOL	0.1	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
2,4-DICHLOROPHENOL	0.4	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
2,4-DIMETHYLPHENOL	NS	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
2,4-DINITROPHENOL	0.200 or MDL	0.46 U	0.71 U	16 U	0.38 U	0.40 U	0.42 U	0.39 U	19 U	0.44 U
2,4-DINITROTOLUENE	NS	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
2,6-DINITROTOLUENE	1	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
2-CHLORORNAPHTHALENE	NS	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
2-CHLOROPHENOL	0.8	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
2-NITROPHENOL	0.330 or MDL	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
3,3'-DICHLOROBENZIDINE	N/A	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
4-BROMOPHENYLPHENYL ETHER	NS	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
4-NITROPHENOL	0.100 or MDL	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
ACENAPHTHENE	50	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
ACENAPHTHYLENE	41	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
ANTHRACENE	50	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
BENZIDINE	NS	0.46 U	0.71 U	16 U	0.38 U	0.40 U	0.42 U	0.39 U	19 U	0.44 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
BENZO[A]PYRENE	0.061 or MDL	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.099 J	0.20 U	9.3 U	0.22 U
BENZO[B]FLOURANTHENE	1.1	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
BENZO[G,H,I]PERYLENE	50	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
BENZO[K]FLOURANTHENE	1.1	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
BENZYL BUTYL PHTHALATE	50	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
BIS(2-CHLOROETHYL)ETHER	NS	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
BIS(2-ETHYHEXYL)PHTHALATE	50	0.18 JB	0.13 JB	8.2 U	0.074 JB	0.079 JB	0.21 U	0.079 JB	9.3 U	0.093 JB
DI-N-BUTYL PHTHALATE	8.1	0.23 U	0.35 U	8.2 U	0.19 U	0.13 JB	0.058 JB	0.20 U	9.3 U	0.43
DI-N-OCTYL PHTHALATE	50	0.10 JB	0.073 JB	8.2 U	0.064 JB	0.054 JB	0.045 JB	0.041 JB	9.3 U	0.057 JB
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
DIETHYL PHTHALATE	7.1	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
DIMETHYL PHTHALATE	2	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
FLUORANTHENE	50	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
FLUORENE	50	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
HEXACHLORO-1,3-BUTADIENE	NS	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
HEXACHLOROBENZENE	0.41	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
HEXACHLOROCYCLOPENTADIENE	NS	0.68 U	1.1 U	25 U	0.57 U	0.60 U	0.63 U	0.59 U	28 U	0.66 U
HEXACHLOROETHANE	NS	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
INDENO[1,2,3-CD]PYRENE	3.2	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
ISOPHORORNE	4.4	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
M-DICHLOROBENZENE	NS	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
N-NITROSODIMETHYLAMINE	NS	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
N-NITROSODIPHENYLAMINE	NS	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
NAPHTHALENE	13	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
NITROBENZENE	0.200 or MDL	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
PENTACHLOROPHENOL	1.0 or MDL	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
PHENANTHRENE	50	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
PHENOL	0.03 or MDL	0.23 U	0.37	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
PYRENE	50	0.23 U	0.35 U	8.2 U	0.19 U	0.20 U	0.21 U	0.20 U	9.3 U	0.22 U
TOTAL SVOCs	500	0.28	0.573	ND	0.138	0.263	0.202	0.12	ND	0.58

U	Undetectable Levels
NS	No Standard
MDL	Method Detection Limit

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 2A/2B HHMT- Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-B-3** 12/4/2000 PG-B-03 2-4' MG/KG	**PG-B-3** 12/4/2000 PG-B-03 6-8' MG/KG	**PG-B-4** 12/4/2000 PG-B-04 2-4' MG/KG	**PG-E-1** 11/13/2000 PG-E-01 0.2-2' MG/KG	**PG-E-1** 11/13/2000 PG-E-01 4-6' MG/KG	**PG-E-1** 11/13/2000 PG-E-01 10-12' MG/KG	**PG-F2-2** 11/20/2000 PG-F2-2 2-4' MG/KG	**PG-F2-2** 11/20/2000 PG-F2-2 8-10' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
1,2-BENZPHENANTHRACENE	NS	1.2 U	0.27 U	1.2	0.30	0.19 U	0.31 U	0.18 U	0.19 U
1,2-DICHLOROBENZENE	7.9	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
1,2-DIPHENYLHYDRAZINE	NS	0.23 U	0.055 U	0.039 U	0.038 U	0.039 U	0.063 U	0.036 U	0.039 U
1,4-DICHLOROBENZENE	8.5	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
2,4,6-TRICHLORORPHENOL	0.1	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.082 J
2,4-DICHLOROPHENOL	0.4	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.059 J
2,4-DIMETHYLPHENOL	NS	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
2,4-DINITROPHENOL	0.200 or MDL	2.3 U	0.55 U	0.39 U	0.38 U	0.39 U	0.63 U	0.36 U	0.39 U
2,4-DINITROTOLUENE	NS	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
2,6-DINITROTOLUENE	1	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
2-CHLORORNAPHTHALENE	NS	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.040 J
2-CHLOROPHENOL	0.8	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
2-NITROPHENOL	0.330 or MDL	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
3,3'-DICHLOROBENZIDINE	N/A	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
4-BROMOPHENYLPHENYL ETHER	NS	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.079 J
4-CHLOROPHENYLPHENYL ETHER	NS	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
4-NITROPHENOL	0.100 or MDL	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
ACENAPHTHENE	50	1.2 U	0.27 U	1.2	0.19 U	0.19 U	0.31 U	0.18 U	0.062 J
ACENAPHTHYLENE	41	0.41 J	0.27 U	0.11 J	0.19 U	0.19 U	0.31 U	0.18 U	0.046 J
ANTHRACENE	50	1.2 U	0.27 U	1.1	0.046 J	0.19 U	0.31 U	0.18 U	0.19 U
BENZIDINE	NS	2.3 U	0.55 U	0.39 U	0.38 U	0.39 U	0.63 U	0.36 U	0.39 U
BENZO[A]ANTHRACENE	0.224 or MDL	1.2 U	0.27 U	1.	0.31	0.19 U	0.31 U	0.18 U	0.043 J
BENZO[A]PYRENE	0.061 or MDL	1.2 U	0.27 U	0.75	0.25	0.19 U	0.31 U	0.18 U	0.19 U
BENZO[B]FLOURANTHENE	1.1	1.2 U	0.27 U	1.2	0.31	0.19 U	0.31 U	0.18 U	0.19 U
BENZO[G,H,I]PERYLENE	50	1.2 U	0.27 U	0.17 J	0.14 J	0.19 U	0.31 U	0.18 U	0.19 U
BENZO[K]FLOURANTHENE	1.1	1.2 U	0.27 U	0.70	0.11 J	0.19 U	0.31 U	0.18 U	0.040 J
BENZYL BUTYL PHTHALATE	50	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
BIS(2-CHLOROETHOXY)METHANE	NS	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
BIS(2-CHLOROETHYL)ETHER	NS	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
BIS(2-ETHYHEXYL)PHTHALATE	50	0.32 JB	2.4 B	0.37 B	0.27	0.22	0.20 J	0.075 JB	0.098 JB
DI-N-BUTYL PHTHALATE	8.1	1.2 U	0.27 U	0.20 B	0.040 J	0.10 J	0.077 J	0.18 U	0.043 J
DI-N-OCTYL PHTHALATE	50	1.2 U	0.27 U	0.28 B	0.19 U	0.053 J	0.15 J	0.046 J	0.060 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	1.2 U	0.27 U	0.060 J	0.049 J	0.19 U	0.31 U	0.18 U	0.19 U
DIETHYL PHTHALATE	7.1	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.047 J
DIMETHYL PHTHALATE	2	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.046 J
FLUORANTHENE	50	1.2 U	0.27 U	4.2	0.40	0.19 U	0.087 J	0.18 U	0.040 J
FLUORENE	50	1.2 U	0.27 U	0.84	0.19 U	0.19 U	0.31 U	0.18 U	0.065 J
HEXACHLORO-1,3-BUTADIENE	NS	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
HEXACHLOROBENZENE	0.41	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.061 J
HEXACHLOROCYCLOPENTADIENE	NS	3.5 U	0.82 U	0.59 U	0.57 U	0.58 U	0.94 U	0.54 U	0.58 U
HEXACHLOROETHANE	NS	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
INDENO[1,2,3-CD]PYRENE	3.2	1.2 U	0.27 U	0.17 J	0.12 J	0.19 U	0.31 U	0.18 U	0.19 U
ISOPHORORNE	4.4	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.067 J
M-DICHLOROBENZENE	NS	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
N-NITROSO-DI-N-PROPYLAMINE	NS	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.59	0.19 U
N-NITROSODIMETHYLAMINE	NS	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
N-NITROSODIPHENYLAMINE	NS	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
NAPHTHALENE	13	1.2 U	0.27 U	1.1	0.19 U	0.19 U	0.42	0.18 U	0.19 U
NITROBENZENE	0.200 or MDL	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
PENTACHLOROPHENOL	1.0 or MDL	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
PHENANTHRENE	50	1.2 U	0.27 U	2.9	0.17 J	0.19 U	0.22 J	0.18 U	0.045 J
PHENOL	0.03 or MDL	1.2 U	0.27 U	0.20 U	0.19 U	0.19 U	0.31 U	0.18 U	0.19 U
PYRENE	50	1.2 U	0.27 U	2.8	0.48	0.19 U	0.31 U	0.18 U	0.19 U
TOTAL SVOCs	500	0.73	2.4	20.35	3.005	0.373	1.154	0.711	1.023

U Undetectable Levels

NS No Standard

MDL Method Detection Limit

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 2A/2B HHMT- Port Ivory Facility

Location	**Recommended**	**PG-P-1**	**PG-P-1**	**PG-P-2**	**PG-P-2**	**PG-P-3**	**PG-P-3**	**PG-PD-1**	**PG-PD-1**
Sample Date	**Soil**	11/22/2000	11/22/2000	11/30/2000	11/30/2000	11/22/2000	11/22/2000	11/21/2000	11/21/2000
Sample ID	**Cleanup**	PG-P-01	PG-P-01	PG-P-02	PG-P-02	PG-P-03	PG-P-03	PG-PD-01	PG-PD-01
Sample Depth	**Objective**	2-4'	8-10'	2-4'	4-6'	2-4'	6-8'	2-4'	10-12'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
1,2-BENZPHENANTHRACENE	NS	0.18 U	0.063 J	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
1,2-DICHLOROBENZENE	7.9	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
1,2-DIPHENYLHYDRAZINE	NS	0.036 U	0.042 U	0.039 U	0.040 U	0.038 U	0.038 U	0.037 U	0.042 U
1,4-DICHLOROBENZENE	8.5	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
2,4,6-TRICHLORORPHENOL	0.1	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
2,4-DICHLOROPHENOL	0.4	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
2,4-DIMETHYLPHENOL	NS	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
2,4-DINITROPHENOL	0.200 or MDL	0.36 U	0.42 U	0.39 U	0.40 U	0.38 U	0.38 U	0.37 U	0.42 U
2,4-DINITROTOLUENE	NS	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
2,6-DINITROTOLUENE	1	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
2-CHLORORNAPHTHALENE	NS	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
2-CHLOROPHENOL	0.8	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
2-NITROPHENOL	0.330 or MDL	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
3,3'-DICHLOROBENZIDINE	N/A	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
4-BROMOPHENYLPHENYL ETHER	NS	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
4-NITROPHENOL	0.100 or MDL	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
ACENAPHTHENE	50	0.18 U	0.21 U	0.19 U	0.094 J	0.19 U	0.19 U	0.19 U	0.21 U
ACENAPHTHYLENE	41	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
ANTHRACENE	50	0.18 U	0.21 U	0.19 U	0.13 J	0.19 U	0.19 U	0.19 U	0.21 U
BENZIDINE	NS	0.36 U	0.42 U	0.39 U	0.40 U	0.38 U	0.38 U	0.37 U	0.42 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.18 U	0.043 J	0.19 U	0.044 J	0.19 U	0.19 U	0.19 U	0.21 U
BENZO[A]PYRENE	0.061 or MDL	0.18 U	0.060 J	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
BENZO[B]FLOURANTHENE	1.1	0.044 J	0.095 J	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
BENZO[G,H,I]PERYLENE	50	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
BENZO[K]FLOURANTHENE	1.1	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
BENZYL BUTYL PHTHALATE	50	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
BIS(2-CHLOROETHYL)ETHER	NS	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
BIS(2-ETHYHEXYL)PHTHALATE	50	0.34 B	0.32 B	0.064 J	0.080 J	0.41 B	0.38 B	0.086 JB	0.22 B
DI-N-BUTYL PHTHALATE	8.1	0.038 JB	0.050 JB	0.19 U	0.042 J	0.052 JB	0.19 U	0.19 U	0.21 U
DI-N-OCTYL PHTHALATE	50	0.18 U	0.086 J	0.040 J	0.064 J	0.089 J	0.058 J	0.19 U	0.21 U
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
DIETHYL PHTHALATE	7.1	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
DIMETHYL PHTHALATE	2	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
FLUORANTHENE	50	0.18 U	0.21 U	0.19 U	0.23	0.19 U	0.19 U	0.19 U	0.21 U
FLUORENE	50	0.18 U	0.21 U	0.19 U	0.10 J	0.19 U	0.19 U	0.19 U	0.21 U
HEXACHLORO-1,3-BUTADIENE	NS	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
HEXACHLOROBENZENE	0.41	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
HEXACHLOROCYCLOPENTADIENE	NS	0.54 U	0.63 U	0.58 U	0.60 U	0.57 U	0.57 U	0.56 U	0.63 U
HEXACHLOROETHANE	NS	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
INDENO[1,2,3-CD]PYRENE	3.2	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
ISOPHORORNE	4.4	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
M-DICHLOROBENZENE	NS	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
N-NITROSODIMETHYLAMINE	NS	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
N-NITROSODIPHENYLAMINE	NS	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
NAPHTHALENE	13	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
NITROBENZENE	0.200 or MDL	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
PENTACHLOROPHENOL	1.0 or MDL	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
PHENANTHRENE	50	0.18 U	0.21 U	0.19 U	0.41	0.19 U	0.19 U	0.19 U	0.21 U
PHENOL	0.03 or MDL	0.18 U	0.21 U	0.19 U	0.20 U	0.19 U	0.19 U	0.19 U	0.21 U
PYRENE	50	0.18 U	0.058 J	0.19 U	0.16 J	0.19 U	0.19 U	0.19 U	0.21 U
TOTAL SVOCs	500	0.422	0.775	0.104	1.354	0.551	0.438	0.086	0.22

U Undetectable Levels

NS No Standard

MDL Method Detection Limit

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 2A/2B HHMT- Port Ivory Facility

Location	Recommended	PG-PD-3	PG-PD-4	PG-PD-5	PG-PD-5	PG-PA-MW-7	PG-PA-MW-7	PG-PA-MW-7
Sample Date	Soil	11/29/2000	12/2/2000	12/2/2000	12/2/2000	11/13/2000	11/13/2000	11/13/2000
Sample ID	Cleanup	PG-PD-3	PG-PD-4	PG-PD-5	PG-PD-5	PG-PAMW-07	PG-PAMW-07	PG-PAMW-07
Sample Depth	Objective	4-6'	8-10'	0.7-1.5'	2-4'	2.5-4'	4-6'	6-8'
Concentration	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
1,2-BENZPHENANTHRACENE	NS	0.21 U	0.20 U	0.15 J	0.19 U	0.19 U	0.19 U	0.20 U
1,2-DICHLOROBENZENE	7.9	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
1,2-DIPHENYLHYDRAZINE	NS	0.041 U	0.041 U	0.038 U	0.037 U	0.037 U	0.038 U	0.040 U
1,4-DICHLOROBENZENE	8.5	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
2,4,6-TRICHLORORPHENOL	0.1	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
2,4-DICHLOROPHENOL	0.4	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
2,4-DIMETHYLPHENOL	NS	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
2,4-DINITROPHENOL	0.200 or MDL	0.41 U	0.41 U	0.38 U	0.37 U	0.37 U	0.38 U	0.40 U
2,4-DINITROTOLUENE	NS	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
2,6-DINITROTOLUENE	1	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
2-CHLORORNAPHTHALENE	NS	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
2-CHLOROPHENOL	0.8	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
2-NITROPHENOL	0.330 or MDL	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
3,3'-DICHLOROBENZIDINE	N/A	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
4-BROMOPHENYLPHENYL ETHER	NS	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
4-NITROPHENOL	0.100 or MDL	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
ACENAPHTHENE	50	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
ACENAPHTHYLENE	41	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
ANTHRACENE	50	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
BENZIDINE	NS	0.41 U	0.41 U	0.38 U	0.37 U	0.37 U	0.38 U	0.40 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.21 U	0.20 U	0.12 J	0.19 U	0.19 U	0.19 U	0.20 U
BENZO[A]PYRENE	0.061 or MDL	0.21 U	0.20 U	0.14 J	0.19 U	0.19 U	0.19 U	0.20 U
BENZO[B]FLOURANTHENE	1.1	0.21 U	0.20 U	0.28	0.19 U	0.19 U	0.19 U	0.20 U
BENZO[G,H,I]PERYLENE	50	0.21 U	0.20 U	0.050 J	0.19 U	0.19 U	0.19 U	0.20 U
BENZO[K]FLOURANTHENE	1.1	0.21 U	0.20 U	0.077 J	0.19 U	0.19 U	0.19 U	0.20 U
BENZYL BUTYL PHTHALATE	50	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
BIS(2-CHLOROETHYL)ETHER	NS	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
BIS(2-ETHYHEXYL)PHTHALATE	50	0.23 B	0.11 JB	0.19 B	0.12 JB	0.045 J	0.063 J	0.082 J
DI-N-BUTYL PHTHALATE	8.1	0.21 U	0.093 J	0.075 J	0.19 U	0.090 J	0.19 U	0.068 J
DI-N-OCTYL PHTHALATE	50	0.21 U	0.075 JB	0.20 B	0.085 JB	0.039 J	0.046 J	0.057 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
DIETHYL PHTHALATE	7.1	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
DIMETHYL PHTHALATE	2	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
FLUORANTHENE	50	0.21 U	0.20 U	0.17 J	0.19 U	0.19 U	0.19 U	0.20 U
FLUORENE	50	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
HEXACHLORO-1,3-BUTADIENE	NS	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
HEXACHLOROBENZENE	0.41	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
HEXACHLOROCYCLOPENTADIENE	NS	0.62 U	0.61 U	0.57 U	0.56 U	0.56 U	0.57 U	0.60 U
HEXACHLOROETHANE	NS	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
INDENO[1,2,3-CD]PYRENE	3.2	0.21 U	0.20 U	0.049 J	0.19 U	0.19 U	0.19 U	0.20 U
ISOPHORORNE	4.4	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
M-DICHLOROBENZENE	NS	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
N-NITROSODIMETHYLAMINE	NS	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
N-NITROSODIPHENYLAMINE	NS	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
NAPHTHALENE	13	0.21 U	0.20 U	0.046 J	0.19 U	0.19 U	0.19 U	0.20 U
NITROBENZENE	0.200 or MDL	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
PENTACHLOROPHENOL	1.0 or MDL	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
PHENANTHRENE	50	0.21 U	0.20 U	0.098 J	0.19 U	0.19 U	0.19 U	0.20 U
PHENOL	0.03 or MDL	0.21 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U
PYRENE	50	0.21 U	0.20 U	0.16 J	0.19 U	0.19 U	0.19 U	0.20 U
TOTAL SVOCs	500	0.23	0.278	1.805	0.205	0.174	0.109	0.207

U	Undetectable Levels
NS	No Standard
MDL	Method Detection Limit

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 2A/2B HHMT- Port Ivory Facility

Location	**Recommended**	**PG-PA-MW-7**	**PG-PA-MW-10D**	**PG-PA-MW-10D**	**PG—PA-MW10D**	**PG-PA-MW10D**	**PG-Q1-1**
Sample Date	**Soil**	11/13/2000	11/27/2000	11/27/2000	11/27/2000	11/27/2000	11/30/2000
Sample ID	**Cleanup**	PG-PAMW-07	PG-PAMW10D	PG-PAMW10D	PG-MW10D	PG-MW10D	PG-Q1-1
Sample Depth	**Objective**	8-10'	0.5-2'	4-6'	7-8'	8-10'	2-4'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
1,2-BENZPHENANTHRACENE	NS	0.19 U	0.12 J	0.33	6.2	13 U	0.49
1,2-DICHLOROBENZENE	7.9	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
1,2-DIPHENYLHYDRAZINE	NS	0.038 U	0.037 U	0.038 U	0.046 U	2.6 U	0.038 U
1,4-DICHLOROBENZENE	8.5	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
2,4,6-TRICHLORORPHENOL	0.1	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
2,4-DICHLOROPHENOL	0.4	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
2,4-DIMETHYLPHENOL	NS	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
2,4-DINITROPHENOL	0.200 or MDL	0.38 U	0.37 U	0.38 U	0.46 U	26 U	0.38 U
2,4-DINITROTOLUENE	NS	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
2,6-DINITROTOLUENE	1	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
2-CHLORORNAPHTHALENE	NS	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
2-CHLOROPHENOL	0.8	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
2-NITROPHENOL	0.330 or MDL	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
3,3'-DICHLOROBENZIDINE	N/A	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
4-BROMOPHENYLPHENYL ETHER	NS	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
4-NITROPHENOL	0.100 or MDL	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
ACENAPHTHENE	50	0.19 U	0.19 U	0.19 U	0.23	13 U	0.069 J
ACENAPHTHYLENE	41	0.19 U	0.19 U	0.19 U	0.64	2.6 J	0.095 J
ANTHRACENE	50	0.19 U	0.19 U	0.096 J	1.2	13 U	0.20
BENZIDINE	NS	0.38 U	0.37 U	0.38 U	0.46 U	26 U	0.38 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.19 U	0.10 J	**0.36**	**4.4**	13 U	**0.49**
BENZO[A]PYRENE	0.061 or MDL	0.19 U	**0.11 J**	**0.32**	**4.3**	13 U	**0.46**
BENZO[B]FLOURANTHENE	1.1	0.19 U	0.13 J	0.50	**7.9**	13 U	0.55
BENZO[G,H,I]PERYLENE	50	0.19 U	0.081 J	0.13 J	2.5	13 U	0.17 J
BENZO[K]FLOURANTHENE	1.1	0.19 U	0.038 J	0.14 J	**2.9**	13 U	0.30
BENZYL BUTYL PHTHALATE	50	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
BIS(2-CHLOROETHYL)ETHER	NS	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
BIS(2-ETHYHEXYL)PHTHALATE	50	0.11 J	0.14 JB	0.26 B	0.42 B	13 U	0.60
DI-N-BUTYL PHTHALATE	8.1	0.19 U	0.22 B	0.068 JB	0.096 JB	13 U	0.068 J
DI-N-OCTYL PHTHALATE	50	0.091 J	0.074 J	0.15 J	0.23 U	13 U	0.039 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.19 U	0.19 U	**0.050 J**	**0.92**	13 U	0.19 U
DIETHYL PHTHALATE	7.1	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
DIMETHYL PHTHALATE	2	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
FLUORANTHENE	50	0.19 U	0.21	0.79	5.0	13 U	0.88
FLUORENE	50	0.19 U	0.051 J	0.19 U	0.27	13 U	0.13 J
HEXACHLORO-1,3-BUTADIENE	NS	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
HEXACHLOROBENZENE	0.41	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
HEXACHLOROCYCLOPENTADIENE	NS	0.57 U	0.56 U	0.57 U	0.68 U	38 U	0.57 U
HEXACHLOROETHANE	NS	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
INDENO[1,2,3-CD]PYRENE	3.2	0.19 U	0.068 J	0.14 J	2.6	13 U	0.15 J
ISOPHORORNE	4.4	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
M-DICHLOROBENZENE	NS	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
N-NITROSODIMETHYLAMINE	NS	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
N-NITROSODIPHENYLAMINE	NS	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
NAPHTHALENE	13	0.19 U	0.052 J	0.19 U	0.18 J	13 U	0.15 J
NITROBENZENE	0.200 or MDL	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
PENTACHLOROPHENOL	1.0 or MDL	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
PHENANTHRENE	50	0.19 U	0.22	0.37	1.1	13 U	0.95
PHENOL	0.03 or MDL	0.19 U	0.19 U	0.19 U	0.23 U	13 U	0.19 U
PYRENE	50	0.19 U	0.27	0.77	4.8	13 U	0.95
TOTAL SVOCs	500	0.201	1.884	4.474	45.656	2.6	6.741

U	Undetectable Levels
NS	No Standard
MDL	Method Detection Limit

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 2A/2B HHMT- Port Ivory Facility

Location	**Recommended**	**PG-Q1-1**	**PG-RR-1**	**PG-RR-1**	**PG-RR-2**	**PG-RR-3**	**PG-RR-4**	**PG-RR-4**
Sample Date	**Soil**	11/30/2000	11/3/2000	11/3/2000	11/4/2000	11/3/2000	11/4/2000	11/4/2000
Sample ID	**Cleanup**	PG-Q1-1	PG-RR-01	PG-RR-01	PG-RR-02	PG-RR-03	PG-RR-04	PG-RR-04
Sample Depth	**Objective**	4-6'	0-1.2'	1.2-2'	0-2'	1.5-2'	0.6-2'	3-4'
Concentration	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
1,2-BENZPHENANTHRACENE	NS	0.26 U	1.5	0.18 J	0.52	11	0.23	0.21 U
1,2-DICHLOROBENZENE	7.9	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
1,2-DIPHENYLHYDRAZINE	NS	0.051 U	0.039 U	0.038 U	0.039 U	0.19 U	0.037 U	0.042 U
1,4-DICHLOROBENZENE	8.5	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
2,4,6-TRICHLORORPHENOL	0.1	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
2,4-DICHLOROPHENOL	0.4	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
2,4-DIMETHYLPHENOL	NS	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
2,4-DINITROPHENOL	0.200 or MDL	0.51 U	0.39 U	0.38 U	0.39 U	1.9 U	0.37 U	0.42 U
2,4-DINITROTOLUENE	NS	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
2,6-DINITROTOLUENE	1	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
2-CHLORORNAPHTHALENE	NS	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
2-CHLOROPHENOL	0.8	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
2-NITROPHENOL	0.330 or MDL	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
3,3'-DICHLOROBENZIDINE	N/A	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
4-BROMOPHENYLPHENYL ETHER	NS	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
4-NITROPHENOL	0.100 or MDL	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
ACENAPHTHENE	50	1.7	0.053 J	0.19 U	0.20 U	0.50 J	0.19 U	0.21 U
ACENAPHTHYLENE	41	0.26 U	0.41	0.19 U	0.11 J	3.3	0.19 U	0.21 U
ANTHRACENE	50	0.26 U	0.32	0.044 J	0.16 J	2.0	0.049 J	0.21 U
BENZIDINE	NS	0.51 U	0.39 U	0.38 U	0.39 U	1.9 U	0.37 U	0.42 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.26 U	**0.96**	0.12 J	**0.29**	**8.9**	0.20	0.21 U
BENZO[A]PYRENE	0.061 or MDL	0.26 U	**1.2**	**0.15 J**	**0.35**	**15**	**0.19**	0.21 U
BENZO[B]FLOURANTHENE	1.1	0.054 J	**3.2**	0.32	0.96	**26**	0.18 J	0.21 U
BENZO[G,H,I]PERYLENE	50	0.26 U	0.51	0.074 J	0.16 J	3.5	0.12 J	0.21 U
BENZO[K]FLOURANTHENE	1.1	0.26 U	0.19 U	0.19 U	0.20 U	**11**	0.17 J	0.21 U
BENZYL BUTYL PHTHALATE	50	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
BIS(2-CHLOROETHYL)ETHER	NS	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
BIS(2-ETHYHEXYL)PHTHALATE	50	0.11 J	0.075 J	0.19 U	0.052 J	0.23 J	0.052 J	0.071 J
DI-N-BUTYL PHTHALATE	8.1	0.26 U	0.19 U	0.19 U	0.060 J	0.97 U	0.046 J	0.062 J
DI-N-OCTYL PHTHALATE	50	0.095 J	0.071 J	0.19 U	0.064 J	0.35 J	0.067 J	0.057 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.26 U	**0.29**	**0.046 J**	**0.089 J**	0.97 U	0.19 U	0.21 U
DIETHYL PHTHALATE	7.1	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
DIMETHYL PHTHALATE	2	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.057 J
FLUORANTHENE	50	0.49	1.5	0.18 J	0.39	6.6	0.33	0.21 U
FLUORENE	50	0.35	0.081 J	0.19 U	0.042 J	0.47 J	0.19 U	0.21 U
HEXACHLORO-1,3-BUTADIENE	NS	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
HEXACHLOROBENZENE	0.41	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
HEXACHLOROCYCLOPENTADIENE	NS	0.77 U	0.58 U	0.57 U	0.59 U	2.9 U	0.56 U	0.62 U
HEXACHLOROETHANE	NS	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
INDENO[1,2,3-CD]PYRENE	3.2	0.26 U	0.55	0.085 J	0.17 J	**4.3**	0.10 J	0.21 U
ISOPHORORNE	4.4	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
M-DICHLOROBENZENE	NS	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
N-NITROSODIMETHYLAMINE	NS	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
N-NITROSODIPHENYLAMINE	NS	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
NAPHTHALENE	13	0.12 J	0.34	0.039 J	0.50	2.2	0.12 J	0.21 U
NITROBENZENE	0.200 or MDL	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
PENTACHLOROPHENOL	1.0 or MDL	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
PHENANTHRENE	50	0.11 J	0.60	0.085 J	0.47	2.0	0.21	0.21 U
PHENOL	0.03 or MDL	0.26 U	0.19 U	0.19 U	0.20 U	0.97 U	0.19 U	0.21 U
PYRENE	50	0.29	1.5	0.16 J	0.42	9.3	0.34	0.21 U
TOTAL SVOCs	500	3.319	13.16	1.483	4.807	106.65	2.404	0.247

U Undetectable Levels
NS No Standard
MDL Method Detection Limit

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 2A/2B HHMT- Port Ivory Facility

Location	**Recommended**	**PG-RR-5**	**PG-RR-5**	**PG-RR-6**	**PG-RR-6**	**PG-RR-7**	**PG-RR-7**	**PG-STAIN-02**	**PG-STAIN-02**
Sample Date	**Soil**	11/7/2000	11/7/2000	11/6/2000	11/6/2000	11/6/2000	11/6/2000	11/11/2000	11/11/2000
Sample ID	**Cleanup**	PG-RR-05	PG-RR-05	PG-RR-06	PG-RR-06	PG-RR-07	PG-RR-07	PG-ST-02	PG-ST-02
Sample Depth	**Objective**	1-2'	2-4'	1-2'	2-4'	0-2'	2-4'	1-2'	2-3'
Concentration	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
1,2-BENZPHENANTHRACENE	NS	0.055 J	0.18 U	0.079 J	0.18 U	0.18 U	0.11 J	0.20 U	0.20 U
1,2-DICHLOROBENZENE	7.9	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
1,2-DIPHENYLHYDRAZINE	NS	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.039 U	0.040 U
1,4-DICHLOROBENZENE	8.5	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
2,4,6-TRICHLORORPHENOL	0.1	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
2,4-DICHLOROPHENOL	0.4	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
2,4-DIMETHYLPHENOL	NS	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
2,4-DINITROPHENOL	0.200 or MDL	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.39 U	0.40 U
2,4-DINITROTOLUENE	NS	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
2,6-DINITROTOLUENE	1	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
2-CHLORORNAPHTHALENE	NS	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
2-CHLOROPHENOL	0.8	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
2-NITROPHENOL	0.330 or MDL	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
3,3'-DICHLOROBENZIDINE	N/A	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
4-BROMOPHENYLPHENYL ETHER	NS	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
4-NITROPHENOL	0.100 or MDL	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
ACENAPHTHENE	50	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
ACENAPHTHYLENE	41	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
ANTHRACENE	50	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
BENZIDINE	NS	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.39 U	0.40 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.18 U	0.18 U	0.054 J	0.18 U	0.18 U	0.074 J	0.20 U	0.20 U
BENZO[A]PYRENE	0.061 or MDL	0.18 U	0.18 U	0.054 J	0.18 U	0.18 U	0.12 J	0.20 U	0.20 U
BENZO[B]FLOURANTHENE	1.1	0.18 U	0.18 U	0.12 J	0.18 U	0.18 U	0.22	0.20 U	0.20 U
BENZO[G,H,I]PERYLENE	50	0.18 U	0.18 U	0.043 J	0.18 U	0.18 U	0.17 J	0.20 U	0.20 U
BENZO[K]FLOURANTHENE	1.1	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
BENZYL BUTYL PHTHALATE	50	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
BIS(2-CHLOROETHYL)ETHER	NS	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
BIS(2-ETHYHEXYL)PHTHALATE	50	0.18 U	0.18 U	0.18 U	0.18 U	0.043 J	0.15 J	0.12 JB	0.13 JB
DI-N-BUTYL PHTHALATE	8.1	0.059 J	0.18 U	0.18 U	0.18 U	0.13 J	0.068 J	0.067 J	0.20 U
DI-N-OCTYL PHTHALATE	50	0.054 J	0.18 U	0.086 JB	0.078 JB	0.077 JB	0.11 JB	0.20 U	0.20 U
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.039 J	0.20 U	0.20 U
DIETHYL PHTHALATE	7.1	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
DIMETHYL PHTHALATE	2	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
FLUORANTHENE	50	0.18 U	0.18 U	0.081 J	0.18 U	0.18 U	0.071 J	0.20 U	0.20 U
FLUORENE	50	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
HEXACHLORO-1,3-BUTADIENE	NS	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
HEXACHLOROBENZENE	0.41	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
HEXACHLOROCYCLOPENTADIENE	NS	0.54 U	0.54 U	0.54 U	0.54 U	0.54 U	0.54 U	0.59 U	0.60 U
HEXACHLOROETHANE	NS	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
INDENO[1,2,3-CD]PYRENE	3.2	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.096 J	0.20 U	0.20 U
ISOPHORORNE	4.4	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
M-DICHLOROBENZENE	NS	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
N-NITROSODIMETHYLAMINE	NS	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
N-NITROSODIPHENYLAMINE	NS	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
NAPHTHALENE	13	0.18 U	0.18 U	0.090 J	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
NITROBENZENE	0.200 or MDL	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
PENTACHLOROPHENOL	1.0 or MDL	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
PHENANTHRENE	50	0.064 J	0.18 U	0.11 J	0.18 U	0.18 U	0.046 J	0.20 U	0.20 U
PHENOL	0.03 or MDL	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.20 U
PYRENE	50	0.18 U	0.18 U	0.079 J	0.18 U	0.18 U	0.14 J	0.20 U	0.20 U
TOTAL SVOCs	500	0.232	ND	0.796	0.078	0.25	1.414	0.187	0.13

U Undetectable Levels
NS No Standard
MDL Method Detection Limit

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 2A/2B HHMT- Port Ivory Facility

Location	**Recommended**	**PG-STAIN-03**	**PG-STAIN-03**	**PG-STAIN-3B**	**PG-STAIN-3B**	**PG-FS-2**	**PG-FS-2**	**PG-FS-2**
Sample Date	**Soil**	11/10/2000	11/10/2000	11/11/2000	11/11/2000	11/17/2000	11/17/2000	11/17/2000
Sample ID	**Cleanup**	PG-ST-03	PG-ST-03	PG-ST-3B	PG-ST-3B	PG-FS-02	PG-FS-02	PG-FS-02
Sample Depth	**Objective**	1.7-2.5'	2.5-3.5'	0-2'	2-4'	2-4'	8-10'	17-18'
Concentration	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,2,4-TRICHLOROBENZENE	3.4	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
1,2-BENZPHENANTHRACENE	NS	77	2.4	0.55	0.18 U	0.19 U	0.20 U	0.19 U
1,2-DICHLOROBENZENE	7.9	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
1,2-DIPHENYLHYDRAZINE	NS	3.9 U	0.21 U	0.036 U	0.036 U	0.038 U	0.041 U	0.037 U
1,4-DICHLOROBENZENE	8.5	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
2,4,6-TRICHLORORPHENOL	0.1	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
2,4-DICHLOROPHENOL	0.4	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
2,4-DIMETHYLPHENOL	NS	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
2,4-DINITROPHENOL	0.200 or MDL	39 U	2.1 U	0.36 U	0.36 U	0.38 U	0.41 U	0.37 U
2,4-DINITROTOLUENE	NS	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
2,6-DINITROTOLUENE	1	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
2-CHLORORNAPHTHALENE	NS	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
2-CHLOROPHENOL	0.8	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
2-NITROPHENOL	0.330 or MDL	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
3,3'-DICHLOROBENZIDINE	N/A	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
4-BROMOPHENYLPHENYL ETHER	NS	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
4-CHLOROPHENYLPHENYL ETHER	NS	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
4-NITROPHENOL	0.100 or MDL	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
ACENAPHTHENE	50	**200**	5.6	0.059 J	0.18 U	0.19 U	0.20 U	0.19 U
ACENAPHTHYLENE	41	32	0.80 J	0.044 J	0.18 U	0.19 U	0.20 U	0.19 U
ANTHRACENE	50	**140**	4.1	0.13 J	0.18 U	0.19 U	0.20 U	0.19 U
BENZIDINE	NS	39 U	2.1 U	0.36 U	0.36 U	0.38 U	0.41 U	0.37 U
BENZO[A]ANTHRACENE	0.224 or MDL	**86**	**2.6**	**0.44**	0.18 U	0.19 U	0.20 U	0.19 U
BENZO[A]PYRENE	0.061 or MDL	**44**	**1.3**	**0.47**	0.18 U	0.19 U	0.20 U	0.19 U
BENZO[B]FLOURANTHENE	1.1	**63**	**2**	1.1	0.18 U	0.19 U	0.20 U	0.19 U
BENZO[G,H,I]PERYLENE	50	18 J	0.52 J	0.24	0.18 U	0.19 U	0.20 U	0.19 U
BENZO[K]FLOURANTHENE	1.1	**22**	0.66 J	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
BENZYL BUTYL PHTHALATE	50	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
BIS(2-CHLOROETHOXY)METHANE	NS	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
BIS(2-CHLOROETHYL)ETHER	NS	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
BIS(2-ETHYHEXYL)PHTHALATE	50	19 U	0.26 JB	0.30 B	0.087 JB	0.19 U	0.050 J	0.19 U
DI-N-BUTYL PHTHALATE	8.1	19 U	1.1 U	0.086 J	0.056 J	0.19 U	0.20 U	0.19 U
DI-N-OCTYL PHTHALATE	50	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	**6.3 J**	1.1 U	**0.13 J**	0.18 U	0.19 U	0.20 U	0.19 U
DIETHYL PHTHALATE	7.1	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
DIMETHYL PHTHALATE	2	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
FLUORANTHENE	50	**350**	9.9	0.66	0.055 J	0.19 U	0.20 U	0.19 U
FLUORENE	50	**190**	5.3	0.054 J	0.18 U	0.19 U	0.20 U	0.19 U
HEXACHLORO-1,3-BUTADIENE	NS	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
HEXACHLOROBENZENE	0.41	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
HEXACHLOROCYCLOPENTADIENE	NS	58 U	3.2 U	0.54 U	0.54 U	0.57 U	0.61 U	0.56 U
HEXACHLOROETHANE	NS	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
INDENO[1,2,3-CD]PYRENE	3.2	**19 J**	0.58 J	0.23	0.18 U	0.19 U	0.20 U	0.19 U
ISOPHORORNE	4.4	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
M-DICHLOROBENZENE	NS	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
N-NITROSO-DI-N-PROPYLAMINE	NS	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
N-NITROSODIMETHYLAMINE	NS	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
N-NITROSODIPHENYLAMINE	NS	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
NAPHTHALENE	13	**420**	11	0.18 J	0.18 U	0.19 U	0.20 U	0.19 U
NITROBENZENE	0.200 or MDL	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
PENTACHLOROPHENOL	1.0 or MDL	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
PHENANTHRENE	50	**540**	16	0.49	0.18 U	0.19 U	0.20 U	0.19 U
PHENOL	0.03 or MDL	19 U	1.1 U	0.18 U	0.18 U	0.19 U	0.20 U	0.19 U
PYRENE	50	**230**	7.1	0.77	0.043 J	0.19 U	0.20 U	0.19 U
TOTAL SVOCs	500	**2437.3**	70.12	5.933	0.241	ND	0.05	ND

U Undetectable Levels

NS No Standard

MDL Method Detection Limit

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 2A/2B HHMT- Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** MG/KG	**PG-FS-3** 11/15/2000 PG-FS03 2-4' MG/KG	**PG-FS-3** 11/15/2000 PG-FS03 6.5-8' MG/KG	**PG-FILL-02** 11/3/2000 PGFILL02 0.7-3' MG/KG	**PG-FILL-03** 11/4/2000 PGFILL03 0.5-2' MG/KG	**PG-FILL-03** 11/6/2000 PGFILL03 2-4' MG/KG	**PG-FILL-03** 11/6/2000 PGFILL03 4-6' MG/KG	**PG-FILL-04** 11/6/2000 PGFILL04 0-2' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
1,2-BENZPHENANTHRACENE	NS	0.048 J	0.20 U	0.18 J	1.6	0.58	0.053 J	0.33
1,2-DICHLOROBENZENE	7.9	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
1,2-DIPHENYLHYDRAZINE	NS	0.038 U	0.039 U	0.043 U	0.036 U	0.037 U	0.037 U	0.039 U
1,4-DICHLOROBENZENE	8.5	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
2,4,6-TRICHLORORPHENOL	0.1	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
2,4-DICHLOROPHENOL	0.4	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
2,4-DIMETHYLPHENOL	NS	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
2,4-DINITROPHENOL	0.200 or MDL	0.38 U	0.39 U	0.43 U	0.36 U	0.37 U	0.37 U	0.39 U
2,4-DINITROTOLUENE	NS	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
2,6-DINITROTOLUENE	1	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
2-CHLORORNAPHTHALENE	NS	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
2-CHLOROPHENOL	0.8	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
2-NITROPHENOL	0.330 or MDL	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
3,3'-DICHLOROBENZIDINE	N/A	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
4-BROMOPHENYLPHENYL ETHER	NS	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
4-NITROPHENOL	0.100 or MDL	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
ACENAPHTHENE	50	0.19 U	0.20 U	0.22 U	0.099 J	0.058 J	0.19 U	0.19 U
ACENAPHTHYLENE	41	0.19 U	0.20 U	0.22 U	0.064 J	0.046 J	0.19 U	0.19 U
ANTHRACENE	50	0.19 U	0.20 U	0.22 U	0.33	0.12 J	0.19 U	0.040 J
BENZIDINE	NS	0.38 U	0.39 U	0.43 U	0.36 U	0.37 U	0.37 U	0.39 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.042 J	0.20 U	0.12 J	1.3	0.47	0.19 U	0.22
BENZO[A]PYRENE	0.061 or MDL	0.043 J	0.20 U	0.081 J	1.4	0.54	0.19 U	0.21
BENZO[B]FLOURANTHENE	1.1	0.051 J	0.20 U	0.14 J	1.4	0.59	0.073 J	0.45
BENZO[G,H,I]PERYLENE	50	0.19 U	0.20 U	0.22 U	0.66	0.34	0.19 U	0.10 J
BENZO[K]FLOURANTHENE	1.1	0.19 U	0.20 U	0.064 J	1.3	0.53	0.19 U	0.19 U
BENZYL BUTYL PHTHALATE	50	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
BIS(2-CHLOROETHYL)ETHER	NS	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
BIS(2-ETHYHEXYL)PHTHALATE	50	0.091 JB	1.3 B	0.12 J	0.038 J	0.21	0.19 U	0.19 U
DI-N-BUTYL PHTHALATE	8.1	0.19 U	0.039 J	0.22 U	0.078 J	0.043 J	0.19 U	0.19 U
DI-N-OCTYL PHTHALATE	50	0.044 JB	0.11 JB	0.23	0.057 JB	0.17 JB	0.059 JB	0.11 JB
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.19 U	0.20 U	0.22 U	0.35	0.16 J	0.19 U	0.076 J
DIETHYL PHTHALATE	7.1	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
DIMETHYL PHTHALATE	2	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
FLUORANTHENE	50	0.079 J	0.20 U	0.14 J	1.9	0.70	0.19 U	0.35
FLUORENE	50	0.19 U	0.20 U	0.22 U	0.084 J	0.19 U	0.19 U	0.19 U
HEXACHLORO-1,3-BUTADIENE	NS	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
HEXACHLOROBENZENE	0.41	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
HEXACHLOROCYCLOPENTADIENE	NS	0.57 U	0.59 U	0.65 U	0.54 U	0.56 U	0.56 U	0.58 U
HEXACHLOROETHANE	NS	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
INDENO[1,2,3-CD]PYRENE	3.2	0.19 U	0.20 U	0.22 U	0.66	0.31	0.19 U	0.10 J
ISOPHORORNE	4.4	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
M-DICHLOROBENZENE	NS	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
N-NITROSODIMETHYLAMINE	NS	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
N-NITROSODIPHENYLAMINE	NS	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
NAPHTHALENE	13	0.19 U	0.20 U	0.56	0.18 U	0.27	0.19 U	0.18 J
NITROBENZENE	0.200 or MDL	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
PENTACHLOROPHENOL	1.0 or MDL	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
PHENANTHRENE	50	0.19 U	0.20 U	0.45	1.2	0.38	0.042 J	0.31
PHENOL	0.03 or MDL	0.19 U	0.20 U	0.22 U	0.18 U	0.19 U	0.19 U	0.19 U
PYRENE	50	0.077 J	0.20 U	0.23	2.2	0.84	0.19 U	0.33
TOTAL SVOCs	500	0.475	1.449	2.315	14.72	6.357	0.227	2.806

U	Undetectable Levels
NS	No Standard
MDL	Method Detection Limit

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 2A/2B HHMT- Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** MG/KG	**PG-FILL-04** 11/6/2000 PGFILL04 2-4' MG/KG	**PG-FILL-04** 11/6/2000 PGFILL04 4-6' MG/KG	**PG-FILL-04** 11/6/2000 PGFILL04 7-8' MG/KG	**PG-FILL-5** 11/18/2000 PG-FILL-5 2-4' MG/KG	**PG-FILL-5** 11/18/2000 PG-FILL-5 6-8' MG/KG	**PG-FILL-10** 12/1/2000 PG-FILL10 3-4' MG/KG	**PG-FILL-10** 12/1/2000 PG-FILL10 6.4-8.2' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
1,2-BENZPHENANTHRACENE	NS	0.19 U	0.12 J	0.21 U	0.18 U	0.19 U	0.23	0.43
1,2-DICHLOROBENZENE	7.9	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
1,2-DIPHENYLHYDRAZINE	NS	0.037 U	0.038 U	0.042 U	0.036 U	0.039 U	0.037 U	0.079 U
1,4-DICHLOROBENZENE	8.5	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
2,4,6-TRICHLORORPHENOL	0.1	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
2,4-DICHLOROPHENOL	0.4	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
2,4-DIMETHYLPHENOL	NS	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
2,4-DINITROPHENOL	0.200 or MDL	0.37 U	0.38 U	0.42 U	0.36 U	0.39 U	0.37 U	0.79 U
2,4-DINITROTOLUENE	NS	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
2,6-DINITROTOLUENE	1	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
2-CHLORORNAPHTHALENE	NS	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
2-CHLOROPHENOL	0.8	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
2-NITROPHENOL	0.330 or MDL	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
3,3'-DICHLOROBENZIDINE	N/A	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
4-BROMOPHENYLPHENYL ETHER	NS	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
4-NITROPHENOL	0.100 or MDL	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
ACENAPHTHENE	50	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.14 J
ACENAPHTHYLENE	41	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.069 J	0.40 U
ANTHRACENE	50	0.19 U	0.041 J	0.21 U	0.18 U	0.19 U	0.054 J	0.17 J
BENZIDINE	NS	0.37 U	0.38 U	0.42 U	0.36 U	0.39 U	0.37 U	0.79 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.19 U	0.082 J	0.21 U	0.18 U	0.19 U	0.24	0.42
BENZO[A]PYRENE	0.061 or MDL	0.19 U	0.076 J	0.081 J	0.18 U	0.19 U	0.17 J	0.34 J
BENZO[B]FLOURANTHENE	1.1	0.19 U	0.11 J	0.21 U	0.18 U	0.19 U	0.18 J	0.62
BENZO[G,H,I]PERYLENE	50	0.19 U	0.045 J	0.21 U	0.18 U	0.19 U	0.11 J	0.11 J
BENZO[K]FLOURANTHENE	1.1	0.19 U	0.054 J	0.21 U	0.18 U	0.19 U	0.063 J	0.30 J
BENZYL BUTYL PHTHALATE	50	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
BIS(2-CHLOROETHYL)ETHER	NS	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
BIS(2-ETHYHEXYL)PHTHALATE	50	0.19 U	0.19 U	0.055 J	0.041 J	0.19 U	0.070 JB	0.27 JB
DI-N-BUTYL PHTHALATE	8.1	0.19 U	0.10 J	0.14 J	0.18 U	0.19 U	0.050 J	0.18 J
DI-N-OCTYL PHTHALATE	50	0.19 B	0.14 JB	0.10 JB	0.18 U	0.19 U	0.037 J	0.15 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
DIETHYL PHTHALATE	7.1	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
DIMETHYL PHTHALATE	2	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
FLUORANTHENE	50	0.19 U	0.15 J	0.21 U	0.18 U	0.19 U	0.35	0.67
FLUORENE	50	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.15 J
HEXACHLORO-1,3-BUTADIENE	NS	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
HEXACHLOROBENZENE	0.41	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
HEXACHLOROCYCLOPENTADIENE	NS	0.56 U	0.57 U	0.62 U	0.54 U	0.58 U	0.55 U	1.2 U
HEXACHLOROETHANE	NS	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
INDENO[1,2,3-CD]PYRENE	3.2	0.19 U	0.039 J	0.21 U	0.18 U	0.19 U	0.078 J	0.11 J
ISOPHORORNE	4.4	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
M-DICHLOROBENZENE	NS	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
N-NITROSODIMETHYLAMINE	NS	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
N-NITROSODIPHENYLAMINE	NS	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
NAPHTHALENE	13	0.19 U	0.050 J	0.21 U	0.18 U	0.19 U	0.18 U	1.9
NITROBENZENE	0.200 or MDL	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
PENTACHLOROPHENOL	1.0 or MDL	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
PHENANTHRENE	50	0.19 U	0.21	0.21 U	0.18 U	0.19 U	0.18 J	0.58
PHENOL	0.03 or MDL	0.19 U	0.19 U	0.21 U	0.18 U	0.19 U	0.18 U	0.40 U
PYRENE	50	0.19 U	0.13 J	0.21 U	0.037 J	0.19 U	0.62	0.58
TOTAL SVOCs	500	0.19	1.347	0.376	0.078	ND	2.501	7.12

U	Undetectable Levels
NS	No Standard
MDL	Method Detection Limit

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 2A/2B HHMT- Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** MG/KG	**PG-UST1-2** 11/20/2000 PG-UST1-2 2-4' MG/KG	**PG-UST1-2** 11/20/2000 PG-UST1-2 12-14' MG/KG	**PG-UST4-1** 11/20/2000 PG-UST4-1 2-4' MG/KG	**PG-UST4-1** 11/20/2000 PG-UST4-1 10-11.5' MG/KG	**PG-UST4-1** 11/20/2000 PG-UST4-1 14-15.5' MG/KG	**PG-UST4-2** 11/20/2000 PG-UST4-2 4-6' MG/KG	**PG-UST4-2** 11/20/2000 PG-UST4-2 12-14' MG/KG	**PG-UST7-1** 11/28/2000 PG-UST7-1 8-10' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
1,2-BENZPHENANTHRACENE	NS	0.74	0.16 J	0.29	0.23 U	0.22 U	0.18 J	0.34	0.10 J
1,2-DICHLOROBENZENE	7.9	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
1,2-DIPHENYLHYDRAZINE	NS	0.036 U	0.040 U	0.042 U	0.046 U	0.043 U	0.044 U	0.050 U	0.039 U
1,4-DICHLOROBENZENE	8.5	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
2,4,6-TRICHLORORPHENOL	0.1	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
2,4-DICHLOROPHENOL	0.4	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.097 J	0.25 U	0.20 U
2,4-DIMETHYLPHENOL	NS	0.18 U	0.059 J	0.21 U	0.23 U	0.22 U	0.19 J	0.25 U	0.20 U
2,4-DINITROPHENOL	0.200 or MDL	0.36 U	0.40 U	0.42 U	0.46 U	0.43 U	0.44 U	0.50 U	0.39 U
2,4-DINITROTOLUENE	NS	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
2,6-DINITROTOLUENE	1	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
2-CHLORORNAPHTHALENE	NS	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
2-CHLOROPHENOL	0.8	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.062 J	0.25 U	0.20 U
2-NITROPHENOL	0.330 or MDL	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
3,3'-DICHLOROBENZIDINE	N/A	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
4-BROMOPHENYLPHENYL ETHER	NS	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
4-NITROPHENOL	0.100 or MDL	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
ACENAPHTHENE	50	0.19	0.098 J	0.44	0.16 J	0.22 U	0.15 J	0.15 J	0.063 J
ACENAPHTHYLENE	41	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.050 J	0.25 U	0.20 U
ANTHRACENE	50	0.56	0.048 J	0.42	0.23 U	0.22 U	0.066 J	0.14 J	0.20 U
BENZIDINE	NS	0.36 U	0.40 U	0.42 U	0.46 U	0.43 U	0.44 U	0.50 U	0.39 U
BENZO[A]ANTHRACENE	0.224 or MDL	**0.87**	0.077 J	**0.25**	0.063 J	0.22 U	0.099 J	**0.39**	0.065 J
BENZO[A]PYRENE	0.061 or MDL	**0.58**	0.056 J	**0.18 J**	0.23 U	0.22 U	**0.063 J**	**0.29**	0.20 U
BENZO[B]FLOURANTHENE	1.1	0.80	0.11 J	0.28	0.054 J	0.22 U	0.12 J	0.40	0.20 U
BENZO[G,H,I]PERYLENE	50	0.33	0.043 J	0.11 J	0.23 U	0.22 U	0.070 J	0.10 J	0.20 U
BENZO[K]FLOURANTHENE	1.1	0.33	0.20 U	0.084 J	0.23 U	0.22 U	0.22 U	0.16 J	0.20 U
BENZYL BUTYL PHTHALATE	50	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
BIS(2-CHLOROETHYL)ETHER	NS	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
BIS(2-ETHYHEXYL)PHTHALATE	50	0.067 JB	0.24 B	0.073 JB	0.17 JB	0.15 JB	0.28 B	0.23 JB	0.11 J
DI-N-BUTYL PHTHALATE	8.1	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.065 JB	0.20 U
DI-N-OCTYL PHTHALATE	50	0.18 U	0.045 J	0.21 U	0.073 J	0.054 J	0.055 J	0.14 J	0.047 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	**0.041 J**	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
DIETHYL PHTHALATE	7.1	0.18 U	0.041 J	0.21 U	0.23 U	0.22 U	0.064 J	0.25 U	0.20 U
DIMETHYL PHTHALATE	2	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
FLUORANTHENE	50	2.2	0.21	1.0	0.32	0.22 U	0.23	0.71	0.064 J
FLUORENE	50	0.26	0.083 J	0.32	0.087 J	0.22 U	0.12 J	0.13 J	0.20 U
HEXACHLORO-1,3-BUTADIENE	NS	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
HEXACHLOROBENZENE	0.41	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
HEXACHLOROCYCLOPENTADIENE	NS	0.54 U	0.60 U	0.63 U	0.68 U	0.65 U	0.67 U	0.75 U	0.59 U
HEXACHLOROETHANE	NS	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
INDENO[1,2,3-CD]PYRENE	3.2	0.33	0.041 J	0.097 J	0.23 U	0.22 U	0.061 J	0.086 J	0.20 U
ISOPHORORNE	4.4	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.052 J	0.25 U	0.20 U
M-DICHLOROBENZENE	NS	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
N-NITROSODIMETHYLAMINE	NS	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
N-NITROSODIPHENYLAMINE	NS	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
NAPHTHALENE	13	0.11 J	0.51	0.28	0.21 J	0.22 U	0.61	0.29	0.20 U
NITROBENZENE	0.200 or MDL	0.18 U	0.20 U	0.21 U	0.23 U	0.22 U	0.22 U	0.25 U	0.20 U
PENTACHLOROPHENOL	1.0 or MDL	0.18 U	0.20 U	0.21 U	0.23 U	0.081 J	0.22 U	0.25 U	0.040 J
PHENANTHRENE	50	2.4	0.24	0.96	0.22 J	0.22 U	0.28	0.60	0.16 J
PHENOL	0.03 or MDL	0.18 U	0.20 U	0.21 U	0.23 U	**0.047 J**	**0.14 J**	0.25 U	0.20 U
PYRENE	50	1.6	0.15 J	0.72	0.22 J	0.22 U	0.20 J	0.63	0.28
TOTAL SVOCs	500	11.408	2.211	5.504	1.577	0.332	3.239	4.851	0.929

U Undetectable Levels
NS No Standard
MDL Method Detection Limit

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 2A/2B HHMT- Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	Recommended Soil Cleanup Objective MG/KG	PG-UST7-1A 11/28/2000 PG-UST7-1A 0-2' MG/KG	PG-UST7-1B 11/28/2000 PG-UST7-1B 2-3.5' MG/KG	PG-UST7-2 11/21/2000 PG-UST7-2 8-10' MG/KG	PG-UST7-2 11/21/2000 PG-UST7-2 10-12' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	1.8 U	1.9 U	0.19 U	0.20 U
1,2-BENZPHENANTHRACENE	NS	0.82 J	2.7	0.31	0.61
1,2-DICHLOROBENZENE	7.9	1.8 U	1.9 U	0.19 U	0.20 U
1,2-DIPHENYLHYDRAZINE	NS	0.36 U	0.38 U	0.038 U	0.040 U
1,4-DICHLOROBENZENE	8.5	1.8 U	1.9 U	0.19 U	0.20 U
2,4,6-TRICHLORORPHENOL	0.1	1.8 U	1.9 U	0.19 U	0.20 U
2,4-DICHLOROPHENOL	0.4	1.8 U	1.9 U	0.19 U	0.20 U
2,4-DIMETHYLPHENOL	NS	1.8 U	1.9 U	0.19 U	0.20 U
2,4-DINITROPHENOL	0.200 or MDL	3.6 U	3.8 U	0.38 U	0.40 U
2,4-DINITROTOLUENE	NS	1.8 U	1.9 U	0.19 U	0.20 U
2,6-DINITROTOLUENE	1	1.8 U	1.9 U	0.19 U	0.20 U
2-CHLORORNAPHTHALENE	NS	1.8 U	1.9 U	0.19 U	0.20 U
2-CHLOROPHENOL	0.8	1.8 U	1.9 U	0.19 U	0.20 U
2-NITROPHENOL	0.330 or MDL	1.8 U	1.9 U	0.19 U	0.20 U
3,3'-DICHLOROBENZIDINE	N/A	1.8 U	1.9 U	0.19 U	0.20 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	1.8 U	1.9 U	0.19 U	0.20 U
4-BROMOPHENYLPHENYL ETHER	NS	1.8 U	1.9 U	0.19 U	0.20 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	1.8 U	1.9 U	0.19 U	0.20 U
4-CHLOROPHENYLPHENYL ETHER	NS	1.8 U	1.9 U	0.19 U	0.20 U
4-NITROPHENOL	0.100 or MDL	1.8 U	1.9 U	0.19 U	0.20 U
ACENAPHTHENE	50	1.8 U	0.45 J	0.26	0.27
ACENAPHTHYLENE	41	1.8 U	1.9 U	0.19 U	0.20 U
ANTHRACENE	50	1.8 U	1.0 J	0.60	0.49
BENZIDINE	NS	3.6 U	3.8 U	0.38 U	0.40 U
BENZO[A]ANTHRACENE	0.224 or MDL	**0.43 J**	**2.3**	**0.32**	**0.4**
BENZO[A]PYRENE	0.061 or MDL	1.8 U	**1.1 J**	**0.19**	**0.28**
BENZO[B]FLOURANTHENE	1.1	0.65 J	**1.2 J**	0.12 J	0.10 J
BENZO[G,H,I]PERYLENE	50	0.70 J	1.9 U	0.12 J	0.18 J
BENZO[K]FLOURANTHENE	1.1	0.59 J	0.89 J	0.066 J	0.075 J
BENZYL BUTYL PHTHALATE	50	1.8 U	1.9 U	0.19 U	0.20 U
BIS(2-CHLOROETHOXY)METHANE	NS	1.8 U	1.9 U	0.19 U	0.20 U
BIS(2-CHLOROETHYL)ETHER	NS	1.8 U	1.9 U	0.19 U	0.20 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	1.8 U	1.9 U	0.19 U	0.20 U
BIS(2-ETHYHEXYL)PHTHALATE	50	1.8 U	1.9 U	0.19 U	0.42 B
DI-N-BUTYL PHTHALATE	8.1	1.8 U	1.9 U	0.19 U	0.11 JB
DI-N-OCTYL PHTHALATE	50	1.8 U	1.9 U	0.19 U	0.057 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	1.8 U	1.9 U	0.19 U	0.20 U
DIETHYL PHTHALATE	7.1	1.8 U	1.9 U	0.19 U	0.20 U
DIMETHYL PHTHALATE	2	1.8 U	1.9 U	0.19 U	0.20 U
FLUORANTHENE	50	1.8 U	0.69 J	0.25	0.27
FLUORENE	50	1.8 U	0.86 J	0.38	0.20 U
HEXACHLORO-1,3-BUTADIENE	NS	1.8 U	1.9 U	0.19 U	0.20 U
HEXACHLOROBENZENE	0.41	1.8 U	1.9 U	0.19 U	0.20 U
HEXACHLOROCYCLOPENTADIENE	NS	5.4 U	5.7 U	0.57 U	0.60 U
HEXACHLOROETHANE	NS	1.8 U	1.9 U	0.19 U	0.20 U
INDENO[1,2,3-CD]PYRENE	3.2	1.8 U	1.9 U	0.044 J	0.050 J
ISOPHORORNE	4.4	1.8 U	1.9 U	0.19 U	0.20 U
M-DICHLOROBENZENE	NS	1.8 U	1.9 U	0.19 U	0.20 U
N-NITROSO-DI-N-PROPYLAMINE	NS	1.8 U	1.9 U	0.19 U	0.20 U
N-NITROSODIMETHYLAMINE	NS	1.8 U	1.9 U	0.19 U	0.20 U
N-NITROSODIPHENYLAMINE	NS	1.8 U	1.9 U	0.19 U	0.20 U
NAPHTHALENE	13	1.8 U	1.9 U	0.19 U	0.056 J
NITROBENZENE	0.200 or MDL	1.8 U	1.9 U	0.19 U	0.20 U
PENTACHLOROPHENOL	1.0 or MDL	1.8 U	1.9 U	0.19 U	0.20 U
PHENANTHRENE	50	1.8 U	1.4 J	1.4	0.20 U
PHENOL	0.03 or MDL	1.8 U	1.9 U	0.19 U	0.20 U
PYRENE	50	0.59 J	6.1	1.8	2.9
TOTAL SVOCs	500	3.78	18.69	5.86	6.268

U Undetectable Levels
NS No Standard
MDL Method Detection Limit

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-A-4**	**PG-A-4**	**PG-A-5**	**PG-B-1**	**PG-B-1**	**PG-B-1**	**PG-B-02**	**PG-B-02**
Sample Date	**Soil**	11/16/2000	11/16/2000	11/14/2000	12/4/2000	12/4/2000	12/4/2000	11/16/2000	11/16/2000
Sample ID	**Cleanup**	PG-A-04	PG-A-04	PG-A-05	PG-B-01	PG-B-01	PG-B-01	PG-B-02	PG-A-02
Sample Depth	**Objective**	6-8'	12-14'	2-4'	2-4'	6-8'	9-10'	2-4'	6-8'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.0046 U	0.0071 U	0.0041 U	0.0038 U	0.02 U	0.0042 U	0.0039 U	0.0046 U
4,4'-DDE	2.1	0.0046 U	0.0071 U	0.0041 U	0.0038 U	0.35	0.038	0.0039 U	0.0046 U
4,4'-DDT	2.1	0.0046 U	0.0071 U	0.0041 U	0.0038 U	0.02 U	0.042	0.0039 U	0.0046 U
ALDRIN	0.041	0.0046 U	0.0071 U	0.0041 U	0.0038 U	0.02 U	0.0042 U	0.0039 U	0.0046 U
ALPHA-BHC	0.11	0.0046 U	0.0071 U	0.0041 U	0.0038 U	0.02 U	0.0042 U	0.0039 U	0.0046 U
BETA-BHC	0.2	0.0046 U	0.0071 U	0.0041 U	0.0038 U	0.02 U	0.0042 U	0.0039 U	0.0046 U
CHLORDANE	0.54	0.0091 U	0.014 U	0.0082 U	0.0076 U	0.04 U	0.0084 U	0.0078 U	0.0093 U
DELTA-BHC	0.3	0.0046 U	0.0071 U	0.0041 U	0.0038 U	0.02 U	0.0042 U	0.0039 U	0.0046 U
DIELDRIN	0.044	0.0046 U	0.0071 U	0.0041 U	0.0038 U	**0.3**	0.0042 U	0.0039 U	0.0046 U
ENDOSULFAN I	0.9	0.0046 U	0.0071 U	0.0041 U	0.0038 U	0.02 U	0.0042 U	0.0039 U	0.0046 U
ENDOSULFAN II	0.9	0.0046 U	0.0071 U	0.0041 U	0.0038 U	0.02 U	0.0042 U	0.0039 U	0.0046 U
ENDOSULFAN SULFATE	1	0.0046 U	0.0071 U	0.0041 U	0.0038 U	0.02 U	0.0042 U	0.0039 U	0.0046 U
ENDRIN	0.1	0.0046 U	0.0071 U	0.0041 U	0.0038 U	**0.39**	0.0042 U	0.0039 U	0.0046 U
ENDRIN ALDEHYDE	NS	0.0046 U	0.0071 U	0.0041 U	0.0038 U	0.087	0.0042 U	0.0039 U	0.0046 U
ENDRIN KETONE	N/A	0.0046 U	0.0071 U	0.0041 U	0.0038 U	0.02 U	0.0042 U	0.0039 U	0.0046 U
GAMMA-BHC (LINDANE)	0.06	0.0046 U	0.0071 U	0.0041 U	0.0038 U	0.02 U	0.0042 U	0.0039 U	0.0046 U
HEPTACHLOR	0.1	0.0046 U	0.0071 U	0.0041 U	0.0038 U	0.091	0.0042 U	0.0039 U	0.0046 U
HEPTACHLOR EPOXIDE	0.02	0.0046 U	0.0071 U	0.0041 U	0.0038 U	**0.069**	0.0042 U	0.0039 U	0.0046 U
METHOXYCHLOR	NS	0.0046 U	0.0071 U	0.0041 U	0.0038 U	0.02 U	0.0042 U	0.0039 U	0.0046 U
TOXAPHENE	NS	0.046 U	0.071 U	0.041 U	0.038 U	0.2 U	0.042 U	0.039 U	0.046 U
AROCLOR 1016	NS	0.023 U	0.035 U	0.021 U	0.019 U	0.4 U	0.021 U	0.02 U	0.023 U
AROCLOR 1221	NS	0.023 U	0.035 U	0.021 U	0.019 U	0.4 U	0.021 U	0.02 U	0.023 U
AROCLOR 1232	NS	0.023 U	0.035 U	0.021 U	0.019 U	0.4 U	0.021 U	0.02 U	0.023 U
AROCLOR 1242	NS	0.023 U	0.035 U	0.021 U	0.019 U	0.4 U	0.021 U	0.02 U	0.023 U
AROCLOR 1248	NS	0.023 U	0.035 U	0.021 U	0.019 U	0.4 U	0.021 U	0.02 U	0.023 U
AROCLOR 1254	NS	0.023 U	0.035 U	0.021 U	0.019 U	6.6	0.021 U	0.02 U	0.023 U
AROCLOR 1260	NS	0.023 U	0.035 U	0.021 U	0.019 U	0.4 U	0.29	0.02 U	0.023 U
TOTAL PCBs	1.0(Surface)/ 10(Sun-Surface)	ND	ND	ND	ND	6.6	0.29	ND	ND

U Undetectable Levels
ND Not Detectived
NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-B-02A**	**PG-B-3**	**PG-B-3**	**PG-B-4**	**PG-E-1**	**PG-E-1**	**PG-E-1**
Sample Date	**Soil**	11/16/2000	12/4/2000	12/4/2000	12/4/2000	11/13/2000	11/13/2000	11/13/2000
Sample ID	**Cleanup**	PG-B-02A	PG-B-03	PG-B-03	PG-B-04	PG-E-01	PG-E-01	PG-E-01
Sample Depth	**Objective**	8-10'	2-4'	6-8'	2-4'	0.2-2'	4-6'	10-12'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.0044 U	0.023 U	0.0055 U	0.0039 U	0.0038 U	0.0039 U	0.0063 U
4,4'-DDE	2.1	0.0044 U	0.11	0.0055 U	0.0039 U	0.0038 U	0.0039 U	0.0063 U
4,4'-DDT	2.1	0.0044 U	0.023 U	0.0055 U	0.025	0.0038 U	0.0039 U	0.0063 U
ALDRIN	0.041	0.0044 U	0.023 U	0.0055 U	0.0039 U	0.0038 U	0.0039 U	0.0063 U
ALPHA-BHC	0.11	0.0044 U	0.023 U	0.0055 U	0.0039 U	0.0038 U	0.0039 U	0.0063 U
BETA-BHC	0.2	0.0044 U	0.023 U	0.0055 U	0.0039 U	0.0038 U	0.0039 U	0.0063 U
CHLORDANE	0.54	0.0088 U	0.046 U	0.011 U	0.039	0.0076 U	0.0078 U	0.013 U
DELTA-BHC	0.3	0.0044 U	0.023 U	0.0055 U	0.0039 U	0.0038 U	0.0039 U	0.0063 U
DIELDRIN	0.044	0.0044 U	**0.13**	0.0055 U	0.0067	0.0038 U	0.0039 U	0.0063 U
ENDOSULFAN I	0.9	0.0044 U	0.023 U	0.0055 U	0.0039 U	0.0038 U	0.0039 U	0.0063 U
ENDOSULFAN II	0.9	0.0044 U	0.023 U	0.0055 U	0.0039 U	0.0038 U	0.0039 U	0.0063 U
ENDOSULFAN SULFATE	1	0.0044 U	0.023 U	0.0055 U	0.0039 U	0.0038 U	0.0039 U	0.0063 U
ENDRIN	0.1	0.0044 U	**0.14**	0.0055 U	0.0039 U	0.0038 U	0.0039 U	0.0063 U
ENDRIN ALDEHYDE	NS	0.0044 U	0.23	0.0055 U	0.0039 U	0.0038 U	0.0039 U	0.0063 U
ENDRIN KETONE	N/A	0.0044 U	0.023 U	0.0055 U	0.0039 U	0.0038 U	0.0039 U	0.0063 U
GAMMA-BHC (LINDANE)	0.06	0.0044 U	0.023 U	0.0055 U	0.0039 U	0.0038 U	0.0039 U	0.0063 U
HEPTACHLOR	0.1	0.0044 U	0.023 U	0.0055 U	0.0039 U	0.0038 U	0.0039 U	0.0063 U
HEPTACHLOR EPOXIDE	0.02	0.0044 U	**0.029**	0.0055 U	0.0039 U	0.0038 U	0.0039 U	0.0063 U
METHOXYCHLOR	NS	0.0044 U	0.06	0.0055 U	0.0039 U	0.0038 U	0.0039 U	0.0063 U
TOXAPHENE	NS	0.044 U	0.23 U	0.055 U	0.039 U	0.038 U	0.039 U	0.063 U
AROCLOR 1016	NS	0.022 U	0.23 U	0.027 U	0.02 U	0.019 U	0.019 U	0.031 U
AROCLOR 1221	NS	0.022 U	0.23 U	0.027 U	0.02 U	0.019 U	0.019 U	0.031 U
AROCLOR 1232	NS	0.022 U	0.23 U	0.027 U	0.02 U	0.019 U	0.019 U	0.031 U
AROCLOR 1242	NS	0.022 U	0.23 U	0.027 U	0.02 U	0.019 U	0.019 U	0.031 U
AROCLOR 1248	NS	0.022 U	0.23 U	0.027 U	0.02 U	0.019 U	0.019 U	0.031 U
AROCLOR 1254	NS	0.022 U	2.4	0.027 U	0.02 U	0.019 U	0.019 U	0.031 U
AROCLOR 1260	NS	0.022 U	0.23 U	0.027 U	0.24	0.019 U	0.019 U	0.031 U
TOTAL PCBs	1.0(Surface)/ 10(Sun-Surface)	ND	2.4	ND	0.24	ND	ND	ND

U Undetectable Levels
ND Not Detectived
NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-F2-2**	**PG-F2-2**	**PG-P-1**	**PG-P-1**	**PG-P-2**	**PG-P-2**	**PG-P-3**
Sample Date	**Soil**	11/20/2000	11/20/2000	11/22/2000	11/22/2000	11/30/2000	11/30/2000	11/22/2000
Sample ID	**Cleanup**	PG-F2-2	PG-F2-2	PG-P-01	PG-P-01	PG-P-02	PG-P-02	PG-P-03
Sample Depth	**Objective**	2-4'	8-10'	2-4'	8-10'	2-4'	4-6'	2-4'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
4,4'-DDE	2.1	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
4,4'-DDT	2.1	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
ALDRIN	0.041	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
ALPHA-BHC	0.11	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
BETA-BHC	0.2	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
CHLORDANE	0.54	0.0072 U	0.0078 U	0.0072 U	0.0084 U	0.0078 U	0.0079 U	0.041 U
DELTA-BHC	0.3	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
DIELDRIN	0.044	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
ENDOSULFAN I	0.9	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
ENDOSULFAN II	0.9	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
ENDOSULFAN SULFATE	1	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
ENDRIN	0.1	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
ENDRIN ALDEHYDE	NS	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
ENDRIN KETONE	N/A	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
GAMMA-BHC (LINDANE)	0.06	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
HEPTACHLOR	0.1	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
HEPTACHLOR EPOXIDE	0.02	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
METHOXYCHLOR	NS	0.0036 U	0.0039 U	0.0036 U	0.0042 U	0.0039 U	0.004 U	0.021 U
TOXAPHENE	NS	0.036 U	0.039 U	0.036 U	0.042 U	0.039 U	0.04 U	0.21 U
AROCLOR 1016	NS	0.018 U	0.019 U	0.018 U	0.021 U	0.019 U	0.02 U	0.021 U
AROCLOR 1221	NS	0.018 U	0.019 U	0.018 U	0.021 U	0.019 U	0.02 U	0.021 U
AROCLOR 1232	NS	0.018 U	0.019 U	0.018 U	0.021 U	0.019 U	0.02 U	0.021 U
AROCLOR 1242	NS	0.018 U	0.019 U	0.018 U	0.021 U	0.019 U	0.02 U	0.021 U
AROCLOR 1248	NS	0.018 U	0.019 U	0.018 U	0.021 U	0.019 U	0.02 U	0.021 U
AROCLOR 1254	NS	0.018 U	0.019 U	0.018 U	0.021 U	0.019 U	0.02 U	0.021 U
AROCLOR 1260	NS	0.018 U	0.019 U	0.018 U	0.021 U	0.019 U	0.02 U	0.021 U
TOTAL PCBs	1.0(Surface)/ 10(Sun-Surface)	ND	ND	ND	ND	ND	ND	ND

U Undetectable Levels
ND Not Detectived
NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-P-3**	**PG-PD-1**	**PG-PD-1**	**PG-PD-3**	**PG-PD-4**	**PG-PD-5**	**PG-PD-5**
Sample Date	**Soil**	11/22/2000	11/21/2000	11/21/2000	11/29/2000	12/2/2000	12/2/2000	12/2/2000
Sample ID	**Cleanup**	PG-P-03	PG-PD-01	PG-PD-01	PG-PD-3	PG-PD-4	PG-PD-5	PG-PD-5
Sample Depth	**Objective**	6-8'	2-4'	10-12'	4-6'	8-10'	0.7-1.5'	2-4'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
4,4'-DDE	2.1	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
4,4'-DDT	2.1	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0054	0.0037 U
ALDRIN	0.041	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
ALPHA-BHC	0.11	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
BETA-BHC	0.2	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
CHLORDANE	0.54	0.0081 U	0.0075 U	0.0084 U	0.041 U	0.0081 U	0.0076 U	0.0075 U
DELTA-BHC	0.3	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
DIELDRIN	0.044	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
ENDOSULFAN I	0.9	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
ENDOSULFAN II	0.9	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
ENDOSULFAN SULFATE	1	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
ENDRIN	0.1	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
ENDRIN ALDEHYDE	NS	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
ENDRIN KETONE	N/A	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
GAMMA-BHC (LINDANE)	0.06	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
HEPTACHLOR	0.1	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
HEPTACHLOR EPOXIDE	0.02	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
METHOXYCHLOR	NS	0.0041 U	0.0037 U	0.0042 U	0.021 U	0.0041 U	0.0038 U	0.0037 U
TOXAPHENE	NS	0.041 U	0.037 U	0.042 U	0.21 U	0.041 U	0.038 U	0.037 U
AROCLOR 1016	NS	0.02 U	0.019 U	0.021 U	0.021 U	0.02 U	0.019 U	0.019 U
AROCLOR 1221	NS	0.02 U	0.019 U	0.021 U	0.021 U	0.02 U	0.019 U	0.019 U
AROCLOR 1232	NS	0.02 U	0.019 U	0.021 U	0.021 U	0.02 U	0.019 U	0.019 U
AROCLOR 1242	NS	0.02 U	0.019 U	0.021 U	0.021 U	0.02 U	0.019 U	0.019 U
AROCLOR 1248	NS	0.02 U	0.019 U	0.021 U	0.021 U	0.02 U	0.019 U	0.019 U
AROCLOR 1254	NS	0.02 U	0.019 U	0.021 U	0.021 U	0.02 U	0.019 U	0.019 U
AROCLOR 1260	NS	0.02 U	0.019 U	0.021 U	0.021 U	0.02 U	0.036	0.019 U
TOTAL PCBs	1.0(Surface)/ 10(Sun-Surface)	ND	ND	ND	ND	ND	0.036	ND

U Undetectable Levels
ND Not Detectived
NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended Soil Cleanup Objective MG/KG**	**PG-Q1-1** 11/30/2000 PG-Q1-1 2-4' MG/KG	**PG-Q1-1** 11/30/2000 PG-Q1-1 4-6' MG/KG	**PG-RR-1** 11/3/2000 PG-RR-01 0-1.2' MG/KG	**PG-RR-1** 11/3/2000 PG-RR-01 1.2-2' MG/KG	**PG-RR-2** 11/4/2000 PG-RR-02 0-2' MG/KG	**PG-RR-3** 11/3/2000 PG-RR-03 1.5-2' MG/KG	**PG-RR-4** 11/4/2000 PG-RR-04 0.6-2' MG/KG
4,4'-DDD	2.9	0.0038 U	0.026 U	0.078	0.0038 U	0.0039 U	0.019 U	0.0037 U
4,4'-DDE	2.1	0.0052	0.026 U	0.078	0.012	0.017	0.019 U	0.0037 U
4,4'-DDT	2.1	0.0038 U	0.026 U	0.21	0.026	0.0039 U	0.039	0.0037 U
ALDRIN	0.041	0.0038 U	0.026 U	0.019 U	0.0038 U	0.0039 U	0.019 U	0.0037 U
ALPHA-BHC	0.11	0.0038 U	0.026 U	0.019 U	0.0038 U	0.0039 U	0.019 U	0.0037 U
BETA-BHC	0.2	0.0038 U	0.026 U	0.019 U	0.0038 U	0.0039 U	0.019 U	0.0037 U
CHLORDANE	0.54	0.0076 U	0.051 U	0.039 U	0.018	0.0078 U	0.039 U	0.0075 U
DELTA-BHC	0.3	0.0038 U	0.026 U	0.019 U	0.0038 U	0.0039 U	0.019 U	0.0037 U
DIELDRIN	0.044	0.0038 U	0.026 U	0.019 U	0.0038 U	0.0039 U	0.019 U	0.0037 U
ENDOSULFAN I	0.9	0.0038 U	0.026 U	0.019 U	0.0038 U	0.0039 U	0.019 U	0.0037 U
ENDOSULFAN II	0.9	0.0038 U	0.026 U	0.019 U	0.0038 U	0.0039 U	0.019 U	0.0037 U
ENDOSULFAN SULFATE	1	0.0038 U	0.026 U	0.019 U	0.0038 U	0.0039 U	0.019 U	0.0037 U
ENDRIN	0.1	0.0038 U	0.026 U	0.019 U	0.0038 U	0.0039 U	0.019 U	0.0037 U
ENDRIN ALDEHYDE	NS	0.0038 U	0.026 U	0.019 U	0.0038 U	0.0039 U	0.019 U	0.0037 U
ENDRIN KETONE	N/A	0.0038 U	0.026 U	0.019 U	0.0038 U	0.0039 U	0.05	0.0037 U
GAMMA-BHC (LINDANE)	0.06	0.0038 U	0.026 U	0.019 U	0.0038 U	0.0045	0.029	0.0037 U
HEPTACHLOR	0.1	0.0038 U	0.026 U	0.019 U	0.0038 U	0.0039 U	0.019 U	0.0037 U
HEPTACHLOR EPOXIDE	0.02	0.0038 U	0.026 U	0.019 U	0.0038 U	0.0039 U	0.019 U	0.0037 U
METHOXYCHLOR	NS	0.0038 U	0.026 U	0.019 U	0.0038 U	0.0039 U	0.019 U	0.0037 U
TOXAPHENE	NS	0.038 U	0.26 U	0.19 U	0.038 U	0.039 U	0.19 U	0.037 U
AROCLOR 1016	NS	0.019 U	0.026 U	0.019 U	0.019 U	0.02 U	0.019 U	0.019 U
AROCLOR 1221	NS	0.019 U	0.026 U	0.019 U	0.019 U	0.02 U	0.019 U	0.019 U
AROCLOR 1232	NS	0.019 U	0.026 U	0.019 U	0.019 U	0.02 U	0.019 U	0.019 U
AROCLOR 1242	NS	0.019 U	0.026 U	0.019 U	0.019 U	0.02 U	0.019 U	0.019 U
AROCLOR 1248	NS	0.019 U	0.026 U	0.019 U	0.019 U	0.02 U	0.019 U	0.019 U
AROCLOR 1254	NS	0.019 U	0.026 U	0.019 U	0.019 U	0.02 U	0.019 U	0.019 U
AROCLOR 1260	NS	0.019 U	0.026 U	0.13	0.019 U	0.02 U	0.019 U	0.019 U
TOTAL PCBs	1.0(Surface)/ 10(Sun-Surface)	ND	ND	0.13	ND	ND	ND	ND

U Undetectable Levels
ND Not Detectived
NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-RR-4**	**PG-RR-5**	**PG-RR-5**	**PG-RR-6**	**PG-RR-6**	**PG-RR-7**	**PG-RR-7**
Sample Date	**Soil**	11/4/2000	11/7/2000	11/7/2000	11/6/2000	11/6/2000	11/6/2000	11/6/2000
Sample ID	**Cleanup**	PG-RR-04	PG-RR-05	PG-RR-05	PG-RR-06	PG-RR-06	PG-RR-07	PG-RR-07
Sample Depth	**Objective**	3-4'	1-2'	2-4'	1-2'	2-4'	0-2'	2-4'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
4,4'-DDE	2.1	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
4,4'-DDT	2.1	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
ALDRIN	0.041	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
ALPHA-BHC	0.11	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
BETA-BHC	0.2	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
CHLORDANE	0.54	0.0083 U	0.0072 U	0.0072 U	0.0072 U	0.0072 U	0.0072 U	0.0072 U
DELTA-BHC	0.3	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
DIELDRIN	0.044	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
ENDOSULFAN I	0.9	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
ENDOSULFAN II	0.9	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
ENDOSULFAN SULFATE	1	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
ENDRIN	0.1	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
ENDRIN ALDEHYDE	NS	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
ENDRIN KETONE	N/A	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
GAMMA-BHC (LINDANE)	0.06	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
HEPTACHLOR	0.1	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
HEPTACHLOR EPOXIDE	0.02	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
METHOXYCHLOR	NS	0.0042 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
TOXAPHENE	NS	0.042 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
AROCLOR 1016	NS	0.021 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
AROCLOR 1221	NS	0.021 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
AROCLOR 1232	NS	0.021 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
AROCLOR 1242	NS	0.021 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
AROCLOR 1248	NS	0.021 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
AROCLOR 1254	NS	0.021 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
AROCLOR 1260	NS	0.021 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
TOTAL PCBs	1.0(Surface)/ 10(Sun-Surface)	ND	ND	ND	ND	ND	ND	ND

U Undetectable Levels
ND Not Detectived
NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-STAIN-02**	**PG-STAIN-02**	**PG-STAIN-03**	**PG-STAIN-03**	**PG-STAIN-3B**	**PG-STAIN-3B**	**PG-FS-2**
Sample Date	**Soil**	11/11/2000	11/11/2000	11/10/2000	11/10/2000	11/11/2000	11/11/2000	11/17/2000
Sample ID	**Cleanup**	PG-ST-02	PG-ST-02	PG-ST-03	PG-ST-03	PG-ST-3B	PG-ST-3B	PG-FS-02
Sample Depth	**Objective**	1-2'	2-3'	1.7-2.5'	2.5-3.5'	0-2'	2-4'	2-4'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.0039 U	0.004 U	0.078 U	0.0042 U	0.0036 U	0.0036 U	0.0038 U
4,4'-DDE	2.1	0.0039 U	0.004 U	0.078 U	0.01	0.0089	0.0036 U	0.0038 U
4,4'-DDT	2.1	0.0039 U	0.004 U	0.078 U	0.0042 U	0.006	0.0036 U	0.0038 U
ALDRIN	0.041	0.0039 U	0.004 U	0.078 U	0.0042 U	0.0036 U	0.0036 U	0.0038 U
ALPHA-BHC	0.11	0.0039 U	0.004 U	0.078 U	0.0042 U	0.0036 U	0.0036 U	0.0038 U
BETA-BHC	0.2	0.0039 U	0.004 U	0.078 U	0.0042 U	0.0036 U	0.0036 U	0.0038 U
CHLORDANE	0.54	0.0078 U	0.008 U	**4.5**	0.082	0.0072 U	0.0072 U	0.0076 U
DELTA-BHC	0.3	0.0039 U	0.004 U	0.078 U	0.0042 U	0.0036 U	0.0036 U	0.0038 U
DIELDRIN	0.044	0.0039 U	0.004 U	0.078 U	0.0042 U	0.0092	0.0036 U	0.0038 U
ENDOSULFAN I	0.9	0.0039 U	0.004 U	0.078 U	0.0042 U	0.0036 U	0.0036 U	0.0038 U
ENDOSULFAN II	0.9	0.0039 U	0.004 U	0.078 U	0.0042 U	0.0036 U	0.0036 U	0.0038 U
ENDOSULFAN SULFATE	1	0.0039 U	0.004 U	0.62	0.0042 U	0.0036 U	0.0036 U	0.0038 U
ENDRIN	0.1	0.0039 U	0.004 U	0.078 U	0.03	0.023	0.0036 U	0.0038 U
ENDRIN ALDEHYDE	NS	0.0039 U	0.004 U	0.078 U	0.0064	0.0055	0.0036 U	0.0038 U
ENDRIN KETONE	N/A	0.0039 U	0.004 U	0.078 U	0.0042 U	0.0036 U	0.0036 U	0.0038 U
GAMMA-BHC (LINDANE)	0.06	0.0039 U	0.004 U	0.078 U	0.0053	0.0042	0.0036 U	0.0038 U
HEPTACHLOR	0.1	0.0039 U	0.004 U	0.078 U	0.0042 U	0.0036 U	0.0036 U	0.0038 U
HEPTACHLOR EPOXIDE	0.02	0.0039 U	0.004 U	0.078 U	0.0042 U	0.0036 U	0.0036 U	0.0038 U
METHOXYCHLOR	NS	0.0039 U	0.004 U	0.078 U	0.0042 U	0.0036 U	0.0036 U	0.0038 U
TOXAPHENE	NS	0.039 U	0.04 U	0.78 U	0.042 U	0.036 U	0.036 U	0.038 U
AROCLOR 1016	NS	0.02 U	0.02 U	0.097 U	0.021 U	0.018 U	0.018 U	0.019 U
AROCLOR 1221	NS	0.02 U	0.02 U	0.097 U	0.021 U	0.018 U	0.018 U	0.019 U
AROCLOR 1232	NS	0.02 U	0.02 U	0.097 U	0.021 U	0.018 U	0.018 U	0.019 U
AROCLOR 1242	NS	0.02 U	0.02 U	0.097 U	0.021 U	0.018 U	0.018 U	0.019 U
AROCLOR 1248	NS	0.02 U	0.02 U	0.097 U	0.021 U	0.018 U	0.018 U	0.019 U
AROCLOR 1254	NS	0.02 U	0.02 U	0.097 U	0.021 U	0.018 U	0.018 U	0.019 U
AROCLOR 1260	NS	0.02 U	0.02 U	0.097 U	0.021 U	0.17	0.018 U	0.019 U
TOTAL PCBs	1.0(Surface)/ 10(Sun-Surface)	ND	ND	ND	ND	0.17	ND	ND

U Undetectable Levels
ND Not Detectived
NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-FS-2**	**PG-FS-2**	**PG-FS-3**	**PG-FS-3**	**PG-FILL-02**	**PG-FILL-03**	**PG-FILL-03**	**PG-FILL-03**	**PG-FILL-04**
Sample Date	**Soil**	11/17/2000	11/17/2000	11/15/2000	11/15/2000	11/3/2000	11/4/2000	11/6/2000	11/6/2000	11/6/2000
Sample ID	**Cleanup**	PG-FS-02	PG-FS-02	PG-FS03	PG-FS03	PGFILL02	PGFILL03	PGFILL03	PGFILL03	PGFILL04
Sample Depth	**Objective**	8-10'	17-18'	2-4'	6.5-8'	0.7-3'	0.5-2'	2-4'	4-6'	0-2'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U	0.0037 U	0.0039 U
4,4'-DDE	2.1	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.011	0.0036 U	0.0037 U	0.0037 U	0.0039 U
4,4'-DDT	2.1	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0084	0.0036 U	0.0037 U	0.0037 U	0.0039 U
ALDRIN	0.041	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U	0.0037 U	0.0039 U
ALPHA-BHC	0.11	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U	0.0037 U	0.0039 U
BETA-BHC	0.2	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U	0.0037 U	0.0039 U
CHLORDANE	0.54	0.0081 U	0.0075 U	0.0077 U	0.0078 U	0.0087 U	0.0072 U	0.0074 U	0.0074 U	0.0078 U
DELTA-BHC	0.3	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U	0.0037 U	0.0039 U
DIELDRIN	0.044	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U	0.0037 U	0.0039 U
ENDOSULFAN I	0.9	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U	0.0037 U	0.0039 U
ENDOSULFAN II	0.9	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U	0.0037 U	0.0039 U
ENDOSULFAN SULFATE	1	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U	0.0037 U	0.0039 U
ENDRIN	0.1	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U	0.0037 U	0.0039 U
ENDRIN ALDEHYDE	NS	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U	0.0037 U	0.0039 U
ENDRIN KETONE	N/A	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U	0.0037 U	0.0039 U
GAMMA-BHC (LINDANE)	0.06	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U	0.0037 U	0.0039 U
HEPTACHLOR	0.1	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U	0.0037 U	0.0039 U
HEPTACHLOR EPOXIDE	0.02	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U	0.0037 U	0.0039 U
METHOXYCHLOR	NS	0.0041 U	0.0037 U	0.0038 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U	0.0054	0.0039 U
TOXAPHENE	NS	0.041 U	0.037 U	0.038 U	0.039 U	0.043 U	0.036 U	0.037 U	0.037 U	0.039 U
AROCLOR 1016	NS	0.02 U	0.019 U	0.019 U	0.02 U	0.022 U	0.018 U	0.019 U	0.019 U	0.019 U
AROCLOR 1221	NS	0.02 U	0.019 U	0.019 U	0.02 U	0.022 U	0.018 U	0.019 U	0.019 U	0.019 U
AROCLOR 1232	NS	0.02 U	0.019 U	0.019 U	0.02 U	0.022 U	0.018 U	0.019 U	0.019 U	0.019 U
AROCLOR 1242	NS	0.02 U	0.019 U	0.019 U	0.02 U	0.022 U	0.018 U	0.019 U	0.019 U	0.019 U
AROCLOR 1248	NS	0.02 U	0.019 U	0.019 U	0.02 U	0.022 U	0.018 U	0.019 U	0.019 U	0.048
AROCLOR 1254	NS	0.02 U	0.019 U	0.019 U	0.02 U	0.022 U	0.018 U	0.019 U	0.019 U	0.019 U
AROCLOR 1260	NS	0.02 U	0.019 U	0.019 U	0.02 U	0.022 U	0.11	0.054	0.019 U	0.05
TOTAL PCBs	1.0(Surface)/ 10(Sun-Surface)	ND	ND	ND	ND	ND	0.11	0.054	ND	0.098

U	Undetectable Levels
ND	Not Detectived
NS	No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-FILL-04**	**PG-FILL-04**	**PG-FILL-04**	**PG-FILL-5**	**PG-FILL-5**	**PG-FILL-10**	**PG-FILL-10**	**PG-UST1-2**	**PG-UST1-2**
Sample Date	**Soil**	11/6/2000	11/6/2000	11/6/2000	11/18/2000	11/18/2000	12/1/2000	12/1/2000	11/20/2000	11/20/2000
Sample ID	**Cleanup**	PGFILL04	PGFILL04	PGFILL04	PG-FILL-5	PG-FILL-5	PG-FILL10	PG-FILL10	PG-UST1-2	PG-UST1-2
Sample Depth	**Objective**	2-4'	4-6'	7-8'	2-4'	6-8'	3-4'	6.4-8.2'	2-4'	12-14'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0065	0.92	0.0036 U	0.004 U
4,4'-DDE	2.1	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0046	0.24	0.0036 U	0.004 U
4,4'-DDT	2.1	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0037 U	0.079 U	0.0036 U	0.004 U
ALDRIN	0.041	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0037 U	0.079 U	0.0036 U	0.004 U
ALPHA-BHC	0.11	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0037 U	0.079 U	0.0036 U	0.004 U
BETA-BHC	0.2	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0037 U	0.079 U	0.0036 U	0.004 U
CHLORDANE	0.54	0.0075 U	0.0077 U	0.0083 U	0.0072 U	0.0078 U	0.0073 U	0.16 U	0.0072 U	0.0079 U
DELTA-BHC	0.3	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0037 U	0.079 U	0.0036 U	0.004 U
DIELDRIN	0.044	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0037 U	0.079 U	0.0036 U	0.004 U
ENDOSULFAN I	0.9	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0037 U	0.079 U	0.0036 U	0.004 U
ENDOSULFAN II	0.9	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0037 U	0.079 U	0.0036 U	0.004 U
ENDOSULFAN SULFATE	1	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0037 U	0.079 U	0.0036 U	0.004 U
ENDRIN	0.1	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0037 U	0.079 U	0.0036 U	0.004 U
ENDRIN ALDEHYDE	NS	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0037 U	0.079 U	0.0036 U	0.004 U
ENDRIN KETONE	N/A	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0037 U	0.079 U	0.0036 U	0.004 U
GAMMA-BHC (LINDANE)	0.06	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0037 U	0.079 U	0.0036 U	0.004 U
HEPTACHLOR	0.1	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0037 U	0.079 U	0.0036 U	0.004 U
HEPTACHLOR EPOXIDE	0.02	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0037 U	0.079 U	0.0036 U	0.004 U
METHOXYCHLOR	NS	0.0037 U	0.0038 U	0.0042 U	0.0036 U	0.0039 U	0.0037 U	0.079 U	0.0036 U	0.004 U
TOXAPHENE	NS	0.037 U	0.038 U	0.042 U	0.036 U	0.039 U	0.037 U	0.79 U	0.036 U	0.04 U
AROCLOR 1016	NS	0.019 U	0.019 U	0.021 U	0.018 U	0.019 U	0.018 U	0.04 U	0.018 U	0.02 U
AROCLOR 1221	NS	0.019 U	0.019 U	0.021 U	0.018 U	0.019 U	0.018 U	0.04 U	0.018 U	0.02 U
AROCLOR 1232	NS	0.019 U	0.019 U	0.021 U	0.018 U	0.019 U	0.018 U	0.04 U	0.018 U	0.02 U
AROCLOR 1242	NS	0.019 U	0.019 U	0.021 U	0.018 U	0.019 U	0.018 U	0.04 U	0.018 U	0.02 U
AROCLOR 1248	NS	0.019 U	0.019 U	0.021 U	0.018 U	0.019 U	0.018 U	0.04 U	0.018 U	0.02 U
AROCLOR 1254	NS	0.019 U	0.019 U	0.021 U	0.018 U	0.019 U	0.018 U	0.04 U	0.018 U	0.02 U
AROCLOR 1260	NS	0.019 U	0.019 U	0.021 U	0.018 U	0.019 U	0.018 U	0.04 U	0.018 U	0.02 U
TOTAL PCBs	1.0(Surface)/ 10(Sun-Surface)	ND	ND	ND	ND	ND	ND	ND	ND	ND

U Undetectable Levels

ND Not Detectived

NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-UST4-1**	**PG-UST4-1**	**PG-UST4-1**	**PG-UST4-2**	**PG-UST4-2**	**PG-UST7-1**	**PG-UST7-1A**	**PG-UST7-1B**	**PG-UST7-2**
Sample Date	**Soil**	11/20/2000	11/20/2000	11/20/2000	11/20/2000	11/20/2000	11/28/2000	11/28/2000	11/28/2000	11/21/2000
Sample ID	**Cleanup**	PG-UST4-1	PG-UST4-1	PG-UST4-1	PG-UST4-2	PG-UST4-2	PG-UST7-1	PG-UST7-1A	PG-UST7-1B	PG-UST7-2
Sample Depth	**Objective**	2-4'	10-11.5'	14-15.5'	4-6'	12-14'	8-10'	0-2'	2-3.5'	8-10'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.0042 U	0.0046 U	0.0043 U	0.0044 U	0.005 U	0.0039 U	0.018 U	0.019 U	0.0038 U
4,4'-DDE	2.1	0.0042 U	0.0046 U	0.0043 U	0.0044 U	0.005 U	0.0039 U	0.018 U	0.019 U	0.0038 U
4,4'-DDT	2.1	0.0042 U	0.0046 U	0.0043 U	0.081	0.005 U	0.0039 U	0.36	0.15	0.0038 U
ALDRIN	0.041	0.0042 U	0.0046 U	0.0043 U	0.0044 U	0.005 U	0.0039 U	0.018 U	0.019 U	0.0038 U
ALPHA-BHC	0.11	0.0042 U	0.0046 U	0.0043 U	0.0044 U	0.005 U	0.0039 U	0.018 U	0.019 U	0.0038 U
BETA-BHC	0.2	0.0042 U	0.0046 U	0.0043 U	0.0044 U	0.005 U	0.0039 U	0.018 U	0.019 U	0.0038 U
CHLORDANE	0.54	0.0084 U	0.0091 U	0.0087 U	0.0089 U	0.01 U	0.0078 U	0.036 U	0.038 U	0.0077 U
DELTA-BHC	0.3	0.0042 U	0.0046 U	0.0043 U	0.0044 U	0.005 U	0.0039 U	0.018 U	0.019 U	0.0038 U
DIELDRIN	0.044	0.0042 U	0.0046 U	0.0043 U	0.0044 U	0.005 U	0.0039 U	0.13	0.019 U	0.0038 U
ENDOSULFAN I	0.9	0.0042 U	0.0046 U	0.0043 U	0.0044 U	0.005 U	0.0039 U	0.018 U	0.019 U	0.0038 U
ENDOSULFAN II	0.9	0.0042 U	0.0046 U	0.0043 U	0.0044 U	0.005 U	0.0039 U	0.018 U	0.019 U	0.0038 U
ENDOSULFAN SULFATE	1	0.0042 U	0.0046 U	0.0043 U	0.0044 U	0.005 U	0.0039 U	0.018 U	0.019 U	0.0038 U
ENDRIN	0.1	0.0042 U	0.0046 U	0.0043 U	0.0044 U	0.005 U	0.0039 U	0.07	0.019 U	0.0038 U
ENDRIN ALDEHYDE	NS	0.0042 U	0.0046 U	0.0043 U	0.016	0.005 U	0.0039 U	0.018 U	0.019 U	0.0038 U
ENDRIN KETONE	N/A	0.0042 U	0.0046 U	0.0043 U	0.0044 U	0.005 U	0.0039 U	0.018 U	0.019 U	0.0038 U
GAMMA-BHC (LINDANE)	0.06	0.0042 U	0.0046 U	0.0043 U	0.0044 U	0.005 U	0.0039 U	0.018 U	0.019 U	0.0038 U
HEPTACHLOR	0.1	0.0042 U	0.0046 U	0.0043 U	0.0044 U	0.005 U	0.0039 U	0.018 U	0.019 U	0.0038 U
HEPTACHLOR EPOXIDE	0.02	0.0042 U	0.0046 U	0.0043 U	0.0044 U	0.005 U	0.0039 U	0.018 U	0.019 U	0.0038 U
METHOXYCHLOR	NS	0.0042 U	0.0046 U	0.0043 U	0.0044 U	0.005 U	0.0039 U	0.018 U	0.019 U	0.0038 U
TOXAPHENE	NS	0.042 U	0.046 U	0.043 U	0.044 U	0.05 U	0.039 U	0.18 U	0.19 U	0.038 U
AROCLOR 1016	NS	0.021 U	0.023 U	0.022 U	0.022 U	0.025 U	0.02 U	0.018 U	0.019 U	0.019 U
AROCLOR 1221	NS	0.021 U	0.023 U	0.022 U	0.022 U	0.025 U	0.02 U	0.018 U	0.019 U	0.019 U
AROCLOR 1232	NS	0.021 U	0.023 U	0.022 U	0.022 U	0.025 U	0.02 U	0.018 U	0.019 U	0.019 U
AROCLOR 1242	NS	0.021 U	0.023 U	0.022 U	0.022 U	0.025 U	0.02 U	0.018 U	0.019 U	0.019 U
AROCLOR 1248	NS	0.021 U	0.023 U	0.022 U	0.022 U	0.025 U	0.02 U	0.018 U	0.019 U	0.019 U
AROCLOR 1254	NS	0.021 U	0.023 U	0.022 U	0.022 U	0.025 U	0.02 U	0.82	0.34	0.019 U
AROCLOR 1260	NS	0.021 U	0.023 U	0.022 U	0.2	0.025 U	0.02 U	0.018 U	0.019 U	0.019 U
TOTAL PCBs	1.0(Surface)/ 10(Sun-Surface)	ND	ND	ND	0.2	ND	ND	0.82	0.34	ND

U Undetectable Levels

ND Not Detectived

NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-UST7-2**	**PG-PA-MW-7**	**PG-PA-MW-7**	**PG-PA-MW-7**	**PG-PA-MW-7**	**PG-PA-MW-10D**	**PG-PA-MW-10D**	**PG-MW10D**	**PG-MW10D**
Sample Date	**Soil**	11/21/2000	11/13/2000	11/13/2000	11/13/2000	11/13/2000	11/27/2000	11/27/2000	11/27/2000	11/27/2000
Sample ID	**Cleanup**	PG-UST7-2	PG-PAMW-07	PG-PAMW-07	PG-PAMW-07	PG-PAMW-07	PG-PAMW10D	PG-PAMW10D	PG-MW10D	PG-MW10D
Sample Depth	**Objective**	10-12'	2.5-4'	4-6'	6-8'	8-10'	0.5-2'	4-6'	7-8'	8-10'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.011	0.014	0.67	0.0051 U
4,4'-DDE	2.1	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0064	0.0077	0.082	0.0051 U
4,4'-DDT	2.1	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0037 U	0.0063	0.023 U	0.0051 U
ALDRIN	0.041	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0037 U	0.0038 U	0.023 U	0.0051 U
ALPHA-BHC	0.11	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0037 U	0.0038 U	0.023 U	0.0051 U
BETA-BHC	0.2	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0037 U	0.0038 U	0.023 U	0.0051 U
CHLORDANE	0.54	0.008 U	0.0074 U	0.0077 U	0.008 U	0.0076 U	0.0074 U	0.029	0.22	0.01 U
DELTA-BHC	0.3	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0037 U	0.0038 U	0.023 U	0.0051 U
DIELDRIN	0.044	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0037 U	0.0038 U	0.023 U	0.0051 U
ENDOSULFAN I	0.9	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0037 U	0.0038 U	0.023 U	0.0051 U
ENDOSULFAN II	0.9	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0037 U	0.0038 U	0.023 U	0.0051 U
ENDOSULFAN SULFATE	1	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0037 U	0.0038 U	0.023 U	0.0051 U
ENDRIN	0.1	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0037 U	0.0038 U	0.023 U	0.0051 U
ENDRIN ALDEHYDE	NS	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0037 U	0.0038 U	0.023 U	0.0051 U
ENDRIN KETONE	N/A	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0037 U	0.0038 U	0.023 U	0.0051 U
GAMMA-BHC (LINDANE)	0.06	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0037 U	0.0038 U	0.023 U	0.0051 U
HEPTACHLOR	0.1	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0037 U	0.0038 U	0.023 U	0.0051 U
HEPTACHLOR EPOXIDE	0.02	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0037 U	0.0038 U	0.023 U	0.0051 U
METHOXYCHLOR	NS	0.004 U	0.0037 U	0.0038 U	0.004 U	0.0038 U	0.0037 U	0.0038 U	0.023 U	0.0051 U
TOXAPHENE	NS	0.04 U	0.037 U	0.038 U	0.04 U	0.038 U	0.037 U	0.038 U	0.23 U	0.051 U
AROCLOR 1016	NS	0.02 U	0.019 U	0.019 U	0.02 U	0.019 U	0.019 U	0.019 U	0.023 U	0.026 U
AROCLOR 1221	NS	0.02 U	0.019 U	0.019 U	0.02 U	0.019 U	0.019 U	0.019 U	0.023 U	0.026 U
AROCLOR 1232	NS	0.02 U	0.019 U	0.019 U	0.02 U	0.019 U	0.019 U	0.019 U	0.023 U	0.026 U
AROCLOR 1242	NS	0.02 U	0.019 U	0.019 U	0.02 U	0.019 U	0.019 U	0.019 U	0.023 U	0.026 U
AROCLOR 1248	NS	0.02 U	0.019 U	0.019 U	0.02 U	0.019 U	0.019 U	0.019 U	0.023 U	0.026 U
AROCLOR 1254	NS	0.02 U	0.019 U	0.019 U	0.02 U	0.019 U	0.019 U	0.019 U	0.023 U	0.026 U
AROCLOR 1260	NS	0.02 U	0.019 U	0.019 U	0.02 U	0.019 U	0.019 U	0.031	0.25	0.026 U
TOTAL PCBs	1.0(Surface)/ 10(Sun-Surface)	ND	ND	ND	ND	ND	ND	0.031	0.25	ND

U Undetectable Levels
ND Not Detectived
NS No Standard

Table 5D
Soil Analytical Results
Metals
Site 2A/2B HHMT- Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-A-4** 11/16/2000 PG-A-04 6-8' MG/KG	**PG-A-4** 11/16/2000 PG-A-04 12-14' MG/KG	**PG-A-5** 11/14/2000 PG-A-05 2-4' MG/KG	**PG-B-1** 12/4/2000 PG-B-01 2-4' MG/KG	**PG-B-1** 12/4/2000 PG-B-01 6-8' MG/KG	**PG-B-1** 12/4/2000 PG-B-01 9-10' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	1200 U	22000	1500	3300	8500	3700
ANTIMONY	SB	2 U	3.1 U	1.8 U	1.6 U	1.7 U	1.8 U
ARSENIC	7.5 or SB	**19**	**8.9**	**21**	**8.5**	2.4 U	4.7
BARIUM	300 or SB	21	**360**	30	60	120	47
BERYLLIUM	0.16 (HEAST) or SB	0.55 U	**2.2**	0.49 U	0.45 U	**0.56**	0.51 U
CADMIUM	1 or SB	0.41 U	0.64 U	0.37 U	0.34 U	0.36 U	0.38 U
CALCIUM METAL	35,000*	1400 U	20000	1200 U	18000	1300	1300 U
CHROMIUM	10 or SB	7.9	**13**	4.9 U	7.5	**18**	9.1
COBALT	30 or SB	3	13	3.5	4.7	10	3.8
COPPER	25 or SB	22	**69**	20	**37**	13	15
IRON	2,000 or SB	3200 U	**26000**	**7600**	**16000**	**22000**	**13000**
LEAD	500*	10	22	16	31	14	7.5
MAGNESIUM	5,000*	810 U	**7600**	730 U	1700	4100	890
MANGANESE	5,000*	22 U	150	30	120	340	56
NICKEL	13 or SB	9.4	**36**	8.7	13	**19**	5.7
POTASSIUM	43,000*	550 U	19000	490 U	1100	1500	510 U
SELENIUM	2 or SB	3.4 U	5.3 U	3.1 U	**3**	3 U	3.2 U
SILVER	SB	1.7	6.3	0.62 U	1	0.63	0.63 U
SODIUM	8,000*	860	**26000**	490 U	1200	1700	510 U
THALLIUM	300*	1.6 U	2.6 U	1.5 U	1.4 U	1.4 U	1.5 U
VANADIUM	150 or SB	15	40	12 U	14	28	20
ZINC	20 or SB	14 U	**200**	**23**	**31**	**51**	**26**
MERCURY	0.1	0.19 U	0.3 U	0.18 U	0.16 U	0.17 U	0.18 U

U Undetectable Levels
SB Site Background
* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 2A/2B HHMT- Port Ivory Facility

Location	**Recommended**	**PG-B-02**	**PG-B-02**	**PG-B-02A**	**PG-B-3**	**PG-B-3**	**PG-B-4**
Sample Date	**Soil**	11/16/2000	11/16/2000	11/16/2000	12/4/2000	12/4/2000	12/4/2000
Sample ID	**Cleanup**	PG-B-02	PG-A-02	PG-B-02A	PG-B-03	PG-B-03	PG-B-04
Sample Depth	**Objective**	2-4'	6-8'	8-10'	2-4'	6-8'	2-4'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
ALUMINUM (FUME OR DUST)	33,000*	2600	2000	1500	**35000**	15000	4400
ANTIMONY	SB	1.7 U	2 U	1.9 U	2.8	2.4 U	3.9
ARSENIC	7.5 or SB	4.6	3.6	3.6	4.6	4	**37**
BARIUM	300 or SB	43	57	31	230	**350**	170
BERYLLIUM	0.16 (HEAST) or SB	0.47 U	0.56 U	0.53 U	**0.79**	**2.2**	**1.1**
CADMIUM	1 or SB	0.35 U	0.42 U	**14**	0.42 U	0.49 U	0.35 U
CALCIUM METAL	35,000*	9600	3800	6000	15000	3700	19000
CHROMIUM	10 or SB	7.1	5.6 U	5.3 U	**40**	**18**	**19**
COBALT	30 or SB	2.5	2.3 U	2.2 U	13	11	10
COPPER	25 or SB	17	17	17	**73**	**57**	**210**
IRON	2,000 or SB	**7800**	**4800**	**9400**	**28000**	**9000**	**20000**
LEAD	500*	20	6.7	27	200	10	230
MAGNESIUM	5,000*	690 U	820 U	780 U	2500	3400	**8800**
MANGANESE	5,000*	69	22 U	110	150	59	210
NICKEL	13 or SB	11	7.4	6.7	**53**	**19**	**600**
POTASSIUM	43,000*	560	560 U	530 U	5700	6200	580
SELENIUM	2 or SB	2.9 U	3.5 U	3.3 U	3.5 U	4.1 U	2.9 U
SILVER	SB	0.68	0.69 U	0.66 U	6.6	6.7	0.59 U
SODIUM	8,000*	470 U	560 U	530 U	**15000**	5400	470 U
THALLIUM	300*	1.4 U	1.7 U	1.6 U	1.7 U	2 U	1.4 U
VANADIUM	150 or SB	12 U	14 U	13 U	14 U	23	36
ZINC	20 or SB	12 U	**35**	**1100**	**170**	**30**	**580**
MERCURY	0.1	0.17 U	0.2 U	0.19 U	**0.48**	0.23 U	**0.34**

U Undetectable Levels
SB Site Background
* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 2A/2B HHMT- Port Ivory Facility

Location	**Recommended**	**PG-E-1**	**PG-E-1**	**PG-E-1**	**PG-F2-2**	**PG-F2-2**	**PG-P-1**
Sample Date	**Soil**	11/13/2000	11/13/2000	11/13/2000	11/20/2000	11/20/2000	11/22/2000
Sample ID	**Cleanup**	PG-E-01	PG-E-01	PG-E-01	PG-F2-2	PG-F2-2	PG-P-01
Sample Depth	**Objective**	0.2-2'	4-6'	10-12'	2-4'	8-10'	2-4'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
ALUMINUM (FUME OR DUST)	33,000*	4500	1900	7300	2300	6400	2200
ANTIMONY	SB	1.6 U	1.7 U	2.7 U	1.6 U	1.7 U	1.6 U
ARSENIC	7.5 or SB	6.4	5.3	**12**	2.2 U	2.3 U	2.5
BARIUM	300 or SB	93	44	**390**	15	17	18
BERYLLIUM	0.16 (HEAST) or SB	**0.63**	0.47 U	**1.9**	0.43 U	0.47 U	0.43 U
CADMIUM	1 or SB	0.34 U	0.35 U	0.57 U	0.33 U	0.35 U	0.33 U
CALCIUM METAL	35,000*	8300	3800	7400	1100 U	2300	1100 U
CHROMIUM	10 or SB	8.5	4.7 U	7.5 U	4.3 U	5.9	5.2
COBALT	30 or SB	6.8	3.1	3.1 U	1.8 U	1.9 U	2.2
COPPER	25 or SB	**100**	**60**	**28**	20	4.4 U	13
IRON	2,000 or SB	**16000**	**8300**	**23000**	**6100**	**12000**	**7200**
LEAD	500*	170	70	70	9.1	4.7 U	21
MAGNESIUM	5,000*	3500	850	2300	640 U	710	640 U
MANGANESE	5,000*	190	54	84	24	110	66
NICKEL	13 or SB	**32**	**36**	7.2	2.7 U	4.6	4.6
POTASSIUM	43,000*	810	470 U	2200	430 U	910	430 U
SELENIUM	2 or SB	2.8 U	2.9 U	4.7 U	2.7 U	2.9 U	2.7 U
SILVER	SB	0.57 U	0.66	0.94 U	0.54 U	0.58 U	0.54 U
SODIUM	8,000*	450 U	470 U	**17000**	430 U	470 U	430 U
THALLIUM	300*	1.4 U	1.4 U	2.3 U	1.3 U	1.4 U	1.3 U
VANADIUM	150 or SB	19	12 U	19 U	11 U	12 U	11 U
ZINC	20 or SB	**540**	**990**	**120**	**22**	**25**	**40**
MERCURY	0.1	**0.24**	**1.2**	0.27 U	0.15 U	0.17 U	0.15 U

U Undetectable Levels
SB Site Background
* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 2A/2B HHMT- Port Ivory Facility

Location	**Recommended**	**PG-P-1**	**PG-P-2**	**PG-P-2**	**PG-P-3**	**PG-P-3**	**PG-PD-1**
Sample Date	**Soil**	11/22/2000	11/30/2000	11/30/2000	11/22/2000	11/22/2000	11/21/2000
Sample ID	**Cleanup**	PG-P-01	PG-P-02	PG-P-02	PG-P-03	PG-P-03	PG-PD-01
Sample Depth	**Objective**	8-10'	2-4'	4-6'	2-4'	6-8'	2-4'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
ALUMINUM (FUME OR DUST)	33,000*	5200	2600	3100	8700	7400	4700 U
ANTIMONY	SB	1.8 U	1.7 U	1.7 U	1.7 U	1.7 U	8.1 U
ARSENIC	7.5 or SB	2.5 U	4.2	3.1	2.3 U	2.3 U	**13**
BARIUM	300 or SB	20	19	21	73	58	170
BERYLLIUM	0.16 (HEAST) or SB	0.51 U	0.47 U	0.48 U	**0.78**	**0.73**	2.2 U
CADMIUM	1 or SB	0.38 U	0.35 U	0.36 U	0.34 U	0.34 U	1.7 U
CALCIUM METAL	35,000*	1300 U	580 U	600 U	3400	**45000**	16000
CHROMIUM	10 or SB	10	4.7 U	5.6	**18**	**16**	22 U
COBALT	30 or SB	3.1	1.9 U	2 U	10	9.2	9.3 U
COPPER	25 or SB	5.6	**82**	4.5 U	16	6.1	**92**
IRON	2,000 or SB	**12000**	**5100**	**9000**	**20000**	**18000**	13000 U
LEAD	500*	7.9	17	4.8 U	12	14	80
MAGNESIUM	5,000*	1100	420 U	450	4900	5000	3300 U
MANGANESE	5,000*	47	38	27	860	1300	91 U
NICKEL	13 or SB	5.4	**14**	3.3	**23**	**21**	**23**
POTASSIUM	43,000*	520	140	250	1900	2500	450 U
SELENIUM	2 or SB	3.2 U	2.9 U	3 U	2.9 U	2.9 U	14 U
SILVER	SB	0.63 U	0.58 U	0.6 U	0.57 U	0.57 U	2.8 U
SODIUM	8,000*	510 U	460 U	480 U	460 U	460 U	450 U
THALLIUM	300*	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	6.7 U
VANADIUM	150 or SB	19	12 U	12 U	25	26	56 U
ZINC	20 or SB	**23**	**64**	14	**53**	**42**	**240**
MERCURY	0.1	0.18 U	0.17 U	0.17 U	0.16 U	0.16 U	0.16 U

U Undetectable Levels

SB Site Background

* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 2A/2B HHMT- Port Ivory Facility

Location	**Recommended**	**PG-PD-1**	**PG-PD-3**	**PG-PD-4**	**PG-PD-5**	**PG-PD-5**	**PG-Q1-1**
Sample Date	**Soil**	11/21/2000	11/29/2000	12/2/2000	12/2/2000	12/2/2000	11/30/2000
Sample ID	**Cleanup**	PG-PD-01	PG-PD-3	PG-PD-4	PG-PD-5	PG-PD-5	PG-Q1-1
Sample Depth	**Objective**	10-12'	4-6'	8-10'	0.7-1.5'	2-4'	2-4'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
ALUMINUM (FUME OR DUST)	33,000*	1100	8600	7200	4200	4400	3700
ANTIMONY	SB	1.8 U	1.8 U	1.8 U	1.6 U	1.6 U	1.6 U
ARSENIC	7.5 or SB	2.5 U	2.5 U	2.4 U	**9.3**	2.2 U	**10**
BARIUM	300 or SB	13	38	47	50	66	67
BERYLLIUM	0.16 (HEAST) or SB	0.51 U	**0.72**	**0.89**	**0.57**	**0.8**	0.45 U
CADMIUM	1 or SB	0.38 U	0.37 U	0.37 U	0.34 U	0.34 U	0.34 U
CALCIUM METAL	35,000*	1300 U	15000	1100	**47000**	27000	26000
CHROMIUM	10 or SB	5.1 U	**19**	**13**	**17**	**11**	**11**
COBALT	30 or SB	2.1 U	8.8	9.1	4.1	5.7	4.7
COPPER	25 or SB	5.8	12	**29**	**72**	9.5	**44**
IRON	2,000 or SB	**4500**	**22000**	**17000**	**14000**	**14000**	**14000**
LEAD	500*	5.1 U	16	13	47	10	75
MAGNESIUM	5,000*	750 U	**11000**	2900	**14000**	3300	**12000**
MANGANESE	5,000*	21 U	270	280	130	630	190
NICKEL	13 or SB	3.1 U	**19**	**15**	**19**	12	**15**
POTASSIUM	43,000*	510 U	1900	810	470	1200	450
SELENIUM	2 or SB	3.2 U	3.1 U	3 U	2.8 U	2.8 U	2.8 U
SILVER	SB	0.63 U	0.62 U	0.61 U	0.57	0.56 U	0.57 U
SODIUM	8,000*	510 U	1900	490 U	550	1100	450 U
THALLIUM	300*	1.5 U	1.5 U	1.5 U	1.4 U	1.3 U	1.4 U
VANADIUM	150 or SB	13 U	26	24	52	20	26
ZINC	20 or SB	17	**61**	**40**	**87**	**28**	**110**
MERCURY	0.1	0.18 U	0.18 U	0.17 U	**0.39**	0.16 U	0.16 U

U Undetectable Levels

SB Site Background

* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 2A/2B HHMT- Port Ivory Facility

Location	**Recommended**	**PG-Q1-1**	**PG-RR-1**	**PG-RR-1**	**PG-RR-2**	**PG-RR-3**	**PG-RR-4**
Sample Date	**Soil**	11/30/2000	11/3/2000	11/3/2000	11/4/2000	11/3/2000	11/4/2000
Sample ID	**Cleanup**	PG-Q1-1	PG-RR-01	PG-RR-01	PG-RR-02	PG-RR-03	PG-RR-04
Sample Depth	**Objective**	4-6'	0-1.2'	1.2-2'	0-2'	1.5-2'	0.6-2'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
ALUMINUM (FUME OR DUST)	33,000*	3000	1400	2500	840	1900	3400
ANTIMONY	SB	2.2 U	7.3	2	3	1.9	1.6 U
ARSENIC	7.5 or SB	**9.2**	**980**	**290**	**150**	**250**	**11**
BARIUM	300 or SB	42	170	22	100	120	73
BERYLLIUM	0.16 (HEAST) or SB	0.62 U	0.47 U	0.46 U	0.47 U	0.47 U	0.45 U
CADMIUM	1 or SB	0.46 U	**1.4**	0.34 U	0.35 U	0.39	0.34 U
CALCIUM METAL	35,000*	770 U	**37000**	570 U	3100	10000	**61000**
CHROMIUM	10 or SB	10	**23**	4.6	9.6	8.4	7.9
COBALT	30 or SB	3.3	5.1	1.9	4.2	4.6	2.2
COPPER	25 or SB	**42**	**150**	12	**51**	**69**	22
IRON	2,000 or SB	**14000**	**24000**	**9200**	**23000**	**13000**	**8700**
LEAD	500*	39	210	11	120	120	52
MAGNESIUM	5,000*	620	**21000**	580	1300	**5900**	**27000**
MANGANESE	5,000*	43	210	41	140	130	120
NICKEL	13 or SB	8.2	**65**	**15**	**41**	**130**	**22**
POTASSIUM	43,000*	250	370	170	310	230	600
SELENIUM	2 or SB	3.8 U	2.9 U	2.9 U	2.9 U	2.9 U	2.8 U
SILVER	SB	0.77 U	0.58 U	0.57 U	0.59 U	0.58 U	0.56 U
SODIUM	8,000*	610 U	460 U	460 U	470 U	460 U	450 U
THALLIUM	300*	1.8 U	1.4 U	1.4 U	1.4 U	1.4 U	1.3 U
VANADIUM	150 or SB	18	45	13	23	21	11 U
ZINC	20 or SB	**47**	**270**	**30**	**61**	**110**	**40**
MERCURY	0.1	0.22 U	**0.21**	0.16 U	0.17 U	0.17 U	0.16 U

U Undetectable Levels
SB Site Background
* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 2A/2B HHMT- Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-RR-4** 11/4/2000 PG-RR-04 3-4' MG/KG	**PG-RR-5** 11/7/2000 PG-RR-05 1-2' MG/KG	**PG-RR-5** 11/7/2000 PG-RR-05 2-4' MG/KG	**PG-RR-6** 11/6/2000 PG-RR-06 1-2' MG/KG	**PG-RR-6** 11/6/2000 PG-RR-06 2-4' MG/KG	**PG-RR-7** 11/6/2000 PG-RR-07 0-2' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	8500	3000	4700	2800	1500	770
ANTIMONY	SB	1.8 U	1.6 U	1.6 U	4.2	1.6 U	1.6 U
ARSENIC	7.5 or SB	7.5	**89**	**180**	**140**	**12**	2.8
BARIUM	300 or SB	96	73	23	96	19	29
BERYLLIUM	0.16 (HEAST) or SB	0.5 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U
CADMIUM	1 or SB	0.37 U	0.33 U	0.32 U	0.33 U	0.33 U	0.32 U
CALCIUM METAL	35,000*	3700	1100 U	1100 U	3800	540 U	540 U
CHROMIUM	10 or SB	**13**	7.5	7.1	6.8	4.3 U	5.9
COBALT	30 or SB	8	2.7	2.2	2.4	1.8 U	2.7
COPPER	25 or SB	19	**42**	**44**	**65**	12	11
IRON	2,000 or SB	**19000**	**14000**	**11000**	**19000**	**11000**	**3600**
LEAD	500*	22	29	22	200	24	17
MAGNESIUM	5,000*	3800	640 U	630 U	1200	390 U	390 U
MANGANESE	5,000*	410	43	33	79	28	30
NICKEL	13 or SB	**14**	**130**	**16**	9	2.7 U	2.6 U
POTASSIUM	43,000*	1100	210	180	270	140	120
SELENIUM	2 or SB	3.1 U	2.7 U	2.7 U	**2.8**	2.7 U	2.7 U
SILVER	SB	0.62 U	0.54 U	0.54 U	0.54 U	0.54 U	0.54 U
SODIUM	8,000*	1900	97 U	96 U	430 U	430 U	430 U
THALLIUM	300*	1.5 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
VANADIUM	150 or SB	20	14	16	17	11 U	15
ZINC	20 or SB	**54**	**30**	**21**	**46**	11 U	15
MERCURY	0.1	0.18 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U

U Undetectable Levels
SB Site Background
* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 2A/2B HHMT- Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended Soil Cleanup Objective MG/KG**	**PG-RR-7** 11/6/2000 PG-RR-07 2-4' MG/KG	**PG-STAIN-02** 11/11/2000 PG-ST-02 1-2' MG/KG	**PG-STAIN-02** 11/11/2000 PG-ST-02 2-3' MG/KG	**PG-STAIN-03** 11/10/2000 PG-ST-03 1.7-2.5' MG/KG	**PG-STAIN-03** 11/10/2000 PG-ST-03 2.5-3.5' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	710	3100	4900	1200	1100 U
ANTIMONY	SB	1.6 U	1.7 U	1.7 U	1.7 U	1.8 U
ARSENIC	7.5 or SB	**8.5**	**31**	**50**	**110**	**43**
BARIUM	300 or SB	43	12 U	18	71	66
BERYLLIUM	0.16 (HEAST) or SB	0.43 U	**0.58**	**0.65**	**0.56**	0.51 U
CADMIUM	1 or SB	0.33 U	0.35 U	0.36 U	0.35 U	0.38 U
CALCIUM METAL	35,000*	**70000**	1900	1200	8900	1300 U
CHROMIUM	10 or SB	6	7.6	7.6	**15**	5.1 U
COBALT	30 or SB	1.8 U	3.7	2 U	2.6	2.1 U
COPPER	25 or SB	14	16	**70**	**52**	18
IRON	2,000 or SB	**4200**	**11000**	**8500**	**38000**	**38000**
LEAD	500*	23	5.1	8.3	110	39
MAGNESIUM	5,000*	**41000**	930	710 U	1900	750 U
MANGANESE	5,000*	88	43	41	34	21 U
NICKEL	13 or SB	4	4.5	3.6	6.9	13
POTASSIUM	43,000*	190	470 U	480 U	980	1400
SELENIUM	2 or SB	2.7 U	2.9 U	3 U	**5.7**	**6**
SILVER	SB	0.54 U	0.59 U	0.6 U	0.58 U	0.63 U
SODIUM	8,000*	430 U	470 U	480 U	2100	2100
THALLIUM	300*	1.3 U	1.4 U	1.4 U	2.3	2.9
VANADIUM	150 or SB	12	15	13	47	23
ZINC	20 or SB	**60**	20	16	18	13 U
MERCURY	0.1	0.15 U	0.17 U	0.17 U	0.17 U	**0.52**

U Undetectable Levels

SB Site Background

* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 2A/2B HHMT- Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-STAIN-3B** 11/11/2000 PG-ST-3B 0-2' MG/KG	**PG-STAIN-3B** 11/11/2000 PG-ST-3B 2-4' MG/KG	**PG-FS-2** 11/17/2000 PG-FS-02 2-4' MG/KG	**PG-FS-2** 11/17/2000 PG-FS-02 8-10' MG/KG	**PG-FS-2** 11/17/2000 PG-FS-02 17-18' MG/KG	**PG-FS-3** 11/15/2000 PG-FS03 2-4' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	2100	2000	4300	4500	1000	3000
ANTIMONY	SB	13	1.6 U	1.6 U	1.8 U	1.6 U	1.7 U
ARSENIC	7.5 or SB	**350**	**31**	5.5	6.8	2.2 U	**30**
BARIUM	300 or SB	160	11 U	32	18	11 U	54
BERYLLIUM	0.16 (HEAST) or SB	**0.67**	**0.5**	**0.54**	**1.9**	0.45 U	0.46 U
CADMIUM	1 or SB	**1.8**	0.32 U	0.34 U	0.37 U	0.34 U	0.34 U
CALCIUM METAL	35,000*	**44000**	1100 U	1100 U	1200 U	1500	1300
CHROMIUM	10 or SB	**83**	7.7	**11**	**14**	5.3	8.6
COBALT	30 or SB	7.4	1.9	1.9 U	7.5	1.9 U	1.9 U
COPPER	25 or SB	**260**	5.7	**26**	9.4	4.3 U	**40**
IRON	2,000 or SB	**45000**	**10000**	**14000**	**17000**	2700 U	**12000**
LEAD	500*	**950**	4.5	6.8	4.9 U	4.5 U	96
MAGNESIUM	5,000*	**22000**	630 U	1200	720 U	660 U	680 U
MANGANESE	5,000*	270	45	46	110	37	40
NICKEL	13 or SB	**34**	4.3	5.6	5	2.7 U	5.2
POTASSIUM	43,000*	430 U	430 U	590	490 U	450 U	470
SELENIUM	2 or SB	**4.1**	2.7 U	2.8 U	3 U	2.8 U	2.9 U
SILVER	SB	0.54 U	0.54 U	0.57 U	0.61 U	0.56 U	0.57 U
SODIUM	8,000*	1200	430 U	450 U	490 U	450 U	460 U
THALLIUM	300*	1.3 U	1.3 U	1.4 U	1.5 U	1.3 U	1.4 U
VANADIUM	150 or SB	26	11	21	30	11 U	14
ZINC	20 or SB	**330**	15	**36**	**42**	11 U	**81**
MERCURY	0.1	**0.24**	0.15 U	0.16 U	0.17 U	0.16 U	0.16 U

U Undetectable Levels
SB Site Background
* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 2A/2B HHMT- Port Ivory Facility

Location	**Recommended**	**PG-FS-3**	**PG-FILL-02**	**PG-FILL-03**	**PG-FILL-03**	**PG-FILL-03**
Sample Date	**Soil**	11/15/2000	11/3/2000	11/4/2000	11/6/2000	11/6/2000
Sample ID	**Cleanup**	PG-FS03	PGFILL02	PGFILL03	PGFILL03	PGFILL03
Sample Depth	**Objective**	6.5-8	0.7-3'	0.5-2'	2-4'	4-6'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
ALUMINUM (FUME OR DUST)	33,000*	5800	4300	3900	2500	3300
ANTIMONY	SB	1.7 U	1.9 U	1.6 U	19	1.6 U
ARSENIC	7.5 or SB	2.5	**45**	**13**	**9.3**	3
BARIUM	300 or SB	130	210	87	100	29
BERYLLIUM	0.16 (HEAST) or SB	**0.68**	0.52 U	**0.86**	**0.45**	0.44 U
CADMIUM	1 or SB	0.35 U	1	0.44	0.4	0.33 U
CALCIUM METAL	35,000*	3000	21000	27000	23000	2200
CHROMIUM	10 or SB	**11**	**22**	**11**	6.1	5.4
COBALT	30 or SB	7.2	7.6	4.8	3.7	2.2
COPPER	25 or SB	14	**93**	**66**	**2600**	25
IRON	2,000 or SB	**15000**	**39000**	**19000**	**13000**	**9600**
LEAD	500*	22	**680**	63	420	28
MAGNESIUM	5,000*	3400	**10000**	**5000**	**9600**	1000
MANGANESE	5,000*	290	150	240	96	40
NICKEL	13 or SB	**16**	**17**	**24**	**180**	7.6
POTASSIUM	43,000*	1300	480	290	350	300
SELENIUM	2 or SB	2.9 U	**3.3**	2.7 U	2.8 U	2.8 U
SILVER	SB	0.59 U	0.65 U	0.54 U	11	0.56 U
SODIUM	8,000*	470 U	520 U	430 U	440 U	470
THALLIUM	300*	1.4 U	1.6 U	1.3 U	1.3 U	1.3 U
VANADIUM	150 or SB	20	30	32	14	11 U
ZINC	20 or SB	**93**	**120**	**280**	**320**	**40**
MERCURY	0.1	0.17 U	0.18 U	**0.22**	**0.19**	0.16 U

U Undetectable Levels
SB Site Background
* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 2A/2B HHMT- Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended Soil Cleanup Objective MG/KG**	**PG-FILL-04** 11/6/2000 PGFILL04 0-2' MG/KG	**PG-FILL-04** 11/6/2000 PGFILL04 2-4' MG/KG	**PG-FILL-04** 11/6/2000 PGFILL04 4-6' MG/KG	**PG-FILL-04** 11/6/2000 PGFILL04 7-8' MG/KG	**PG-FILL-5** 11/18/2000 PG-FILL-5 2-4' MG/KG	**PG-FILL-5** 11/18/2000 PG-FILL-5 6-8' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	2300	2000	3600	2400	3200	2600
ANTIMONY	SB	1.7 U	1.6 U	1.7 U	1.8 U	1.6 U	1.7 U
ARSENIC	7.5 or SB	**10**	**8.8**	4.7	3	4.6	3.3
BARIUM	300 or SB	140	70	50	13 U	26	17
BERYLLIUM	0.16 (HEAST) or SB	0.47 U	0.45 U	0.46 U	0.5 U	**0.58**	**0.47**
CADMIUM	1 or SB	0.48	0.34 U	0.34 U	0.37 U	0.32 U	0.35 U
CALCIUM METAL	35,000*	3700	1300	1100	910	1100 U	1200 U
CHROMIUM	10 or SB	4.7 U	4.9	6.8	5 U	7.8	5.9
COBALT	30 or SB	4.5	5.1	5	4.6	4	2.8
COPPER	25 or SB	**48**	**49**	22	20	11	8.7
IRON	2,000 or SB	**16000**	**14000**	**13000**	**6800**	**11000**	**10000**
LEAD	500*	76	43	16	12	8.2	4.7 U
MAGNESIUM	5,000*	680	450	950	450 U	800	690 U
MANGANESE	5,000*	63	66	120	38	86	53
NICKEL	13 or SB	**15**	10	10	5.1	4.6	3.6
POTASSIUM	43,000*	270	260	470	260	430 U	470 U
SELENIUM	2 or SB	2.9 U	2.8 U	2.9 U	3.1 U	2.7 U	2.9 U
SILVER	SB	0.58 U	0.56 U	0.57 U	0.62 U	0.54 U	0.58 U
SODIUM	8,000*	460 U	450 U	460 U	500 U	430 U	470 U
THALLIUM	300*	1.4 U	1.3 U	1.4 U	1.5 U	1.3 U	1.4 U
VANADIUM	150 or SB	12 U	13	15	13 U	16	14
ZINC	20 or SB	**130**	**110**	**53**	**24**	**26**	**22**
MERCURY	0.1	**0.26**	0.16 U	0.16 U	**0.24**	0.15 U	0.17 U

U	Undetectable Levels
SB	Site Background
*	Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 2A/2B HHMT- Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended Soil Cleanup Objective MG/KG**	**PG-FILL-10** 12/1/2000 PG-FILL10 3-4' MG/KG	**PG-FILL-10** 12/1/2000 PG-FILL10 6.4-8.2' MG/KG	**PG-UST1-2** 11/20/2000 PG-UST1-2 2-4' MG/KG	**PG-UST1-2** 11/20/2000 PG-UST1-2 12-14' MG/KG	**PG-UST4-1** 11/20/2000 PG-UST4-1 2-4' MG/KG	**PG-UST4-1** 11/20/2000 PG-UST4-1 10-11.5' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	4000	6500	2800	1000 U	3600	3600
ANTIMONY	SB	1.6 U	3.6	1.8	1.7 U	1.8 U	2 U
ARSENIC	7.5 or SB	4.8	**180**	**11**	2.4 U	**50**	**33**
BARIUM	300 or SB	67	**360**	70	12 U	210	90
BERYLLIUM	0.16 (HEAST) or SB	**0.55**	**1.1**	0.43 U	0.48 U	**0.6**	**0.55**
CADMIUM	1 or SB	0.33 U	**2.6**	0.32 U	0.36 U	0.62	0.41 U
CALCIUM METAL	35,000*	5100	6300	4200	1200 U	21000	5200
CHROMIUM	10 or SB	**16**	**66**	6.9	4.8 U	8.6	5.5 U
COBALT	30 or SB	4.9	**38**	3.3	2 U	8	9
COPPER	25 or SB	22	**220**	**38**	4.5 U	**370**	**41**
IRON	2,000 or SB	**13000**	**35000**	**12000**	**4300**	**32000**	**17000**
LEAD	500*	26	260	300	4.8 U	310	16
MAGNESIUM	5,000*	1500	1500	1600	700 U	**13000**	1500
MANGANESE	5,000*	430	67	130	19 U	150	60
NICKEL	13 or SB	8.1	**230**	9.7	2.9 U	**57**	**110**
POTASSIUM	43,000*	390	440	430 U	480 U	590	810
SELENIUM	2 or SB	2.7 U	**6.7**	2.7 U	3 U	**4.9**	**4.3**
SILVER	SB	0.55 U	1.2 U	0.54 U	0.6 U	0.63 U	0.68 U
SODIUM	8,000*	440 U	950 U	430 U	480 U	510 U	550 U
THALLIUM	300*	1.3 U	2.9 U	1.3 U	1.4 U	1.5 U	1.6 U
VANADIUM	150 or SB	34	130	14	12 U	25	18
ZINC	20 or SB	**41**	**640**	**100**	**39**	**1200**	**3500**
MERCURY	0.1	0.16 U	**0.47**	**1**	0.17 U	**0.45**	0.19 U

U	Undetectable Levels
SB	Site Background
*	Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 2A/2B HHMT- Port Ivory Facility

Location	**Recommended**	**PG-UST4-1**	**PG-UST4-2**	**PG-UST4-2**	**PG-UST7-1**	**PG-UST7-1A**	**PG-UST7-1B**
Sample Date	**Soil**	11/20/2000	11/20/2000	11/20/2000	11/28/2000	11/28/2000	11/28/2000
Sample ID	**Cleanup**	PG-UST4-1	PG-UST4-2	PG-UST4-2	PG-UST7-1	PG-UST7-1A	PG-UST7-1B
Sample Depth	**Objective**	14-15.5'	4-6'	12-14'	8-10'	0-2'	2-3.5'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
ALUMINUM (FUME OR DUST)	33,000*	6300	1400	1500	7600	2500	990
ANTIMONY	SB	1.9 U	1.9 U	2.2 U	1.7 U	1.6 U	1.6 U
ARSENIC	7.5 or SB	5.1	**8.4**	**13**	2.4 U	2.3	2.3 U
BARIUM	300 or SB	76	61	43	31	49	16
BERYLLIUM	0.16 (HEAST) or SB	**0.62**	0.53 U	0.6 U	0.47 U	0.43 U	0.45 U
CADMIUM	1 or SB	0.39 U	0.4 U	0.45 U	0.35 U	0.32 U	0.34 U
CALCIUM METAL	35,000*	3700	3700	6700	1500	**69000**	20000
CHROMIUM	10 or SB	**13**	5.3 U	6 U	**11**	9.2	4.5 U
COBALT	30 or SB	9.2	2.2 U	2.5 U	6.7	3.3	1.9 U
COPPER	25 or SB	25	16	**38**	7.3	**45**	19
IRON	2,000 or SB	**20000**	**7100**	**18000**	**14000**	**10000**	**4300**
LEAD	500*	65	13	49	8.5	120	23
MAGNESIUM	5,000*	3600	790 U	1400	3400	**31000**	**11000**
MANGANESE	5,000*	300	22	100	180	130	68
NICKEL	13 or SB	**22**	9.3	11	**14**	**17**	8.4
POTASSIUM	43,000*	4100	530 U	1900	1400	430 U	450 U
SELENIUM	2 or SB	3.2 U	3.3 U	3.7 U	2.9 U	2.7 U	2.8 U
SILVER	SB	0.65 U	0.74	0.79	0.59 U	0.54 U	0.57 U
SODIUM	8,000*	4000	530 U	4400	720	470	450 U
THALLIUM	300*	1.6 U	1.6 U	1.8 U	1.4 U	1.3 U	1.4 U
VANADIUM	150 or SB	23	13 U	15 U	18	17	13
ZINC	20 or SB	**160**	**79**	**480**	**44**	**160**	**83**
MERCURY	0.1	**0.24**	0.19 U	0.21 U	0.17 U	**0.83**	0.16 U

U Undetectable Levels

SB Site Background

* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 2A/2B HHMT- Port Ivory Facility

Location	**Recommended**	**PG-UST7-2**	**PG-UST7-2**	**PG-PA-MW-7**	**PG-PA-MW-7**	**PG-PA-MW-7**	**PG-PA-MW-7**
Sample Date	**Soil**	11/21/2000	11/21/2000	11/13/2000	11/13/2000	11/13/2000	11/13/2000
Sample ID	**Cleanup**	PG-UST7-2	PG-UST7-2	PG-PAMW-07	PG-PAMW-07	PG-PAMW-07	PG-PAMW-07
Sample Depth	**Objective**	8-10'	10-12'	2.5-4'	4-6'	6-8'	8-10'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
ALUMINUM (FUME OR DUST)	33,000*	8200	5200	4200	2600	2600	6200
ANTIMONY	SB	1.7 U	1.7 U	1.6 U	1.7 U	1.7 U	1.6 U
ARSENIC	7.5 or SB	4.7	6.6	4.2	2.9	2.4 U	2.3 U
BARIUM	300 or SB	110	92	16	12	12 U	57
BERYLLIUM	0.16 (HEAST) or SB	**0.94**	**0.53**	0.44 U	0.46 U	0.48 U	0.45 U
CADMIUM	1 or SB	0.34 U	0.36 U	0.33 U	0.34 U	0.36 U	0.34 U
CALCIUM METAL	35,000*	2300	3600	1100 U	1100 U	1200 U	1100 U
CHROMIUM	10 or SB	**19**	**14**	7.2	5.6	6.3	7.8
COBALT	30 or SB	11	6.3	5.4	1.9 U	2 U	5.3
COPPER	25 or SB	15	22	4.2 U	4.4 U	4.6 U	8.2
IRON	2,000 or SB	**23000**	**19000**	**12000**	**9200**	**9000**	**11000**
LEAD	500*	12	40	4.4 U	4.6 U	4.8 U	5.1
MAGNESIUM	5,000*	4100	2600	1100	680 U	710 U	1800
MANGANESE	5,000*	430	310	150	49	51	92
NICKEL	13 or SB	**41**	**14**	4.7	2.8 U	2.9 U	8.1
POTASSIUM	43,000*	1600	850	570	490	490	690
SELENIUM	2 or SB	2.9 U	3 U	2.8 U	2.9 U	3 U	2.8 U
SILVER	SB	0.94	0.83	0.56 U	0.57 U	0.6 U	0.6
SODIUM	8,000*	460 U	480 U	440 U	700	890	3900
THALLIUM	300*	1.4 U	1.4 U	1.3 U	1.4 U	1.4 U	1.4 U
VANADIUM	150 or SB	28	22	15	12	13	14
ZINC	20 or SB	**54**	**59**	**22**	15	16	**29**
MERCURY	0.1	0.16 U	0.17 U	0.16 U	0.16 U	0.17 U	0.16 U

U Undetectable Levels
SB Site Background
* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 2A/2B HHMT- Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended Soil Cleanup Objective MG/KG**	**PG-PA-MW-10D** 11/27/2000 PG-PAMW10D 0.5-2' MG/KG	**PG-PA-MW-10D** 11/27/2000 PG-PAMW10D 4-6' MG/KG	**PG-MW10D** 11/27/2000 PG-MW10D 7-8' MG/KG	**PG-MW10D** 11/27/2000 PG-MW10D 8-10' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	3000	2900	2800	3600
ANTIMONY	SB	1.6 U	1.6 U	2.4	2.2 U
ARSENIC	7.5 or SB	3.9	**7.6**	**140**	**12**
BARIUM	300 or SB	42	35	51	120
BERYLLIUM	0.16 (HEAST) or SB	**0.58**	**0.49**	**0.93**	0.62 U
CADMIUM	1 or SB	0.33 U	0.34 U	0.44	0.46 U
CALCIUM METAL	35,000*	3800	3100	**120000**	5800
CHROMIUM	10 or SB	6.7	5	**13**	6.2 U
COBALT	30 or SB	3.2	2.8	3.9	3.1
COPPER	25 or SB	17	19	**95**	6.4
IRON	2,000 or SB	**10000**	**8100**	**19000**	**6600**
LEAD	500*	15	19	84	24
MAGNESIUM	5,000*	2000	2100	**52000**	1700
MANGANESE	5,000*	190	160	210	120
NICKEL	13 or SB	5.1	7.5	**29**	4.2
POTASSIUM	43,000*	440 U	450 U	550 U	620 U
SELENIUM	2 or SB	2.8 U	2.8 U	3.4 U	3.8 U
SILVER	SB	0.56 U	0.57 U	0.68 U	0.78
SODIUM	8,000*	440 U	450 U	550 U	1900
THALLIUM	300*	1.3 U	1.4 U	1.6 U	1.8 U
VANADIUM	150 or SB	17	14	40	15 U
ZINC	20 or SB	**25**	**51**	**170**	17
MERCURY	0.1	0.16 U	**0.38**	0.19 U	0.22 U

U Undetectable Levels

SB Site Background

* Eastern USA Background

Table 5E
Soil Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended Soil Cleanup Objective MG/KG**	**PG-A-4** 11/16/2000 PG-A-04 6-8' MG/KG	**PG-A-4** 11/16/2000 PG-A-04 12-14' MG/KG	**PG-A-5** 11/14/2000 PG-A-05 2-4' MG/KG	**PG-B-1** 12/4/2000 PG-B-01 2-4' MG/KG	**PG-B-1** 12/4/2000 PG-B-01 6-8' MG/KG	**PG-B-1** 12/4/2000 PG-B-01 9-10' MG/KG
PETROLEUM HYDROCARBONS	NS	47 U	74	**12000**	39 U	41 U	43 U
OIL & GREASE	NS	91 U	2100	9700	76 U	80 U	84 U
CYANIDE	***	0.34 U	0.53 U	0.74	0.28 U	0.3 U	0.32 U
pH	NS	10	11	4.9	10	8.8	8.0
TOTAL PHENOLICS	NS	1.7 U	2.7 U	1.5 U	1.4 U	1.5 U	1.6 U

U Undetectable Levels

NS No Standard

NA Not Analyzed

*** Site Specfifc Standard

Although there is no standard, Petroleum Hydrocarbons and
Oil & Grease over 10,000 mg/kg have been bolded and highlighted

Table 5E
Soil Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-B-02** 11/16/2000 PG-B-02 2-4' MG/KG	**PG-B-02** 11/16/2000 PG-A-02 6-8' MG/KG	**PG-B-02A** 11/16/2000 PG-B-02A 8-10' MG/KG	**PG-B-3** 12/4/2000 PG-B-03 2-4' MG/KG	**PG-B-3** 12/4/2000 PG-B-03 6-8' MG/KG	**PG-B-4** 12/4/2000 PG-B-04 2-4' MG/KG
PETROLEUM HYDROCARBONS	NS	1200	10000	890	**15000**	**13000**	1400
OIL & GREASE	NS	1800	**20000**	460	**22000**	4200	2000
CYANIDE	***	0.29 U	0.35 U	0.33 U	0.35 U	0.41 U	0.29 U
pH	NS	8.8	7.9	8.0	9.1	9.2	7.8
TOTAL PHENOLICS	NS	1.5 U	1.7 U	1.6 U	1.7 U	2.0 U	1.5 U

U Undetectable Levels

NS No Standard

NA Not Analyzed

*** Site Specfifc Standard

Although there is no standard, Petroleum Hydrocarbons and
Oil & Grease over 10,000 mg/kg have been bolded and highlight

Table 5E
Soil Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-E-1** 11/13/2000 PG-E-01 0.2-2' MG/KG	**PG-E-1** 11/13/2000 PG-E-01 4-6' MG/KG	**PG-E-1** 11/13/2000 PG-E-01 10-12' MG/KG	**PG-F2-2** 11/20/2000 PG-F2-2 2-4' MG/KG	**PG-F2-2** 11/20/2000 PG-F2-2 8-10' MG/KG	**PG-P-1** 11/22/2000 PG-P-01 2-4' MG/KG	**PG-P-1** 11/22/2000 PG-P-01 8-10' MG/KG
PETROLEUM HYDROCARBONS	NS	150	120	96	37 U	40 U	37 U	43 U
OIL & GREASE	NS	1200	2600	430	140	78 U	72 U	84 U
CYANIDE	***	0.58	0.84	0.47 U	0.27 U	0.29 U	0.27 U	0.32 U
pH	NS	7.4	7.7	8.7	9.9	6.4	6.4	6.9
TOTAL PHENOLICS	NS	1.4 U	1.4 U	2.4 U	1.4 U	1.4 U	1.4 U	1.6 U

U Undetectable Levels
NS No Standard
NA Not Analyzed
*** Site Specfifc Standard
Although there is no standard, Petroleum Hydrocarbons and
Oil & Grease over 10,000 mg/kg have been bolded and highlight

Table 5E
Soil Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-P-2** 11/30/2000 PG-P-02 2-4' MG/KG	**PG-P-2** 11/30/2000 PG-P-02 4-6' MG/KG	**PG-P-3** 11/22/2000 PG-P-03 2-4' MG/KG	**PG-P-3** 11/22/2000 PG-P-03 6-8' MG/KG	**PG-PD-1** 11/21/2000 PG-PD-01 2-4' MG/KG	**PG-PD-1** 11/21/2000 PG-PD-01 10-12' MG/KG
PETROLEUM HYDROCARBONS	NS	40 U	40 U	74	39 U	38 U	43 U
OIL & GREASE	NS	220	79 U	110	77 U	170	370
CYANIDE	***	0.29 U	0.30 U	0.29 U	0.29 U	0.28 U	0.32 U
pH	NS	6.7	7.3	7.3	7.8	8.4	7.0
TOTAL PHENOLICS	NS	1.4 U	1.8	1.4 U	1.4 U	1.4 U	1.6 U

U Undetectable Levels
NS No Standard
NA Not Analyzed
*** Site Specfifc Standard
Although there is no standard, Petroleum Hydrocarbons and
Oil & Grease over 10,000 mg/kg have been bolded and highlight

Table 5E
Soil Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-PD-3** 11/29/2000 PG-PD-3 4-6' MG/KG	**PG-PD-4** 12/2/2000 PG-PD-4 8-10' MG/KG	**PG-PD-5** 12/2/2000 PG-PD-5 0.7-1.5' MG/KG	**PG-PD-5** 12/2/2000 PG-PD-5 2-4' MG/KG	**PG-Q1-1** 11/30/2000 PG-Q1-1 2-4' MG/KG	**PG-Q1-1** 11/30/2000 PG-Q1-1 4-6' MG/KG
PETROLEUM HYDROCARBONS	NS	42 U	41 U	62	38 U	39 U	260
OIL & GREASE	NS	82 U	81 U	190	75 U	280	810
CYANIDE	***	0.31 U	0.3 U	0.28 U	0.28 U	0.29	0.45
pH	NS	8.8	7.7	12	10	8.9	7.4
TOTAL PHENOLICS	NS	1.5 U	1.5 U	1.4 U	1.4 U	1.4 U	1.9 U

U Undetectable Levels

NS No Standard

NA Not Analyzed

*** Site Specfifc Standard

Although there is no standard, Petroleum Hydrocarbons and
Oil & Grease over 10,000 mg/kg have been bolded and highlight

Table 5E
Soil Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-RR-1** 11/3/2000 PG-RR-01 0-1.2' MG/KG	**PG-RR-1** 11/3/2000 PG-RR-01 1.2-2' MG/KG	**PG-RR-2** 11/4/2000 PG-RR-02 0-2' MG/KG	**PG-RR-3** 11/3/2000 PG-RR-03 1.5-2' MG/KG	**PG-RR-4** 11/4/2000 PG-RR-04 0.6-2' MG/KG	**PG-RR-4** 11/4/2000 PG-RR-04 3-4' MG/KG
PETROLEUM HYDROCARBONS	NS	130	42	40 U	110	160	71
OIL & GREASE	NS	NA	NA	NA	NA	NA	NA
CYANIDE	***	0.68	0.47	0.29 U	0.29 U	0.28 U	0.31 U
pH	NS	NA	NA	NA	NA	NA	NA
TOTAL PHENOLICS	NS	1.4 U	1.4 U	1.5 U	1.4 U	1.4 U	1.6 U

U Undetectable Levels

NS No Standard

NA Not Analyzed

*** Site Specfifc Standard

Although there is no standard, Petroleum Hydrocarbons and
Oil & Grease over 10,000 mg/kg have been bolded and highlight

Table 5E
Soil Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-RR-5** 11/7/2000 PG-RR-05 1-2' MG/KG	**PG-RR-5** 11/7/2000 PG-RR-05 2-4' MG/KG	**PG-RR-6** 11/6/2000 PG-RR-06 1-2' MG/KG	**PG-RR-6** 11/6/2000 PG-RR-06 2-4' MG/KG	**PG-RR-7** 11/6/2000 PG-RR-07 0-2' MG/KG	**PG-RR-7** 11/6/2000 PG-RR-07 2-4' MG/KG
PETROLEUM HYDROCARBONS	NS	37 U	37 U	37 U	37 U	86	250
OIL & GREASE	NS	NA	NA	72 U	72 U	290	7500
CYANIDE	***	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
pH	NS	NA	NA	6.5	5.0	3.8	4.7
TOTAL PHENOLICS	NS	1.4 U	1.3 U	1.4 U	1.4 U	1.3 U	1.4 U

U Undetectable Levels

NS No Standard

NA Not Analyzed

*** Site Specfifc Standard

Although there is no standard, Petroleum Hydrocarbons and
Oil & Grease over 10,000 mg/kg have been bolded and highlight

Table 5E
Soil Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-STAIN-02** 11/11/2000 PG-ST-02 1-2' MG/KG	**PG-STAIN-02** 11/11/2000 PG-ST-02 2-3' MG/KG	**PG-STAIN-03** 11/10/2000 PG-ST-03 1.7-2.5' MG/KG	**PG-STAIN-03** 11/10/2000 PG-ST-03 2.5-3.5' MG/KG	**PG-STAIN-3B** 11/11/2000 PG-ST-3B 0-2' MG/KG
PETROLEUM HYDROCARBONS	NS	40 U	49	3600	170	680
OIL & GREASE	NS	78 U	80 U	7400	84 U	1500
CYANIDE	***	0.29 U	0.30 U	0.29 U	0.32 U	0.27 U
pH	NS	7.2	7.0	5.3	4.3	6.9
TOTAL PHENOLICS	NS	1.5 U	1.5 U	5.5	1.6 U	1.3 U

U Undetectable Levels
NS No Standard
NA Not Analyzed
*** Site Specfifc Standard

Although there is no standard, Petroleum Hydrocarbons and
Oil & Grease over 10,000 mg/kg have been bolded and highlight

Table 5E
Soil Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-STAIN-3B** 11/11/2000 PG-ST-3B 2-4' MG/KG	**PG-FS-2** 11/17/2000 PG-FS-02 2-4' MG/KG	**PG-FS-2** 11/17/2000 PG-FS-02 8-10' MG/KG	**PG-FS-2** 11/17/2000 PG-FS-02 17-18' MG/KG	**PG-FS-3** 11/15/2000 PG-FS03 2-4' MG/KG	**PG-FS-3** 11/15/2000 PG-FS03 6.5-8' MG/KG
PETROLEUM HYDROCARBONS	NS	37 U	70	41 U	38 U	49	40 U
OIL & GREASE	NS	72 U	76	130	75 U	77 U	78 U
CYANIDE	***	0.27 U	0.28 U	0.30 U	0.28 U	0.29 U	0.29 U
pH	NS	6.9	7.2	6.6	7.7	6.6	7.2
TOTAL PHENOLICS	NS	1.3 U	1.4 U	1.5 U	1.4 U	1.4 U	1.5 U

U Undetectable Levels

NS No Standard

NA Not Analyzed

*** Site Specfifc Standard

Although there is no standard, Petroleum Hydrocarbons and
Oil & Grease over 10,000 mg/kg have been bolded and highlight

Table 5E
Soil Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-FILL-02** 11/3/2000 PGFILL02 0.7-3' MG/KG	**PG-FILL-03** 11/4/2000 PGFILL03 0.5-2' MG/KG	**PG-FILL-03** 11/6/2000 PGFILL03 2-4' MG/KG	**PG-FILL-03** 11/6/2000 PGFILL03 4-6' MG/KG	**PG-FILL-04** 11/6/2000 PGFILL04 0-2' MG/KG	**PG-FILL-04** 11/6/2000 PGFILL04 2-4' MG/KG
PETROLEUM HYDROCARBONS	NS	330	100	69	38 U	120	45
OIL & GREASE	NS	1400	**12000**	**11000**	190	640	310
CYANIDE	***	0.32 U	0.27 U	0.28 U	0.28 U	0.29 U	0.28 U
pH	NS	7.2	7.7	7.5	7.9	6.8	5.3
TOTAL PHENOLICS	NS	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U

U Undetectable Levels
NS No Standard
NA Not Analyzed
*** Site Specfifc Standard

Although there is no standard, Petroleum Hydrocarbons and Oil & Grease over 10,000 mg/kg have been bolded and highlight

Table 5E
Soil Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location	**Recommended**	**PG-FILL-04**	**PG-FILL-04**	**PG-FILL-5**	**PG-FILL-5**	**PG-FILL-10**	**PG-FILL-10**
Sample Date	**Soil**	11/6/2000	11/6/2000	11/18/2000	11/18/2000	12/1/2000	12/1/2000
Sample ID	**Cleanup**	PGFILL04	PGFILL04	PG-FILL-5	PG-FILL-5	PG-FILL10	PG-FILL10
Sample Depth	**Objective**	4-6'	7-8'	2-4'	6-8'	3-4'	6.4-8.2'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
PETROLEUM HYDROCARBONS	NS	39 U	43 U	37 U	40 U	37 U	160
OIL & GREASE	NS	150	83 U	72 U	78 U	95	2000
CYANIDE	***	0.29 U	0.31 U	0.27 U	0.29 U	0.27 U	0.6 U
pH	NS	6.3	6.6	7.2	6.2	8.2	7.5
TOTAL PHENOLICS	NS	1.4 U	1.6 U	1.3 U	1.4 U	1.4 U	3.0 U

U Undetectable Levels

NS No Standard

NA Not Analyzed

*** Site Specfifc Standard

Although there is no standard, Petroleum Hydrocarbons and
Oil & Grease over 10,000 mg/kg have been bolded and highlight

Table 5E
Soil Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-UST1-2** 11/20/2000 PG-UST1-2 2-4' MG/KG	**PG-UST1-2** 11/20/2000 PG-UST1-2 12-14' MG/KG	**PG-UST4-1** 11/20/2000 PG-UST4-1 2-4' MG/KG	**PG-UST4-1** 11/20/2000 PG-UST4-1 10-11.5' MG/KG	**PG-UST4-1** 11/20/2000 PG-UST4-1 14-15.5' MG/KG	**PG-UST4-2** 11/20/2000 PG-UST4-2 4-6' MG/KG
PETROLEUM HYDROCARBONS	NS	60	41 U	200	45 U	92	51 U
OIL & GREASE	NS	270	79 U	3300	690	220	470
CYANIDE	***	0.27 U	0.30 U	0.32 U	0.77	0.32 U	0.33 U
pH	NS	7.1	6.7	6.5	7.8	10	7.4
TOTAL PHENOLICS	NS	1.3 U	1.5 U	1.6 U	1.7 U	1.6 U	1.7 U

U Undetectable Levels

NS No Standard

NA Not Analyzed

*** Site Specfifc Standard

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Oil & Grease over 10,000 mg/kg have been bolded and highlight

Table 5E
Soil Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended Soil Cleanup Objective MG/KG**	**PG-UST4-2** 11/20/2000 PG-UST4-2 12-14' MG/KG	**PG-UST7-1** 11/28/2000 PG-UST7-1 8-10' MG/KG	**PG-UST7-1A** 11/28/2000 PG-UST7-1A 0-2' MG/KG	**PG-UST7-1B** 11/28/2000 PG-UST7-1B 2-3.5' MG/KG	**PG-UST7-2** 11/21/2000 PG-UST7-2 8-10' MG/KG
PETROLEUM HYDROCARBONS	NS	150	290	5500	**12000**	1100
OIL & GREASE	NS	830	580	**14000**	**24000**	2200
CYANIDE	***	0.37 U	0.29 U	0.27 U	0.28 U	0.29 U
pH	NS	11	9.1	8.4	8.2	7.3
TOTAL PHENOLICS	NS	1.9 U	1.5 U	1.3 U	1.4 U	1.4 U

U Undetectable Levels

NS No Standard

NA Not Analyzed

*** Site Specfifc Standard

Although there is no standard, Petroleum Hydrocarbons and
Oil & Grease over 10,000 mg/kg have been bolded and highlight

Table 5E
Soil Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-UST7-2** 11/21/2000 PG-UST7-2 10-12' MG/KG	**PG-PA-MW-7** 11/13/2000 PG-PAMW-07 2.5-4' MG/KG	**PG-PA-MW-7** 11/13/2000 PG-PAMW-07 4-6' MG/KG	**PG-PA-MW-7** 11/13/2000 PG-PAMW-07 6-8' MG/KG	**PG-PA-MW-7** 11/13/2000 PG-PAMW-07 8-10' MG/KG
PETROLEUM HYDROCARBONS	NS	460	38 U	51	41 U	39 U
OIL & GREASE	NS	5300	74 U	840	80	76 U
CYANIDE	***	0.30 U	0.65	0.59	0.30 U	0.28 U
pH	NS	7.4	8.0	8.4	7.5	9.3
TOTAL PHENOLICS	NS	1.5 U	1.4 U	1.4 U	1.5 U	1.4 U

U Undetectable Levels

NS No Standard

NA Not Analyzed

*** Site Specfifc Standard

Although there is no standard, Petroleum Hydrocarbons and
Oil & Grease over 10,000 mg/kg have been bolded and highlight

Table 5E
Soil Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-PA-MW-10D** 11/27/2000 PG-PAMW10D 0.5-2' MG/KG	**PG-PA-MW-10D** 11/27/2000 PG-PAMW10D 4-6' MG/KG	**PG-MW10D** 11/27/2000 PG-MW10D 7-8' MG/KG	**PG-MW10D** 11/27/2000 PG-MW10D 8-10' MG/KG
PETROLEUM HYDROCARBONS	NS	38 U	39	2400	660
OIL & GREASE	NS	140	83	**11000**	**55000**
CYANIDE	***	0.28 U	0.28 U	0.34 U	0.38 U
pH	NS	7.6	6.9	6.8	5.2
TOTAL PHENOLICS	NS	1.4 U	1.4 U	1.7 U	1.9 U

U Undetectable Levels
NS No Standard
NA Not Analyzed
*** Site Specfifc Standard

Although there is no standard, Petroleum Hydrocarbons and
Oil & Grease over 10,000 mg/kg have been bolded and highlight

Site 2A/2B. Generally, SI soil samples were collected from the intervals revealing indications of contamination based on field screening and/or the presence of fill material.

5.3.1 Potential UST Areas

Four potential UST areas (UST1, UST3, UST4 and UST7) were identified at Site 2A/2B. As described in Section 5.2, a GPR/EM survey was performed at each area. In accordance with the ESIW developed for potential UST areas, soil borings were installed and sampled from each potential UST area. Specifically seven soil borings were installed to evaluate potential UST Areas. One soil boring was installed and sampled at UST1 (UST1-2). Two soil samples were collected from the soil boring installed at UST1 and submitted for laboratory analyses. No soil boring was installed at proposed location UST1-1 due to the presence of concrete and underground utilities. Several other soil borings were installed to the south of the UST1 area. In addition, no the subsurface investigation for UST3 was combined with the investigation of "former structures" in the Buildings 12/13 area. Please see discussion under Section 5.3.6. Two soil borings, UST4-1 and UST4-2, were installed at UST4. Five soil samples were collected from UST4 Area and submitted for laboratory analyses. Four soil borings, UST7-1, UST7-1A, UST7-1B, and UST7-2 were installed at UST7; soil borings UST7-1A and UST7-1B are not depicted on Figure 7 due to their close proximity to UST7-1. Five soil samples were collected from the soil borings installed at UST7 and submitted for laboratory analysis. One temporary monitoring well (TMW-01) was installed in the UST7 Area in order to further evaluate subsurface conditions. Sample designations and depths are summarized in Table 4 under the Potential USTs heading. All samples were analyzed for the parameters specified in the ESIW and listed on Table 4 included in Section 5.1.

5.3.2 Previously Identified AOCs (Areas A, B, E, F2, P,and Q1)

Thirteen soil borings were installed in Site 2A to evaluate those AOCs (Areas A, B, E, F2, P and Q1) previously identified by P&G on Site 2A/2B. With respect to the above listed areas, it was not possible to install two of the proposed soil borings: F2-1 at the F2 Area (Site 2A) and Q1-2 at the Q1 Area (Site 2B). Based on the presence of impediments, the need for installation of these borings and collection of samples was deferred until review of field screening information and analytical results from other samples collected at Areas F2 and Q1.

Two soil borings (A-4 and A-5) were installed at Site 2A to evaluate Area A. Three soil samples were collected from the soil borings and submitted for laboratory analysis. It should be noted that the soil borings installed to evaluate the western limit of Area A, soil borings A-1, A-2, A-3, and A-6, are situated in Site 1. As such, the majority of the information generated through the installation and sampling of these borings was presented in the previously submitted Site 1 Report.

Five soil borings were installed to evaluate Area B (B-1, B-2, B-02A, B-3 and B-4); due to the scale of the map soil boring location B-2 and B-2A are both represented by the B-2 designation. Nine soil samples were collected from Area B and submitted for laboratory analysis. One soil boring (F2-2) was installed at Area F2 with two soil samples submitted for laboratory analysis. One soil boring was installed at Area E (E-1) with three samples submitted for laboratory analysis. Three soil borings (P-1, P-2, and P-3) were installed at Area P with six samples submitted for laboratory analysis. One soil boring (Q1-1) was installed at Site 2B with two samples submitted for laboratory analysis.

Designations for samples collected from the above listed borings are summarized in Table 4 ✓ under the individual AOC headings. Analytical parameters for samples for each AOC were generally consistent with those proposed in the ESIW and also are presented in Table 4 ✓

5.3.3 *Railroad Tracks and Sidings*

Thirteen soil borings were installed and sampled within Site 2A/2B to evaluate this AOC. Three additional soil borings (RR-12, RR-13 and RR-14) were proposed for railroad tracks and sidings at Site 2A. Given the number of other soil borings which were installed and sampled to evaluate this AOC, it was determined adequate coverage was accomplished without these locations with respect to railroad tracks and sidings at Site 2A. However, the need for additional sampling was to be based upon field screening information and analytical results from sampling at other railroad track and siding samples locations.

The thirteen soil borings installed to evaluate railroad tracks and sidings are as follows: RR-01, RR-02, RR-03, RR-04, RR-05, RR-06, RR-07, A-4, B-4, P-1, P-2, P-3 and Q1-1. Twenty-four soil samples were collected from the soil borings to evaluate this AOC. The sample designations and depths are presented in Table 4 ✓ under the Railroad Tracks and Sidings heading. Analytical parameters for samples for this AOC were generally consistent with those proposed in the ESIW and also are presented in Table 4. ✓

5.3.4 Surface Staining

Five soil borings were installed at locations within Site 2A to evaluate this AOC and in particular staining noted at Building 20. The soil borings are as follows: STAIN-02, STAIN-03, STAIN-3B, RR-06 and RR-07. Soil boring STAIN-3 was installed in the center of a stained area situated within Building 20 and STAIN-3B was installed at the fringe of the same stained area. Due to close proximity of these two soil borings to one another, only soil boring STAIN-3 is presented on Figure 7. Ten samples were collected from these borings and submitted for laboratory analysis. The sample designations and depths for samples collected from soil borings installed to evaluate this AOC are presented in Table 4. Analytical parameters for samples for this AOC were generally consistent with those proposed in the ESIW and also are presented in Table 4.

5.3.5 Pits and Drains

Eleven soil borings were installed at locations within Site 2A/2B to evaluate this AOC. In addition, due to the presence of reinforced concrete and/or utilities, it was not possible to install soil borings at several additional locations (RR-12, RR-13, RR-14, Q1-2, PD-13), which were originally proposed to evaluate pits and drains at Site 2A/2B. Based on information from other area samples, these additional samples were not deemed warranted as part of the SI for pits and drains.

The eleven soil borings installed to evaluate pits and drains at Site 2A/2B are as follows: PD-1, PD-3, PD-4, PD-4A, PD-5, A-4, P-1, P-2, P-3, RR-03, STAIN-02. Twenty-two samples were collected from these borings and submitted for laboratory analysis. The sample designations and depths for samples collected from soil borings installed to evaluate this AOC are presented in Table 4 under the Pits and Drains heading. It should be noted that a soil boring was also installed at location adjacent to PD-4 (designated as PD-4A) to provide additional visual review given the presence of subsurface concrete; no sample (for analysis) was collected from this location. Analytical parameters for samples for this AOC were generally consistent with those proposed in the ESIW and also are presented in Table 4.

5.3.6 Former Structures

Ten soil borings were installed at locations within Site 2A/2B to evaluate this AOC. The soil borings are as follows: FS-1, FS-1A, FS-2, FS-3, PAMW-7, RR-01, RR-04, RR-05, PD-1 and PD-3. Soil borings FS-1, FS-1A, FS-2 and FS-3 were also utilized to review potential UST area, UST3. Sixteen samples were collected from these borings and submitted for laboratory analysis. It should be noted that no soil samples were collected from soil borings FS-1 and FS-1A. A discussion of analytical results from samples collected from soil boring FS-1B situated in Site 1 was provided in the Site 1 Report. These soil borings were field screened and information was utilized to evaluate issues associated with former structures in the vicinity of FS-1/1A/1B. Based on visual review at these locations, no further sampling was warranted at the FS-1/1A locations. Again, additional information associated with the FS-1B location is provided in the Site 1 Report. The sample designations and depths for samples collected from soil borings installed to evaluate this AOC are presented in Table 4 under the Former Structures heading. Analytical parameters for samples for this AOC were generally consistent with those proposed in the ESIW and also are presented in Table 4.

5.3.7 *Historic Fill Material*

As previously stated, all soil borings installed during the site investigation were utilized as part of the site-wide historic fill evaluation. Similarly, all soil borings installed at Site 2A/2B were utilized to characterize historic fill material at this portion of the HHMT-Port Ivory facility. Seven additional soil borings Fill-1, Fill-2, Fill-3, Fill-4, Fill-5, Fill-9/PA-MW-10D and Fill-10 were installed at locations within Site 2A/2B to evaluate historic fill material. Twenty soil samples were collected from the seven soil borings and submitted for laboratory analysis. No sample was collected from location Fill-1. In addition, Fill-6 was not able to be installed due to the presence of utilities. Given the comprehensive nature of the fill evaluation at Site 2A/2B and the entire HHMT-Port Ivory Facility, it was determined that sufficient sampling had been performed to evaluate fill materials. However, the need for additional sampling at the Fill-6 location was to be based upon field screening information and analytical results from the overall fill evaluation effort.

A total of 47 soil borings were installed and sampled (including locations at potential UST areas) to evaluate historic fill material at Site 2A/2B. Please note, the information provided in Table 4 under the Fill Material heading presented information related to the four additional soil borings installed to evaluate historic fill material. Analytical parameters for samples for this AOC were as proposed in the ESIW and are presented in Table 4.

5.4 Monitoring Well Installation

The site-wide groundwater investigation included the installation and sampling of 17 wells and the sampling of 14 existing wells. In conjunction with this investigation, five monitoring wells (PA-MW-7, PA-MW-7D, PA-MW-10D, PA-MW-15, PA-MW-15D) and one temporary well (TMW-01) were installed at Site 2A and one monitoring well (MW-10D) was installed at Site 2B. One additional well, MW-10 was proposed to be installed at Site 2B. However, it was determined that existing well shallow well, MW-3 provided adequate coverage at that area. Prior to installation of the monitoring wells, borings were constructed to identify soils and contamination, if any, at the proposed monitoring well locations. All wells were installed in the overburden layer. However, to determine conditions both above and below the naturally occurring peat layer, three shallow wells were screened in fill or native material above the peat layer (where present) and two deep wells were screened in native material below the peat layer. The temporary well was screened in fill material above the peat layer. At two locations on Site 2A, monitoring wells were placed to create shallow/deep well pairs (PA-MW-7/7D, PA-MW-15/15D). In addition, PA-MW-10D was situated to form a shallow/deep well pair in combination with existing well, MW-3.

The monitoring wells were constructed of two-inch outside diameter (O.D.) Schedule 40 polyvinyl chloride (PVC) pipe in a borehole that was eight inches in diameter. The boreholes were drilled with a truck mounted drill rig utilizing HSAs and mud rotary drilling techniques. As described in the soil boring methodology section, hand augering was performed for the first six feet of each location to avoid contacting utilities. The screens of the shallow wells were set across the uppermost water table using ten-foot sections of 0.02-inch (20 slot) slotted screen. The screens of the deep wells were set in the most permeable layer above bedrock and below the peat layer (as present) using ten-foot sections of 0.01 (10 slot) slotted screen. The screened sections of the wells were packed with well-graded sand pack, 95 percent coarser than the slot size, which extended one foot above the top of the screen. The elevation of the top of the sand was checked by lowering a weighted measuring tape in the annular space of the wells. A two-foot thick granular bentonite seal was placed over the sand pack of the wells. The elevation of the top of the granular bentonite seal of the wells were also checked by lowering a weighted measuring tape in the annular space of the wells. To avoid bridging, both the sand and granular bentonite seal were installed by carefully placing small quantities of sand and granular bentonite. The remaining annular space was backfilled with a cement/bentonite grout mix.

why mud?

The wells were completed at the ground surface by either extending a PVC riser to approximately three feet above grade, with a locking compression cap and a fitted steel protective casing over the PVC and embedded into a concrete pad constructed at the ground surface; or the PVC was cut to grade and equipped with a locking compression cap and a steel protective flush mount to fit over the PVC and embedded into the ground surface in a pad constructed of concrete. A keyed-alike lock was installed on the steel casing and the compression cap to hinder tampering with the wells. The concrete pads were sloped away from the wells to prevent water from collecting around same.

Following completion, the newly installed wells and all existing wells to be sampled were developed. Existing wells were redeveloped due to the prolonged time period from previous sampling efforts. A permanent water level measurement mark was etched on top of the PVC casing to allow for accurate, and consistent water level measurements over time. In accordance with Port Authority protocol, the monitoring wells were allowed to equilibrate for a period of two weeks prior to sampling, as feasible given project time constraints.

5.5 Groundwater Sampling

Groundwater sampling was performed in November and December 2000. Prior to sampling activities, the following was performed: condition of each monitoring well was visually inspected for signs of damage or tampering, the lock and well cap was removed so a PID reading could be obtained, depth of water, depth of free product (if present), and depth to bottom of each monitoring well was obtained and recorded.

All monitoring wells were purged prior to sampling. Purging was accomplished by removing a predetermined volume of standing water utilizing a peristaltic or submersible pump. The purge rate depended on the yield of the well, and did not exceed the well development discharge rate. At the start and end of the purging process, the discharge water was monitored and recorded for pH, temperature, dissolved oxygen, turbidity, and specific conductivity.

Subsequent to the completion of purging, groundwater samples were collected after the well had recovered to a volume sufficient for sampling, or no later than two hours from the end time of purging. Samples were collected using poly-Teflon bailers. Bailers were lowered into the well at the screened interval. Once the bailer was filled, it was retrieved and the groundwater was poured into the proper laboratory containers while minimizing aeration. The containers were then labeled, placed on ice, and delivered to the laboratory for analysis. As previously stated, 10 groundwater samples were collected from wells located on Site 2 as part of the site-wide groundwater investigation. Specifically, the following wells were sampled: PG-PA-MW-7, PG-PA-MW-7D, PG-PA-MW-10D, PG-PA-MW-15,and PG-PA-MW-15D (five newly installed wells); PG-TMW-01 (one temporary well); and, PG-MW-3, PG-GW-10, PG-GW-7, and PG-PZ-1 (four existing wells). Please note, due to the presence of sediment/indications of high turbidity, samples were collected from PG-PA-MW-15D on November 20, and November 30, 2000. Free product samples were collected from PG-OP-1 and PG-GW-14 for GC fingerprint analysis. ?

5.6 Surface Water and Sediment Inspection and Sampling

HMM performed several visual inspections of Bridge Creek during both low and high tide events during the weeks of October 29, 2000, November 5, 2000 and November 13, 2000. The purpose of the inspections was to determine if the precipitate material identified in environmental reports provided by P&G were present. The visual inspections revealed the presence of a "white-ish precipitate" material at numerous locations in near shore sediments during low tide. All locations were located at the northern portion of Bridge Creek, proximate to Site 1. The material was not observed to be present at any locations during high tide periods. As such, surface and sediment sampling was performed during low tide on November 21, 2000. In each case, sediment samples included the "white-ish precipitate" material and surface water samples were taken from locations in close proximity to the noted material. As previously stated, all samples were collected from locations adjacent to Site 1. As such, no further information pertaining to SI sampling of Bridge Creek is provided in this report. Sampling of Bridge Creek (sediment and surface water) was performed at locations adjacent to Site 2A in conjunction with RI activities. Information pertaining to RI sampling is provided in Sections 8.3 and 9.3 of this report.

6.0 SI RESULTS

The SI for Site 2A/2B consisted of a variety of tasks designed to establish current (year 2000) environmental conditions for the purposes of acquisition and potential site redevelopment. The results of the SI efforts are presented in this section.

6.1 Site Hydrogeology

Soil and groundwater sampling efforts have provided information to better characterize site hydrogeology including the types and general extent of fill material present at this site. Given that fill material was present at the site prior to the Port Authority's purchase, fill material has been regarded as an existing condition and is referenced as historic fill to reflect same. Soil and groundwater are described below. As stated in Section 5.6, the SI included the collection of sediment and surface water samples from locations adjacent to Site 1. As such, sampling information including analytical results is included in the Site 1 Report. Sampling of Bridge Creek (sediment and surface water) was performed at locations adjacent to Site 2A in conjunction with RI activities. Information pertaining to RI sampling is provided in Sections 8.3 and 9.3 of this report

6.1.1 Soil

Three general types of historic fill material were identified through the SI program with regard to Site 2A/2B: (1) urban fill including non–native soil, vegetative debris, construction debris (wood, bricks, glass, concrete); (2) cinder fill consisting primarily of ash and ash-type materials with some slag; and, (3) by-products from on-site production and manufacturing activities (calcium carbonate, spent diatomaceous earth, and spent carbonaceous filter material). The specific composition of the historic fill was noted to vary with location and frequently all three types were noted in varying quantities at the same location. Urban fill was observed at varying thicknesses and depths at locations throughout Site 2A and 2B. In particular, non-native soil (reddish brown silty clay with coarse gravel or coarse-to-fine brown sand) was noted to be present at the northern, eastern, and southern portions of Site 2A as observed at soil boring locations Fill-5, P-1, P-3, PD-4B, FS-3, F2-2, UST 7-1 and PA-MW-7.

The second type of historic fill material, cinders, was noted to be present in notable quantities in certain locations within Site 2A and 2B. Cinder fill was observed in the central portion of Site 2A in soil borings A-5, B-2, B-4, B-3, P-2, FS-1A, E-1, F1-3, UST1-2, UST4-1 and PA-MW-15 as well as at Site B in soil boring Fill-9/PA-MW-10D.

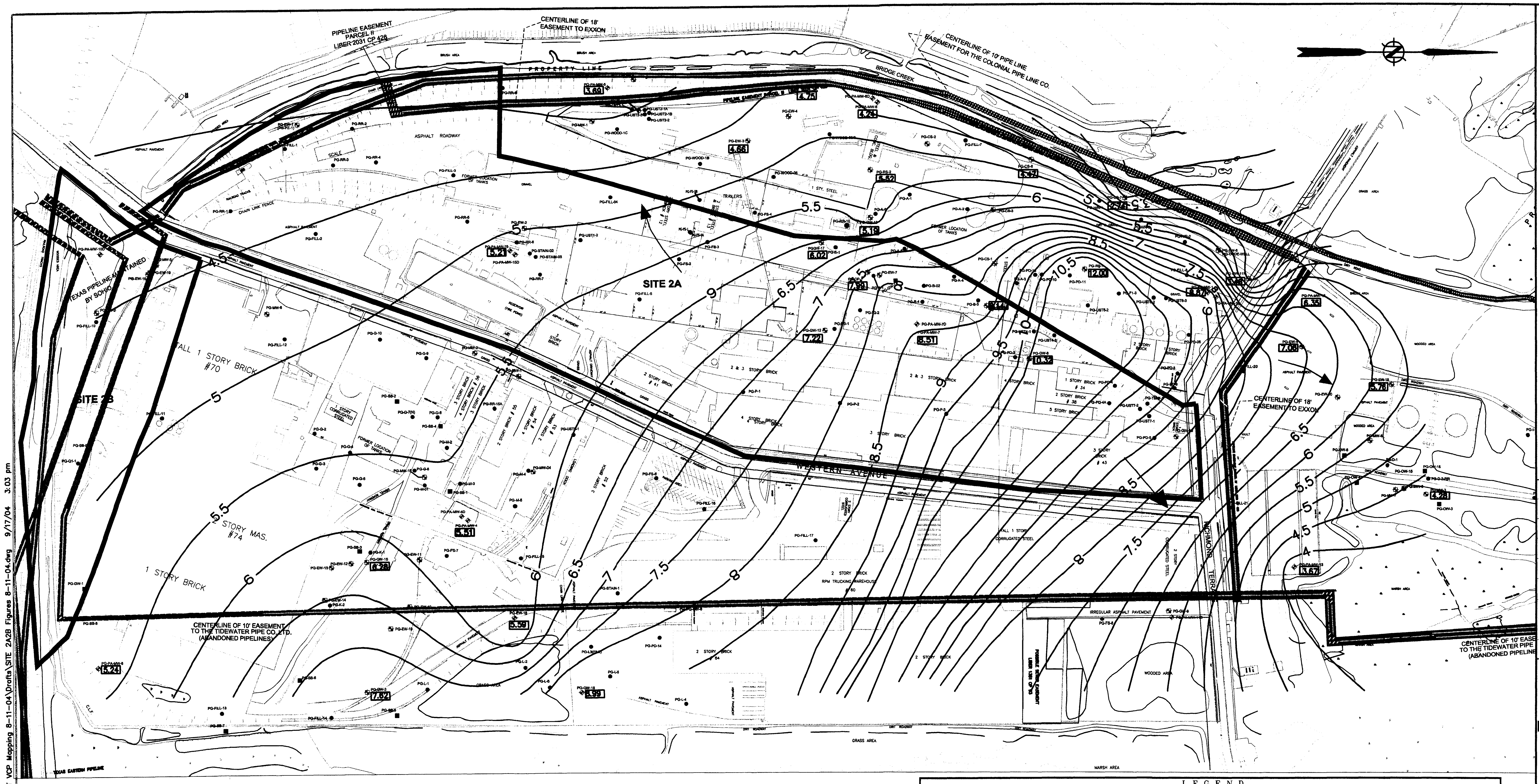
The third type of historic fill material, by-product fill, was encountered just underneath the surface as well as at varying depths primarily in the western to central/northern portion of Site 2A. The by-product fill ranged in color from white to green to blue to gray and black in various depths and widths in boring locations on Site 2A. The by-product fill material was readily distinguishable from the other types of historic fill encountered. The by-product fill material has very small grain sizes and takes on paste/powder-like characteristics, and in some locations is pure white.

Native material has been defined as peat or very well sorted light brown to orange brown to red brown sands and silts. The majority of the borings installed during the SI were advanced to the depth of the brown peat layer. The brown peat horizon was located at depths ranging from 10 to 20 feet bgs. The peat layer was noted to be present at most, but not all, boring locations. In some instances, the peat layer may exists below the completion depth of the soil borings. SI soil boring logs, including those logs for borings, which were finished as monitoring wells are provided in Appendix B. Figure 5, Cross-Section, presents soil conditions at Site 2A/2B

6.1.2 Groundwater

Based on the findings of HMM's SI groundwater program and considering the data generated by prior site investigation activities, the general hydrogeologic regime in overburden saturated zones consists of two components; an upper aquifer, comprised of unconsolidated materials described previously in Section 3.2.2 (indigenous granular soils, operational by-product fill and/or non-indigenous fill materials), and; a deeper water bearing zone comprised of native glacio-fluvial sediments (i.e., gravel, sand, silt and clay). A discontinuous peat layer that occurs at approximately 10 to 24 feet bgs separates these zones of saturation. This peat layer was encountered in the majority of the soil borings installed during HMM's SI program. Please note, the groundwater description provided herein generally reflects site-wide conditions. As appropriate, specific commentary is provided for Site 2A/2B.

Figure 8 depicts the plot of the water table contours for the shallow overburden aquifer during the November 2000 groundwater sampling event. As depicted on Figure 8, the shallow overburden saturated zone exhibits a hydraulic gradient of variable orientation and magnitude. The flow regime for the shallow, saturated overburden zone reflects the non-homogenous nature of the upper surface aquifer. The groundwater contour plot depicts directional flow components to the north, west, and southwest, with a groundwater flow divide oriented from northwest to southeast, across the northern portion of the site. Groundwater flow direction in the upper aquifer across the central and southern portion of Site 2A is generally from the northeast to the southwest flowing towards Bridge Creek. In the northern portion of the site the flow direction changes from the southwest to the northeast, towards the Arthur Kill. Gradual hydraulic gradients are mapped for the southern and central portion of Site 2A, adjacent to Bridge Creek. Less permeable fill materials (by-product fill) deposited in this portion of the site may contribute to the



NOTES:
1. ELEVATION IN FEET ABOVE MEAN SEA LEVEL (BOGART SYSTEM)
CONTOUR INTERVAL = 0.2 FEET

120 0 120 240
SCALE IN FEET

LEGEND

▨	UTILITY EASEMENT
	RAILROAD TRACKS
▬	SITE BOUNDARY
PG-RS-1	PRE-EXISTING P&G MONITORING WELL LOCATION
PG-SB-2 ■	PRE-EXISTING P&G SOIL BORING LOCATION
PG-PA-MW-5	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION
PG-WOOD-3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION
4.5	POTENTIOMETRIC CONTOUR LINE
4.24	GROUNDWATER ELEVATION
→	GROUNDWATER FLOW DIRECTION

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THE PORT AUTHORITY OF NY & NJ

ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

SITE 2A/2B WATER TABLE CONTOUR MAP, SHALLOW WELLS

NOVEMBER 2000

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number FIGURE 8

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mounding/hydraulic divide effects observed along the western boundary of Site 2A. Flow dynamics in the upper aquifer, particularly the Site 2A portion of the Site 2A/2B Site, must take into consideration the low permeability and low porosity characteristics of the by-product fill material. The thicknesses and depths of the by-product fill, may cause changes in flow patterns as groundwater is diverted either horizontally or vertically to find the path of least resistance. The data set indicates shallow hydraulic gradients in the northeast and southwest portions of the site (Site 2A and 3) on the flanks of the groundwater divide. These are areas where SI borings indicated either granular, reworked native soils along with soil fill, or in-situ, undisturbed soil deposits. Indigenous, unconsolidated granular soils consisting of gravel, sand and silt, with little to trace quantities of clay, were encountered in the deep monitoring well borings installed as part of HMM's SI program (MW-7D, PG-PA-MW-10D, and MW-15D). As described previously, deep wells were screened in the first encountered permeable formation beneath the observed (or inferred) depth of the peat layer.

Figure 9, Water Table Contour Map, depicts the plot of the groundwater surface for the November 2000 groundwater sampling event. As depicted on Figure 9, the deep overburden saturated zone exhibits a consistent magnitude of hydraulic gradient across the entire site, and indicates flow direction components toward adjacent surface water bodies (Bridge Creek to the west, the Arthur Kill to the west/southwest and the Kill Van Kull to the North). Across Site 2A/2B, the flow direction is in the northwesterly direction with relatively constant gradient, as it moves towards Bridge Creek. This contrasts with Figure 8 for the shallow overburden aquifer underlying Site 2A, which reflected the effects on hydraulic magnitude and gradient due to aquifer heterogeneity. This disparity in the magnitude and orientation of hydraulic gradient between the shallow and deep overburden aquifers suggests that the peat layer and/or less permeable fill materials limit vertical groundwater movement from the shallow, overburden aquifer to the deep overburden aquifer, establishing predominantly horizontal flow conditions in each of these saturated overburden zones.

HMM employed the use of data loggers to assess whether groundwater movement beneath the subject site was influenced by the tidal fluctuations of the surface water body adjacent to the northern end of Future Site 4. Data loggers were placed in four shallow monitoring wells and one deep monitoring well to monitor groundwater fluctuations in the shallow and deep overburden aquifers. An additional data logger station was established on the Kill Van Kull to monitor fluctuations in the surface water elevation of that water body. Review of the collected elevation data indicated no correlation between tidal fluctuations of the Kill Van Kull and groundwater levels in the shallow and deep aquifers beneath the site. However, recent site building demolition and redevelopment activities appear to contradict this information. Specifically, variable water levels have been observed in shallow excavations installed as part of the removal of concrete pads and foundations and the subsurface modifications to utilities.

6.2 GPR/EM - Potential UST Areas

Due to a limited GPR signal, presumably the result of surface and subsurface features such as concrete slabs, metal piping and rail spurs. The GPR/EM survey proved inconclusive with regard to identifying USTs at the four potential locations at Site 2A (UST1, UST3, UST4 and UST7). However, based on information obtained through the GPR/EM survey, soil borings were installed to further evaluate conditions at each of these potential UST areas; soil borings for UST3 were combined with proposed sampling for former structures at Buildings 12/13. Soil boring locations were selected through the findings of the Hager-Richter survey as well as available information from soil borings installed at adjacent areas to evaluate other AOCs. In one location (UST7 Area), a temporary well was installed, in addition to soil borings, to further evaluate the subsurface conditions and attempt to identify impacts to groundwater, if any. A discussion of the sampling frequency for each potential UST area is provided in Section 5.3.1. No potential UST areas were identified at Site 2B.

6.3 Soil Analytical Data

As described in Section 5, 86 soil samples were collected from 47 soil borings at Site 2A/2B. The locations of the SI soil borings are presented on Figure 7. The samples from the soil borings were submitted for specific laboratory analysis based upon the types of contaminants likely to be present at each AOC. Table 4 provides the analyses for specific samples. The analytical results for HMM's sampling efforts of soil are presented in Tables 5A-5F; presented on the following pages. Figures 10 through 16 provide soil boring locations as well as pertinent analytical data; the figures are presented after first reference in the following subsections. For discussion purposes, the results have been compared, as appropriate, to current NYSDEC regulatory criteria. The criteria utilized are Recommended Soil Cleanup Objectives (RSCOs) as set forth in the December 2000 NYSDEC Division of Technical and Administrative Guidance Memorandum (TAGM) 4046, which incorporates the guidance criteria included in the NYSDEC Spill Technology and Remediation Series (STARS). Please note, the reference of these standards in this report does not represent any agreement or concurrence that same are appropriate for usage at this site. In addition, reports of previous investigations described the presence of fat, oil, grease or "FOG" in soil at the site. As such, one of the goals of the SI phase of this project was to identify issues associated with petroleum and non-petroleum substances in soil at the site. In the absence of a regulatory standard for TPHC, O/G or FOG, a threshold value of 10,000 mg/kg was employed for TPHC and O/G in soil samples for this SI. This threshold value was utilized for comparison purposes only and to identify any areas, which might warrant additional subsurface review prior to site development. This threshold value is not intended as a site specific standard for petroleum or non-petroleum materials in soil at this site. A discussion of the analytical results from the soil component of the SI is provided below.

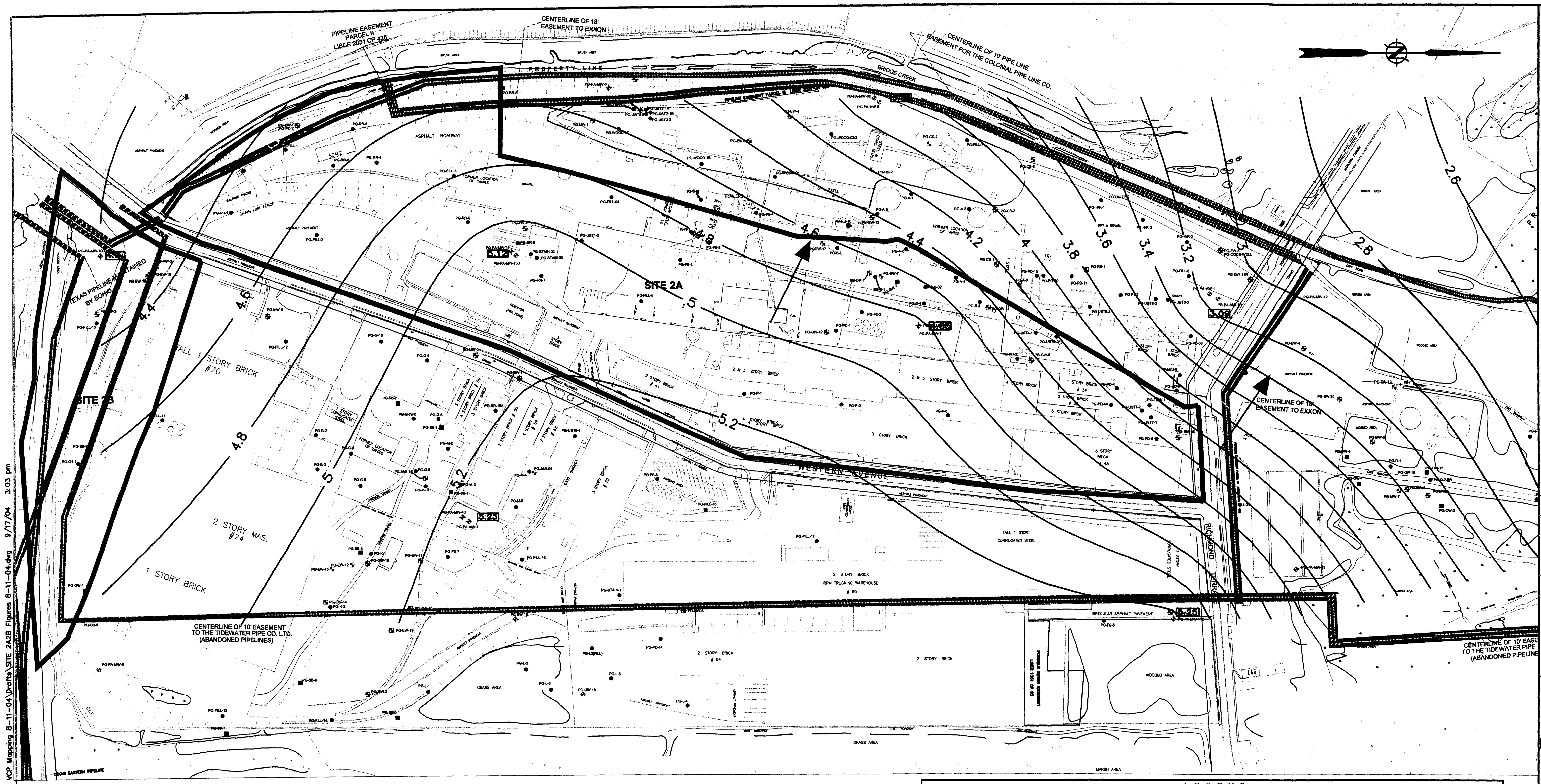
6.3.1 Volatile Organic Compounds

SOIL DATA ✓

VOCs were either not detected or were detected below NYSDEC RSCOs in all but three soil samples collected from Site 2A/2B. Specifically, trans-1,3-dichloropropene was detected at a concentration of 0.43 mg/kg from sample B-4 (5-6 feet); dichloromethane was detected at a concentration of 0.17 mg/kg from sample PG-STAIN-03; and benzene was detected at a concentration of 0.32 mg/kg from sample PG-MW10D. Two of the three samples, B-4 (5-6 feet) and PG-STAIN-03 were collected from locations on Site 2A and the other sample, PG-MW-10D (8-10 feet), was collected from a location at Site 2B. The total VOC concentration was below the NYSDEC guidance criteria of 10 mg/kg for all samples from Site 2A/2B including the results for the above three listed samples. In fact, the highest concentration of total VOCs is 1.99 mg/kg, detected in sample PG-MW-10D (8-10 feet). Total VOCs have been calculated for each sample and are presented in Table 5A. Please refer to Table 5A and Figure 10 for VOC results.

6.3.2 Semi-Volatile Organic Compounds

A number of SVOCs were detected in soil samples collected from Site 2A/2B. However, the vast majority of these compounds were detected below NYSDEC TAGM RSCOs. The following SVOCs were detected at concentrations above corresponding RSCOs in one or more soil samples from Site 2A/2B: pyrene, phenanthrene, acenaphthene, anthracene, naphthalene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(a)anthracene, dibenz[a,h]anthracene, benzo(k)flouranthene, indeno(1,2,3-cd)pyrene, flouranthene, flourene, and phenol. Analytical results revealed the presence of SVOCs in excess of 50 mg/kg in only one sample, Sample PG-STAIN-03, which was collected from within a stained area at Building 20. The SVOCs detected in excess of 50 mg/kg are as follows: acenaphthene, anthracene, benzo(a)anthracene, benzo(b)flouranthene, flouranthene, flourene, naphthalene, phenanthrene and pyrene. One total SVOC concentration, PG-STAIN-03 was detected in excess of the NYSDEC guidance criteria of 500 mg/kg for total SVOCs. Again, this sample was collected from a "stained" area from the surfical interval. The sample collected from the deeper interval at location PG-STAIN-3 and samples collected form the surficial and subsurface intervals of an adjacent location (PG-STAIN-3B) at the fringe of the stained area revealed significantly lower concentrations of SVOCs. Please refer to Table



NOTES:
1. ELEVATION IN FEET ABOVE MEAN SEA LEVEL (BOBART sYSTEM)
CONTOUR INTERVAL = 0.2 FEET

120 0 120 240
SCALE IN FEET

LEGEND

▨	UTILITY EASEMENT	4.5	POTENTIOMETRIC CONTOUR LINE
	RAILROAD TRACKS	4.24	GROUNDWATER ELEVATION
▬	SITE BOUNDARY	→	GROUNDWATER FLOW DIRECTION
PG-RS-1	PRE-EXISTING P&G MONITORING WELL LOCATION		
PG-SB-2 ■	PRE-EXISTING P&G SOIL BORING LOCATION		
PG-PA-MW-5	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION		
PG-WOOD-3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION		

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ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

SITE 2A/2B WATER TABLE CONTOUR MAP

NOVEMBER 2000

This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without its written consent.

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number FIGURE 9

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PG-FILL-10

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene:	0.24	3 to 4'
Benzo[a]pyrene:	0.17 J	3 to 4'
Benzo[a]anthracene:	0.42	6.4 to 8.2'
Benzo[a]pyrene:	0.34 J	6.4 to 8.2'

PG-PA-MW-10D

ANALYTE	RES	DEPTH
VOC		
Benzene:	0.32	8-10'
SVOC		
Benzo[a]pyrene:	0.11 J	0.5 to 2'
Benzo[a]anthracene:	0.36	4 to 6'
Benzo[a]pyrene:	0.32	4 to 6'
Dibenz[a,h]anthracene:	0.050	4 to 6'
Benzphenanthracene:	6.2	7 to 8'
Benzo[a]anthracene:	4.4	7 to 8'
Benzo[a]pyrene:	4.3	7 to 8
Benzo[b]flouranthene:	7.9	7 to 8'
Benzo[k]flouranthene:	2.9	7 to 8'
Dibenz[a,h]anthracene :	0.92	7 to 8

PG-RR-3

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene:	8.9	1.5 to 2'
1.2 Benzo[a]pyrene:	15	1.5 to 2'
Benzo[b]flouranthene:	26	1.5 to 2'
Benzo[k]flouranthene:	11	1.5 to 2'
Indeno[1,2,3-cd]pyrene:	4.3	1.5 to 2'

PG-RR-2

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene:	0.29	0 to 2'
1.2 Benzo[a]pyrene:	0.35	0 to 2'
Dibenz[a,h]anthracene:	0.089 J	0 to 2'

PG-RR-4

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene:	0.19	0.6 to 2'

PG-STAIN-03

ANALYTE	RES	DEPTH
VOC		
Dichloromethane:	0.17 J	1-1.5'
SVOC		
Acenaphthene:	200	1.7 to 2.5'
Anthracene:	140	1.7 to 2.5'
Benzo[a]anthracene:	86	1.7 to 2.5'
Benzo[a]pyrene:	44	1.7 to 2.5'
Benzo[b]fluoranthene:	63	1.7 to 2.5'
Benzo[k]fluoranthene:	22	1.7 to 2.5'
Dibenz[a,h]anthracene:	6.3 J	1.7 to 2.5'
Flouranthene:	350	1.7 to 2.5'
Flourene:	190	1.7 to 2.5'
Indeno[1,2,3-cd]pyrene :	19	1.7 to 2.5'
Naphthalene:	420	1.7 to 2.5'
Phenathrene:	540	1.7 to 2.5'
Pyrene:	230	1.7 to 2.5'
Total SVOCs:	2,437.3	1.7 to 2.5'
Benzo[a]anthracene:	2.6	2.5 to 3.5'
Benzo[a]pyrene:	1.3	2.5 to 3.5'
Benzo[b]fluoranthene:	2	2.5 to 3.5'

PG-STAIN-3B

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene:	0.44	0 to 2'
Benzo[a]pyrene:	0.47	0 to 2'
Benzo[b]fluoranthene:	1.1	0 to 2'
Dibenz[a,h]anthracene:	0.13	0 to 2'

PG-E-1

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene:	0.31	0.2 to 2'
Benzo[a]pyrene:	0.25	0.2 to 2'
Benzo[a,h]anthracene:	0.049 J	0.2 to 2'

PG-B-1

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.099 J	9 to 10'

PG-B-4

ANALYTE	RES	DEPTH
VOC		
Trans-1,3-Dichloropropene:	0.43	5-6'
SVOC		
1,2-Benzphenanthracene:	1.2	2 to 4'
Benzo[a]anthracene:	1.0	2 to 4'
Benzo[a]pyrene:	0.75	2 to 4'
Benzo[b]fluoranthene :	1.2	2 to 4'
Benzo[a,h]anthracene:	0.060 J	2 to 4'

PG-A-4

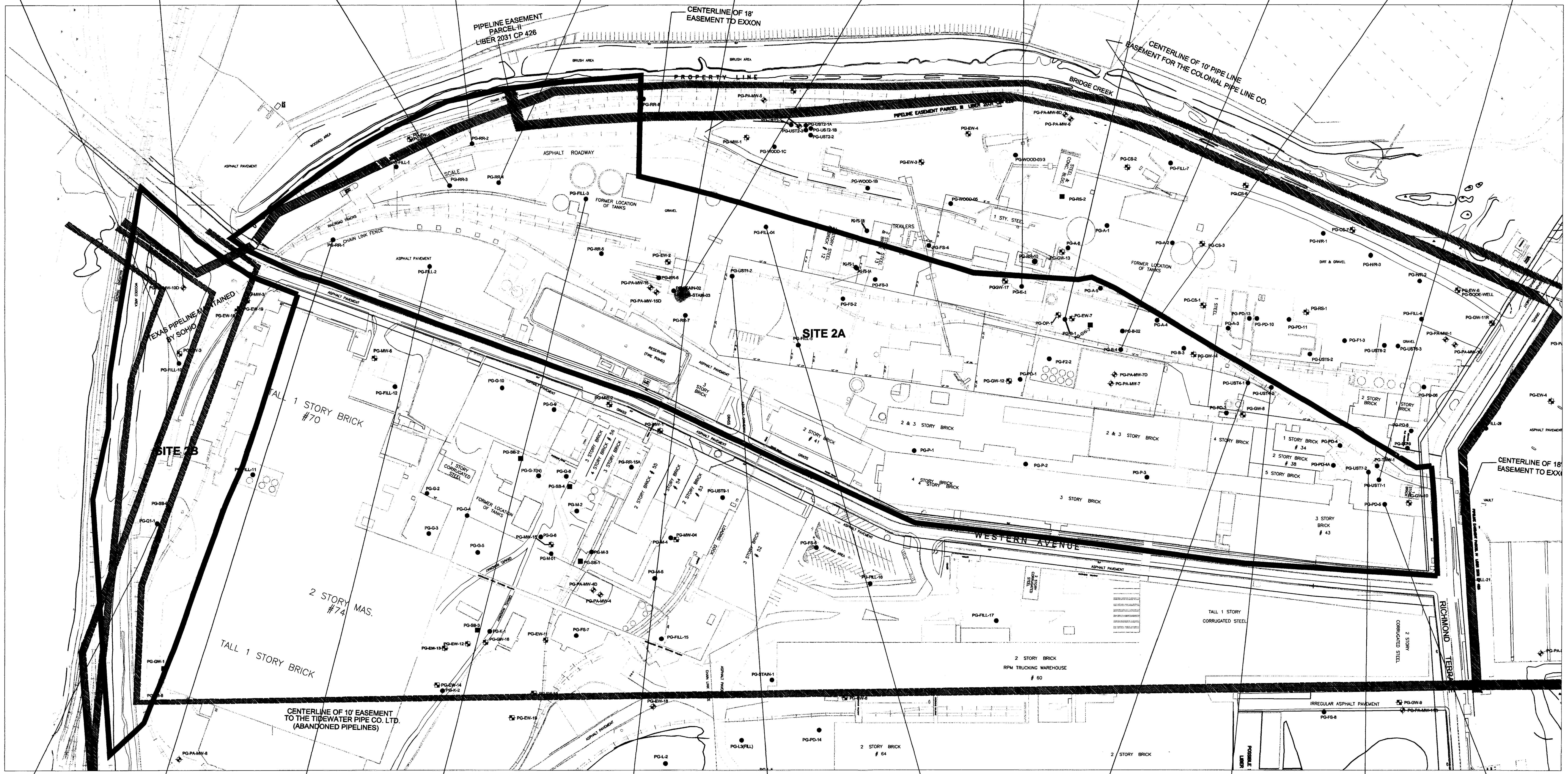
ANALYTE	RES	DEPTH
Phenol :	0.37	12 to 14'

PG-UST7-1A

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene:	0.43 J	0 to 2'

PG-UST7-1B

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene:	2.3	2 to 3.5'
Benzo[a]pyrene:	1.1 J	2 to 3.5'
Benzo[b]flouranthene:	1.2 J	2 to 3.5'



PG-Q1-1

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene:	0.49	2 to 4'
Benzo[a]pyrene:	0.46	2 to 4

PG-RR-1

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene:	0.96	0 to 1.2'
Benzo[a]pyrene:	1.2	0 to 1.2'
Benzo[b]fluoranthene:	3.2	0 to 1.2'
Dibenz[a,h]anthracene:	0.29	0 to 1.2'
Benzo[a]pyrene:	0.15 J	1.2 to 2'
Dibenz[a,h]anthracene:	0.046 J	1.2 to 2'

PG-FILL-02

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.081 J	0.7 to 3'

PG-FILL-03

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene:	1.3	0.5 to 2'
Benzo[a]pyrene:	1.4	0.5 to 2'
Benzo[b]fluoranthene:	1.4	0.5 to 2'
Dibenz[a,h]anthracene:	0.35	0.5 to 2'
Benzo[a]anthracene	0.47	2 to 4'
Benzo[a]pyrene:	0.54	2 to 4'
Dibenz[a,h]anthracene:	0.16 J	2 to 4'

PG-RR-7

ANALYTE	RES	DEPTH
SVOC		
Dibenz[a,h]anthracene:	0.039 J	2 to 4'

PG-UST1-2

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene:	0.87	2 to 4'
Benzo[a]pyrene:	0.58	2 to 4'
Dibenz[a,h]anthracene:	0.041 J	2 to 4'

PG-FILL-04

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene:	0.21	0 to 2'
Dibenz[a,h]anthracene:	0.076 J	0 to 2'
Benzo[a]pyrene:	0.076 J	4 to 6'
Benzo[a]pyrene:	0.081 J	7 to 8'

PG-UST4-1

ANALYTE	RES	DEPTH
SVOC		
Phenol:	0.047 J	14 to 15.5'
Benzo[a]anthracene:	0.25	2 to 4'
Benzo[a]pyrene:	0.18 J	2 to 4'

PG-UST4-2

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene:	0.063 J	4 to 6'
Phenol:	0.14 J	4 to 6'
Benzo[a]anthracene:	0.39	12 to 14'
Benzo[a]pyrene:	0.29	12 to 14'

PG-UST7-2

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene:	0.32	8 to 10'
Benzo[a]pyrene:	0.19	8 to 10'
Benzo[a]anthracene:	0.4	10 to 12'
Benzo[a]pyrene:	0.28	10 to 12'

PG-PD-5

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene:	0.14 J	0.7 to 1.5'

100 0 100 200
SCALE IN FEET

NOTES:
1. THIS MAP PRESENTS CONCENTRATIONS OF VOCs AND SVOCs AT LEVELS ABOVE CORRESPONDING TAGM RSCOs.

RECOMENDED SOIL CLEANUP OBJECTIVES

COMPOUND	RSCO (mg/kg)
VOC	VOC
Benzene:	0.06
Dichloromethane:	0.1
Trans-1,3-Dichloropropene:	0.3
SVOC	SVOC
Acenaphthene:	NS
Anthracene:	50
Benzo[a]anthracene:	50
Benzo[a]pyrene:	0.224 or MDL
Benzo[b]fluoranthene:	0.061 or MDL
Benzo[k]fluoranthene:	1.1
Dibenz[a,h]anthracene:	1.1
Flouranthene:	0.014 or MDL
Flourene:	50
Indeno[1,2,3-cd]pyrene :	50
Naphthalene:	3.2
Phenathrene:	13
Phenol	50
Pyrene:	0.03 or MDL
Individual SVOCs:	50
Total SVOCs	500

MDL - METHOD DETECTION LIMIT
NS - NO STANDARD

L E G E N D

▨	UTILITY EASEMENT
┼┼┼	RAILROAD TRACKS
▬	SITE BOUNDARY
PG-PA-MW-5 ⌖	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION
PG-WOOD-3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION
PG-RS-1 ⊞	PRE-EXISTING P&G MONITORING WELL LOCATION
PG-SB-2 ■	PRE-EXISTING P&G SOIL BORING LOCATION
ANALYTE	INDICATES COMPOUND FOR WHICH LABORATORY ANALYSIS WAS CONDUCTED
RES	CONTAMINANT CONCENTRATION IN MG/KG
J	THE REPORTED VALUE WAS OBTAINED FROM A READING THAT WAS LESS THAN THE CONTRACT REQUIRED DETECTION LIMIT (CRDL), BUT GREATER THAN OR EQUAL TO THE INSTRUMENT DETECTION LIMIT (IDL).
DEPTH	DEPTH IN FEET BELOW GROUND SURFACE

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ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

SITE 2A/2B DISTRIBUTION OF VOCs AND SVOCs IN SOIL, SITE INVESTIGATION

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number **FIGURE 10**

P:\332952wmd\Operable Unit Reports\Operable Unit 2\Mapping\POST VCP Mapping 8-11-04\Drafts\SITE 2A2B ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/17/04 4:03 pm

5B and Figure 10 for a summary of SVOC results for soil at Sites 2A/2B. Total SVOCs have been calculated and are presented in Table 5B.

6.3.3 Polychlorinated Biphenyls

No specific PCBs were detected in soil samples collected from Site 2A/2B. No samples collected from the surficical interval exhibited a concentration in excess of the NYSDEC TAGM RSCO for surface soil of 1 mg/kg. None of the samples collected from the subsurface exceeded the NYSDEC guidance criteria for PCBs in subsurface soil of 10 mg/kg. Please refer to Table 5C and Figure 11 for a summary of PCB results.

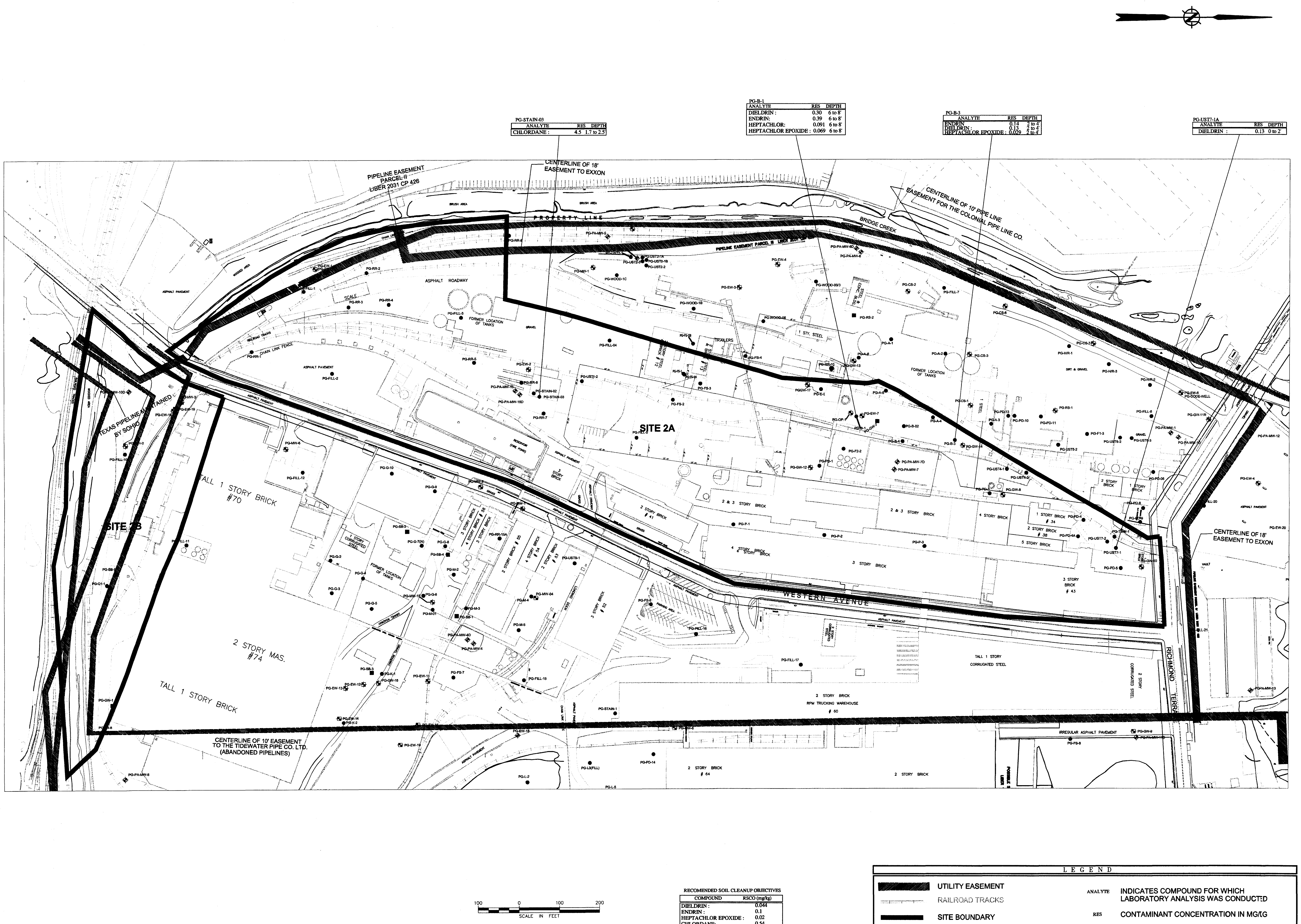
6.3.4 Pesticides

Five pesticide compounds were detected in soil samples collected from various locations at Site 2A/2B. Dieldrin, endrin, heptachlor, heptachlor epoxide, and chlordane were the only contaminants detected in excess of corresponding NYSDEC TAGM RSCOs in samples collected from Site 2A/2B. Specifically, dieldrin was detected at concentrations in excess of its corresponding RSCO in three samples; endrin was detected at concentrations in excess of its corresponding RSCO in two samples; heptachlor was detected in concentrations in excess of its corresponding RSCO in one sample; chlordane was detected in excess of its RSCO in two samples; and, heptachlor epoxide was detected in excess of its RSCO in only a single sample. Please refer to Table 5C and Figure 11 for ~~a~~ summary of pesticides results.

slightly elevated levels in a few locations

6.3.5 Metals

All TAL metals were detected in at least one soil sample collected as part of the SI of Sites 2A and 2B. The NYSDEC TAGM generally regards site background as an appropriate concentration for the 24 TAL metals and only provides RSCOs for a portion of the metals included in the TAL. RSCOs are provided for the following metals: arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, mercury, nickel, selenium, vanadium and zinc. Given the presence of fill material and the urban nature of the site, it is difficult to establish a site background concentration for metals. As such, in the absence of a specified RCSO, the upper limit of the Eastern USA Background Range, as provided in the TAGM was utilized for comparison purposes. It is important to recognize that the presence of a metal above an established background concentration does not constitute an exceedance of a regulatory standard. As the NYSDEC TAGM does not include a regional background concentration nor RSCOs for antimony or silver, no discussion of exceedances is provided for these metals. Analytical results revealed



PG-STAIN-03

ANALYTE	RES	DEPTH
CHLORDANE :	4.5	1.7 to 2.5'

PG-B-1

ANALYTE	RES	DEPTH
DIELDRIN :	0.30	6 to 8'
ENDRIN:	0.39	6 to 8'
HEPTACHLOR:	0.091	6 to 8'
HEPTACHLOR EPOXIDE :	0.069	6 to 8'

PG-B-3

ANALYTE	RES	DEPTH
ENDRIN	0.14	2 to 4'
DIELDRIN :	0.13	2 to 4'
HEPTACHLOR EPOXIDE :	0.029	2 to 4'

PG-UST7-1A

ANALYTE	RES	DEPTH
DIELDRIN :	0.13	0 to 2'

RECOMENDED SOIL CLEANUP OBJECTIVES

COMPOUND	RSCO (mg/kg)
DIELDRIN :	0.044
ENDRIN :	0.1
HEPTACHLOR EPOXIDE :	0.02
CHLORDANE:	0.54

NOTES:
1. THIS MAP PRESENTS CONCENTRATIONS OF PCBs AND PESTICIDES IN EXCESS OF TAGM RSCOs.

** – BECAUSE IT IS UNCLEAR AS TO THE ACTUAL DEPT OF SAMPLE COLLECTION, THE MOST STRINGENT RSCO IS UTILIZED FOR TOTAL PCBs.

LEGEND

▨	UTILITY EASEMENT
┼─┼	RAILROAD TRACKS
▬	SITE BOUNDARY
PG-PA-MW-5 ⊕	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION
PG-WOOD-3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION
PG-RS-1 ⊞	PRE-EXISTING P&G MONITORING WELL LOCATION
PG-SB-2 ■	PRE-EXISTING P&G SOIL BORING LOCATION
ANALYTE	INDICATES COMPOUND FOR WHICH LABORATORY ANALYSIS WAS CONDUCTED
RES	CONTAMINANT CONCENTRATION IN MG/KG
J	THE REPORTED VALUE WAS OBTAINED FROM A READING THAT WAS LESS THANTHE CONTRACT REQUIRED DETECTION LIMIT(CRDL), BUT GREATER THAN OR EQUAL TO THE INSTRUMENT DETECTION LIMIT (IDL).
DEPTH	DEPTH IN FEET BELOW GROUND SURFACE

P:\232952wmd\Operable Unit Reports\Operable Unit 2\Mapping\POST VCP Mapping 8-11-04\Drafts\SITE 2A2B ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/17/04 4:03 pm

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ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

SITE 2A/2B DISTRIBUTION OF PESTICIDES AND PCBs IN SOIL, SITE INVESTIGATION

This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without its written consent.

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number **FIGURE 11**

exceedances of RSCOs in one or more soil samples for 12 of the 13 of the metals with established guidance criteria; antimony was not detected in excess of its RSCO in any of the soil samples from Site 2A/2B. It should be noted that the NYSDEC has not established a guidance criteria for lead but does review concentrations related to this metal on a case by case basis. The Eastern US Background guidance for lead is 500 mg/kg. Analytical results from this sampling performed at Site 2A/2B revealed concentrations of lead ranging from not detected to 950 mg/kg.

Arsenic was detected in the majority of the samples collected from Site 2A/2B; the highest concentration of arsenic (980 mg/kg) was detected in sample PG-RR-1 (0-1.2 feet). Cadmium was detected above the RSCO ranging in four samples; concentrations above the RSCO ranged from 1.4 mg/kg in sample PG-RR-1 (0-1.2 feet) to 14 mg/kg in sample PG-B-02A (8-10 feet). Chromium was detected in excess of the RSCO in many of the samples; concentrations above the RSCO of 10 mg/kg ranged from 11 mg/kg in several samples to 83 mg/kg in sample PG-STAIN-3B (0-2 feet). Mercury was detected in excess of the RSCO of 0.1 mg/kg in 18 samples collected from Site 2A/2B. Exceedances ranged from 0.19 mg/kg in sample PG-FILL-03 (2-4 feet) to 1.2 mg/kg in sample PG-E-1 (4-6 feet).

Arsenic is only metal with consistantly elevated levels. Highest: 980 ppm

Please refer to Table 5D and Figure 12 for a summary of metals results.

6.3.6 *Cyanide and Total Phenolics*

Cyanide was detected in several soil samples collected from Site 2A/2B. In all instances, cyanide was detected at a concentration of less than 1 mg/kg. The NYSDEC has not established guidance criteria for cyanide in soil. Rather, the NYSDEC establishes guidance criteria for cyanide on a case-by-case basis. Please refer to Table 5E for a summary of cyanide results.

Low

Total phenolics was detected in two samples collected from Site 2A/2B, both samples were collected from Site 2A. The concentrations were 1.8 mg/kg from sample PG-P-2 (4-6 feet) and 5.5 mg/kg from sample PG-STAIN-03 (1.7-2.5 feet). The NYSDEC has not established guidance criteria for total phenolics in soil. Rather, the NYSDEC establishes guidance criteria for total phenolics on a case-by-case basis. Please refer to Table 5E for a summary of total phenolics results.

PG-FILL-10

ANALYTE	RES	DEPTH
CHROMIUM :	16	3 to 4'
[illegible]	[illegible]	6.4to 8.2'
CADMIUM :	2.6	6.4 to 8.2'
CHROMIUM :	66	6.4 to 8.2'
MERCURY :	0.47	6.4 to 8.2'

PG-PA-MW-10D

ANALYTE	RES	DEPTH
ARSENIC :	7.6	4 to 6'
MERCURY :	0.38	4 to 6'
ARSENIC :	140	7 to 8'
CHROMIUM :	13	7 to 8'
ARSENIC :	12	8 to 10'

PG-RR-1

ANALYTE	RES	DEPTH
ARSENIC :	980	0 to 1.2'
CADMIUM :	1.4	0 to 1.2'
CHROMIUM :	23	0 to 1.2'
MERCURY :	0.21	0 to 1.2'
ARSENIC :	290	1.2 to 2'

PG-FILL-02

ANALYTE	RES	DEPTH
ARSENIC :	45	0.7 to 3'
CADMIUM :	1	0.7 to 3'
CHROMIUM :	22	0.7 to 3'
LEAD :	680	0.7 to 3'

PG-RR-3

ANALYTE	RES	DEPTH
ARSENIC :	250	1.5 to 2'

PG-RR-2

ANALYTE	RES	DEPTH
ARSENIC :	150	0 to 2'

PG-RR-4

ANALYTE	RES	DEPTH
ARSENIC :	11	0.6 to 2'
ARSENIC :	7.5	3 to 4'
CHROMIUM:	13	3 to 4'

PG-UST1-2

ANALYTE	RES	DEPTH
ARSENIC :	11	2 to 4'
MERCURY :	1	2 to 4'

PG-FILL-04

ANALYTE	RES	DEPTH
ARSENIC :	10	0 to 2'
MERCURY :	0.26	0 to 2'
ARSENIC :	8.8	2 to 4'
MERCURY :	0.24	7 to 8'

PG-E-1

ANALYTE	RES	DEPTH
MERCURY :	0.24	0.2 to 2'
ARSENIC :	12	10 to 12'
MERCURY :	1.2	4 to 6'

PG-B-1

ANALYTE	RES	DEPTH
ARSENIC :	8.5	2 to 4'
CHROMIUM :	18	6 to 8'

PG-A-5

ANALYTE	RES	DEPTH
ARSENIC :	21	2 to 4'

PG-B-2A

ANALYTE	RES	DEPTH
CADMIUM :	14	8 to 10'

PG-B-4

ANALYTE	RES	DEPTH
ARSENIC :	37	2 to 4'
CHROMIUM :	19	2 to 4'
MERCURY :	0.34	2 to 4'

PG-A-4

ANALYTE	RES	DEPTH
ARSENIC :	19	6 to 8'
ARSENIC :	8.9	12 to 14'
CHROMIUM :	13	12 to 14'

PG-B-3

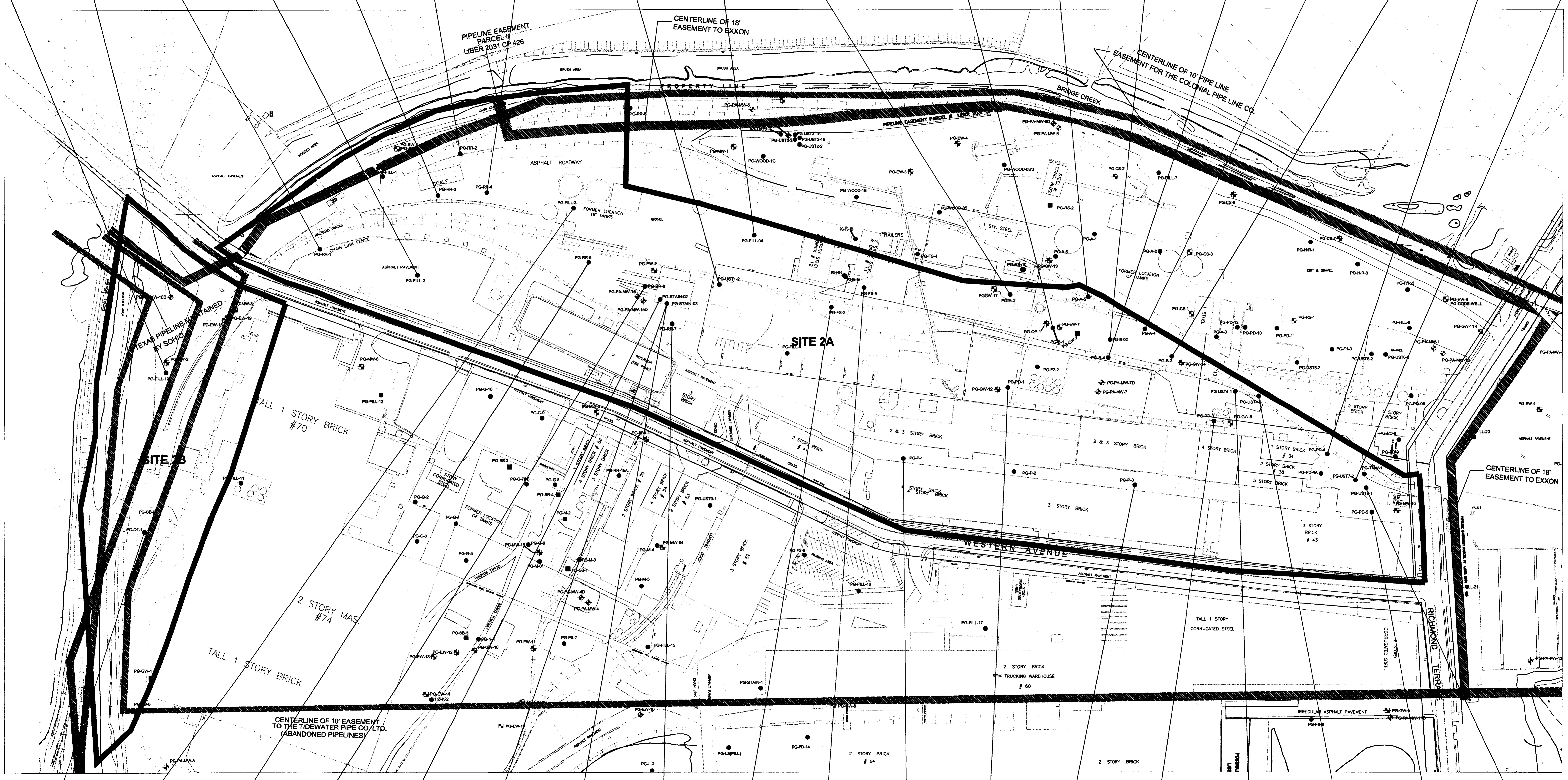
ANALYTE	RES	DEPTH
CHROMIUM :	40	2 to 4'
CHROMIUM :	18	6 to 8'
MERCURY :	0.48	2 to 4'

PG-PD-4

ANALYTE	RES	DEPTH
CHROMIUM :	13	8 to 10'

PG-UST7-2

ANALYTE	RES	DEPTH
CHROMIUM :	19	8 to 10'
CHROMIUM :	14	10 to 12'



PG-Q1-1

ANALYTE	RES	DEPTH
ARSENIC :	10	2 to 4'
CHROMIUM :	11	2 to 4'
ARSENIC :	9.2	4 to 6'
CHROMIUM :	10	4 to 6'

PG-FILL-03

ANALYTE	RES	DEPTH
ARSENIC :	13	0.5 to 2'
CHROMIUM :	11	0.5 to 2'
MERCURY :	0.22	0.5 to 2'
ARSENIC :	9.3	2 to 4'
MERCURY :	0.19	2 to 4'

PG-RR-5

ANALYTE	RES	DEPTH
ARSENIC :	[illegible]	1 to 2'
ARSENIC :	180	2 to 4'

PG-RR-6

ANALYTE	RES	DEPTH
ARSENIC :	140	1 to 2'
ARSENIC :	12	2 to 4'

PG-STAIN-02

ANALYTE	RES	DEPTH
ARSENIC :	31	1 to 2'
ARSENIC :	50	2 to 3'

PG-STAIN-03

ANALYTE	RES	DEPTH
ARSENIC :	110	1.7 to 2.5'
CHROMIUM :	15	1.7 to 2.5'
ARSENIC :	43	2.3 to 3.5'
MERCURY :	0.52	2.5 to 3.5'

PG-STAIN-3B

ANALYTE	RES	DEPTH
ARSENIC :	350	0 to 2.0'
CADMIUM :	1.8	0 to 2.0'
CHROMIUM :	83	0 to 2.0'
LEAD :	950	0 to 2.0'
MERCURY :	0.24	0 to 2.0'
ARSENIC :	31	2.0 to 4.0'

PG-RR-7

ANALYTE	RES	DEPTH
ARSENIC :	8.5	2 to 4'

PG-FS-2

ANALYTE	RES	DEPTH
CHROMIUM :	11	2 to 4'
CHROMIUM :	14	8 to 10'

PG-FS-3

ANALYTE	RES	DEPTH
ARSENIC :	30	2 to 4'
CHROMIUM :	11	6.5 to 8'

PG-P-1

ANALYTE	RES	DEPTH
CHROMIUM :	10	8 to 10'

PG-PD-1

ANALYTE	RES	DEPTH
ARSENIC :	13	2 to 4'

PG-P-3

ANALYTE	RES	DEPTH
CHROMIUM :	18	2 to 4'
CHROMIUM :	16	6 to 8'

PG-PD-3

ANALYTE	RES	DEPTH
CHROMIUM :	19	4 to 6'

PG-UST4-1

ANALYTE	RES	DEPTH
ARSENIC :	50	2 to 4'
MERCURY :	0.45	2 to 4'
ARSENIC :	33	10 to 11.5'
CHROMIUM :	13	14 to 15.5'
MERCURY :	0.24	14 to 15.5'

PG-UST4-2

ANALYTE	RES	DEPTH
ARSENIC :	8.4	4 to 6'
ARSENIC :	13	12 to 14'

PG-PD-5

ANALYTE	RES	DEPTH
ARSENIC :	9.3	0.7 to 1.5'
CHROMIUM :	17	0.7 to 1.5'
MERCURY :	0.39	0.7 to 1.5'
CHROMIUM :	11	2 to 4'

PG-UST7-1

ANALYTE	RES	DEPTH
CHROMIUM :	11	8 to 10'

PG-UST7-1A

ANALYTE	RES	DEPTH
MERCURY :	0.83	0 to 2'

RECOMENDED SOIL CLEANUP OBJECTIVES

COMPOUND	RSCO (mg/kg)
ARSENIC :	7.5 or SB
CADMIUM :	1 or SB
CHROMIUM :	10 or SB
LEAD :	SB
MERCURY :	0.01

SB - SITE BACKGROUND

NOTES:
1. THIS MAP PRESENTS CONCENTRATIONS OF SELECT METALS ABOVE CORRESPONDING TAGM RSCOs AND LEAD ABOVE THE EASTERN US BACKGROUND CRITERIA OF 500 ppm.

L E G E N D

▨	UTILITY EASEMENT
┼	RAILROAD TRACKS
▬	SITE BOUNDARY
PG-PA-MW-5 ⊕	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION
PG-WOOD-3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION
PG-RS-1 ⊞	PRE-EXISTING P&G MONITORING WELL LOCATION
PG-SB-2 ■	PRE-EXISTING P&G SOIL BORING LOCATION
ANALYTE	INDICATES COMPOUND FOR WHICH LABORATORY ANALYSIS WAS CONDUCTED
RES	CONTAMINANT CONCENTRATION IN MG/KG
DEPTH	DEPTH IN FEET BELOW GROUND SURFACE

P:\232952wmd\Operable Unit Reports\Operable Unit 2\Mapping\POST VCP Mapping 8-11-04\Drafts\SITE 2A2B ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/17/04 3:44 pm

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Title

(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

SITE 2A/2B DISTRIBUTION OF SELECT METALS IN SOIL, SITE INVESTIGATION

This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without its written consent.

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number **FIGURE 12**

6.3.7 Petroleum Hydrocarbons/Oil and Grease

TPHC and O/G were detected in the majority of SI soil samples collected from Site 2A/2B as well as throughout the site. The NYSDEC does not currently maintain a standard for TPHC or O/G in soil. For general guidance purposes related to total petroleum hydrocarbon concentrations, TPHC and O/G results were compared to a threshold value of 10,000 mg/kg. As described in Sections 6.3.1 and 6.3.2, samples were also analyzed for VOC and SVOC compounds and concentrations were compared to corresponding NYSDEC RSCOs including NYSDEC guidance values of 10 mg/kg for total VOCs, 50 mg/kg for individual SVOCs and 500 mg/kg for total SVOCs.

Overall, four samples from Site 2A/2B exhibited a concentration of TPHC above 10,000 mg/kg. All of the samples exhibiting TPHC at or above the guidance threshold were collected from locations at Site 2A. The samples were collected from locations at Area A, Area B and UST7. The concentrations above the guidance threshold are as follows: 12,000 mg/kg at sample PG-A-5 (2-4 feet); 15,000 mg/kg at sample PG-B-3 (2-4 feet); 13,000 at sample PG-B-3 (6-8 feet) and 12,000 mg/kg at sample UST7-1B (2-3.5 feet). Two of the samples also exhibited concentrations of O/G in excess of 10,000 mg/kg. TPHC was not detected above 10,000 mg/kg in any of the samples collected from Site 2B. O/G was detected at a concentration in excess of 10,000 mg/kg in eight samples. The detections above the guidance threshold were identified at locations from both Site 2A/2B and ranged from 11,000 mg/kg in sample PG-Fill-03 (2-4 feet) to 55,000 mg/kg in sample PG-MW-10D. Two of the eight samples from Site 2A/2B also exhibited concentrations of TPHC in excess of 10,000 mg/kg. Please refer to Table 5E and Figures 13 and 14 for a summary of TPHC and O/G results; TPHC results are summarized on Figure 13 and O/G results are summarized on Figure 14.

6.3.8 pH

The pH values recorded for soil samples collected from Site 2A/2B ranged from 3.8 to 12 with a little less then the majority, approximately 46%, of the values falling between 7.0 and 8.5. It should be noted that all of the samples exhibiting pH concentrations at or above 10 were collected from soil borings installed into the by-product fill material present at the Site A. Three samples exhibiting low pH, below 5, were also were noted at Site A. The three samples were all obtained from locations near Building 20 and were noted in samples from surface to approximately 4 feet bgs. Please refer to Table 5E and Figure 15 for a summary of the pH results.

PG-A-5

ANALYTE	RES	DEPTH
PETROLEUM HYDROCARBONS :	12000	2 to 4'

PG-B-02

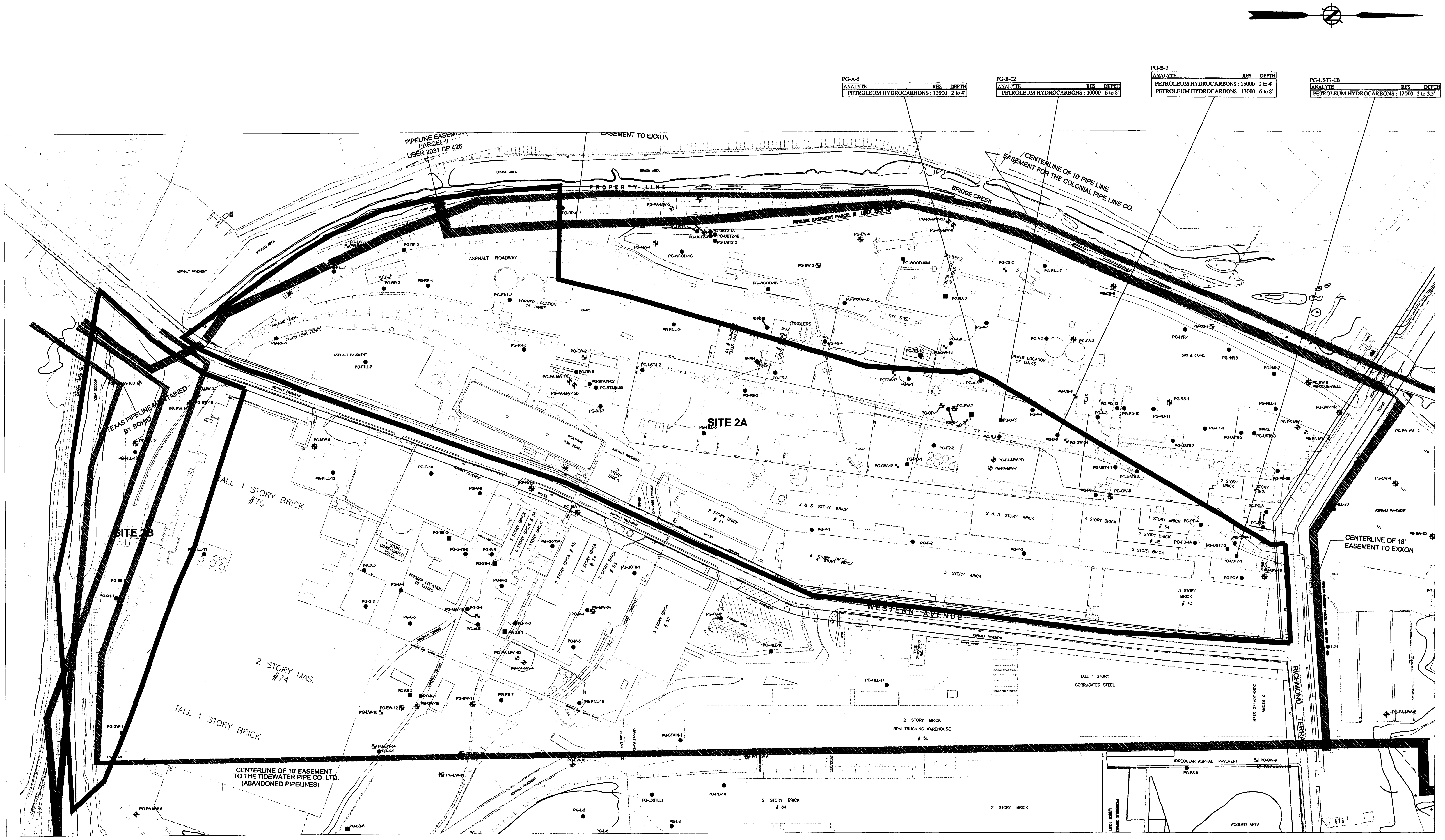
ANALYTE	RES	DEPTH
PETROLEUM HYDROCARBONS :	10000	6 to 8'

PG-B-3

ANALYTE	RES	DEPTH
PETROLEUM HYDROCARBONS :	15000	2 to 4'
PETROLEUM HYDROCARBONS :	13000	6 to 8'

PG-UST7-1B

ANALYTE	RES	DEPTH
PETROLEUM HYDROCARBONS :	12000	2 to 3.5'



1. THIS MAP PRESENTS CONCENTRATIONS OF TPHC ABOVE 10,000 ppm.

LEGEND

▬	UTILITY EASEMENT	PG-RS-1 ⊕	PRE-EXISTING P&G MONITORING WELL LOCATION
┼┼┼	RAILROAD TRACKS	PG-SB-2 ■	PRE-EXISTING P&G SOIL BORING LOCATION
━	SITE BOUNDARY		
PG-PA-MW-6 ⊕	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION	ANALYTE	INDICATES COMPOUND FOR WHICH LABORATORY ANALYSIS WAS CONDUCTED
PG-WOOD-3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION	RES	CONTAMINANT CONCENTRATION IN MG/KG
		DEPTH	DEPTH IN FEET BELOW GROUND SURFACE

P:\232952wmd\Operable Unit Reports\Operable Unit 2\Mapping\POST VCP Mapping 8-11-04\Drafts\SITE 2A2B ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/17/04 3:44 pm

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SITE 2A/2B DISTRIBUTION OF TPHC IN SOIL, SITE INVESTIGATION

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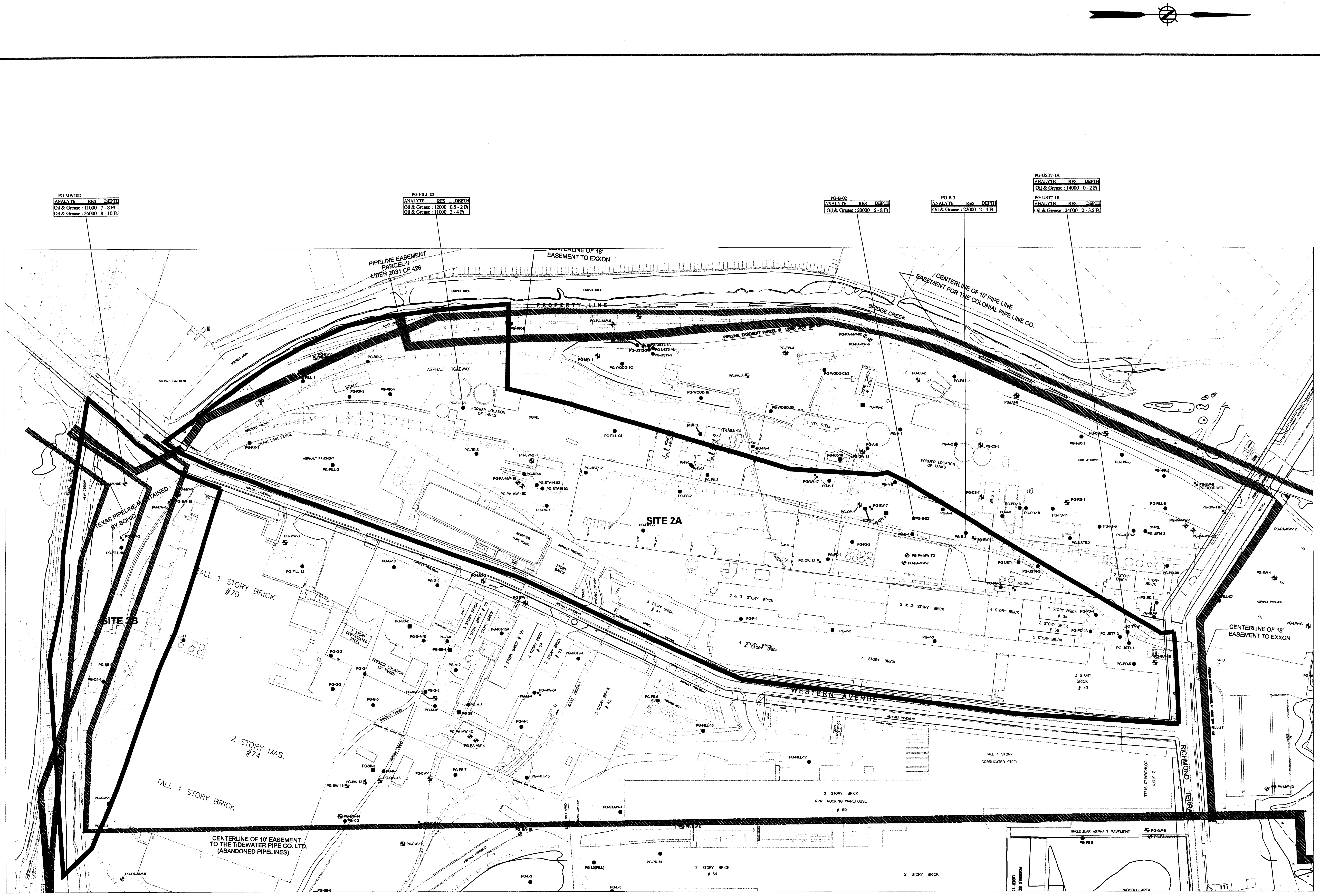
Drawing Number **FIGURE 13**



PG-MW10D

ANALYTE	RES	DEPTH
Oil & Grease :	11000	7 - 8 Ft
Oil & Grease :	55000	8 - 10 Ft

PG-FILL-03

ANALYTE	RES	DEPTH
Oil & Grease :	12000	0.5 - 2 Ft
Oil & Grease :	11000	2 - 4 Ft

PG-B-02

ANALYTE	RES	DEPTH
Oil & Grease :	20000	6 - 8 Ft

PG-B-3

ANALYTE	RES	DEPTH
Oil & Grease :	22000	2 - 4 Ft

PG-UST7-1A

ANALYTE	RES	DEPTH
Oil & Grease :	14000	0 - 2 Ft

PG-UST7-1B

ANALYTE	RES	DEPTH
Oil & Grease :	24000	2 - 3.5 Ft

100 0 100 200
SCALE IN FEET

NOTES:
1. RESULTS ARE IN MG/KG
2. DEPTH REFERS TO THE DEPTH IN FEET BELOW GRADE THAT SAMPLES WERE COLLECTED FROM.
3. THIS MAP PRESENTS CONCENTRATIONS OF OIL AND GREASE ABOVE 10,000 ppm.

LEGEND

▨	UTILITY EASEMENT	PG-RS-1 ⊕	PRE-EXISTING P&G MONITORING WELL LOCATION
┼	RAILROAD TRACKS	PG-SB-2 ■	PRE-EXISTING P&G SOIL BORING LOCATION
■	SITE BOUNDARY		
PG-PA-MW-5 ⊕	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION	ANALYTE	INDICATES COMPOUND FOR WHICH LABORATORY ANALYSIS WAS CONDUCTED
PG-WOOD-3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION	RES	CONTAMINANT CONCENTRATION IN MG/KG
		DEPTH	DEPTH IN FEET BELOW GROUND SURFACE

P:\232952wmd\Operable Unit Reports\Operable Unit 2\Mapping\POST VCP Mapping 8-11-04\Drafts\SITE 2A2B ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/17/04 3:44 pm

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SITE 2A/2B DISTRIBUTION OF OIL AND GREASE IN SOIL, SITE INVESTIGATION

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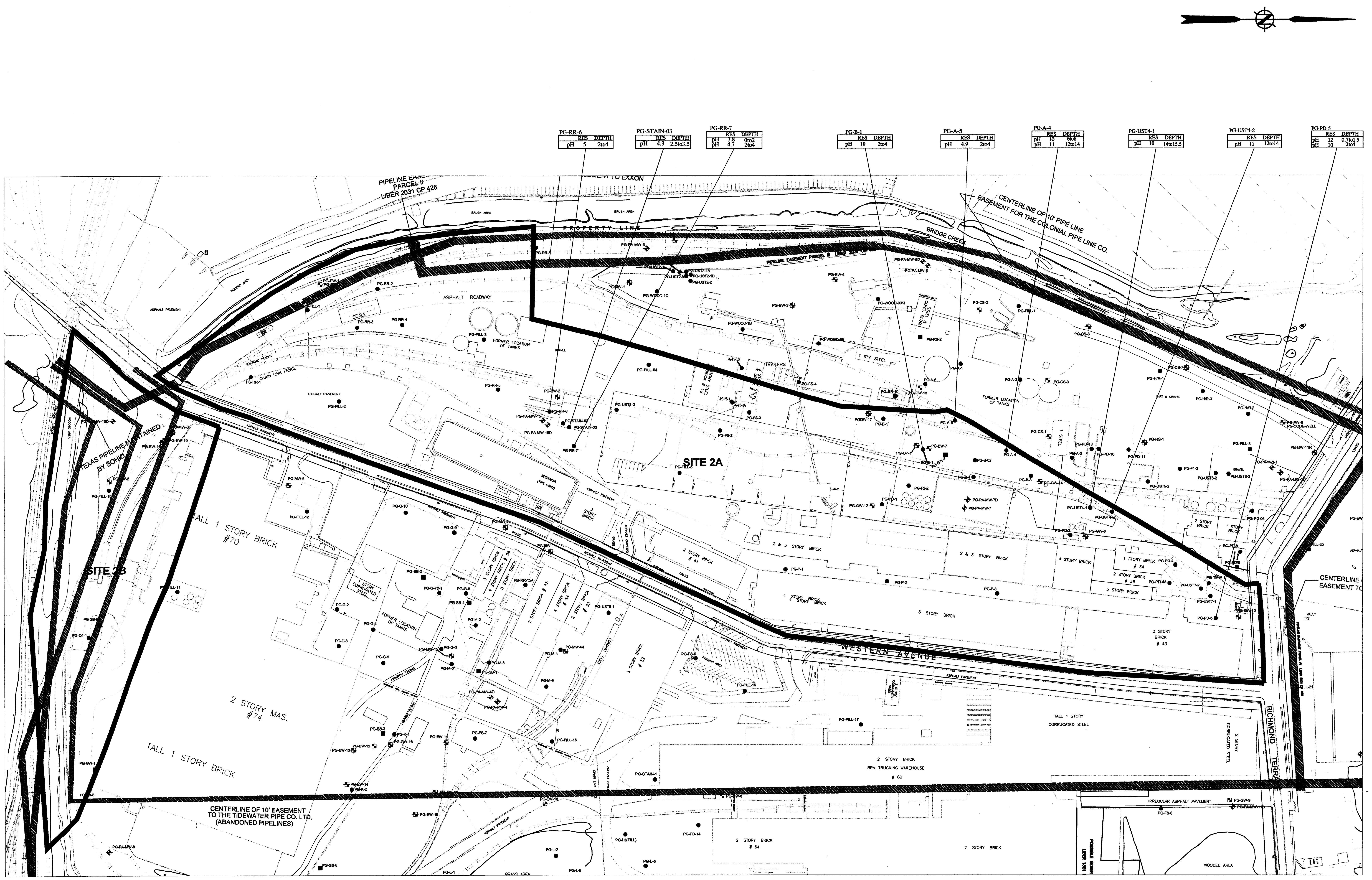
Drawing Number **FIGURE 14**



PG-RR-6

	RES	DEPTH
pH	5	2to4

PG-STAIN-03

	RES	DEPTH
pH	4.3	2.5to3.5

PG-RR-7

	RES	DEPTH
pH	3.8	0to2
pH	4.7	2to4

PG-B-1

	RES	DEPTH
pH	10	2to4

PG-A-5

	RES	DEPTH
pH	4.9	2to4

PG-A-4

	RES	DEPTH
pH	10	6to8
pH	11	12to14

PG-UST4-1

	RES	DEPTH
pH	10	14to15.5

PG-UST4-2

	RES	DEPTH
pH	11	12to14

PG-PD-5

	RES	DEPTH
pH	12	0.7to1.5
pH	10	2to4

100 0 100 200
SCALE IN FEET

NOTES:
1. RESULTS ARE IN pH STANDARD UNITS.
2. DEPTH REFERS TO THE DEPTH IN FEET BELOW GRADE THAT THE SAMPLE WAS COLLECTED FROM.
3. NYSDEC DOES NOT HAVE A STANDARD OR GUIDANCE VALUE FOR pH IN SOIL. RESULTS PRESENTED ON THE MAP REFLECT pH READINGS EQUAL TO OR ABOVE 10 AND EQUAL TO OR BELOW 5.

LEGEND

▨	UTILITY EASEMENT	PG-RS-1 ✣	PRE-EXISTING P&G MONITORING WELL LOCATION
┼┼┼	RAILROAD TRACKS	PG-SB-2 ■	PRE-EXISTING P&G SOIL BORING LOCATION
▬	SITE BOUNDARY		
PG-PA-MW-5 ✣	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION	ANALYTE	INDICATES COMPOUND FOR WHICH LABORATORY ANALYSIS WAS CONDUCTED
PG-WOOD-3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION	RES	pH VALUE IDENTIFIED IN SOIL
		DEPTH	DEPTH IN FEET BELOW GROUND SURFACE

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SITE 2A/2B DISTRIBUTION OF pH IN SOIL, SITE INVESTIGATION

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Drawing Number **FIGURE 15**

P:\232952wmd\Operable Unit Reports\Operable Unit 2\Mapping\POST VCP Mapping 8-11-04\Drafts\SITE 2A2B ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/17/04 3:44 pm

The pH values recorded for soil samples collected from Site 2B ranged from 5.2 to 8.9 with 50%, of the values falling between 7.0 and 8.5. Please refer to Table 5E for a summary of the pH results.

6.4 Groundwater Analytical Data

Groundwater samples were collected from all five of the newly installed groundwater monitoring wells, one temporary well and four of the existing monitoring wells in Site 2A/2B. Table 4 presents the specific analyses for groundwater samples. In addition, field pH was recorded for all groundwater samples. The analytical results for HMM's sampling efforts are presented in Tables 6A-6E, included in the following pages. Figure 7 presents monitoring well locations and Figure 16 presents pertinent groundwater analytical data for Site 2A/2B.

For discussion purposes, the results have been compared, as appropriate, to current NYSDEC Ambient Water Quality Standards and Guidance Values (SGVs). The NYSDEC classifies all groundwater in New York State as GA, potential drinking water source, unless otherwise reclassified. At this time, this represent the only guidance available for ambient groundwater. Please note, the reference of these standards in this report does not represent any agreement or concurrence that same are appropriate for usage at this site. A discussion of the analytical results from the groundwater component of the investigation is provided below.

6.4.1 *Volatile Organic Compounds*

What about VC in sample MW-1

No VOCs were detected above NYSDEC groundwater SVGs in groundwater samples from Site 2A/2B. Please refer to Table 6A and Figure 16, for VOC results.

6.4.2 *Semi-Volatile Organic Compounds*

One SVOC was detected at concentrations in excess of its corresponding NYSDEC groundwater SVG. Specifically, bis(2-ethylhexyl)phthalate was detected above the SVG of 5 ug/l in two samples. This compound was detected at 8.1 ppb in the sample from PG-PZ-1 and 9.2 ug/l in the sample from PG-TMW-01. Bis(2-ethylhexyl)phthalate is frequently identified as a laboratory contaminant, and in fact, this compound was identified as being a laboratory contaminant in other groundwater samples collected with regard to this project. Please refer to Table 6B and Figure 16, for a summary of SVOC results.

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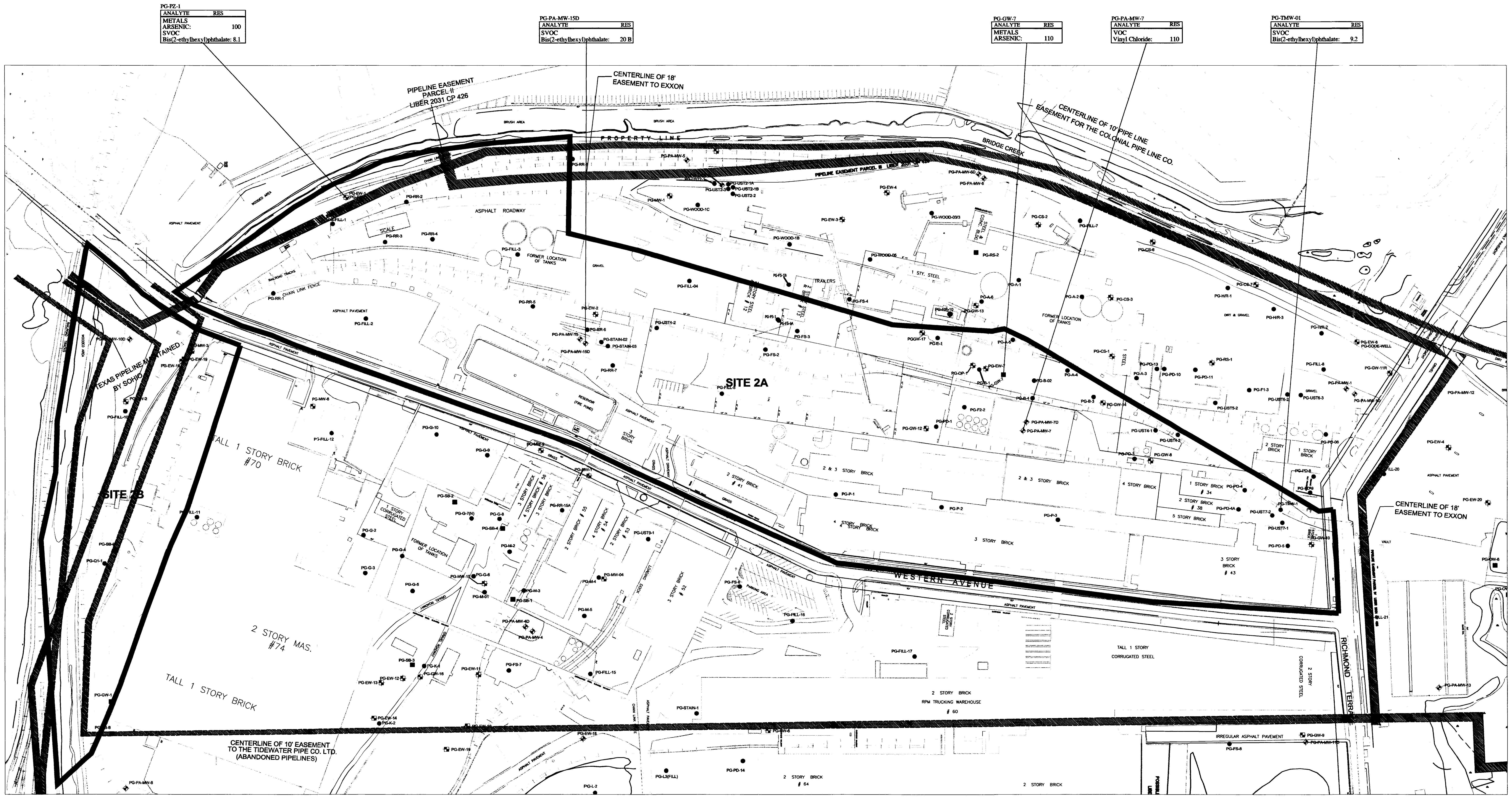

PG-PZ-1

ANALYTE	RES
METALS	
ARSENIC:	100
SVOC	
Bis(2-ethylhexyl)phthalate:	8.1

PG-PA-MW-15D

ANALYTE	RES
SVOC	
Bis(2-ethylhexyl)phthalate:	20 B

PG-GW-7

ANALYTE	RES
METALS	
ARSENIC:	110

PG-PA-MW-7

ANALYTE	RES
VOC	
Vinyl Chloride:	110

PG-TMW-01

ANALYTE	RES
SVOC	
Bis(2-ethylhexyl)phthalate:	9.2

100 0 100 200
SCALE IN FEET

bis(2-eth...)
not here

NYSDEC GROUNDWATER CLEANUP STANDARDS AND CLEANUP GUIDANCE VALUES

ANALYTE	RCS (ug/l)	RCG (ug/l)
VOCs		
Ethylbenzene:	5	NG
M&P Xylenes:	5&5	NG
SVOCs		
Benzo(a)anthracene:	NS	0.002
1,2-Benzphenanthracene:	NS	0.002
1,2-Diphenylhydrazine:	NS	NG
Phenol:	1	NG
METALS		
Arsenic:	25	NG
Cadmium:	5	NG

NS - NO STANDARD
NG - NO GUIDANCE VALUE

NOTES:
1. RESULTS ARE IN ug/L
2. THIS MAP PRESENTS VOCs, SVOCs, AND METALS AT CONCENTRATIONS ABOVE NYSDEC RECOMENDED GROUNDWATER CLEANUP STANDARDS AND GUIDANCE VALUES.

LEGEND

▨	UTILITY EASEMENT
┼─┼	RAILROAD TRACKS
▬	SITE BOUNDARY
PG-PA-MW-5 ⌖	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION
PG-WOOD-3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION
PG-RS-1 ⌖	PRE-EXISTING P&G MONITORING WELL LOCATION
PG-SB-2 ■	PRE-EXISTING P&G SOIL BORING LOCATION
ANALYTE	INDICATES COMPOUND FOR WHICH LABORATORY ANALYSIS WAS CONDUCTED
RES	CONTAMINANT CONCENTRATION IN ug/L
DEPTH	DEPTH IN FEET BELOW GROUND SURFACE

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(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

SITE 2A/2B DISTRIBUTION OF METALS, VOCs, AND SVOCs IN GROUNDWATER, SITE INVESTIGATION

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Drawing Number FIGURE 16

Table 6A
Groundwater Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT Port Ivory Facility

Location **Sample Date** **Concentration**	**Recommended Groundwater Cleanup Standard UG/L**	**Recommended Groundwater Cleanup Criteria UG/L**	**PG-GW-10** 11/24/2000 UG/L	**PG-GW-7** 11/24/2000 UG/L	**PG-MW-3** 11/28/2000 UG/L	**PG-PA-MW-7** 11/27/2000 UG/L	**PG-PA-MW-7D** 11/30/2000 UG/L	**PG-PA-MW-10D** 11/30/2000 UG/L
1,1,1-TRICHLOROETHANE	5	NG	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U
1,1,2,2-TETRACHLOROETHANE	5	NG	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U
1,1,2-TRICHLOROETHANE	1	NG	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-DICHLOROETHANE	5	NG	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
1,1-DICHLOROETHYLENE	5	NG	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U
1,2-DICHLOROETHANE	0.6	NG	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U
1,2-DICHLORORPROPANE	1	NG	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U
2-CHLOROETHYL VINYL ETHER	NS	NG	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
ACROLEIN	5	NG	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
ACRYLONITRILE	5	NG	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
BENZENE	1	NG	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
BROMODICHLOROMETHANE	NS	50	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U
BROMOFORM	NS	50	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
BROMOMETHANE	5	NG	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
CARBON TETRACHLORIDE	5	NG	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
CHLOROBENZENE	5	NG	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
CHLOROETHANE	5	NG	0.52 U	0.52 U	0.52 U	0.52 U	0.52 U	0.52 U
CHLOROFORM	7	NG	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U
CHLOROMETHANE	5	NG	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
CIS-1,3-DICHLOROPROPENE	5	NG	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
DIBROMOCHLOROMETHANE	NS	50	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U
DICHLOROMETHANE	5	NG	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U	0.85 U
ETHYLBENZENE	5	NG	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
M&P-XYLENES	5&5	NG	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U
METHYLBENZENE	5	NG	3.2	0.24 U	0.24 U	0.24 U	3.3	0.24 U
O-XYLENE	5	NG	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U
TETRACHLOROETHYLENE	5	NG	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
TRAMS-1,2-DICHLOROETHYLENE	5	NG	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U
TRANS-1,3-DICHLOROPROPENE	NS	NG	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
TRICHLOROETHYLENE	5	NG	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U
VINYL CHLORIDE	2	NG	0.67 U	0.67 U	0.67 U	2.0	0.67 U	0.67 U

U Undetectable Levels

NS No Standard

NG No Guidance

Does not match Figure 16 which shows 10 ppb

Table 6A
Groundwater Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT Port Ivory Facility

Location **Sample Date** **Concentration**	**Recommended Groundwater Cleanup Standard UG/L**	**PG-PA-MW-15** 11/20/2000 UG/L	**PG-PA-MW-15D** 11/20/2000 UG/L	**PG-PA-MW-15D** 11/30/2000 UG/L	**PG-PZ-1** 11/24/2000 UG/L	**PG-TMW-01** 11/29/2000 UG/L
1,1,1-TRICHLOROETHANE	5	0.22 U	0.22 U	0.44 U	0.44 U	0.44 U
1,1,2,2-TETRACHLOROETHANE	5	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U
1,1,2-TRICHLOROETHANE	1	0.51 U	0.51 U	0.50 U	0.50 U	0.50 U
1,1-DICHLOROETHANE	5	0.54 U	0.54 U	0.35 U	0.35 U	0.35 U
1,1-DICHLOROETHYLENE	5	0.99 U	0.99 U	0.41 U	0.41 U	0.41 U
1,2-DICHLOROETHANE	0.6	0.22 U	0.22 U	0.44 U	0.44 U	0.44 U
1,2-DICHLORORPROPANE	1	0.73 U	0.73 U	0.44 U	0.44 U	0.44 U
2-CHLOROETHYL VINYL ETHER	NS	0.77 U	0.77 U	1.1 U	1.1 U	1.1 U
ACROLEIN	5	5.1 U	5.1 U	3.0 U	3.0 U	3.0 U
ACRYLONITRILE	5	2.0 U	2.0 U	6.6 U	6.6 U	6.6 U
BENZENE	1	0.15 U	0.15 U	0.32 U	0.32 U	0.32 U
BROMODICHLOROMETHANE	NS	0.27 U	0.27 U	0.30 U	0.30 U	0.30 U
BROMOFORM	NS	0.34 U	0.34 U	0.32 U	0.32 U	0.32 U
BROMOMETHANE	5	0.72 U	0.72 U	0.55 U	0.55 U	0.55 U
CARBON TETRACHLORIDE	5	0.36 U	0.36 U	0.23 U	0.23 U	0.23 U
CHLOROBENZENE	5	0.34 U	0.34 U	0.25 U	0.25 U	0.25 U
CHLOROETHANE	5	0.88 U	0.88 U	0.52 U	0.52 U	0.52 U
CHLOROFORM	7	0.27 U	0.27 U	0.45 U	0.45 U	0.45 U
CHLOROMETHANE	5	0.66 U	0.66 U	0.32 U	0.32 U	0.32 U
CIS-1,3-DICHLOROPROPENE	5	0.43 U	0.43 U	0.35 U	0.35 U	0.35 U
DIBROMOCHLOROMETHANE	NS	0.42 U	0.42 U	0.41 U	0.41 U	0.41 U
DICHLOROMETHANE	5	1.0 U	1.0 U	0.85 U	0.85 U	0.85 U
ETHYLBENZENE	5	0.57 U	0.57 U	0.15 U	0.15 U	0.15 U
M&P-XYLENES	5&5	0.90 U	0.90 U	0.81 U	0.81 U	0.81 U
METHYLBENZENE	5	1.5	1.6	0.24 U	0.24 U	0.24 U
O-XYLENE	5	0.55 U	0.55 U	0.36 U	0.36 U	0.36 U
TETRACHLOROETHYLENE	5	0.59 U	0.59 U	0.34 U	0.34 U	0.34 U
TRAMS-1,2-DICHLOROETHYLENE	5	0.94 U	0.94 U	0.46 U	0.46 U	0.46 U
TRANS-1,3-DICHLOROPROPENE	NS	0.21 U	0.21 U	0.24 U	0.24 U	0.24 U
TRICHLOROETHYLENE	5	0.64 U	0.64 U	0.37 U	0.37 U	0.37 U
VINYL CHLORIDE	2	0.69 U	0.69 U	0.67 U	0.67 U	0.67 U

U Undetectable Levels
NS No Standard
NG No Guidance

Table 6B
Groundwater Analytical Results
Semi-Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Concentration	Recommended Groundwater Cleanup Standard UG/L	Recommended Groundwater Cleanup Criteria UG/L	PG-GW-10 11/24/2000 UG/L	PG-GW-7 11/24/2000 UG/L	PG-MW-3 11/28/2000 UG/L	PG-PA-MW-7 11/27/2000 UG/L	PG-PA-MW-7D 11/30/2000 UG/L	PG-PA-MW-10D 11/30/2000 UG/L
1,2,4-TRICHLOROBENZENE	5	NG	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
1,2-BENZPHENANTHRACENE	NS	0.002	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U
1,2-DICHLOROBENZENE	3	NG	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
1,2-DIPHENYLHYDRAZINE	NS	NG	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
1,4-DICHLOROBENZENE	3	NG	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
2,4,6-TRICHLOROPHENOL	NS	NG	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
2,4-DICHLOROPHENOL	5	NG	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
2,4-DIMETHYLPHENOL	NS	50	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
2,4-DINITRPHENOL	NS	10	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U
2,4-DINITROTOLUENE	5	NG	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
2,6-DINITROTOLUENE	5	NG	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
2-CHLORONAPHTHALENE	NS	10	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
2-CHLOROPHENOL	NS	NG	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
2-NITROPHENOL	NS	NG	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
3,3'-DICHLOROBENZIDINE	5	NG	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U
4,6-DINITRO-O-CRESOL	NS	NG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
4-BROMOPHENYLPHENYL ETHER	NS	NG	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
4-CHLORO-3-METHYLPHENOL	NS	NG	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
4-CHLORORPHENLYPHENYL ETHER	NS	NG	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
4-NITROPHENOL	NS	NG	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
ACENAPHTHENE	NS	20	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
ACENAPHTHYLENE	NS	NG	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
ANTHRACENE	NS	50	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
BENZIDINE	5	NG	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
BENZO{A}ANTHRACENE	NS	0.002	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
BENZO{A}PYRENE	ND	NG	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
BENZO{B}FLOURANTHENE	NS	0.002	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U
BENZO{G,H,I}PERYLENE	NS	NG	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U
BENZO{K}FLOURANTHENE	NS	0.002	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
BENZYL BUTYL PHTHALATE	NS	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
BIS(2-CHLOROETHOXY)METHANE	5	NG	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
BIS(2-CHLOROETHYL)ETHER	1	NG	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
BIS(2-CHLOROISOPROPYL)ETHER	5	NG	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
BIS(2-ETHYLHEXYL)PHTHALATE	5	NG	1.5	2.2	4.2 B	2.1 B	2.5 B	3.0 B
DI-N-BUTYL PHTHALATE	50	NG	0.26 U	0.26 U	0.26 U	0.26 U	1.2	0.26 U
DI-N-OCTYL PHTHALATE	NS	50	0.80 U	0.80 U	1.1 B	0.80 U	1.4	1.7
DIBENZ[A,H]ANTHRACENE	NS	NG	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
DIETHYL PHTHALATE	NS	50	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
DIMETHYL PHTHALATE	NS	50	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
FLUORANTHENE	NS	50	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
FLUORENE	NS	50	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
HEXACHLORO-1,3-BUTADIENE	0.5	NG	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HEXACHLOROBENZENE	0.04	NG	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
HEXACHLOROCYCLOPENTADIENE	5	NG	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
HEXACHLOROETHANE	5	NG	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
INDENO[1,2,3-CD]PYRENE	NS	0.002	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
ISOPHORONE	NS	50	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
M-DICHLOROBENZENE	3	NG	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
N-NITROSO-DI-N-PROPYLAMINE	NS	NG	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
N-NITROSODIMETHYLAMINE	NS	NG	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
N-NITROSODIPHENYLAMINE	NS	50	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
NAPHTHALENE	NS	10	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U
NITROBENZENE	0.4	NG	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
PENTACHLOROPHENOL	1(Total Phenols)	NG	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
PHENANTHRENE	NS	50	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
PHENOL	1(Total Phenols)	NG	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
PYRENE	NS	50	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U

U Undetectable Levels
NS No Standard
NG No Guidance
* Principal organic contaminant standard for groundwater of 5 ug/L applies

Table 6B
Groundwater Analytical Results
Semi-Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location **Sample Date** **Concentration**	**Recommended Groundwater Cleanup Standard UG/L**	**Recommended Groundwater Cleanup Criteria UG/L**	**PG-PA-MW-15** 11/20/2000 UG/L	**PG-PA-MW-15D** 11/20/2000 UG/L	**PG-PA-MW-15D** 11/30/2000 UG/L	**PG-PZ-1** 11/24/2000 UG/L	**PG-TMW-01** 11/29/2000 UG/L
1,2,4-TRICHLOROBENZENE	5	NG	0.27 U	0.23 U	0.27 U	0.27 U	0.27 U
1,2-BENZPHENANTHRACENE	NS	0.002	0.30 U	0.37 U	0.30 U	0.30 U	0.30 U
1,2-DICHLOROBENZENE	3	NG	0.26 U	0.36 U	0.26 U	0.26 U	0.26 U
1,2-DIPHENYLHYDRAZINE	NS	NG	0.24 U	0.26 U	0.24 U	0.24 U	0.24 U
1,4-DICHLOROBENZENE	3	NG	0.20 U	0.38 U	0.20 U	0.20 U	0.20 U
2,4,6-TRICHLOROPHENOL	NS	NG	2.1 U	1.6 U	2.1 U	2.1 U	2.1 U
2,4-DICHLOROPHENOL	5	NG	2.0 U	2.6 U	2.0 U	2.0 U	2.0 U
2,4-DIMETHYLPHENOL	NS	50	1.4 U	1.5 U	1.4 U	1.4 U	1.4 U
2,4-DINITRPHENOL	NS	10	0.47 U	2.7 U	0.47 U	0.47 U	0.47 U
2,4-DINITROTOLUENE	5	NG	0.16 U	0.84 U	0.16 U	0.16 U	0.16 U
2,6-DINITROTOLUENE	5	NG	0.27 U	0.44 U	0.27 U	0.27 U	0.27 U
2-CHLORONAPHTHALENE	NS	10	0.22 U	0.29 U	0.22 U	0.22 U	0.22 U
2-CHLOROPHENOL	NS	NG	1.4 U	2.4 U	1.4 U	1.4 U	1.4 U
2-NITROPHENOL	NS	NG	2.1 U	1.9 U	2.1 U	2.1 U	2.1 U
3,3'-DICHLOROBENZIDINE	5	NG	2.7 U	3.4 U	2.7 U	2.7 U	2.7 U
4,6-DINITRO-O-CRESOL	NS	NG	1.2 U	1.8 U	1.2 U	1.2 U	1.2 U
4-BROMOPHENYLPHENYL ETHER	NS	NG	0.23 U	0.75 U	0.23 U	0.23 U	0.23 U
4-CHLORO-3-METHYLPHENOL	NS	NG	1.9 U	2.5 U	1.9 U	1.9 U	1.9 U
4-CHLORORPHENLYPHENYL ETHER	NS	NG	0.32 U	0.55 U	0.32 U	0.32 U	0.32 U
4-NITROPHENOL	NS	NG	1.6 U	2.2 U	1.6 U	1.6 U	1.6 U
ACENAPHTHENE	NS	20	0.31 U	0.40 U	0.31 U	0.31 U	1.1
ACENAPHTHYLENE	NS	NG	0.26 U	0.34 U	0.26 U	0.26 U	0.26 U
ANTHRACENE	NS	50	0.25 U	0.40 U	0.25 U	0.25 U	0.25 U
BENZIDINE	5	NG	3.4 U	3.0 U	3.4 U	3.4 U	3.4 U
BENZO{A}ANTHRACENE	NS	0.002	0.20 U	0.41 U	0.20 U	0.20 U	0.20 U
BENZO{A}PYRENE	ND	NG	0.24 U	0.47 U	0.24 U	0.24 U	0.24 U
BENZO{B}FLOURANTHENE	NS	0.002	0.49 U	0.46 U	0.49 U	0.49 U	0.49 U
BENZO{G,H,I}PERYLENE	NS	NG	0.36 U	0.45 U	0.36 U	0.36 U	0.36 U
BENZO{K}FLOURANTHENE	NS	0.002	0.50 U	0.67 U	0.50 U	0.50 U	0.50 U
BENZYL BUTYL PHTHALATE	NS	50	0.29 U	0.31 U	0.29 U	0.29 U	0.29 U
BIS(2-CHLOROETHOXY)METHANE	5	NG	0.21 U	0.31 U	0.21 U	0.21 U	0.21 U
BIS(2-CHLOROETHYL)ETHER	1	NG	0.15 U	0.58 U	0.15 U	0.15 U	0.15 U
BIS(2-CHLOROISOPROPYL)ETHER	5	NG	0.14 U	0.31 U	0.14 U	0.14 U	0.14 U
BIS(2-ETHYLHEXYL)PHTHALATE	5	NG	3.8 B	**20 B**	2.3 B	**8.1**	**9.2**
DI-N-BUTYL PHTHALATE	50	NG	0.26 U	0.30 U	0.26 U	0.26 U	0.26 U
DI-N-OCTYL PHTHALATE	NS	50	0.80 U	0.48 U	1.2	0.80 U	0.80 U
DIBENZ[A,H]ANTHRACENE	NS	NG	0.34 U	0.46 U	0.34 U	0.34 U	0.34 U
DIETHYL PHTHALATE	NS	50	0.31 U	0.32 U	0.31 U	0.31 U	0.31 U
DIMETHYL PHTHALATE	NS	50	0.24 U	0.41 U	0.24 U	0.24 U	0.24 U
FLUORANTHENE	NS	50	0.29 U	0.42 U	0.29 U	0.29 U	0.29 U
FLUORENE	NS	50	0.28 U	0.33 U	0.28 U	0.28 U	0.28 U
HEXACHLORO-1,3-BUTADIENE	0.5	NG	0.25 U	0.61 U	0.25 U	0.25 U	0.25 U
HEXACHLOROBENZENE	0.04	NG	0.28 U	0.64 U	0.28 U	0.28 U	0.28 U
HEXACHLOROCYCLOPENTADIENE	5	NG	2.5 U	3.0 U	2.5 U	2.5 U	2.5 U
HEXACHLOROETHANE	5	NG	0.26 U	0.74 U	0.26 U	0.26 U	0.26 U
INDENO[1,2,3-CD]PYRENE	NS	0.002	0.34 U	0.38 U	0.34 U	0.34 U	0.34 U
ISOPHORONE	NS	50	0.21 U	0.41 U	0.21 U	0.21 U	0.21 U
M-DICHLOROBENZENE	3	NG	0.27 U	0.48 U	0.27 U	0.27 U	0.27 U
N-NITROSO-DI-N-PROPYLAMINE	NS	NG	0.22 U	0.47 U	0.22 U	0.22 U	0.22 U
N-NITROSODIMETHYLAMINE	NS	NG	0.28 U	0.89 U	0.28 U	0.28 U	0.28 U
N-NITROSODIPHENYLAMINE	NS	50	0.32 U	0.44 U	0.32 U	0.32 U	0.32 U
NAPHTHALENE	NS	10	0.36 U	0.26 U	0.36 U	0.36 U	0.36 U
NITROBENZENE	0.4	NG	0.23 U	0.63 U	0.23 U	0.23 U	0.23 U
PENTACHLOROPHENOL	1(Total Phenols)	NG	2.0 U	1.4 U	2.0 U	2.0 U	2.0 U
PHENANTHRENE	NS	50	0.27 U	0.32 U	0.27 U	0.27 U	0.27 U
PHENOL	1(Total Phenols)	NG	1.2 U	1.4 U	1.2 U	1.2 U	1.2 U
PYRENE	NS	50	0.27 U	0.17 U	0.27 U	0.27 U	0.27 U

U Undetectable Levels
NS No Standard
NG No Guidance
* Principal organic contaminant standard for groundwater of 5 ug/L applies

Table 6C
Groundwater Analytical Results
Pesticides and PCBs
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Concentration	Recommended Groundwater Cleanup Standard UG/L	Recommended Groundwater Cleanup Criteria UG/L	PG-GW-10 11/24/2000 UG/L	PG-GW-7 11/24/2000 UG/L	PG-PA-MW-7 11/27/2000 UG/L	PG-MW-3 11/28/2000 UG/L	PG-PA-MW-7D 11/30/2000 UG/L	PG-PA-MW-10D 11/30/2000 UG/L
4,4'-DDD	0.3	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
4,4'-DDE	0.2	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
4,4'-DDT	0.2	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
ALDRIN	NS	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
ALPHA-BHC	NS	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
AROCLOR 1016	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1221	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1232	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1242	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1248	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1254	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1260	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BETA-BHC	0.04	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
CHLORDANE	0.05	NG	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
DELTA-BHC	0.04	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
DIELDRIN	0.004	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
ENDOSULFAN I	NS	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
ENDOSULFAN II	NS	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
ENDOSULFAN SULFATE	NS	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
ENDRIN	NS	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
ENDRIN ALDEHYDE	5	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
ENDRIN KETONE	5	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
GAMMA-BHC (LINDANE)	0.05	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
HEPTACHLOR	0.04	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
HEPTACHLOR EPOXIDE	0.03	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
METHOXYCHLOR	35	NG	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	0.02 U
TOXAPHENE	0.06	NG	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR 1016	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1221	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1232	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1242	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1248	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1254	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1260	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total PCBs	0.09	NG	ND	ND	ND	ND	ND	ND

U Undetectable Levels
NS No Standard
NG No Guidance
ND Not Detected
** Total PCBs

Table 6C
Groundwater Analytical Results
Pesticides and PCBs
Site 2A/2B HHMT - Port Ivory Facility

Location **Sample Date** **Concentration**	**Recommended Groundwater Cleanup Standard UG/L**	**Recommended Groundwater Cleanup Criteria UG/L**	**PG-PA-MW-15** 11/20/2000 UG/L	**PG-PA-MW-15D** 11/20/2000 UG/L	**PG-PA-MW-15D** 11/30/2000 UG/L	**PG-PZ-1** 11/24/2000 UG/L	**PG-TMW-01** 11/29/2000 UG/L
4,4'-DDD	0.3	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
4,4'-DDE	0.2	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
4,4'-DDT	0.2	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ALDRIN	NS	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ALPHA-BHC	NS	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
AROCLOR 1016	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1221	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1232	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1242	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1248	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1254	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1260	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BETA-BHC	0.04	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
CHLORDANE	0.05	NG	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
DELTA-BHC	0.04	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
DIELDRIN	0.004	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ENDOSULFAN I	NS	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ENDOSULFAN II	NS	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ENDOSULFAN SULFATE	NS	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ENDRIN	NS	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ENDRIN ALDEHYDE	5	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
ENDRIN KETONE	5	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
GAMMA-BHC (LINDANE)	0.05	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
HEPTACHLOR	0.04	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
HEPTACHLOR EPOXIDE	0.03	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
METHOXYCHLOR	35	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
TOXAPHENE	0.06	NG	1 U	1 U	1 U	1 U	1 U
AROCLOR 1016	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1221	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1232	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1242	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1248	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1254	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
AROCLOR 1260	0.09**	NG	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total PCBs	0.09	NG	ND	ND	ND	ND	ND

U Undetectable Levels
NS No Standard
NG No Guidance
ND Not Detected
** Total PCBs

Table 6D
Groundwater Analytical Results
Metals
Site 2A/2B HHMT - Port Ivory Facility

Location **Sample Date** **Concentration**	**Recommended Groundwater Cleanup Standard UG/L**	**Recommended Groundwater Cleanup Criteria UG/L**	**PG-GW-10** 11/24/2000 UG/L	**PG-GW-7** 11/24/2000 UG/L	**PG-MW-3** 11/28/2000 UG/L	**PG-PA-MW-7** 11/27/2000 UG/L	**PG-PA-MW-7D** 11/30/2000 UG/L	**PG-PA-MW-10D** 11/30/2000 UG/L
ALUMINUM (FUME OR DUST)	NS	NG	510	140	120	3100	58 U	440
ANTIMONY	3	NG	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
ARSENIC	25	NG	3.6 U	**110**	6.7	13	5.7	3.6 U
BARIUM	1000	NG	37	110	280	39	**1800**	120
BERYLLIUM	NS	3	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
CADMIUM	5	NG	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
CALCIUM METAL	NS	NG	48000	76000	130000	5700	230000	69000
CHROMIUM	50	NG	16 U	16 U	16 U	16 U	16 U	16 U
COBALT	NS	NG	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U
COPPER	200	NG	20 U	20 U	20 U	20 U	20 U	20 U
IRON	300***	NG	**610*****	**14000*****	**3700*****	**5300*****	**3500*****	**12000*****
LEAD	25	NG	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
MAGNESIUM	NS	35000	8400	7600	**180000**	1900	**36000**	21000
MANGANESE	300***	NG	**16*****	**420*****	**170*****	**220*****	**1300*****	**570*****
NICKEL	100	NG	15 U	15 U	57	15 U	15 U	15 U
POTASSIUM	NS	NG	2600	10000	7500	4100	2900	4600
SELENIUM	10	NG	20 U	20 U	20 U	20 U	20 U	20 U
SILVER	50	NG	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SODIUM	20000	NG	**440000**	**38000**	**1700000**	**220000**	**240000**	**450000**
THALLIUM	NS	0.5	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
VANADIUM	NS	NG	4.5	4.3 U	8.8	9.2	7.4	8.9
ZINC	NS	2000	20 U	20 U	20 U	20 U	20 U	20 U
MERCURY	0.7	NG	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U

U Undetectable Levels
NS No Standard
NG No Guidance
*** Total for Iron and Maganese is > 500

Table 6D
Groundwater Analytical Results
Metals
Site 2A/2B HHMT - Port Ivory Facility

Location **Sample Date** **Concentration**	**Recommended Groundwater Cleanup Standard UG/L**	**Recommended Groundwater Cleanup Criteria UG/L**	**PG-PA-MW-15** 11/20/2000 UG/L	**PG-PA-MW-15D** 11/20/2000 UG/L	**PG-PA-MW-15D** 11/30/2000 UG/L	**PG-PZ-1** 11/24/2000 UG/L	**PG-TMW-01** 11/29/2000 UG/L
ALUMINUM (FUME OR DUST)	NS	NG	NA	58 U	58 U	1300	1600
ANTIMONY	3	NG	NA	3.3 U	3.3 U	3.3 U	3.3 U
ARSENIC	25	NG	NA	3.6 U	3.6 U	100	3.6 U
BARIUM	1000	NG	NA	63	240	30	39
BERYLLIUM	NS	3	NA	2.5 U	2.5 U	2.5 U	2.5 U
CADMIUM	5	NG	NA	1.4 U	1.4 U	1.4 U	1.4 U
CALCIUM METAL	NS	NG	NA	360000	330000	6200	36000
CHROMIUM	50	NG	NA	16 U	16 U	16 U	22
COBALT	NS	NG	NA	4.6 U	4.6 U	4.6 U	6.3
COPPER	200	NG	NA	20 U	20 U	20 U	20 U
IRON	300***	NG	NA	2200***	330***	21000***	3100***
LEAD	25	NG	NA	7.3	3.4 U	11	3.4 U
MAGNESIUM	NS	35000	NA	56000	49000	1800	8600
MANGANESE	300***	NG	NA	1500***	1200***	420***	2400***
NICKEL	100	NG	NA	15 U	25	15 U	28
POTASSIUM	NS	NG	NA	2600	2700	2400	6300
SELENIUM	10	NG	NA	20 U	20 U	20 U	20 U
SILVER	50	NG	NA	5.2 U	5.2 U	5.2 U	5.2 U
SODIUM	20000	NG	24000	78000	65000	240000	22000
THALLIUM	NS	0.5	NA	3.1 U	3.1 U	3.1 U	3.1 U
VANADIUM	NS	NG	NA	7	7.2	37	47
ZINC	NS	2000	NA	20 U	20 U	33	40
MERCURY	0.7	NG	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U

U Undetectable Levels
NS No Standard
NG No Guidance
*** Total for Iron and Maganese is > 500

Tab[illegible] E

Groundwater Analytical Results

TPHC, Oil and Grease, pH, Cyanide and Total Phenolics

Site 2A/2B HHMT - Port Ivory Facility

Location **Sample Date** **Concentration**		**Recommended Groundwater Cleanup Standard**	**Recommended Groundwater Cleanup Criteria**	**PG-GW-10** 11/24/2000	**PG-GW-7** 11/24/2000	**PG-MW-3** 11/28/2000	**PG-PA-MW-7** 11/27/2000	**PG-PA-MW-7D** 11/30/2000	**PG-PA-MW-10D** 11/30/2000
PETROLEUM HYDROCARBONS	MG/L	NS	NG	1.0 U	1.1 U	1.0 U	1.1 U	1.0 U	1.0 U
OIL & GREASE	MG/L	NS	NG	7.9	12	25	9.8	18	22
CYANIDE	MG/L	0.2	NG	0.01 U	0.01 U	0.027	0.033	0.01 U	0.074
*pH	pH units	NS	NG	7.72	6.6	6.91	7.42	7.31	6.76
TOTAL PHENOLICS	MG/L	0.001	NG	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U

U Undetectable Levels

NS No Standard

NG No Guidance

Note: pH listed is the pH recorded in the field

Tab E
Groundwater Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location **Sample Date** **Concentration**		**Recommended Groundwater Cleanup Standard**	**Recommended Groundwater Cleanup Criteria**	**PG-PA-MW-15** 11/20/2000	**PG-PA-MW-15D** 11/20/2000	**PG-PA-MW-15D** 11/30/2000	**PG-PZ-1** 11/24/2000	**PG-TMW-01** 11/29/2000
PETROLEUM HYDROCARBONS	MG/L	NS	NG	1.0 U	1.1 U	1.1 U	1.1 U	1.0 U
OIL & GREASE	MG/L	NS	NG	1.1 U	1.1 U	25	19	13
CYANIDE	MG/L	0.2	NG	0.01 U	0.01 U	0.01 U	0.01 U	0.01
*pH	pH units	NS	NG	6.59	7	7.4	7.02	7.12
TOTAL PHENOLICS	MG/L	0.001	NG	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U

U Undetectable Levels

NS No Standard

NG No Guidance

Note: pH listed is the pH recorded in the field

6.4.3 Polychlorinated Biphenyls

PCBs were not detected in the groundwater samples from Site 2A/2B. It should be noted that all of the method detection limits for PCBs were above the NYSDEC groundwater SVGs. Please refer to Table 6C for a summary of PCB results.

6.4.4 Pesticides

None

No pesticides were detected in groundwater samples collected from Site 2A and 2B. Please refer to Table 6C for a summary of pesticides results.

6.4.5 Metals

A number of TAL metals were detected in one or more groundwater samples collected as part of the groundwater investigation of Site 2A/2B. However, only six TAL metals (arsenic, barium, magnesiun, iron, manganese, and sodium) were detected in one or more groundwater samples at concentrations in excess of corresponding NYSDEC groundwater SVGs. Iron and sodium were detected in excess of NYSDEC groundwater SVGs in several groundwater samples collected from wells located throughout Site 1. Magnesium and manganese and sodium were detected in excess of NYSDEC groundwater SVGs in several groundwater samples collected from wells located throughout Site 2A/2B. Arsenic was detected in two samples, PG-PZ-1 and PG-GW-7 at concentrations of 100 ug/l and 110 ug/l respectively; both wells are located on Site 2A. Comparatively, barium was detected in excess of NYSDEC groundwater SVGs in only a single sample (PG-PA-MW-7D) at a concentration of 1,800 ug/L. Please refer to Table 6D and Figure 16, for a summary of metals results.

6.4.6 Cyanide and Total Phenolics

Cyanide was detected in four of the groundwater samples collected from wells at Site 2A/2B. All concentrations were below the NYSDEC SVG for cyanide. Please refer to Table 6E, for a summary of cyanide results.

Total phenolics were not detected in any of the groundwater samples collected from Site 2A/2B. Please refer to Table 6E, for a summary of total phenolic results.

6.4.7 Petroleum Hydrocarbons/Oil and Grease

TPHC was not detected in the groundwater samples from Site 2A/2B. In contrast, O/G was detected in six of eleven groundwater samples. The detectable ranges of O/G ranged from 7.9 mg/L to 25 mg/L in samples PG-GW-10 and PG-MW-3, respectively. Please refer to Table 6E, for a summary of TPHC and O/G results.

Free phase product was observed in two wells, GW-14 and OP-1, from Site 2A. No free phase product was observed in wells situated at Site 2B. Product thickness was noted as a sheen in both wells. Regardless, samples of product were submitted for GC fingerprinting analysis, however, sufficient product could not be collected to perform the required analyses.

6.4.8 pH

The pH was recorded for groundwater at all locations as part of field sampling. The field pH values have been included in Table 6E for reference purposes. Please note, the value included on Table 6E reflects the pH recorded just prior to sampling. The pH values recorded in conjunction with the groundwater sampling from Site 2A/2B ranged from 6.59 to 7.72. The field recorded pH values are included on groundwater sampling logs provided in Appendix C.

7.0 SI - DISCUSSIONS/CONCLUSIONS

The investigative efforts described herein were undertaken to confirm current site conditions as well as to evaluate previously identified AOCs at this site. Overall, the field component of the SI confirmed the presence of a variety of fill materials and identified several potential "oil" impacted areas including potential UST ~~Areas.~~ Analytical data has revealed the presence of contaminants at concentrations in excess of current NYSDEC regulatory guidance criteria in samples from soil and groundwater. However, the data generally indicates that site issues are related to petroleum and non-petroleum oils, pH and to some degree, metals. To a far lesser extent, VOCs and SVOCs were noted to be present at concentrations above NYSDEC guidance criteria in soil and groundwater. Generally analytical results have shown that former site usage did not substantially impact groundwater and that groundwater quality is typical to that of urban areas. It should be noted that the investigation described herein did not include

V, low

V, low

a geo-technical evaluation. As such, it does not identify or address any issues associated with the physical elements of the fill material including issues associated with future construction activities.

7.1 Soil

Volatile Organic Compounds

Analytical results identified the presence of only three VOCs at concentrations in excess of NYSDEC guidance criteria for soil in the 86 soil samples collected from Site 2A/2B including soil samples collected from the four potential UST areas. Specifically, trans-1,3-dichloropropene was detected at a concentration of 0.43 mg/kg from sample PG-B-4 (5-6 feet); dichloromethane was detected at a concentration of 0.17 mg/kg from sample PG-STAIN-03; and benzene was detected at a concentration of 0.32 mg/kg from sample PG-MW-10D.

Given the low levels or non-detectable levels of VOC compounds in soil and the proposed future site usage, no further action was deemed warranted with regard to this class of contaminants. However, additional actions were proposed to further evaluate the presence of benzene at the PG-MW-10D location at Site 2B. Please refer to Section 8.2 for a discussion of proposed RI actions at the PG-MW-10D location.

Semi-Volatile Organic Compounds

Analytical results indicated the presence of several SVOCs at concentrations in excess of NYSDEC guidance criteria in a number soil samples collected from Site 2A/2B. Generally, these soil results reveal that the SVOCs present in soil at the site consist predominantly of PAH compounds at concentrations only slightly above NYSDEC guidance criteria. In one instance, sample PG-STAIN-03 (1.7-2.5 feet), individual PAH compounds were detected at concentrations above in excess of the NYSDEC guidance of 50 mg/kg for individual SVOCs; the total SVOC concentration for this sample was above 500 mg/kg. However, this sample was collected from a stained area and analytical results from a sample collected at a slightly deeper interval (2.5-3.5 feet) revealed significantly lower concentrations of PAH compounds.

Except as outlined above, the relatively low concentrations of PAH compounds detected in soil samples is not unexpected given that fill material was emplaced at Site 2A/2B in conjunction with site development and that Site 2A/2B, as well as the remainder of the site, has been utilized in an industrial capacity for approximately 100 years. As discussed in Section 6.4.2, no PAH compounds were detected above

NYSDEC guidance criteria in groundwater samples. Given the low levels of PAH compounds in soil, lack of adverse impacts to groundwater and the proposed future site usage, no further action is proposed with regard to this class of contaminants in soil. However, the PG-STAIN-03 location will be addressed in conjunction with demolition of Building 20 and overall site development. No delineation sampling was deemed warranted at the PG-STAIN-03 location based on other analytical data from this area, including deeper samples collected from the PG-STAIN-03 location and samples collected from an adjacent location (PG-STAIN-3B) and visual signs of staining.

Metals

Analytical data revealed the presence of a variety of metals at a wide range of concentrations including exceedances of NYSDEC guidance criteria in soil samples collected from Site 2A/2B. The presence of metals in soil at this site was not unexpected given that indigenous soils may contain concentrations of metals species at levels near or above regulatory criteria. The number and wide range of the concentrations of detected metals similarly was anticipated as a variety of fill materials were placed at Site 2A/2B as well as other areas of the site in conjunction with site development.

A review of the spatial distribution of the analytical results revealed two notable conditions with regard to the metals at Site 2A/2B. First, analytical data from the soil component of this SI has revealed the presence of elevated concentrations of arsenic at locations throughout Site 2A/2B as well as the remainder of the site. However, this contaminant seems to occur at higher than "site average" concentrations in many of the soil samples collected from locations adjacent to current and former railroad tracks. The presence of this contaminant was also noted, at a reduced frequency and at lower concentrations, in samples from locations not proximate to railroad tracks and sidings. Given the large portion of Site 2A/2B, which is currently occupied or which was historically occupied by railroad tracks and sidings, it is likely that the presence of arsenic at many locations may be attributable, in part, to railroad fill, bedding materials (cinders and clunkers) and railroad tie chemical preservatives. Therefore, the presence of this metal is considered ubiquitous to Site 2A/2B site based upon the connection of arsenic and railroad materials. Further, the anticipated usage of Site 2A/2B consists of an intermodal facility, which will include a rail system. Although arsenic was detected in Site 2A/2B groundwater, only 2 of 11 samples (from 10 well locations) exhibited a concentration in excess of NYSDEC guidance criteria. The presence of this contaminant in groundwater may reflect the urban nature of the site area rather than an impact from site activities. Accordingly, no further action was proposed with regard to arsenic in soil.

Second, fewer metals appear to be present in the by-product (diatomaceous earth) fill material present at the site as compared to other fill/soil. Generally, the by-product fill material includes aluminum, barium, calcium, iron, magnesium and sodium and to a lesser extent, manganese and potassium. This assertion does not appear to be sustained at locations where the by-product fill is intermixed or located in close proximity to soil fill or cinder fill or in samples of the by-product fill collected from the surficial interval. Analytical results revealed concentrations of aluminum, iron, sodium, and manganese above NYSDEC guidance criteria in samples from numerous site wells, including wells located at other areas of the site. Further discussion of fill related issues are provided later in this section. With regard to Site 2A/2B, the by-product fill appears to be limited to certain portions of Site 2A. The soil borings installed as Site 2B did not reveal the presence of by-product fill material. In addition, the presence of metals in soil does not appear to have adversely impacted groundwater at Site 2A/2B.

Therefore, based on future site development, no further actions were proposed with regard to metals in soil. The Port Authority is considering various development options and strategies relative to the presence of fill material. Thus, the need for additional review of environmental quality of metals in soil related to fill materials will be reviewed as part of development planning and evaluation.

pH

Investigative efforts at the site have revealed that pH in soil at Site 2A/2B ranges from 3.8 to 12, with the majority of values falling between 7.0 and 8.5. Figure 15 presents pH values at the high and low end of the recorded values: readings presented on Figure 15 are those noted to equal or exceed 10 or those noted to equal or fall below 5. The geospatial presentation of the high and low recorded pH values reveals that the higher pH values, defined as values greater than or equal to 10, appear to be most frequently recorded in samples collected from locations situated at the northern/northwestern portion of Site 2A. In addition, a localized area of lower pH, defined as values less than or equal to 5, was identified in the area of Building 20. Based on visual review of soil borings from the SI, the area noted to exhibit higher pH concentrations corresponds with the presence of by-product fill material. Issues regarding higher pH at Site 2A/2B appear to be associated with fill material. Fill material will be addressed in conjunction with overall site redevelopment. Issues associated with lower pH may appear to be localized to the Building 20 area and to be associated with surficial soil. The surficial soil at Building 20 will be addressed in conjunction with building demolition and site redevelopment.

Potential Oil Impacted Areas (TPHC/Oil & Grease)

Visual observations and the results of laboratory analyses identified several potential "oil" impacted areas at Site 2A/2B. These areas included: several areas observed to include black staining and a distinct petroleum odor and four areas exhibiting concentrations of TPHC in excess of 10,000 mg/kg. It should be noted that the analytical results for O/G and TPHC suggest that these areas may, in some instances, be impacted by non-petroleum materials. Free product was noted on the groundwater surface in two wells at Site 2A, OP-1 and GW-14. Black staining was noted at several site locations including a few at Site 2A/2B. Taken in concert with analytical results, it appeared that "oil" impacts might be present at the following locations: Eastern Portion of the Area B and Area A including OP-1, UST7 Area, and GW-14 Area. Based on field observations and analytical results, additional actions to evaluate potential "oil" issues for soil were proposed for the following areas: Eastern Portion of the Area B and Area A including OP-1, UST7 Area, and GW-14 Area. Please refer to Section 8.2 for proposed actions.

In many instances, the presence of black staining was noted at locations, which also were characterized by cinder-type fill material. To the extent possible, the list of potential oil-impacted areas provided above reflects "oil" issues which are not attributable to the presence of trace cinders in fill material. The presence of the cinder fill material at the site is described, along with other fill material, as a separate issue later in this section.

SI efforts did not identify "oil" impacted areas at potential UST areas UST1, UST3 or UST4. However, soil borings installed at the UST7 revealed the presence of TPHC in excess of 10,000 mg/kg as well as visual signs of potential petroleum impacts. In addition, the SI revealed the presence of petroleum-related contaminants at PG-STAIN-03 which is situated in the vicinity of UST1. Regardless of the detection of contaminants through the SI, additional actions were proposed for each potential UST Area to verify that no tanks or impacted soil remain at these areas given inconclusive results from the GPR/EM survey and difficulties encountered during soil boring installation activities. Please refer to Section 8 for a discussion of proposed investigative efforts for oil-impacted areas as well as the potential UST Areas.

7.2 Groundwater

Volatile Organic Compounds

Analytical results did not identify the presence of any VOCs above the NYSDEC SVGs in samples collected from Site 2A/2B. Therefore, no further action was proposed with regard to VOCs in groundwater. However, the Port Authority proposed to re-evaluate this no further action proposal upon completion of the actions proposed to evaluate the presence of "oil" areas in soil. Please refer to Section 8 for a description of proposed RI actions.

X

Semi-Volatile Organic Compounds

Analytical results indicate the presence of only one SVOC, bis(2-ethylhexyl)phthalate, at a concentration in excess of NYSDEC guidance criteria in samples from two monitoring wells, PG-PZ-1, and PG-TMW-01. Bis(2-ethylhexyl)phthalate is a common laboratory contaminant and is unlikely to be an issue with regard to this site. As such, no further action was proposed with regard to SVOCs in groundwater at Site 2A/2B.

Metals

Analytical data revealed the presence of only six TAL metals (arsenic, barium, manganese, iron and sodium) at concentrations in excess of NYSDEC guidance criteria in groundwater samples. Four of these metals (barium, manganese, iron and sodium) are generally regarded as secondary contaminants with regard to water quality and are more likely to be related to regional groundwater conditions. Arsenic was only detected at an elevated concentration in two samples and the presence of this contaminant is not unexpected given the urban nature of Site 2A/2B, the HHMT-Port Ivory Facility as well as the site area. Therefore, no further action was proposed with regard to metals in groundwater at Site 2A/2B.

pH

Investigative efforts at the site have revealed that pH in groundwater ranges from 6.59 to 7.72. Therefore, it does not appear that fringe pH levels recorded in soil samples at Site 2A/2B have had a deleterious impact on site groundwater. Further, as presented in the Site 1 Report, the pH recorded for surface water samples collected from Bridge Creek, situated downgradient of fill-containing areas, revealed levels of pH within the normal range for saline waters, 7.5 to 8.2. Given that groundwater is not utilized for potable purposes by the site or surrounding area and that the investigation did not identify any downgradient impacted receptors with regard to pH, no additional actions were proposed with regard to pH in soil or groundwater. However, it was proposed to address historic fill material in conjunction with overall site redevelopment. The Port Authority is considering various development options and strategies relative to the presence of fill material. Thus, it was proposed to consider the need for additional review of environmental quality of pH in groundwater as part of development planning and evaluation.

X

Potential Oil Impacted Areas (TPHC/Oil & Grease)

Visual observations and the results of laboratory analyses identified no potential "oil" issues with regard to groundwater at Site 2A/2B. TPHC was not detected in the groundwater samples from Site 2A/2B. In contrast, O/G was detected in nine of eleven groundwater samples. In addition, free phase product was observed in wells OP-1 and GW-14. In both instances, samples were collected but insufficient sample was available to perform fingerprint analyses. Additional RI actions were proposed with regard to both OP-1 and GW-14. Please refer to Section 8 for a discussion of proposed RI efforts. *

7.3 Bridge Creek - Surface Water/Sediment

Samples were obtained from both the surface water and sediment of Bridge Creek during the SI of the HHMT-Port Ivory Facility. As presented in the Site 1 Report, analytical results revealed the presence of several metals at concentrations in excess of NYSDEC guidance and screening criteria. In addition, information provided in P&G reports states that the frequency and extent of precipitates noted to be present in the stream corridor has decreased significantly over the past decade (late 1980s to late 1990s). P&G attributed the decrease, in part, to a delayed response to the installation of underground piping and containment system at an AST Area in 1984. Given the cessation of manufacturing activities at the site, the occurrence of precipitate in Bridge Creek is expected to remain stable or decrease in frequency. Further, it is anticipated that the Port Authority's development of the site will continue to enhance the quality of Bridge Creek. As such, no further investigation or delineation was proposed for Bridge Creek relative to Site 1. However, given the lack of information pertaining to surface water and sediment quality at the portion of Bridge Creek situated downgradient of Site 2A, additional sampling was proposed with respect to that portion of Bridge Creek proximate to Site 2A. Please refer to Section 8.3 for proposed sampling for Bridge Creek.

7.4 Historic Fill

Initial assessment/investigative efforts revealed that P&G placed a variety of fill material at the subject site to raise the topographic grade to facilitate site development. The investigation noted the presence of three general types of fill: (1) urban fill (including soil fill, vegetative debris, construction debris, wood, bricks, glass, concrete); (2) cinder fill (consisting primarily of ash, coal pieces, spoils from the furnace, ash-type materials with some slag); and (3) by-products from onsite production and manufacturing activities (calcium carbonate, spent diatomaceous earth, and spent carbonaceous filter material). The specific composition of the fill was noted to vary with location and frequently all three types of fill were noted to be present in varying concentrations at the same location.

As described previously in this report, urban fill is present throughout the site. Further, this type of fill material is considered ubiquitous with regard to waterfront sites throughout Staten Island as well as the larger region. Although trace cinders are likely to be present in urban fill, more significant cinder fill layers were noted in fill material present at some portions of Site 2A/2B. However, cinder fill was notably absent at the eastern portions of Site 2A. The third type of fill present at this site consists of a combination of process by-products such as calcium carbonate, spent diatomaceous earth, and spent carbonaceous filter material. Although this material was noted to be variable with regard to moisture content and coloration, it was readily distinguishable from other fill materials as well as underlying native materials at the site. Based on the site-wide fill investigation, the by-product fill material was predominantly located along the western border of Site 2A. No by-product fill was observed in soil borings installed at Site 2B. *

Analytical results revealed the presence of a variety of contaminants including TPHC, PAH compounds and metals at a wide range of concentrations in samples collected from or including the urban fill and the cinder fill. A review of contaminant profiles of samples from each of these fill materials did not identify contaminants which were more prevalent in either type of material. The contaminants detected in these media are generally regarded as "typical" urban fill (contaminants such as arsenic, beryllium, cadmium, lead and various petroleum hydrocarbons related to fossil fuel by-products including PAH compounds). In general, the potential exists for a wide variety of contaminants to be present in historic fill material and the contaminants present at a specific site are typically linked to the source or sources of the fill materials and the composition of same. For example, arsenic and petroleum related compounds are typically present in historic fill materials taken from old railyard sites and emplaced at sites throughout the New York Metro Region. * The types of contaminants detected in the samples from urban and cinder fill present at the site support this assertion. In contrast, the contaminant profile of samples collected from the by-product fill does distinguish this material from other site fill and native material. As previously stated in this report, the by-product fill appears to be characterized by an elevated pH value and the presence of metals such as aluminum, barium, calcium, iron, magnesium and sodium and to a lesser extent, manganese and potassium rather than typical fill metals (lead, arsenic, nickel, etc.). The by-product fill material is not characterized by the presence of VOCs, SVOCs, pesticides, PCBs, TPHC or O/G, although these types of contaminants were detected at locations where the by-product fill is intermixed or located in close proximity to soil fill or cinder fill or in samples of the by-product fill collected from the surficial interval. Based on the investigation, no additional actions are proposed with regard to the presence of fill material at Site 2A/2B. However, fill material will be identified, as appropriate, during the remedial investigation proposed to evaluate potential petroleum/oil impacted areas. As previously stated, the Port Authority will address fill material, as necessary, in conjunction with the redevelopment of this site. The Port Authority is considering various development options and strategies relative to the presence of fill material. Thus, the need for additional review of environmental quality of fill material will be reviewed as part of development planning and evaluation.

8.0 REMEDIAL INVESTIGATION WORKPLAN

Overall, the SI of Site 2A/2B described herein has revealed the presence of relatively few issues that require additional investigation/delineation and/or remediation. Further, the proposed redevelopment of the property will address many of the site contaminant issues in conjunction with construction activities. However, the SI revealed the presence of several potential petroleum-impacted areas, which require further evaluation/delineation prior redevelopment of Site 2A/2B. As such, the Port Authority developed a remedial investigation workplan (RIW) to further evaluate four potential UST areas (UST1, UST3, UST4 and UST7) as well as six other areas within Site 2A/2B, which exhibited indications of potential petroleum impacts. The specific actions proposed to further evaluate the potential UST areas and the potential petroleum-impacted areas are described in the following sections. Please note, the QA/QC and Health and Safety protocols for the RI were to be consistent with those set forth for the SI as identified in Section 4.3.

8.1 Proposed Actions - Potential UST Areas

As described in Section 6.2, the geophysical survey was inconclusive due to interference with utilities and other site features. As such, the Port Authority proposed to install test pits at the potential UST Areas within Site 2 (UST1, UST3, UST4 and UST7) for the purpose of locating USTs and/or impacted soil, if present. Additional actions at these areas, such as sample collection and analyses, were to be based upon results of the proposed test pit effort. The locations of UST1, UST3, UST4 and UST7 are presented on Figure 17. In addition, soil borings installed at UST7 revealed the presence of potential petroleum impacts. Thus, RI efforts were proposed at the general UST7 Area for the purpose of confirming the presence/absence of USTs as well as at specific locations (UST7-1A and UST7-1B) to delineate previously observed petroleum impacts.

8.2 Proposed Actions - Potential Petroleum-Impacted Areas

As previously stated, visual observations and the results of laboratory analyses identified several areas on Site 2A/2B, which were impacted by petroleum or non-petroleum oil materials. These identified areas include the following: the location of two wells exhibiting a sheen on the groundwater surface (PG-GW-14 and PG-GW-10D); several areas observed to include black staining and a distinct petroleum odor; two locations with potential petroleum related VOC exceedances; and a few areas exhibiting concentrations of TPHC in excess of 10,000 mg/kg. Therefore, based on field screening and analytical results, it was proposed to delineate the extent of potential petroleum impacts at the following areas: Area OP-1, Area B-2, Area B-3, Area MW-10D and Area GW-14. As stated in Section 8.1, RI efforts also were proposed at soil boring locations at the UST7 Area. No delineation actions were proposed for PG-STAIN-3 given the proximity of other soil borings. Rather, it was proposed to address the "stained area" during building demolition activities. It should be noted that delineation actions were also proposed at the A-5 and FS-1B location. Although soil boring A-5 is located within Site 2A, the majority of the RI actions undertaken to address the A-5 location were situated within Site 1. Likewise with SI boring FS-1B, a majority of the RI actions undertaken to address the FS-1B were situated in Site 1. Thus, a discussion of RI activities for the A-5 and FS-1B Areas location are also provided in this report. The remaining delineation information for the A-5 and FS-1B location was presented in the previously submitted Site 1 Report. It is important to note that some or all of the potential petroleum or "oil" impacts which were observed are likely to be from non-petroleum materials such as vegetable or fish oils which were used or produced at the facility. However, for the purposes of the RI, the encountered materials will be referred to as petroleum-impacted materials or petroleum-impacted soil, as appropriate. It should also be noted that activities were performed at adjacent to location GW-1, located immediately south of Building 74. These activities were performed to further review conditions at Site 3. However, for completeness, a brief overview of information related to conditions encountered at those locations is provided herein. A more detailed discussion is provided in the Site 3 Report.

The RI for the above listed areas was to be accomplished through the installation and sampling of soil borings. Specifically, it was proposed to install and sample soil borings approximately 15 feet to the north, south, east and west of the SI soil borings, which exhibited evidence (through field screening or analytical results) of petroleum impacts. All samples were to be field screened for indications of petroleum-related contamination. If evidence of petroleum-related contamination was observed, another boring was to be installed at a distance of approximately 15 feet from the previous boring. The RIW established a sequential program of soil boring installation/sampling and field screening until the effort did not identify the indications of petroleum-related impacts. The efforts were to be confirmed through laboratory analysis of representative endpoint samples. Laboratory analysis was to include PAH compounds and VOCs. The general locations of the proposed RI activities (Area PG-MW-10D, Area B-2, Area B-3, Area GW-1, Area GW-14, Area OP-1, Area FS-1B, and Area A-5) are presented on Figure 17.

in 2B

highlighted on Fig 17

8.3 Proposed Actions - Bridge Creek

P&G had identified the presence of a white precipitate materials along the banks of Bridge Creek. Although P&G reports did not identify a significant environmental issue with regard to the presence of the precipitate, sampling was performed as part of the HHMT-Port Ivory Facility SI to evaluate current (year 2000) conditions relative to this issue. The results of the SI undertaken at locations adjacent to Site 1 were presented in the Site 1 Report. As no samples were collected downgradient of Site 2A, it was proposed to collect surface water and sediment samples from Bridge Creek as part of the RI activities for Site 2A/2B. Overall, it was proposed to collect four sediment and four surface water samples from representative locations along Bridge Creek. Samples were to be analyzed for TCL VOCs, TCL SVOCs, TAL Metals, TPHC, O/G, cyanide, total phenolics and pH.

9.0 RI - FIELD INVESTIGATION

The objective of the RI was to determine the extent of potential petroleum impacts in soil at Site 2A/B. No additional groundwater investigation was proposed as part of the RI for Site 2A/2B. The RI was developed and implemented to coordinate with proposed redevelopment of the site for use as an intermodal facility. RI activities were performed from May through July 2002 and additional UST removal efforts were performed at UST7 in the Fall of 2003. The UST removal effort is described in Section 10, the UST removal is not considered a remedial action since it was previously noted as an area requiring further evaluation. In addition, subsurface conditions throughout Site 2A were reviewed as part of ongoing building demolition (including removal of building footings and concrete pads) during 2002 and 2003. These efforts served to address the former potential UST Areas (UST1, UST3, UST4 and UST7) at Site 2A; no potential UST Areas were identified at Site 2B. A summary of the soil borings and samples are presented in Table 7. The soil boring locations are presented on Figure 16. The RI (Site 2A/2B) included the following areas: Area A-5, Area B-2, Area B-3, Area OP-1, Area GW-14, Area PG-MW-10D, the eastern delineation of location A-5, the eastern delineation of FS-1B and the southern

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Table 7
Summary of Remedial Investigation Sampling
Site 2A/2B: HHMT- Port Ivory Facility

Initial AOC	Location	Description of Issues	Description of Actions and Sampling	Sampling Methodology (Soil)
Area A West Tank Field (Southwest of Building 16)/Block 1400	**A-5**	Boring A-5 is located in Site 2A. The RI borings in the eastern direction are part of Site 2A. The north, south, and western RI borings are in Site 1 and were discussed in a previous report.	Three soil borings were installed around A-5 in Site 2A: A-5-E1, A-5-E2, and A-5-E3. Two soil samples were collected and submitted for laboratory analysis: A5E3-S2(2-4'), A5E5-S3(4-6').	VOC 8260; BN 8270
Potential UST Areas (UST 1, UST3, UST4, UST7)	**UST1, UST3, UST4 & UST7**	Sanborn Maps identified the potential presence of USTs at four areas at Site 2A. The SI identified potential petroleum impacts in a soil boring installed at the UST7 Area.	The four potential UST areas were reviewed as part of ongoing building demolition activities. No USTs or presence of impacted material was encountered during demolition efforts at UST1, UST3 and UST4. During the demolition/investigation of the area designated UST4, underground footings, trenches, piping, catch basins, and concrete manholes were encountered. Soil in this area appeared to be fill material and an odor resembling the household soap, "comet" was noted. No UST was discovered during excavation within the UST4 Area. During the breaking up of concrete pads and a concrete foundation west of Building #43, two USTs were identified. The two USTs measured approximately 26 feet in length and approximately 8 to 10 feet in diameter. The USTs were situated side-by-side in individual concrete vaults. Impacted soil directly surrounding the USTs was removed and stockpiled on site. The USTs were removed and the excavation was backfilled, with on-site soil.	VOC 8260; BN 8270

Table 7
Summary of Remedial Investigation Sampling
Site 2A/2B: HHMT- Port Ivory Facility

Initial AOC	Location	Description of Issues	Description of Actions and Sampling	Sampling Methodology (Soil)
Area B Former Raw Product and By-Product AST areas/Block 1400	**B-2, B-3**	During SI activities B-2 and B-3 exhibited indications of potential petroleum/non-petroleum substances. The majority of the soil borings installed around B-3 are located in Site 2A. However, the farthest western boring B-3-W2 lies in Site 1 and was previously discussed in a report addressing Site 1.	Twenty-two soil borings were installed surrounding B-2: B-2-S8,B-2-S7, B-2-S6, B-2-S5, B-2-S4, B-2-S3, B-2-S2, B-2-S1, B-2-E1, B-2-E2, B-2-E3, B-2-E4, B-2-W1, B-2-W2, B-2-W3, B-2-W4, B-2-N1, B-2-N2, B-2-N3, B-2-N4, B-2-N5, and B-2-N6. Eight soil borings were installed surrounding B-3. Seven of the eight soil borings were located in Site 2A: B-3-S1, GW-14-S1/B-3-N1, B-3-W1, B-3-E1, B-3-E2, and B-3-E3. Five soil samples collected from the B-2 and B-3 areas in Site 2A were submitted for laboratory analysis: B2S8-S1 (0-2'), B2S8-S2(2-4'), B2S8-S3(4-6'), B2E4-S3(4-6'), B3E3-S3(5-5.5').	VOC 8260; BN 8270
Monitoring Wells	**GW-14** **OP-1**	Existing monitoring wells OP-1 and GW-14 were further investigated due to the presence of sheen on groundwater. A majority of the soil borings installed around GW-14 are located in Site 2A. However, the farthest western borings GW-14-W3 and GW-14-W4 lie in Site 1 and were discussed in the Site 1 Report.	Ten soil borings were installed around the center-boring GW-14. Two of the 10 are in Site 1. Eight borings were located in Site 2A: GW-14-E1,GW-14-E2, GW-14-E3, GW-14-W1, GW-14-W2, GW-14-N1, GW-14-N2,and GW-14-N3. Two soil samples were submitted for laboratory analysis: GW-14-E3-S3(5-5.5') and GW-14-N3(3.5-4'). Seven soil borings were installed around the center-point OP-1: OP-1-E1, OP-1-N1, OP-1-W1, OP-1-S1, OP-1-S2, OP-1-S3, and OP-1-S4. Full installation of soil borings OP-1-S3 and OP-1-S4 were impeded by the presence of reinforced concrete. Five soil samples were submitted for laboratory analyses: OP1E1-S3(4-6'), OP1E1-S2(2-4'), OP1N1-S1(4.5-5'), OP1S1-S3(4-6'), and OP1W1-S3(4-6').	VOC 8260; BN 8270

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Table 7
Summary of Remedial Investigation Sampling
Site 2A/2B: HHMT- Port Ivory Facility

Initial AOC	Location	Description of Issues	Description of Actions and Sampling	Sampling Methodology (Soil)
MW-10D	**MW-10D**	Monitoring well MW-10D was further investigated based on the detectable concentrations of benzene in one soil sample collected from this location.	Utilizing MW-10D as the center-point, soil boring soil borings were installed as previously stated in the above AOC. Note, the MW-10D location was referenced as "GW-10D" during the RI and therefore, the GW-10D prefix refers to soil boring/well locations surrounding MW-10D. Five soil borings were installed around the center-point MW-10D to evaluate soil conditions: GW-10D-N1, GW-10D-N2, GW-10D-N3, GW-10D-W1, AND GW-10D-W2. Three soil samples were submitted for laboratory analysis: GW10E1-S3 (4.5'), GW-10N3-S3(4-5'), and GW10W2-S3(4-6').	VOC 8260; BN 8270

Note: the "PG" prefix has been removed from the MW-10D designation.

delineation of issues at Site 3 (i.e., soil borings installed adjacent to the GW-1 location). The specific actions undertaken at each AOC are presented below.

9.1 RI Sampling Procedures/ Methodology

All soil boring installation and sampling activities were performed in accordance with the guidelines set forth in the Port Authority's *Field Standard Operating Procedures Manual* dated January 1995 and appropriate NYSDEC protocols. A detailed description of soil boring installation and sampling performed during the SI is provided in Section 5.3. As same procedures for soil boring installation and sampling were utilized during the RI, the information provided in this section is limited to those aspects particular to the RI. For general information pertaining to soil boring installation and sampling, please refer to Section 5.3. All field sampling activities were performed in accordance with the Port Authority's QA/QC and Health and Safety protocol's which are presented in the Port Authority *Field Standard Operating Procedures Manual* dated January 1995.

As proposed, initial delineation at each location consisted of the installation of soil borings approximately 15 feet to the north, south, east and west of the previous SI or target soil borings. Samples were collected from the soil borings and were screened continuously for indications of petroleum contamination utilizing visual, olfactory, and instrument methods. Field screening included documenting and recording the following, as appropriate and feasible: soil boring depth, date and time of installation and sampling, photo ionization readings (if applicable), presence of water, and soil strata description (color, grain size, etc.). In those instances when groundwater was encountered, field screening also included an assessment of the presence of a sheen or free product on the water table. If the sample was noted to exhibit indications of petroleum, another boring was constructed approximately 15 feet from the previous boring in the same direction. At some locations, it was necessary to utilize intervals greater then 15 feet. If field screening by visual, olfactory, or instrument methods did not reveal any indications of petroleum above background concentrations, the location was considered an endpoint for that target boring and soil samples were collected and submitted for laboratory analysis per the RIW. As stated above, soil samples were collected from the outermost borings (i.e., assumed delineation endpoints) to confirm the limits of the potential petroleum-impacted area. As feasible, three soil samples were collected from each endpoint boring in the following manner: one sample was collected from the 0 to 2 foot interval; one sample was collected from the soil/water table interface; and, one sample was collected from the interval corresponding to the midpoint depth, as measured from ground surface to soil boring depth. As described above, field screening was performed during the soil boring installation and sampling. The field screening did not reveal indications of contamination at non-specified intervals of the sampled boring locations. Based on analytical results from the SI and the objective of the RI, soil samples were submitted to a New York State certified laboratory (Hampton-Clarke/Veritech Laboratories) for NYSDEC VOCs including MTBE and TBA (8260) and PAH Compounds (8270). Soil boring and sample designations, sample depths and analytical parameters are presented in Table 7 and field observations are presented in Table 8.

9.1.1 Potential UST Areas

The RIW included the installation of test pits at the four potential UST Areas (UST1, 3, 4 and 7) at Site 2A. The purpose of the proposed test pits was to confirm that USTs did not exist at these locations. No potential UST areas had been identified at Site 2B. During 2002 and 2003, contractors retained by the Port Authority initiated building and site demolition activities at Site 2A. As part of those activities, the contractors removed concrete building footings and slabs, which allowed for visual review of the potential UST areas. No indications of USTs, other subsurface structures, or impacted soil was identified at either the UST1 or UST3 areas. Further, upon review of additional site mapping, it appears that the tank depicted on historical mapping at the UST1 Area may actually be located to the east of Building 20. As described earlier in this report, P&G removed an 8,000 gallon UST from the area east of Building 20. The tank removal was performed in accordance with NYSDEC procedures and with NYSDEC oversight, as appropriate. *

Investigative efforts at the UST4 Area revealed the presence of subsurface structures including concrete building footings/foundation elements, trenches, piping, catch basins, and concrete manholes. Soil in this area appeared to include limited quantities of by-product fill material. Field screening did not reveal any elevated readings on the PID. However, an odor similar to the household soap "Comet" was noted during the subsurface review. No USTs were discovered during excavation within the UST4 Area.

During the breaking up of concrete pads and a concrete foundation west of Building 43 and north of Buildings 34/37, two USTs were identified at the UST7 Area. Each UST measured approximately 26 feet in length and approximately 8 to 10 feet in diameter. The tanks were situated side-by-side in individual concrete vaults. Based on the presence of the USTs, the Port Authority implemented actions to remove the "discovered" tanks and limited visually impacted soil. Tank removal information is provided in Section 11.

Table 8
Summary of RI Field Observations
Site 2A/2B: HHMT - Port Ivory Facility

	Area of Concern	Soil Boring ID	Distance and Direction Reference	Date	Field Observations and PID Readings	Located on Map (Yes/No)	Laboratory Analysis (Yes/No)
1.	**FS-1 Area Block 1400**	PG-FS-1B-E1	15’E of FS-1B *located in Site 2A	6/3/02	0-2’ brn. Sdy gravel, t. slit; 2-4’some wd pale green sand, dk brn. m Sd., l Grv. Lit. brn-pale green grease 4-4.5’diatomaceous earth white gray Gw @ 4” bsg	Yes	No
2.	**FS-1 Area Block 1400**	PG-FS-1B-E2	30’E of FS-1B	6/3/02	0-1’ brn Grvly Sd, t. slt. 1-2’ dk brn, Grvly Sd, t. slt 2-4’ dk brn Grvly Sd, s. slt. Wd chips, slag [PID 5.4] 3.0’ tan yellow-pale green Sd/wd 4-5’moist mottled rust/brn/blk slt, diatomaceous earth Gw @ 4.5’ 5’ diatomaceous earth	Yes	No
3.	**FS-1 Area Block 1400**	PG-FS-1B-E3	45’E of FS-1B	6/3/02	0-1’ brn Grvly Sd, t. slt 1-2’ brn-blk Sdy Grv, slag 2-2.5’ brn-blk Sdy Grv, slag 2.5-4’ concrete, brk, Sdy Grv 4-5’ Concrete, brk, Sdy Grv 5-5.5’ concrete, brk, wd, Sdy Grv Gw@ 5.5’ bsg	Yes	Yes AB58799-00
4.	**OP-1 Area Block 1400**	PG-OP-1-E1	15’E of OP-1	6/17/02	0-1’ concrete, rebar 1-2’ concrete, rebar 2-4’ cndrs, Sd, Grv; no odors 4-4.5’ brn Sd 4.5-5.5’ brn cl Sd,slt 5.5-6’ dk brn Sd; no odors Gw @ 6.0’ bsg	Yes	Yes AB9795-6

Table 8
Summary of RI Field Observations
Site 2A/2B: HHMT - Port Ivory Facility

	Area of Concern	Soil Boring ID	Distance and Direction Reference	Date	Field Observations and PID Readings	Located on Map (Yes/No)	Laboratory Analysis (Yes/No)
5.	**OP-1 Area Block 1400**	PG-OP-1-N1	15' N of OP-1	6/13/02	0-0.25' Grv 0.25-3.0' concrete 3.0-5.0' cndrs, Grv, brk; no odors, no sheen Gw @ 5.0' bsg	Yes	Yes AB59584
6.	**OP-1 Area Block 1400**	PG-OP-1-S1	16' S of OP-1	6/13/02 6/25/02	(NOT COMPLETED REFUSAL) 0-4" concrete rebar 4"-3'concrete rebar 3-4.5' concrete 4.5-5' concrete rebar 5-6' tan m Sd 6-8' tan m Sd, blk f slt, c grv Gw @ 6.5' bsg	Yes	Yes AB60465
7.	**OP-1 Area Block 1400**	PG-OP-1-S2	37' S of OP-1	6/17/02 6/24/02	(NOT COMPLETED REFUSAL) (NOT COMPLETED REFUSAL)	Yes	No
8.	**OP-1 Area Block 1400**	PG-OP-1-S3	72' S of OP-1	6/17/02	0-1' Grv, s Sd 1-3.5' brn slt Sd, Grv 3.5-4.5'brn cl Sd; no odors 4.5-5.5' brn f Sd; no odors 5.5-5.75' brn f Sd, cndrs; slty stn, very faint odors Gw @ 5.5'	Yes	No
9.	**OP-1 Area Block 1400**	PG-OP-1-S4	45' S of OP-1	6/17/02 6/19/02	0-1' concrete OBSTRUCTION	Yes	No

Table 8
Summary of RI Field Observations
Site 2A/2B: HHMT - Port Ivory Facility

	Area of Concern	Soil Boring ID	Distance and Direction Reference	Date	Field Observations and PID Readings	Located on Map (Yes/No)	Laboratory Analysis (Yes/No)
10.	**OP-1 Area Block 1400**	PG-OP-1-W1	15' W of OP-1	6/17/02 6/25/02	OBSTRUCTION 0-8" concrete 8"-2' Grv. 1 ½" 2-4' blk f Sd.; 1 ½" Grv 4-5' brn blk f Sd; 1 ½" Grv; no sheen, no odors Gw @ 5' bsg	Yes	Yes AB60466
11.	**A-5 Area Block 1400**	PG-A-5-E1	15' E of A-5	5/29/02	0-1' concrete 1-2' blk slt Sd, Grv 2-5' blk slt Sd, Grv; odor, sheen 5-6' brn Sd 6-7' blk Sd Gw @ 5' bsg	Yes	No
12.	**A-5 Area Block 1400**	PG-A-5-E2	30' E of A-5	5/29/02	0-1' concrete pad 1-2' dk brn-blk Sd slt, cndrs, Grv 2-4' blk cndrs, Grv; sli odor 4-4.5' blk cndrs, Grv; odor 4.5-5.5' Brn-gry Sd , t. slt, blk viscous material; odor Gw @ 5.3' bsg	Yes	No
13.	**A-5 Area Block 1400**	PG-A-5-E3	45' E of A-5	5/29/02	0-0.5' Grv 0.5-2' concrete pad 2-3.5' concrete pad 3.5-4' blk Grv, cndrs, slag 4-5' blk Grv, cndrs, slag 5-6' brn-blk Sd; no odor no sheen Gw @ 5.7' bsg	Yes	Yes AB 58485-6 5/28/02

Table 8
Summary of RI Field Observations
Site 2A/2B: HHMT - Port Ivory Facility

	Area of Concern	Soil Boring ID	Distance and Direction Reference	Date	Field Observations and PID Readings	Located on Map (Yes/No)	Laboratory Analysis (Yes/No)
14.	**B-2 Area Block 1400**	PG-B-2-E1	15' E of B-2	5/31/02	0-0.3' Grv, orange Sd 0.3-2.5' concrete pad 2.5-4' blk slt Sd, cndrs, slag; odor 4-5' blk silt Sd, cndrs, slag; odor Gw @ 5' bsg	Yes	No
15.	**B-2 Area Block 1400**	PG-B-2-E2	30' E of B-2	5/31/02	0-0.4' Grv, slt Sd 0.4-2' concrete pad 2-3.6' blk cndrs, slag; odors 3.6-4' brn Sd; odor 4-5' brn Sd; odor Gw @ 5' bsg	Yes	No
16.	**B-2 Area Block 1400**	PG-B-2-E3	45' E of B-2	5/31/02	0-0.1' asphalt 0.1-0.3' Grv 0.3-1.3' RR tie 1.3-2' blk Grv, cndrs 2-2.4' blk Grv, cndrs 2.4-2.7' blk Sd slt 2.7-4' brn Sd slt 4-4.3' brn Sd slt 4.3-5' f-m Sd; odor Gw @ 5' bsg	Yes	No
17.	**B-2 Area Block 1400**	PG-B-2-E4	60' E of B-2	5/31/02	0-3.5' concrete bldg foundation 3.5-4' slt, s Grv 4-6' blk Sd, t Grv; no odor, no sheen Gw @ 5' bsg	Yes	Yes AB58797

Table 8
Summary of RI Field Observations
Site 2A/2B: HHMT - Port Ivory Facility

	Area of Concern	Soil Boring ID	Distance and Direction Reference	Date	Field Observations and PID Readings	Located on Map (Yes/No)	Laboratory Analysis (Yes/No)
18.	**B-2 Area Block 1400**	PG-B-2-N1	15' N of B-2	5/30/02	0-0.1 Grv 0.1-0.5' concrete pad 0.5-2' brn slt Sd, s blk Sd 2-4' blk slt Sd, cndrs, slag 4-5' blk slt Sd, s blk Sd Gw @ 5' bsg	Yes	No
19.	**B-2 Area Block 1400**	PG-B-2-N2	30' N of B-2	5/30/02	0-0.3' Grv 0.3-1' concrete pad 1-2' blk cndrs, s Grv 2-3' blk cndr, s Grv 3-3.2' concrete pad 3.2-4' blk cndrs, s Grv; odor, sheen on Gw Gw @ 4.2' bsg	Yes	No
20.	**B-2 Area Block 1400**	PG-B-2-N3	45' N of B-2	5/30/02	0-0.2' Grv 0.2-1 concrete pad 1-2' blk cndrs Grv 2-3' blk cndrs Grv 3-3.3' concrete pad 3.3-4' blk cndrs, s Grv; odor, sheen Gw @ 4' bsg	Yes	No
21.	**B-2 Area Block 1400**	PG-B-2-N4	60' N of B-2	5/30/02	0-0.2' Grv 0.2-2' concrete pad 2-3' concrete pad 3-4' brn blk cndrs, slag 4-5' brn Sd Gw @ 4' bsg	Yes	No

Table 8
Summary of RI Field Observations
Site 2A/2B: HHMT - Port Ivory Facility

	Area of Concern	Soil Boring ID	Distance and Direction Reference	Date	Field Observations and PID Readings	Located on Map (Yes/No)	Laboratory Analysis (Yes/No)
22.	**B-2 Area Block 1400**	PG-B-2-N5	75' N of B-2	5/30/02	0-0.1' Grv 0.1-3' concrete pad 3-4' blk cndrs, slag; sheen on Gw Gw @ 4' bsg	Yes	No
23.	**B-2 Area Block 1400**	PG-B-2-N6	90' N of B-2	5/30/02	0.0-0.1'Grv 0.1-2' concrete pad 2-4' blk cndrs, slag; sheen Gw @ 4' bsg	Yes	No
24.	**B-2 Area Block 1400**	PG-B-2-N7	105' N of B-2	5/31/02	0.0-0.1' Grv 0.1'- REFUSAL CONCRETE	Yes	No
25.	**B-2 Area Block 1400**	PG-B-2-N8	120' N of B-2	6/24/02	0-4" asphalts 4"-1' blk f Sd; Grv 1-2' brn blk f Sd 2-4' blk f Sd; slt, 1" Grv, brn cls; strng odors, sheen on soil Gw @ 4' bsg	Yes	No
26.	**B-2 Area Block 1400**	PG-B-2-S1	15' S of B-2	5/31/02	0-0.2' Grv 0.2-2' concrete pad 2-4' cndrs slag 4-6' cndrs, slag; odor Gw @ 5.7'	Yes	No
27.	**B-2 Area Block 1400**	PG-B-2-S2	30' S of B-2	5/31/02	0-0.2' Grv, slt Sd 0.2-2' concrete pad 2-3.7' blk slt 3.7-4' blk cndrs, slag 4-5' blk cndrs, slag; odor Gw @ 4.8' bsg	Yes	No

Table 8
Summary of RI Field Observations
Site 2A/2B: HHMT - Port Ivory Facility

	Area of Concern	Soil Boring ID	Distance and Direction Reference	Date	Field Observations and PID Readings	Located on Map (Yes/No)	Laboratory Analysis (Yes/No)
28.	**B-2 Area Block 1400**	PG-B-2-S3	45' S of B-2	5/31/02	0-0.2' Grv 0.2-2' concrete 2-3' concrete 3-4' cndrs, Grv 4-6' cndrs, Grv; odor Gw @ 4.8' bsg	Yes	No
29.	**B-2 Area Block 1400**	PG-B-2-S4	60' S of B-2	6/4/02	0-0.2' c Grv 0.2-0.7' concrete pad 0.7-2' blk Sd slt , cndrs, Grv 2-4' blk Sd slt, Grv, cndrs 4-5' blk Sd slt, Grv, cndrs; odor Gw @ 5' bsg	Yes	No
30.	**B-2 Area Block 1400**	PG-B-2-S5	75' S of B-2	6/4/02	0-0.2' c Grv 0.2-0.7' reinforced concrete pad 0.7-2' concrete pad 2-3' concrete pad 3-4' blk sd Slt, Grv, cndrs 4-5' blk sd Slt, Grv, cndrs; odor Gw @ 5' bsg	Yes	No
31.	**B-2 Area Block 1400**	PG-B-2-S6	90' S of B-2	6/4/02	0-0.2' c Grv 0.2-1' concrete pad 1-2' brn sd Slt, Grv 2-4' Slt, diatomaceous earth 4-5' Cndrs, slag; odor (0.3 PID) GW @ 5' bsg	Yes	No

Table 8
Summary of RI Field Observations
Site 2A/2B: HHMT - Port Ivory Facility

	Area of Concern	Soil Boring ID	Distance and Direction Reference	Date	Field Observations and PID Readings	Located on Map (Yes/No)	Laboratory Analysis (Yes/No)
32.	**B-2 Area Block 1400**	PG-B-2-S7	105' S of B-2	6/5/02	0-0.5' c Grv 0.5-2' concrete pad 2-2.5' Slt, diatomaceous earth 2.5-4' blk Cndrs slag 4-6' blk Cndrs, slag; Odor Gw @ 5.5' bsg	Yes	No
33.	**B-2 Area Block 1400**	PG-B-2-S8	120' S of B-2	6/5/02	0-0.5' c Grv 0.5-1' concrete pad 1-2' gry-blk slt Sd 2-4' Cndrs, slag, cl slt 4-6' Cndrs, slag cl Slt, no odor Gw @ 5.5' bsg	Yes	Yes AB58965-7
34.	**B-2 Area Block 1400**	PG-B-2-W1	15' W of B-2	5/29/02	0-0.5' Grv, s Sd 0.5-1' concrete pad 1-1.5' Sd 1.5-2' concrete pad 2-3' cndrs; odors, sheen 3-4' cndrs 4-5' cndrs Gw @ 3' bsg	Yes	No
35.	**B-2 Area Block 1400**	PG-B-2-W2	30' W of B-2	5/29/02	0-0.5' Grv 0.5-2' brn-blk Sd, Grv cndrs 2-4' Grv, cndrs Gw @ 4' bsg	Yes	No
36.	**B-2 Area Block 1400**	PG-B-2-W3	45' W of B-2	5/30/02	0-0.3' coarse Grv 0.3-1' concrete pad 1-2' slt Sd, cndrs, Grv 2-3.5' slt Sd, cndrs, Grv Gw @ 3.5' bsg	Yes	No

Table 8
Summary of RI Field Observations
Site 2A/2B: HHMT - Port Ivory Facility

	Area of Concern	Soil Boring ID	Distance and Direction Reference	Date	Field Observations and PID Readings	Located on Map (Yes/No)	Laboratory Analysis (Yes/No)
37.	**B-2 Area Block 1400**	PG-B-2-W4	60' W of B-2	5/30/02	0-0.7' Grv, slt Sd 0.7-2' blk slt Sd, cndrs, coal pcs 2-2.8' blk slt Sd, cndrs, coal pcs 2.8-3.5' cndrs, coal pcs, brn slt Sd Gw @ 3.5' bsg	Yes	Yes AB 58574-5 5/30/02
38.	**B-3 Area Block 1400**	PG-B-3-E1	15' E of B-3	6/24/02	0-4" concrete 4"-1' concrete 1-1.5' c Grv 1.5-3' blk. F Sd; Grv 3-4' blk, m. Sd, t. slt; strng odors/sheen from soil/water agitation Gw @ 3.5'bsg	Yes	No
39.	**B-3 Area Block 1400**	PG-B-3-E2	30' E of B-3	6/24/02	0-6" asphalts/ concrete 6"-1' brn blk f Sd; 1" Grv 1-2' brn blk f Sd; 1" Grv, cndrs, brk 2-3' blk f Sd; 1" Grv 3-4' blk m Sd, t. slt; sw agitation free product, strng odors Gw @ 4' bsg	Yes	No
40.	**B-3 Area Block 1400**	PG-B-3-E3	45' E of B-3	6/24/02	0-6" concrete 6"-3' concrete 3-3.5' gry blk f Sd, Grv 3.5-5' gry blk f Sd, Grv 5-6' blk f Sd, cl, Grv: there is an odor and some type of product on the soil and g. sw agitation produced soap bubbles	Yes	Yes AB60466

Table 8
Summary of RI Field Observations
Site 2A/2B: HHMT - Port Ivory Facility

	Area of Concern	Soil Boring ID	Distance and Direction Reference	Date	Field Observations and PID Readings	Located on Map (Yes/No)	Laboratory Analysis (Yes/No)
41.	**B-3 Area Block 1400**	PG-B-3-S1	15'S of B-3	6/20/02	0-4" concrete 4"-2' concrete 2-3.5' blk f Sd, Grv; strng odor, sheen on soil Gw @ 3.5' bsg	Yes	No
42.	**B-3 Area Block 1400**	PG-B-3-W1	30'W of B-3	6/21/02	0-6" asphalt 6"-1' blk f Sd, Grv and cndrs 1-2' blk f Sd, Grv and cndrs, sli odors 2-3' blk f Sd, Grv and cndrs, m odor 3-4' blk f Sd, Grv/cndrs, strng odors, sheen on soil/Gw Gw @ 3' bsg	Yes	No
43.	**GW-10D Area Block 1338**	PG-GW-10D-E1	20' E of GW-10D	7/3/02	0-4" Grv 4"-1' red brn coarse Sd, Grv 1-2' brn f slty Sd, t. Grv 2-3' dk brn f slty Sd 3-4' dk brn f slty Sd 4-5' dk brn f slty Sd Gw @ 5' bsg	Yes	Yes AB61895
44.	**GW-10D Area Block 1338**	PG-GW-10D-N1	Proximity to Texas Eastern pipeline, 21' N of GW-10D	7/2/02	0-2" Grv 2"-1' reddish slty Sd, Grv 1-2' brn red f Sd, t. slt; sli odor 2-3' dk brn f Sd, t. slt; sli odor, sheen on water Gw @ 3'	Yes	No
45.	**GW-10D Area Block 1338**	PG-GW-10D-N2	Proximity to Texas Eastern Pipeline, 35.5' N of	7/2/02	0-2" Grv 2"-1' reddish slty Sd, t Grv; sli odor 1-2' brn red f Sd, t. slt; apparent odor 2-3' brn f Sd, t. slt; apparent odor	Yes	No

Hatch Mott MacDonald

Table 8
Summary of RI Field Observations
Site 2A/2B: HHMT - Port Ivory Facility

	Area of Concern	Soil Boring ID	Distance and Direction Reference	Date	Field Observations and PID Readings	Located on Map (Yes/No)	Laboratory Analysis (Yes/No)
			GW-10D		3-4’ brn f Sd, t. slt; apparent odor 4-5’ brn f Sd, t. slt; apparent odor		
46.	**GW-10D Area Block 1338**	PG-GW-10D-N3	Proximity to Texas Eastern Pipeline; 47.5’ N of GW-10D	7/2/02	0-2” Grv 2”-1’ dk brn slty Sd, Grv 1-2’ dk brn slty Sd, Grv 2-3’ brn slty Sd, t. Grv 3-4’brn slty m-f Sd 4-5’ brn slty m-f Sd 5-6’ brn slty m-f Sd Gw @ 5’ bsg	Yes	Yes AB60923
47.	**GW-14 Area Block 1400**	PG-GW-14-E1	15’ E of GW-14	6/20/02	0-4” asphalt 4”-1’ blk f Sd, 1 ½” Grv 1-2’ blk f Sd, c. grv2-4’ blk f Sd slt, os (wd) 4-5’ blk slt f Sd; sheen on Gw, strng odor Gw @ 5’ bsg	Yes	No
48.	**MW-10D Area Block 1338**	PG-GW-10D-W1	Proximity to Texas Eastern Pipeline. 18’ W of GW-10D	7/2/02	0-2” Grv 2”-1’ dk brn slty fine-coarse Sd, Grv 1-2’ brn slty f-coarse Sd; sli odor 2-3’ brn slty f-coasre Sd; sli odor 3-4’ reddish brn f-coarse Sd; sli odor, sheen 4-5’ reddish brn f-coarse Sd; sli odor, sheen Gw @ 5’ bsg	Yes	No
49.	**MW-10D Area Block 1338**	PG-GW-10D-W2	35’ W of GW-10D	7/3/02	0-2” Grv 2”-1’ red brn slty Sd, Grv 1-2’ red brn slty Sd, Grv 2-3’ dk brn f slty Sd, Grv 3-5’ brn f slty Sd, t. Grv 5-6’ yellowish cl Slt; strng odor	Yes	Yes AB61896

Table 8
Summary of RI Field Observations
Site 2A/2B: HHMT - Port Ivory Facility

	Area of Concern	Soil Boring ID	Distance and Direction Reference	Date	Field Observations and PID Readings	Located on Map (Yes/No)	Laboratory Analysis (Yes/No)
					Gw @ 5' bsg		
50.	**GW-14 Area Block 1400**	PG-GW-14-E2	30'E of GW14	6/20/02	0-4" concrete 4"-1' Grv, blk f Sd 1-2' brn slt f Sd 2-3' brn slt f Sd 3-4' brn slt f Sd, os (mulch) 4.5-5' gry-brn cl slt, os (mulch); sw agitation confirm presence of pet on soil) Gw @ 5' bsg	Yes	No
51.	**GW-14 Area Block 1400**	PG-GW-14-E3	45'E of GW-14	6/20/02	0-8" concrete 8"-4' blk f Sd, 1" Grv 4-6' blk f Sd, 1" Grv Gw @ 6' bsg	Yes	Yes AB60098
52.	**GW-14 Area Block 1400**	PG-GW-14-N1	16' N of GW-14	6/19/02	0-1" thin asphalt 1"-2' blk m Sd, Grv 2- 3' cndrs, Grv, Sd, blk f Sd; increasing odors and stn, pety sheen, odors Gw @ 3' bsg	Yes	No
53.	**GW-14 Area Block 1400**	PG-GW-14-N2	34'N of GW-14	6/19/02	0-3" asphalt 3"-2.5' Grv, gry m Sd 2.5-3.0' blk Sd, Grv, slag, moist, impacted soil, odors, sheen on Gw Gw @ 3.0'	Yes	No
54.	**GW-14 Area Block 1400**	PG-GW-14-N3	52' N of GW-14	6/19/02	0-3" Grv 3"-1' Grv, gry Sd 1-3.5' lt. Brn w-s m Sd,; no odor 3.5-4.0' brn-blk m Sd, very slty stn very	Yes	Yes AB59996

Table 8
Summary of RI Field Observations
Site 2A/2B: HHMT - Port Ivory Facility

	Area of Concern	Soil Boring ID	Distance and Direction Reference	Date	Field Observations and PID Readings	Located on Map (Yes/No)	Laboratory Analysis (Yes/No)
					faint odors; no sheen Gw @ 4.0' bsg		
55.	**GW-14 Area Block 1400**	PG-GW-14-S1	15' S of GW-14 and 15' N of B-3	6/20/02	0-4" concrete 4"-2' concrete 2-4' gry-blk f Sd slt; sheen on Gw, strng odor Gw @ 4' bsg	Yes	No
56.	**GW-14 Area Block 1400**	PG-GW-14-W1	18'W of GW-14	6/19/02	0-3" asphalt 3"-1' Grv, gry Sd 1-2' Grv, blk Sd 2-3' blk slt Sd, Grv; stn soil, sli odors, no product, no sheen Gw @ 3.0' bsg	Yes	No
57.	**GW-14 Area Block 1400**	PG-GW-14-W2	33'W of GW14	6/20/02	0-4" asphalt 4"-2' blk f slt Sd, Grv 2-2.5' blk f Sd slt; free product noted, strng odor Gw @ 2.5'	Yes	No
58.	**UST – 7 Area** (not initiated because of site conditions)						

Note:

(1) The "PG" has been removed from well designations for this table.

(2) PG-MW-10D was referenced as GW-10D during the RI. As such, soil borings installed surrounding location MW-10D utilized the prefix "GW-10D".

9.1.2 Areas B-2 and B-3

As proposed soil borings were installed and sampled to the north, south, east and west of SI soil borings B-2 and B-3. The specific number of soil borings and sample locations at each area are provided below.

B-2

Twenty-four RI soil borings were installed in the north, south, east, and west of soil boring B-2. Soil samples were field screened as described in Section 9.1 resulting in the establishment of endpoints at variable distances extending from this soil boring. Specifically, soil borings were installed as follows: four soil borings were installed to the west, eight soil borings were installed to the south, eight soil borings were installed to the north, and four soil borings were installed to the east. The distances in each direction were as follows: 60 feet to the east, 120 feet to the north, 120 feet to the south, and 60 feet to the west. Six soil samples were collected from various depths of endpoint soil borings and were submitted for laboratory analyses. The RI soil borings and sample designations, sample depths and analytical parameters are provided in Table 7 and field observations are provided in Table 8.

B-3

Seven RI soil borings were installed at locations north, south, east and west of the SI soil boring B-3. All of the borings are located on Site 2A; except for, the farthest westerly boring which is located in Site 1. This westerly boring has already been discussed in a previously submitted report to the NYSDEC addressing Site 1. Soil samples were field screened as described in Section 9.1 resulting in the establishment of endpoints at variable distances extending from B-3. Specifically, soil borings were installed as follows: three to the east of the soil boring, one to the north, one to the south, and two to the west. The distances in each direction were as follows: 45 feet to the east, 15 feet to the south, 45 feet to the west, 15 feet to the north. Due to the close proximity of B-3 to monitoring well GW-14, the RI boring installed to the north of B-3 was also utilized to delineate the southwestern limit of potential impacts associated with GW-14. Two soil samples were collected from various depths of endpoint soil borings and were submitted for laboratory analyses The soil boring and sample designations, sample depths and analytical parameters are provided in Table 7 and field observations are provided in Table 8.

9.1.3 Area GW-14

As proposed, soil borings were installed surrounding the monitoring well GW-14. Eleven RI soil borings were installed at locations north, south, east, and west of the SI boring GW-14. Soil samples were field screened as described in Section 9.1 resulting in the establishment of endpoints 15 to 52 feet from this soil boring. Specifically, RI soil borings were installed as follows: three to the east, three to the north, fifteen feet to the south, and four to the west. The furthest westerly borings installed as part of the RI for GW-14 are located in Site 1; therefore these borings were discussed in the Site 1 Report. The distances in each direction were as follows: 52 feet to the north, 45 feet to the east, 15 feet to the south, and 60 feet to the west (into Site 1). As described in Section 9.1.2, soil borings to the southwest of GW-14 are also utilized in the delineation of B-3. This RI boring is located equidistant from both borings. Two soil samples were collected from various depths of endpoint soil borings and were submitted for laboratory analyses. The soil boring and sample designations, sample depths and analytical parameters are provided in Table 7 and field observations are provided in Table 8.

9.1.4 Area OP-1

As proposed, soil borings were installed surrounding the SI soil boring OP-1. Seven RI soil borings were installed at locations north, south, east, and west of SI soil boring OP-1. Soil samples were field screened as described in Section 9.1 resulting in the establishment of endpoints 15 to 20 feet from this soil boring. One RI soil boring was installed in the north, west, and eastern direction at a distance of approximately 15 feet from OP-1. Four RI soil borings were installed in the southern direction, however, concrete was encountered at approximately 2 feet bgs in two of the soil borings (OP1-S2 and OP1-S4). Based on the above, the distances in each direction were as follows: 15 feet to the north, west, and east; and 16 feet to the south. Five soil samples were collected from various depths endpoint soil borings and were submitted for laboratory analyses. The soil borings and sample designations, sample depths and analytical parameters are provided in Table 7 and field observations are presented in Table 8.

9.1.5 Area A-5

As proposed, soil borings were installed surrounding SI soil boring A-5, which is located in Site 1. As previously stated, the delineation of A-5 extended in an easterly direction to locations within Site 2A. The RI borings installed in the north, south and western directions were installed in Site 1 and information pertaining to those locations are provided in the Site 1 Report. Soil samples were field screened as described in Section 9.1 resulting in the establishment of endpoints ranging from 45 to 75 feet from this soil boring. The distances in each direction were as follows: 75 feet to the north (OP1), 75 feet to the west (OP1), 75 feet to the south (OP1), and 45 feet to the east (OP2). Eight soil samples were collected from various depths on endpoint soil borings and were submitted for laboratory analyses. The soil boring and sample designations, sample depths and analytical parameters are provided in Table 7 and field observations are presented in Table 8.

9.1.6 Area FS-1B

As proposed, soil borings were installed surrounding SI soil boring FS-1B, which is located in Site 1. As previously stated, the delineation of FS-1B in an easterly direction to include locations within Site 2A. The RI borings installed in the north, south and western directions were installed in Site 1 and information pertaining to those locations are provided in the Site 1 Report. Three soil borings were installed in the eastern direction onto Site 2A. The RI soil borings installed to the north, south, and western directions were installed in Site 1, and discussed in a previously submitted report. Soil samples were field screened as described in Section 9.1 resulting in the establishment of an endpoint 45 feet (to the east) from this soil boring. Specifically, soil borings were installed as follows: two soil borings were installed to the north (Site 1), two soil borings were installed to the south (Site 2A), three soil borings were installed to the west (Site 1) and three soil borings to the west (Site 2A). The distances in each direction were as follows: 30 feet to the north (Site 1), 30 feet to the south (Site 1), 45feet to the west (Site 1), and 30 feet to the east (Site 2A). Ten soil samples were collected from various depths of endpoint soil borings and were submitted for laboratory analyses. With regard to Site 2A, 2 soil samples were submitted from RI boring FS1B-E3. The RI soil boring and sample designations, sample depths and analytical parameters are provided in Table 7 and field observations are presented in Table 8.

9.1.7 Area GW-1

The GW-1 Area was investigated in order to assess the soil lying on the southern side of Building 74/75 (Site 2B). The RI implemented for the K-2 area (located on Site 3) included a review of conditions between the K-2 and the northern wall of Building 74/75. Based on field observations, the RI for Site 3 was expanded to include the area south of Building 74, which is located within Site 2B. Overall, three soil borings were installed at locations west of monitoring well GW-1. Soil samples were field screened according to the procedures outlined in Section 9.1. Distances in the western direction from GW-1 extended 265 feet. Three soil samples were collected from various depths; one from each of the soil borings, and submitted for laboratory analyses. No temporary monitoring wells were installed in this area. The soil boring and sample designations, sample depths and analytical parameters are provided in Table 7 and field observations are presented in Table 8.

9.1.8 MW-10D Area

As proposed, soil borings were installed surrounding SI monitoring well MW-10D. Six soil borings were installed at locations north, west and east of MW-10D. No soil borings were installed to the south, due to the presence of an active Texas Eastern Pipeline. Soil samples were field screened as described in Section 9.1 resulting in the establishment of endpoints 20 to 48 feet from this boring. Specifically, soil borings were installed as follows: one to the east, three to the north and two to the west. The distances in each direction from MW-10D were as follows: 35 feet to the west, 20 feet to the east, and 48 feet to the north. Three soil samples were collected from various depths of the endpoint soil borings and were submitted for laboratory analyses. No temporary monitoring wells were installed in this area. The soil boring and sample designations, sample depths and analytical parameters are provided in Table 7 and field observations are presented in Table 8.

9.2 RI - Analytical Results (Soil)

Twenty-one soil samples were collected from 58 delineation soil borings installed at Site 2A/2B; the totals include soil borings and samples used to evaluate certain limits of AOCs located on Site 1 (A-5, GW-14 and B-3). The locations of the RI soil borings are presented on Figure 18. The RI was performed to delineate the extent of potential petroleum-impacted soil and, as such, samples were submitted for VOCs (8270) and PAH compounds (8260). Table 7 identifies soil boring and sample designations and Table 8 presents the findings of field screening including soil characterization. The analytical results for HMM's sampling efforts of soil are presented in Tables 9A and 9B. Figure 18 presents the RI samples locations and a summary of analytical results. For discussion purposes, the results have been compared, as appropriate, to current NYSDEC regulatory criteria. For the RI phase of this project, the criteria utilized are NYSDEC RSCOs. Please note, the reference of these standards in this report does not represent any agreement or concurrence that same are appropriate for usage at this site.

9.2.1 Volatile Organic Compounds

VOCs were either not detected or were detected below correspond RSCOs. Further, none of the samples exhibited a total concentration of VOCs in excess of the 10 mg/kg threshold established for this contaminant class. Table 9A, presents analytical results from VOC analysis.

X

very low

GW10N3-S3

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	2.8	4' to 5'
Benzo[a]pyrene :	1.5	4' to 5'
Benzo[b]flouranthene :	2.3	4' to 5'
Benzo[k]flouranthene :	1.1	4' to 5'
1,2-Benzphenanthracene:	2.0	4' to 5'
Dibenzo[a,h)Anthracene :	0.05 J	4' to 5'

FS1BE3-S1

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.62	0' to 2'
Benzo[a]pyrene :	0.64	0' to 2'
Chrysene :	0.57	0' to 2'

FS1BE3-S4

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.19 J	5' to 5.5'

FS1BS2-S1

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.14 J	2' to 4'

FS1BS2-S3

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.78	4' to 5'
Benzo[a]pyrene :	0.65	4' to 5'
Chrysene :	0.91	4' to 5'

FS1BW3-S1

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.18 J	2' to 4'
Dibenzo[a,h)Anthracene :	0.059 J	2' to 4'

FS1BW3-S2

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.19 J	2' to 4'

FS1BW3-S3

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.089 J	2' to 4'

FS1BN2-S2

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.21 J	2' to 4'
Dibenzo[a,h)Anthracene :	0.049 J	2' to 4'

A5W5-S1

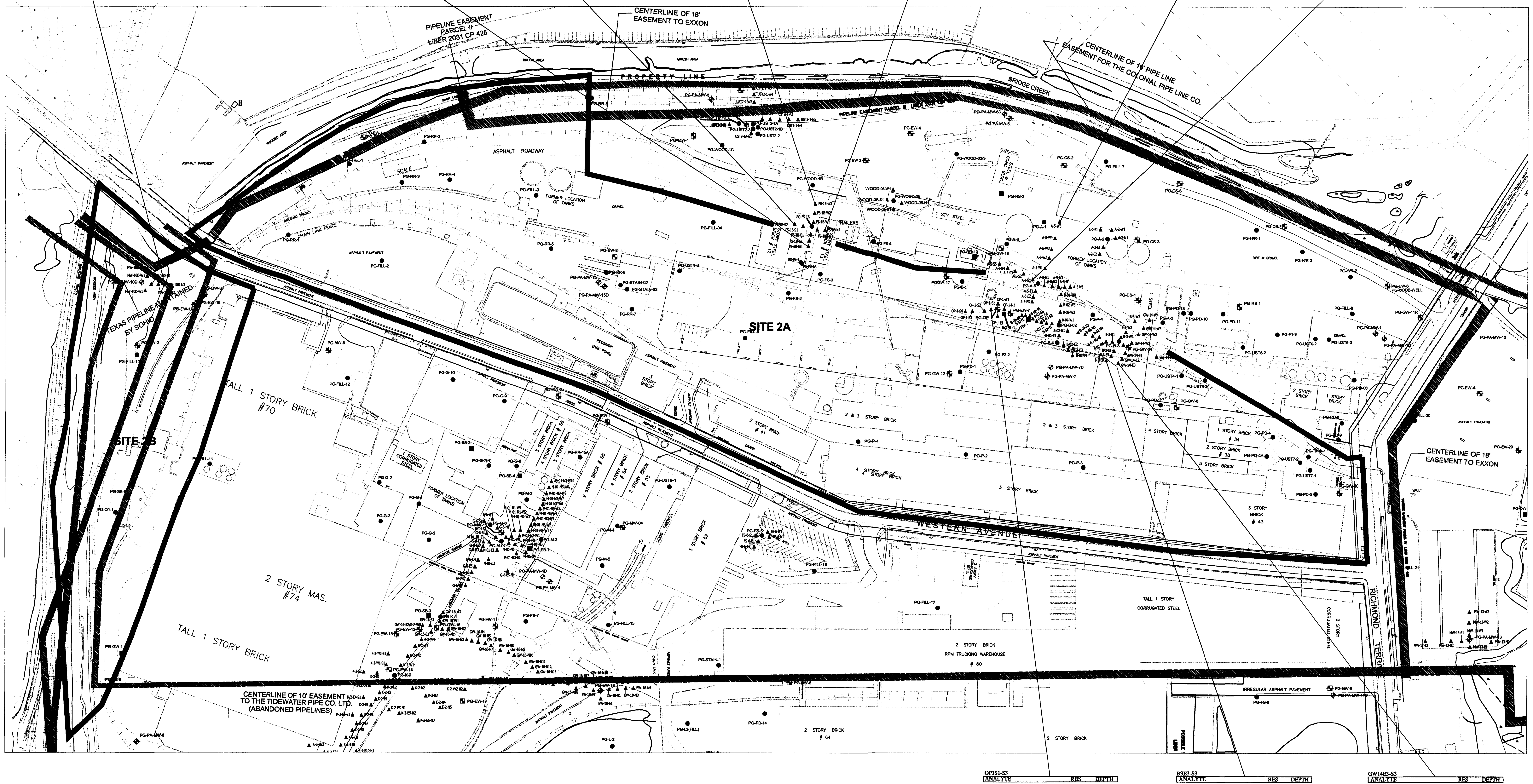
ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.55	0' to 2'
Benzo[a]pyrene :	0.47	0' to 2'
Chrysene :	0.5	0' to 2'

A5N5-S1

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.28	0' to 2'
Benzo[a]pyrene :	0.29	0' to 2'
Chrysene :	0.4	0' to 2'

A5N5-S2

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.74	2' to 3'



OP1S1-S3

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.68	4' to 6'
Benzo[a]pyrene :	0.60	4' to 6'
1,2-Benzphenanthracene:	0.69	4' to 6'
Dibenzo[a,h)Anthracene :	0.040 J	4' to 6'

B3E3-S3

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.14 J	2' to 4'

GW14E3-S3

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.14 J	2' to 4'

100 0 100 200
SCALE IN FEET

RECOMENDED SOIL CLEANUP OBJECTIVES

COMPOUND	RSCO (mg/kg)	
SVOC	NS	
1,2-Benzphenanthracene:	0.224 or MDL	.224
Benzo[a]anthracene :	0.061 or MDL	.061
Benzo[a]pyrene :	1.1	1.100
Benzo[b]flouranthene:	1.1	1.100
Benzo[k]flouranthene:	0.4	.400
Chrysene:	0.014 or MDL	
Dibenz(a,h)Anthracene :		

MDL - METHOD DETECTION LIMIT
NS - NO STANDARD

all
off - shifted

NOTES:
1. THIS MAP PRESENTS CONCENTRATIONS OF SVOCs AT LEVELS ABOVE CORRESPONDING TAGM RSCO. THE RI SAMPLING PROGRAM INCLUDED LABORATORY ANALYSIS FOR VOCs. NO VOCs WERE DETECTED ABOVE CORRESPONDING TAGM RSCOs.

LEGEND

▨	UTILITY EASEMENT
	RAILROAD TRACKS
▬	SITE BOUNDARY
PG-PA-MW-5 ⌖	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION
PG-WOOD-3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION
PG-RS-1 ⊞	PRE-EXISTING P&G MONITORING WELL LOCATION
PG-SB-2 ■	PRE-EXISTING P&G SOIL BORING LOCATION
▲ A-5-W5	YEAR 2003 REMEDIAL INVESTIGATION SAMPLE LOCATION
ANALYTE	INDICATES COMPOUND FOR WHICH LABORATORY ANALYSIS WAS CONDUCTED
RES	CONTAMINANT CONCENTRATION IN MG/KG
J	THE REPORTED VALUE WAS OBTAINED FROM A READING THAT WAS LESS THAN THE CONTRACT REQUIRED DETECTION LIMIT (CRDL), BUT GREATER THAN OR EQUAL TO THE INSTRUMENT DETECTION LIMIT (IDL).
DEPTH	DEPTH IN FEET BELOW GROUND SURFACE

Sheet of

THE PORT AUTHORITY
OF NY & NJ

ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

SITE 2A/2B SAMPLE LOCATIONS AND ANALYTICAL RESULTS MAP, REMEDIAL INVESTIGATION

Designed by Drawn by Checked by
Date
Contract Number
Drawing Number **FIGURE 18**

Table 9A
Soil Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT Port Ivory Facility

Location	**Recommended**	**A5E3-S2**	**A5E5-S3**	**B2S8-S1**	**B2S8-S2**	**B2S8-S3**	**B2E4-S3**	**B2W4-S1**	**B2W4-S2**	**B3E3-S3**	**GW14E3-S3**
Sample Date	**Soil**	5/29/2002	5/29/2002	6/5/2002	6/5/2002	6/5/2002	5/31/2002	5/30/2002	5/30/2002	6/26/2002	6/21/2002
Area ID	**Cleanup**	PG-A-5	PG-A-5	PG-B-2	PG-B-2	PG-B-2	PG-B-2	PG-B-2	PG-B-2	PG-B-3	PG-GW-14
Sample Depth (feet)	**Objective**	2-4'	4-6'	0-2'	2-4'	4-6'	4-6'	0-2'	2-4'	5-5.5'	5.5-6'
Concentration	**mg/kg**	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2,4-trimethylbenzene	3.4	0.0012U	0.0013U	0.0011U	0.0012U	0.0013U	1.0U	0.0014U	0.0013U	0.0013U	0.0012U
1,3,5-trimethylbenzene	NS	0.0012U	0.0013U	0.0011U	0.0012U	0.0013U	1.0U	0.0014U	0.0013U	0.0013U	0.0012U
4-isopropyltoluene	NS	0.0012U	0.0013U	0.0011U	0.0012U	0.0013U	1.0U	0.0014U	0.0013U	0.0018	0.0088
Benzene	0.06	0.0012U	0.0013U	0.0011U	0.0012U	0.0013U	1.0U	0.0014U	0.0013U	0.0013U	0.0012U
Ethylbenzene	5.5	0.0012U	0.0013U	0.0011U	0.0012U	0.0013U	1.0U	0.0014U	0.0013U	0.0013U	0.0012U
Isopropylbenzene	NS	0.0012U	0.0013U	0.0011U	0.0012U	0.0013U	1.0U	0.0014U	0.0013U	0.0013U	0.0012U
M&p Xylenes	1.2*	0.0024U	0.0025U	0.0021U	0.0025U	0.0026U	2.0U	0.0027U	0.0026U	0.0015J	0.0025U
Methyl-t-butyl ether	NS	0.0012U	0.0013U	0.0011U	0.0012U	0.0013U	1.0U	0.0014U	0.0013U	0.0013U	0.0012U
Naphthalene	13	0.0012U	0.0013U	0.0011U	0.0012U	0.0013U	1.0U	0.0014U	0.0013U	0.0013U	0.0012U
N-Butylbenzene	NS	0.0012U	0.0013U	0.0011U	0.0012U	0.0013U	1.0U	0.0014U	0.0013U	0.0013U	0.0012U
N-Propylbenzene	NS	0.0012U	0.0013U	0.0011U	0.0012U	0.0013U	1.0U	0.0014U	0.0013U	0.0013U	0.0012U
O-Xylene	1.2*	0.0012U	0.0013U	0.0011U	0.0012U	0.0013U	1.0U	0.0014U	0.0013U	0.0013U	0.0012U
Sec-Butylbenzene	NS	0.0012U	0.0013U	0.0011U	0.0012U	0.0013U	1.0U	0.0014U	0.0013U	0.0013U	0.0012U
t-Butyl Alcohol	NS	0.012U	0.013U	0.011U	0.012U	0.013U	10U	0.014U	0.013U	0.013U	0.012U
T-Butylbenzene	NS	0.0012U	0.0013U	0.0011U	0.0012U	0.0013U	1.0U	0.0014U	0.0013U	0.0013U	0.0012U
Methylbenzene	1.5	0.0012U	0.0013U	0.0011U	0.0012U	0.0013U	1.0U	0.0014U	0.0013U	0.0013U	0.0012U
Total VOCs	50	ND	ND	ND	ND	ND	ND	ND	ND	0.0018	0.0088

NS No Standard
ND Not Detected
U Undetectable Levels
* Total Xylene Recommended Cleanup Standard

Table 9A
Soil Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT Port Ivory Facility

Location	**Recommended**	**GW-14-N3**	**OP1E1-S2**	**OP1E1-S3**	**OP1N1-S1**	**OP1S1-S3**	**OP1W1-S3**	**GW10E1-S3**	**GW10N3-S3**	**GW10W2-S3**
Sample Date	**Soil**	6/19/2002	6/17/2002	6/17/2002	6/13/2002	6/26/2002	6/26/2002	7/8/2002	7/2/2002	7/8/2002
Area ID	**Cleanup**	PG-GW-14	PG-OP-1	PG-OP-1	PG-OP-1	PG-OP-1	PG-OP-1	PG-MW-10D	PG-MW-10D	PG-MW-10D
Sample Depth (feet)	**Objective**	3.5-4'	2-4'	4-6'	4.5-5'	4-6'	4-6'	4-5'	4-5'	4-6'
Concentration	**mg/kg**	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2,4-trimethylbenzene	3.4	0.0012U	0.0012U	0.0011U	0.0013U	0.0012U	0.0012U	ND	ND	ND
1,3,5-trimethylbenzene	NS	0.0012U	0.0012U	0.0011U	0.0013U	0.0012U	0.0012U	ND	ND	ND
4-isopropyltoluene	NS	0.0012U	0.0012U	0.0011U	0.0013U	0.0012U	0.0012U	ND	ND	ND
Benzene	0.06	0.0012U	0.0012U	0.0011U	0.0013U	0.0012U	0.0012U	ND	ND	ND
Ethylbenzene	5.5	0.0012U	0.0012U	0.0011U	0.0013U	0.0012U	0.0012U	ND	ND	ND
Isopropylbenzene	NS	0.0012U	0.0012U	0.0011U	0.0013U	0.0012U	0.0012U	ND	ND	ND
M&p Xylenes	1.2*	0.0024U	0.0024U	0.0023U	0.0026U	0.0024U	0.0024U	ND	ND	ND
Methyl-t-butyl ether	NS	0.0012U	0.0012U	0.0011U	0.0013U	0.0012U	0.0012U	ND	ND	ND
Naphthalene	13	0.0012U	0.0012U	0.0011U	0.0013U	0.0012U	0.0012U	ND	ND	ND
N-Butylbenzene	NS	0.0012U	0.0012U	0.0011U	0.0013U	0.0012U	0.0012U	ND	ND	ND
N-Propylbenzene	NS	0.0012U	0.0012U	0.0011U	0.0013U	0.0012U	0.0012U	ND	ND	ND
O-Xylene	1.2*	0.0012U	0.0012U	0.0011U	0.0013U	0.0012U	0.0012U	ND	ND	ND
Sec-Butylbenzene	NS	0.0012U	0.0012U	0.0011U	0.0013U	0.0012U	0.0012U	ND	ND	ND
t-Butyl Alcohol	NS	0.012U	0.012U	0.011U	0.013U	0.012U	0.012U	ND	ND	ND
T-Butylbenzene	NS	0.0012U	0.0012U	0.0011U	0.0013U	0.0012U	0.0012U	ND	ND	ND
Methylbenzene	1.5	0.0012U	0.0012U	0.0011U	0.0013U	0.0012U	0.0012U	ND	ND	ND
Total VOCs	50	ND	ND	ND	ND	ND	ND	ND	ND	ND

NS No Standard
ND Not Detected
U Undetectable Levels
* Total Xylene Recommended Cleanup Stand

Table 9B
Soil Analytical Results
PAH Compounds
Site 2A/2B HHMT Port Ivory Facility

Location **Sample Date** **Area ID** **Sample Depth (feet)** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** mg/kg	**A5E3-S2** 5/29/2002 PG-A-5 2-4' mg/kg	**A5E5-S3** 5/29/2002 PG-A-5 4-6' mg/kg	**B2S8-S1** 6/5/2002 PG-B-2 0-2' mg/kg	**B2S8-S2** 6/5/2002 PG-B-2 2-4' mg/kg	**B2S8-S3** 6/5/2002 PG-B-2 4-6' mg/kg	**B2E4-S3** 5/31/2002 PG-B-2 4-6' mg/kg	**B2W4-S1** 5/30/2002 PG-B-2 0-2' mg/kg	**B2W4-S2** 5/30/2002 PG-B-2 2-4' mg/kg	**B3E3-S3** 6/26/2002 PG-B-3 5-5.5' mg/kg	**GW14E3-S3** 6/21/2002 PG-GW-14 5.5-6' mg/kg
Acenaphthene	41	0.41U	0.42U	0.35U	0.42U	0.43U	0.39U	0.45U	0.44U	0.43U	0.41U
Anthracene	50	0.41U	0.42U	0.35U	0.42U	0.43U	0.39U	0.099J	0.44U	0.053 J	0.088 J
Benzo(a)anthracene	0.224 or MDL	0.41U	0.42U	0.35U	0.42U	0.43U	0.39U	0.073J	0.44U	0.14 J	0.14 J
Benzo(a)pyrene	0.061 or MDL	0.41U	0.42U	0.35U	0.42U	0.43U	0.39U	0.048J	0.44U	**0.11 J**	**0.13 J**
Benzo(b)fluoranthene	1.1	0.41U	0.42U	0.35U	0.42U	0.43U	0.04J	0.24J	0.44U	0.21 J	0.12 J
Benzo(g,h,I)perylene	50	0.41U	0.42U	0.35U	0.42U	0.43U	0.39U	0.073J	0.44U	0.088 J	0.042 J
Benzo(k)fluoranthene	1.1	0.41U	0.42U	0.35U	0.42U	0.43U	0.39U	0.05J	0.44U	0.057 J	0.11 J
1,2- Benzphenanthracene	0.4	0.41U	0.42U	0.35U	0.42U	0.43U	0.05J	0.17J	0.44U	0.16 J	0.12 J
Dibenzo(a,h)Anthracene	0.014 or MDL	0.41U	0.42U	0.35U	0.42U	0.43U	0.39U	0.45U	0.44U	0.43U	0.41U
Fluoranthene	50	0.41U	0.42U	0.35U	0.42U	0.43U	0.066J	0.19J	0.44U	0.33 J	0.51
Fluorene	50	0.41U	0.42U	0.35U	0.42U	0.43U	0.39U	0.45U	0.44U	0.059 J	0.41U
Indeno(1,2,3-cd)pyrene	3.2	0.41U	0.42U	0.35U	0.42U	0.43U	0.39U	0.073J	0.44U	0.077 J	0.044 J
Naphthalene	13	0.41U	0.42U	0.35U	0.42U	0.43U	0.39U	0.095J	0.65J	0.11 J	0.051 J
Phenanthrene	50	0.41U	0.42U	0.35U	0.42U	0.43U	0.11J	0.16J	0.44U	0.32 J	0.28 J
Pyrene	50	0.41U	0.42U	0.35U	0.42U	0.43U	0.048J	0.077J	0.44U	0.27 J	0.22 J
Total PAH Compounds	500	ND	ND	ND	ND	ND	0.274	1.622	0.65	1.984	1.855

MDL Method Detection Limit
NS No Standard
ND Not Detected
U Undetectable Levels

Table 9B
Soil Analytical Results
PAH Compounds
Site 2A/2B HHMT Port Ivory Facility

Location	**Recommended**	**GW-14-N3**	**OP1E1-S2**	**OP1E1-S3**	**OP1N1-S1**	**OP1S1-S3**	**OP1W1-S3**	**GW10E1-S3**	**GW10N3-S3**	**GW10W2-S3**
Sample Date	**Soil**	6/19/2002	6/17/2002	6/17/2002	6/13/2002	6/26/2002	6/26/2002	7/8/2002	7/2/2002	7/8/2002
Area ID	**Cleanup**	PG-GW-14	PG-OP-1	PG-OP-1	PG-OP-1	PG-OP-1	PG-OP-1	PG-MW-10D	PG-MW-10D	PG-MW-10D
Sample Depth (feet)	**Objective**	3.5-4'	2-4'	4-6'	4.5-5'	4-6'	4-6'	4-5'	4-5'	4-6'
Concentration	**mg/kg**	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	41	2.0U	0.39U	0.38U	0.43U	0.097 J	0.40U	ND	0.33J	ND
Anthracene	50	2.0U	0.39U	0.38U	0.43U	0.28 J	0.40U	ND	1.1	ND
Benzo(a)anthracene	0.224 or MDL	2.0U	0.39U	0.38U	0.43U	**0.68**	0.066 J	0.071J	**2.8**	0.049J
Benzo(a)pyrene	0.061 or MDL	2.0U	0.39U	0.38U	0.43U	**0.60**	0.053 J	0.056J	**1.5**	0.049J
Benzo(b)fluoranthene	1.1	2.0U	0.069J	0.38U	0.43U	0.61	0.088 J	0.069J	**2.3**	0.062J
Benzo(g,h,I)perylene	50	2.0U	0.39U	0.38U	0.43U	0.33 J	0.40U	ND	0.3J	ND
Benzo(k)fluoranthene	1.1	2.0U	0.39U	0.38U	0.43U	0.22 J	0.40U	ND	**1.1**	ND
1,2- Benzphenanthracene	0.4	2.0U	0.055J	0.38U	0.43U	**0.69**	0.071 J	0.061J	**2.0**	0.067J
Dibenzo(a,h)Anthracene	0.014 or MDL	2.0U	0.39U	0.38U	0.43U	**0.040 J**	0.40U	ND	**0.05J**	ND
Fluoranthene	50	2.0U	0.057J	0.38U	0.43U	1.2	0.12 J	0.13J	3.9	0.097J
Fluorene	50	2.0U	0.39U	0.38U	0.43U	0.088 J	0.40U	ND	0.56	ND
Indeno(1,2,3-cd)pyrene	3.2	2.0U	0.39U	0.38U	0.43U	0.27 J	0.40U	ND	0.31J	ND
Naphthalene	13	2.0U	0.39U	0.38U	0.43U	0.10 J	0.40U	ND	0.28J	ND
Phenanthrene	50	2.0U	0.045J	0.38U	0.045J	0.97	0.093 J	0.046J	2.8	0.043J
Pyrene	50	2.0U	0.044J	0.38U	0.43U	1.5	0.11 J	0.1J	4.0	0.079J
Total PAH Compounds	500	ND	0.27	ND	0.045	7.675	0.601	0.533	23.33	0.446

MDL Method Detection Limit
NS No Standard
ND Not Detected
U Undetectable Levels

9.2.2 PAH Compounds

The majority of PAH compounds were either not detected or were detected below corresponding RSCOs. Only the following five PAH compounds were detected in excess of corresponding RSCOs in one or more samples from the RI samples: benzo(a)anthracene, benzo(a)pyrene, benzo(b)flouranthene, benzo(k)flouranthene, dibenzo(a,h)anthracene. All PAH compounds were detected below 1 mg/kg with the exception of a single sample at the Area OP-1 which revealed concentrations of PAH compounds ranging from not detected to 1.5 mg/kg and Area MW-10D (referenced as GW-10D) which revealed concentrations of PAH compounds ranging from 0.05 mg/kg to 2.8 mg/kg. NYSDEC has not established guidance threshold values for individual PAH or total PAH compounds. However, PAH compounds are a sub-class of the SVOC class of contaminants for which the NYSDEC has established a threshold value of 50 mg/kg for a single SVOC and a contaminant class threshold of 500 mg/kg for total SVOCs. None of the samples from the RI sampling exhibited an individual concentration or total PAH concentration in excess of the guidance thresholds. A brief summary of the PAH compounds detected at each AOC is presented below.

* generally v. low

Area B-2

No PAH compounds were detected at concentrations greater than the NYSDEC RSCOs.

Area B-3

Only one PAH compound (Benzo(a)pyrene) was detected at an elevated concentration in the samples collected from endpoint soil borings installed to delineate the B-3 location. Sample B3E3-S3 (5-5.5 feet) exhibited a concentration of 0.11 mg/kg in excess of the RSCO.

Area GW-14

Two PAH compounds were detected at concentrations greater than the NYSDEC RSCOs. Specifically, benzo(a)anthracene was detected in excess of the RSCO in three samples and benzo(a)pyrene was detected in seven samples. Benzo(a)anthracene was detected in excess of the RSCO ranging from 0.26 mg/kg in sample GW14-10 (3-3.5 feet) to 0.27 mg/kg in samples GW14-8 (3-3.5 feet) and GW14-12 (3-3.5 feet). Benzo(a)pyrene was detected in excess of the RSCO ranging from 0.062 mg/kg in sample GW-14-3 (3-3.5 feet) to 0.24 mg/kg in sample GW14-12 (3-3.5 feet).

Area OP-1

Benzo(a)anthracene, benzo(a)pyrene, and dibenzo(a,h)anthracene were detected at slightly elevated concentrations in one sample (OP1S1-S3) collected from an endpoint boring at this AOC. Total PAH compound concentrations ranged from 0.27 mg/kg in sample OP1E1-S2(2-4 feet) to 7.675 mg/kg in sample OP11-S3 (4-6 feet).

Area FS-1B

Four PAH compounds were detected in excess of the corresponding RSCOs in several samples obtained from the FS-1B Area. Specifically, benzo(a)anthracene was detected in three samples ranging from 0.27 mg/kg in sample FS1-1 (4.5-5 feet) to 2.2 mg/kg in sample FS1-4 (4.5-5 feet). Benzo(a)pyrene was detected in six samples in excess of the RSCO ranging from 0.18 mg/kg in sample FS1-8 (4.5-5 feet) to 1.7 mg/kg in sample FS1-4 (4.5-5 feet). Benzo(b)flouranthene was detected in one sample in excess of its RSCO (sample FS1-4(4.5-5 feet)). Chrysene was detected in three samples in excess of its RSCO ranging from 0.41 mg/kg in sample FS1-1 (4.5-5 feet) to 2.3 mg/kg in sample FS1-4 (4.5-5 feet).

none of this data is in table or figures

Area MW-10D

Slightly elevated concentrations of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)flouranthene, dibenzo(a,h)anthracene were detected in the samples collected from endpoint soil borings installed to delineate the GW-10D location . The highest individual concentration of a PAH compound was 4.0 mg/kg. The cumulative concentrations for each sample ranged from 0.446 mg/kg to 23.33 mg/kg.

Area GW-1

Slightly elevated concentrations of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)flouranthene, 1,2 benzphenanthracene, dibenzo(a,h)anthracene were detected in the samples collected from endpoint soil borings installed to delineate southern extent of K-2, situated on Site 3. The highest individual concentration of a PAH compound was 2.30 mg/kg. The cumulative concentrations for each sample ranged from 9.017 mg/kg to 13.18 mg/kg.

9.3 Sediment and Surface Water Analytical Data

Bridge Creek is located along the western boundary of Sites 1 and 2A (Block 1400, Lot 1) and flows to the north discharging to the Arthur Kill at the northwest corner of Future Site 4 (Block 1309, Lot 10). Bridge Creek is considered a tidal, saline stream due to the influence of the Arthur KillThe NYSDEC,

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Division of Water has classified surface water into fresh and saline divisions. Bridge Creek is classified as the following: SD – due to man-made/natural conditions, the stream cannot meet primary or secondary criteria. The stream can support fish survival and limited fishing. Sampling was performed adjacent to Site 1 during the SI of the HHMT-Port Ivory Facility. Information associated with the SI of Bridge Creek is provided in the Site 1 Report.

As part of the RI, rour sediment and four surface water samples were collected from Bridge Creek and submitted to Hampton-Clarke, Inc./Veritech Laboratories (NY certification number 11408) of Fairfield, New Jersey for TCL VOC, SVOC, TAL Metals, pesticides, PCBs, TPHC, O/G and pH analysis. The analytical parameters were selected to provide information on the current environmental quality of Bridge Creek . Analytical results for sediment are presented in Tables 10A-10E and surface water samples are presented in Tables 11A-11E. The sample locations and a summary of analytical results are presented on Figure 19. For discussion purposes, the results have been compared, as appropriate, to current NYSDEC Sediment Screening Criteria and Recommended Surface Water Cleanup Standards (RSWCS); in the absence of a RSWCS, results were compared to Recommended Surface Water Guidance Criteria (RSWGC). The NYSDEC Sediment Screening establishes two levels of protection for sediments; detections below the first level area considered "not contaminated"; detections above the first level but below the second are considered contaminated but tolerable by most benthic organisms; and, detections above the second level are considered to have a pronounced disturbance of the habitat. Please note, the reference of these standards in this report does not represent any agreement or concurrence that same are appropriate for usage at this site. A discussion of the analytical results from the sediment/precipitate and surface water component of the investigation is provided below.

9.3.1 Sediment

Analytical results from sediment sampling are discussed in the following subsections by contaminants class. Analytical results for sediment sampling are provided in Tables 10A-10E with exceedences of applicable standards presented on Figure 19.

9.3.1.1 Volatile Organic Compounds

VOC compounds were either not detected or detected below the Human Health Bioaccumulation criteria in all sediment samples. Please refer to Table 10A for VOC results.

SW-1

ANALYTE	RESULTS (ug/g OC)
PCB and Pesticides	
Chlordane	0.039
P,P'-DDD	0.016
P,P-DDE	0.049
P,P'-DDT	0.014
Aroclor-1260	0.23
Total PCB's	0.23
METALS	
ARSENIC*	20
CHROMIUM*	40
LEAD	130
MERCURY*	0.37
NICKEL*	46
ZINC	470

SW-2

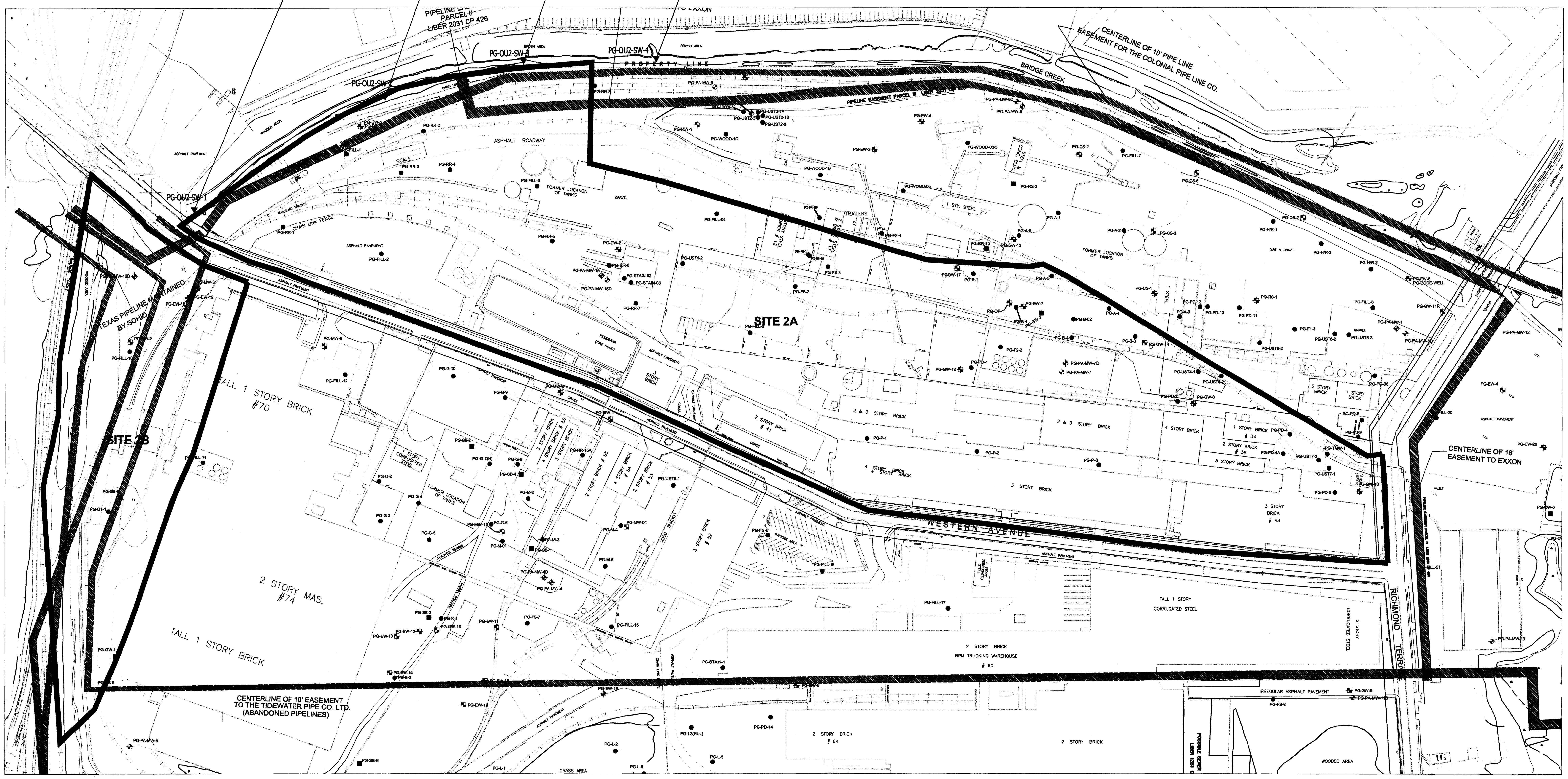
ANALYTE	RESULTS (ug/g OC)
PCB and Pesticides	
P,P-DDE	0.066
P,P'-DDT	0.014
Aroclor-1260	0.23
Total PCB's	0.23
METALS	
ARSENIC	44
CADMIUM*	1.9
CHROMIUM	110
LEAD	300
MERCURY*	0.78
ANTIMONY*	6.9
NICKEL	160
ZINC	1400

SW-3

ANALYTE	RESULTS (ug/g OC)
PCB and Pesticides	
P,P'-DDD	0.11
P,P-DDE	0.056
P,P'-DDT	0.35
Aroclor-1260	0.13
Total PCB's	0.13
METALS	
ARSENIC	62
CHROMIUM*	81
LEAD	240
MERCURY*	0.85
NICKEL*	39
ZINC	870

SW-4

ANALYTE	RESULTS (ug/g OC)
PCB and Pesticides	
P,P'-DDD	0.066
P,P-DDE	0.029
Aroclor-1260	0.065
Total PCB's	0.065
METALS	
ARSENIC*	6.2
CHROMIUM*	28
LEAD*	54
MERCURY*	0.2
NICKEL*	26
ZINC	390



100 0 100 200

SCALE IN FEET

NYSDEC SEDIMENT CLEANUP CRITERIA
LOWER EFFECT LEVEL (LEL)
SEVERE EFFECT LEVEL (SEL)

ANALYTE	LEL (ug/g)	SEL (ug/g)
ARSENIC	6.0	33
CADMIUM	0.6	9
CHROMIUM	26	110
LEAD	31	110
MERCURY	0.2	1.3
ANTIMONY	2.0	25
NICKEL	16	50
ZINC	120	270

MG/KG = ug/g

NYSDEC BENTHIC AQUATIC LIFE CHRONIC
TOXICITY CRITERIA (BALCT)

ANALYTE	HHB (ug/g OC)
Chlordane	0.001
P,P'-DDD	0.001
P,P-DDE	0.001
P,P'-DDT	0.001
Aroclor-1260	0.0008 (Total PCBs)
Total PCBs	0.0008 (Total PCBs)

HHB - Human Health Bioaccumulation

All wrong

NOTES:

* – INDICATES VALUES WERE DETECTED ABOVE THE LOWEST EFFECTIVE LEVEL (LEL) AS WELL AS ABOVE THE SEVERE EFFECTIVE LEVEL (SEL). ALL OTHER SEDIMENT RESULTS WERE FOUND ABOVE LEL LEVELS ONLY.

1. SEDIMENT RESULTS ARE RECORDED IN ug/gOC.
2. PESTICIDES AND PCBs ARE REPORTED IN BENTHIC AQUATIC LIFE CHRONIC TOXICITY CRITERIA (BALCT).
3. THIS MAP PRESENTS CONCENTRATIONS OF METALS THAT EXCEED NYSDEC RSCS AND RSCG VALUES.
4. NO GUIDANCE VALUES OR STANDARDS WERE EXCEEDED FOR SURFACE WATER SAMPLES.

LEGEND

▨	UTILITY EASEMENT
┼	RAILROAD TRACKS
▬	SITE BOUNDARY
PG-PA-MW-5 ⊕	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION
PG-WOOD-3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION
PG-SED-SW5 ◐	SEDIMENT AND SURFACE WATER SAMPLE LOCATION
▲ A-5-W5	YEAR 2003 REMEDIAL INVESTIGATION SAMPLE LOCATION
PG-RS-1 ⊞	PRE-EXISTING P&G MONITORING WELL LOCATION
PG-SB-2 ■	PRE-EXISTING P&G SOIL BORING LOCATION

Sheet of

THE PORT AUTHORITY OF NY & NJ

ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

SITE 2A/2B ANALYTICAL RESULTS, SEDIMENT AND SURFACE, REMEDIAL INVESTIGATION

This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without its written consent.

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number FIGURE 19

P:\23295\2wmd\Operable Unit 2\Operable Unit Reports\Operable Unit 2\Mapping\POST VCP Mapping 8-11-04\Drafts\SITE 2A2B ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/17/04 3:44 pm

Table 10A
Sediment Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location **Sample Date** **Concentration**	**Human Health Bioaccumulation ug/gOC**	**SW-1** 4/29/2003 ug/gOC	**SW-2** 4/29/2003 ug/gOC	**SW-3** 4/29/2003 ug/gOC	**SW-4** 4/29/2003 ug/gOC
1,1,1,2-Tetrachloroethane	0.3	0.0016ND	0.0020ND	0.0024ND	0.0016ND
1,1,1-Trichloroethane	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
1,1,2,2-Tetrachloroethane	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
1,1,2-Trichloroethane	0.6	0.0081ND	0.0098ND	0.012ND	0.0079ND
1,1-Dichloroethane	0.7	0.0081ND	0.0098ND	0.012ND	0.0079ND
1,1-Dichloroethene	0.02	0.0081ND	0.0098ND	0.012ND	0.0079ND
1,2-Dichloroethane	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
1,2-Dichloropropane	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
2-Butanone	NS	0.040ND	0.049ND	0.060ND	0.040ND
2-Chloroethylvinylether	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
2-Hexanone	NS	0.032ND	0.039ND	0.048ND	0.032ND
4-Methyl-2-Pentanone	NS	0.032ND	0.039ND	0.048ND	0.032ND
Acetone	NS	0.032ND	0.039ND	0.048ND	0.032ND
Acrolein	NS	0.024ND	0.029ND	0.036ND	0.024ND
Acrylonitrile	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
Benzene	0.6	0.0016ND	0.020ND	0.0024ND	0.0016ND
Bromodichrloromethane	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
Bromoform	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
Bromomethane	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
Carbon disulfide	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
Carbon tetrachloride	0.6	0.0081ND	0.0098ND	0.012ND	0.0079ND
Chlorobenzene	BALCT**	0.0081ND	0.0098ND	0.012ND	0.0079ND
Chloroethane	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
Chloroform	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
Chloromethane	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
CIS-1,2-Dichloroethene	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
CIS-1,3-Dischloropropene	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
Dibromochloromethane	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
Ethylbenzene	BALCT**	0.0016ND	0.0020ND	0.0024ND	0.0016ND
M&P-Xylenes	BALCT**	0.0032ND	0.0039ND	0.0048ND	0.0032ND
Methylene chloride	NS	0.0069JB	0.0079JB	0.011JB	0.0073JB
O-Xylene	BALCT**	0.0016ND	0.0020ND	0.0024ND	0.0016ND
Styrene	NS	0.0016ND	0.0020ND	0.0024ND	0.0016ND
Tetrachloroethene	0.8	0.0081ND	0.0098ND	0.012ND	0.0079ND
Toluene	BALCT**	0.0016ND	0.0020ND	0.0024ND	0.0016ND
Trans-1,2-Dichloroethene	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
Trans-1,3-Dichloropropene	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
Trichloroethene	NS	0.0081ND	0.0098ND	0.012ND	0.0079ND
Vinyl chloride	0.06	0.0081ND	0.0098ND	0.012ND	0.0079ND

NS	No Standard
ND	Not Detected
BALCT	Benthic Aquatic Life Crhronic Toxicity Criteria
* *	There is no criteria for Human Health Bioaccumulation

Table 10B
Sediment Analytical Results
Semi-Volatile Organic Coumpounds
Site 2A/2B HHMT - Port Ivory Facility

Location **Sample Date** **Concentration**	**Human Health Bioaccumulation ug/gOC**	**SW-1** 4/29/2003 ug/gOC	**SW-2** 4/29/2003 ug/gOC	**SW-3** 4/29/2003 ug/gOC	**SW-4** 4/29/2003 ug/gOC
1,2,4-Trichlorobenzene	BALCT**	0.81ND	0.98ND	1.2ND	0.79ND
1,2-Dichlorobenzene	BALCT**	0.81ND	0.98ND	1.2ND	0.79ND
1,2-Diphenylhydrazine	0.58	0.81ND	0.98ND	1.2ND	0.79ND
1,3-Dichlorobenzene	NS	0.81ND	0.98ND	1.2ND	0.79ND
1,4-Dichlorobenzene	BALCT**	0.81ND	0.98ND	1.2ND	0.79ND
2,4,5-Trichlorophenol	NS	0.81ND	0.98ND	1.2ND	0.79ND
2,4,6-Trichlorophenol	NS	0.81ND	0.98ND	1.2ND	0.79ND
2,4-Dichlorophenol	NS	0.81ND	0.98ND	1.2ND	0.79ND
2,4-Dimethylphenol	NS	0.81ND	0.98ND	1.2ND	0.79ND
2,4-Dinitrophenol	NS	0.81ND	0.98ND	1.2ND	0.79ND
2,4-Dinitrotoluene	NS	0.81ND	0.98ND	1.2ND	0.79ND
2,6-Dinitrotoluene	NS	0.81ND	0.98ND	1.2ND	0.79ND
2-Chloronaphthalene	NS	0.81ND	0.98ND	1.2ND	0.79ND
2-Chlorophenol	NS	0.81ND	0.98ND	1.2ND	0.79ND
2-Methylnaphthalene	NS	0.082J	0.98ND	1.2ND	0.79ND
2-Methylphenol	NS	0.81ND	0.98ND	1.2ND	0.79ND
2-Nitroaniline	NS	0.81ND	0.98ND	1.2ND	0.79ND
2-Nitrophenol	NS	0.81ND	0.98ND	1.2ND	0.79ND
3 &4-Methylphenol	NS	0.25J	0.98ND	1.2ND	0.79ND
3,3'-Dichlorobenzidine	NS	0.81ND	0.98ND	1.2ND	0.79ND
3-Nitroaniline	NS	0.81ND	0.98ND	1.2ND	0.79ND
4,6-Dinitro-2-methylphenol	NS	0.81ND	0.98ND	1.2ND	0.79ND
4-Bromophenyl phenylether	NS	0.81ND	0.98ND	1.2ND	0.79ND
4-Chloro-3-methylphenol	NS	0.81ND	0.98ND	1.2ND	0.79ND
4-Chloroaniline	NS	0.81ND	0.98ND	1.2ND	0.79ND
4-Chlorophenly-phenylether	NS	0.81ND	0.98ND	1.2ND	0.79ND
4-Nitroaniline	NS	0.81ND	0.98ND	1.2ND	0.79ND
4-Nitrophenol	NS	0.81ND	0.98ND	1.2ND	0.79ND
Acenaphthene	BALCT**	0.81ND	0.98ND	1.2ND	0.79ND
Acenaphthylene	NS	0.81ND	0.98ND	1.2ND	0.79ND
Anthracene	BALCT**	0.10J	0.98ND	1.2ND	0.79ND
Benzidine	0.003	1.6ND	2.0ND	1.2ND	1.6ND
Benzo{a}anthracene	BALCT**	0.48J	0.61J	0.26J	0.19J
Benzo{a}pyrene	1.3	0.36J	0.54J	0.24J	0.14J
Benzo{b}flouranthene	NS	0.63J	0.75J	0.59J	0.24J
Benzo{g,h,I}perylene	NS	0.17J	0.21J	1.2ND	0.79ND
Benzo{k}flouranthene	NS	0.23J	0.22J	0.20J	0.091J
Bis(2-Chloroethoxy)methane	NS	0.81ND	0.98ND	1.2ND	0.79ND
Bis(2-Chloroethyl)ether	0.03	0.81ND	0.98ND	1.2ND	0.79ND
Bis(2-Chloroisopropyl)ether	NS	0.81ND	0.98ND	1.2ND	0.79ND
Bis(2-Ethylhexyl)phthalate	BALCT**	0.83	0.37J	0.76J	0.49J
Butylbenzylphthalate	NS	0.33J	0.98ND	1.2ND	0.79ND
Carbozole	NS	0.81ND	0.98ND	1.2ND	0.79ND
Chrysene	NS	0.54J	0.59J	0.48J	0.22J
Dibenzo[a,h]anthracene	NS	0.81ND	0.98ND	1.2ND	0.79ND
Dibenzofuran	NS	0.81ND	0.98ND	1.2ND	0.79ND
Diethylphthalate	NS	0.81ND	0.98ND	1.2ND	0.79ND

Table 10B
Sediment Analytical Results
Semi-Volatile Organic Coumpounds
Site 2A/2B HHMT - Port Ivory Facility

Location	**Human Health**	**SW-1**	**SW-2**	**SW-3**	**SW-4**
Sample Date	**Bioaccumulation**	4/29/2003	4/29/2003	4/29/2003	4/29/2003
Concentration	**ug/gOC**	ug/gOC	ug/gOC	ug/gOC	ug/gOC
Dimethyl phthalate	NS	0.81ND	0.98ND	1.2ND	0.79ND
Di-n-butylphthalate	NS	0.20J	0.19J	0.22J	0.12J
Di-n-octylphthalate	NS	0.81ND	0.98ND	1.2ND	0.79ND
Flouranthene	BALCT**	0.95	1.5	0.50J	0.49J
Flourene	BALCT**	0.81ND	0.98ND	1.2ND	0.79ND
Hexachlorobenzene	0.15	0.81ND	0.98ND	1.2ND	0.79ND
Hexachlorobutadiene	0.3	0.81ND	0.98ND	1.2ND	0.79ND
Hexachlorocyclopentadiene	BALCT**	0.81ND	0.98ND	1.2ND	0.79ND
Hexachloroethane	NS	0.81ND	0.98ND	1.2ND	0.79ND
Indeno[1,2,3-cd]pyrene	NS	0.15J	0.21J	1.2ND	0.79ND
Isophorone	NS	0.81ND	0.98ND	1.2ND	0.79ND
Naphthalene	BALCT**	0.10J	0.98ND	1.2ND	0.79ND
Nitrobenzene	NS	0.81ND	0.98ND	1.2ND	0.79ND
N-Nitrosodimethylamine	NS	0.81ND	0.98ND	1.2ND	0.79ND
N-Nitroso-di-n-propylamine	NS	0.81ND	0.98ND	1.2ND	0.79ND
N-Nitrosodiphenylamine	NS	0.81ND	0.98ND	1.2ND	0.79ND
Pentachlorophenol	BALCT**	0.81ND	0.98ND	1.2ND	0.79ND
Phenanthrene	BALCT**	0.34J	0.25J	0.21J	0.37J
Phenol	BALCT**	0.12J	0.98ND	1.2ND	0.092J
Pyrene	BALCT**	0.84	1.4	0.49J	0.42J

NS	No Standard
ND	Not Detected
BALCT	Benthic Aquatic Life Crhronic Toxicity Criteria
* *	There is no criteria for Human Health Bioaccumulation

Table 10C
Sediment Analytical Results
Pesticides and PCBs
Site 2A/2B HHMT - Port Ivory Facility

Location **Sample Date** **Concentration**	**Human Health** **Bioaccumulation** **ug/gOC**	**SW-1** 4/29/2003 ug/gOC	**SW-2** 4/29/2003 ug/gOC	**SW-3** 4/29/2003 ug/gOC	**SW-4** 4/29/2003 ug/gOC
Aldrin	0.1	0.0054ND	0.0065ND	0.0082	0.0053ND
Alpha-BHC	NS	0.0054ND	0.0065ND	0.0079ND	0.0053ND
Beta-BHC	NS	0.0054ND	0.0065ND	0.069	0.032
Chlordane	0.001	**0.039**	0.013ND	0.0079ND	0.011ND
Delta-BHC	NS	0.0054ND	0.0065ND	0.0079ND	0.0053ND
Dieldrin	0.1	0.0054ND	0.0065ND	0.0079ND	0.0064
Endosulfan I	BALCT**	0.0054ND	0.0065ND	0.12	0.0053ND
endosulfan II	BALCT**	0.0054ND	0.0065ND	0.0079ND	0.0053ND
Endosulfate	NS	0.0054ND	0.0065ND	0.0079ND	0.0053ND
endrin	0.8	0.0054ND	0.0065ND	0.0079ND	0.0053ND
endrin aldehyde	NS	0.074	0.0065ND	0.036	0.011
endrin ketone	NS	0.0054ND	0.048	0.0079ND	0.0053ND
Gamma-BHC	NS	0.0054ND	0.0065ND	0.0079ND	0.0053ND
Heptachlor	NS	0.0054ND	0.0065ND	0.0079ND	0.0053ND
Heptachlor Epoxide	0.0008	0.0054ND	0.0065ND	0.0079ND	0.0053ND
Methoxychlor	BALCT**	0.0054ND	0.0065ND	0.0079ND	0.0053ND
P,P'-DDD	0.001	**0.016**	0.0065ND	**0.11**	**0.066**
P,P-DDE	0.001	**0.049**	**0.066**	**0.056**	**0.029**
P,P'-DDT	0.001	**0.014**	**0.014**	**0.35**	0.0053ND
Toxaphene	0.02	0.027ND	0.033ND	0.04ND	0.026ND
Aroclor-1016	.0008 (total PCB)	0.027ND	0.033ND	0.04ND	0.026ND
Aroclor-1221	.0008 (total PCB)	0.027ND	0.033ND	0.04ND	0.026ND
Aroclor-1232	.0008 (total PCB)	0.027ND	0.033ND	0.04ND	0.026ND
Aroclor-1242	.0008 (total PCB)	0.027ND	0.033ND	0.04ND	0.026ND
Aroclor-1248	.0008 (total PCB)	0.027ND	0.033ND	0.04ND	0.026ND
Aroclor-1254	.0008 (total PCB)	0.027ND	0.033ND	0.04ND	0.026ND
Aroclor-1260	.0008 (total PCB)	**0.23**	**0.23**	**0.13**	**0.065**
Total PCBs	.0008 (total PCB)	**0.23**	**0.23**	**0.13**	**0.065**

NS	No Standard
ND	Not Detected
BALCT	Benthic Aquatic Life Crhronic Toxicity Criteria
* *	There is no criteria for Human Health Bioaccumulation

Table 10D
Sediment Analytical Results
Metals
Site 2A/2B HHMT - Port Ivory Facility

Location **Sample Date** **Concentration**	**Sediment Criteria** **Lowest Effect Level** **ug/g**	**Sediment Criteria** **Severe Effect Level** **ug/g**	**SW-1** 4/29/2003 ug/g	**SW-2** 4/29/2003 ug/g	**SW-3** 4/29/2003 ug/g	**SW-4** 4/29/2003 ug/g
Antimony	2.0	25.0	3.2ND	**6.9**	4.8ND	3.2ND
Arsenic	6.0	33.0	**20**	**44**	**62**	**6.2**
Barium	NS	NS	65	77	190	60
Beryllium	NS	NS	0.97ND	1.2ND	1.4ND	0.95ND
Cadmium	0.6	9.0	0.97ND	**1.9**	1.4ND	0.95ND
Chromium	26.0	110.0	**40**	**110**	**81**	**28**
Copper	NS	NS	100	340	130	44
Lead	31.0	110.0	**130**	**300**	**240**	**54**
Mercury	0.2	1.3	**0.37**	**0.78**	**0.85**	**0.2**
Nickel	16.0	50.0	**46**	**160**	**39**	**26**
Selenium	NS	NS	2.9ND	4.5	4.3ND	2.9ND
Silver	1.0	2.2	4.0ND	4.9ND	6.0ND	4.0ND
Thallium	NS	NS	1.9ND	2.4ND	2.9ND	1.9ND
Zinc	120.0	270.0	**470**	**1400**	**870**	**390**

NS	No Standard
ND	Not Detected
▨	Above LEL
▩	Above SEL

Table 10E
Sediment Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location **Sample Date** **Concentration**	**Human Health Bioaccumulation ug/gOC**	**SW-1** 4/29/2003 ug/gOC	**SW-2** 4/29/2003 ug/gOC	**SW-3** 4/29/2003 ug/gOC	**SW-4** 4/29/2003 ug/gOC
PETROLEUM HYDROCARBONS	NS	61	110	330	440
OIL & GREASE	NS	350	520	760	760
CYANIDE	NS	0.4ND	0.8	0.59ND	0.4ND
pH	NS	8.1	7	7.4	7.9
TOTAL PHENOLICS	BALCT**	2ND	2.5ND	3ND	2ND

NS	No Standard
ND	Not Detected
BALCT	Benthic Aquatic Life Crhronic Toxicity Criteria
* *	There is no criteria for Human Health Bioaccumulation

9.3.1.2 Semi-Volatile Organic Compounds

SVOC compounds were either not detected or detected at concentrations below the Human Health Bioaccumulation criteria in the sediment samples. Please refer to Table 10B for SVOC results.

9.3.1.3 Pesticides and Polychlorinated Biphenyls

Four pesticide compounds were detected at concentrations in excess of the Human Health Bioaccumulation criteria for sediment samples collected at Site 2A/2B. Chlordane was detected in one sample; SW-1 at a concentration of 0.039 ug/gOC. P,P'-DDD was detected in three samples ranging from 0.016 ug/gOC in sample SW-1 to 0.11 ug/gOC in sample SW-2. P,P-DDE' was detected in all four sediment samples ranging in concentrations from 0.029 ug/gOC in sample SW-4 to 0.066 ug/gOC in sample SW-2. P,P-DDT' was detected in three samples ranging in concentrations from 0.014 ug/gOC in samples SW-1 and SW-2 to 0.35 ug/gOC in sample SW-3. Several additional pesticides were detected, but were at concentrations well below the Human Health Bioaccumulation criteria.

One PCB compound was detected in sediment samples collected from Site 2A/2B. Aroclor–1260 was detected in all four sediment samples in excess of the Human Health Bioaccumulation criteria. Specifically, concentrations ranged from 0.065 ug/gOC in sample SW-4 to 0.013 ug/gOC in sample SW-3. The total PCB concentration, comprised entirely of Aroclor-1260, for all four samples was also in excess of the Human Health Bioaccumulation criteria. Please refer to Table 10C and Figure 19, for pesticide and PBC results.

9.3.1.4 Metals

Several TAL metals were detected in one or more sediment samples. Eight metals were detected above either the first level (LEL) or second level (SEL) of NYSDEC screening criteria in one or more sediment samples. Four metals were detected at concentrations above the LEL but below the SEL: antimony and cadmium were detected at concentrations above the LEL in sample SW-2; mercury was detected above LEL in three samples ranging from 0.37 ug/g in SW-1 to 0.86 ug/g in sample SW-3; and chromium was detected above LEL in all four samples ranging from 28 ug/g in sample SW-4 to 110 ug/g in sample SW-2. Arsenic (two samples), lead (three samples) and nickel (one sample) exceeded the LEL in all samples and the SEL in one or more sediment samples. Arsenic was detected in concentrations ranging from 6.2 ug/g in sample SW-4 to 62 ug/g in sample SW-3. Lead was detected at concentrations ranging from 54 ug/g in sample SW-4 to 300 mg/kg in sample SW-2. Nickel was detected at concentrations ranging from 26 ug/g in sample SW-4 to 160 ug/g in sample SW-2. Zinc was detected at concentrations in excess of the SEL in all four samples with concentrations ranging from 390 ug/g in sample SW-4 to 1400 ug/g in sample SW-2. Please refer to Table 10D and Figure 19 for metals results.

9.3.1.5 *Petroleum Hydrocarbons/Oil and Grease*

TPHC was detected in all four sediment samples ranging from 61 ug/gOC in sample SW-1 to 440 ug/gOC in sample SW-4. Oil & Grease was detected in all four sediment samples ranging from 350 ug/gOC in sample SW-1 to 760 ug/gOC in samples SW-3 and SW-4. Please refer to Table 10E and Figure 19 for TPHC and oil and grease results.

Not on Figure 19

9.3.1.6 *Cyanide and Total Phenolics*

Cyanide was detected in one sample, SW-2 at a concentration of 0.8 ug/gOC. Total phenolics was not detected in any sediment samples collected from Site 2A/2B. Please refer to Table 10E for cyanide and total phenolics results.

9.3.1.7 pH

The pH recorded for sediment samples ranged from 7.0 to 8.1. The lowest pH value (7.0) was recorded at sample location, SW-2 and the highest pH value (8.1) was detected at sample location SW-1. Please refer to Table 10E and Figure 19 for pH results.

Not on figure 19

9.3.2 Surface Water

Analytical results from surface water sampling are discussed in the following subsections by contaminants class. Analytical results for sediment sampling are provided in Tables 11A-11E.

9.3.2.1 *Volatile Organic Compounds*

VOC compounds were either not detected or detected below the RSWCS or RSWCG for all surface water samples. Please refer to Table 11A for VOC results.

Table 11A
Surface Water Analytical Results
Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location **Sample Date** **Concentration**	**Recommended Surface Water Cleanup Standard ug/L**	**Recommended Surface Water Cleanup Guidanc ug/L**	**SW-1** 4/29/2003 ug/L	**SW-2** 4/29/2003 ug/L	**SW-3** 4/29/2003 ug/L	**SW-4** 4/29/2003 ug/L
1,1,1,2-Tetrachloroethane	1	NG	0.35ND	0.35ND	0.35ND	0.35ND
1,1,1-Trichloroethane	5	NG	0.28ND	0.28ND	0.28ND	0.28ND
1,1,2,2-Tetrachloroethane	NS	0.2	0.16ND	0.16ND	0.16ND	0.16ND
1,1,2-Trichloroethane	5	NG	0.58ND	0.58ND	0.58ND	0.58ND
1,1-Dichloroethane	5	NG	0.19ND	0.19ND	0.19ND	0.19ND
1,1-Dichloroethene	NS	0.7	0.33ND	0.33ND	0.33ND	0.33ND
1,2-Dichloroethane	0.6	NG	0.32ND	0.32ND	0.32ND	0.32ND
1,2-Dichloropropane	1	NG	0.46ND	0.46ND	0.46ND	0.46ND
2-Butanone	NS	50	0.53ND	0.53ND	0.53ND	0.53ND
2-Chloroethylvinylether	NS	NG	0.17ND	0.17ND	0.17ND	0.17ND
2-Hexanone	NS	50	0.25ND	0.25ND	0.25ND	0.25ND
4-Methyl-2-Pentanone	NS	NG	0.26ND	0.26ND	0.26ND	0.26ND
Acetone	NS	50	27	25	23	2.1ND
Acrolein	NS	5	0.94ND	0.94ND	0.94ND	0.94ND
Acrylonitrile	NS	0.07	0.76ND	0.76ND	0.76ND	0.76ND
Benzene	1	NG	0.20ND	0.20ND	0.20ND	0.20ND
Bromodichrloromethane	NS	50	0.28ND	0.28ND	0.28ND	0.28ND
Bromoform	NS	50	0.42ND	0.42ND	0.42ND	0.42ND
Bromomethane	5	NG	0.56ND	0.56ND	0.56ND	0.56ND
Carbon disulfide	NS	NG	0.22ND	4.2	1.4	0.22ND
Carbon tetrachloride	NS	0.4	0.21ND	0.21ND	0.21ND	0.21ND
Chlorobenzene	5	NG	0.19ND	0.19ND	0.19ND	0.19ND
Chloroethane	NS	5	0.79ND	0.79ND	0.79ND	0.79ND
Chloroform	7	NG	0.18ND	0.18ND	0.18ND	0.18ND
Chloromethane	5	NG	0.22ND	0.22ND	0.22ND	0.22ND
CIS-1,2-Dichloroethene	NS	0.7	0.35ND	0.35ND	0.35ND	0.35ND
CIS-1,3-Dischloropropene	5	NG	0.23ND	0.23ND	0.23ND	0.23ND
Dibromochloromethane	NS	50	0.44ND	0.44ND	0.44ND	0.44ND
Ethylbenzene	5	NG	0.35ND	0.35ND	0.35ND	0.35ND
M&P-Xylenes	5&5	NG	0.39ND	0.39ND	0.39ND	0.39ND
Methylene chloride	5	NG	0.25ND	0.25ND	0.25ND	0.25ND
O-Xylene	5	NG	0.23ND	0.23ND	0.23ND	0.23ND
Styrene	5	NG	0.26ND	0.26ND	0.26ND	0.26ND
Tetrachloroethene	NS	0.7	0.37ND	0.37ND	0.37ND	0.37ND
Toluene	5	NG	0.19ND	0.19ND	0.19ND	0.19ND
Trans-1,2-Dichloroethene	5	NG	0.38ND	0.38ND	0.38ND	0.38ND
Trans-1,3-Dichloropropene	NS	NG	0.22ND	0.22ND	0.22ND	0.22ND
Trichloroethene	5	NG	0.22ND	0.22ND	0.22ND	0.22ND
Vinyl chloride	NS	0.3	0.22ND	0.22ND	0.22ND	0.22ND

NS No Standard
NG No Guidance
ND Not Detected

Table 11B
Surface Water Analytical Results
Semi-Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Concentration	Recommended Surface Water Cleanup Standard ug/L	Recommended Surface Water Cleanup Guidance ug/L	SW-1 4/29/2003 ug/L	SW-2 4/29/2003 ug/L	SW-3 4/29/2003 ug/L	SW-4 4/29/2003 ug/L
1,2,4-Trichlorobenzene	NS	5	0.35ND	0.35ND	0.35ND	0.35ND
1,2-Dichlorobenzene	3	NG	0.24ND	0.24ND	0.24ND	0.24ND
1,2-Diphenylhydrazine	0.05	NG	0.24ND	0.24ND	0.24ND	0.24ND
1,3-Dichlorobenzene	3	NG	0.31ND	0.31ND	0.31ND	0.31ND
1,4-Dichlorobenzene	3	NG	0.21ND	0.21ND	0.21ND	0.21ND
2,4,5-Trichlorophenol	NS	NG	3.2ND	3.2ND	3.2ND	3.2ND
2,4,6-Trichlorophenol	NS	NG	1.8ND	1.8ND	1.8ND	1.8ND
2,4-Dichlorophenol	NS	5	1.6ND	1.6ND	1.6ND	1.6ND
2,4-Dimethylphenol	NS	50	1.7ND	1.7ND	1.7ND	1.7ND
2,4-Dinitrophenol	NS	10	4.4ND	4.4ND	4.4ND	4.4ND
2,4-Dinitrotoluene	NS	5	0.26ND	0.26ND	0.26ND	0.26ND
2,6-Dinitrotoluene	NS	0.07	0.24ND	0.24ND	0.24ND	0.24ND
2-Chloronaphthalene	10	NG	0.17ND	0.17ND	0.17ND	0.17ND
2-Chlorophenol	NS	NG	1.2ND	1.2ND	1.2ND	1.2ND
2-Methylnapthalene	NS	NG	1.7ND	1.7ND	1.7ND	1.7ND
2-Methylphenol	NS	NG	0.98ND	0.98ND	0.98ND	0.98ND
2-Nitroaniline	NS	5	1.8ND	1.8ND	1.8ND	1.8ND
2-Nitrophenol	NS	NG	1.6ND	1.6ND	1.6ND	1.6ND
3 &4-Methylphenol	NS	NG	0.89ND	0.89ND	0.89ND	0.89ND
3,3'-Dichlorobenzidine	NS	5	2.8ND	2.8ND	2.8ND	2.8ND
3-Nitroaniline	NS	5	3.4ND	3.4ND	3.4ND	3.4ND
4,6-Dinitro-2-methylphenol	NS	NG	1.9ND	1.9ND	1.9ND	1.9ND
4-Bromophenyl phenylether	NS	NG	0.20ND	0.20ND	0.20ND	0.20ND
4-Chloro-3-methylphenol	NS	NG	2.0ND	2.0ND	2.0ND	2.0ND
4-Chloroaniline	NS	5	2.5ND	2.5ND	2.5ND	2.5ND
4-Chlorophenly-phenylether	NS	NG	0.33ND	0.33ND	0.33ND	0.33ND
4-Nitroaniline	NS	NG	1.8ND	1.8ND	1.8ND	1.8ND
4-Nitrophenol	NS	NG	1.4ND	1.4ND	1.4ND	1.4ND
Acenaphthene	20	NG	0.17ND	0.17ND	0.17ND	0.17ND
Acenaphthylene	NS	NG	0.15ND	0.15ND	0.15ND	0.15ND
Anthracene	NS	50	0.17ND	0.17ND	0.17ND	0.17ND
Benzidine	NS	0.02	19ND	19ND	19ND	19ND
Benzo{a}anthracene	NS	0.002	0.34ND	0.34ND	0.34ND	0.34ND
Benzo{a}pyrene	NS	0.002	0.19ND	0.19ND	0.19ND	0.19ND
Benzo{b}flouranthene	NS	0.002	0.15ND	0.15ND	0.15ND	0.15ND
Benzo{g,h,I}perylene	NS	NG	0.23ND	0.23ND	0.23ND	0.23ND
Benzo{k}flouranthene	NS	0.002	0.19ND	0.19ND	0.19ND	0.19ND
Bis(2-Chloroethoxy)methane	NS	5	0.12ND	0.12ND	0.12ND	0.12ND
Bis(2-Chloroethyl)ether	NS	0.03	0.25ND	0.25ND	0.25ND	0.25ND
Bis(2-Chloroisopropyl)ether	NS	5	0.32ND	0.32ND	0.32ND	0.32ND
Bis(2-Ethylhexyl)phthalate	5	NG	3.1B	3.0B	2.6B	2.7B
Butylbenzylphthalate	NS	50	0.44ND	0.44ND	0.44ND	0.44ND
Carbozole	NS	NG	0.19ND	0.19ND	0.19ND	0.19ND
Chrysene	NS	0.002	0.17ND	0.17ND	0.17ND	0.17ND
Dibenzo[a,h]anthracene	NS	NG	0.21ND	0.21ND	0.21ND	0.21ND

Table 11B
Surface Water Analytical Results
Semi-Volatile Organic Compounds
Site 2A/2B HHMT - Port Ivory Facility

Location **Sample Date** **Concentration**	**Recommended Surface Water Cleanup Standard ug/L**	**Recommended Surface Water Cleanup Guidance ug/L**	**SW-1** 4/29/2003 ug/L	**SW-2** 4/29/2003 ug/L	**SW-3** 4/29/2003 ug/L	**SW-4** 4/29/2003 ug/L
Dibenzofuran	NS	NG	1.7ND	1.7ND	1.7ND	1.7ND
Diethylphthalate	NS	50	0.27ND	0.27ND	0.27ND	0.27ND
Dimethyl phthalate	NS	50	0.080ND	0.080ND	0.080ND	0.080ND
Di-n-butylphthalate	NS	50	1.2B	2.0B	0.66ND	1.3B
Di-n-octylphthalate	NS	50	0.39ND	0.39ND	0.39ND	0.39ND
Flouranthene	NS	50	0.25ND	0.25ND	0.25ND	0.25ND
Flourene	NS	50	0.19ND	0.19ND	0.19ND	0.19ND
Hexachlorobenzene	0.04	NG	0.39ND	0.39ND	0.39ND	0.39ND
Hexachlorobutadiene	0.5	NG	0.33ND	0.33ND	0.33ND	0.33ND
Hexachlorocyclopentadiene	NS	5	1.9ND	1.9ND	1.9ND	1.9ND
Hexachloroethane	5	NG	0.31ND	0.31ND	0.31ND	0.31ND
Indeno[1,2,3-cd]pyrene	NS	0.002	0.22ND	0.22ND	0.22ND	0.22ND
Isophorone	NS	50	0.46ND	0.46ND	0.46ND	0.46ND
Naphthalene	10	NG	0.17ND	0.17ND	0.17ND	0.17ND
Nitrobenzene	0.4	NG	0.15ND	0.15ND	0.15ND	0.15ND
N-Nitrosodimethylamine	NS	NG	1.1ND	1.1ND	1.1ND	1.1ND
N-Nitroso-di-n-propylamine	NS	NG	0.32ND	0.32ND	0.32ND	0.32ND
N-Nitrosodiphenylamine	NS	50	0.25ND	0.25ND	0.25ND	0.25ND
Pentachlorophenol	1(Total Phenols)	NG	1.0ND	1.0ND	1.0ND	1.0ND
Phenanthrene	NS	50	0.21ND	0.21ND	0.21ND	0.21ND
Phenol	1(Total Phenols)	NG	0.96ND	0.96ND	0.96ND	0.96ND
Pyrene	NS	50	0.30ND	0.30ND	0.30ND	0.30ND

NS No Standard
NG No Guidance
ND Not Detected

Table 11C
Surface Water Analytical Results
Pesticides and PCBs
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Concentration	**Recommended Surface Water Cleanup Standard ug/L**	**Recommended Surface Water Cleanup Guidance ug/L**	**SW-1** 4/29/2003 ug/L	**SW-2** 4/29/2003 ug/L	**SW-3** 4/29/2003 ug/L	**SW-4** 4/29/2003 ug/L
Aldrin	NS	0.002	0.02ND	0.02ND	0.02ND	0.02ND
Alpha-BHC	NS	NG	0.02ND	0.02ND	0.02ND	0.02ND
Beta-BHC	0.04	NG	0.02ND	0.02ND	0.02ND	0.02ND
Chlordane	0.05	NG	0.2ND	0.2ND	0.2ND	0.2ND
Delta-BHC	0.04	NG	0.02ND	0.02ND	0.02ND	0.02ND
Dieldrin	0.004	NG	0.02ND	0.02ND	0.02ND	0.02ND
Endosulfan I	NS	NG	0.02ND	0.02ND	0.02ND	0.02ND
endosulfan II	NS	NG	0.02ND	0.02ND	0.02ND	0.02ND
Endosulfate	NS	NG	0.02ND	0.02ND	0.02ND	0.02ND
endrin	0.2	NG	0.02ND	0.02ND	0.02ND	0.02ND
endrinaldehyde	NS	5	0.02ND	0.02ND	0.02ND	0.02ND
endrin ketone	NS	5	0.02ND	0.02ND	0.02ND	0.02ND
Gamma-BHC	0.05	NG	0.02ND	0.02ND	0.02ND	0.02ND
Heptachlor	0.04	NG	0.02ND	0.02ND	0.02ND	0.02ND
Heptachlor Epoxide	0.03	NG	0.02ND	0.02ND	0.02ND	0.02ND
Methoxychlor	35	NG	0.02ND	0.02ND	0.02ND	0.02ND
P,P'-DDD	0.3	NG	0.02ND	0.02ND	0.02ND	0.02ND
P,P-DDE	0.2	NG	0.02ND	0.02ND	0.02ND	0.02ND
P,P'-DDT	0.2	NG	0.02ND	0.02ND	0.02ND	0.02ND
Toxaphene	0.06	NG	1ND	1ND	1ND	1ND
Aroclor-1016	0.09*	NG	0.5ND	0.5ND	0.5ND	0.5ND
Aroclor-1221	0.09*	NG	0.5ND	0.5ND	0.5ND	0.5ND
Aroclor-1232	0.09*	NG	0.5ND	0.5ND	0.5ND	0.5ND
Aroclor-1242	0.09*	NG	0.5ND	0.5ND	0.5ND	0.5ND
Aroclor-1248	0.09*	NG	0.5ND	0.5ND	0.5ND	0.5ND
Aroclor-1254	0.09*	NG	0.5ND	0.5ND	0.5ND	0.5ND
Aroclor-1260	0.09*	NG	0.5ND	0.5ND	0.5ND	0.5ND
Total PCBs	0.09	NG	ND	ND	ND	ND

NS	No Standard
NG	No Guidance
ND	Not Detected
*	Total PCBs

Table 11D
Surface Water Analytical Results
Metals
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Concentration	**Recommended Surface Water Cleanup Standard ug/L**	**Recommended Surface Water Cleanup Guidance ug/L**	**SW-1** 4/29/2003 ug/L	**SW-2** 4/29/2003 ug/L	**SW-3** 4/29/2003 ug/L	**SW-4** 4/29/2003 ug/L
Antimony	3	NG	7.5ND	7.5ND	7.5ND	7.5ND
Arsenic	50	NG	16	11	14	12
Barium	1000	NG	110	93	91	94
Beryllium	NS	3	4.0ND	4.0ND	4.0ND	4.0ND
Cadmium	5	NG	2.0ND	2.0ND	2.0ND	2.0ND
Chromium	50	NG	25ND	25ND	25ND	25ND
Copper	200	NG	25ND	25ND	25ND	25ND
Lead	50	NG	15	5.0ND	5.0ND	5
Mercury	0.7	NG	0.20ND	0.20ND	0.20ND	0.20ND
Nickel	100	NG	13	10ND	10ND	10ND
Selenium	10	NG	25ND	25ND	25ND	25ND
Silver	50	NG	10ND	10ND	10ND	10ND
Thallium	NS	0.5	5.0ND	5.0ND	5.0ND	5.0ND
Zinc	NS	2000	110	31	25ND	71

NS No Standard
NG No Guidance
ND Not Detected

Table 11E
Surface Water Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 2A/2B HHMT - Port Ivory Facility

Location Sample Date Concentration		**Recommended Surface Water Cleanup Standard**	**Recommended Surface Water Cleanup Guidance**	**SW-1** 4/29/2003	**SW-2** 4/29/2003	**SW-3** 4/29/2003	**SW-4** 4/29/2003
PETROLEUM HYDROCARBONS	MG/L	NS	NG	1.2ND	1.1ND	1.1ND	1.2ND
OIL & GREASE	ug/L	15,000 (max)	NG	1.2ND	1.2ND	1.1ND	1.2ND
CYANIDE	MG/L	0.2	NG	0.01ND	0.01ND	0.01ND	0.01ND
pH	pH units	NS	NG	7.9	7.9	8.1	7.9
TOTAL PHENOLICS	MG/L	0.001	NG	0.05ND	0.05ND	0.05ND	0.05ND

NS	No Standard
NG	No Guidance
ND	Not Detected

9.3.2.2 Semi-Volatile Organic Compounds

SVOC compounds were either not detected or detected at concentrations below the RSWCS or RSWCG for all surface water samples. Please refer to Table 11B for SVOC results.

9.3.2.3 Pesticides and Polychlorinated Biphenyls

No pesticides or PCBs were detected for surface water samples. Please refer to Table 11C for pesticide and PCB results.

9.3.2.4 Metals

Several TAL metals were detected in one or more samples of surface water, but all were detected at concentrations below the LEL. Please refer to Table 11D for metals results.

9.3.2.5 Petroleum Hydrocarbons/Oil and Grease

TPH and oil/grease were not detected in the four surface water samples. Please refer to Table 11E for TPHC and oil/grease results.

9.3.2.6 Cyanide and Total Phenolics

Cyanide and total phenolics were not detected in the four surface water samples. Please refer to Table 11E for cyanide and total phenolics.

9.3.2.7 pH

The pH recorded for surface water samples ranged from 7.9 to 8.1. The pH value was recorded at 7.9 in three locations (SW-1, SW-2 and SW-4). The pH value of 8.1 was detected at sample SW-3. Please refer to Table 11E for pH results for surface water.

9.4 RI Summary

RI activities were proposed for seven general areas at Site 2A/2B: Area A-5, Area B-3, Area B-2, Area OP-1, Area GW-14 and Area FS1-1 at Site 2A and Area MW-10D at Site 2B. In addition, RI activities were also proposed to evaluate the southern limits of the K-2 location, which is situated on Site 3. Due to the presence of Buildings 74/75, the evaluation of the K-2 Area was performed within the limits of Site

2B, in the vicinity of GW-1; the samples were designated with a GW-1 prefix to identify location and not to reference GW-1 as an AOC. Field screening identified the limits of the petroleum impacts at the above listed AOCs through visual, olfactory and field instrumentation. Analytical results confirmed the conclusions rendered through field screening activities performed during the field investigation component of the RI. Thus, the RI implemented at Site 2A/2B has successfully delineated petroleum impacts at Area A, Area B-3, Area B-2, Area OP-1, Area GW-14 and Area FS-1B on Site 2A.

With respect to Area MW-10D located on Site 2B, the RI has successfully delineated the extent of potential petroleum impacts to the north, west and east, however, the RI activities to the south were limited by the presence of an active pipeline. Based on the results of the RI, the Port Authority has reviewed remedial alternatives to address potential petroleum impacts at Site 2A/2B. Given the redevelopment plan (i.e., the contemplated use) for Site 2A/2B, it was determined that the most appropriate remedial alternative to address the petroleum-impacted areas is hot spot excavation with off-site disposal for the majority of the above listed areas. With regard to Area MW-10D further evaluation is being performed based on the presence of the nearby pipeline. A discussion of the selected remedial alternative is presented in Section 12.

In addition, the potential UST Areas were reviewed in conjunction with building/site demolition activities and resulted in the identification of two tanks at the UST7 Area. Tank removal actions are presented in Section 11 of this report.

10.0 EXPOSURE ASSESSMENT

This Exposure Assessment (EA) addresses conditions at Site 2A/2B. As previously stated, this portion of the former industrial site is being redeveloped as the intermodal component of an intermodal/container storage facility. This EA describes the exposure setting, the nature of on-site contaminants, potential exposure points and routes and identifies potential exposure populations.

10.1 Exposure Setting

The HHMT-Port Ivory Facility is situated in an industrial section in the northwestern portion of Staten Island. Generally, the site is bordered by industrial/commercial businesses, roadways, surface water bodies (Arthur Kill and Bridge Creek) and undeveloped/vacant areas. No residential populations are situated immediately adjacent to Site 2A/2B. Site 2A/2B encompasses 22.6 acres and, at the time of Port Authority purchase, was improved by approximately twenty-nine buildings. Site 2A/2B was utilized for offices, boiler buildings, furnace structures, manufacturing and development buildings, locomotive maintenance, security stations, cafeteria, a sewage treatment plant and a reservoir for fire protection. Tanks, both USTs and ASTs, as well as an underground network of piping for drainage control were formerly situated at Site 2A/2B.

The entire HHMT-Port Ivory Facility including Site 2A/2B is serviced by connections to the potable water and sanitary system of New York City. No septic systems or potable water wells are reported to be located or have been located at Site 2A/2B, or elsewhere on the HHMT-Port Ivory Facility. Storm water generated on the site is directed via a sheet flow to on-site catch basins. These catch basins discharge, through the facilities underground stormwater sewer system, to the adjacent waterways, roadways, and marshland. Bridge Creek though not directly located on the site is within the proximity of Site 2A/2B and was therefore included in site investigation activities. This creek is a tidal, saline stream, which has been classified as SD by the NYSDEC. This classification indicates that due to man-made/natural conditions the stream cannot meet primary or secondary criteria. The stream can support fish survival and limited fishing.

In addition, several utility easements and pipelines traverse the subject site. Colonial Pipeline, Exxon (now known as ExxonMobil) and Texas Pipeline (maintained by SOHIO) maintain the easements. Colonial Pipeline maintains a 10-foot pipeline easement that extends in a north/south direction along the western property boundary of Sites 1 and 2A. The easement initiates in the far southwestern corner of Site 2B and extends along the southern and southwestern corner into Site 2A. The easement traverses through the southern portion of Site 2A in a northeasterly direction and enters the southwestern corner of Site 1. The pipeline continues through Site 1 extending across Richmond Terrace and through the western portion of Future Site 4 (Block 1309, Lot 10). The easement terminates at the northern end of Future Site 4 (Block 1309, Lot 10). ExxonMobil maintains an 18-foot easement that is located generally east of the Colonial Pipeline easement. This easement parallels the Colonial Pipeline easement initiates at the western portion of Site 2A, just south of Site 1 and extends through Site 1 to Richmond Terrace where it turns in a easterly direction and extends along the southern boundary of Future Site 4 (Block 1309, Lot 10). Two Texas Pipeline (maintained by SOHIO) easements extend in a east/west direction through Site 2B. In addition, Tidewater Pipe Company LTD formerly operated pipelines that extend in an east/west direction through Site 2B and continue in a northerly direction through Site 3. These abandoned pipelines continue across Richmond Terrace and extend along the easterly property boundary of Future Site 4.

Investigative activities undertaken as part of the previously described SI and RI indicate that the HHMT-Port Ivory Facility consists of non-indigenous fill on top of organic clays and peat or sand deposits. Fill was placed upon tidal salt-marsh or sand deposits to raise the elevation of the land for development. The fill is reported to have included: sand, silt, gravel mixed with debris, cinders generated from on-site coal-fired boilers, calcium carbonate and other carbonate salts generated as a by-product from soap manufacturing processes, spent diatomaceous filter earth from vegetable oil refining operations, and carbonaceous filter material from glycerin recovery operations. Generally, Site 2A/2B is characterized by the presence of urban fill material including cinders. The presence of by-product fill material at Site 2A/2B is generally limited to the northwestern portion of Site 2A along the boundary line between Site 1 and Site 2A.

10.2 Nature of On-Site Contaminants

The SI/RI activities undertaken by HMM included investigation of the soil and groundwater at Site 2A/2B as well as sediment and surface water of Bridge Creek. The SI/RI for soil at Site 2A/2B included the installation of over 50 soil borings and the collection of over 80 soil samples. Groundwater investigations included the installation of 5 monitoring wells, one temporary well, recording water levels from all newly installed wells and four existing wells, reviewing wells for the presence of free phase floating product and the collection and laboratory analysis of 10 groundwater samples.

In soil, only three VOCs, trans-1,3-dichloropropene (0.43 mg/kg), dichloromethane (0.17 mg/kg) and benzene (0.32 mg/kg) were detected in excess of corresponding RSCOs in the SI. No elevated concentrations of VOCs were detected during the RI. In the instances, when the contaminant was detected, it was marginally above the MDL for the compound. The total VOCs concentration was below the NYSDEC guidance criteria of 10 mg/kg for all samples collected from Site 2A/2B. A number of SVOCs were detected in soil samples collected from Sites 2A/2B during the SI and RI. However, the vast majority of these compounds were detected below NYSDEC TAGM RSCOs. The following SVOCs were detected at concentrations above corresponding RSCOs in one or more soil samples from Site 2A/2B: acenaphthaene, anthracene, flouranthene, flourene, pyrene, phenanthrene, naphthalene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(a)anthracene, dibenz[a,h]anthracene, benzo(k)flouranthene, indeno(1,2,3-cd)pyrene, and phenol. The total SVOC concentration was below the NYSDEC guidance criteria for all samples except the surface sample collected from location PG-STAIN-03, situated on Site 2A. The sample also exhibited the presence of a few PAH compounds in excess of 50 mg/kg. No PCBs were detected at concentrations in excess of corresponding RSCOs for surface or subsurface soil, as applicable.

Five pesticides (chlordane, endrin, dieldrin, heptachlor and heptachlor epoxide) were detected in excess of corresponding TAGM RSCOs in only a few samples collected from Site 2A/2B. Specifically, Dieldrin was detected at concentrations in excess of its corresponding RSCO in three samples; chlordane and endrin were both detected in excess of their individual RSCO in two samples; and, heptachlor and heptachlor epoxide were each detected in excess of their RSCO in only a single sample.

The NYSDEC TAGM generally regards site background as an appropriate concentration for the 24 TAL metals and has only established RSCOs for a portion of the targeted metals. Therefore, analytical results from investigative efforts were compared to the upper limit of the Eastern USA Background Range in the absence of a RCSO standard. This application is particularly appropriate in this instance given the presence of fill material and the urban nature of the site and site area. Analytical results revealed exceedances of RSCOs in one or more soil samples for 12 of the 13 of the metals with established guidance criteria; vanadium as not detected in excess of its RSCO in any of the soil samples from Site 2A/and 2B. Lead is reviewed by the NYSDEC on a case-by-case basis with 500 mg/kg established as the upper limit of the Eastern USA Background Range . Levels of lead in samples collected from Site 2A/2B ranged from not detected to 950 mg/kg.

Guidance criteria have not been established for cyanide or total phenolics. The presence of these types of contaminants is reviewed on a case-by-case basis by the NYSDEC. Cyanide was detected in several soil samples collected from Site 2A/2B. In the majority of instances, cyanide was detected at a concentration of less than 1 mg/kg. Total phenolics ranged from not detected to 5.5 mg/kg in 2 samples.

Four samples exhibited concentrations of TPHC in excess of 10,000 mg/kg. All four exhibiting concentrations above 10,000 mg/kg samples were collected from Site 2A. Eight samples exhibited a concentration of oil/grease above 10,000 mg/kg.

Samples collected ranged in pH from 3.8 to 12 with a little less then the majority, approximately 46%, of the values falling between 7.0 and 8.5. It should be noted that all of the samples exhibiting pH concentrations at or above 10 were collected from soil borings installed into the by-product fill material present at the site. SI/RI activities identified three types of fill at Site 2A/2B: urban fill (historic fill) including soil fill, vegetative debris, construction debris (wood, glass, brick, concrete); cinder fill consisting of ash and ash-type materials with some slag; and by-product fill from production activities (calcium carbonate, spent diatomaceous earth, and spent carbonaceous filter material). As previously stated, by-product fill was generally limited to the northwestern portion of Site 2A and was not identified at Site 2B. The majority of fill material encountered of Site 2A/2B consisted of urban fill and cinder fill.

Several petroleum-impacted areas were identified within areas consisting of fill material. Further sampling efforts (i.e., RI phase) performed at these petroleum-impacted areas delineated the extent of "impacted" areas, which may be unrelated to the fill material. Analytical results from endpoint sampling during the RI did not reveal the presence of any VOCs and revealed relatively low levels of PAH compounds.

Overall, very few contaminants were detected in groundwater samples collected from Site 2A/2B. No VOCs, pesticides or PCBs were detected in groundwater samples and only a single SVOC, bis(2-thylhexyl)phthalate, was detected in excess of its corresponding SVG in groundwater samples from Site 2A/2B. Bis(2ethylhexyl) phthalate is frequently identified as a laboratory contaminant and, in fact, this compound was identified as being a laboratory contaminant in other groundwater samples collected with regard to this project.

A number of TAL metals were detected in one or more groundwater samples collected as part of the groundwater investigation of Site 2A/2B. However, only six TAL metals were detected at concentrations in excess of corresponding NYSDEC SVGs: arsenic, barium, iron, magnesium, manganese, and sodium. Barium was detected in one sample whereas arsenic, iron, manganese, magnesium and sodium were detected in several samples at elevated levels. Cyanide was detected below its corresponding SVG and total phenolics were not detected in any groundwater samples. TPHC was not detected in the groundwater samples from Site 2A/2B. In contrast, O/G was detected in six of eleven groundwater samples.

Four sediment and four surface water samples were collected at locations along Bridge Creek generally within the boundary of Site 2A. Analytical results from surface water and sediment samples revealed the presence of several metals at concentrations in excess of NYSDEC screening and guidance criteria. Four pesticide compounds; chlordane, P,P'-DDD, P,P'-DDT and P,P'-DDE were detected in sediment samples in excess of the Human Health Bioaccumulation criteria during the RI. Total PCB concentrations and concentrations of Arclor-1260 were detected in all sediment samples in excess of the Human Health

Bioaccumulation criteria. No contaminant gradient was identified with respect to the detected contaminants indicating that the presence of same is a product of the urban nature of the stream corridor. Cessation of manufacturing activities at the site and the redevelopment of the site by the Port Authority is expected to continue to enhance the quality of Bridge Creek.

Based on the findings of the SI, HMM performed RI activities to delineate the presence of petroleum impacts at certain site locations. The RI successfully delineated the extent of petroleum impacts in soil and, in some instances, provided additional information pertaining to UST areas. The RI did not identify the presence of any VOCs in excess of NYSDEC guidance criteria or any free product conditions at Site 2A/2B. The specifics of the RI and UST evaluation efforts were presented earlier in this Report. Based on the results of the SI and RI, the Port Authority has proposed to address petroleum-impacted soil through source area excavation and removal. The remainder of the contaminants will be addressed as part of site redevelopment through the use of engineering and institutional controls.

10.3 Potential Exposure Points and Routes

The SI/RI revealed elevated concentrations (i.e., concentrations in excess of the NYDEC AGVs, RSCOs, and SVGs) of contaminants have been detected in environmental media at the site. These contaminants however are expected given the sites historical usage and its location in a historically urbanized area. In addition to contaminants that occurred directly as an outcome of historical site activities it can be assumed that contaminants at the site have migrated to the site from various sources found in historically urban areas. Generally the contaminants and levels that were found during the SI are believed to relate to both the sites historical use, location, and the fill reported to have been emplaced at the site as part of site development activities. Generally, the contaminants detected at concentrations in excess of NYSDEC soil guidance criteria included typical historic fill contaminants such as PAH compounds, metals, low levels of PCBs/pesticides, TPHC and O/G. As previously stated, non-fill contaminants such as VOCs were detected at elevated concentrations in only 3 of over 80 soil samples collected from Site 2A/2B.

In groundwater, no VOCs and only one SVOC were detected in excess of NYSDEC groundwater standards. The TAL metals iron, arsenic, barium, magnesium, manganese, and sodium were detected in excess of NYSDEC groundwater standards. In sediment, the several metals, pesticides/PCBs exceeded NYSDEC screening criteria. Analytical results did not reveal the presence of any contaminants at concentrations in excess of NYSDEC guidance criteria in one or more surface water samples.

On most sites, the most likely route of exposure for human receptors would be through ingestion of the contaminated soil, sediment or water or inhalation of airborne dust/particulates created through soil erosion in exposed areas of the site. However, on this site, a low potential exists for human contact, and thus few exposure points exist with regard to contaminants present at the site based on the two following conditions: (1) No human populations are situated in the immediate vicinity of the site. Persons present at the site are limited to Port Authority personnel or contractors retained by the Port Authority; and, (2) The Port Authority has implemented health and safety measures to minimize contact with contaminants by all persons currently performing tasks at the site. In addition, the Port Authority requires that contractors have and implement health and safety plans based on their tasks.

As previously stated, groundwater is not utilized for potable purposes and thus human populations will not contact groundwater. Bridge Creek is situated west of Site 2A. However, the Creek's physical position between the HHMT-Port Ivory Facility and the Howland Hook Marine Terminal does not provide easy access for area persons. Further, a fence is present along Bridge Creek, which further restricts access. Thus, Bridge Creek is considered to have a low potential as a point of exposure for human populations.

Any contamination remaining after the performance of remedial actions will be addressed through redevelopment efforts including engineering and institutional controls. Thus, exposure points will be eliminated in conjunction with site redevelopment.

10.4 Receptor Populations

As previously stated, no human population reside at or in the immediate vicinity of the Site 2A/2B. Further, persons currently present at the site are limited to Port Authority personnel or contractors retained by the Port Authority. To minimize exposure, the Port Authority and its contractors have implemented health and safety measures to minimize contact with contaminants by all persons currently performing tasks at the site. Additional persons will be present on site subsequent to the completion of site redevelopment. As the site will be redeveloped for industrial purposes (intermodal/container storage facility), no resident population will occupy the site. Contamination at the site will have been addressed prior to these future worker populations being present at the site.

10.5 Exposure Assessment Summary

Information gained through the SI /RI has revealed the presence of fill material and a contaminant profile, which is consistent with urban sites located in the New York Metropolitan Region. The presence of contaminants in the soil does not appear to have significantly impacted groundwater quality at the site. Based on delineation efforts, petroleum impacts (identified through assessment and investigation activities) will be addressed through excavation of source areas. Any residual contamination will be addressed through and in conjunction with site redevelopment efforts.

Human receptors have not been identified in the immediate vicinity of the site and health and safety procedures are employed by the Port Authority and its contractors to minimize exposure to persons working at the site during ongoing redevelopment efforts. The intended future redevelopment of the site as an intermodal/container storage facility will further restrict contaminant pathways/routes through the installation of pavement and other semi-impervious material, which will function as an environmental cap throughout the entire site. This action will stabilize contaminants in the soil and fill material by impending infiltration as well as minimize or, in some cases, prevent erosion, as well as forming a barrier to human exposure to impacted soil and groundwater. Redevelopment of the site also is anticipated to continue to reduce any residual contamination in sediment/surface water at Bridge Creek, thus enhancing water quality and virtually eliminating this creek as a pathway of contaminants to human receptors.

The Port Authority will continue to implement appropriate actions to minimize exposure to human populations during remedial efforts and site redevelopment. In addition, the Port Authority will monitor the integrity of any engineering controls employed as part of the overall site remedial and redevelopment strategy. Given the above, no further action is required with regard to exposure assessment for Site 2A/2B.

11.0 UST REMOVAL

During the demolition of the concrete foundation located in the vicinity of Building S-35, in September 2002, the Port Authority identified the presence of an UST. A review of available historical records revealed that the UST encountered during the demolition activities was a former #6 fuel oil tank, which had been closed in place by P&G.

Subsequently, the Port Authority removed surface soil surrounding the UST and identified a second UST situated adjacent to the originally encountered tank. Further evaluation revealed that both tanks were located within concrete vaults and were filled with inert material (bricks, stone and sand). Subsequently, the Port Authority removed the tanks and the surrounding concrete vaults. Indications of petroleum impacts to the surrounding soil were observed during excavation activities. As a result, the Port Authority excavated visually impacted soil immediately adjacent to the vaults. Excavated soil was stockpiled on-site pending off-site disposal at an appropriate recycling/disposal facility. The excavation measured approximately 25 feet in length, 20 feet in width, and approximately 11 feet in depth; groundwater was encountered at approximately 8 feet bgs. The USTs and all connected piping were removed and set aside for off-site recycling with the other recycled materials from the demolition activities. Subsequently, the area was backfilled with existing site soil/crushed concrete. Based on the above described tank removal actions, no further action is proposed with regard to UST7.

12.0 SUMMARY OF REMEDIAL ACTIONS

12.1 Proposed Remedial Actions

The SI of Site 2A/2B revealed a variety of contaminants at a wide-range of concentrations in samples collected from soil, sediment, surface water and groundwater. The presence of these contaminants was not unexpected given the former use and location of the site. Overall, given that the subject site is located in a highly urbanized and historically industrial area, it is reasonable to assume that diffuse anthropogenic pollution has contributed, over many decades, to the contaminants present in site soil, sediment, surface water and groundwater. Diffuse anthropogenic pollution is typically defined as pollution emanating from a variety of sources including automobile exhaust and industrial smokestacks. The primary contaminants of concern associated with these types of sources are lead and PAH compounds, but it is not unusual to encounter other types of contaminants associated with sustained urban activity. Regulatory agencies have indicated that most areas are likely to have been impacted, to some degree, by anthropogenic activity, but recognize that the greatest impacts are to those sites located in urban areas such as the subject site. However, the SI also revealed the presence of two issues (the presence of several potential petroleum-impacted areas and the potential presence of USTs), which required additional investigation or delineation prior to the redevelopment of Site 2A/2B. Subsequently, the RI successfully delineated the extent of potential petroleum issues at all of the identified locations. The RI, in conjunction with other field efforts, has resolved UST related issues at the four potential UST areas (UST1, UST3, UST4 and UST7). As described in Section 11, investigations at UST 7 revealed two tanks, which had been closed in place by P&G. These tanks were removed as part of site redevelopment efforts.

Based on the information gained through the RI and the intended future usage of Site 2A/2B, hot spot excavation was identified as the appropriate remedial action to address petroleum-impacted soil at the following areas: Area B-3/B-2, Area GW-14, Area OP-1, Area A-5 and Area FS-1B. It was proposed to remove "delineated" hot spots of potentially petroleum-impacted soil at these locations in accordance with NYSDEC remedial procedures. Proposed excavation areas are presented in Figure 20. Further, it was proposed to collect samples from resultant excavation limits to confirm the success of the remedial efforts. Samples were to be analyzed for VOCs (8270) and PAH compounds (8260) based on the findings from prior sampling efforts. A summary of the actions undertaken prior to entering the VCP Program are provided in Section 12.2.

With regard to other site contaminants including fill material, the SI/RI activities identified the presence of contaminants at Site 2A/2B, which are typical to urban sites in the New York Metropolitan region. Further, the presence of contaminants in soil does not appear to have adversely impacted groundwater quality at Site 2A/2B. Overall, industrial/commercial usage such as the Port Authority's planned usage of the site as an intermodal facility and container terminal is not inconsistent with the levels of contamination noted to be present in site soil and groundwater. In fact, it is anticipated that the Port Authority's redevelopment of the site will have a positive impact on site environmental quality. In particular, the Port Authority intends to install material such as pavement and other semi-impervious material, which will function as an environmental cap throughout the entire site. This action will tend to stabilize contaminants present in soil and fill material by impeding infiltration, thereby reducing the potential for contaminants in soil to leach from the unsaturated zone to groundwater. In addition, the placement of such materials will safeguard the public by preventing exposure to contaminants in soil and groundwater. Additional information pertaining to development actions is provided in Section 13.

12.2 Completed Remedial Actions

To accommodate site redevelopment efforts, hot spot excavation was performed at locations within Site 2A. No remedial efforts have been proposed or performed at Site 2B. A summary of the excavation and sampling at 2A is presented by AOC in the following Sections. Excavation and sampling were performed in accordance with NYSDEC protocols. Continuous field screening, utilizing a photoionization detector (PID) was performed through excavation and sampling efforts. The limits of the hot spot excavation areas and the locations of samples are provided on Figure 21 and a summary of sampling is presented in Table 12.

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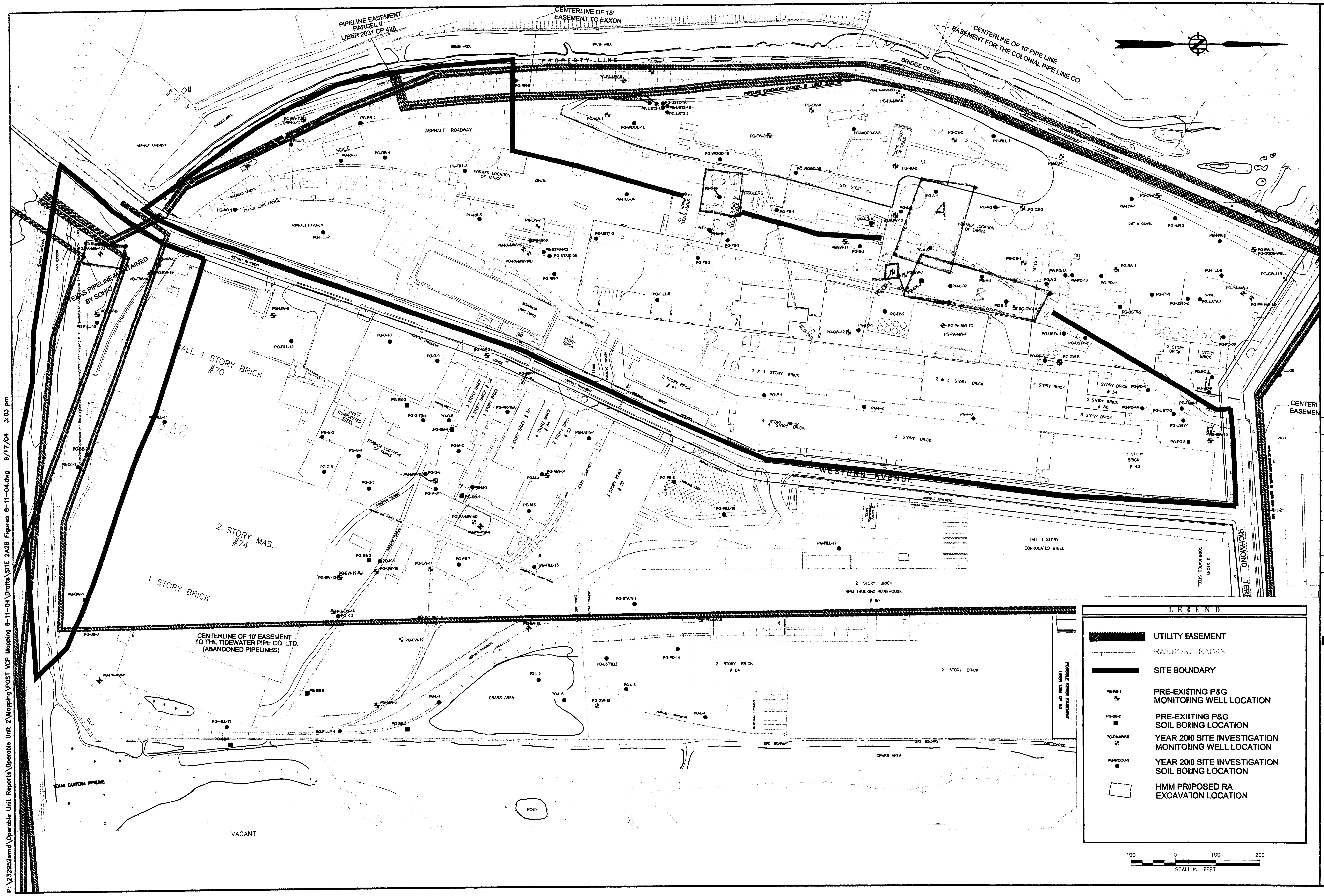

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ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

SITE 2A/2B PROPOSED HOT SPOT EXCAVATION AREAS, REMEDIAL ACTION

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number **FIGURE 20**

FS1-7

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	1.4	4.5' to 5'
Benzo[a]pyrene :	1	4.5' to 5'
Chrysene :	1.5	4.5' to 5'

FS1-8

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.22 J	4.5' to 5'
Benzo[a]pyrene :	0.18 J	4.5' to 5'

A5-5

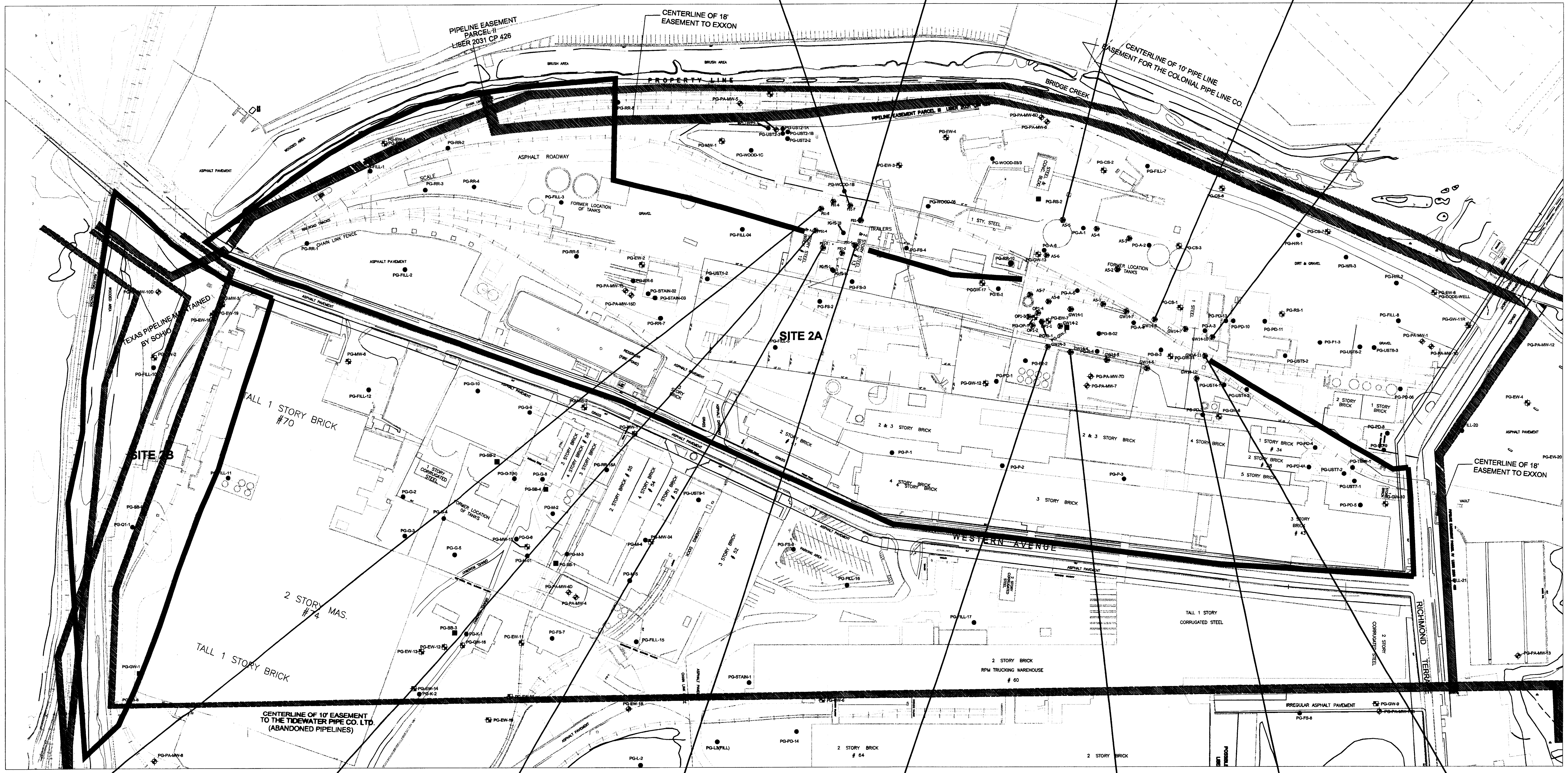
ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.14 J	3' to 3.5'

GW14-8

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.27 J	3' to 3.5'
Benzo[a]pyrene :	0.23 J	3' to 3.5'

GW14-10

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.26 J	3' to 3.5'
Benzo[a]pyrene :	0.17 J	3' to 3.5'



FS1-4

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	2.2	4.5' to 5'
Benzo[a]pyrene :	1.7 J	4.5' to 5'
Benzo[b]flouranthene:	2	4.5' to 5'
Chrysene :	2.3	4.5' to 5'

FS1-5

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.24 J	4.5' to 5'

FS1-3

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.21 J	4.5' to 5'

FS1-1

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.27 J	4.5' to 5'
Benzo[a]pyrene :	0.36 J	4.5' to 5'
Chrysene :	0.41 J	4.5' to 5'

GW14-3

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.062 J	3' to 3.5'

GW14-4

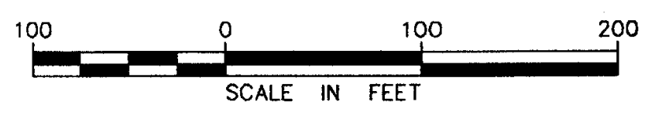
ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.11 J	3' to 3.5'

GW14-12

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.27 J	3' to 3.5'
Benzo[a]pyrene :	0.24 J	3' to 3.5'

GW14-11

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.10 J	3' to 3.5'



RECOMENDED SOIL CLEANUP OBJECTIVES

COMPOUND	RSCO (mg/kg)
SVOC	
Benzo[a]anthracene :	0.224 or MDL
Benzo[a]pyrene :	0.061 or MDL
Benzo[b]flouranthene:	1.1
Chrysene:	0.4

MDL - METHOD DETECTION LIMIT

NOTES:
1. THIS MAP PRESENTS CONCENTRATIONS OF VOCs AND SVOCs AT LEVELS ABOVE CORRESPONDING TAGM RSCOs.

L E G E N D

▨	UTILITY EASEMENT
┼	RAILROAD TRACKS
▬	SITE BOUNDARY
A5-5	HMM REMEDIAL ACTION POST EXCAVATION/CONFIRMATION SAMPLE LOCATIONS
PG-PA-MW-5 ⌖	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION
PG-WOOD-3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION
PG-RS-1	PRE-EXISTING P&G MONITORING WELL LOCATION
PG-SB-2 ■	PRE-EXISTING P&G SOIL BORING LOCATION
ANALYTE	INDICATES COMPOUND FOR WHICH LABORATORY ANALYSIS WAS CONDUCTED
RES	CONTAMINANT CONCENTRATION IN MG/KG
J	THE REPORTED VALUE WAS OBTAINED FROM A READING THAT WAS LESS THAN THE CONTRACT REQUIRED DETECTION LIMIT (CRDL), BUT GREATER THAN OR EQUAL TO THE INSTRUMENT DETECTION LIMIT (IDL).
DEPTH	DEPTH IN FEET BELOW GROUND SURFACE

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ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

SITE 2A/2B HOT SPOT EXCAVATION LIMITS AND CONFIRMATION SAMPLE LOCATIONS, REMEDIAL ACTION

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number **FIGURE 21**

P:\232952wmd\Operable Unit Reports\Operable Unit 2\Mapping\POST VCP Mapping 8-11-04\Drafts\SITE 2A2B ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/17/04 4:03 pm

Table 12
Summary of Remedial Actions and Sampling
Site 2A/2B: HHMT- Port Ivory Facility

Initial SI AOC	SI Soil Boring Location	Description of Issues	Description of Actions and Sampling	Analytical Parameters
Area A	**A-5**	The RI delineated potential petroleum-impacted soil surrounding the borings located in Area A.	The delineated area consisting of Area A was excavated to the groundwater table to address potential petroleum impacted soil. Although not located on Site 1, the excavations for A-2 and A-5 were combined based upon field observations. Soil samples were collected from the 0.0-0.5 foot interval above the groundwater table, approximately 3.0-3.5 feet bgs. The excavation measured approximately 170 feet by 147 feet. Additional excavation, measuring approximately 68 feet by 32 feet, was performed off the northwest corner to address visual signs of potential petroleum impacts. Eight confirmation samples were collected from the A-5 excavation: A5-1, A5-2, A5-3, A5-4, A5-5, A5-6, A5-7, and A5-8. All samples were submitted for laboratory analysis. Excavated soil was stockpiled on site pending off-site disposal. The majority of this excavation is located on Site 1, with only a small area at Site 2A.	VOC 8260; BN 8270
Area B	**B-2, B-3, GW-14**	The RI delineated potential petroleum-impacted soil surrounding the borings located in Area B including sheen noted on groundwater at GW-14.	The delineated area consisting of Area B including B-2 and B-3 and Area GW-14 was excavated to the groundwater table to address potential petroleum impacted soil. Soil samples were collected from the 0.0-0.5 foot interval above the groundwater table. The excavated soil was stockpiled on site pending off-site disposal. The B-2/B-3 excavations joined the GW-14 excavation with resultant sampling utilized the GW-14 designation. The Area GW-14 excavation extended approximately 305 feet in length (north to south) and 110 feet in width (east to west). The excavation was extended to a depth of approximately 3.5 feet; the excavation activities encountered groundwater at some locations. Approximately three-quarters of the excavation	VOC 8260; BN 8270

Table 12
Summary of Remedial Actions and Sampling
Site 2A/2B: HHMT- Port Ivory Facility

Initial SI AOC	SI Soil Boring Location	Description of Issues	Description of Actions and Sampling	Analytical Parameters
			is located on Site 2A, while one-quarter is located in Site 1.	
OP-1	**OP-1**	A sheen was noted on the groundwater surface of OP-1	The Area OP-1 excavation extended approximately 30 feet in length and 30 feet in width and was extended 3.5 feet in depth. No readings above background were recorded on the PID. The Area OP-1 excavation was located to the south of the Area GW-14 excavation, and situated entirely within Site 2A. All visually impacted soils were removed from Area OP-1. No groundwater was encountered during excavation activities. Four soil samples were collected from the sidewalls of the excavation at 3-3.5 feet bgs. Excavated soil was stockpiled onsite pending off-site disposal.	VOC 8260; BN 8270
Former Structures – FS-1B	**FS-1B**	The RI delineated potential petroleum-impacted soil surrounding the FS-1B location.	The delineated area surrounding FS-1B was excavated to the groundwater table to address potential petroleum impacted soil. Soil samples were collected from the 0.0-0.5 foot interval above the groundwater table. The excavation measured 100 feet by 83 feet. Eight confirmation soil samples were collected: FS1-1, FS1-2, FS1-3, FS1-4, FS1-5, FS1-6, FS1-7, and FS1-8. Soil samples were taken at the base of the sidewalls at the 0.0-0.5 foot interval above the groundwater table (approximately 4.5-5' bgs). Excavated soil was stockpiled onsite pending off-site disposal. The majority of this excavation is located on Site 1, with only a small area at Site 2A.	VOC 8260; BN 8270

12.2.1 Area B-3/B-2

The Area B-3/B-2 excavation was extended to address visual indications of petroleum impacts resulting in the joining of the Area B-3/B-2 excavation and the Area GW-14 excavation. As such, the excavation and sampling for Area B-3/B-2 are described in detail under Area GW-14 in Section 12.2.2 below.

12.2.2 Area GW-14

The Area GW-14 excavation extended approximately 305 feet in length (north to south) and 110 feet in width (east to west). The excavation was extended to a depth of approximately 3.5 feet; the excavation activities encountered groundwater at some locations. Approximately three-quarters of the excavation is located on Site 2A, while one-quarter is located in Site 1. Visually impacted soils located from within the limits of the excavation ranged from cinder and ash fill, red clays, silts and sands. PID readings were continuously recorded and ranged from not detected to 1500 parts per million (ppm). No measurable free product was observed to be present or to form on groundwater, where present.

During the removal of soil, piping was noted extending north to south along the eastern portion of the excavation. All piping was removed from the excavation. Based on field observations and historical site maps, it appears that the piping was associated with a former storm sewer line. Additional piping was uncovered in the northern corner of the excavation. The piping was traced and noted to extend to the north. The expansion of the excavation revealed the presence of a UST measuring 4 feet wide by 8 feet long by 6 feet in diameter. Based on historical information, it appeared that the UST was utilized as part of a former oil/water separator system. The UST appeared intact and additional efforts were undertaken to inspect and removed the vessel. Inspection of the tank and the underlying soil did not reveal the presence of residual materials or visually impacted soils. Field screening did not reveal the any readings above background. Due to the presence of the UST, the excavation was expanded in an easterly direction. The extension revealed the presence of three concrete tubs. The tubs were connected with piping and appeared to be part of the oil/water separators system. The system was removed from the excavation for off-site disposal.

Twelve soil samples were collected from the sidewalls of the excavation at the soil/ground water interface (3-3.5 feet bgs). All soil samples were analyzed for PAH Compounds (8260) and VO Compounds (8270). VOCs were either ~~not detected or~~ were detected at concentrations below corresponding RSCOs. No

Table 13A
Soil Analytical Results
Area GW-14
Volatile Organic Compounds
Site 2A/2B - HHMT-Port Ivory Facility

Location **Sample Date** **Sample Depth (ft)** **Units**	**Recommended Soil Cleanup Objective mg/kg**	**GW14-1** 4/9/2003 3-3.5 mg/kg	**GW14-2** 4/9/2003 3-3.5 mg/kg	**GW14-3** 4/9/2003 3-3.5 mg/kg	**GW14-4** 4/9/2003 3-3.5 mg/kg	**GW14-5** 4/9/2003 3-3.5 mg/kg	**GW14-6** 4/9/2003 3-3.5 mg/kg
1,2,4-trimethylbenzene	3.4	0.0014U	0.0013U	0.0012U	0.0012U	0.0012U	0.0013U
1,3,5-trimethlybenzene	NS	0.0014U	0.0013U	0.0012U	0.0012U	0.0012U	0.0013U
4-isopropyltoluene	NS	0.0014U	0.0013U	0.0012U	0.0012U	0.0012U	0.0024
Benzene	0.06	0.0014U	0.0013U	0.0012U	0.0012U	0.0012U	0.0013U
Ethylbenzene	5.5	0.0014U	0.0013U	0.0012U	0.0012U	0.0012U	0.0013U
Isopropylbenzene	NS	0.0014U	0.0013U	0.0048	0.0012U	0.0012U	0.0013U
M&p-Xylenes	1.2*	0.0028U	0.0026U	0.0024U	0.0025U	0.0024U	0.0025U
Methyl-t-butyl ether	NS	0.0014U	0.0013U	0.0012U	0.0012U	0.0012U	0.0013U
Naphthalene	13	0.0014U	0.0013U	0.0012U	0.0012U	0.0012U	0.0013U
N-butylbenzene	NS	0.0014U	0.0013U	0.0013	0.0012U	0.0012U	0.0013U
N-Propylbenzene	NS	0.0014U	0.0013U	0.0047	0.0012U	0.0012U	0.0013U
O-Xylene	1.2*	0.0014U	0.0013U	0.0012U	0.0012U	0.0012U	0.0013U
Sec-butylbenzene	NS	0.0014U	0.0013U	0.0046	0.0012U	0.0012U	0.0013U
T-butylbenzene	NS	0.0014U	0.0013U	0.0049	0.0012U	0.0012U	0.0013U
Toluene	1.5	0.011	0.0084	0.011	0.0084	0.0076	0.0099
Total VOCs	10	0.011	0.0084	0.0313	0.0084	0.0076	0.0123

U Undetectable Levels
ND Not Detected
NS No Standard
* Total Xylene Recommended Cleanup Standard

Table 13A
Soil Analytical Results
Area GW-14
Volatile Organic Compounds
Site 2A/2B - HHMT-Port Ivory Facility

Location **Sample Date** **Sample Depth (ft)** **Units**	**Recommended Soil Cleanup Objective mg/kg**	**GW14-7** 4/9/2003 3-3.5 mg/kg	**GW14-8** 4/9/2003 3-3.5 mg/kg	**GW14-9** 4/24/2003 3-3.5 mg/kg	**GW14-10** 4/24/2003 3-3.5 mg/kg	**GW14-11** 4/24/2003 3-3.5 mg/kg	**GW14-12** 4/24/2003 3-3.5 mg/kg
1,2,4-trimethylbenzene	3.4	0.0014U	0.0012U	0.0014U	0.0011U	0.0011U	0.0011U
1,3,5-trimethlybenzene	NS	0.0014U	0.0012U	0.0014U	0.0011U	0.0011U	0.0011U
4-isopropyltoluene	NS	0.0014U	0.0012U	0.0014U	0.0011U	0.0088	0.0086
Benzene	0.06	0.0014U	0.0012U	0.0014U	0.0011U	0.0011U	0.0011U
Ethylbenzene	5.5	0.0014U	0.0012U	0.0014U	0.0011U	0.0011U	0.0011U
Isopropylbenzene	NS	0.0014U	0.0012U	0.0014U	0.0011U	0.0011U	0.0011U
M&p-Xylenes	1.2*	0.0029U	0.0025U	0.0028U	0.0022U	0.0022U	0.0022U
Methyl-t-butyl ether	NS	0.0014U	0.0012U	0.0014U	0.0011U	0.0011U	0.0011U
Naphthalene	13	0.0014U	0.0012U	0.0014U	0.0011U	0.0011U	0.0011U
N-butylbenzene	NS	0.0014U	0.0012U	0.0014U	0.0011U	0.0011U	0.0011U
N-Propylbenzene	NS	0.0014U	0.0012U	0.0014U	0.0011U	0.0011U	0.0011U
O-Xylene	1.2*	0.0014U	0.0012U	0.0014U	0.0011U	0.0011U	0.0011U
Sec-butylbenzene	NS	0.0014U	0.0012U	0.0014U	0.0011U	0.0011U	0.0011U
T-butylbenzene	NS	0.0014U	0.0012U	0.0014U	0.0011U	0.0011U	0.0011U
Toluene	1.5	0.015	0.0054	0.0014U	0.0011U	0.0011U	0.0011U
Total VOCs	10	0.015	0.0054	ND	ND	0.0088	0.0086

U Undetectable Levels
ND Not Detected
NS No Standard
* Total Xylene Recommended Cleanup Standard

Table 13B
Soil Analytical Results
Area GW-14
PAH Compounds
Site 2A/2B - HHMT-Port Ivory, Facility

Location	**Recommended Soil Cleanup Objective mg/kg**	**GW14-1**	**GW14-2**	**GW14-3**	**GW14-4**	**GW14-5**	**GW14-6**	**GW14-7**	**GW14-8**	**GW14-9**	**GW14-10**	**GW14-11**	**GW14-12**
Sample Date		4/9/2003	4/9/2003	4/9/2003	4/9/2003	4/9/2003	4/9/2003	4/9/2003	4/9/2003	4/24/2003	4/24/2003	4/24/2003	4/24/2003
Sample Depth (ft)		3-3.5	3-3.5	3-3.5	3-3.5	3-3.5	3-3.5	3-3.5	3-3.5	3-3.5	3-3.5	3-3.5	3-3.5
Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	41	0.69U	0.64U	0.61U	0.62U	0.60U	0.63U	0.096J	0.14J	0.69U	0.14J	0.088J	0.079J
Anthracene	50	0.69U	0.64U	0.61U	0.11J	0.60U	0.63U	0.71U	0.62U	0.69U	0.15J	0.062J	0.12J
Benzo(a)anthracene	0.224 or MDL	0.69U	0.64U	0.086J	0.16J	0.60U	0.082J	0.084J	**0.27J**	0.69U	**0.26J**	0.13J	**0.27J**
Benzo(a)pyrene	0.061 or MDL	0.69U	0.64U	**0.062J**	**0.11J**	0.60U	0.63U	0.71U	**0.23J**	0.69U	**0.17J**	**0.10J**	**0.24J**
Benzo(b)fluoranthene	1.1	0.69U	0.64U	0.14J	0.16J	0.60U	0.084J	0.18J	0.53J	0.69U	0.36J	0.18J	0.35J
Benzo(g,h,i)perylene	50	0.69U	0.64U	0.61U	0.62U	0.60U	0.63U	0.71U	0.093J	0.69U	0.56U	0.54J	0.081J
Benzo(k)fluoranthene	1.1	0.69U	0.64U	0.61U	0.070J	0.60U	0.63U	0.71U	0.14J	0.69U	0.12J	0.54J	0.12J
Chrysene	0.4	0.69U	0.64U	0.11J	0.18J	0.60U	0.075J	0.12J	0.37J	0.69U	0.31J	0.14J	0.29J
Dibenzo(a,h)Anthracene	0.014 or MDL	0.69U	0.64U	0.61U	0.62U	0.60U	0.63U	0.71U	0.62U	0.69U	0.56U	0.54U	0.56U
Fluoranthene	50	0.69U	0.64U	0.20J	0.35J	0.60U	0.21J	2.4	8.7	0.15J	0.91	0.37J	0.86
Fluorene	50	0.69U	0.64U	0.61U	0.080J	0.60U	0.63U	0.71U	0.62U	0.69U	0.12J	0.071J	0.098J
Indeno(1,2,3-cd)pyrene	3.2	0.69U	0.64U	0.61U	0.62U	0.60U	0.63U	0.71U	0.099J	0.69U	0.56U	0.54U	0.079J
Napthalene	13	0.074J	0.64U	0.61U	0.62U	0.60U	0.63U	0.16J	0.15J	0.095J	0.20J	0.083J	0.089J
Phenanthrene	50	0.69U	0.64U	0.15J	0.19J	0.60U	0.19J	1.5	0.62U	0.16J	0.79	0.24J	0.76
Pyrene	50	0.69U	0.64U	0.18J	0.30J	0.60U	0.17J	0.22J	0.84	0.10J	0.61	0.33J	0.55J
Total PAH Compounds	500	0.074	ND	0.928	1.71	ND	0.811	4.76	11.562	0.505	4.14	2.874	3.986

U Undetectable Levels
ND Not Detected
MDL Method Detection Limit

Table 14A
Soil Analytical Results
Area OP-1
Volatile Organic Compounds
Site 2A/2B - HHMT - Port Ivory Facility

Location **Sample Date** **Sample Depth (ft)** **Units**	**Recommended** **Soil Cleanup** **Objective** **mg/kg**	**OP1-1** 4/24/2003 3-3.5 mg/kg	**OP1-2** 4/24/2003 3-3.5 mg/kg	**OP1-3** 4/24/2003 3-3.5 mg/kg	**OP1-4** 4/24/2003 3-3.5 mg/kg
1,2,4-trimethylbenzene	3.4	0.0013U	0.0011U	0.0012U	0.0011U
1,3,5-trimethlybenzene	NS	0.0013U	0.0011U	0.0012U	0.0011U
4-isopropyltoluene	NS	0.0013U	0.0011U	0.0012U	0.0011U
Benzene	0.06	0.0013U	0.0011U	0.0012U	0.0011U
Ethylbenzene	5.5	0.0013U	0.0011U	0.0012U	0.0011U
Isopropylbenzene	NS	0.0013U	0.0011U	0.0012U	0.0011U
M&p-Xylenes	1.2*	0.0025U	0.0023U	0.0023U	0.0022U
Methyl-t-butyl ether	NS	0.0013U	0.0011U	0.0012U	0.0011U
Naphthalene	13	0.0013U	0.0011U	0.0012U	0.0011U
N-butylbenzene	NS	0.0013U	0.0011U	0.0012U	0.0011U
N-Propylbenzene	NS	0.0013U	0.0011U	0.0012U	0.0011U
O-Xylene	1.2*	0.0013U	0.0011U	0.0012U	0.0011U
Sec-butylbenzene	NS	0.0013U	0.0011U	0.0012U	0.0011U
T-butylbenzene	NS	0.0013U	0.0011U	0.0012U	0.0011U
Toluene	1.5	0.0013U	0.0011U	0.0012U	0.0011U
Total VOCs	10	ND	ND	ND	ND

U	Undetectable Levels
NS	No Standard
ND	Not Detected

* Total Xylene Recommended Cleanup Standard

Table 14B
Soil Analytical Results
Area OP-1
PAH Compounds
Site 2A/2B - HHMT- Port Ivory Facility

Location **Sample Date** **Sample Depth (ft)** **Units**	**Recommended Soil Cleanup Objective mg/kg**	**OP1-1** 4/24/2003 3-3.5 mg/kg	**OP1-2** 4/24/2003 3-3.5 mg/kg	**OP1-3** 4/24/2003 3-3.5 mg/kg	**OP1-4** 4/24/2003 3-3.5 mg/kg
Acenaphthene	41	0.63U	0.57U	0.58U	0.55U
Anthracene	50	0.63U	0.57U	0.58U	0.55U
Benzo(a)anthracene	0.224 or MDL	0.072J	0.57U	0.58U	0.55U
Benzo(a)pyrene	0.061 or MDL	0.63U	0.57U	0.58U	0.55U
Benzo(b)fluoranthene	1.1	0.63U	0.57U	0.58U	0.071J
Benzo(g,h,i)perylene	50	0.63U	0.57U	0.58U	0.55U
Benzo(k)fluoranthene	1.1	0.63U	0.57U	0.58U	0.55U
Chrysene	0.4	0.071J	0.57U	0.58U	0.060J
Dibenzo(a,h)Anthracene	0.014 or MDL	0.63U	0.57U	0.58U	0.55U
Fluoranthene	50	0.12J	0.57U	0.058J	0.18J
Fluorene	50	0.63U	0.57U	0.58U	0.55U
Indeno(1,2,3-cd)pyrene	3.2	0.63U	0.57U	0.58U	0.55U
Napthalene	13	0.064J	0.57U	0.58U	0.55U
Phenanthrene	50	0.088J	0.57U	0.58U	0.11J
Pyrene	50	0.14J	0.57U	0.58U	0.10J
Total PAH Compounds	500	0.555	ND	0.058	0.521

U Undetectable Levels

ND Not Detected

MDL Method Detection Limit

samples exceeded the RSCO of 10 mg/kg for total VOCs. Only two PAH Compounds, benzo(a)anthracene and benzo(a)pyrene, were detected above corresponding RSCOs. Benzo(a)anthracene was detected at concentrations in excess of its RSCO in three samples ranging from 0.26 mg/kg in sample GW14-10 to 0.27 mg/kg in samples GW14-8 and GW14-12. Benzo(a)pyrene was detected at concentrations in excess of its RSCO in six samples ranging from 0.062 mg/kg in sample GW14-3 to 0.24 mg/kg in sample GW14-12. None of the samples were noted to exceed 50 mg/kg guidance for individual PAH Compounds or the 500 mg/kg guidance criteria for total PAH compounds. Please refer to Tables 13A and 13B for a summary of all analytical results.

LOW PAH

12.2.3 Area OP-1

The Area OP-1 excavation extended approximately 30 feet in length and 30 feet in width and was extended 3.5 feet in depth. No readings above background were recorded on the PID. The Area OP-1 excavation was located to the south of the Area GW-14 excavation, and situated entirely within Site 2A. All visually impacted soils were removed from Area OP-1. No groundwater was encountered during excavation activities. Four soil samples were collected from the sidewalls of the excavation at 3-3.5 feet bgs. All samples were analyzed for PAH Compounds (8260) and VOCs (8270).

No VOCs were detected in the four samples collected from the excavation. All PAH compounds were detected at concentrations below corresponding RSCOs and no sample exceeded the 500 mg/kg guidance threshold for total PAH compounds. Please refer to Tables 14A and 14B for a summary of analytical results.

12.2.4 Area A-5

The Area A-5 excavation measured approximately 170 feet in length (east to west) and 150 feet in width (north to south) and extended 3.5 feet in depth. No readings above background were recorded on the PID. The northeastern corner of the Area A-5 excavation overlaps the southwestern excavation of the Area GW-14 (Area B-3/B-2) excavation. Approximately one-quarter of the Area A-5 excavation is situated within the limits of Site 2A, the majority of the excavation is located on Site 1. Access to the underlying soils was possible after the removal of railroad tracks and concrete slabs. Visually impacted soils located from within the limits of the excavation consisted of a mix of cinder, ash, lime sludge/by-product fill, fine black sand and tan sand. The depth of the excavation was limited by the presence of groundwater (3.5 feet bgs) as well as the presence of lime sludge/by-product fill and numerous tree trunks (4 feet to 15 feet bgs).

Eight soil samples were collected from the interface of the sidewalls/ground water table. All samples were analyzed for PAH Compounds (8260) and VOCs (8270). No VOCs were detected at concentrations above corresponding RSCOs and no sample exceeded the total VOC guidance threshold of 10 mg/kg. ~~PAH~~ compounds were either not detected or detected at concentrations below the RSCO in all but one sample. Benzo(a)pyrene was detected at 0.14 mg/kg in Sample A5-5. None of the samples collected exceeded the guidance threshold of 500 mg/kg for total PAH compounds. Please refer to Tables 15A and 15B for a summary of the analytical results.

12.2.5 FS-1B Area

The Area FS-1B measured approximately 100 feet in length (east to west) and 83 feet in width (north to south) and extended approximately 5.0 feet in depth, just above the groundwater table. No readings above background were recorded on the PID. The Area FS-1B excavation is located to the southwest of the Area GW-14 excavation. Approximately one-quarter of the excavation is located on Site 2A, the majority of the excavation is located on Site 1. Visually impacted soils located from within the limits of the excavation consisted of a mix of cinder, ash, lime sludge/by-product fill material, sand, tree timbers and concrete sections.

During the soil removal effort, a concrete structure was encountered at the southeast corner. No visual indications of contaminants were noted and no readings above background were recorded on the PID. The concrete structure was removed from the excavation for off-site disposal along with other concrete demolition debris.

Eight soil samples were collected from the excavation; two from each sidewall and submitted for PAH Compound (8260) and VOC (8270) analyses. VOCs were either not detected or were detected at concentrations below the corresponding RSCO. None of the samples exceeded the guidance threshold of 10 mg/kg for total VOCs. Four PAH compounds were detected at concentrations in excess of corresponding RSCOs in several samples collected from Area FS-1B excavation. Benzo(a)anthracene was detected in excess of its RSCO in three samples with concentrations ranging from 0.27 mg/kg in sample FS1-1 to 2.2 mg/kg in sample FS1-4. Benzo(a)pyrene was detected in excess of its RSCO in six samples ranging in concentrations from 0.18 mg/kg in sample FS1-8 to 1.7 mg/kg in sample FS1-4.

Table 15A
Soil Analytical Results
Area A-5
Volatile Organic Compounds
Site 2A/2B - HHMT-Port Ivory Facility

Location	Recommended Soil Cleanup Objective mg/kg	A5-1	A5-2	A5-3	A5-4	A5-5	A5-6	A5-7	A5-8
Sample Date		4/9/2003	4/9/2003	4/9/2003	4/9/2003	4/9/2003	4/9/2003	4/9/2003	4/9/2003
Sample Depth (ft)		3-3.5	3-3.5	3-3.5	3-3.5	3-3.5	3-3.5	3-3.5	3-3.5
Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2,4-trimethylbenzene	3.4	0.0015U	0.0014U	0.0013U	0.0014U	0.0012U	0.0013U	0.0014U	0.0012U
1,3,5-trimethlybenzene	NS	0.0015U	0.0014U	0.0013U	0.0014U	0.0012U	0.0013U	0.0014U	0.0012U
4-isopropyltoluene	NS	0.0039	0.0046	0.0035	0.012	0.0084	0.0013U	0.0014U	0.0012U
Benzene	0.06	0.0015U	0.0014U	0.0013U	0.0014U	0.0012U	0.0013U	0.0014U	0.0012U
Ethylbenzene	5.5	0.0015U	0.0014U	0.0013U	0.0014U	0.0012U	0.0013U	0.0014U	0.0012U
Isopropylbenzene	NS	0.0015U	0.0014U	0.0013U	0.0014U	0.0012U	0.0013U	0.0014U	0.0012U
M&P-Xylenes	1.2*	0.0031U	0.0027U	0.0027U	0.0029U	0.0025U	0.0026U	0.0027U	0.0025U
Methyl-t-butyl ether	NS	0.0015U	0.0014U	0.0013U	0.0014U	0.0012U	0.0013U	0.0014U	0.0012U
Naphthalene	13	0.0015U	0.0014U	0.0013U	0.0014U	0.0012U	0.0013U	0.0014U	0.0012U
N-butylbenzene	NS	0.0015U	0.0014U	0.0013U	0.0014U	0.0012U	0.0013U	0.0014U	0.0012U
N-Propylbenzene	NS	0.0015U	0.0014U	0.0013U	0.0014U	0.0012U	0.0013U	0.0014U	0.0012U
O-Xylene	1.2*	0.0015U	0.0014U	0.0013U	0.0014U	0.0012U	0.0013U	0.0014U	0.0012U
Sec-butylbenzene	NS	0.0015U	0.0014U	0.0013U	0.0014U	0.0012U	0.0013U	0.0014U	0.0012U
Toluene	1.5	0.033	0.014	0.012	0.0065	0.021	0.031	0.018	0.02
Total VOCs	10	0.0369	0.0186	0.0155	0.0185	0.0294	0.031	0.018	0.02

U Undetectable Levels

NS No Standard

* Total Xylene Recommended Cleanup Standard

Table 15B
Soil Analytical Results
Area A-5
PAH Compounds
Site 2A/2B - HHMT- Port Ivory Facility

Location	**Recommended Soil Cleanup Objective mg/kg**	**A5-1**	**A5-2**	**A5-3**	**A5-4**	**A5-5**	**A5-6**	**A5-7**	**A5-8**
Sample Date		4/9/2003	4/9/2003	4/9/2003	4/9/2003	4/9/2003	4/9/2003	4/9/2003	4/9/2003
Sample Depth (ft)		3-3.5	3-3.5	3-3.5	3-3.5	3-3.5	3-3.5	3-3.5	3-3.5
Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	41	0.77U	0.68U	0.67U	0.71U	0.40U	0.66U	0.68U	0.62U
Anthracene	50	0.77U	0.68U	0.67U	0.71U	0.043J	0.66U	0.68U	0.62U
Benzo(a)anthracene	0.224 or MDL	0.77U	0.68U	0.67U	0.076J	0.15J	0.66U	0.68U	0.62U
Benzo(a)pyrene	0.061 or MDL	0.77U	0.68U	0.67U	0.71U	0.14J	0.66U	0.68U	0.62U
Benzo(b)fluoranthene	1.1	0.77U	0.68U	0.67U	0.71U	0.22J	0.66U	0.68U	0.62U
Benzo(g,h,i)perylene	50	0.77U	0.68U	0.67U	0.71U	0.40U	0.66U	0.68U	0.62U
Benzo(k)fluoranthene	1.1	0.77U	0.68U	0.67U	0.71U	0.083J	0.66U	0.68U	0.62U
Chrysene	0.4	0.77U	0.68U	0.67U	0.087J	0.18J	0.075J	0.68U	0.62U
Dibenzo(a,h)Anthracene	0.014 or MDL	0.77U	0.68U	0.67U	0.71U	0.40U	0.66U	0.68U	0.62U
Fluoranthene	50	0.77U	0.68U	0.67U	0.13J	0.26J	0.19J	0.14J	0.13J
Fluorene	50	0.77U	0.68U	0.67U	0.71U	0.40U	0.66U	0.68U	0.62U
Indeno(1,2,3-cd)pyrene	3.2	0.77U	0.68U	0.67U	0.71U	0.40U	0.66U	0.68U	0.62U
Napthalene	13	0.83	0.68U	0.67U	0.091J	0.070J	0.66U	0.68U	0.62U
Phenanthrene	50	0.77U	0.68U	0.67U	0.12J	0.20J	0.14J	0.68U	0.62U
Pyrene	50	0.77U	0.68U	0.67U	0.12J	0.30J	0.14J	0.10J	0.093J
Total PAH Compounds	500	0.83	ND	ND	0.624	1.646	0.545	0.24	0.223

U	Undetectable Levels
ND	Not Detected
MDL	Method Detection Limit

Benzo(b)flouranthene was detected in excess of its RSCO in one sample, FS1-4 at 2.0 mg/kg. Chrysene was detected in excess of its RSCO in three samples ranging in concentrations from 0.41 mg/kg in sample FS1-1 to 2.3 mg/kg in sample FS1-4. None of the samples exhibited concentrations in excess of the guidance threshold of 500 mg/kg for total PAH Compounds. Please refer to Tables 16A and 16B for a summary of the analytical results.

13.0 SUMMARY OF PROPOSED SITE DEVELOPMENT ACTIONS

The Port Authority is currently redeveloping Site 2A/2B for use as an intermodal facility, which will function as part of the larger container terminal/intermodal facility including the entire HHMT-Port Ivory Facility. The findings from the assessment/investigation actions have revealed that the Port Authority's planned usage of the site as an intermodal facility and container terminal is not inconsistent with the levels of contamination noted to be present in site soil and groundwater and that contamination can be addressed through site redevelopment.

The Port Authority had developed Preliminary Site Plans for the proposed redevelopment of Sites 1 and 2A/2B. Please refer to Appendix D for information related to site development including a Preliminary Site Plan dated January 2003 and a Preliminary Site Plan with Phasing, also dated January 2003. As shown on these plans, the majority of Site 2A (as well as Site 1) will be dedicated to a railway system which will continue through the southern end of Site 2A and onto Site 2B. Although the elements proposed for Site 2B are not depicted in detail on the Site Plan Figures included in Appendix D, the continuation of the rail system is illustrated on a schematic drawing designated as SK16 and dated October 13, 2003; drawing SK16 is also provided in Appendix D. At this time, it is anticipated that two buildings (Buildings 40 and 41) will remain at Site 2A and will be utilized for security and offices associated with the operation of the facility. To address structural issues presented by the presence of fill material, the Port Authority's development plan includes a process of surcharging portions of Site 1 and Site 2A/2B, with geotechnically suitable clean fill, to achieve a stable base for future construction. Figure SK1, Sequencing of Surcharge Areas along with an associated schedule, is provided in Appendix D.

As part of the geotechnical site preparation work, the Port Authority performed a surcharge pilot study at an area of Site 1 in 2002/2203. The study included the systematic placement of soil/fill over an area

Table 16A
Soil Analytical Results
Area FS-1B
Volatile Organic Compounds
Site 2A/2B - HHMT- Port Ivory Facility

Location **Sample Date** **Sample Depth (ft)** **Units**	**Recommended Soil Cleanup Objective mg/kg**	**FS1-1** 12/3/2002 4.5-5.0 mg/kg	**FS1-2** 12/3/2002 4.5-5.0 mg/kg	**FS1-3** 12/3/2002 4.5-5.0 mg/kg	**FS1-4** 12/3/2002 4.5-5.0 mg/kg	**FS1-5** 12/3/2002 4.5-5.0 mg/kg	**FS1-6** 12/3/2002 4.5-5.0 mg/kg	**FS1-7** 12/3/2002 4.5-5.0 mg/kg	**FS1-8** 12/3/2002 4.5-5.0 mg/kg
1,2,4-trimethylbenzene	3.4	0.0012U	0.0014U	0.0016U	0.0020U	0.0018U	0.0013U	0.0020U	0.0016U
1,3,5-trimethlybenzene	NS	0.0012U	0.0014U	0.0016U	0.0020U	0.0018U	0.0013U	0.0020U	0.0016U
4-isopropyltoluene	NS	0.0012U	0.0014U	0.0016U	0.0020U	0.0018U	0.0022	0.0020U	0.0016U
Benzene	0.06	0.0012U	0.0014U	0.0016U	0.0020U	0.0018U	0.0013U	0.0020U	0.0016U
Ethylbenzene	5.5	0.0012U	0.0014U	0.0016U	0.0020U	0.0018U	0.0013U	0.0020U	0.0016U
Isopropylbenzene	NS	0.0012U	0.0014U	0.0016U	0.0020U	0.0018U	0.0013U	0.0020U	0.0016U
M&p-Xylenes	1.2*	0.0012U	0.0028U	0.0032U	0.0039U	0.0035U	0.0025U	0.0040U	0.0032U
Methyl-t-butyl ether	NS	0.0012U	0.0014U	0.0016U	0.0020U	0.0018U	0.0013U	0.0020U	0.0016U
Naphthalene	13	0.0012U	0.0014U	0.0016U	0.0020U	0.0018U	0.0013U	0.0020U	0.0016U
N-butylbenzene	NS	0.0012U	0.0014U	0.0016U	0.0020U	0.0018U	0.0013U	0.0020U	0.0016U
N-Propylbenzene	NS	0.0012U	0.0014U	0.0016U	0.0020U	0.0018U	0.0013U	0.0020U	0.0016U
O-Xylene	1.2*	0.0012U	0.0014U	0.0016U	0.0020U	0.0018U	0.0013U	0.0020U	0.0016U
Sec-butylbenzene	NS	0.0012U	0.0014U	0.0016U	0.0020U	0.0018U	0.0013U	0.0020U	0.0016U
T-Butlybenzene	NS	0.0012U	0.0014U	0.0016U	0.0020U	0.0018U	0.0013U	0.0020U	0.0016U
Toluene	1.5	0.0031	0.0037	0.0016U	0.0020U	0.0028	0.0025	0.0023	0.0016U
Total VOCs	10	0.0031	0.0037	ND	ND	0.0028	0.0047	0.0023	ND

U	Undetectable Levels
ND	Not Detected
NS	No Standard

* Total Xylene Recommended Cleanup Standard

Table 16B
Soil Analytical Results
Area FS-1B
PAH Compounds
Site 2A/2B - HHMT-Port Ivory Facility

Location **Sample Date** **Sample Depth (ft)** **Units**	**Recommended Soil Cleanup Objective mg/kg**	**FS1-1** 12/3/2002 4.5-5.0 mg/kg	**FS1-2** 12/3/2002 4.5-5.0 mg/kg	**FS1-3** 12/3/2002 4.5-5.0 mg/kg	**FS1-4** 12/3/2002 4.5-5.0 mg/kg	**FS1-5** 12/3/2002 4.5-5.0 mg/kg	**FS1-6** 12/3/2002 4.5-5.0 mg/kg	**FS1-7** 12/3/2002 4.5-5.0 mg/kg	**FS1-8** 12/3/2002 4.5-5.0 mg/kg
Acenaphthene	41	0.045J	0.47U	0.52U	2.0U	0.58U	0.42U	0.27J	0.54U
Anthracene	50	0.12J	0.47U	0.52U	2.0U	0.58U	0.42U	0.67	0.063J
Benzo(a)anthracene	0.224 or MDL	**0.27J**	0.47U	0.1J	**2.2**	0.19J	0.071J	**1.4**	0.22J
Benzo(a)pyrene	0.061 or MDL	**0.36J**	0.47U	**0.21J**	**1.7J**	**0.24J**	0.059J	**1**	**0.18J**
Benzo(b)fluoranthene	1.1	0.6	0.47U	0.36J	**2**	0.29J	0.10J	0.96	0.31J
Benzo(g,h,i)perylene	50	0.13J	0.47U	0.52U	0.69J	0.58U	0.42U	0.2J	0.54U
Benzo(k)fluoranthene	1.1	0.27J	0.47U	0.087J	0.52J	0.069J	0.42U	0.43J	0.54U
Chrysene	0.4	**0.41J**	0.14J	0.15J	**2.3**	0.35J	0.092J	**1.5**	0.32J
Dibenzo(a,h)Anthracene	0.014 or MDL	0.42U	0.47U	0.52U	2.0U	0.58U	0.42U	0.67U	0.54U
Fluoranthene	50	0.66	0.47U	0.17J	0.82J	0.24J	0.11J	1.9	0.28J
Fluorene	50	0.055J	0.47U	0.52U	2.0U	0.58U	0.42U	0.29J	0.54U
Indeno(1,2,3-cd)pyrene	3.2	0.13J	0.47U	0.52U	0.55J	0.58U	0.42U	0.18J	0.54U
Napthalene	13	0.14J	0.16J	0.082J	0.52J	0.58U	0.045J	2.2	0.19J
Phenanthrene	50	0.54	0.19J	0.16J	0.66J	0.20J	0.089J	3.5	0.35J
Pyrene	50	0.81	0.47U	0.17J	2	0.35J	0.11J	3.3	0.41J
Total PAH Compounds	500	4.54	0.49	1.489	13.96	1.929	1.516	17.8	2.323

U Undetectable Levels
MDL Method Detection Limit

measuring approximately 75 feet by 75 feet and the measurement of settlement. As part of the pilot study, the Port Authority reviewed potential environmental impacts to groundwater and Bridge Creek. The environmental review for groundwater included the installation and sampling of nested monitoring well pairs (one shallow and one deep well) at four locations around the pilot study area. The wells were constructed approximately 15 feet from the edge of the surcharge material pile. Groundwater samples were collected from the eight newly installed wells as well as from two additional existing well locations, PG-CS-7 and PG-RS-1. Three rounds of groundwater sampling were performed on the two existing wells with all rounds including phenols and BTEX (benzene, toluene, ethylbenzene and xylenes) and one round including phenols, BTEX, TAL Metals and pH. One round of groundwater sampling was performed for the eight newly installed wells with analysis for TAL Metals and pH. A summary of analytical results is provided in Tables 17A (BTEX), 17B (phenols), and 17C (TAL Metals and pH). The pilot study area and well locations are presented on Figure 22. In addition, exceedences of applicable groundwater SVGs are also presented, by location, on Figure 22. A summary of analytical results is presented in Tables 17A-17C.

With respect to Bridge Creek, the environmental review included the inspection of the eastern bank of Bridge Creek for the presence of seeps, precipitate, bank failure or other evidence of mass movement of subsurface material or liquids. It should be noted that the surface water and sediment sampling undertaken as part of the RI of Site 2A/2B was performed during the surcharge pilot test period. As such, the information generated from that evaluation has been utilized as part of the environmental review for the pilot study. Information related to sampling of Bridge Creek is presented in Sections 8.3 and 9.3 of this Report. In addition, two rounds of surface water sampling were performed as part of the surcharge pilot study. Five samples were collected from representative locations during both rounds and samples were analyzed for TAL Metals and pH. The surface water locations and associated analytical results are presented on Figure 22 and Table 17C. Given the purpose of the study, the surface water samples were compared to applicable groundwater SVGs.

Overall, the environmental evaluation performed as part of the pilot study did not reveal any adverse impacts as a result of the compaction process. Inspection of the eastern bank did not reveal the presence of seeps, additional/increased occurrence of precipitate, bank failure or other evidence of mass movement of subsurface material or liquids. Analytical results from the surface water and the groundwater sampling did not reveal any increased contaminant concentrations over the period of study. It should be noted that m&p xylenes (reported as a combined concentration) was/were detected in the groundwater sample from

PG-ST-SW-1

DATE SAMPLED	10/21/2002
MATRIX	SURFACE WATER
ANALYTE	RESULTS (ug/L)
METALS	
IRON	610***
MAGNESIUM	600,000
SILVER	4,800,000

PG-ST-SW-2

DATE SAMPLED	10/21/2002
MATRIX	SURFACE WATER
ANALYTE	RESULTS (ug/L)
METALS	
MAGNESIUM	630,000
SODIUM	5,100,000

PG-ST-MW-4D

DATE SAMPLED	11/8/2002
MATRIX	GROUNDWATER
ANALYTE	RESULTS (ug/L)
METALS	
IRON (unfiltered)	22,000***
IRON (filtered)	19,000***
MANGANESE (unfiltered)	5,200***
MANGANESE (filtered)	4,800***
SODIUM (unfiltered)	2,100,000
SODIUM (filtered)	2,000,000

PG-ST-MW-4S

DATE SAMPLED	11/8/2002
MATRIX	GROUNDWATER
ANALYTE	RESULTS (ug/L)
METALS	
ANTIMONY (filtered)	75
ARSENIC (filtered)	69
BERYLLIUM (filtered)	40
IRON (unfiltered)	3,300***
IRON (filtered)	550***
SODIUM (unfiltered)	400,000
SODIUM (filtered)	470,000
THALLIUM (filtered)	42

PG-ST-SW-3

DATE SAMPLED	SURFACE WATER
MATRIX	RESULTS (ug/L)
ANALYTE	
METALS	790***
IRON	130,000
MAGNESIUM	1,300,000
SODIUM	

PG-ST-SW-4

DATE SAMPLED	10/21/2002
MATRIX	SURFACE WATER
ANALYTE	RESULTS (ug/L)
METALS	
MAGNESIUM	610,000
SODIUM	4,900,000

PG-ST-SW-5

DATE SAMPLED	SURFACE WATER
MATRIX	RESULTS (ug/L)
ANALYTE	
METALS	630,000
MAGNESIUM	5,000,000
SODIUM	

PG-CS-7

DATE SAMPLED	10/15/2002
MATRIX	GROUNDWATER
ANALYTE	RESULTS (ug/L)
METALS	
SODIUM (unfiltered)	79,000
SODIUM (filtered)	89,000

DATE SAMPLED	11/8/2002
MATRIX	GROUNDWATER
ANALYTE	RESULTS (ug/L)
METALS	
SODIUM (unfiltered)	130,000
SODIUM (filtered)	130,000

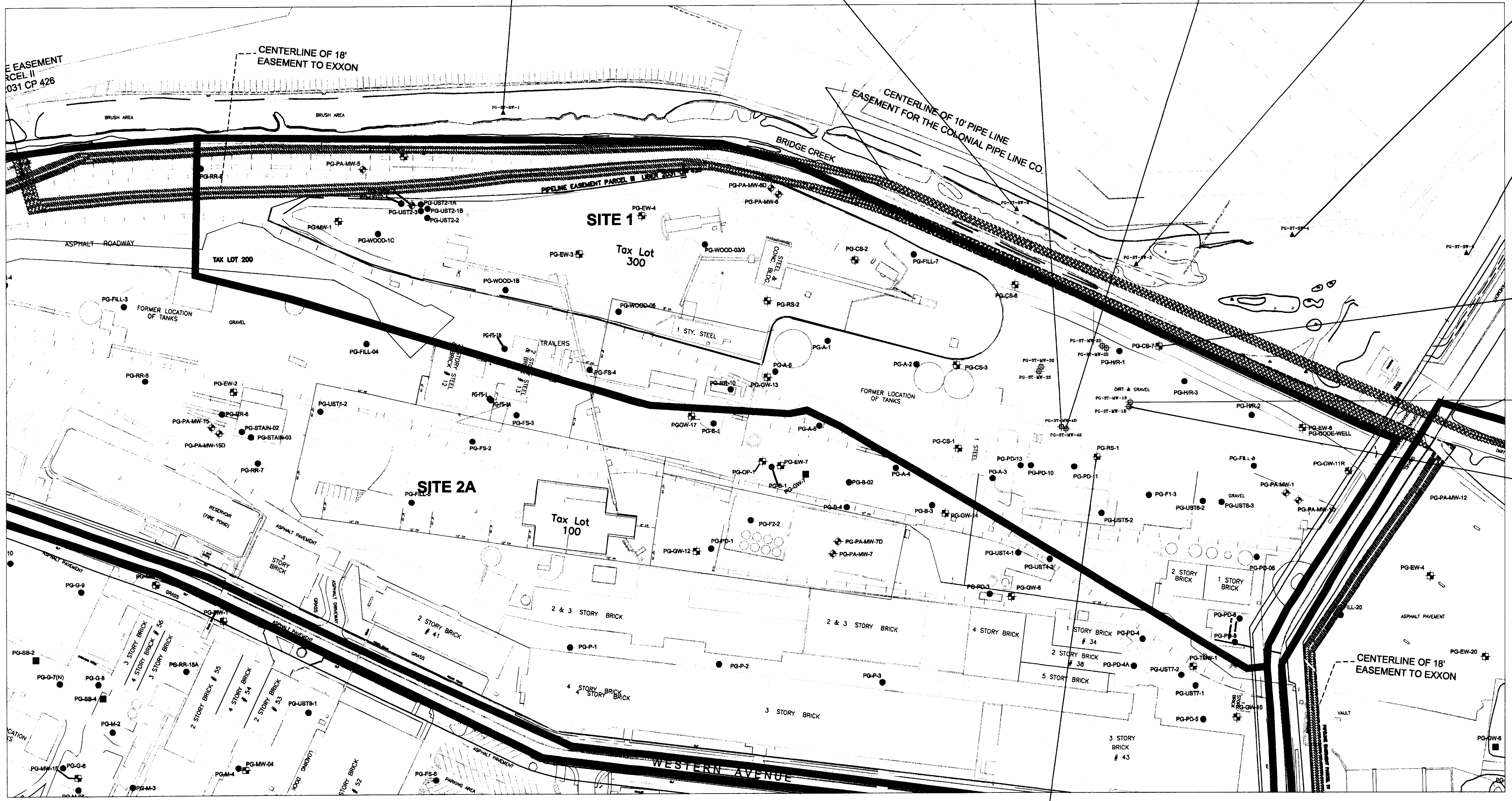
DATE SAMPLED	12/2/2002
MATRIX	GROUNDWATER
ANALYTE	RESULTS (ug/L)
BTEX	
M&P-XYLENES	7

PG-ST-MW-1S

DATE SAMPLED	11/8/2002
MATRIX	GROUNDWATER
ANALYTE	RESULTS (ug/L)
METALS	
ARSENIC (unfiltered)	90
ARSENIC (filtered)	53
IRON (unfiltered)	2,200***
NICKEL (filtered)	110
SODIUM (unfiltered)	1,500,000
SODIUM (filtered)	1,600,000

PG-ST-MW-1D

DATE SAMPLED	11/8/2002
MATRIX	GROUNDWATER
ANALYTE	RESULTS (ug/L)
METALS	
IRON (unfiltered)	5,200***
IRON (filtered)	3,500***
SODIUM (unfiltered)	660,000
SODIUM (filtered)	720,000



PG-RS-1

DATE SAMPLED	10/15/2002
MATRIX	GROUNDWATER
ANALYTE	RESULTS (ug/L)
METALS	
IRON (unfiltered)	20,000***
IRON (filtered)	380***
SODIUM (unfiltered)	29,000
SODIUM (filtered)	28,000
ACID EXTRACTABLES	
TOTAL PHENOLS	1.1

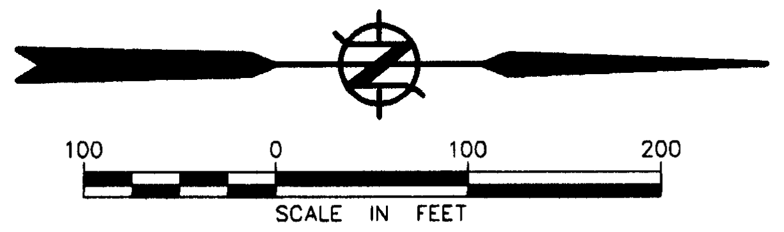
DATE SAMPLED	11/8/2002
MATRIX	GROUNDWATER
ANALYTE	RESULTS (ug/L)
METALS	
IRON (unfiltered)	1,400***
IRON (filtered)	950***
SODIUM (unfiltered)	32,000
SODIUM (filtered)	33,000

DATE SAMPLED	12/2/2002
MATRIX	GROUNDWATER
ANALYTE	RESULTS (ug/L)
ACID EXTRACTABLES	
PHENOL	3
TOTAL PHENOL	6.8

NYSDEC GROUNDWATER
CLEANUP STANDARDS AND CLEANUP
GUIDANCE VALUES

ANALYTE	RCS (ug/l)	RCG (ug/l)
VOCs		
M&P Xylenes:	5&5	NG
ACID EXTRACTABLES		
Phenol:	1	NG
Total Phenol:	1	NG

NG - NO GUIDANCE VALUE



Notes:
1. Site 1, 2A/2B, and 3 descriptions as per July 2004 VCP Agreements.
2. This map presents concentrations of BTEX, Acid Extractables, and Metals at levels above NYSDEC Groundwater Cleanup Standards and Groundwater Cleanup Guidance Values.

LEGEND

▨	UTILITY EASEMENT
┼┼┼	RAILROAD TRACKS
▬	SITE BOUNDARY
PG-RS-1 ✣	PRE-EXISTING P&G MONITORING WELL LOCATION
PG-SB-2 ■	PRE-EXISTING P&G SOIL BORING LOCATION
PG-PA-MW-5 ✣	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION
PG-WOOD-03/3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION
PG-ST-MW-1D ⊕	SURCHARGE MONITORING WELL LOCATIONS
PG-ST-SW-4 ▲	SURCHARGE SURFACE WATER SAMPLE LOCATIONS

Sheet of

THE PORT AUTHORITY
OF NY & NJ

ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

(BLOCK 1400, LOT 1 AND BLOCK 1338, LOT 1) HHMT-PORT IVORY FACILITY

SURCHARGE MONITORING WELL LOCATIONS MAP AND ANALYTICAL DATA

This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without its written consent.

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number FIGURE 22

[illegible]e 17A
Surcharge Pilot Study -Groundwater Results
BTEX
Site 2A/2B: HHMT - Port Ivory Facility

Location Date LAB ID# Concentration	Recommended Groundwater Cleanup Standard UG/L	Recommended Groundwater Cleanup Guidance UG/L	**CS-7** 10/15/2002 AB70453 UG/L	**RS-1** 10/15/2002 AB70455 UG/L	**FB-1** 10/15/2002 AB70457 UG/L	**TB-1** 10/15/2002 AB70459 UG/L	**CS-7** 11/6/2002 AB72292 UG/L	**RS-1** 11/6/2002 AB72294 UG/L	**TB-1** 11/6/2002 AB72304 UG/L	**FB-1** 11/6/2002 AB72305 UG/L	**TB-1** 11/7/2002 AB72397 UG/L	**CS-7** 12/2/2002 AB74079 UG/L	**RS-1** 12/2/2002 AB74081 UG/L
Benzene	1	NG	0.49U	0.49U	0.49U	0.49U	0.49U	0.49U	0.49U	0.49U	0.49U	0.49U	0.49U
Ethylbenzene	5	NG	0.63U	0.63U	0.63U	0.63U	0.63U	0.63U	0.63U	0.63U	0.63U	2.4	0.63U
m&p-xylenes	5&5	NG	1.1U	1.1U	1.1U	1.1U	1.1U	1.1U	1.1U	1.1U	1.1U	7	1.1U
O-xylenes	5	NG	0.59U	0.59U	0.59U	0.59U	0.59U	0.59U	0.59U	0.59U	0.59U	0.59U	0.59U
Toluene	5	NG	0.79U	0.79U	0.79U	0.79U	0.79U	0.79U	0.79U	0.79U	0.79U	0.79U	0.79U

U Undetectable Levels

NG No Guidance

T[illegible]e 17B
Surcharge Pilot Study - Groundwater Results
Acid Extractables
Site 2A/2B: HHMT Port Ivory Facility

Location Date Lab ID Concentration	Recommended Groundwater Cleanup Standard UG/L	Recommended Groundwater Cleanup Guidance UG/L	**CS-7** 10/15/2002 AB70453 UG/L	**RS-1** 10/15/2002 AB70455 UG/L	**FB-1** 10/15/2002 AB70457 UG/L	**CS-7** 11/6/2002 AB72292 UG/L
2,4,5-trichlorophenol	NS	NG	0.6U	0.6U	0.6U	0.6U
2,4,6-trichlorophenol	NS	NG	0.65U	0.65U	0.65U	0.65U
2,4-dichlorophenol	5	NG	0.57U	0.57U	0.57U	0.57U
2,4-dimethylphenol	NS	50	0.49U	0.49U	0.49U	0.49U
2,4-dinitrophenol	NS	10	3.1U	3.1U	3.1U	3.1U
2-chlorophenol	NS	NG	0.49U	0.49U	0.49U	0.49U
2-methylphenol	NS	NG	0.61U	0.61U	0.61U	0.61U
2-nitrophenol	NS	NG	0.64U	0.64U	0.64U	0.64U
3&4-methylphenol	NS	NG	5.4U	1.1J	5.4U	5.4U
4,6-dinitro-2-methylphenol	NS	NG	0.36U	0.36U	0.36U	0.36U
4-chloro-3-methylphenol	NS	NG	0.38U	0.38U	0.38U	0.38U
4-nitrophenol	NS	NG	0.27U	0.27U	0.27U	0.27U
pentachlorophenol	1 (total phenols)	NG	0.57U	0.57U	0.57U	0.57U
phenol	1 (total phenols)	NG	0.14U	0.14U	0.14U	0.14U
Total phenols	1	NG	ND	1.1	ND	ND

U Undetectable Levels
NS No Standard
NG No Guidance
ND Not Detected

Table 17B
Surcharge Pilot Study - Groundwater Results
Acid Extractables
Site 2A/2B: HHMT Port Ivory Facility

Location Date Lab ID Concentration	Recommended Groundwater Cleanup Standard UG/L	Recommended Groundwater Cleanup Guidance UG/L	**RS-1** 11/6/2002 AB72294 UG/L	**FB-1** 11/6/2002 AB72305 UG/L	**CS-7** 12/2/2002 AB74079 UG/L	**RS-1** 12/2/2002 AB74081 UG/L
2,4,5-trichlorophenol	NS	NG	0.6U	0.6U	0.6U	0.6U
2,4,6-trichlorophenol	NS	NG	0.65U	0.65U	0.65U	0.65U
2,4-dichlorophenol	5	NG	0.57U	0.57U	0.57U	0.57U
2,4-dimethylphenol	NS	50	0.49U	0.49U	0.49U	0.49U
2,4-dinitrophenol	NS	10	3.1U	3.1U	3.1U	3.1U
2-chlorophenol	NS	NG	0.49U	0.49U	0.49U	0.49U
2-methylphenol	NS	NG	0.61U	0.61U	0.61U	0.61U
2-nitrophenol	NS	NG	0.64U	0.64U	0.64U	0.64U
3&4-methylphenol	NS	NG	5.4U	5.4U	5.4U	3.8J
4,6-dinitro-2-methylphenol	NS	NG	0.36U	0.36U	0.36U	0.36U
4-chloro-3-methylphenol	NS	NG	0.38U	0.38U	0.38U	0.38U
4-nitrophenol	NS	NG	0.27U	0.27U	0.27U	0.27U
pentachlorophenol	1 (total phenols)	NG	0.57U	0.57U	0.57U	0.57U
phenol	1 (total phenols)	NG	0.14U	0.14U	0.14U	**3**
Total phenols	1	NG	ND	ND	ND	**6.8**

U Undetectable Levels
NS No Standard
NG No Guidance
ND Not Detected

T[illegible]e 17C
Surcharge Pilot Study - Groundwater and Surface Water Results
Metals and pH
Site 2A/2B: HHMT - Port Ivory Facility

Location Date Lab ID Concentration Filtered or Unfiltered	Recommended Groundwater Cleanup Standard UG/L	Recommended Groundwater Cleanup Guidance UG/L	ST-SW1 10/21/2002 AB70895 UG/L	ST-SW2 10/21/2002 AB70896 UG/L	ST-SW3 10/21/2002 AB70460 UG/L	ST-SW4 10/21/2002 AB70897 UG/L	ST-SW5 10/21/2002 AB70898 UG/L	CS-7 10/15/2002 AB70453 UG/L unfiltered	CS-7 10/15/2002 AB70454 UG/L filtered	RS-1 10/15/2002 AB70455 UG/L unfiltered
Aluminum	NS	NG	570	400	140	190	330	100U	100U	170
Antimony	3	NG	7.5U	7.5U	7.5U	7.5U	7.5U	7.5U	7.5U	7.5U
Arsenic	25	NG	4.0U	5.4	4.0U	10	4.0U	4.0U	4.0U	4.1
Barium	1000	NG	27	25U	45	25U	25U	25U	25U	59
Beryllium	NS	3	4.0U	4.0U	4.0U	4.0U	4.0U	4.0U	4.0U	4.0U
Cadmium	5	NG	2.5	2.5	2.0U	2.5	2.5	2.0U	2.0U	2.0U
Calcium	NS	NG	150000	160000	93000	170000	160000	110000	120000	130000
Chromium	50	NG	25U	25U	25U	25U	25U	25U	25U	36
Cobalt	NS	NG	10U	10U	10U	10U	10U	10U	10U	10U
Copper	200	NG	25U	25U	25U	25U	25U	25U	25U	25U
Iron	300***	NG	**610*** **	**280*** **	**790*** **	150U	150U	210	150U	**20000*** **
Lead	25	NG	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
Magnesium	NS	35000	**600000**	**630000**	**130000**	**610000**	**630000**	**47000**	**52000**	27000
Manganese	300***	NG	**82*** **	**69*** **	**260*** **	67	61	25U	25U	**180*** **
Nickel	100	NG	25U	25U	25U	25U	25U	25U	25U	46
Potassium	NS	NG	250000	260000	58000	250000	260000	13000	15000	5800
Selenium	10	NG	25U	25U	25U	25U	25U	25U	25U	25U
Silver	50	NG	**4800000**	10U	10U	10U	10U	10U	10U	10U
Sodium	20000	NG	50000U	**5100000**	**1300000**	**4900000**	**5000000**	**79000**	**89000**	**29000**
Thallium	NS	0.5	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
Vanadium	NS	NG	25U	25U	25U	25U	25U	25U	25U	25U
Zinc	NS	2000	47	34	25U	32	31	64	67	440
Mercury	0.7	NG	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U
pH	NS	NG	7.5	7.6	7.7	7.6	7.6	7	7	7.2

ND	No Data
U	Undetectable Levels
NS	No Standard
NG	No Guidance

*** Total for Iron and Manganese is > 500

Note-1: pH listed is the pH recorded in the field

Note-2: ST-SW1 through ST-SW5 represents samples collected from surface water

T[illegible]e 17C
Surcharge Pilot Study - Groundwater and Surface Water Results
Metals and pH
Site 2A/2B: HHMT - Port Ivory Facility

Location Date Lab ID Concentration Filtered or Unfiltered	Recommended Groundwater Cleanup Standard UG/L	Recommended Groundwater Cleanup Guidance UG/L	RS-1 10/15/2002 AB70456 UG/L filtered	FB-1 10/15/2002 AB70457 UG/L unfiltered	FB-1 10/15/2002 AB70458 UG/L filtered	ST-SW1 11/7/2002 AB72569 ug/l	ST-SW2 11/7/2002 AB72570 ug/l	ST-SW3 11/7/2002 AB72571 ug/l	ST-SW4 11/7/2002 AB72572 ug/l	ST-SW5 11/7/2002 AB72573 ug/l
Aluminum	NS	NG	100U	100U	100U	430	420	340	550	290
Antimony	3	NG	7.5U	7.5U	7.5U	7.5U	7.5U	7.5U	7.5U	7.5U
Arsenic	25	NG	4.0U	4.0U	4.0U	4.0U	4.0U	4.1	5.4	4.0U
Barium	1000	NG	52	25U	25U	28	25U	37	25U	25U
Beryllium	NS	3	4.0U	4.0U	4.0U	4.0U	4.0U	4.0U	4.0U	4.0U
Cadmium	5	NG	2.0U	2.0U	2.0U	2.6	2.8	2.6	2.8	2.8
Calcium	NS	NG	130000	1000U	1000U	160000	170000	170000	180000	180000
Chromium	50	NG	25U	25U	25U	25U	25U	25U	25U	25U
Cobalt	NS	NG	10U	10U	10U	10U	10U	10U	10U	10U
Copper	200	NG	25U	25U	25U	25U	25U	25U	25U	25U
Iron	300***	NG	**380*** **	150U	150U	**400*** **	290	**360*** **	**460*** **	150U
Lead	25	NG	5.0U	5.0U	5.0U	5U	5U	5U	5U	5U
Magnesium	NS	35000	26000	1000U	1000U	**620000**	**680000**	**610000**	**710000**	**730000**
Manganese	300***	NG	**170*** **	25U	25U	**72*** **	53	**100*** **	**48*** **	36
Nickel	100	NG	25U	25U	25U	25U	25U	25U	25U	25U
Potassium	NS	NG	5500	2500U	2500U	300000	340000	300000	360000	380000
Selenium	10	NG	25U	25U	25U	25U	25U	25U	25U	25U
Silver	50	NG	10U	10U	10U	10U	10U	10U	10U	10U
Sodium	20000	NG	**28000**	25000U	25000U	**5100000**	**5500000**	**5000000**	**5500000**	**5900000**
Thallium	NS	0.5	5.0U	5.0U	5.0U	5U	5U	5U	5U	5U
Vanadium	NS	NG	25U	25U	25U	25U	25U	25U	25U	25U
Zinc	NS	2000	25U	25U	25U	26	25U	28	25U	25U
Mercury	0.7	NG	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U
pH	NS	NG	7.2	4.2	4.2	7.7	7.6	7.7	7.8	7.8

ND	No Data
U	Undetectable Levels
NS	No Standard
NG	No Guidance

*** Total for Iron and Manganese is > 500

Note-1: pH listed is the pH recorded in the field

Note-2: ST-SW1 through ST-SW5 represents samples collected from surface water

T[illegible]e 17C
Surcharge Pilot Study - Groundwater and Surface Water Results
Metals and pH
Site 2A/2B: HHMT - Port Ivory Facility

Location Date Lab ID Concentration Filtered or Unfiltered	Recommended Groundwater Cleanup Standard UG/L	Recommended Groundwater Cleanup Guidance UG/L	CS-7 11/6/2002 AB72292 UG/L unfiltered	CS-7 11/6/2002 AB72293 UG/L filtered	RS-1 11/6/2002 AB72294 UG/L unfiltered	RS-1 11/6/2002 AB722945 UG/L filtered	ST-4S 11/6/2002 AB72296 UG/L unfiltered	ST-4S 11/6/2002 AB72297 UG/L filtered	ST-4D 11/6/2002 AB72298 UG/L unfiltered	ST-4D 11/6/2002 AB72299 UG/L filtered
Aluminum	NS	NG	100U	100U	100U	100U	970	2300	140	100U
Antimony	3	NG	7.5U	7.5U	7.5U	7.5U	7.5U	**75**	7.5U	7.5U
Arsenic	25	NG	7.5	5.9	4.1	4.6	15	**69**	8.1	8.3
Barium	1000	NG	25U	25U	78	76	80	130	780	710
Beryllium	NS	3	4U	4U	4U	4U	4U	**40**	4U	4U
Cadmium	5	NG	2U	2U	2U	2U	2U	3.2	2U	2U
Calcium	NS	NG	83000	81000	130000	120000	200000	90000	290000	230000
Chromium	50	NG	25U	25U	25U	25U	25U	46	25U	25U
Cobalt	NS	NG	10U	10U	10U	10U	10U	220	10U	10U
Copper	200	NG	25U	25U	25U	25U	25U	160	25U	25U
Iron	300***	NG	150U	150U	**1400*** **	**950*** **	**3300*** **	**550*** **	**22000*** **	**19000*** **
Lead	25	NG	5U	5U	5U	5U	5U	5U	5U	5U
Magnesium	NS	35000	34000	34000	18000	19000	2000	**52000**	**97000**	**89000**
Manganese	300***	NG	25U	25U	**170** **	**170*** **	**28*** **	**150*** **	**5200*** **	**4800*** **
Nickel	100	NG	25U	25U	25U	25U	25U	49	25U	25U
Potassium	NS	NG	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	10	NG	25U	25U	25U	25U	25U	25U	25U	25U
Silver	50	NG	10U	10U	10U	10U	10U	10U	10U	10U
Sodium	20000	NG	**130000**	**130000**	**32000**	**33000**	**400000**	**470000**	**2100000**	**2000000**
Thallium	NS	0.5	5U	5U	5U	5U	5U	**42**	5U	5U
Vanadium	NS	NG	25U	25U	25U	25U	25U	25U	28	26
Zinc	NS	2000	49	25U	130	34	26	920	25U	25U
Mercury	0.7	NG	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U
pH	NS	NG	8	8	8	8	11	11	7	7

ND	No Data
U	Undetectable Levels
NS	No Standard
NG	No Guidance

*** Total for Iron and Manganese is > 500

Note-1: pH listed is the pH recorded in the field

Note-2: ST-SW1 through ST-SW5 represents samples collected from surface water

Table 17C
Surcharge Pilot Study - Groundwater and Surface Water Results
Metals and pH
Site 2A/2B: HHMT - Port Ivory Facility

Location Date Lab ID Concentration Filtered or Unfiltered	Recommended Groundwater Cleanup Standard UG/L	Recommended Groundwater Cleanup Guidance UG/L	ST-1S 11/6/2002 AB72300 UG/L unfiltered	ST-1S 11/6/2002 AB72301 UG/L filtered	ST-1D 11/6/2002 AB72302 UG/L unfiltered	ST-1D 11/6/2002 AB72303 UG/L filtered	FB-1 11/6/2002 AB72305 UG/L unfiltered	FB-1 11/6/2002 AB72306 UG/L filtered	FB-1 11/7/2002 AB72395 UG/L unfiltered	FB-1 11/7/2002 AB72396 UG/L filtered
Aluminum	NS	NG	3200	350	910	140	100U	100U	100U	100U
Antimony	3	NG	7.5U	7.5U	7.5U	7.5U	7.5U	7.5U	7.5U	7.5U
Arsenic	25	NG	**90**	**53**	8	6.2	4U	4U	4U	4U
Barium	1000	NG	190	150	84	74	25U	25U	25U	25U
Beryllium	NS	3	4U	4U	4U	4U	4U	4U	4U	4U
Cadmium	5	NG	3.2	2.5	2U	2U	2U	2U	2U	2U
Calcium	NS	NG	690000	350000	74000	74000	1000U	1000U	1000U	1000U
Chromium	50	NG	25U	25U	25U	25U	25U	25U	25U	25U
Cobalt	NS	NG	10U	10U	10U	10U	10U	10U	10U	10U
Copper	200	NG	25U	25U	25U	25U	25U	25U	25U	25U
Iron	300***	NG	2200***	150U	5200***	3500***	150U	150U	150U	150U
Lead	25	NG	5U	5U	5U	5U	5U	5U	5U	5U
Magnesium	NS	35000	12000	1000U	**58000**	**59000**	1000U	1000U	1000U	1000U
Manganese	300***	NG	54***	25U	120***	110***	25U	25U	25U	25U
Nickel	100	NG	92	**110**	25U	25U	25U	25U	25U	25U
Potassium	NS	NG	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	10	NG	25U	25U	25U	25U	25U	25U	25U	25U
Silver	50	NG	10U	10U	10U	10U	10U	10U	10U	10U
Sodium	20000	NG	**1500000**	**1600000**	**660000**	**720000**	2500U	2500U	2500U	2500U
Thallium	NS	0.5	5U	5U	5U	5U	5U	5U	5U	5U
Vanadium	NS	NG	32	25U	25U	26	25U	25U	25U	25U
Zinc	NS	2000	44	25U	25U	25U	25U	25U	25U	25U
Mercury	0.7	NG	0.2U	0.21	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U
pH	NS	NG	13	13	7.3	7.3	6.5	6.5	6.8	6.8

ND No Data
U Undetectable Levels
NS No Standard
NG No Guidance
*** Total for Iron and Manganese is > 500
Note-1: pH listed is the pH recorded in the field
Note-2: ST-SW1 through ST-SW5 represents samples collected from surface water

Table 17C
Surcharge Pilot Study - Groundwater and Surface Water Results
Metals and pH
Site 2A/2B: HHMT - Port Ivory Facility

Location Date Lab ID Concentration Filtered or Unfiltered	Recommended Groundwater Cleanup Standard UG/L	Recommended Groundwater Cleanup Guidance UG/L	ST-2S 11/7/2002 AB72398 UG/L unfiltered	ST-2S 11/7/2002 AB72398 UG/L filtered	ST-2D 11/7/2002 AB72400 UG/L unfiltered	ST-2D 11/7/2002 AB72401 UG/L filtered	ST-3D 11/7/2002 AB72402 UG/L unfiltered	ST-3D 11/7/2002 AB72403 UG/L filtered	ST-3S 11/7/2002 AB72404 UG/L unfiltered	ST-3S 11/7/2002 AB72405 UG/L filtered
Aluminum	NS	NG	2400	800	1400	670	680	100U	4400	420
Antimony	3	NG	7.5U	7.5U	7.5U	7.5U	7.5U	7.5U	7.5U	7.5U
Arsenic	25	NG	28	23	8.2	6.2	8.2	4U	61	9.7
Barium	1000	NG	160	180	120	110	91	83	510	430
Beryllium	NS	3	4U	4U	4U	4U	4U	4U	4U	4U
Cadmium	5	NG	2U	2U	2U	2U	2U	2U	2.7	2U
Calcium	NS	NG	420000	420000	120000	110000	220000	220000	880000	430000
Chromium	50	NG	25U	25U	25U	25U	25U	25U	25U	25U
Cobalt	NS	NG	10U	10U	10U	10U	10U	10U	10U	10U
Copper	200	NG	25U	25U	25U	25U	25U	25U	25U	25U
Iron	300***	NG	1100***	150U	6600***	4900***	8500***	8200***	2100***	150U
Lead	25	NG	6.7	5U	5U	5U	5U	5U	5U	5U
Magnesium	NS	35000	2400	1000U	83000	82000	130000	140000	13000	1000U
Manganese	300***	NG	25U	25U	430***	400***	2300***	2500***	58***	25U
Nickel	100	NG	39U	37	25U	25U	25U	25U	39	25U
Potassium	NS	NG	52000	57000	23000	32000	72000	74000	250000	2500
Selenium	10	NG	25U	25U	25U	25U	25U	25U	25U	25U
Silver	50	NG	10U	10U	10U	10U	10U	10U	10U	10U
Sodium	20000	NG	780000	850000	740000	540000	2200000	2300000	2100000	25000
Thallium	NS	0.5	5U	5U	5U	5U	5U	5U	7.1	5U
Vanadium	NS	NG	27	25U	25U	25U	55	52	27	25U
Zinc	NS	2000	56	25U	25U	25U	25U	25U	130	25U
Mercury	0.7	NG	0.2U	0.2U	0.2U	0.2U	0.2U	0.2U	1.7	0.2U
pH	NS	NG	13	13	7.8	7.8	7.2	7.2	13	13

ND	No Data
U	Undetectable Levels
NS	No Standard
NG	No Guidance

*** Total for Iron and Manganese is > 500

Note-1: pH listed is the pH recorded in the field

Note-2: ST-SW1 through ST-SW5 represents samples collected from surface water

the third round of sampling of PG-CS-7 but not in the first or second rounds. This is not regarded as increase in contaminant concentration during the pilot study since xylenes were detected at a higher concentration in the SI sampling round performed in November 2000. As shown on the surcharging phasing study and schedule, surcharging has been completed at the two areas labeled Phase 1A has been completed and has been initiated at the area labeled Phase 1B North. Although the pilot study did not reveal the presence of adverse impacts to groundwater or Bridge Creek, additional monitoring efforts are proposed to confirm the findings of the pilot study. The proposed actions ~~will~~ mimic those performed during the pilot study but will utilize five existing monitoring wells situated in both Site 1 and Site 2A at locations adjacent to Bridge Creek; the proposed locations include EW-1 (Site 2A), MW-5 (Site 1) MW-6/MW-6D (Site 2A) and CS-7 (Site 2A). The proposed monitoring program will also include sampling of two sets of wells (MW-15/MW-15D located on Site 2A and MW-1/MW-1D located at Site 1) to provide additional groundwater information. The samples will be analyzed for TCL VOCs, phenols, TAL Metals and pH. Based on current information, four rounds of sampling will be performed over the next 12 months with collection occurring once per quarter.

The monitoring program will include a review of conditions at Bridge Creek and the sampling of both surface water and sediment/precipitate. The proposed sediment/surface water sampling will be performed in conjunction with the proposed groundwater sampling events and will include samples from five locations. Sediment and surface water samples also will be analyzed for TCL VOCs, phenols, TAL Metals and pH. In addition, monthly inspection will be performed to document conditions along the eastern bank of Bridge Creek. The inspections will be performed during low tide and will note the presence of seeps, precipitate, bank failure or other evidence of mass movement of subsurface material or liquids. All sampling will be performed in accordance with NYSDEC protocol and laboratory analysis will be performed by a NYSDEC certified laboratory. Again, information from the pilot study has not identified any adverse impacts to groundwater or Bridge Creek, however, the Port Authority intends to confirm these findings through the above-described program.

14.0 CONCLUSIONS

This report presents a summary of assessment, investigation, delineation and remedial actions which have been undertaken at Site 2A/2B from 2000 through 2003. By and large, assessment and investigation efforts identified relatively few environmental issues with respect to Site 2A/2B. Generally, the issues involved the presence of fill material, previously closed USTs and the presence of a few petroleum-impacted areas. As described herein, the environmental conditions at this Site 2A/2B as well as Sites 1 and 3 of the HHMT-Port Ivory Facility have been evaluated with respect to the HHMT-Port Ivory Facility's proposed usage. Further, the Port Authority has undertaken actions to address residual petroleum related contamination through source removal. The actions undertaken at these areas also have included the removal of two previously closed USTs (closed in place by P&G) and an abandoned oil/water separator system from Site 2A. Based on assessment and investigation activities, no remedial actions were warranted with respect to Site 2B. With regard to the presence of fill material, the SI/RI activities identified the presence of contaminants at Site 2A/2B, which are typical to urban sites in the New York Metropolitan region. The presence of the fill material and residual levels of fill-related contaminants in soil does not appear to have adversely impacted groundwater quality at Site 2A/2B or Bridge Creek, situated adjacent to the western property boundary of Site 2A/2B and Site 1.

Overall, industrial/commercial usage such as the Port Authority's planned usage of the site as an intermodal facility and container terminal is not inconsistent with the residual levels of contamination noted to be present in site soil and groundwater. The Port Authority has addressed several petroleum-impacted areas through source removal and will address fill material and residual contamination (associated with the fill material and prior industrial usage of the site by P&G) through site redevelopment including the use of engineering and institutional controls, which will minimize potential impacts to human health and the environment. Specifically, the Port Authority intends to install material such as pavement and other semi-impervious material, which will function as an environmental cap at Site 2A/2B and the entire HHMT-Port Ivory Facility. This action will tend to stabilize contaminants present in soil and fill material by impeding infiltration, thereby reducing the potential for contaminants in soil to leach from the unsaturated zone to groundwater. Further, the placement of such materials will safeguard the public by preventing exposure to contaminants in soil and groundwater.

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File 00D59
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0. EXECUTIVE SUMMARY

Hager-Richter Geoscience, Inc. conducted a geophysical survey at the Proctor & Gamble Port Ivory Facility located on Staten Island, New York for Killam Associates (Killam)in October and November, 2000. The scope of the project and areas of interest were specified by Killam. The geophysical survey is part of a environmental investigation of the site being conducted by Killam on behalf of the Port Authority of New York and New Jersey.

The site is a large inactive industrial facility located in the northwestern portion of Staten Island. The Site consists of several buildings, gravel and paved parking areas, rail spurs, foundations and slabs of demolished buildings, and open areas. Hager-Richter was contracted by Killam to locate utilities in the vicinity of as many as 210 proposed boring locations and to locate possible USTs that may be present at nine locations identified at the Site by Killam. The locations of utilities detected as part of the boring program were marked on site as specified by Killam, and are not discussed further.

According to information provided by Killam, as many as 19 USTs might be present in nine areas of the site, designated by Killam UST Area 1 through UST Area 9. Four of the nine areas may contain multiple USTs, and five areas may contain a single UST.

The objective of the geophysical survey was to detect possible USTs in each of the nine areas of interest specified by Killam, and if any were detected, to determine the locations of each.

The geophysical survey consisted of time domain electromagnetic induction metal detector (EM61) surveys followed by focused GPR surveys in each of the areas of interest. The EM61 data were acquired at approximately 8-inch intervals along profile lines spaced 5 feet apart across the accessible portions of the areas of interest. In order to aid in the identification of the objects, a focused GPR survey was conducted at the locations of anomalies detected with the EM.

The results of the geophysical survey conducted at the Proctor & Gamble Port Ivory Facility can be summarized as follows:

- Several areas of buried metal were detected in the nine areas of interest at the site on the basis of the EM61 data. None of the identified areas of buried metal could be definitively identified as a UST due to the limited GPR signal penetration and/or surface features such as concrete slabs, metal piping, and rail spurs. Whether the buried metal is a UST is present cannot be determined on the basis of the geophysical data alone.

- Several other EM61 anomalies are interpreted as possible utilities.

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FIGURES

PLATE

APPENDIX

1. INTRODUCTION

Hager-Richter Geoscience, Inc. conducted a geophysical survey at the Proctor & Gamble Port Ivory Facility located on Staten Island, New York for Killam Associates (Killam) October 25 - November 15, 2000. The scope of the project and areas of interest were specified by Killam. The geophysical survey is part of a environmental investigation of the site being conducted by Killam on behalf of the Port Authority of New York and New Jersey.

The site is a large inactive industrial facility located in the northwestern portion of Staten Island. The general location of the Site is shown in Figure 1, and Plate 1 is a site plan. The Site consists of several buildings, gravel and paved parking areas, rail spurs, foundations and slabs of demolished buildings, and open areas. Hager-Richter was contracted by Killam to locate utilities in the vicinity of as many as 210 proposed boring locations and to locate possible USTs that may be present at nine locations identified at the Site by Killam. The locations of utilities detected as part of the boring program were marked on site as specified by Killam, and are not discussed further.

According to information provided by Killam, as many as 19 USTs might be present in nine areas of the site, designated by Killam as UST Area 1 through UST Area 9. Four of the nine areas may contain multiple USTs, and five areas may contain a single UST. The locations of the nine areas specified by Killam are shown as hatched areas on Plate 1.

The objective of the geophysical survey was to detect possible USTs in each of the nine areas of interest specified by Killam, and if any were detected, to determine the locations of each.

The geophysical survey consisted of time domain electromagnetic induction metal detector (EM61) surveys followed by focused GPR surveys in each of the areas of interest. The EM61 survey detects and outlines areas containing buried metal. However, the EM method cannot provide information on the type of objects causing the EM anomaly. In order to aid in the identification of the objects, a focused GPR survey was conducted at the locations of anomalies detected with the EM61.

James Coffman, Jeffrey Reid, P.G., and Jeffrey Sullivan of Hager-Richter conducted the field operations on October 30, November 8, 9, 14, and 15, 2000. The project was coordinated with Ms. Jennifer Kohlsaat of Killam. Mr. Daniel Davis and Mr. Charles Springer, both of Killam, specified the areas of interest for the survey and were present for portions of the field work.

2. EQUIPMENT AND PROCEDURES

2.1 General

The equipment, limitations, and general procedures of EM61 high sensitivity metal detector and GPR surveys are described below. Details specific to this project are given in the Site Specific section below.

2.2 EM61

Equipment. The EM survey was conducted using a Geonics Model EM61 time domain electromagnetic induction metal detector, the industry standard for this type of geophysical survey. The EM61 produces a pulsed primary magnetic field in the earth that induces eddy currents in the ground and in nearby metal objects. The receiver is timed to measure the secondary magnetic field produced by eddy currents after those in the ground have dissipated, i.e., only the current in the metal objects. The data are recorded on a digital data logger. The EM61 is relatively insensitive to nearby cultural interferences such as buildings.

Limitations of the Method. The data from an EM61 survey are affected by surface metal debris in the survey area, and its depth sensitivity is limited to about 15 feet. The instrument is relatively cumbersome, and works best where the 1-meter square transmit and receive coils can be hand pulled in a small trailer.

Detection and identification should be clearly differentiated. Detection is the recognition of the presence of a metal object, and the electromagnetic method is excellent for such purposes. Identification, on the other hand, is determination of the nature of the causative body (i.e., what is the body -- a cache of drums, UST, automobile, white goods, etc.?). Although the EM61 data cannot be used to *identify* all buried metal objects, they provide excellent guides to the identification of some objects. For example, buried metal utilities produce anomalies with lengths many times their widths.

2.3 GPR

Equipment. The GPR survey was conducted using a Geophysical Survey Systems SIR-2 digital GPR system equipped with a survey wheel to trigger recording of data at equal horizontal distances. The GPR system was used with a 500 MHz antenna and a 60 nsec time window. The GPR traverses were spaced approximately 5 feet apart, and were conducted at the locations of EM61 anomalies.

Limitations of the Method. There are limitations of the GPR technique as used to detect and/or locate targets such as those of the subject Site: (1) surface conditions, (2) electrical conductivity of the ground, (3) contrast of the electrical conductivities of the targets and the ground, and (4) spacing between lines. Of these limitations, only the fourth, line spacing, is controlled by the operator.

The condition of the ground surface can affect the quality of the GPR data and the depth of penetration of the GPR signal. Sites covered with high grass, bushes, landscape structures, debris, obstacles, soil mounds, etc. limit the survey access and the coupling of the GPR antenna with the ground. In many cases, the GPR signal will not penetrate below concrete pavement, especially inside of buildings, and a target may not be detectable.

The electrical conductivity of the ground determines the attenuation of the GPR signals, and thereby limits the maximum depth of exploration. The GPR signal does not penetrate clay-rich soils, and targets buried in clay can be missed.

A definite contrast in the electrical conductivities of the ground and the target is required to obtain a reflection of the GPR signal. If the contrast is too small, possibly due to construction details or extremely corroded conditions of metal targets, then the reflection may be too weak to recognize, and the target can be missed.

The spacing between lines is under control of the GPR operator, and the design of the survey is based on the dimensions of the smallest feature of interest. Targets with dimensions smaller than the spacing between GPR survey lines can be missed.

2.4 Site Specific

As noted in the Introduction, Killam specified nine areas of interest for the geophysical survey. A local survey grid was established in each of the UST survey areas and tied to fixed landmarks.

EM61 data were acquired at approximately 8-inch intervals along lines spaced 5 feet apart in the accessible portions of each area. The EM61 was operated with the 1-meter square transmit/receive coils mounted on a hand-drawn trailer with a survey wheel that measures distance and triggers data collection at equal intervals. The EM61 data were recorded digitally and processed in the field using software provided by the manufacturer. A color contour plot of the data was generated using commercially available software (Geosoft).

A focused GPR survey was conducted at the locations of anomalies detected by the EM61 survey to attempt to identify the causative body(ies). GPR traverses were located along the same lines as the EM61 survey and spacing was variable based on the size of the EM anomalies and surface conditions. The GPR antenna was pulled by hand for all traverses.

GPR data were acquired with a 300 MHz antenna and a 60 nsec time window. GPR signal penetration varied significantly at the Site. Based on handbook values of time-to-depth conversions for the GPR signal in average soils, the GPR signal penetration is estimated to have varied from about 1 foot to about 5 feet.

3. RESULTS AND DISCUSSION

3.1 General

The geophysical survey consisted of a time domain electromagnetic induction metal detector (EM61) survey followed by a focused GPR survey where the EM61 survey indicated possible buried metal. Plate 1 is a Site Plan provided by Killam showing the locations of the survey areas.

Interpretation of EM61 data is based on the *relative* response (in millivolts) of the top and bottom instrument coils to local conditions. The differential response, the difference between the top and bottom coils, is typically used as the best indication of the location of buried metal objects, and is shown in the figures for this report. The instrument is not calibrated to provide an absolute measure of a particular property, such as the conductivity of the soil or of buried metal objects. Subsurface metal objects produce sharply defined positive anomalies when the EM61 is positioned directly over them. Such anomalies are colored red and pink on the color plots presented herein. Acquiring data at short intervals along closely spaced lines, as was done at the present site, provides high spatial resolution of the location and footprint of the targets. Thus, buried metal is recognized in contour plots of EM61 data by positive anomalies (red or pink zones) roughly corresponding to the dimensions of the buried metal.

Many surface metal objects and objects containing metal are present in the UST survey areas such as manhole covers, railroad tracks, fences, and reinforced concrete. The locations of such objects are shown on the figures for each of the areas. Because these objects contain metal, they can produce significant EM anomalies. The presence or absence of buried metal in these areas cannot be determined due to the anomalies caused by such surface objects.

In general, GPR signal penetration at the site was limited, with reflections received for less than about 30 nsec. The limited signal penetration is likely due to conductive soils, and in many places, concrete at the surface. Based on handbook time-to-depth conversions for the GPR signal in average soils, the GPR signal penetration is estimated to have been no more than about 2 to 3 feet for most of the areas of interest.

3.2 UST Area 1

UST Area 1 is located on the north side of Building 20, and its location is shown on Plate 1. EM61 data were acquired along survey lines spaced 5 feet apart, and GPR data were acquired at most locations where the EM data indicated the presence of buried metal. Figure 2 is a color contour plot of the EM61 data for UST Area 1, and Figure 3 shows the locations of the GPR traverses and the interpretation of both the EM61 and GPR data. Five areas of possible buried metal were detected within the survey area, and their locations are shown on Figure 3. GPR traverses were conducted in the central portion of the area. GPR signal penetration was limited to less than 2 feet. Therefore, no additional information regarding the causative bodies was determined for this area with the GPR traverse.

Based on the shapes and sizes of the EM anomalies for UST Area 1, we infer that a utility and several other buried objects are present. Whether the objects are USTs cannot be determined on the basis of the geophysical data alone. If any of the buried metal objects is a UST, its capacity is likely 1000 gallons or less.

3.3 UST Area 2

UST Area 2 is located south of a wood shavings stockpile area, and its location is shown on Plate 1. EM61 data were acquired along survey lines spaced 5 feet apart, and GPR data were acquired at most locations where the EM data indicated the presence of buried metal. Figure 4 is a color contour plot of the EM61 data for UST Area 2, and Figure 5 shows the locations of the GPR traverses and the interpretation of both the EM61 and GPR data. One area of possible buried metal was detected within the survey area. The area is located about 35 feet south of a concrete pad. GPR traverses were conducted over the location of the EM anomaly. GPR signal penetration is estimated to have been about 4 to 5 feet for this area, but GPR reflections typical of a UST were not detected in the area included in the GPR survey.

Based on the presence of the EM anomaly in UST Area 2, we infer that a buried metal object is present. Whether the object is a UST cannot be determined on the basis of the geophysical data alone. Because no GPR reflections typical of a UST were observed in the records for the effective depth of penetration of the GPR signal (about 5 feet), and the EM anomaly is small in amplitude, we conclude that if a UST is present, it would likely be located at a depth greater than 5 feet.

3.4 UST Area 3

UST Area 3 is located north of the northeast corner of Building 13, and its location is shown on Plate 1. EM61 data were acquired along survey lines spaced 5 feet apart, and GPR data were acquired at most locations where the EM data indicated the presence of buried metal. Figure 6 is a color contour plot of the EM61 data for UST Area 3, and Figure 7 shows the locations of the GPR traverses and the interpretation of both the EM61 and GPR data. Two areas of possible buried metal were detected within the survey area as well as a possible utility. One buried metal object is located about 25 feet east of a trailer, the other is located about 60 feet east of the trailer, and the locations of both are shown on Figure 7.

GPR signal penetration is estimated to have been about 2 to 3 feet for this area. GPR reflections typical of a UST were not detected in the area included in the GPR survey. GPR reflections typical of a flat structure, such as a concrete pad, are present at the location of the southern end of the EM anomaly closer to the trailer.

Based on the presence of the EM anomalies in UST Area 2, we infer that two buried metal objects are present. The GPR data indicate that at least part of one of the EM anomalies may be related to a flat concrete-like structure. Whether the concrete object is a UST cannot be determined on the basis of the geophysical data alone.

3.5 UST Area 4

UST Area 4 is located west of Buildings 34 and 38 and north of a former floor slab for a demolished building, and its location is shown on Plate 1. EM61 data were acquired along survey lines spaced 5 feet apart, and GPR data were acquired at most locations where the EM data indicated the presence of buried metal. Figure 8 is a color contour plot of the EM61 data for UST Area 4, and Figure 9 shows the locations of the GPR traverses and the interpretation of both the EM61 and GPR data.

The western portion of the survey area is covered by a concrete pad. Three significant EM anomalies are present in this portion of the survey area and one large EM anomaly is present along the southeast edge of the survey area. The areas of the EM anomalies are shown as areas of buried metal on Figure 9. The large EM anomalies may be caused by structures located under the concrete slab. The GPR signal penetration over the concrete slab is limited to less than about 1 foot and GPR reflections typical of USTs were not detected. Whether USTs are located under the slab cannot be determined on the basis of the geophysical data alone. The remaining portion of UST Area 4 is generally free of buried metal.

3.6 UST Area 5

UST Area 5 is located along a rail spur southwest of Building 17, and its location is shown on Plate 1. EM61 data were acquired along survey lines spaced 5 feet apart, and GPR data were acquired at most locations where the EM data indicated the presence of buried metal. Figure 10 is a color contour plot of the EM61 data for UST Area 5, and Figure 11 shows the locations of the GPR traverses and the interpretation of both the EM61 and GPR data. Two rail spurs and a reinforced concrete surface drainage swale are present in the area. High amplitude EM anomalies are present near the concrete drainage swale and low amplitude negative EM anomalies are observed for the rail spurs.

GPR traverses were conducted in the northwest corner of the survey area, but the GPR signal penetration was limited to less than about 1 foot and no GPR reflection typical for a UST were detected.

3.7 UST Area 6

UST Area 6 is located along a rail spur west of Building 17, and its location is shown on Plate 1. EM61 data were acquired along survey lines spaced 5 feet apart, and GPR data were acquired at most locations where the EM data indicated the presence of buried metal. Figure 12 is a color contour plot of the EM61 data for UST Area 6, and Figure 13 shows the locations of the GPR traverses and the interpretation of both the EM61 and GPR data. A rail spur and iron rimmed surface drain are present along the east side of the survey area.

Five EM anomalies not related to the surface features were identified, and their locations are shown on Figure 13. The two large circular anomalies located in the northeast portion of the survey area are likely caused by buried concrete. A small portion of a slab was visible on site and its presence was confirmed with the GPR. The remaining three anomalies are low amplitude and small in extent and are likely too small to be caused by USTs.

3.8 UST Area 7

UST Area 7 is located south of Building S-#35, and its location is shown on Plate 1. EM61 data were acquired along survey lines spaced 5 feet apart, and GPR data were acquired at most locations where the EM data indicated the presence of buried metal. Figure 14 is a color contour plot of the EM61 data for UST Area 7, and Figure 15 shows the locations of the GPR traverses and the interpretation of both the EM61 and GPR data. Surface objects such as a rail spur, a concrete loading dock, a steel plate, transformers, and a tower are present in the survey area. The EM data were adversely affected at such locations.

Four EM anomalies not related to the surface features were identified, and their locations are shown on Figure 15. A large EM anomaly is present in the central portion of the survey area. The GPR data for the area of the large anomaly indicate the presence of a shallow buried reinforced concrete slab or structure at a depth of about 1 foot in the southern part of the anomaly. GPR records for the traverses conducted in the vicinity of the remaining anomalies contain no reflections characteristic of USTs. Such areas are shown as areas of buried metal. Whether the buried metal objects are USTs cannot be determined on the basis of the geophysical data alone.

3.9 UST Area 8

UST Area 8 is located at the northeast corner of Building 55, and its location is shown on Plate 1. EM61 data were acquired along survey lines spaced 5 feet apart, and GPR data were acquired at most locations where the EM data indicated the presence of buried metal. Figure 16 is a color contour plot of the EM61 data for UST Area 8, and Figure 17 shows the locations of the GPR traverses and the interpretation of both the EM61 and GPR data. Surface objects such as a concrete pad and vertical pipes cut at grade are present in the survey area and such objects are shown on Figure 17.

Three anomalies attributed to buried metal objects were identified by the EM survey and their locations are shown on Figure 17. EM anomalies attributed to subsurface utilities were also identified. GPR signal penetration in the areas of the EM anomalies was limited to a depth of about 1 foot and no GPR reflections typical of a UST were detected. Therefore, no information regarding the causative bodies could be determined. Whether the buried metal objects are USTs cannot be determined on the basis of the geophysical data alone.

3.10 UST Area 9

UST Area 9 is located between Buildings 52 and 53, and its location is shown on Plate 1. EM61 data were acquired along survey lines spaced 5 feet apart, and GPR data were acquired at most locations where the EM data indicated the presence of buried metal. Figure 18 is a color contour plot of the EM61 data for UST Area 9, and Figure 19 shows the locations of the GPR traverses and the interpretation of both the EM61 and GPR data.

Several surface metal objects, such as valve box covers, transformers, and overhead pipes are present in the survey area. Four 4-inch pipes, cut at the surface, are present in the southeast corner of the survey area. Significant EM anomalies are present at the locations of the surface features and may mask the presence of buried metal objects, if any, at such locations.

Three anomalies not associated with surface metal were identified by the EM survey. These anomalies have been attributed to buried metal objects. GPR signal penetration in the areas of the EM anomalies was limited to a depth of about 1 foot and no GPR reflections typical of a UST were detected. Therefore, no information regarding the causative bodies could be determined. Whether the buried metal objects are USTs cannot be determined on the basis of the geophysical data alone.

4. CONCLUSIONS

Based on the geophysical survey conducted at the Proctor & Gamble Port Ivory Facility located on Staten Island, New York, we conclude:

- Several areas of buried metal were detected in the nine areas of interest at the site on the basis of the EM61 data. None of the identified areas of buried metal could be definitively identified as a UST due to the limited GPR signal penetration and/or surface features such as concrete slabs, metal piping, and rail spurs. Whether the buried metal is a UST is present cannot be determined on the basis of the geophysical data alone.

- Several other EM61 anomalies are interpreted as possible utilities.

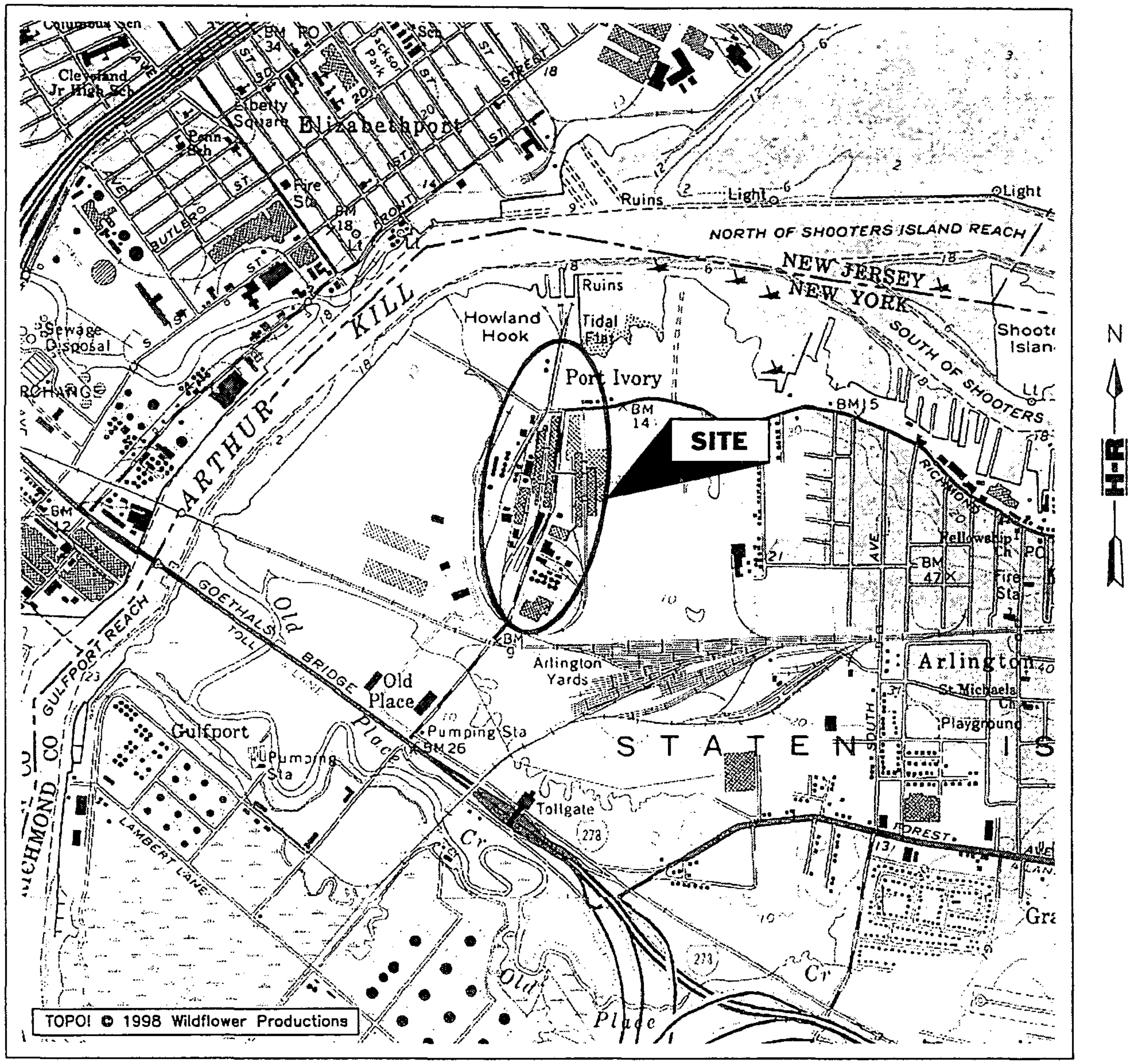
5. LIMITATIONS

This letter report was prepared for the exclusive use of Killam Associates and the Port Authority of New York and New Jersey (Client). No other party shall be entitled to rely on this Report or any information, documents, records, data, interpretations, advice or opinions given to Client by Hager-Richter Geoscience, Inc. (H-R) in the performance of its work. The Report relates solely to the specific project for which H-R has been retained and shall not be used or relied upon by Client or any third party for any variation or extension of this project, any other project or any other purpose without the express written permission of H-R. Any unpermitted use by Client or any third party shall be at Client's or such third party's own risk and without any liability to H-R.

H-R has used reasonable care, skill, competence and judgment in the performance of its services for this project consistent with professional standards for those providing similar services at the same time, in the same locale, and under like circumstances. Unless otherwise stated, the work performed by H-R should be understood to be exploratory and interpretational in character and any results, findings or recommendations contained in this Report or resulting from the work proposed may include decisions which are judgmental in nature and not necessarily based solely on pure science or engineering. It should be noted that our conclusions might be modified if subsurface conditions were better delineated with additional subsurface exploration including, but not limited to, test pits, soil borings with collection of soil and water samples, and laboratory testing.

The detection of subsurface utilities and/or other subsurface objects was not an objective of this portion of the geophysical survey, and the survey was not designed to detect such. However, some utilities and/or other subsurface objects were detected and their locations are provided as a courtesy. Other utilities and/or other subsurface objects may be present and the Client or any third party shall not rely on this report for information on such.

Except as expressly provided in this limitations section, H-R makes no other representation or warranty of any kind whatsoever, oral or written, expressed or implied; and all implied warranties of merchantability and fitness for a particular purpose, are hereby disclaimed.



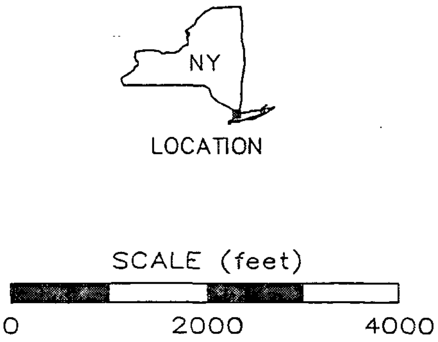
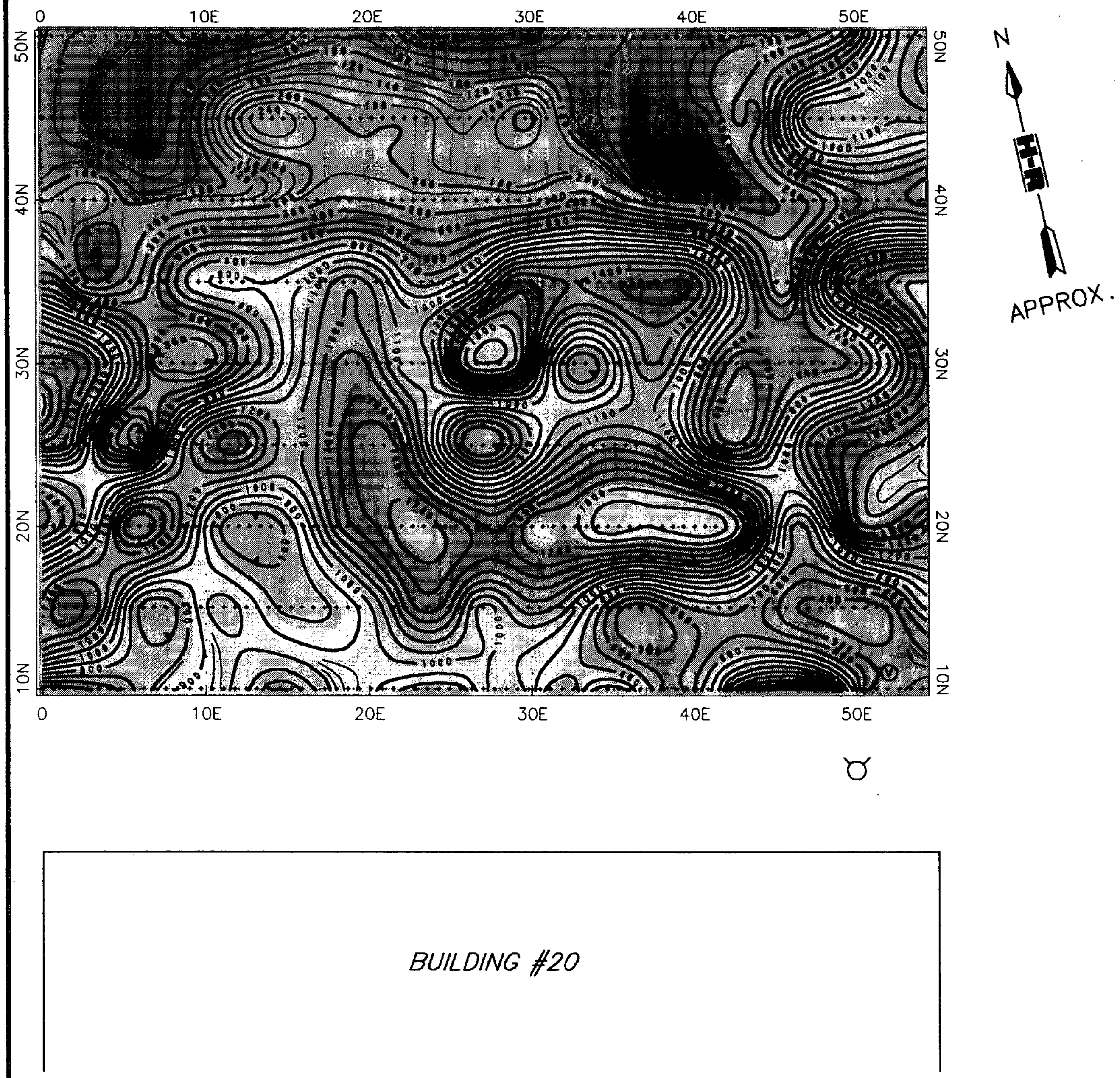


Figure 1
General Site Location
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59

December, 2000

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



NOTES:

1. Site sketch generated from field notes.
2. Contour Interval = 20 mV.

LEGEND

·	EM DATA STATION
Ⓥ	WATER VALVE
Ծ	HYDRANT

SCALE (feet)

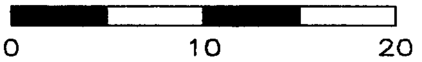


Figure 2
EM61 Survey - UST Area 1
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59 | December, 2000

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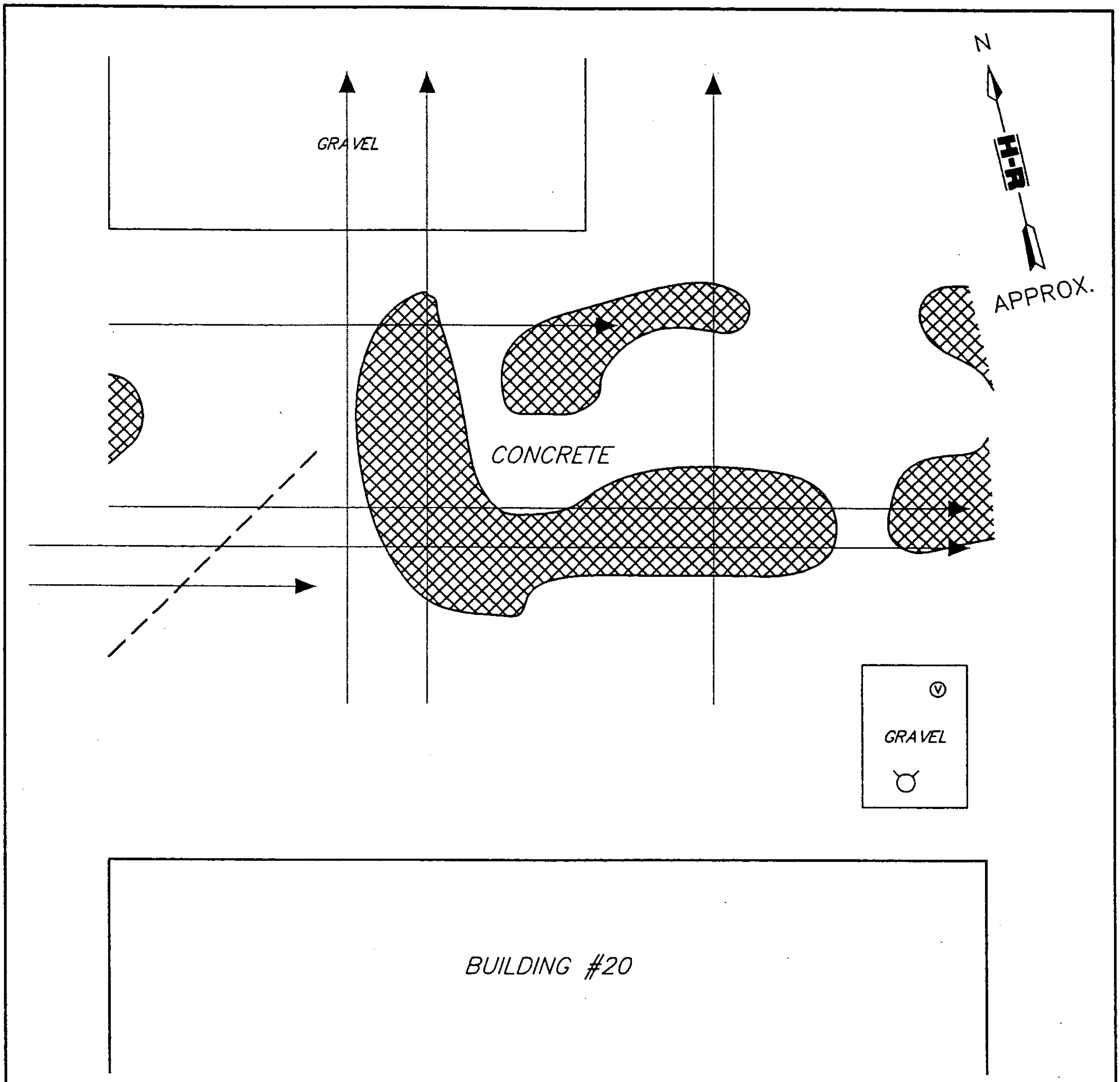
Salem, New Hampshire



LEGEND

→	GPR TRAVERSE
▨	AREA OF POSSIBLE BURIED METAL
– – – –	POSSIBLE UTILITY
ⓥ	WATER VALVE
Ծ	HYDRANT

SCALE (feet)

0 10 20

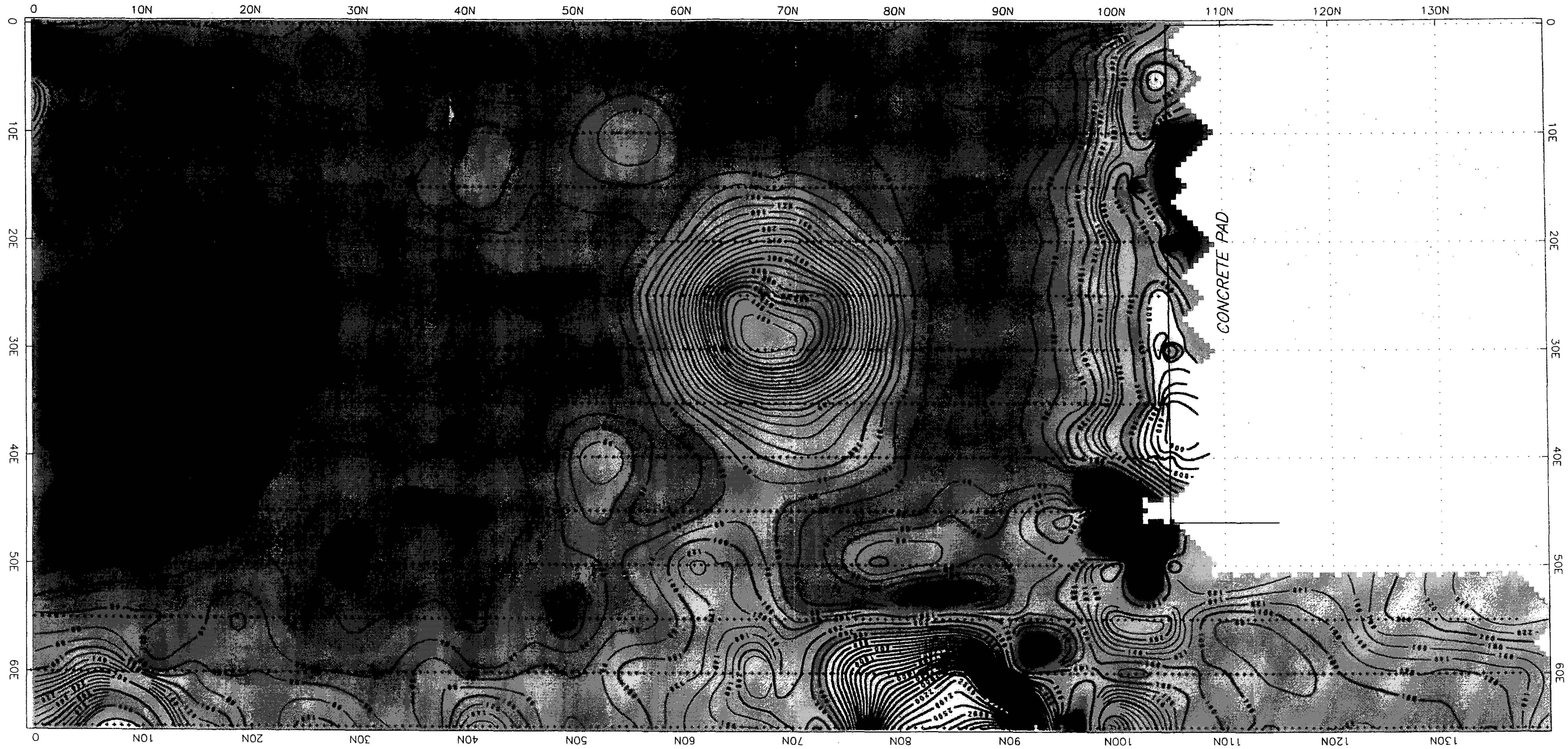
NOTES:

1. Site sketch generated from field notes.
2. Concrete covers survey area except for the areas shown as gravel-covered.

Figure 3
GPR Survey & Integrated Interpretation – UST Area 1
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59	December, 2000

HAGER–RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



NOTES:

1. Site sketch generated from field notes.
2. Contour Interval = 20 mV.

LEGEND

· EM DATA STATION

☒ WATER VALVE

⊕ MONITORING WELL

SCALE (feet)

0 10 20

APPROX.

H-R

N

Figure 4
EM61 Survey – UST Area 2
Procter & Gamble Port Ivory Facility
Staten Island, New York

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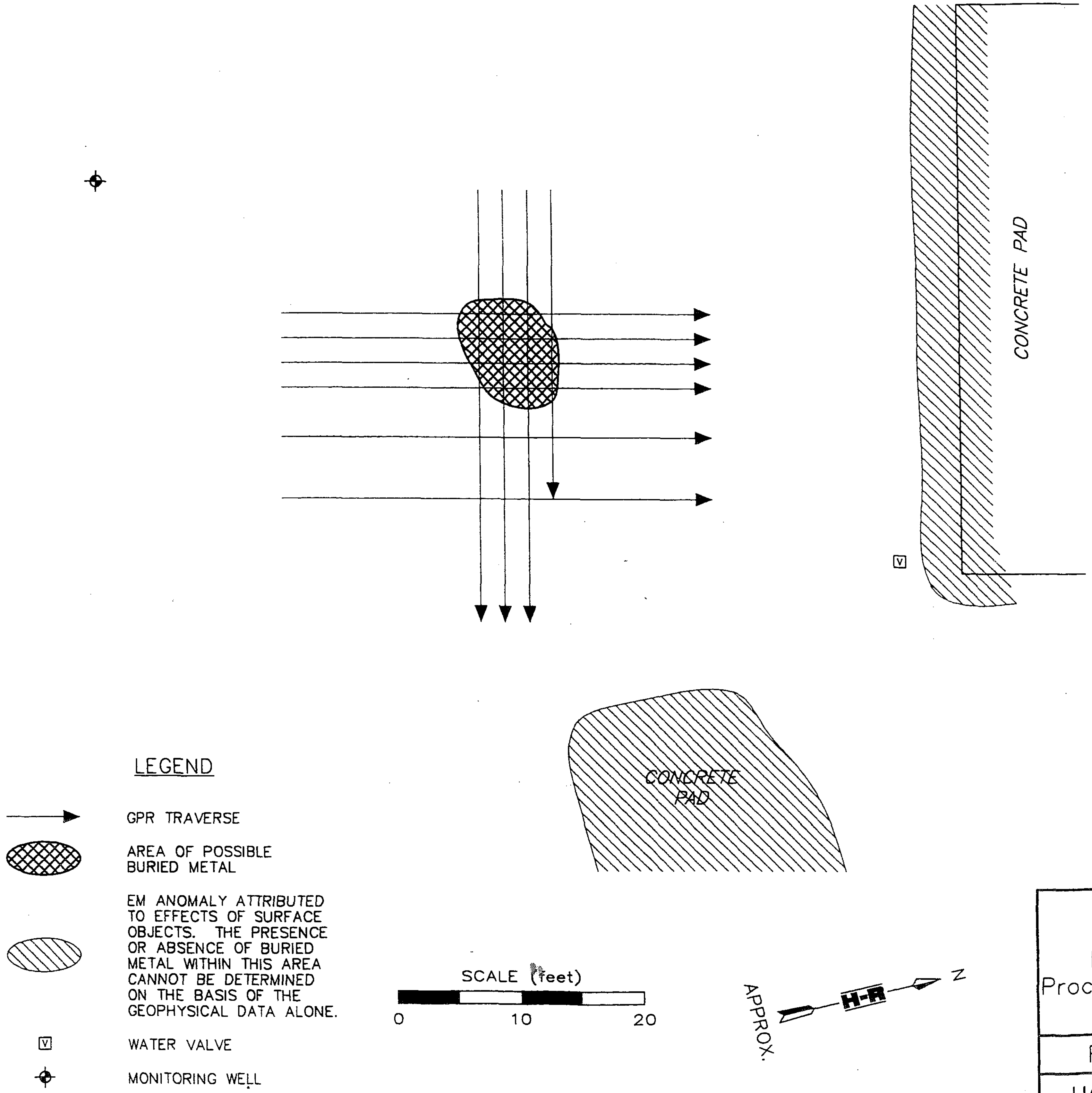
Salem, New Hampshire



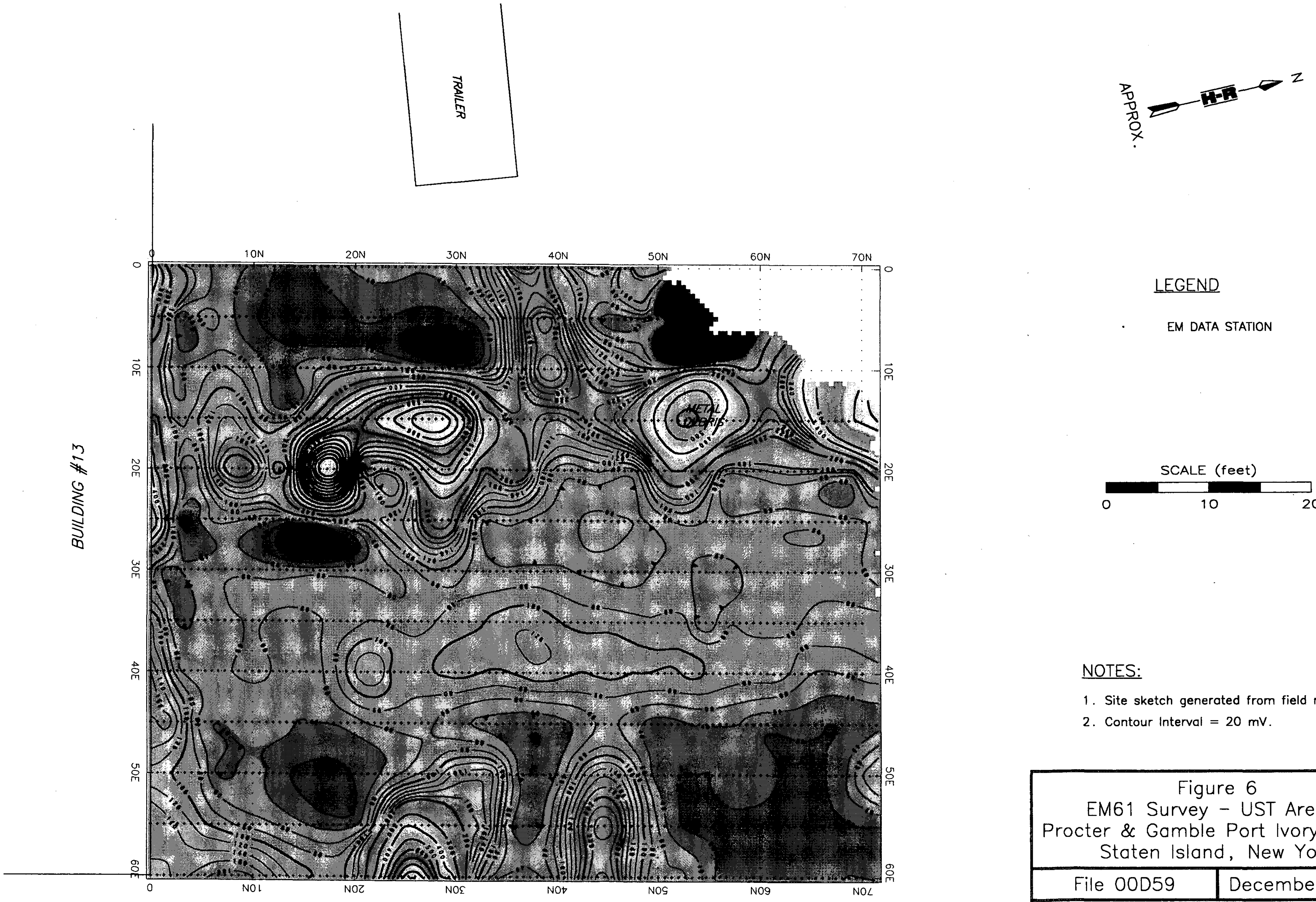
NOTE:

Site sketch generated from field notes.

Figure 5
GPR Survey & Integrated
Interpretation – UST Area 2
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59	December, 2000

HAGER–RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



LEGEND

· EM DATA STATION

SCALE (feet)

0 10 20

NOTES:

1. Site sketch generated from field notes.
2. Contour Interval = 20 mV.

Figure 6
EM61 Survey - UST Area 3
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59	December, 2000

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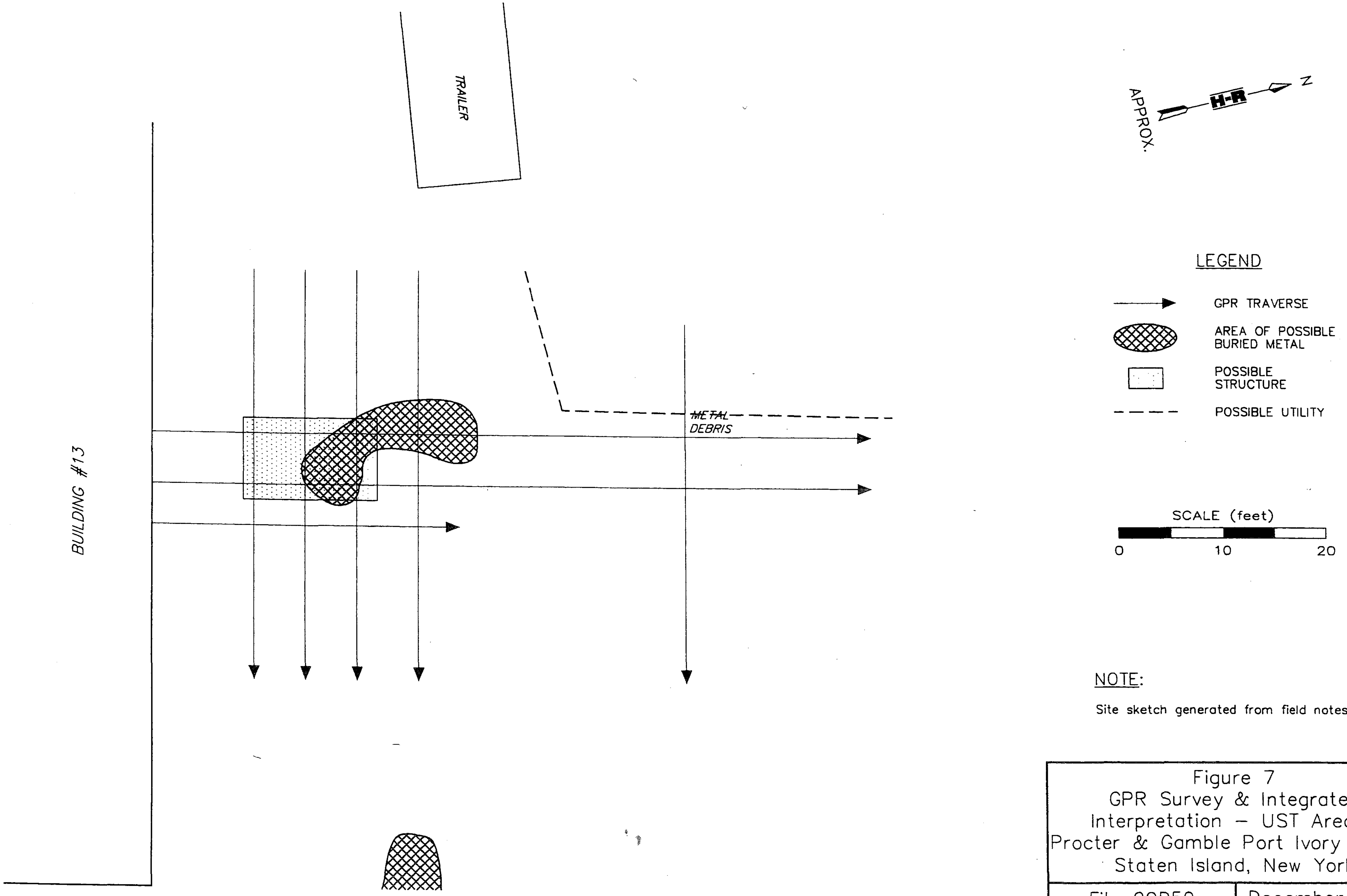
Salem, New Hampshire



NOTE:

Site sketch generated from field notes.

Figure 7
GPR Survey & Integrated
Interpretation – UST Area 3
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59	December, 2000

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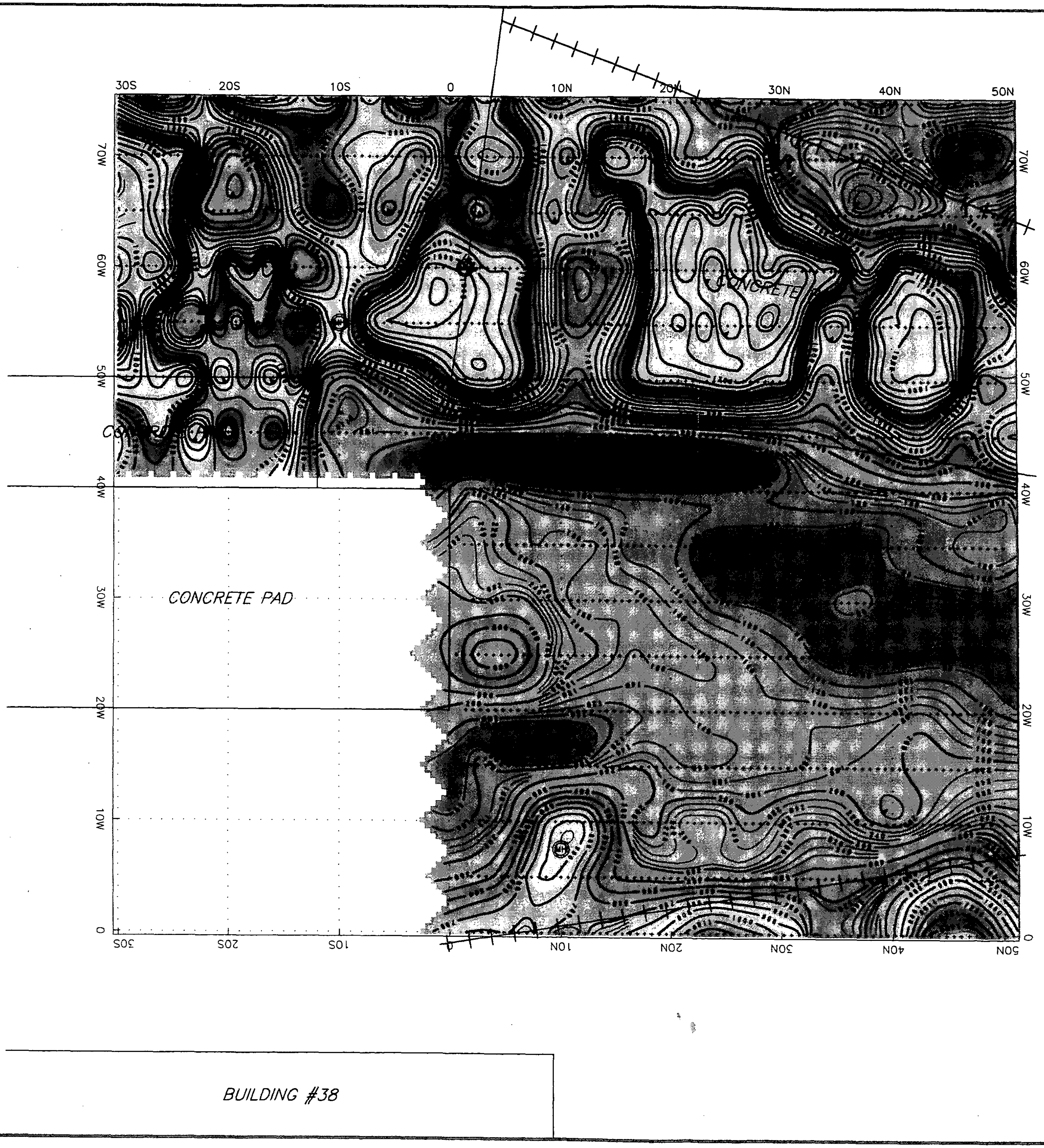
Salem, New Hampshire



NOTES:

1. Site sketch generated from field notes.
2. Contour Interval = 20 mV.

Figure 8
EM61 Survey – UST Area 4
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59	December, 2000

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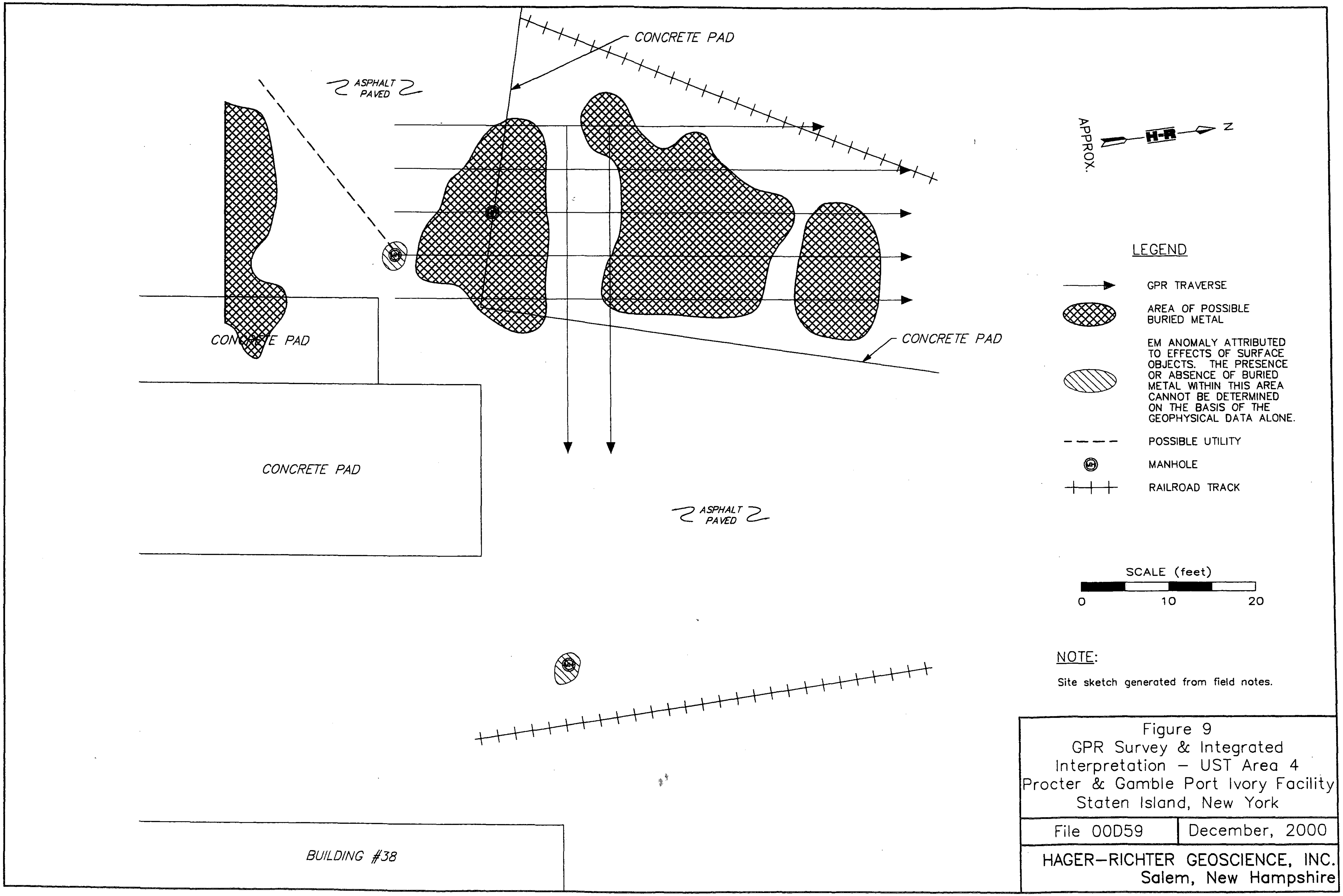
Salem, New Hampshire



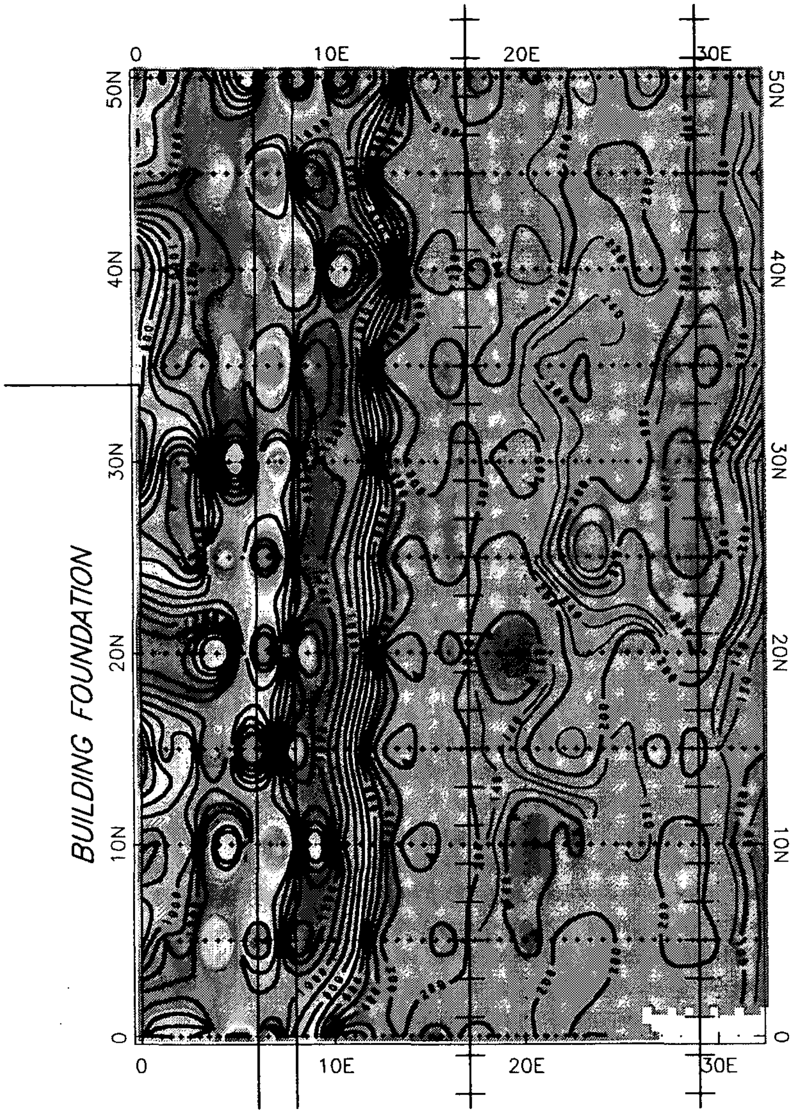
NOTE:

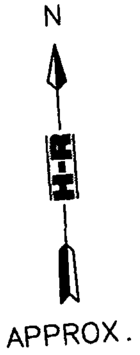
Site sketch generated from field notes.

Figure 9
GPR Survey & Integrated Interpretation – UST Area 4
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59 | December, 2000

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire





NOTES:

1. Site sketch generated from field notes.
2. Contour Interval = 20 mV.

LEGEND

·	EM DATA STATION
+-+-+	RAILROAD TRACK

SCALE (feet)

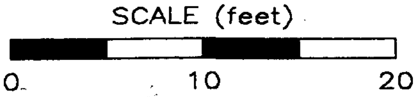
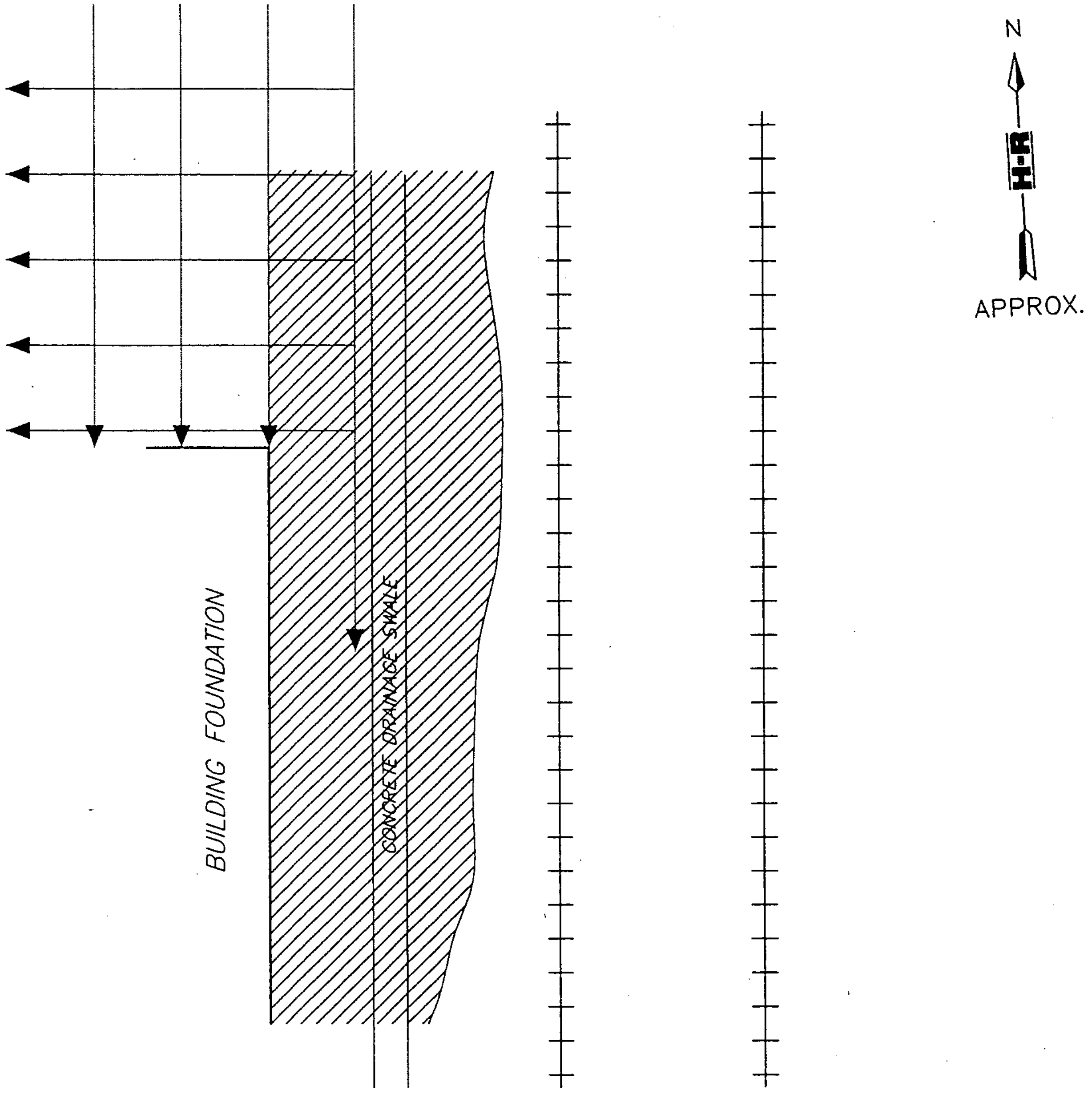


Figure 10
EM61 Survey - UST Area 5
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59 | December, 2000

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



LEGEND

→ GPR TRAVERSE

▨ EM ANOMALY ATTRIBUTED TO EFFECTS OF SURFACE OBJECTS. THE PRESENCE OR ABSENCE OF BURIED METAL WITHIN THIS AREA CANNOT BE DETERMINED ON THE BASIS OF THE GEOPHYSICAL DATA ALONE.

┼┼┼ RAILROAD TRACK

SCALE (feet)

0 10 20

NOTE:

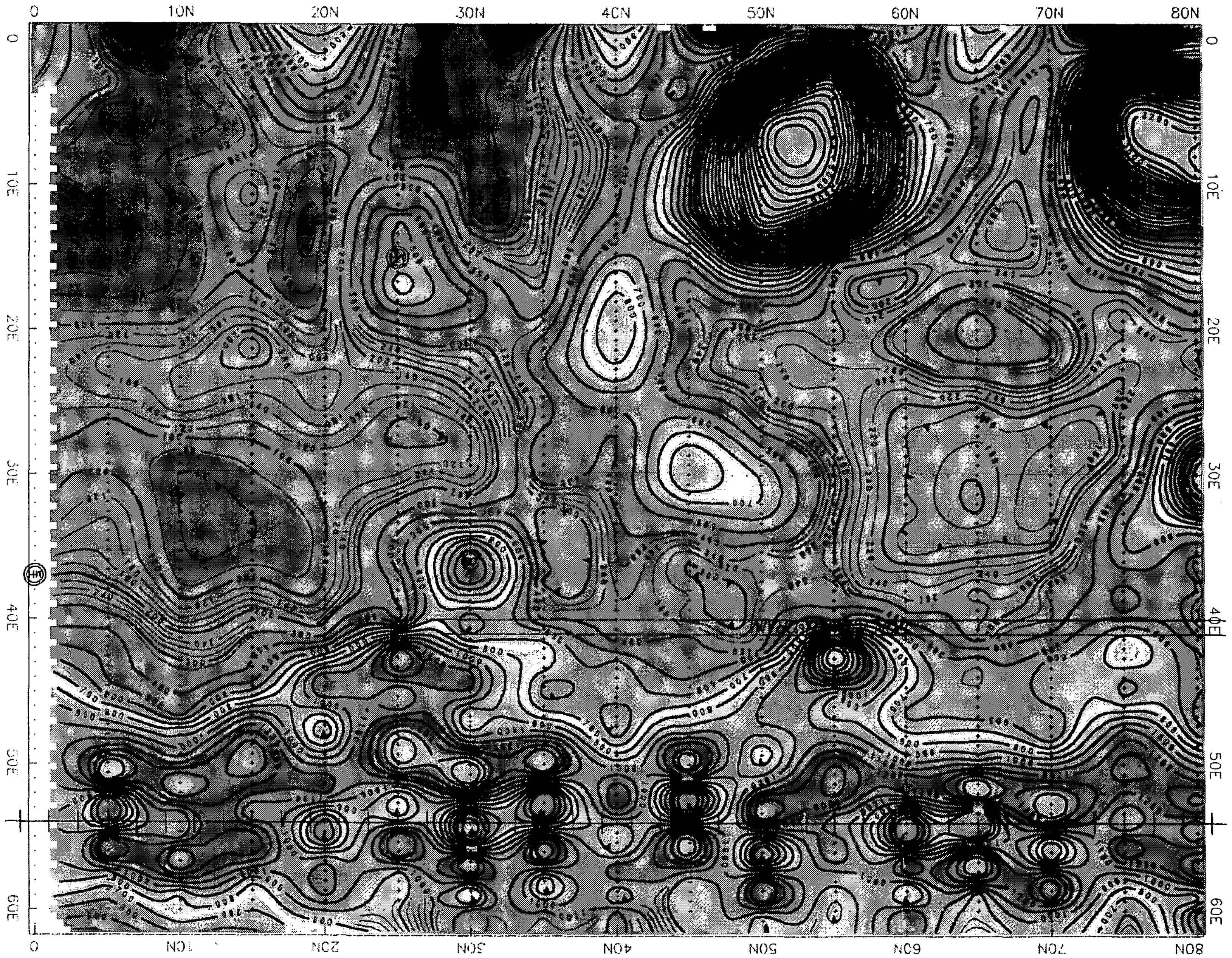
Site sketch generated from field notes.

Figure 11
GPR Survey & Integrated
Interpretation – UST Area 5
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59	December, 2000

HAGER–RICHTER GEOSCIENCE, INC.
Salem, New Hampshire

APPROX. H-R N



LEGEND

·	EM DATA STATION
MH	MANHOLE
CB	CATCH BASIN
┼─┼─┼	RAILROAD TRACK

SCALE (feet)
0 10 20

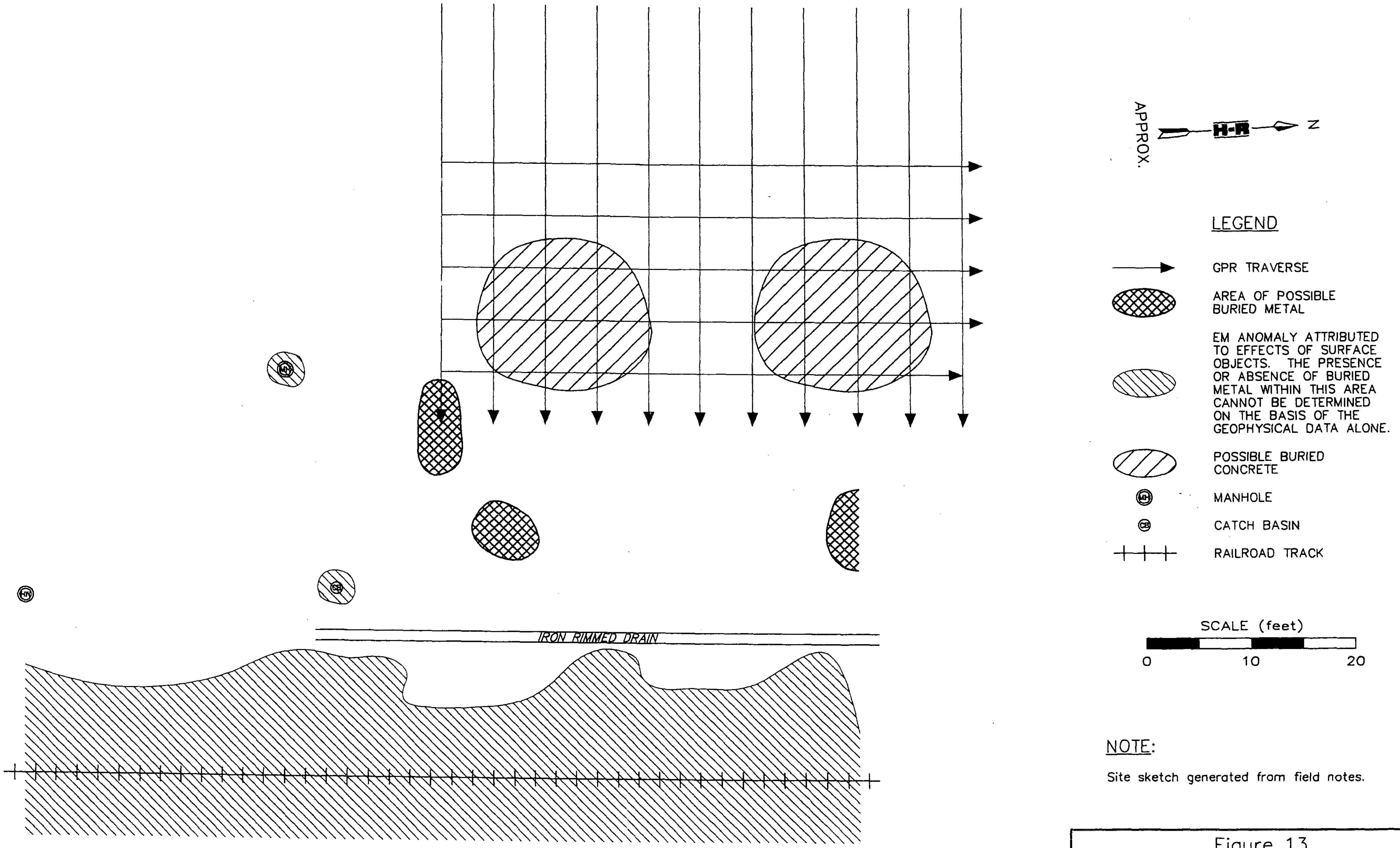
NOTES:

1. Site sketch generated from field notes.
2. Contour Interval = 20 mV.

Figure 12
EM61 Survey - UST Area 6
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59 | December, 2000

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



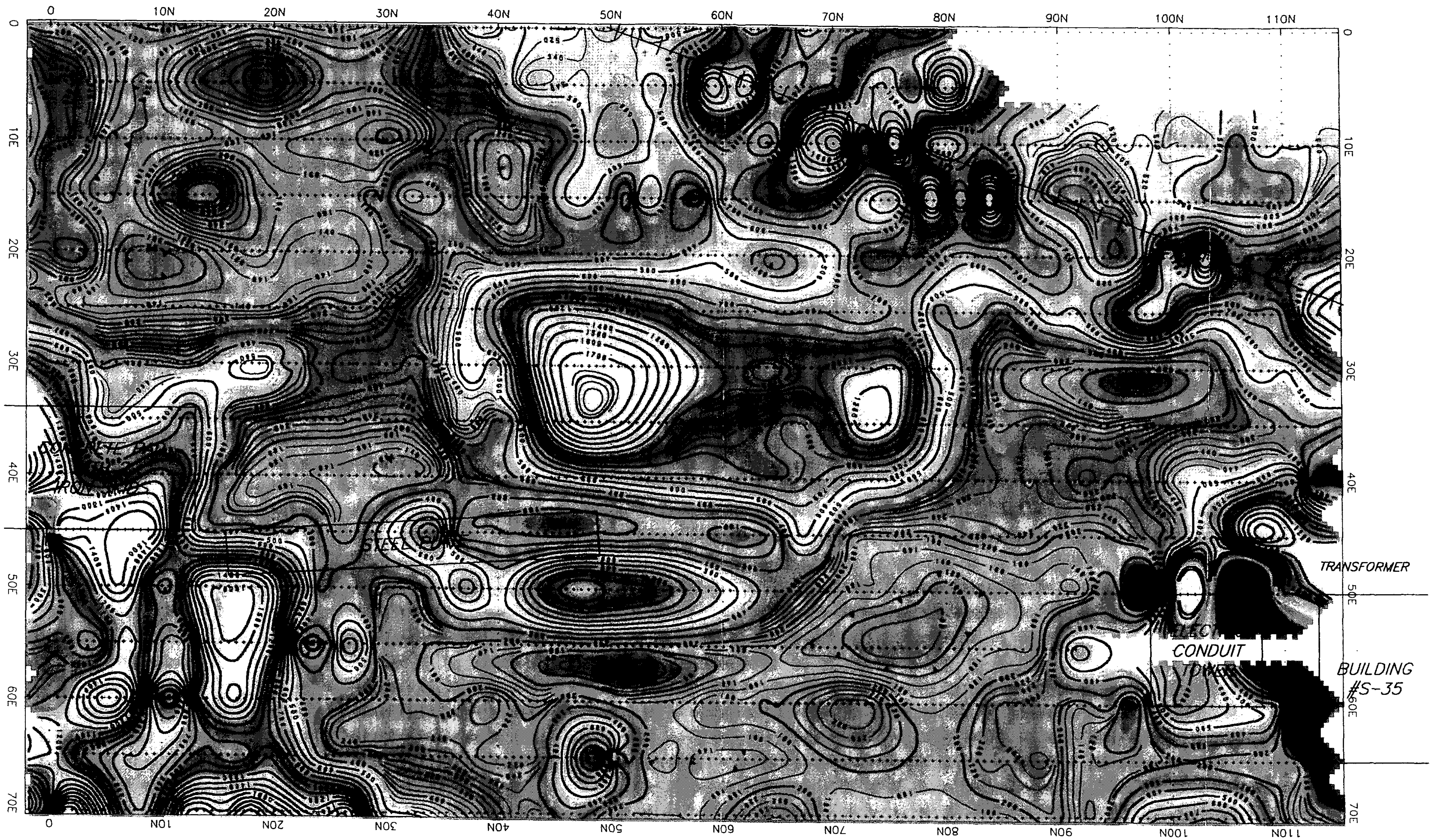
NOTE:

Site sketch generated from field notes.

Figure 13
GPR Survey & Integrated
Interpretation – UST Area 6
Procter & Gamble Port Ivory Facility
Staten Island, New York

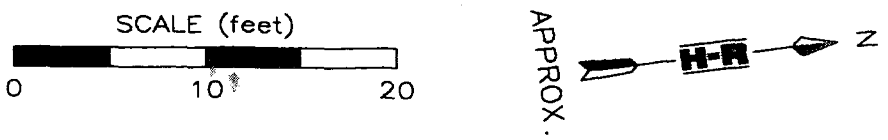
File 00D59	December, 2000

HAGER–RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



LEGEND

- EM DATA STATION
- MANHOLE
- HYDRANT
- RAILROAD TRACK



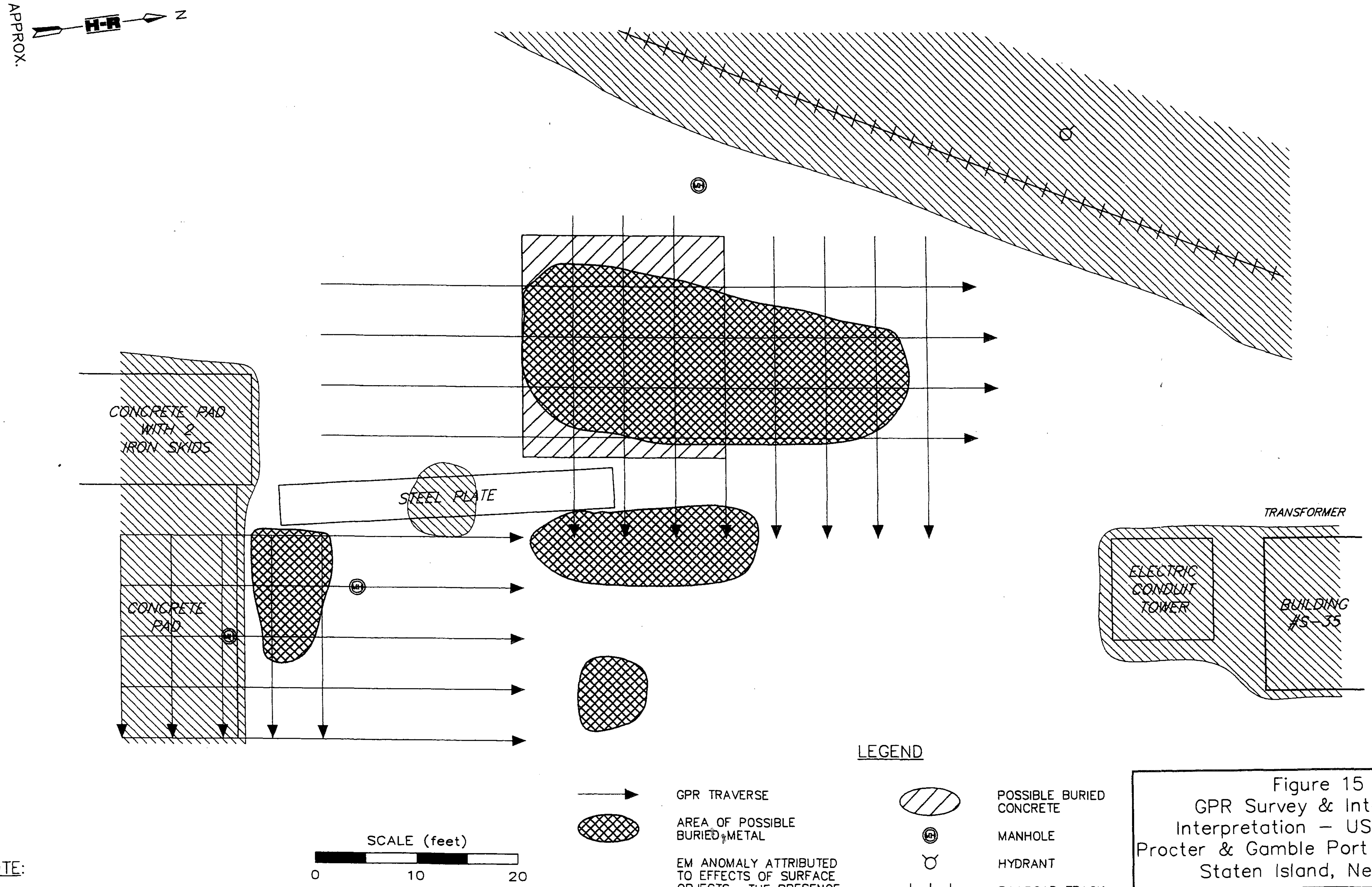
NOTES:

1. Site sketch generated from field notes.
2. Contour Interval = 20 mV.

Figure 14
EM61 Survey - UST Area 7
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59 | December, 2000

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



LEGEND

→	GPR TRAVERSE
▩	AREA OF POSSIBLE BURIED METAL
▨	EM ANOMALY ATTRIBUTED TO EFFECTS OF SURFACE OBJECTS. THE PRESENCE OR ABSENCE OF BURIED METAL WITHIN THIS AREA CANNOT BE DETERMINED ON THE BASIS OF THE GEOPHYSICAL DATA ALONE.
▧	POSSIBLE BURIED CONCRETE
◎	MANHOLE
Ծ	HYDRANT
┼┼┼	RAILROAD TRACK

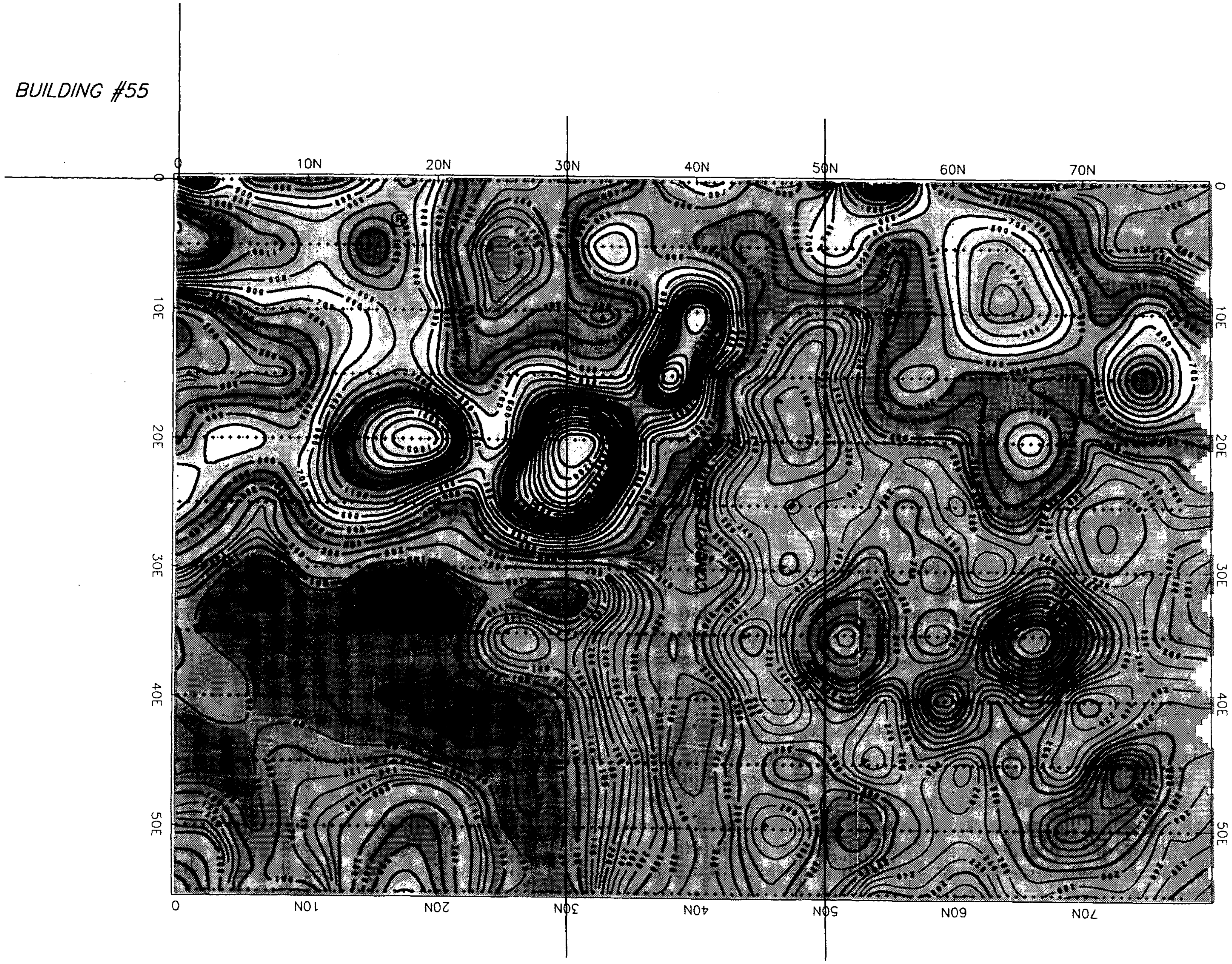
NOTE:

Site sketch generated from field notes.

Figure 15
GPR Survey & Integrated
Interpretation – UST Area 7
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59 | December, 2000

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



APPROX. N

LEGEND

- · EM DATA STATION
- Ⓟ PIPE

SCALE (feet)

0 10 20

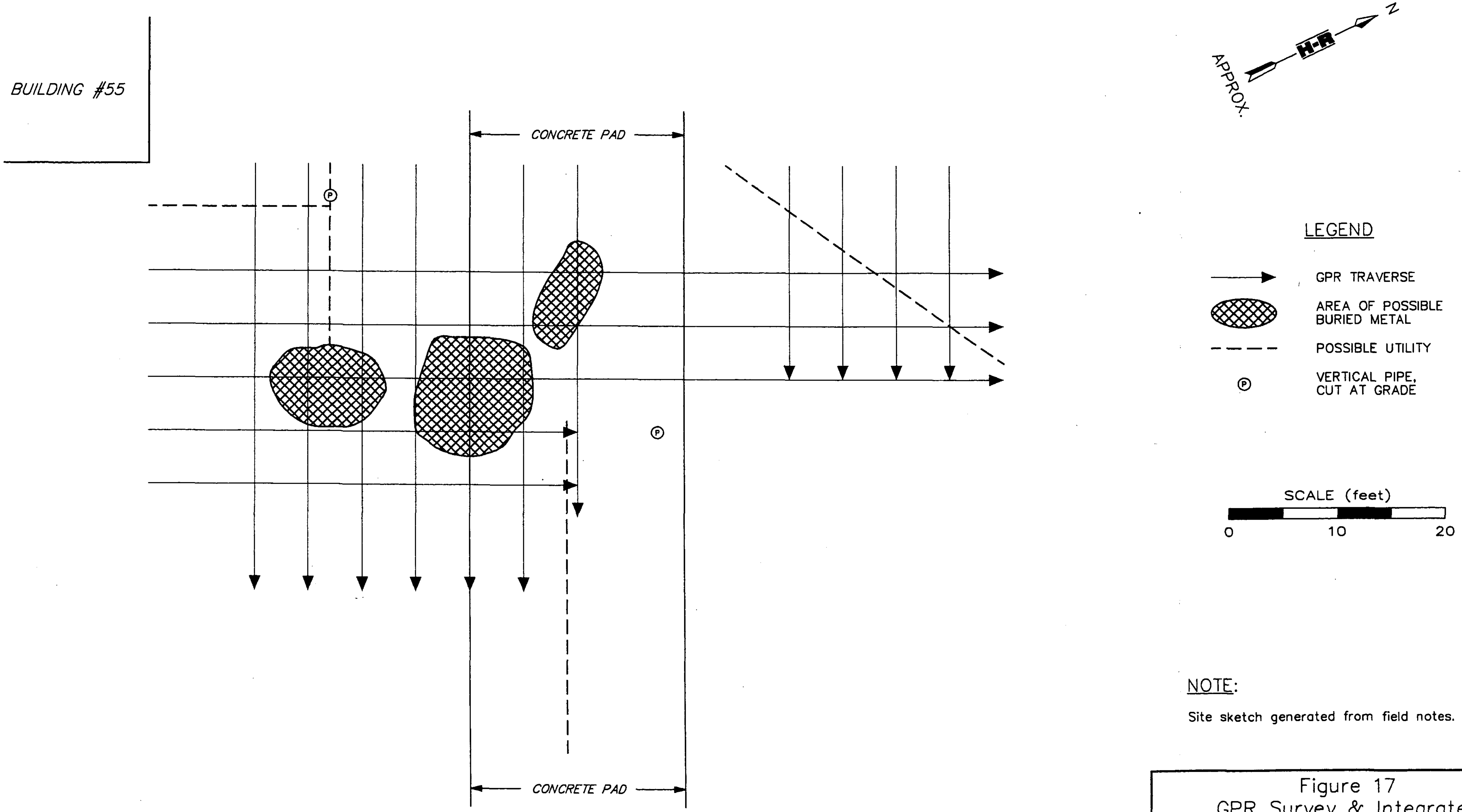
NOTES:

1. Site sketch generated from field notes.
2. Contour Interval = 20 mV.

Figure 16
EM61 Survey – UST Area 8
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59	December, 2000

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



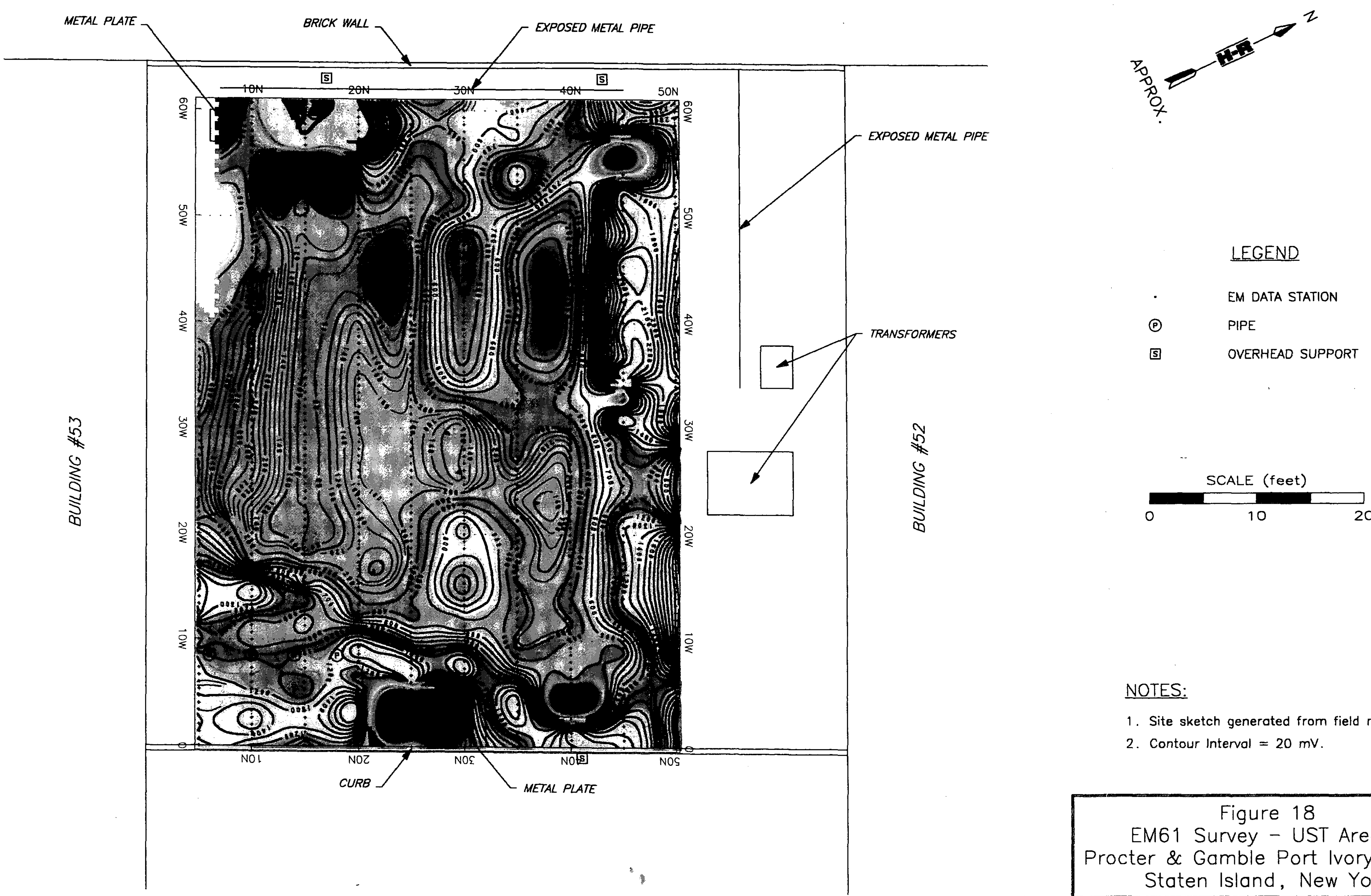
NOTE:

Site sketch generated from field notes.

Figure 17
GPR Survey & Integrated
Interpretation – UST Area 8
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59 | December, 2000

HAGER–RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



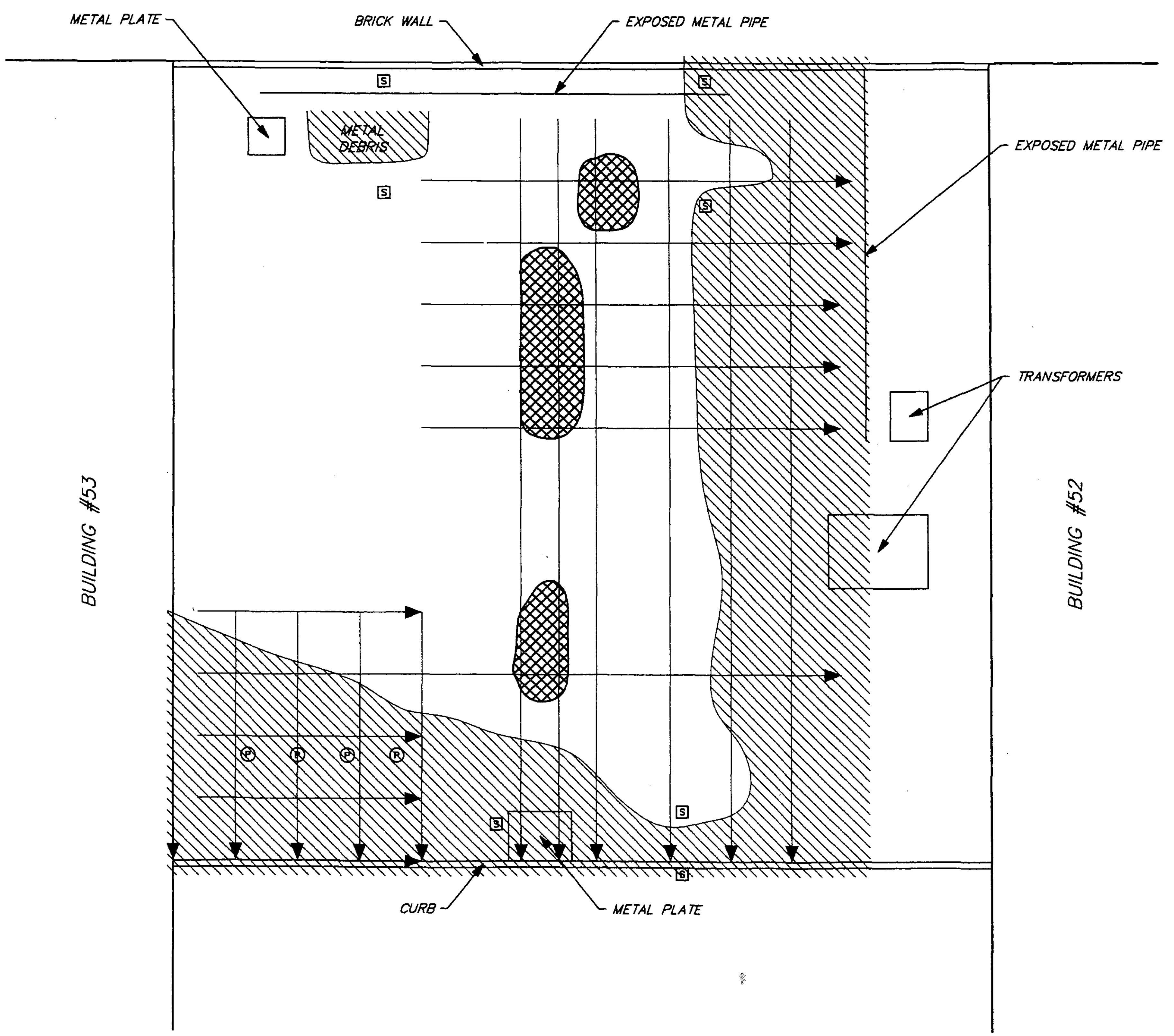
NOTES:

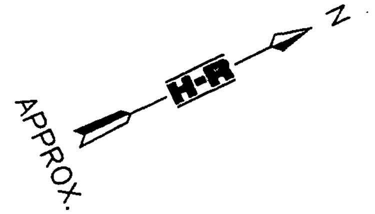
1. Site sketch generated from field notes.
2. Contour Interval = 20 mV.

Figure 18
EM61 Survey – UST Area 9
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59 | December, 2000

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire





LEGEND

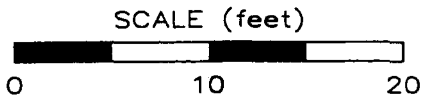
→ GPR TRAVERSE

▩ AREA OF POSSIBLE BURIED METAL

▨ EM ANOMALY ATTRIBUTED TO EFFECTS OF SURFACE OBJECTS. THE PRESENCE OR ABSENCE OF BURIED METAL WITHIN THIS AREA CANNOT BE DETERMINED ON THE BASIS OF THE GEOPHYSICAL DATA ALONE.

Ⓟ VERTICAL PIPE, CUT AT GRADE

S OVERHEAD SUPPORT



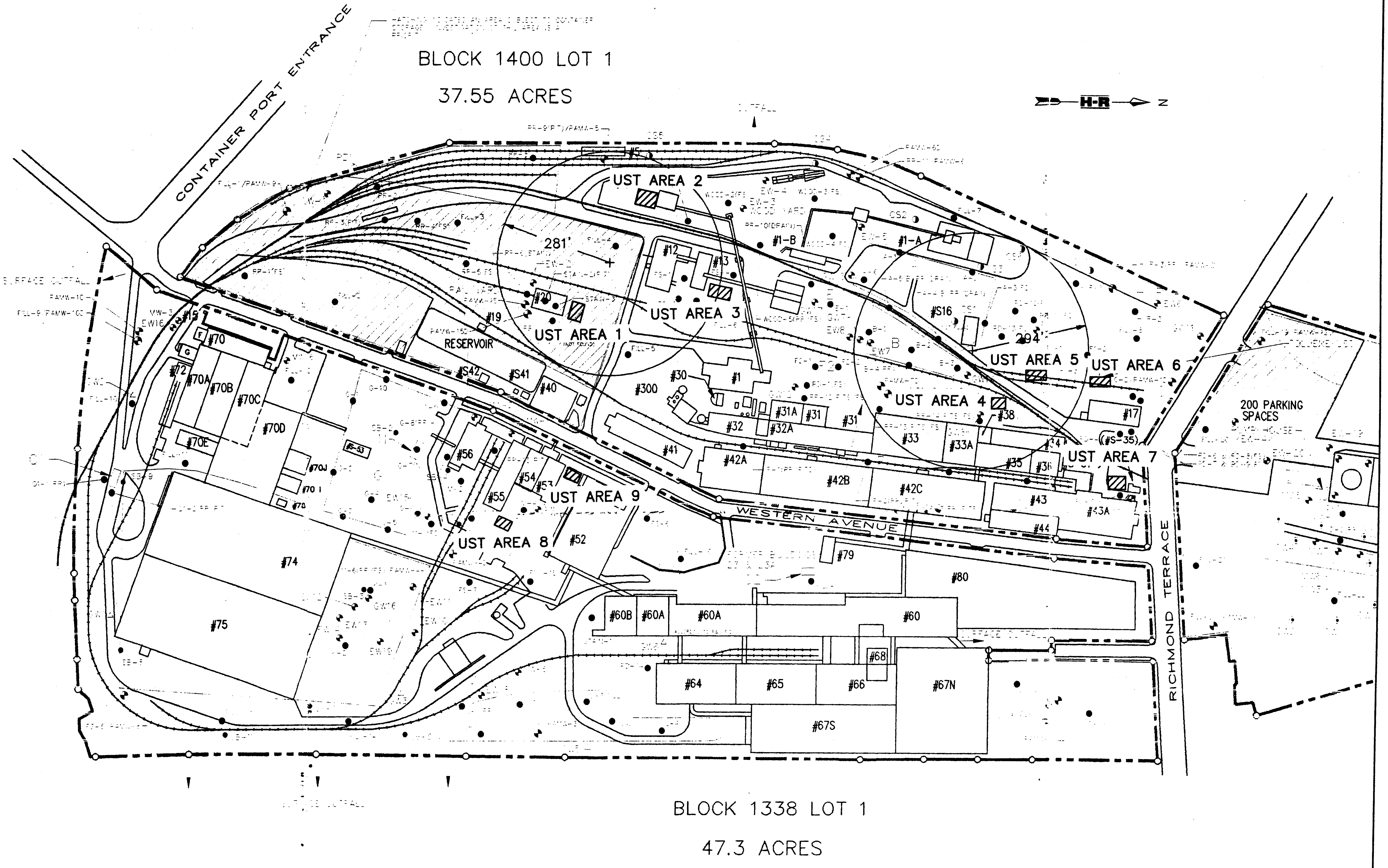
NOTE:

Site sketch generated from field notes.

Figure 19
GPR Survey & Integrated
Interpretation – UST Area 9
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59	December, 2000

HAGER–RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



LEGEND

▨ UST SURVEY AREA

NOT TO SCALE

NOTE:

Modified from site plan provided by Killam Associates

PLATE 1
SITE PLAN
PROCTER & GAMBLE
PORT IVORY FACILITY
STATEN ISLAND, NEW YORK

FILE 00D59	DECEMBER, 2000

HAGER-RICHTER GEOSCIENCE, INC.
SALEM, NEW HAMPSHIRE

APPENDIX
EM61 Metal Detector Surveys

Equipment. The Geonics EM61Metal Detector is a time-domain electromagnetic induction type instrument designed solely for detecting buried metal objects. The manufacturer's specifications are attached. An air-cored 1-meter square transmitter coil generates a pulsed primary magnetic field in the earth, thereby inducing eddy currents in nearby metal objects. The decay of the eddy current produces a secondary magnetic field that is sensed by two receiver coils, one coincident with the transmitter and one positioned 40 cm above the main coil. By measuring the secondary magnetic field after the current in the ground has dissipated but before the current in metal objects has dissipated, the instrument responds only to the secondary magnetic field produced by metal objects. Two channels of secondary response are measured in mV and are recorded on a digital data logger. The system is generally operated by pulling the coils as a trailer with an odometer mounted on the axle to trigger the data logger automatically at 20-cm intervals.

Data Analysis and Interpretation. EM61survey data are most commonly plotted as color contour plots of Channel 2, the lower of the two receiver coils, and the difference between Channel 1 and Channel 2. The differential plot suppresses the effects of surface metal objects.

A buried metal object produces a single, sharply defined, positive peak response when the EM61 is located directly over the object. Thus, the interpretation of the plotted data is relatively straightforward in terms of the presence and location of buried metal objects. The depth of metal objects can be estimated by the width or "footprint" of the peak response.

According to the manufacturer's literature, the EM61 can detect a single 55-gallon drum buried at a depth of 10 feet. The instrument provides excellent lateral location accuracy and discrimination of multiple targets due to the data density (20 cm) possible along each traverse. The EM61 is not as affected by interference from surface metal and electrical objects as other geophysical methods and has the advantage of detecting both ferrous and non-ferrous metal objects.

Limitations of the Method. The EM61 detects metal objects that are present below the 1-meter square coils of the instrument, but it is not very sensitive to the presence of small metal objects located to the sides of the coils. It is possible, then, that metal objects could be missed in an EM61 survey if the survey data are collected at intervals greater than 1 meter.

Detection and identification should be clearly differentiated. Detection in this context is the recognition of the presence of a metal object, and the EM61 is excellent for such purposes. Identification, on the other hand, is determination of the nature of the causative body (i.e., what is the body -- a cache of drums, UST, automobile, white goods, etc.?), and the EM61 cannot identify the buried metal object.

APPENDIX
GROUND PENETRATING RADAR SURVEYS

Field Work. A Geophysical Survey Systems, Inc. Model SIR-2 ground penetrating radar system was used for this survey. The SIR-2 is a fully digital system and includes a color monitor, grey-scale thermal printer, and 10-Gbyte digital tape backup system. The transmit/receive antenna is housed in a box that is moved across the surface. The antenna transmits electromagnetic signals into the subsurface and then detects, amplifies, and displays reflections of the signals in real-time on the color monitor. The result is a radar record of the subsurface.

The maximum depth of penetration of the GPR signal and the resolution of the reflections are controlled in part by the frequency of the antenna used and in part by the electrical properties of the subsurface. Hager-Richter owns antennas with the following center frequencies: 120 MHz, 300 MHz, 500 MHz, and 1000 MHz. The total time during which radar signals are recorded can be varied from a few to 1,000 nanoseconds (nsec). However, there is a trade-off between total time, corresponding to depth range, and resolution. As the total time of recording is increased, the resolution of the GPR records decreases. For a given site, the total time window is set to detect features located somewhat below the maximum expected target depths.

Interpretation. The horizontal axis of a GPR record represents distance across the surface and the vertical axis represents round-trip travel time of the radar signal. The round-trip travel time can be converted to approximate depth by correlating with reflections from targets of known depth or by using handbook values of velocities for materials in the subsurface. For those sites where the subsurface is electrically heterogeneous, the travel times of the radar signal may be different in the various materials, and the vertical scale for the radar records is not necessarily uniform with depth.

The reflections in a GPR record are produced by spatial changes in the physical properties (e.g., type of material, subsurface fluids, porosity, etc.) and related changes in the electrical properties (dielectric constant) of the subsurface materials in the path of the signals. The greater the difference in electrical properties between two materials in the subsurface, the stronger the reflection observed in the GPR record.

The size, shape, and amplitude of the GPR reflections are the characteristics that are considered in the interpretation of the data from any site. Because the electrical properties of metal USTs, utilities, and conduits different significantly from those of the soils in which they are buried, such objects produce GPR reflections with high amplitude and distinctive shapes that permit identification with a high degree of reliability. Most other objects, although readily detectable, require "ground truth" for identification. Only excavations provide positive identification for most objects identified in GPR surveys.

For GPR profiles oriented perpendicular to the long axis of a tank, the signature is similar to a hyperbola, the shape of which is a function of the diameter and depth of burial of the tank. For GPR profiles oriented parallel to the long axis of a tank, the signature is a set of parallel, high amplitude reflections that terminate sharply at the ends of the tank. GPR, then, is useful for determining the exact location and dimensions of USTs.

Limitations of the Method. The maximum depth to which GPR signals can penetrate depends on the electrical properties of the subsurface materials. The higher the electrical conductivity of the subsurface materials, the lower the radar signal penetration. Clay minerals and/or brackish water in the subsurface, for example, attenuate the GPR signal, so reflections are not received from materials at greater depths.

There are limitations of the GPR technique as used to detect and/or locate particular targets: (1) surface conditions, (2) electrical conductivity of the ground, (3) contrast of the electrical conductivities of the targets and the ground, and (4) spacing between lines. Of these limitations, only the fourth, line spacing, is controlled by the operator.

The condition of the ground surface can affect the quality of the GPR data and the depth of penetration of the GPR signal. Sites covered with high grass, bushes, landscape structures, debris, obstacles, soil mounds, etc. limit the survey access and the coupling of the GPR antenna with the ground. In many cases, the GPR signal will not penetrate below concrete pavement, and a target may not be detectable.

The electrical conductivity of the ground determines the attenuation of the GPR signals, and thereby limits the maximum depth of exploration. The GPR signal does not penetrate clay-rich soils, and targets buried in clay can be missed.

A contrast in the electrical conductivities of the ground and the target is required to obtain a reflection of the GPR signal. If the contrast is too small, possibly due to extremely corroded conditions of a metal target, then the reflection may be too weak to recognize, and the target can be missed.

The spacing between lines is under control of the GPR operator, and the design of the survey is based on the dimensions of the smallest target of interest. Targets with dimensions smaller than the spacing between GPR survey lines can be missed.

Accurate determination of the depth to any interface requires calibration of the site specific GPR signal velocity. Where targets of a known depth are not available at a site, the time-to-depth conversion of the GPR signal can be estimated from handbook values, but such depth estimations might contain significant error.

Interpretation of GPR data is subjective. As noted above, "ground truth" through correlation with borings and excavations is required for positive identification of most objects detected on the basis of GPR data.

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BORING REPORT

SHEET 1 OF 3

PROJECT PROCTOR and GAMBLE	NAME OF CONTRACTOR CRAIG	BORING NO. RR 1	SURFACE ELEV.
LOCATION AS MARKED out in The field by KILLIAM ASSOC.		CONTRACT NO. 426-99-006	DATE 11-3-00

SPOON 3 "O.D. 2 3/8 "I.D.	CASING SIZE H.S. Augers	HOLE TYPE
HAMMER (safety) 140 # FALL 30 "	HAMMER # FALL "	
DRILLER P. Pennell		
INSPECTOR M. Oudeh		

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/3	Am	3.2'	

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP. NO.[2]	[3]SAMPLE DESCRIPTION AND REMARKS _____ LINE LOCATES CHANGE OF PROFILE 0.0'
H.S	0	Hard	Full	1	Fill - dark brown c-f SAND, some Crushed Rock, little Gravel, trace Silt 1.2'
Augers		Auger		2	Fill - brown c-f SAND, trace Gravel, trace Silt
				3	Fill - dark brown c-f SAND, trace Gravel, trace Silt
	5			4	Fill - SAME
		7-8 11-13	24"	5	Fill - SAME
		4-10 11-15	20"	6	Fill - brown c-f SAND, trace Gravel, trace Silt
	10	5-11 13-10	24"	7	Fill - SAME
		10-12 12-14	24"	8	Fill - SAME
	15	7-9 11-15	21"	9	Fill - brown-grey c-f SAND, trace Gravel, trace Silt
		5-13 20-19	21"	10	Fill - red brown c-f SAND, little Gravel, trace Crushed Rock little Silt
		8-11 14-16	20"	11	Fill - red brown m-f SAND, little Silt, trace Gravel
	20	27-17 16-20	22"	12A	Fill - SAME 21.6'
				B	red-brown SILT 22.0'
					All Samples saved in 2 one pt. JAR & 1 4 oz. bottom of boring ↕ with the following exceptions: S#4 was not saved. S#12B was saved in 1 one pt. JAR & 1 4 oz JAR.
	25				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 4

PROJECT Howland Hook, Port Ivory Pd G S, Ro	NAME OF CONTRACTOR Craig Drilling	BORING NO. RR-2	SURFACE ELEV.
LOCATION ± 10' west of orig Loc		CONTRACT NO. 426-99-006	DATE 11/4/00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE HW
HOLE TYPE 1
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER S Burns
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/4/00	2^45 pm	2.9	while Hand Augering

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ___ LINE LOCATES CHANGE OF PROFILE 0.0
Hand	0	Hand Augr	Full	1	
Augr					Fill- Cinders
				2	
↓		↓	↓		Same
HW	5	Tapped/Spoon	24"	3	
Casing		↓			Same 6.0
		2-2		4	
		2-1	12"		Gray organic silty Clay & Brown Peat 0.2 8.0
↓		WOR		5	
Drill	10	1-8	9"		Black Brown Peat 0.2 10.0
Ahead		3-8		6	
with		10-10	10"		F Gray Sand, Tr Silt 12.0
Mud		5-7		7	
↓		10-13	14"		F Brown Sand, Tr Silt ~~0.2~~
		6-8		8	
	15	8-5	9"		Same ~~0.2~~ 16.0
					Bottom of Boring
					Note S# 6-8 Taken with 2" Spoon
	20				Sample # 1-5 checked with PID Meter
					S# 1-4 Saved for Enviro Testing
					GeoTech Samples on All
	25				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Proctor & Gamble
NAME OF CONTRACTOR Craig
BORING NO. RR 3
SURFACE ELEV.
LOCATION As marked out in the field by Killian Assoc.
CONTRACT NO. 426-99-506
DATE 11-3-00
SPOON 3 " O.D. 2 3/8 " I.D.
CASING SIZE H.S. Augers
HOLE TYPE
HAMMER (Safety) 140 # FALL 30 "
HAMMER # FALL "
DRILLER P. Pennell
INSPECTOR M. Oudeh

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/3/00	2:45p	4.5'	In S-#3

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3] SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE
	0	HAND	Full		0.0'
					CRUSHED ROCK 1.5'
		AUGER		1	Fill- dark brown c-f SAND, some Gravel, trace Silt 2.0'
				2	Fill- brown c-f SAND, trace Gravel, trace Silt
	5			3	Fill. SAME
Augers		12-13	24"	4	Fill. dark brown c-f SAND, trace Gravel, trace Silt
		20-22			
		5-5	24"	5	Fill- brown c-f SAND, trace Gravel, trace Silt.
	10	7-19			
		6-18		6	Fill-Brown M-F Sand, tr Silt, tr Gravel.
		21-20	18"		
		10-12		7	Same
		15-15	20"		
	15	5-9		8	Same
		10-12	17"		16.0'
					Bottom of Boring
	20				
					Note: 2-16oz jars & 1 Voa jar was saved from each sample.
	25				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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SHEET 1 OF 3

PROJECT H4 - P&G	NAME OF CONTRACTOR Craig	BORING NO. RR-4	SURFACE ELEV.
LOCATION As laid out by Killam assoc		CONTRACT NO. 426-99-006	DATE 11/4/00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE H.S.Auger
HOLE TYPE 1
HAMMER 140 # FALL 30 "
HAMMER # FALL "
DRILLER J. Craig
INSPECTOR T. Ryan

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/4/00	11:57 Am	4.0'	In S. #4

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3]SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE
	0				CRUSHED STONE 0.5'
		Hand	Full	1	
		Auger	Rec		Fill-Br M-F Sand, some Gr, little Cinders, some Brick
		↓	↓	2	Same 3.0'
					Fill - Rd Br Clay Silt little Gr, tr Cinders.
	5			3	Mix Fill-Rd Br Clay Silt, some Gr, tr Conc, tr Wood, tr Br.
					6.0'
gers		6-9		4	Gray F Sand, tr Plant fibers
		9-8	11"		
		2-4		5	Br M-F Sand, tr Silt, tr Gravel.
	10	4-5	12"		
		2-4		6	Same
		4-5	10"		
		5-7		7	Same
↓		11-11	24"		
	15	3-5	10"	8	Same 15.0'
					Note: Sample #1-5 were saved for environ testing as per C. Springer (Killam Assoc). All other samples were screened w/ PID & then discarded.

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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SHEET 1 OF 3

PROJECT	NAME OF CONTRACTOR	BORING NO.	SURFACE ELEV.
Howland Hook, Port Ivory P&C Site	Craig Drilling	RR-5	

LOCATION	CONTRACT NO.	DATE
F120' South of Bldg 20 Block 1400 Lot 1	426-99-006	11/7/00

SPOON 3 " O.D. 2 3/8 " I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER 140 # FALL 30 " Safety
HAMMER # FALL "
DRILLER S Burns
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/7/00	7 35 A	5.0	while Hand Augering

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP. NO.[2]	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE	0.0
Hand	0	Hand Auger	Full	1	Fill-Cinders	1.0
Auger					Fill- M-F Brown Sand, Tr Cinders, Tr Silt	
				2		
					Same	4.0
	5			3		
					M-F Brown Sand, Tr Silt	
llow		2-2		4		
Stem		3-2	14"		F Brown Sand, Tr Silt	
Augers		6-8		5		
	10	10-13	22"		Same	
		10-13		6		
		20-24	24"		Same	
		10-13		7		
		16-17	24"		Same	
	15	5-7		8		
		8-12	24"			16.0
					Bottom of Boring	
	20				All Samples Checked with PID Meter	
					S# 1-3 Saved for Testing, S# 1&2 To	
					Be Tested, Remaining Samples Discarded	
	25					

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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SHEET 1 OF 3

PROJECT Howland Hook, Port Ivory Pd G Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. RR-6	SURFACE ELEV.
LOCATION South Side Bldg #70 Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 11/6/00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER S Burns
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/6/00	3 05 P	6.0	S# 4

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE	0.0
Hand	0	Hand Auger	Full	1	Fill- Cinders	1.0
Auger					Fill- M-F Brown Sand, Little Cinders, Tr Silt	
				2		
					Fill- M-F Brown Sand, Tr Cinders, Tr Silt, Tr Gravel	
	5			3		
					Same	6.0
[illegible]		1-0		4		
Stem		0-1	24"		M-F Brown Sand, Tr Silt	
Augers		1-4		5		
	10	3-10	21"		Same	
		10-8		6		
		10-20	23"		M-F Brown Sand, Tr ~~M-F~~ Gray Sand, Tr Silt	
		8-14		7		
		24-40	24"		M-F Brown Sand, Tr Silt	
		9-10		8		
	15	16-20	18"			16.0
					Bottom of Boring	
					All Samples checked with PID Meter	
	20				S# 1-3 Saved for Enviro Testing only 1&2 to	
					Be Tested, Remaining Samples Discarded	
	25					

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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SHEET 1 OF 3

PROJECT Howland Hook, Port Ivory P&G Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. RR-7	SURFACE ELEV.
LOCATION As Laid out by Killam Assoc East Side Bldg 20		CONTRACT NO. 426-99-006	DATE 11/6/00

SPOON 3 " O.D. 2 3/8 " I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER 140 # FALL 30 " Safety
HAMMER # FALL "
DRILLER S Burns
INSPECTOR D Nowe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/6/00	1^{10} pm	6.0	S#4

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE 0.0
Hand	0	Hand Auger	Full	1	
Auger					Fill-M-F Brown Sand, Little Silt, Tr Gravel
				2	0.2
					Fill-M-F Brown Sand, Little Gravel, Tr Silt, Tr Clay clumps 4.5
	5			3	
					M-F Brown Sand, Tr Silt, Tr Gravel
ow		11-10		4	
Stem		8-8	15"		Same 8.0
Augers		6-4		5	
		9-13	22"		F Brownish Grey Sand, Some Silt, Tr Gravel 10.0
	10	2-1			
		17-19	20"	6	F Brown Sand, Tr Silt
		5-17		7	
		25-29	24"		Same
	15	11-17		8	
		18-34	24"		Same 16.0
					Bottom of Boring
	20				All Samples checked with PID Meter
					S# 1-3 Saved for Testing, S# [illegible] To [illegible]
					Remaining Samples Discarded
	25				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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SHEET 1 OF 3

PROJECT Port Ivory P & G	NAME OF CONTRACTOR Craig drilling	BORING NO. PD-1	SURFACE ELEV.
LOCATION ± 30' W of Bldg 31 Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 11-20-00 / 11-21-00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER Autom. 140 # FALL 30 "
HAMMER # FALL "
DRILLER S. Craig / J. Craig
INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-20-00	12:20pM	5.5'	SAMple #3
			None [illegible]

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-[1] COV'D	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS LINE LOCATES CHANGE OF PROFILE	
	0					0.0'
Handauger		Handauger	Full		concrete	0.7'
				1	Fill brown c-f SAND, little Gravel, tr Silt.	
				2*	SAME	
	5			3	SAME	
[illegible]W [illegible]EM AUGERS		2 - 4 3 - 3	10"	4	SAME	
	10	3 - 3 5 - 4	24"	5	Fill brown c-f SAND, little Gravel, tr Silt	
		2 - 4 9 - 9	14"	6*	Fill greyish-black c-f SAND, tr Gravel, tr Silt	12.0'
		2 - 9 13 - 13	24"	7	Reddish-brown Silty Clay.	14.0'
	15					
					Note: 2 samples saved for testing. All other samples screened with PID meter & discarded	
						Bottom of Boring
	20					

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT: Port Ivory P & G
NAME OF CONTRACTOR: Craig drilling
BORING NO.: PD 3
SURFACE ELEV.:
LOCATION: ±25' W of Bldg 33 A Block 1400 Lot 1
CONTRACT NO.: 426-99-006
DATE: 11-28-00/11-29-00
SPOON: 3 "O.D. 2 3/8 "I.D.
CASING SIZE: Augers
HOLE TYPE: 1
HAMMER: 140 # FALL 30 " Safety
HAMMER: # FALL "
DRILLER: A. Kides
INSPECTOR: J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-28-00	3:27 PM	1.8'	Sample #1

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE 0.0'
Cutter Head Handauger	0	Cutter Head Handauger	Full Rec		CONCRETE 0.9'
				1	Fill grey c-f SAND & Gravel, Cobbles, tr. Silt
				2	Fill grey & brown c-f SAND some Gravel, little Silt
	5			*	
				3	Reddish brown Silty ClAY some c-f SAND, tr. Gravel 6.
		7-10			
AUGERS		14-20	12"	4	SAME
		15-19			
	10	21-27	8"	5	SAME
		6-9			
		12-16	24"	6*	SAME
		12-14			
		14-20	24	7	SAME 14.0'
	15				

Note: 2 samples saved for testing.
All samples checked with PID meter.
& discarded

Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT: Port Ivory P & G
NAME OF CONTRACTOR: Craig drilling
BORING NO.: PD 4
SURFACE ELEV.:
LOCATION: 20' W of BH PD 4A & 25' N of Bldg 36 (NW corner) Block 1400 lot 1
CONTRACT NO.: 426-99-006
DATE: 12-2-00
SPOON: 3 "O.D. 2 3/8 "I.D.
CASING SIZE: Augers
HOLE TYPE: 1
HAMMER: Auto 140 # FALL 30 "
HAMMER: # FALL "
DRILLER: A Kides
INSPECTOR: J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
12-2-00	2:13 PM	6.0'	Top sample #4

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE
Handauger	0	Handauger	Full Rec		0.0' ASPHAIT 0.4'
					Fill grey c-f SAND & Gravel some Cobbles tr. SilT 1.0'
				1	Red-brown c-f SAND with silty ClAY some Gravel. 20'
				2	Reddish-brown Silty ClAY some c-f SAND & Gravel
	5				
				3	SAME
		1 - 2			
AUGERS		3 - 3	20"	4	SAME
		3 - 2			
	10	2 - 2	24"	5*	SAME 10.0'
		3 - 2			
		4 - 5	22"	6	Reddish-brown ClAYEY SIlT.
		3 - 9			
		9 - 16	20"	7	SAME 14.0'
	15				Note: 1 sample saved for testing. All checked w. PID meter
					Remaining samples discarded.
					Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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Construction Division
Materials Engineering Section

BORING REPORT

SHEET 1 OF 2

PROJECT Port Ivory P & G	NAME OF CONTRACTOR Craig drilling	BORING NO. PD 4A	SURFACE ELEV.
LOCATION 2' W of BH PD 4B Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 12-2-00

SPOON Hand auger "O.D. "I.D.
CASING SIZE Handauger
HOLE TYPE 1
HAMMER # FALL "
HAMMER # FALL "
DRILLER A. Kides
INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE
Cutter Head Handauger	0	Cutter Head HANDAUGER	Full Rec		0.0' ASPHALT 0.2' Concrete 0.7'
				1	Fill greyish-black c-f SAND, tr Gravel, tr Silt
				2	SAME 3.5'
	5				Note: Obstruction at 3.5'. A pipeline i/t BH. Move ± 2' East
					Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 2

PROJECT Port Ivory P & G	NAME OF CONTRACTOR Craig drilling	BORING NO. PD 4 B	SURFACE ELEV.
LOCATION ± 20' N of Bldg 36 (center) Block 1400 lot 1		CONTRACT NO. 426-99-006	DATE 12-2-00

SPOON 3 "O.D. 2 3/8 "I.D. | CASING SIZE Augers | HOLE TYPE 1

HAMMER Autom 140 # FALL 30 " | HAMMER # FALL "

DRILLER A. Kides

INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS LINE LOCATES CHANGE OF PROFILE
Cutter Head Handauger	0	Cutter Head Handauger	Full		0.0'
					Asphalt 0.2'
					Concrete 0.7'
				1	Fill greyish-brown c-f SAND & Gravel, tr. Silt
				2	Reddish-brown c-f SAND & Gravel with Silty ClAY
	5			3	Reddish-brown SIlTy ClAY some Gravel & c-f SAND 6.0'
					CONCRETE SlAB
					Refusal Bottom of Boring.
	10				
	15				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P & G	NAME OF CONTRACTOR Craig drilling	BORING NO. PD-5	SURFACE ELEV.
LOCATION ±10'W of Bldg 43A & ±50'S of NW corner bldg 43 Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 12-02-00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER 140 # FALL 30 "
HAMMER # FALL "
DRILLER A. Kides
INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
12-2-00	9:32	7.0'	SAMple # 4

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE	
Cutter Head Handauger	0	Cutter Head Handauger	Full			0.0'
					CONCRETE	0.7'
				1 *	Fill greyish-brown c-f SAND & Gravel, Cobbles tr. Silt.	1.5'
					Red-brown Silty ClAY little c-f SAND & Gravel.	
				2 *	Red-brown c-f SAND & Gravel with Silty ClAY	
	5					
				3	SAME	
N		5 - 5				
EM Augers		10 - 10	14"	4	Reddish-brown Silty ClAY	
		8 - 13				
	10	17 - 19	18"	5	Reddish-brown Silty ClAY	10.0'
					Note: 2 samples saved for testing.	
					All checked w. P.I.D meter.	
					Remaining samples discarded.	
						Bottom of Boring
	15					

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT	NAME OF CONTRACTOR	BORING NO.	SURFACE ELEV.
Port Ivory P & G	Craig drilling	F2-2	
LOCATION ±75' W of Bldg 31 Block 1400 lot 1		CONTRACT NO. 426-99-006	DATE 11-20-00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER J. Craig
INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-20-00	10:45	7.0	S #4

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP. NO.[2]	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE
Cutter Head Handaugr	0	Cutter Head Handauger	Full		Concrete 0.5'
					Fill brown c-f SAND, tr Gravel tr. SILT
				1	Fill brown c-f SAND, tr Gravel, tr. SILT
				2*	SAME
	5			3	SAME
w EM		4-4			
Augers		6-7	18"	4	Fill brown & grey c-f SAND, tr. Gravel, tr. Silt
		11-11			
	10	12-20	24"	5 x	Fill grey c-f SAND, tr. Gravel, tr. SilT
		11-12			
		20-47	14"	6	SAME
		8-20			
		26-30	24"	7	SAME
				A	SAME 14.5
	15	7-8			
		10-13	24"	8 B	Reddish-brown Silty CLAY with tr. Gravel 16.0'
					Note: 2 samples saved for testing
					& 1 on hold. All other samples
	20				screened w. PID meter & discarded

Bottom of Bo

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT: Ivory Pt -- P&G
NAME OF CONTRACTOR: Craig
BORING NO.: STAIN #2
SURFACE ELEV.:
LOCATION: Laid out inside Bldg 20 in Pit (South End) (Block-1400)
CONTRACT NO.: 426-99-006
DATE: 11/1/00
SPOON: 3 " O.D. 2 3/8 " I.D.
CASING SIZE: Augers
HOLE TYPE: 1
HAMMER: Safety 140 # FALL 30 "
HAMMER: # FALL "
DRILLER: D. Oswch
INSPECTOR: D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/1/00	12^{05} p	6.0	While Hand Augering

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-[1] COV'D	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE
					Level of Floor inside Bldg +3.6
					Hole in Inspection PiT Floor
	0				0.0
					Concrete 1.0
nd		Hand Augr	Full	1	Fill- M-F orange Brown Sand, Little SilT 2.0
Auger				2	M-F Black Brown Sand, Little SilT, Tr Vegt 3.0
	5			3	F Brown Sand, Tr SilT, Tr Vegt
				4	Same
Augers		13-24			
	10	29-28	24"	5	Same
		16-15		6	
		15-16	19"		Same 12.0
					Bottom of Boring
	15				
					All Samples checked with P10 Meter,
					S# 1-3 Saved, S# 1&2 To BeTested
					Remaining samples Discarded
	20				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Ivory Point P & G	NAME OF CONTRACTOR Craig drilling	BORING NO. Stain-3	SURFACE ELEV.
LOCATION East Bay, Engine House Bldg 2C		CONTRACT NO. 426-99-006	DATE 11-10-00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER 140 # FALL 30 "
HAMMER # FALL "
DRILLER D. Osuch
INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE
					0.0
Handauger	0	Handauger	Full		Crushed Rock -DGABC 0.5
					Wooden block 1.3'
					Rubber Tire 1.5'
				1	Fill greyish brown c-f SAND, Gravel, tr. Silt & CLAY
				2	Fill yellowish-grey c-f SAND, some Silty CLAY, tr. Gravel, cinder, wood'.
	5				
					Bottom of Boring obstruction, Steel Plate
	10				All Samples checked with PID Meter, S# 1 & 2 Saved for Testing

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 1

PROJECT Port Ivory P&G Site	**NAME OF CONTRACTOR** Craig Drilling	**BORING NO.** Stain 3 A	**SURFACE ELEV.**
LOCATION ± 3' SW of Stain 3 East Bay, Bldg 20		**CONTRACT NO.** 426-99-000	**DATE** 11/11/00

SPOON "O.D. "I.D.
CASING SIZE
HOLE TYPE
HAMMER # FALL "
HAMMER # FALL "
DRILLER D Osuch
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/11		Dry	

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. [2] NO.	[3] SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE
	0				0.0
Hand		Hand Auger	Full		for strata 0-4' See Log
Auger					for Stain 2
				–	No Samples Taken
↓		↓	↓		4.0
					Bottom of Boring
	5				obstruction, Steel Plate
	10				
	15				
	20				
	25				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

			SHEET 1 OF 3
PROJECT Port Ivory, P&G Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. Stain 3B	SURFACE ELEV.
LOCATION East Bay, Bldg 20 ± 11' South of Stain 3A		CONTRACT NO. 426-99-00	DATE 11/11/00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER 140 # FALL 30 " Safety
HAMMER # FALL "
DRILLER D Osuch
INSPECTOR D Kowe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/11/00	9^{15}	5.5'	While Hand Augering

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE 0.0
Hand	0	Hand Auger	Full	1	Misc Fill, Cinders, Sand, Gravel, Etc 1.3
Auger					Fill F Brown Sand, Tr Cinders 2.0
				2	
					Fill – F Brown Sand
					Same
	5			3	5.5
					F Black Gray Sand, Tr Black Silt 6.2
[illegible]		6-4		4	
Stem		3-3	16"		F Brown Sand, Little Silt
Augers		2-4			
		6-7	18"	5	Same
	10	8-12			
		8-10	22"	6	Same
		6-7			
		8-12	24	7	Same
		12-12	12"	8	Same 15.0
	15				
					Bottom of Boring
	20				
					All Samples checked with PID Meter
					S# 1,2 & 4 Saved, S# 1,2 to Be Tested
					Remaining Samples Discarded
	25				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P&G Site	**NAME OF CONTRACTOR** Craig Drilling	**BORING NO.** Q1-1	**SURFACE ELEV.**
LOCATION South end of Lot, Next to Truck scale Block 1338 Lot 7		**CONTRACT NO.** 426-99-006	**DATE** 11/30/00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER S Burns
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/30	10:16	1.0	In crushed Stone

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ________ LINE LOCATES CHANGE OF PROFILE 0.0
	0				Concrete 1.0
Hand		Hand Auger	Full		Crushed Stone 2.0
Auger		↓	↓	1	
↓					Fill- M-F Grey Sand, Little Silt, Tr Cinders, Tr Gravel 4.0
Hollow	5	Tapped			Tr oil sheen on Sample
Stem		Spoon	18"	2	F Brown Sand, Little Silt, Tr Black Root, Tr Gravel 6.0
[illegible]ers		8-10			
↓		12-15	5"	3	F Brown Sand, Little Silt, Tr Gravel
		4-3			
	10	3-6	19"	4	F Brown Sand, Tr Silt, Tr Veg, Tr Gravel
		6-17			
		27-27	20"	5	F Brown Sand, Tr Silt, Tr Gravel
		6-12			
↓		19-21	15"	6	F Brown Sand, Tr F Grey Sand, Tr Silt, Tr Gravel 14.0
		5-12			
	15	12-16	18"	7	F Grey Sand, Tr Silt 16.0
					Bottom of Boring
					All Samples checked with PID Meter
	20				S# 1,2 & 4 Saved for Enviro Testing
					Remaining Samples Discarded
	25				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P & G	NAME OF CONTRACTOR Craig drilling	BORING NO. P1	SURFACE ELEV.
LOCATION Between bldg 42A & bldg 32 betw. Rail road tracks Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 11-22-00

SPOON 3 " O.D. 2 3/8 " I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER Autom. 140 # FALL 30 "
HAMMER # FALL "
DRILLER D. Cooke
INSPECTOR J Zark

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-22-00	1:49 PM	6.0	S# 4

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE
	0		Full		0.0' ASPHALT 0.3'
					BALLAST & Crushed Rock
				1	Fill grey c-f SAND & Gravel, tr. SILT
				2*	Fill reddish-brown c-f SAND, tr. Gravel, tr SILT
	5				
				3	SAME
[illegible]w [illegible]M Augers		4 - 6 5 - 4	20"	4	Brown c-f SAND, tr. Gravel, tr SILT.
	10	1 - 2 4 - 8	24"	5*	Brown c-f SAND, tr. Gravel, tr. CLAY & SILT
		6 - 2 15 - 22	24"	6	SAME 12.0'
	15				Note: 2 samples saved for testing All other samples checked w PID meter & discarded

Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory PdG Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. P-2	SURFACE ELEV.
LOCATION Between Bldg 32A & 42B	Block 1400 Lot 1	CONTRACT NO. 426-99-006	DATE 11/30/00

SPOON 3 "O.D. 2 3/8 "I.D.	CASING SIZE Augers	HOLE TYPE 1
HAMMER Safety 140 # FALL 30 "	HAMMER # FALL "	
DRILLER S Burns		
INSPECTOR D Howe		

GROUND WATER LEVEL

Date	Time	Depth	Remarks
		7.0	While Hand Augering

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE 0.0
	0				Asphalt 0.3
Hand		Hand Auger	Full		Crushed Stone .9ppm 2.0
Auger				1	.1ppm
					Misc Fill - Sand, Silt, Cinders, Brick, Etc
	5			2	Fill - F Gray, Brown & RB Sand, Tr Silt, Tr Gravel
				3	Same 8.0
Hollow Stem		6-8		4	
Augers	10	8-14	14"		Red Brown Silty Clay, Tr F Sand, Tr Gravel
		8-10		5	
		10-2	20"		Same 12.0
					Bottom of Boring
	15				
					All Samples checked with PID Meter
					S# 1 & 2 Saved for Enviro Testing
					Remaining Samples Discarded
	20				
	25				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

8:28
11:00

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BORING REPORT

			SHEET 1 OF 3
PROJECT Port Ivory P & G	NAME OF CONTRACTOR Craig drilling	BORING NO. P 3	SURFACE ELEV.
LOCATION Between bldg 42 & bldg 33 A ; 20' W of Bldg 42 Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 11-22-00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER Autom. 140 # FALL 30 "
HAMMER # FALL "
DRILLER D. Cooks
INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-22-00	9:50	4.5'	Top S# 3

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE
	0		Full Rec		ASPHALT 0.0' 0.2'
Handauger		Handauger			Fill grey c-f SAND AND Gravel, tr SilT 1.0
				1	Reddish-brown c-f SAND and Gravel some Clayey SilT
				2*	SAME 4.0'
	5			3	Red-brown Silty ClAY with Gravel, boulders, little c-f SAND 6
H[illegible]ow [illegible]M [illegible]gers		27 - 26			
		33 - 38	24"	4*	Red brown c-f SAND and Gravel, boulders some ClAYEY SilT
		8 - 12			
	10	15 - 23	24"	5	SAME
		42 - 24			
		20 - 18	24	6	SAME 12.0'
	15				
	20				

Note: 2 samples saved for testing
All other samples checked w PID meter
& discarded.

Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 5

PROJECT Port Ivory P&G Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. PDMW-7D	SURFACE ELEV.
LOCATION ±20' west of PDMW-7, west of Bldg 37, Block 1400 Lot 1		CONTRACT NO. 426-29-006	DATE 11/13/00

SPOON 2 "O.D. 1 3/8 "I.D.	CASING SIZE HW	HOLE TYPE 'D' Monitor
HAMMER Safety 140 # FALL 30 "	HAMMER # FALL "	
DRILLER J Finch		
INSPECTOR D Howe		

GROUND WATER LEVEL

Date	Time	Depth	Remarks

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE 0.0
Cutter	0				
head					for Strata 0-16 See log for
Hand Auger		Hand Auger			PDMW-7 No Samples Taken 0-16'
	5				
	6				
[illegible]sing					
	15				
					16.0
Drill		11-16		1	
Bhead		23-21	24"		Red Brown Silty Clay, Tr F Sand 18.0'
with		11-16		2	
Rotary	20	16-24	12"		F Dk Brown Sand, Tr Silt
		12-15		3	
		16-18	11"		F Dk Brown Sand, Tr Silt, Tr Gravel
		10-16		4	
		16-21	12"		F Dk Brown Sand, Tr Silt
	25	9-14		5	Note After S#5 HW advanced from 16' to 24'
		16-21	16"		Same 26.0
		23-29		6	
		19-19	17"		F Brown Sand Little Silt
		8-8		7	
	30	13-23	9"		Same

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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THE PORT AUTHORITY OF NY & NJ

Engineering Department
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Materials Engineering Section

BORING REPORT

SHEET 2 OF 5

PROJECT Port Ivory P&G Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. PAMW-7D	SURFACE ELEV.
LOCATION ±20' West of PA-MW-7, West of Bldg 33 Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 11/14/00

SPOON 2 "O.D. 1 3/8 "I.D.
CASING SIZE Rount
HOLE TYPE "A" Monitor
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER J Finch
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE
Drill	30	12-22		8	
Ahead		20-32	16"		F Brown Sand, Little Silt
with		14-16		9	
Rount		28-28	12"		Same
	35	25-23		10	Note: After S#10 HW casing advanced from 24' to 34'
		13-12	10"		F Brown Sand, Tr Silt 36.0'
		5-9		11	
		12-14	15"		F Red Brown Sand, Some clayey Silt
		20-11		12	
	40	11-11	22"		F Red Brown Sand Some Silt
		14-15		13	
		14-15	22"		Same 42.0'
		7-6		14	
		5-5	21"		F Red Brown Sand, Some clayey Silt 44.0'
	45	7-8		15	
		11-9	24"		F Red Brown Sand, Little clayey Silt 46.0'
		10-10		16	
		10-12	19"		F Red Brown Sand, Little Silt
		9-8		17	
	50	11-11	24"		F Red Brown Sand Some Silt
		11-12		18	
		13-18	24"		Same
		7-8		19 A	Same 53.5
		11-10	22"	B	F Red Brown Sand, Little clayey Silt, Tr Gravel
		10-19	20"	20	Same
	55				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 3 **OF** 5

PROJECT Port Ivory P&G Site	**NAME OF CONTRACTOR** Craig Drilling	**BORING NO.** PAMW-7D	**SURFACE ELEV.**
LOCATION ±20' West of PAMW 7, West of Bldg 33 Block 1400 Lot 1		**CONTRACT NO.** 426-99-006	**DATE** 11/16/00

SPOON 2 "O.D. 1 7/8 "I.D. **CASING SIZE** Revert **HOLE TYPE** "B" Monitor

HAMMER Safety 140 # FALL 30 " **HAMMER** # FALL "

DRILLER J Finch

INSPECTOR D Horne

GROUND WATER LEVEL

Date	Time	Depth	Remarks

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE
Drill	55	30-32	22"	20	F Red Brown Sand, Little Clayey Silt, Tr Gravel
Head		15-18		21	
with		21-24	11"		Same
Revert		17-19		22	
		27-30	7"		F Red Brown Sand, Some clayey Silt, Tr Red shale, Tr Gravel
	60	7-10		23	
		20-61	12"		F Red Brown Sand, Some clayey Silty, Little Gravel, Tr Red Shale
		23-20		24	
		48-37	12"		F Red Brown Sand, Little Gravel, Little clayey Silt, Tr Red Shale
		44-35		25	
	65	34-48	14"		F Red Brown Sand, Some Gravel, Tr Clayey, Tr Red Shale 66.0
		20-29		26	
		87-58	7"		Decomposed Red Shale, Some Gravel, Little F Sand
		27-58		27	
		100/5" 4/1" * 26 *	14"		Same 70.0
	70	24-94		28	Tr clayey Silt
		96 58	12"		F Red Brown Sand Some Decomposed Red Shale, Little Gravel, 72.0
		54-100/5" 4/1" *	10"	29	Decomposed Red Shale, Little clayey Silt, Tr F Sand 73.2
		12/2" 59/0" *			9
					Refusal, See Drilling Report
	75				
					78.2
					Bottom of Boring
	80				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

*300lb Hammer used

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DRILLING REPORT

PROJECT Port Ivory P&G Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. PA-MW-7D	SHEET 4 OF 5
LOCATION ±20' West of PA-MW-7 West of Bldg 33 Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 11 / 16 / 00
TYPE OF DRILL RIG. Moble B-58	COE BARREL SINGLE TUBE [✓ DOUBLE TUBE]	CORE DRILL SIZE 2" wireline I.D.	CONDITION OF DIAMOND BIT Good
DEPTH BOTTOM CASING 34.0'	DEPTH START CORING 73.2'	DRILLER J Finch	INSPECTOR D Moore

TIME [1]		DEPTH	DRILL BEHAVIOR [2]	WASH WATER [3]	[4] ROCK—DESCRIPTION AND REMARKS ______ LINE LOCATED END OF RUN
~~Start~~	~~End~~				
		73.2			73.2
8	Mins/FT		Steady	Losing water	
10					Run# 1 Red Shale, Seamy & Fractured
9				Blocking up	
12				Losing water	
18				Blocking up	78.2
		78.2			
					Bottom of Boring
		83.2			
		88.2			
		93.2			

	RUN NO.	FROM	TO	LENGTH DRILLED	LENGTH RECOVERED	% RECOVERED	NO. PIECES
NOTES ON DRILL RUNS	1	73.2	78.2	5.0	4.5	90 %	17 Pieces & Frags

NOTES: 1 — Record the time to start and end of each foot of drilling
2 — Log drill behavior (i.e., steady, chatter, grinding, etc.)
3 — Log wash water return (i.e., color, loss, blocking, etc.)
4 — Log type, color and condition of rock (i.e., broken, soft, seamy, hard, etc.), log character of wash return solids

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Well Installation Report

Sheet 5 of 5

PROJECT Port Ivory, P&G Site	CONTRACT NO. 426-99-006
LOCATION ±20' West of PAMW-7 West of Bldg 33, Block 1400 Lot 1	CONTRACTOR Craig Drilling

WELL NO. PAMW-7D	WELL TYPE 'A" Monitor	INSPECTOR OHo	DRILLER J Fuch	DATE 11/16/00

Well Development Report

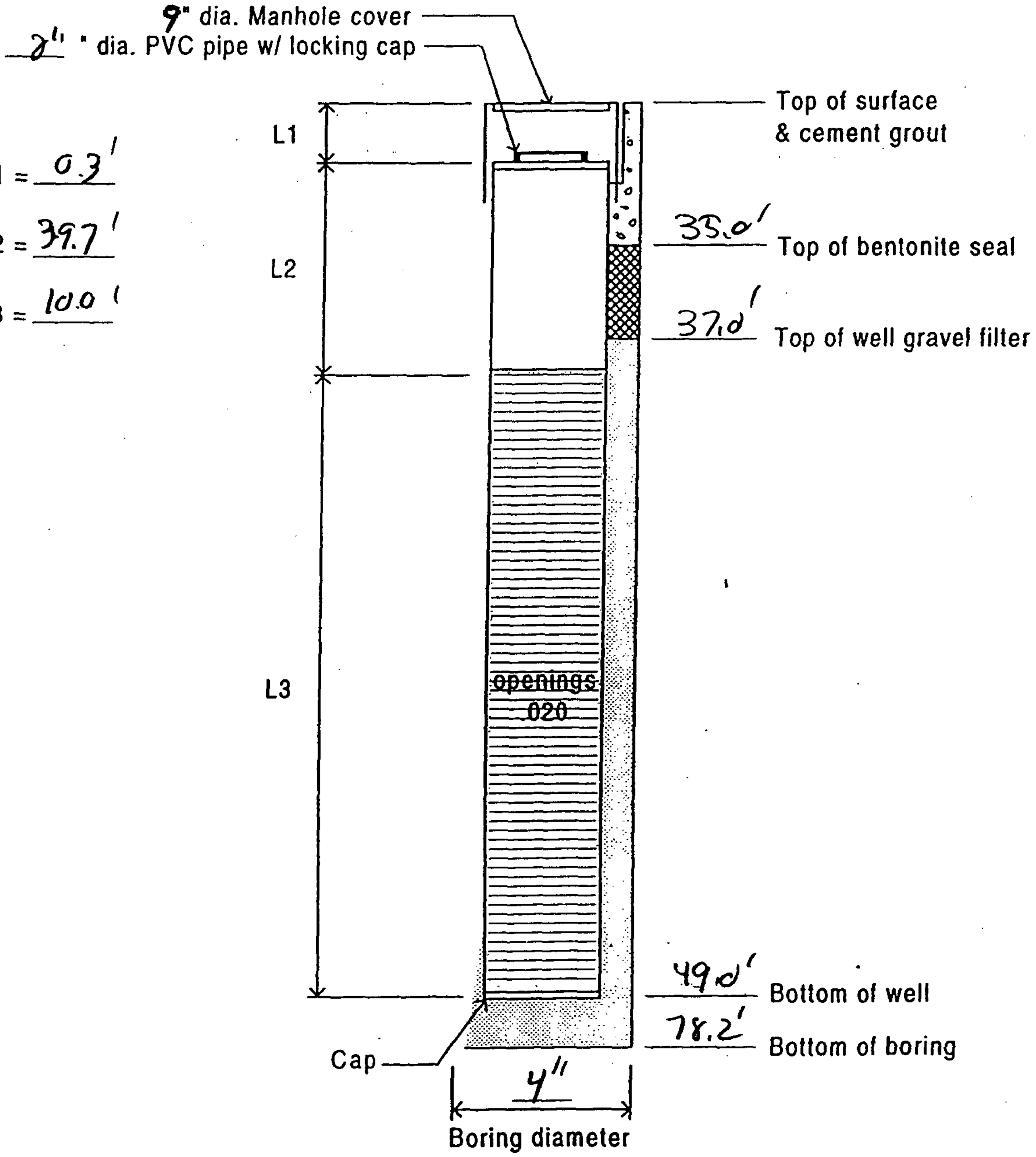
(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

DATE	WATER LEVEL BEFORE ______	WATER LEVEL AFTER ______	TAKEN ______ MINUTES AFTER

L1 = 0.3'

L2 = 39.7'

L3 = 10.0'



REMARKS:

Hole Backfilled 49.0-55.0 with Well Gravel

" 55.0-78.2 with Hole Plug

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BORING REPORT

SHEET 1 OF 4

PROJECT Port Ivory P & G	NAME OF CONTRACTOR Graig drilling	BORING NO. PAMW-7	SURFACE ELEV.
LOCATION 3'SW of original location Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 11-11-00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE "A" Monitor
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER J Finch
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/13/00	8 15	7.0	S#3

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3]SAMPLE DESCRIPTION AND REMARKS ———— LINE LOCATES CHANGE OF PROFILE
					0.0
Cutter-Head	0	Cutter Head	F...		
					Concrete 2.5'
Hand Auger		Hand Auger	F?'r		
				1	Fill– M-F Brown Sand, Tr Silt 4.0'
	5			2	
					Fill -M-F Black Sand, Tr Silt
[illegible]		31-45		3 A	Same 7.0'
Stem		54-82	19"	B	Fill - F Dk Gray Sand, Tr Silt
Augers		97-72		4 A	same 8.5'
	10	52-60	24"	B	Reddish Brown Clayey Silt & Sand, Tr F Black Sand 10.0
		4-8		5	
		14-20	18"		Red Brown Silty Clay, Little F Sand, Tr Gravel, Tr F Black Sand
		15-17		6	
		24-28	24		Red Brown Silty Clay, Tr F Sand Tr Gravel
	15	11-15		7	
		25-28	24"		Same 16.0
					Bottom of Boring
					All Sample checked with PID Meter
					S# 1-4 Saved for Testing + 1-4 to be Test Geo Tech Sample on all
	20				
	25				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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Well Installation Report

Sheet 2 of 4

PROJECT Port Ivory, PJG Site				CONTRACT NO. 426-99-006
LOCATION ±3' SW of orig Loc Block 1400 Lot 1				CONTRACTOR Craig Drilling
WELL NO. PAMW-7	WELL TYPE 'A' Monitor	INSPECTOR D Howe	DRILLER J Finch	DATE 11/13/00

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

DATE 11/13/00	WATER LEVEL BEFORE 6.2	WATER LEVEL AFTER 7.5	TAKEN 20 MINUTES AFTER

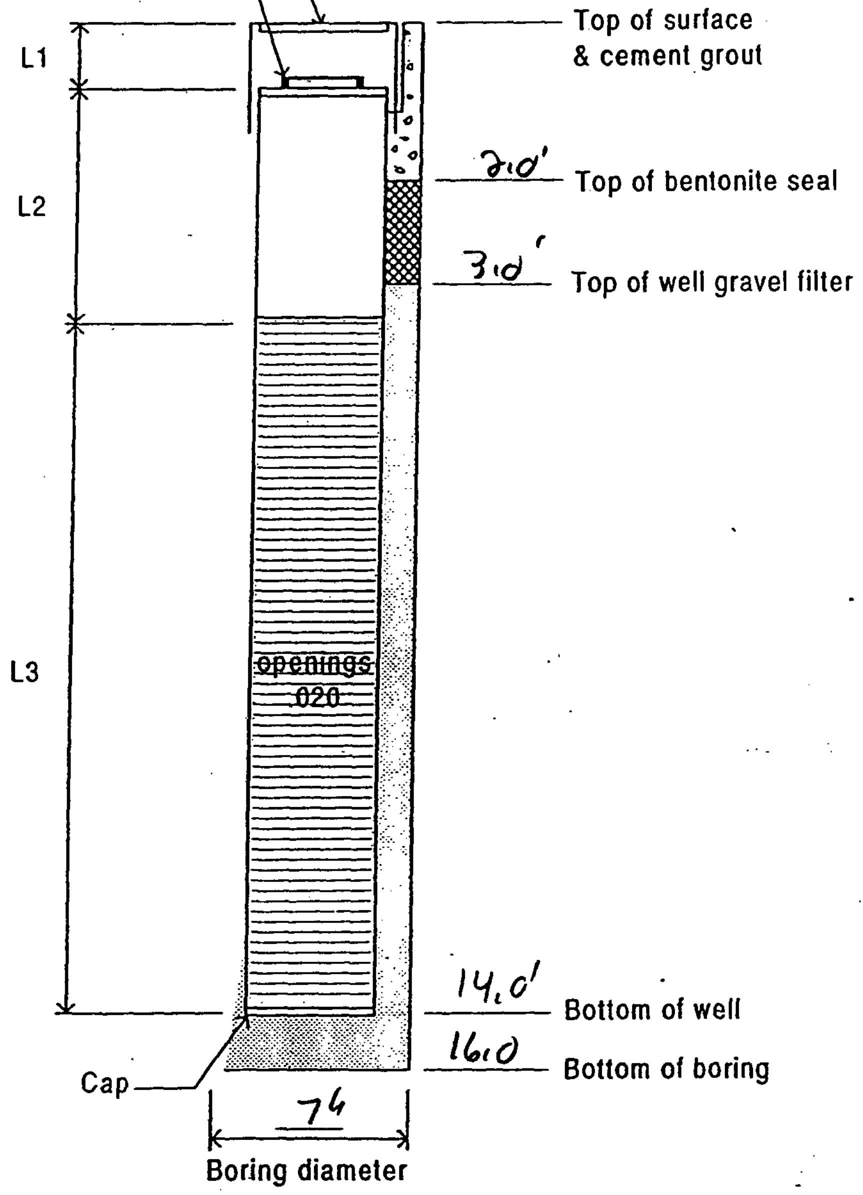
9" dia. Manhole cover

2'' " dia. PVC pipe w/ locking cap

L1 = 0.3'

L2 = 3.7'

L3 = 10.0'



REMARKS: Hole Back Filled 14-16 with Well Gravel

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BORING REPORT

SHEET 1 OF 5

PROJECT: Howland Hook, Port Ivory, P&G Site
NAME OF CONTRACTOR: Craig Drilling
BORING NO.: PA-MW 15D
SURFACE ELEV.:
LOCATION: As Laid out by Killam Assoc
CONTRACT NO.: 426-99-006
DATE: 11/3/00
SPOON: 2 "O.D. 1 3/8 "I.D.
CASING SIZE: HW
HOLE TYPE: 1
HAMMER: Safety 140 # FALL 30"
HAMMER: # FALL "
DRILLER: S Burns
INSPECTOR: D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3]SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE
					0.0
HW	0				
Casing					No Samples Taken
					for Strata 0-16 See log
					for PA-MW-15
	5				
	10				
	15				
					16.0
Drill		11-12		1	
Ahead		15-13	14"		F Brown Sand, Tr Silt, Tr Gravel
with		6-8		2	
Revert	20	11-13	14"		Same
		11-12		3	
		13-13	18"		F Brown Sand, Little Silt, Tr Gravel
		10-12		4	
		18-18	15"		Same
	25	9-10	16"	5	Same

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 2 OF 5

PROJECT Howland Hook, Port Ivory PDG Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. PAMW 15D	SURFACE ELEV.
LOCATION As Laid out by Killam Assoc		CONTRACT NO. 426-99-006	DATE 11/3/00

SPOON 2 "O.D. 1 3/8 "I.D.
CASING SIZE Revert
HOLE TYPE
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER S Burns
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE
Drill	25	12-12	16"	5	F Brown Sand, Little Silt, tr Gravel
Thread		13-18		6	
with		24-22	15"		Same
Revert		11-16		7	
		12-12	8"		Same 30.0'
	30	12-11		8	
		13-14	11"		Brown Silt, Little F Sand
		9-11		9	
		13-12	15"		Brown Silt & F Sand 34.0'
	35	10-17		10	
		13-16	18"		F Brown Sand, Some Silt 36.0'
		8-8		11	
		7-6	18"		F Brown Sand, Some Silty Clay
		2-2		12	
	40	3-4	15"		Same
		3-2		13	
		3-4	16"		Same
		4-2		14	
		1-1	19"		Same
	45	3-2		15	
		1-4	24"		Same 460
		5-4		16	
		3-4	22"		F Brown Sand, Little Silt 48.0
		3-4		17	M-F Reddish Brown Sand, Little Silt, Tr Red Shaley
	50	5-6	23"		1/4" Lens of F Gray Sand, 1/2" Layer of Gray clayey Silt

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

Note after S#17 Hole Caved in to 40'

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BORING REPORT

SHEET 3 OF 5

PROJECT Howland Hook, Port Ivory PA&G Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. PA MW-15D	SURFACE ELEV.
LOCATION As Laid out by Killam Assoc		CONTRACT NO. 426-99-006	DATE 11/3/00

SPOON 2 "O.D. 1 3/8 "I.D.
CASING SIZE Revert
HOLE TYPE "A" Monitor
HAMMER 140 # FALL 30 " Safety
HAMMER # FALL "
DRILLER S Burns
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS LINE LOCATES CHANGE OF PROFILE
					50.0
Drill	50	6-9		18 A	F Brown Sand, Little Silt 51.0
Ahead		21-22	20"	B	M-F Red Brown Sand, Some Clayey Silt, Little Red Shale Gravel 52.0
With		8-3		19	Note: After S# 18 Hole cased from 17' to 51'
Revert		8-10	12"		Red Brown clayey Silt, Little M-F Sand, Little Gravel 54.0
		9-13		20	Red Shale
	55	27-22	18"		Reddish Brown Clayey Silt, Little M-F Sand, Tr Decomposed 56.0
		10-15		21	
		23-30	19"		Red Brown Silt, Tr F Sand 58.0
		8-11		22	
	60	19-43	11"		Red Brown Clayey Silt, Some M-F Sand, Tr Gravel, Tr Red Shale 60.0
		10-26		23	
		22-21	11"		M-F Red Brown Sand, Some Silt, Little Gravel, Little Red Shale 62.0
		7-10	11"	24	Decomposed Red Shale, Little M-F Red Brown Sand 63.5
		100/1/8" ~~41/5½"~~			
		~~5/0"~~			Refusal, See Drilling Report
	65				
					68.5
					Bottom of Boring
	70				
	75				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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DRILLING REPORT

PROJECT Howland Hook, Port Ivory P&G Site
NAME OF CONTRACTOR Craig Drilling
BORING NO. PA MW 150
SHEET 4 **OF** 5
LOCATION As Laid out by Killam Assoc
CONTRACT NO. 426-99-006
DATE 11 / 4 / 00
TYPE OF DRILL RIG. Mobile B-58
COE BARREL SINGLE TUBE [✓ DOUBLE TUBE]
CORE DRILL SIZE 2" wireline **I.D.**
CONDITION OF DIAMOND BIT Good
DEPTH BOTTOM CASING 51.0
DEPTH START CORING 63.5
DRILLER S Burns
INSPECTOR D Howe

TIME [1]		DEPTH	DRILL BEHAVIOR [2]	WASH WATER [3]	[4] ROCK—DESCRIPTION AND REMARKS LINE LOCATED END OF RUN
~~Start~~	~~End~~	63.5			63.5
7	Mins/Ft		Steady	Full Ret	
10	↓		↓	↓	Run #1 Red Shale, Seamy & Fractured
11					
15	↓		chattering	Blocked up	
13	↓	68.5	4	Losing water	68.5
					Bottom of Boring
		73.5			
		78.5			
		83.5			

NOTES ON DRILL RUNS	RUN NO.	FROM	TO	LENGTH DRILLED	LENGTH RECOVERED	% RECOVERED	NO. PIECES
	1	63.5'	68.5'	5.0'	3.9'	78%	7 Pieces & Frags

NOTES: 1 — Record the time to start and end of each foot of drilling
2 — Log drill behavior (i.e., steady, chatter, grinding, etc.)
3 — Log wash water return (i.e., color, loss, blocking, etc.)
4 — Log type, color and condition of rock (i.e., broken, soft, seamy, hard, etc.), log character of wash return solids

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Well Installation Report

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ECT Howland Hook, Port Ivory P&G Site				CONTRACT NO. 426-99-006
LOCATION As Laid out by Killam Assoc				CONTRACTOR Craig Drilling
WELL NO. PA MW 15D	WELL TYPE 'A' Monitor	INSPECTOR D Howe	DRILLER S Borns	DATE 11/4/00

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

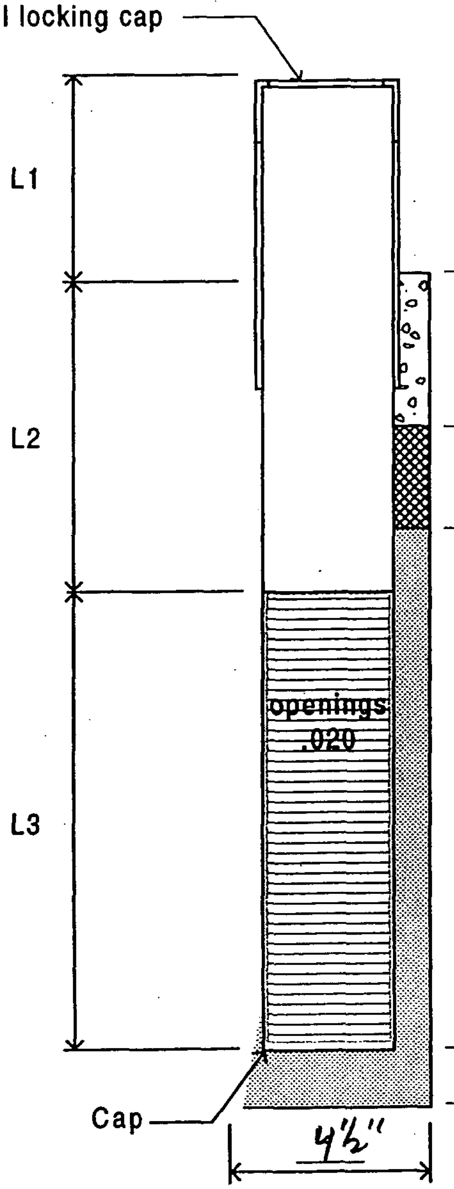
DATE	WATER LEVEL BEFORE ______	WATER LEVEL AFTER ______	TAKEN ______ MINUTES AFTER

2" " dia. PVC pipe w/steel locking cap

L1 = 3.3'

L2 = 41.7'

L3 = 10.0'



Top of surface & cement grout

38.0' Top of bentonite seal

40.0' Top of well gravel filter

51.7' Bottom of well

68.5' Bottom of boring

MARKS:

Hole Back Filled 51.7' - 68.5' with Holo Plug

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BORING REPORT

SHEET 1 OF 4

PROJECT Howland Hook, Port Ivory P&G Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. PA MW-15	SURFACE ELEV.
LOCATION As Laid out by Killam Assoc		CONTRACT NO. 426-99-006	DATE 11/3/00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER S Burns
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/3/00	8^00	5.9	while Hand Augering

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP. NO.[2]	[3]SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE
	0				0.0
Hand		Hand Auger	Full	1	
Auger					Misc Fill-Cinders, Ashes, Sand, Gravel, Etc 2.0
				2	
					Fill -M-F Brown Sand, Tr Silt, Tr Gravel 4.0
	5			3	
					Fill - M-F Brown Sand, Little Dk Brown Sand, Tr Silt 6.0
Hollow		1-0		4	
Stem		1-0	18"		Fill- F- Brown Sand, Little Silt, Tr Wood 8.0
Augers		1-0		5	
	10	1-4	14"		Fill- F Brown Sand, Little Silt, Tr Silty Clay 10.0
		7-8		6	
		5-11	18"		! F Brown Sand, Tr Silt, Tr Gravel
		10-12		7	No sample Saved
		18-28	24"		Same
	15	4-10		8	
		15-21	20"		Same 16.0
					Bottom of Boring
	20				All Samples checked with PID Meter
					S# 1-6 & 8 Saved for Testing
					Remaining Soil Discarded
	25				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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Well Installation Report

Sheet 2 of 4

PROJECT Howland Hock, Port Ivory P+G Site				CONTRACT NO. 426-99-006
LOCATION As Laid out by Killam				CONTRACTOR Craig
WELL NO. PA MW-15	WELL TYPE "A" Monitor	INSPECTOR D Howe	DRILLER S Burns	DATE 11/3/00

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

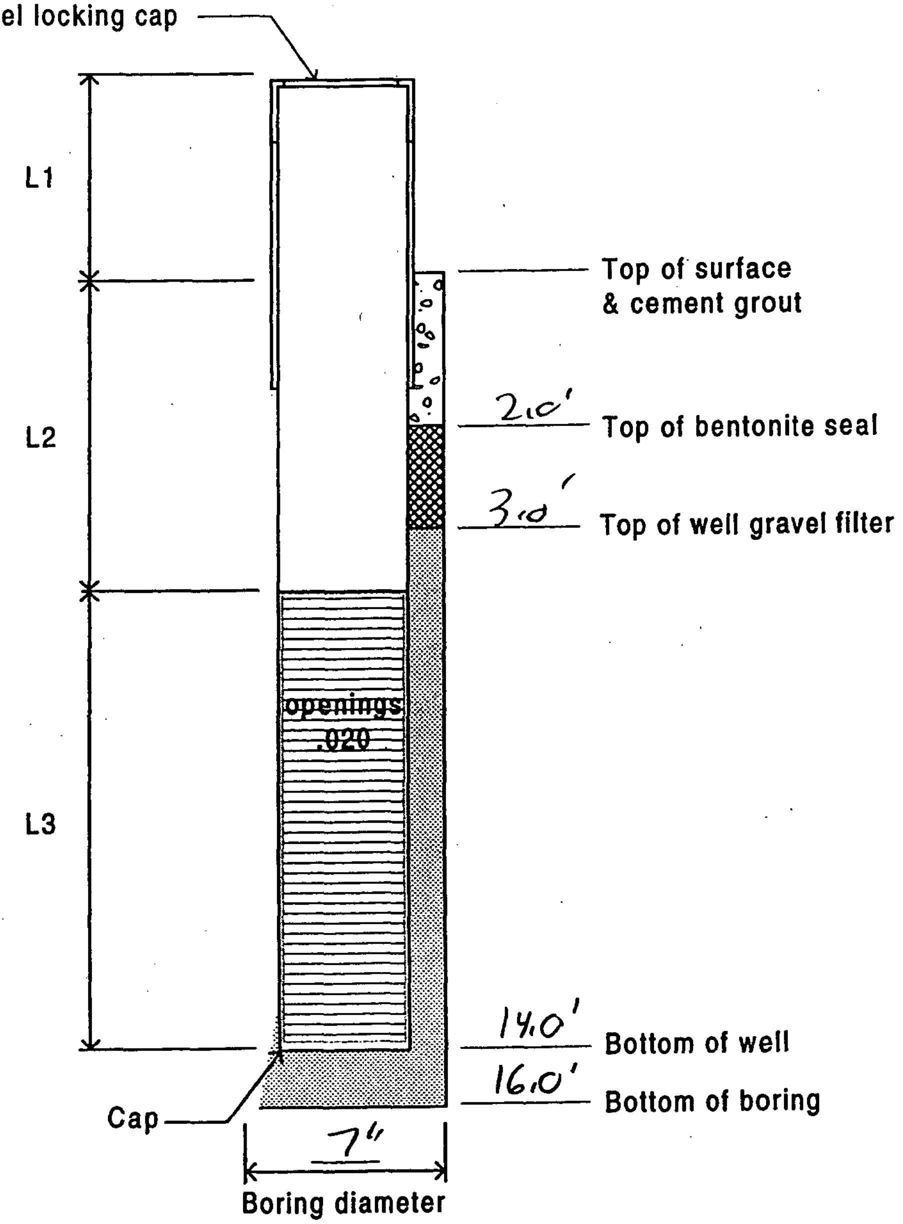
DATE 11/3/00	WATER LEVEL BEFORE 8.0'	WATER LEVEL AFTER 9.7'	TAKEN 60 MINUTES AFTER

2" dia. PVC pipe w/steel locking cap

L1 = 3.0'

L2 = 4.0'

L3 = 10.0'



Top of surface & cement grout

2.0' Top of bentonite seal

3.0' Top of well gravel filter

14.0' Bottom of well

16.0' Bottom of boring

7" Boring diameter

REMARKS:
Hole Back Filled 14-16' with Well Gravel

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BORING REPORT

SHEET 1 OF 3

ROJECT: HOWLAND HOOK, PORT IVORY P+G SITE

NAME OF CONTRACTOR: CRAIG DRILLING

BORING NO.: UST7-1

SURFACE ELEV.:

OCATION: NORTH OF BUILDING S37 - 25' WEST OF UST7-1A

CONTRACT NO.: 426-99-006

DATE: 11/28/00

POON: 3" O.D. 2 3/8" I.D.

CASING SIZE: AUGER

HOLE TYPE: 1

AMMER: 140 # FALL SAFETY 130 "

HAMMER: # FALL "

RILLER: J CRAIG

NSPECTOR: DAN DAVIS

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/28/00	15:30	6 to 7	OBSERVED DURING SPOONING

CASING LOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE
HAND AUGER		HAND AUGER	FULL	1	ASPHALT AN STONE 0.5' ~~FILL~~ - DARK BROWN AND BLACK FINE TO MEDIUM SAND + GRAVEL
				2	SAME 3.5'
	5			3	FILL - REDDISH/BROWN CLAYEY SILT, LITTLE GRAVEL AND FINE SAND 5.2'
					FILL - BLACK-STAINED LAYER (1/16"-THICK), GRADES TO BROWN FINE SAND, SOME SILT, TRACE CLAY 90-100 PPM
A		2 3 4 4	3"	4	SAME
	10	4 5 5 8	5"	5	FILL → R/B CLAYEY SILT - SOME SMALL TO LARGE GRAVEL AND FINE SAND, STRONG PETROLEUM ODOR 10'
		10 10 19 34	18"	6	DENSE REDDISH BROWN SILT, TRACE CLAY 12'
					BOTTOM OF BORING
					- ALL SAMPLES SCREENED WITH PID METER - SAMPLES #5 AND 6 SAVED FOR ENVIRONMENTAL TESTING - ALL REMAINING SAMPLES DISCARDED

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

ROJECT: Port Ivory P&G Site

NAME OF CONTRACTOR: Craig Drilling

BORING NO.: UST 7-1 A

SURFACE ELEV.:

OCATION: North of Building 537

CONTRACT NO.: 426-99-006

DATE: 11/28/00

POON "O.D. "I.D.

CASING SIZE

HOLE TYPE: 1

AMMER # FALL "

HAMMER # FALL "

RILLER: J Craig

NSPECTOR: Dan Davis

GROUND WATER LEVEL

Date	Time	Depth	Remarks

CASING LOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3] SAMPLE DESCRIPTION AND REMARKS LINE LOCATES CHANGE OF PROFILE
HAND AUGER		HAND AUGER	FULL	1*	FILL DARK BROWN F-M SAND, SOME S GRAVEL
				2	SAME 3.5
					BOTTOM OF BORING (CONCRETE PAD?)
	5				
	10				
	15				- ALL SAMPLES SCREENED WITH PID METER - SAMPLE 1 SAVED FOR ENVIRONMENTAL TESTING - REMAINING SAMPLES DISCARDED
	20				
	25				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

			SHEET 1 OF 3
PROJECT PORT IVORY P&G SITE	NAME OF CONTRACTOR CRAIG DRILLING	BORING NO. UST 7-1 B	SURFACE ELEV.
LOCATION NORTH OF BUILDING S 37 → 8' WEST OF UST7-1A		CONTRACT NO. 426-99-006	DATE 11/28/00

SPOON "O.D. "I.D.
CASING SIZE
HOLE TYPE /
HAMMER # FALL "
HAMMER # FALL "
DRILLER J CRAIG
INSPECTOR D DAVIS

GROUND WATER LEVEL

Date	Time	Depth	Remarks

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE
HAND AUGER ↓		H. AUGER ↓		1	FILL STONE AND WOOD
				2	FILL - BLACK STAINED FINE TO MEDIUM SAND - PETROLEUM ODOR
	5				
					- ALL SAMPLES SCREENED WITH PID METER
	10				- SAMPLE 2 SAVED FOR ENVIRONMENTAL TESTING
					- ALL REMAINING SAMPLES DISCARDED
	15				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 2

ROJECT: HOWLAND HOOK, P+G SITE

NAME OF CONTRACTOR: CRAIG DRILLING

BORING NO.: UST 7-1 C

SURFACE ELEV.:

OCATION: NORTH OF BUILDING S 37 -> 8' SOUTH OF UST 7-1 A

CONTRACT NO.: 426-99-006

DATE: 11/28/00

POON "O.D. "I.D.

CASING SIZE

HOLE TYPE /

IAMMER # FALL "

HAMMER # FALL "

RILLER: J CRAIG

NSPECTOR: DAN DAVIS

GROUND WATER LEVEL

Date	Time	Depth	Remarks

CASING LOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-[1] COV'D	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE
HAND AUGER		HAND AUGER	FULL	1	STONE AND DARK BROWN SAND
↓		↓			FILL - LIGHT BROWN FINE TO MEDIUMSAND
				2	FILL - BLACK STAINED FINE TO MEDIUM SAND - PETROLEUM ODOR
					BOTTOM OF BORING (CONCRETE PAD?)
	5				
					- ALL SAMPLES SCREENED WITH PID METER
					- ALL SAMPLES DISCARDED

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT: Port Ivory P & G
NAME OF CONTRACTOR: Craig drilling
BORING NO.: UST 7-2
SURFACE ELEV.:
LOCATION: ±75' North of Bldg 36 & ±15' E of rail road. - Block 1400 Lot 1
CONTRACT NO.: 426-99-006
DATE: 11-21-00
SPOON: 3 " O.D. 2 3/8 " I.D.
CASING SIZE: Augers
HOLE TYPE: 1
HAMMER: Autom. 140 # FALL 30 "
HAMMER: # FALL "
DRILLER: J. Craig
INSPECTOR: J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-21-00	1:30pM	7.0	SAMple # 4

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE
Cutter Head Handauger	0	Cutter Head Handauger	Full		ASPHALT 0.0' 0.2'
					CONCRETE 0.8'
					DGABC 1'
				1	Fill greyish-black c-f SAND some Gravel, tr SILT 2.7'
					Fill reddish-brown Clayey SILT, little Gravel, some m-f SAND
				2	SAME 4.0'
	5				
				3	Fill reddish-brown Gravel and c-f SAND some ClAYEY SilT 6
Hollow St[illegible] Au[illegible]		6-6			
		10-10	24"	4	Reddish-brown Silty ClAY and Gravel
		11-9		*	
	10	10-10	24"	5	SAME (oil)
		5-7			
		11-11	24"	6*	SAME (oil)
		5-7			
		8-8	24"	7	SAME (oil)
	15	10-15			
		20-20	24"	8	SAME 16.0'
					Note: 2 samples saved for testing All other samples screened with PID meter & discarded. Bottom of Boring
	20				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P & G
NAME OF CONTRACTOR Craig drilling
BORING NO. UST 4-1
SURFACE ELEV.
LOCATION + 80' W of Bldg 80 & 5' E of railroad
CONTRACT NO. 426-99-006
DATE 11-20-00
SPOON 3 " O.D. 2 3/8 " I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER 140 # FALL 30 "
HAMMER # FALL "
DRILLER J. Craig
INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-20-00	2:30 PM	5.0'	Sample # 3

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3] SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE
Handauger	0	Handauger	Full		ASPHALT 0.3'
				1	Fill black c-f SAND, some Gravel, tr SILT
				2*	SAME
	5			3	SAME
H[illegible]		3 - 3			
Augers		3 - 3	18"	4	Misc. Fill black c-f SAND, little Gravel, tr. Silt, wood, cinders
		3 - 2			
	10	8 - 5	24"	5	SAME (No wood)
		5 - 8		* 6A	Fill black c-f SAND & Gravel, tr SILT, Cinders 11.5
		10 - 11	24"	6B	Reddish brown Silty Clay,
		4 - 8			SAME
		10 - 17	20"	7	Black c-f SAND, some Gravel, tr. Silt, cinders brick,
	15	4 - 2		* 8A	Same. 15.5'
		3 - 3	20"	8B	Brown Peat w. Silty Clay & fibers 16.0

Note: 3 samples saved for testing
All other samples screened with PID meter
& discarded.

Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P & G
NAME OF CONTRACTOR Craig drilling
BORING NO. UST4-2
SURFACE ELEV.
LOCATION ±100' W of Bldg 38
CONTRACT NO. 426-99-006
DATE 11-20-00
SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER 140 # FALL 30 "
HAMMER # FALL "
DRILLER J. Craig
INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-20-00	1:30pM	5.0'	Sample #3

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE
	0				Asphalt 0.0
Handauger		Handauger	Full		
			"	1	Fill black c-f SAND, some Gravel, tr. Silt
				2	SAME
	5			3*	SAME
Hollow		2 - 1			
S A s		8 - 19	10"	4	Fill black c-f SAND, tr. Gravel, tr Silt, cindess, wood
		25 - 6			
	10	6 - 6	8"	5	Misc. Fill black c-f SAND, tr. Gravel, tr Silt, cindess wood
		66 - 5			
		5 - 4	2"	6	SAME
		2 - 2			
		2 - 2	10"	7*	SAME
	15	6-12			SAME 15.4'
		17 - 6	10"	8	Brown PEAT & fibers 16.0'
	20				

Note: 2 samples saved for testing
All other samples screened with
PiD meter & discarded

Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 1

PROJECT Port Ivory P & G

NAME OF CONTRACTOR Craig drilling

BORING NO. FS-1

SURFACE ELEV.

LOCATION ±15' S of Bldg 12 (Front side) Block 1400 lot 1

CONTRACT NO. 426-99-006

DATE 11-17-00

SPOON "O.D. "I.D.

CASING SIZE

HOLE TYPE 1

HAMMER # FALL "

HAMMER # FALL "

DRILLER S Burns

INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS LINE LOCATES CHANGE OF PROFILE
	0				Asphalt 0.[illegible]'
HANDAUGER		HANDAUGER	Full Rec	A	Fill black & dark brown c-f SAND some Gravel, tr. Silt, coal, cinders, bric 0.2'
				1 B	Fill reddish. brown Silty ClAY with c-f SAND & Gravel. 1.'
				2	SAME
					3.5'
	5				Concrete SlAB - obstruction
					Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 1

PROJECT Port Ivory P & G	NAME OF CONTRACTOR Craig drilling	BORING NO. FS-1 A	SURFACE ELEV.
LOCATION ±17' S of Bldg 13 Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 11-17-00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER S. Burns
INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3]SAMPLE DESCRIPTION AND REMARKS LINE LOCATES CHANGE OF PROFILE
	0				ASPHALT 0.0 0.2'
Handauger		Handauger	Full Rec		Fill dark brown & black c-f SAND some Gravel, tr. SILT, coal, cinders, brick 1.5'
				1	Fill reddish brown - Silty CLAY with c-f SAND and Gravel
				2	SAME
	5				5.0'
					Concrete Slab - obstruction
					Bottom of Boring
	10				
	15				
	20				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT: Port Ivory P & G
NAME OF CONTRACTOR: Craig drilling
BORING NO.: FS 1 B
SURFACE ELEV.:
LOCATION: 40'W of BH-FS 1 betw. Bldg 12 & Bldg 13 Block 1400 Lot 1
CONTRACT NO.: 426-99-006
DATE: 11-17-00
SPOON: 3 " O.D. 2 3/8 " I.D.
CASING SIZE: Augers
HOLE TYPE: 1
HAMMER: Safety # FALL 30 "
HAMMER # FALL "
DRILLER: S. Burns
INSPECTOR: J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-17-00	11:20	7.0'	Sample #4

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3]SAMPLE DESCRIPTION AND REMARKS LINE LOCATES CHANGE OF PROFILE	
Handauger	0	Handauger	Full Rec			0.0'
					ASPHALT	0.2'
				* 1	Fill greyish-black c-f SAND, Gravel, tr Silt, Cinders, coal, wood	1.3'
					Fill greyish-yellow c-f SAND AND Silty CLAY, cinders, wood, coal.	
				2	Fill greyish-black Gravel, some c-f SAND, tr Silt, cinders	
	5			3	Fill greyish black Gravel, some c-f SAND, tr Silt, cinders	6.0'
[illegible]		4-7		* 4 A	Misc Fill yellowish-white dietomaceous, grey c-f SAND, Gravel, cinders, wood	6.5'
AUGERS		4-3	18"	4 B	Fill greyish-black Gravel, some c-f SAND, tr Silt, cinder	
		1-4				
	10	1-0	24"	5	Fill greyish-White Dietomaceous - with grey c-f SAND & Gravel.	
		Weight of				
		HAMMER	0"	6	(Sample fall into the hole)	
		W.O.H.	18"	* A	Fill grey Dietomaceous - with grey c-f SAND & Gravel	13.5'
		18" Bounce	100/0"	7		
	15				Refusal - Bottom of Boring	
	20					

Note: 3 samples saved for testing
All samples screened with PID meter,
the other samples discarded

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P & G	NAME OF CONTRACTOR Craig drilling	BORING NO. FS-2	SURFACE ELEV.
LOCATION ± 50' NE of Bldg 12 Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 11-17-00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER S. Burns
INSPECTOR J ZARKS

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-17-00	PM	7.0	Sample #4

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE
	0	HANDAUGER	Full Rec		crushed Rock DGABC 0.0 / 0.5
				1	BALLAST - Crushed Rock 2.0'
				2*	Fill red-brown c-f SAND tr. Gravel, tr. SilT Same
	5				
				3	SAME 6.4'
[illegible]ow [illegible]EM		3 - 3			
Augers		3 - 4	12"	4	Fill grey c-f SAND, tr. Gravel, tr SilT
		8 - 9			
	10	9 - 10	24"	5*	SAME (with wood splinters)
		5 - 3			
		8 - 25	20"	6	SAME (with wood)
		40 - 28			
		38 - 25	24"	7	Fill grey c-f SAND & Gravel, tr. SilT wood
	15	20 - 12			
		18 - 27	20"	8	SAME
		24 - 38		9 A	Fill greyish black c-f SAND & Gravel, tr. SilT & wood.
		68 - 88	24"	*9 B	Greyish-green c-f SAND
	20				Note: 3 samples saved for Testing All other samples screened with PiD meter & discarded Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

Revision

PROJECT Port Ivory P & G	**NAME OF CONTRACTOR** Craig drilling	**BORING NO.** FS-~~2~~ 3	**SHEET** 1 **OF** 3 **SURFACE ELEV.**
LOCATION As laid out in the field		**CONTRACT NO.** 426-99-006	**DATE** 11-15-00

SPOON 3 "O.D. 2 3/8 "I.D.	**CASING SIZE** Augers	**HOLE TYPE** 1
HAMMER 140 # FALL 30 "	**HAMMER** # FALL "	
DRILLER D. Osuch		
INSPECTOR J. Zarks		

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-15-00	11:45	8.5'	Sample # 5

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. [2] NO.	[3] SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE
Handauger	0	Handauger	Full Rec		DGABC 0.0' 0.5'
				1	Misc Fill greyish-black c-f SAND & Gravel, tr. Silt, cinders, wood, coal etc.
				2*	Fill brown c-f SAND, tr. Gravel, tr. Silty CLAY, tr. Coal
	5				
				3	SAME
[illegible]w		4 - 4		4*	6.5'
[illegible]EM AUGERS		5 - 5	14"		Fill reddish-brown CLAYEY SILT; little c-f SAND, tr. Gravel
		4 - 4			
	10	17 - 14	2"	5	SAME 10.0'
		4 - 5			
		6 - 5	20"	6	Fill brown c-f SAND AND Red-brown Clayey Silt, little Gr
		2 - 2		*	SAME 12.8'
		3 - 4	24"	7	Brown PEAT some grey CLAY 14.0'
	15				

Note: Samples 2; 4 & 7 were saved for testing all samples were screened with PID meters and the other samples were discarded.

Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P & G
NAME OF CONTRACTOR Craig drilling
BORING NO. FS-4
SURFACE ELEV.
LOCATION As laid out in the field
CONTRACT NO. 426-99-006
DATE 11-15-00
SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER 140 # FALL 30 "
HAMMER # FALL "
DRILLER D. Osuch
INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-15-00	1:40 PM	8.0	Sample #5 (top)

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3] SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE
					0.0'
HANDAUGER	0	HAND AUGER	Full Rec		DGABC 0.5'
				*	
				1	Fill grey c-f SAND and Gravel, tr. SILT.
				2	Fill greyish-black c-f SAND some Gravel, tr. SILT, cinders, coal, wood.
	5				
				3	SAME
H[illegible] AUGER		4-5			
		5-5	24"	4	SAME
		4-4			
	10	9-9	20"	5	SAME (wood)
		8-12			
		8-6	8"	6	SAME (wood)
		9-9			
		4-4	2"	7	SAME 14.0'
	15	2-2		*	
		2-2	20"	8	Brown Peat, tr. grey silty CLAY 16.0'
					Note: Samples 1, 2 & 8 saved for testing
					All samples screened with PID meter
	20				and discarded Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P+G Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. FS-7	SURFACE ELEV.
LOCATION West of Bld 55		CONTRACT NO. 426-99.00C	DATE 12/1/00

SPOON 3 " O.D. 2 3/8 " I.D.
CASING SIZE Auger
HOLE TYPE 1
HAMMER 140 # FALL Safety 30 "
HAMMER # FALL "
DRILLER Jeff Craig
INSPECTOR Charlie Springer

GROUND WATER LEVEL

Date	Time	Depth	Remarks
12/1/00	0825	5'	HA

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3] SAMPLE DESCRIPTION AND REMARKS LINE LOCATES CHANGE OF PROFILE
Hand auger		Hand auger	Full	1	Concrete .55' ~~Gravel Fill w/Grnd matrix 1.2'~~
				2*	Fine to med Sand Trace SILT/Some Gravel Dark Brown 4.0
	5			3	Fine sand Trace SILT LT Brown
[illegible]ger		8-14	2'	4	
		11-10			Same
		12-14	2'	5*	
		16-18			Same
	10	4-6	2'	6	
		10-7			Same 12.0
					Bottom of Boring
	15				
					- all Samples Screened w/ PID
					- Samples 2,5 Saved For Env. Testing
					- all Remaining Samples Discarded
	20				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Howland Hook, Port Ivory PdG Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. Fill-1	SURFACE ELEV.
LOCATION ±75' Southwest of Truck Scale, Near South Gate, Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 11/7/00

SPOON 2 "O.D. 1 3/8 "I.D.	CASING SIZE Augers	HOLE TYPE 1
HAMMER 140 # FALL 30 "	HAMMER # FALL "	
DRILLER S Burns		
INSPECTOR D Hove		

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/7/00	9 35/A	3.0	While Hand Augering

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE	0.0
Hand	0	Hand Auger	Full	1	Crushed Stone	0.5
Auger					Fill M-F Brown Sand, Tr Silt, Tr Crushed Stone	
				2		
					M-F Brown Sand, Tr Silt	
	5			3		
					Same	
low		4-3		4	Same	7.0
Stem		3-3	19"		M-F Grey Sand, Tr Silt	
Augers		3-3		5	Note S# 4- Taken with 2" Spoon	
	10	6-12	18"		F Brownish Grey Sand, Little Silt	
		7-9		6		
		13-11	18"		F Brown Sand, Tr Silt	
		6-11		7		
		11-14	16"		Same	
	15	4-6		8	Same	15.0
		7-9	14"		M-F Grey Sand, Little Silt F Brown Sand, Some Silt	15.5 16.0
					Bottom of Boring	
	20				All Samples checked with PID Meter,	
					S# 1 & 2 Saved for Enviro Testing.	
					Remaining Samples Discarded	
	26					

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT: PROCTOR & GAMBLE
NAME OF CONTRACTOR: CRAIG
BORING NO.: FILL-2
SURFACE ELEV.:
LOCATION: AS MARKED OUT IN THE FIELD BY KILLIAN ASSOC.
CONTRACT NO.: 426-99-006
DATE: 11-3-00
SPOON: 3 "O.D. 2 7/8 "I.D.
CASING SIZE: H.S. Augers
HOLE TYPE:
HAMMER (safety) 140 # FALL 30 "
HAMMER # FALL "
DRILLER: P. Pennell
INSPECTOR: M. Oudeh

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-3	Am	4.1'	found in S#3

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3] SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE
H.S.	0				Asphalt Pavement 0.2'
					Crushed Rock 0.7'
Augers		HAND AUGER	Full	1	Fill- dark brown c-f SAND, some Gravel, trace Silt, trace Crushed Rock
	5			2	Fill- brown c-f SAND, trace Gravel, trace Silt
		4-4 6-7	20"	3	Fill- SAME
		5-6 10-12	20"	4	Fill- SAME
	10	8-11 14-17	24"	5	Fill- SAME
		10-10 13-15	24"	6	Fill- SAME
	15	9-11 18-22	24"	7	Fill- SAME 16.0'
					Bottom of boring
	20				All samples were saved in 2 one pt. JARS & 1 4 oz JAR.
	25				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT HH-P&G	**NAME OF CONTRACTOR** Craig (BLOCK 1400)	**BORING NO.** Fill #3	**SURFACE ELEV.**
LOCATION As laid out by Killian Assoc (± 2' east of tank foundations)*		**CONTRACT NO.** 426-99-006	**DATE** 11/4/00

SPOON 3 "O.D. 2 3/8 "I.D. **CASING SIZE** HS-Augers **HOLE TYPE** 1

HAMMER 140 # FALL 30 " **HAMMER** # FALL "

DRILLER J. Craig

INSPECTOR T. Ryan

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/6/00	10:05A	7.5'	In S #4

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP. NO.[2]	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE
	0	Hand	Full		CRUSHED STONE 0.5'
				1	Misc Fill - Sand, Cinders, Brick, Conc
		auger	Rec.		
				2	Same w/ tr metal
	5			3	[illegible] metal 5.0'
					[illegible], tr Silt, tr Gravel.
ers		7-15		4	Same
		11-27	17"		
		13-31			Same
		54-45	22"	5	
	10	7-11			Same
		18-31	20"	6	
		11-17		7	Same
		22-28	14"		
	15	4-10	12"	8	Same 15.0'
					Bottom of Boring

Note: Samples # 1-4 were saved for testing. All other samples were screened w/ PID & then discarded. Sample #4 was saved & placed on Hold.

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

* - Tanks have been removed, foundation only exists.

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BORING REPORT

SHEET 1 OF 3

PROJECT HH- P&G	NAME OF CONTRACTOR Craig	BORING NO. Fill # 4	SURFACE ELEV.
LOCATION As laid out by Killam Assoc (±103' So. of Bldg 12) (BLOCK 1400)		CONTRACT NO. 426-99-006	DATE 11/6/00

SPOON 3 " O.D. 2 3/8 " I.D.
CASING SIZE Augers (HS)
HOLE TYPE 1
HAMMER 140 # FALL 30 "
HAMMER # FALL "
DRILLER P Pennell
INSPECTOR T. Ryan

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/ /00	1:40 pm	5.9'	In S #3

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE (Gravel Covered)
	0	Hand	Full		Fill-Cinders, Sand, little Br, little Glass
		Auger	Rec	1	
					Same
				2	
					Same 5.0'
	5			3	Fill-Br M-F Sand little silt, tr Gravel
gers		2-3		4	Same
		3-6	19"		Br F Sand some Silt, some Plant fibers (org. odor)
		1-1			Br M-F Sand, tr Silt, tr Gravel
	10	2-2	17"	5	
		1-2			Same
		2-2	13"	6	
		10-15			Same
		11-15	24"	7	
	15	11-14	12"	8	Same 15.0'

Bottom of Boring

Note: Samples #1-5 were saved for environ testing. All other samples were screened w/ PID & then discarded. Sample #5 was saved & placed on hold.

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P & G	NAME OF CONTRACTOR Craig drilling	BORING NO. Fill 5	SURFACE ELEV.
LOCATION ± 180' E of Bldg 12 - Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 11-18-00

SPOON 3 "O.D. 2 3/8 "I.D.	CASING SIZE Augers	HOLE TYPE 1
HAMMER Safety 140 # FALL 30 "	HAMMER # FALL "	
DRILLER James Finch		
INSPECTOR J. Zarks		

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-18-00	12:30 PM	7.5'	Bottom of Sample # 4

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE	0.0
Handauger	0	HANDAUGER	Full Rec		Crushed Rock & DGABC	0.5'
				1 *	Fill greyish-brown c-f SAND, little Gravel, tr. Silt, cinder	
				2	Fill reddish-brown c-f SAND, tr. Gravel, tr. Silt, wood	
	5			3	SAME	
H[illegible]w S[illegible]M AUGERS		5 - 5 6 - 6	20"	* 4	Fill brown c-f SAND, tr. Gravel, tr Silt with bl. organic fibers (±2")	
	10	4 - 3 3 - 5	20"	5	SAME	
		3 - 4 7 - 11	18"	6	SAME	
		11 - 13 15 - 21	24"	7	Fill grey & brown c-f SAND, tr Gravel, tr. SilT	
	15	7 - 10 10 - 13	24"	8	Grey c-f SAND, tr. Grabel, tr. SilT	16.0'
					Note: 2 Samples saved for testing All other samples checked w. PID meter & discarded	
	20				Bottom of Boring	

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P&G Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. Fill-7	SURFACE ELEV.
LOCATION West of wood chipper, Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 12/4/00

SPOON 3 " O.D. 2 3/8 " I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER S Burns
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
12/4	905	10.0	S#6

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE	
						0.0
	0				Concrete	0.7
Hand		Hand Auger	Full	1	Misc Fill, Sand, Gravel, Cinders, wood, Silt, ETC	
Auger						
				2	Same	4.0
	5			3		
					Misc Fill, Cinders Gravel, ETC	
[illegible]llow		16-11		4		
Stem		16-18	19"		Same	
Augers		17-9		5		
	10	4-3	20'		Same	10.0
		3-2		6		
		1-1	24"		Fill-White Diatomaceous Earth	
		WOH		7		
		WOH	24'		Same	
	15	WOH-1		8		
		2-2	23"		Same	
		2-2		9		
		2-2	24"		Same	
		9-18		10		
	20	25-45	15"		Fill-White Diatomaceous Earth, Little Cinders, Tr Gravel	
		7-3		11		
		2-2	18"		Fill-White & Grey Diatomaceous Earth	
		3-2		12 A	Same	23.0
		1-1	18'	B	Brown Peat	24.0
	25				Bottom of Boring	

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

All Samples checked with PID Meter S# 1, 3 & 6 Saved for [illegible] Tested Remaining Samples Discarded

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P&C Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. Fill-8	SURFACE ELEV.
LOCATION NW Corner of site, 75' South of PAMW-1	Block 140c Lot 1	CONTRACT NO. 426-99-006	DATE 12/2/00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER 140 # FALL 30 " Safety
HAMMER # FALL "
DRILLER S Burns
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
12/2	11 30/AM	3.0	while Hand Augering

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE 0.0
Hand	0	Hand Auger	Full	1	
Auger					Misc Fill - Sand, Silt, Brick, Gravel, Metal, Etc
				2	
					4.0
	5			3	Fill - Grey Diatomaceous Earth, Little Misc Fill
[illegible]llow		1-1		4	
Stem		1-1	19"		Fill - Grey Diatomaceous Earth
Augers		WOH		5	
	10	WOH	23"		Fill - White & Grey Diatomaceous Earth
		WOH		6	
		WOH	22"		Same
		WOH		7	
		WOH	22"		Same
	15	WOH		8	
		WOH	22"		Same
		WOH		9 A	Same 17.5
		WOH-1	24"	B	Black Peat 18.0
					Bottom of Boring
	20				
					All Samples checked with PID Meter
					S# 1 & 4 Saved for Envir Testing
					Remaining Samples Discarded
	25				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P+G Site
NAME OF CONTRACTOR Craig drilling
BORING NO. FI140
SURFACE ELEV.

LOCATION South of BLD 72
CONTRACT NO. 426.99.006
DATE 12/7/00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE auger
HOLE TYPE 1

HAMMER 140 # FALL Safety 30 "
HAMMER # FALL "

DRILLER Jeff Craig

INSPECTOR Charlie Springer

GROUND WATER LEVEL

Date	Time	Depth	Remarks
12/1/00	1025	5.8'	

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. [2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS LINE LOCATES CHANGE OF PROFILE
					~~Fine Sand some Silt Gravel~~
					0.2
H.A.		H.A.	Full	1	Fine Sand some SILT Red Brn
					3
				*2 ^ D	Fine Sand Some SILT w/ Gravel Red Brn
	5			3	
					6.4
[illegible]		5-8	1.3'	4*	Sand w/ Gravel, Cinders, Concrete & wood Black
		5-23			Slight Odor
					8.2
		4-4	21	5	Peat
	10	4-4			10.0
					End of Boring 10'
					- All Samples Screened w/ PID
					- Samples 2b + 4 Saved For Env. Testing
					- All Remaining Samples Discarded
	15				
	20				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT PORT IVORY P+6 SITE	NAME OF CONTRACTOR CRAIG DRILLING	BORING NO. B1	SURFACE ELEV.
LOCATION BLOCK 1400, BORING B1 (WEST OF BUILDING #31) Block 1400		CONTRACT NO. 426-99-006	DATE 12/4/00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE AUGER
HOLE TYPE 1
HAMMER 140 # FALL SAFETY 30 "
HAMMER # FALL "
DRILLER JIM FINCH
INSPECTOR DAN DAVIS

GROUND WATER LEVEL

Date	Time	Depth	Remarks
12/4/00	1230	10 to 12	

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. [2] NO.	[3] SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE 0.0
					CONCRETE
					2.0
HAND AUGER		HAND AUGER	FULL	2*	CINDERS AND SMALL GRAVEL
↓		↓	↓		
				3 A	SAME 4.5
	5			B	REDDISH BROWN CLAYEY SILT, LITTLE GRAVEL
[illegible]		3 4	16"	4*	SAME
		5 6			
		3 5	15"	5 A	SAME 9.0
		7 8		B*	BLACK FINE SAND, TRACE SILT
	10	3 4	14"	6	SAME 11.0
		4 6			BROWN FINE TO MEDIUM SAND, TRACE SILT 12.0
		7 8	8"	7	BROWN PEAT
↓		9 11			14.0
	15				↑ BOTTOM OF BORING
					- ALL SAMPLES SCREENED WITH PID METER
	20				- SAMPLES 2, 4 AND 5B SAVED FOR ENVIRONMENTAL TESTING
					- ALL REMAINING SAMPLES DISCARDED

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT: Port Ivory P&G Site
NAME OF CONTRACTOR: Craig Drilling
BORING NO.: B-2
SURFACE ELEV.:
LOCATION: Gravel Area West of Bldg 33
CONTRACT NO.: 426-99-006
DATE: 11/10/00 - 11/16/00
SPOON: 3 "O.D. 2 3/8 "I.D.
CASING SIZE: Augers
HOLE TYPE: 1
HAMMER: Safety 140 # FALL 30 "
HAMMER: # FALL "
DRILLER: S Burns
INSPECTOR: D Howe / J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-16-00	9:08 AM	9.0'	Sample #5
		5.2'	Open hole

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D¹	SAMP.² NO.	³SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE	0.0'
Cutter Head	0	Cutter Head	Full Rec		DGABC - CRUSHED ROCK	0.2'
					Fill brown c-f SAND, tr. Gravel, tr. Silt	0.8
				1	Concrete slab w. ribars	2.0'
HAND AUGER		HAND AUGER				
				2*	Fill greyish-black c-f SAND & Gravel, tr. Silt, Cinders, coal, br	
	5			3	SAME	
[illegible] M AUGERS		5 - 5			225.8 ppm	
		6 - 6	24'	4*	SAME w/oil	
		8 - 12			123.9 ppm	
	10	13 - 15	18"	5	SAME w/wood	
		100/3"	3"	6	Same	10.3'
					Refusal Bottom of Boring	
	15				Note: 2 samples saved for testing	
					All other samples checked with PID meter	
					& discarded	
	20					
	25					

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P & G
NAME OF CONTRACTOR Craig drilling
BORING NO. B-2 A
SURFACE ELEV.
LOCATION 10' S of BH. B-2
CONTRACT NO. 426-99-006
DATE 11-16-00
SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER G. Mc. Aneny
INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-16-00	10:30	5.1'	sample #3

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP. NO.[2]	[3]SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE
Cutter Head	0	Cutter Head	Full		
				1	
HANDAUGER		HAND AUGER			For soil strata 0.0' - 8.0'
				2	see Boring report BH-2
	5				
				3	
H[illegible] Auger		—	-		
		—	-	4	
		4 - 5		*	66.8ppm
	10	7 - 8	20"	5	Misc Fill black c-f SAND some Gravel tr. Silt, Cinders, Coal, wood
		100/3"		6	10.3'
					SAME 2.7ppm
					Note: 1 sample #5 saved for testing. All other samples screened for PID readings & discarded. Refusal - Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF

PROJECT: Port Ivory P & G
NAME OF CONTRACTOR: Craig drilling
BORING NO.: B - 3
SURFACE ELEV.:
LOCATION: 40' S of Bldg 16 & 200' W of Bldg 33A Block 1400 lot 1
CONTRACT NO.: 426-99-006
DATE: 12-4-00
SPOON: 3 "O.D. 2 3/8 "I.D.
CASING SIZE: Augers
HOLE TYPE: 1
HAMMER: 140 # FALL 30 "
HAMMER: # FALL "
DRILLER: D. Cooke
INSPECTOR: J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
12-4-00	9:30	3.5'	sample # 2

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE
	0				Gravel 0.0' 0.2'
Handauger		Handauger	Full Rec		CONCRETE 0.9
				1	Fill dark grey c-f SAND, tr. Gravel, tr Silt, cinders, coal.
				2*	SAME
	5				
				3	SAME
[illegible]w [illegible] [illegible]ERS		2-3		*	
		3-3	20"	4	Fill c-f SAND, tr Gravel, tr Silt, cinders, coal
		12-18			
	10	22-24	24"	5	SAME
		6-6			
		7-7	24"	6	SAME
		8-12			
		12-15	20"	7	SAME
	15	3-5			
		6-7	20"	8	SAME
		4-4		9	SAME 17.5'
		4-4	20"		Brown Peat 18.0'
					Note: 2 samples saved for testing
	20				All samples checked w. PID meter
					remaining samples discarded
					Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT: PORT IVORY P+G SITE
NAME OF CONTRACTOR: CRAIG DRILLING
BORING NO.: B4
SURFACE ELEV.:
LOCATION: WEST OF BUILDING #33, BLOCK 1400 Block 1400
CONTRACT NO.: 426-99-006
DATE: 12/4/00
SPOON: 3 "O.D. 2 3/8 "I.D.
CASING SIZE: AUGER
HOLE TYPE: 1
HAMMER: 140 # FALL SAFETY 30 "
HAMMER: # FALL "
DRILLER: JIM FINCH
INSPECTOR: DAN DAVIS

GROUND WATER LEVEL

Date	Time	Depth	Remarks
12/4/00	2:00	4to5	DURING HAND AUGERING

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ___ LINE LOCATES CHANGE OF PROFILE
HAND AUGER		HAND AUGER		1 A	Asphalt AND STONE 1.5
				B	FILL CINDERS AND GRAVEL
				2*	- PETROLEUM ODOR 250-400 ppm
	5			3 A	5.0
				B*	FILL GRAY FINE SAND TRACE SILT - PETROLEUM ODOR 250-400 ppm 6.0
GER		5 6	15"	4 A*	FILL REDDISH BROWN CLAYEY SILT 7.3
		6 5		B	FILL BROWN FINE SAND, TRACE SILT
		3 3	2"	5	SAME
	10	5 8			SAME 10.5
		4 4	10"	6	BROWN PEAT 10.9
		7 11			BROWN FINE SAND, TRACE SILT 12.0
					↑ BOTTOM OF BORING
	15				
					- ALL SAMPLES SCREENED WITH PID METER
					- SAMPLES #2, 3B AND 4A SAVED FOR ENVIRONMENTAL TESTING
	20				- ALL REMAINING SAMPLES DISCARDED

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P+G	NAME OF CONTRACTOR Craig Drilling	BORING NO. A-1	SURFACE ELEV.
LOCATION N Bld 1-A Block 1400		CONTRACT NO. 426-99-006	DATE 12/2 AND 12/4/00

SPOON 3 " O.D. 2 7/8 " I.D.
CASING SIZE auger
HOLE TYPE 1
HAMMER 140 # FALL SAFTY 30 "
HAMMER # FALL "
DRILLER JAY
INSPECTOR Charlie Springer

GROUND WATER LEVEL

Date	Time	Depth	Remarks
12/4/00	7:45	8.0	DURING SPLIT-SPOONING

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3] SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE
NA		NA	Fd	1	Gravel w/ Sand SILT matrix
					2.5
				2*	~~Gravel w/Cinders Sand SILT matrix Black~~ 3.5
					~~diatomaceous Earth white~~ 4.5
	5			3	Cinders + Gravel Black
ER		7 8	15"	4	SAME
		12 9			
		9 7	13"	5	SAME
	10	3 3			
		7 6	20"	6	SAME, WITH 4" LAYER DIATOMACEOUS EARTH TOP OF SPOON
		5 3			
		3 1	3"	7	SAME
		2 3			14'
	15	2 1	14"	8	BROWN PEAT
		2 2			16.0
					BOTTOM OF BORING
	20				- ALL SAMPLES SCREENED WITH PID METER
					- SAMPLE #2 SAVED FOR ENVIRONMENTAL TESTING
					- ALL REMAINING SAMPLES DISCARDED

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory, P+G site

NAME OF CONTRACTOR Craig Drilling

BORING NO. A-2

SURFACE ELEV.

LOCATION SW of Building 16 (approx. 60 feet)

CONTRACT NO. 42C.99.006

DATE 11/29/2000

SPOON 3 "O.D. 2 3/8 "I.D.

CASING SIZE

HOLE TYPE

HAMMER 140 # FALL Safty 30 "

HAMMER 140 # FALL "

DRILLER David cooks

INSPECTOR M. Patel

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/29/00	0815	4.0'	

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. [2] NO.	[3] SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE
Hand Auger		Hand Auger	full	1	Fill. Black and Brownish yellow cmf SAND
					trace Silt, trace mf Gravel, Rock, cinder, etc 2.0'
				2	White Diatomacaceous earth material
	5			3	White & Gray same
H[illegible]ger		W O	24"	4	White Diatamacaous earth material
		H			
		1 0	24"	5	SAME
	10	1 0			
		1 0	20"	6	SAME
		1,1			
		1, 1	16"	7	SAME
		2, 2			
	15	9, 15	18"	8	SAME 15.0'
		20, 15			Black cmf GRAVEL, trace cmf SAND Rock, cinder
		5, 6	10"	9	SAME
		10, 5			
		1, 1	18"	10	SAME
		1, 1			Brown Organic SILT & decomposed wood (PEAT)
	20				Bottom of Hole at 20.0'
					All soil samples checked for PID meter
					Sample # 1 & 2 saved for Environmental testing
					Remaining samples are discarded.

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P & G	NAME OF CONTRACTOR Craig drilling	BORING NO. A-3	SURFACE ELEV.
LOCATION As laid out in the field		CONTRACT NO. 426-99-006	DATE 11-16-00

SPOON 3 "O.D. 2 3/8 "I.D. | CASING SIZE Augers | HOLE TYPE 1

HAMMER Safety 140 # FALL 30 " | HAMMER # FALL "

DRILLER G. Mc Aneny

INSPECTOR J. ZARKS

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-16-00	2:05 PM	2.0'	SAMPLE #2

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. [2] NO.	[3] SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE	
						0.0'
Handauger	0	Cutter Head	Full Re		concrete	0.6
				1	Fill grey c-f SAND and Gravel, tr. SILT	2.4'
				2*	SAME Fill greyish-green Silt, tr. m-f SAND	4.0
	5					
				3	Fill greyish-black Silt & ClAY	
W M AUGERS		6-6 8-10	24"	4*	Fill black - SILT & ClAY	8.0'
	10	7-8 9-15	24	5	Fill grey c-f SAND, greenish-White Diatomaceous.	
		4-5 6-6	24"	6*	Fill white & grey c-f SAND, Gravel, Diatomaceous	12.0
		2-2 3-4	20"	7	Fill black Silty Clay, some chunks.	
	15	1-2 1-2	24"	8	Fill black Clay SILT	
		2-2 2-2	24"	9	SAME	19.0'
		1-2 2-2	24"	10	Brown PEAT	
	20					
					Note: 3 samples saved for Testing All other samples screened with PID meter & discarded Bottom of Boring	

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT: Port Ivory P & G
NAME OF CONTRACTOR: Craig drilling
BORING NO.: A-4
SURFACE ELEV.:
LOCATION: As laid out in the field
CONTRACT NO.: 426-99-006
DATE: 11-16-00
SPOON: 3 " O.D. 2 3/8 " I.D.
CASING SIZE: Augers
HOLE TYPE: 1
HAMMER: Safety 140 # FALL 30 "
HAMMER: # FALL "
DRILLER: G. Mc Aneny
INSPECTOR: J. Zarks

GROUND WATER LEVEL			
Date	Time	Depth	Remarks
11-16-00	11:24 AM	3.0'	SAMPLE #2

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE 0.0
Cutter Head	0	Cutter Head	Full Rec		DGABC 0.5
					CONCRETE 1.1
				1	Misc Fill greyish-black c-f SAND & Gravel, tr Silt, Coal, Cinders, Brick, wood etc
HANDAUGER		HANDAUGER			
				2	SAME
	5				
				3	SAME
[illegible]w		4-4		*	
STEM Augers		3-3	18"	4	SAME
		4-3			
	10	3-3	14"	5	SAME
		4-3			
		3-4	20"	6	SAME
		4-6			
		6-4	20"	7*	SAME
	15	2-2			SAME 14.8
		2-2	18"	8	Brown PEAT 16.0

Note: Samples #4 & #7 saved for testing
All other samples screened with PID meter
& discarded

Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P & G	NAME OF CONTRACTOR Craig drilling	BORING NO. A-5	SURFACE ELEV.
LOCATION As laid out in the field.		CONTRACT NO. 426-99-006	DATE 11-14-00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER 140 # FALL 30 "
HAMMER # FALL "
DRILLER D. Osuch
INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-15-00	7:46	8.0'	Sample #5

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-[1] COV'D	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS LINE LOCATES CHANGE OF PROFILE	
Handauger	0	Handauger	Full		Fill DGABC	0.0' 0.5'
					Fill dark brown c-f SAND, Gravel, tr SilT, cinders	
				1	SAME	
				*		
				2	Fill greyish-black c-f SAND, Gravel, tr. Silt, cinders, coal	
	5					
				3	SAME	
[illegible]		5-8				
AUGERS		12-17	12"	4	Misc Fill greyish black c-f SAND, Gravel, tr. Silt, cinders, wood, coa	
		7-8				
	10	7-9	20"	5	SAME	
		12-6				
		6-7	24"	6	SAME	
		10-11				
		11-14	12"	7	SAME	
	15	4-3			SAME	14.8'
		3-4	24"	8	Brown PEAT, little Silty ClAY	16.0'
	20					

Note: sample #2 saved for testing.
All samples were screened with PID meter and discarded

Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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BORING REPORT

SHEET 1 OF 3

PROJECT: Port Ivory P&G Site
NAME OF CONTRACTOR: Craig Drilling
BORING NO.: A-6
SURFACE ELEV.:
LOCATION: East of Bldg 1A Block 1400 Lot 1
CONTRACT NO.: 426-99-006
DATE: 11/10/00 - 11/11
SPOON: 3 " O.D. 2 3/8 " I.D.
CASING SIZE:
HOLE TYPE: 1
HAMMER: 140 # FALL 30 "
HAMMER: # FALL "
DRILLER: S Burns
INSPECTOR: D Howe / J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/10/00	4^{15} P	6.0	while Hand Augering
11/11/00	1:05 PM	6.5'	Sample # 4

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3] SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE
Hand	0	Hand Augr	Full		Crushed Stone, Little Misc Fil 0.1ppm
Auger				1	
					Misc Fill Cinders Gravel Sand Brick, ETC
				2	
	5				Same
				3	Same
[illegible]w		4 - 3			
STEM		3 - 6	20"	4	SAME
Augers		4 - 5			
	10	6 - 6	20"	5	SAME
		6 - 8			
		6 - 11	24"	6	SAME
		18 - 18			
		12 - 3	18"	7	Misc Fill Cinders, black c-f SAND, Gravel etc 14.0
	15	W. 0			
		H. 1	24"	8	Brown PEAT, some grey Silty ClAY 16.0'
					Bottom of Boring
	20				
					All Samples Checked with PID Meter
					S# 1&2 Saved for Testing
					Sample #8 saved (On hold) for testing
	25				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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MATERIALS ENGINEERING DIVISION

[redacted] WELL MONITORING DATA SHEET

PROJECT: HH - PORT IVORY P&G SITE	**JOB NO:** 501-233-295
WELL DESIGNATION: TW2	**DATE:** 12-2-00
CHECK BOX FOR LOWFLOW: ☐ RATE(ML):	**CASING DIAMETER:** 2 Inch
WEATHER CONDITIONS: SUNNY 28°F	STICK-UP DISTANCE: 2.0
STATIC WATER LEVEL	GPS COORD'S : LONG.: LAT.:

		DISTANCE FROM TOP OF PIPE TO:	
	TIME	**WATER (FEET)**	**PRODUCT (FEET)**
PRE-PURGE:	11:15AM	6.77	—
POST PURGE:	12:20PM	6.85	—

	DEPTH OF WELL	11.05	FEET
	DEPTH TO WATER	6.77	FEET
	DEPTH OF WATER COLUMN	4.28	FEET
WELL PURGE	FACTOR *	X 0.618	
	VOLUME TO BE REMOVED	2.65	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY ~~(umohs/cm)~~ µS	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
11:21AM	7.18	16.2°	2950	1.5	E2	—
11:30AM	7.28	16.2°	3167	1.7	1,006	—
11:40	7.10	17.1	3138	1.7	736 *	—

SAMPLED BY:

COMMENTS: Sheen visible in purged volumes

* METALS SAMPLED WITH FILTER

Well sampled at 12:00PM

* FACTOR = 0.618 FOR 2INCH DIAMETER WELL CASING

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MATERIALS ENGINEERING DIVISION

[redacted] WELL MONITORING DATA SHEET

PROJECT: HH - PORT IVORY P&G SITE	**JOB NO:** S01-233-295
WELL DESIGNATION: MW PZ-1	**DATE:** 11-24-00
CHECK BOX FOR LOWFLOW: ☐ RATE(ML):	**CASING DIAMETER:** 2 Inch
WEATHER CONDITIONS: SUNNY 34°F	STICK-UP DISTANCE: 2.4
STATIC WATER LEVEL GPS COORD'S : LONG:	LAT.:

		DISTANCE FROM TOP OF PIPE TO:	
	TIME	**WATER (FEET)**	**PRODUCT (FEET)**
PRE-PURGE:	2:10PM	4.63	—
POST PURGE:	2:49PM	4.98	—

	DEPTH OF WELL	14.13	FEET
	DEPTH TO WATER	4.63	FEET
	DEPTH OF WATER COLUMN	9.5	FEET
WELL PURGE	FACTOR *	X 0.618	
	VOLUME TO BE REMOVED	5.871	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY (umohs/cm)	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
[illegible]:15Pm	7.32	13.6°	1245	0.6	95	—
2:21Pm	7.20	14.4°	1239	0.6	110	—
2:35Pm	7.02	15.6°	1260	0.6	110 *	—

SAMPLED BY: RG. / E.M.

COMMENTS: Well sampled at 2:45PM

* METALS Filtered

* FACTOR = 0.618 FOR 2INCH DIAMETER WELL CASING

* FA

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MATERIALS ENGINEERING DIVISION

[redacted] WELL MONITORING DATA SHEET

PROJECT: HH - PORT IVORY P&G SITE	**JOB NO:** 501-233-295
WELL DESIGNATION: PAMW-15	**DATE:** 11/20/00
CHECK BOX FOR LOWFLOW: ☐ RATE (ML):	**CASING DIAMETER:** 2 Inch
WEATHER CONDITIONS: Good	STICK-UP DISTANCE: 3.20'
STATIC WATER LEVEL	GPS COORD'S: LONG.: LAT.:

		DISTANCE FROM TOP OF PIPE TO:	
	TIME	**WATER (FEET)**	**PRODUCT (FEET)**
PRE-PURGE:	10:07	9.59	—
POST PURGE:			

	DEPTH OF WELL	16.00	FEET
	DEPTH TO WATER	9.59	FEET
	DEPTH OF WATER COLUMN	6.41	FEET
	FACTOR *	X 0.618	
WELL PURGE	VOLUME TO BE REMOVED	3.46	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY (umohs/cm)	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
10:44	6.48	16.0	379	0.2	05	—
11:00	6.48	15.3	364	0.2	05	—
11:10	6.46	16.4	372	0.2	650	—
11:45	6.56	16.0	391	0.2	220	—
12:15	6.59	16.1	395	0.2	205	—

05 → off scale

SAMPLED BY: AZ & E.M.

COMMENTS: Well goes dry after each volume. Very muddy if bailer or fast Groundfos setting is used
Low flow was used to ~~[illegible]~~ lower turbidity and
collect sample. Sampling commenced @ 12:16 →
Used 0.45 micron for metals

* FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING

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MATERIALS ENGINEERING DIVISION

[redacted] WELL MONITORING DATA SHEET

PROJECT: HH - PORT IVORY P&G SITE	JOB NO: 501-233-295
WELL DESIGNATION: PAMW-15D	DATE: 11/20/00
CHECK BOX FOR LOWFLOW: ☐ RATE(ML):	CASING DIAMETER: 2" Inch
WEATHER CONDITIONS:	STICK-UP DISTANCE:
STATIC WATER LEVEL GPS COORD'S: LONG.:	LAT.:

	TIME	DISTANCE FROM TOP OF PIPE TO: WATER (FEET)	PRODUCT (FEET)
PRE-PURGE:	10:08	9.99	–
POST PURGE:			

WELL PURGE

DEPTH OF WELL	52.49	FEET
DEPTH TO WATER	9.99	FEET
DEPTH OF WATER COLUMN	42.50	FEET
FACTOR *	X 0.618	
VOLUME TO BE REMOVED	26.27	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY (umohs/cm)	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
12:23	6.83	15.7	2132	1.1	0.5	–
13:05	~~14.76~~ 6.90	14.7	2162	1.1	0.5	–
13:48	6.87	15.4	2257	1.2	0.5	–
14:15	6.99	15.6	2264	1.2	0.5	–
14:20	6.99	15.7	2284	1.2	0.5	–
14:35	7.00	15.5	2290	1.2	0.5	–

SAMPLED BY: AZ & EM

COMMENTS: Very muddy Filtered Metals

* FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING

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MATERIALS ENGINEERING DIVISION

[redacted] WELL MONITORING DATA SHEET

PROJECT: HH - Port Ivory P&G Site	**JOB NO:** 501-233-295
WELL DESIGNATION: PA MW-15D (Repeat)	**DATE:** 11/30/00
CHECK BOX FOR LOWFLOW: ☐ RATE (ML):	**CASING DIAMETER:** 2" Inch
WEATHER CONDITIONS:	STICK-UP DISTANCE:
STATIC WATER LEVEL	GPS COORD'S : LONG.: LAT.:

	TIME	**DISTANCE FROM TOP OF PIPE TO:** **WATER (FEET)**	**PRODUCT (FEET)**
PRE-PURGE:	8:16	13.23	–
POST PURGE:	9:56	15.53	–

	DEPTH OF WELL	52.49	FEET
	DEPTH TO WATER	13.23	FEET
	DEPTH OF WATER COLUMN	39.26	FEET
	FACTOR *	X 0.618	
WELL PURGE	VOLUME TO BE REMOVED	24.26	

TIME	**pH (SU)**	**TEMP (C)**	**CONDUCTIVITY (umohs/cm)**	**SALINITY (0/00)**	**TURBIDITY**	**DISS. O2 (mg/l)**
8:45	7.53	14.2	2274	1.2	O.R.	–
9:18	7.43	16.4	2337	1.2	O.R.	–
9:33	7.40	18.0	2332	1.2	O.R.	–

O.R - over range

SAMPLED BY: AZ 4 EM

COMMENTS: Very muddy - slow recovery, well goes almost dry between volumes

Filtered metals

* FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING

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MATERIALS ENGINEERING DIVISION

[redacted] WELL MONITORING DATA SHEET

PROJECT: HH - PORT IVORY P&G SITE	JOB NO: 501-233-295
WELL DESIGNATION: PAMW-10D	DATE: 11/30/00
CHECK BOX FOR LOWFLOW: ☐ RATE(ML):	CASING DIAMETER: 2" Inch
WEATHER CONDITIONS:	STICK-UP DISTANCE:

STATIC WATER LEVEL GPS COORD'S : LONG: LAT.:

		DISTANCE FROM TOP OF PIPE TO:	
	TIME	WATER (FEET)	PRODUCT (FEET)
PRE-PURGE:	14:36	7-18	-
POST PURGE:	15:30	7-68	-

WELL PURGE

DEPTH OF WELL		33-58	FEET
DEPTH TO WATER		7-18	FEET
DEPTH OF WATER COLUMN		26·40	FEET
FACTOR *	X	0·618	
VOLUME TO BE REMOVED		16·32	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY (umohs/cm)	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
14:46	6-76	14-8	2742	1·4	32	-
14:56	6-74	15·6	2686	1-4	40	-
15:07	6-76	15-8	2729	1-4	35	-

SAMPLED BY: AZ & E.M

COMMENTS: Good recovery

* FACTOR = 0.618 FOR 2INCH DIAMETER WELL CASING

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[redacted] WELL MONITORING DATA SHEET

PROJECT: HH - PORT IVORY P&G SITE	JOB NO: 501-233-295
WELL DESIGNATION: PAMW7	DATE: 11/27/00
CHECK BOX FOR LOWFLOW: ☐ RATE (ML):	CASING DIAMETER: Inch
WEATHER CONDITIONS:	STICK-UP DISTANCE:
STATIC WATER LEVEL GPS COORD'S: LONG:	LAT.:

		DISTANCE FROM TOP OF PIPE TO:	
	TIME	WATER (FEET)	PRODUCT (FEET)
PRE-PURGE:	8:10	6.63	
POST PURGE:	10:25	7.08	

	DEPTH OF WELL	13.10	FEET
	DEPTH TO WATER	6.63	FEET
	DEPTH OF WATER COLUMN	6.47	FEET
	FACTOR * 2"	X 0.618	
WELL PURGE	VOLUME TO BE REMOVED	3.99	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY (~~umohs/cm~~) mS	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
:25 *	7.06	14.9			700	1.06
10:50	7.40	15.6	1.00	0.5	270	
10:55	7.41	15.6	0.96	0.5	120	
11:00	7.42	15.8	0.98	0.5	210	

SAMPLED BY:

COMMENTS: Sample for metals filtered, high turbidity.
* Well pumped continuously till next reading

* FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING

THE PORT AUTHORITY OF N.Y. & N.J.

MATERIALS ENGINEERING DIVISION

[redacted] WELL MONITORING DATA SHEET

PROJECT: HH - PORT IVORY P&G SITE	**JOB NO:** 501-233-295
WELL DESIGNATION: PAMW-7D	**DATE:** 11/30/00
CHECK BOX FOR LOWFLOW: ☐ RATE(ML):	**CASING DIAMETER:** 2" Inch
WEATHER CONDITIONS:	STICK-UP DISTANCE:
STATIC WATER LEVEL GPS COORD'S: LONG.:	LAT.:

		DISTANCE FROM TOP OF PIPE TO:	
	TIME	**WATER (FEET)**	**PRODUCT (FEET)**
PRE-PURGE:	10:08	11.01	—
POST PURGE:	11:25	16.37	—

	DEPTH OF WELL	46.40	**FEET**
	DEPTH TO WATER	11.01	**FEET**
	DEPTH OF WATER COLUMN	35.39	**FEET**
WELL PURGE	FACTOR *	X 0.618	
	VOLUME TO BE REMOVED	21.87	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY (umohs/cm)	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
10:22	7.78	15.2	3554	1.9	110	—
10:35	7.32	16.8	4486	2.4	950	—
11:00	7.32	17.0	3094	1.6	O.R.	—
11:16	7.31	16.9	3123	1.6	O.R.	—

SAMPLED BY: A Z & E.M.

COMMENTS: Very slow recovery - It runs almost dry
Red muddy water
Filtered metals

* FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING

THE PORT AUTHORITY OF N.Y. & N.J.

MATERIALS ENGINEERING DIVISION

[redacted] WELL MONITORING DATA SHEET

PROJECT: HH - PORT IVORY P&G SITE
JOB NO: 501-233-295
WELL DESIGNATION: MW- GW-7
DATE: 11/24/00
CHECK BOX FOR LOWFLOW: ☐ RATE(ML):
CASING DIAMETER: 2" Inch
WEATHER CONDITIONS:
STICK-UP DISTANCE:
STATIC WATER LEVEL
GPS COORD'S : LONG.: LAT.:

	TIME	DISTANCE FROM TOP OF PIPE TO: WATER (FEET)	PRODUCT (FEET)
PRE-PURGE:	11:14	8.82	–
POST PURGE:	12:36	9.26	–

	DEPTH OF WELL	14.98	FEET
	DEPTH TO WATER	8.82	FEET
	DEPTH OF WATER COLUMN	6.16	FEET
WELL PURGE	FACTOR *	X 0.618	
	VOLUME TO BE REMOVED	3.81	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY (umohs/cm)	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
11:36	6.87	~~[illegible]~~ 14.7	707	0.4	60	–
11:39	6.60	16.6	702	0.3	14	–
11:45	6.61	16.7	704	0.3	5.1	–
11:50	6.60	16.7	705	0.3	5.2	–

SAMPLED BY: A2 & DP

COMMENTS:

* FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING

THE PORT AUTHORITY OF N.Y. & N.J.

MATERIALS ENGINEERING DIVISION

WELL MONITORING DATA SHEET

PROJECT: HH - PORT IVORY P&G SITE
JOB NO: 501-233-295
WELL DESIGNATION: GW-10
DATE: 11-24-00
CHECK BOX FOR LOWFLOW: ☐ RATE(ML):
CASING DIAMETER: 2 Inch
WEATHER CONDITIONS: SUNNY, 34°F
STICK-UP DISTANCE: 0.0
STATIC WATER LEVEL
GPS COORD'S: LONG:
LAT:

		DISTANCE FROM TOP OF PIPE TO:	
	TIME	WATER (FEET)	PRODUCT (FEET)
PRE-PURGE:	3:26PM	6.98	—
POST PURGE:	4:19PM	7.81	

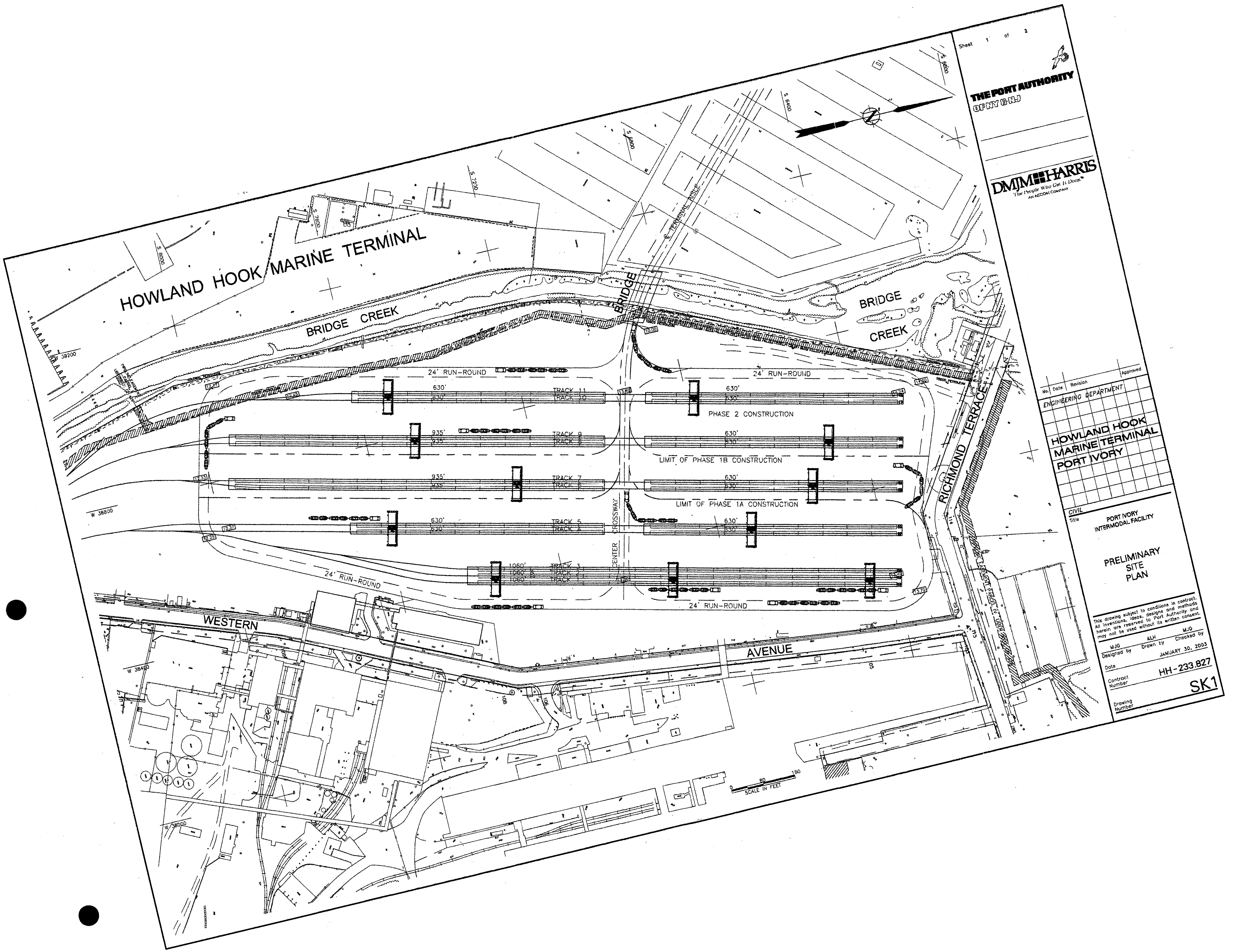
	DEPTH OF WELL	13.42	FEET
	DEPTH TO WATER	6.98	FEET
	DEPTH OF WATER COLUMN	6.44	FEET
WELL PURGE	FACTOR *	X 0.618	
	VOLUME TO BE REMOVED	3.98	

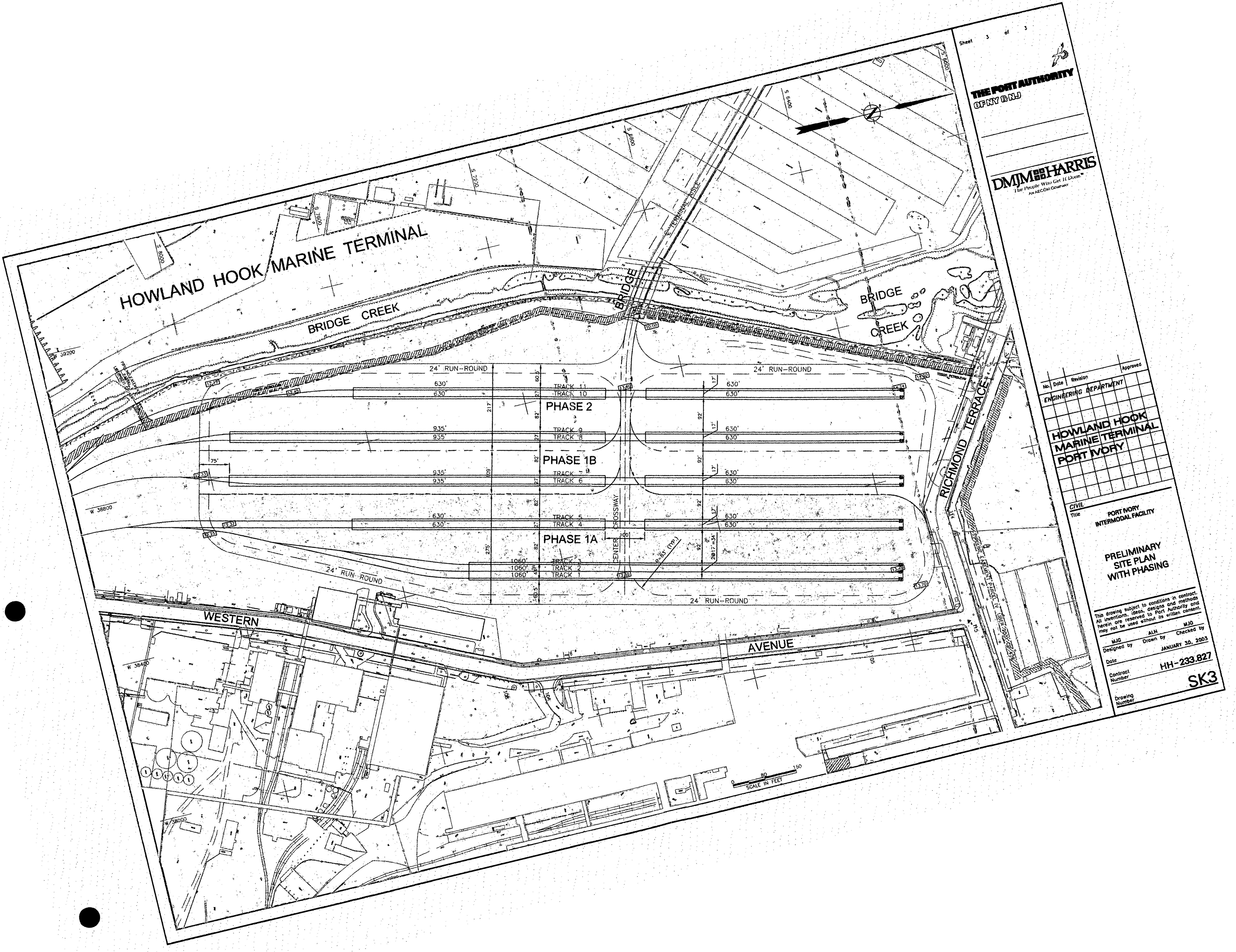
TIME	pH (SU)	TEMP (C)	CONDUCTIVITY (umohs/cm) (uS)	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
3:30PM	8.13	15.2°	2620	1.4	50	-
3:42PM	8.07	15.1°	2523	1.3	30	-
3:50PM	7.69	15.2°	2718	1.4	25	-
3:59PM	7.72	15.3°	2712	1.4	23	—

SAMPLED BY: RG/EM.

COMMENTS: well sampled @4:17PM

* FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING


HOWLAND HOOK MARINE TERMINAL
BRIDGE CREEK
BRIDGE
BRIDGE CREEK
24' RUN-ROUND
TRACK 11
TRACK 10
630'
PHASE 2 CONSTRUCTION
TRACK 9
TRACK 8
935'
LIMIT OF PHASE 1B CONSTRUCTION
TRACK 7
TRACK 6
LIMIT OF PHASE 1A CONSTRUCTION
TRACK 5
TRACK 4
TRACK 3
TRACK 2
TRACK 1
1060'
CENTER CROSSWAY
RICHMOND TERRACE
WESTERN AVENUE
SCALE IN FEET
0
80
160
Sheet 1 of 2
THE PORT AUTHORITY OF NY & NJ
DMJM HARRIS
"The People Who Get It Done."
AN AECOM COMPANY
No.
Date
Revision
Approved
ENGINEERING DEPARTMENT
HOWLAND HOOK
MARINE TERMINAL
PORT IVORY
CIVIL
Title
PORT IVORY
INTERMODAL FACILITY
PRELIMINARY
SITE
PLAN
This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without its written consent.
MJG
Designed by
ALH
Drawn by
MJG
Checked by
Date
JANUARY 30, 2003
Contract Number
HH-233.827
Drawing Number
SK1



Sheet 3 of 3

THE PORT AUTHORITY OF NY & NJ

DMJM HARRIS
The People Who Get It Done.™
AN AECOM COMPANY

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

HOWLAND HOOK
MARINE TERMINAL
PORT IVORY

CIVIL

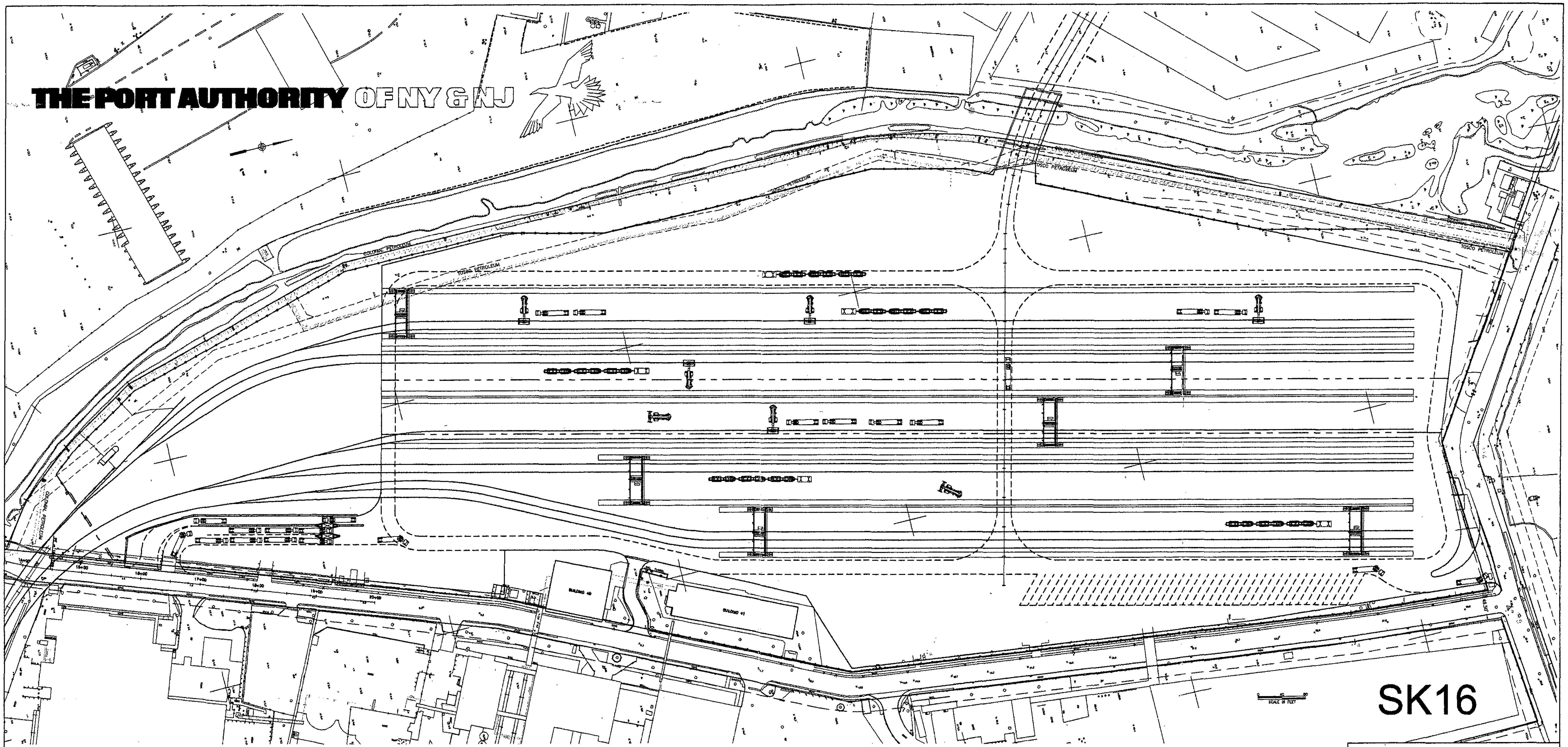
Title PORT IVORY
INTERMODAL FACILITY

PRELIMINARY
SITE PLAN
WITH PHASING

This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without its written consent.

Designed by MJG
Drawn by ALH
Checked by MJG
Date JANUARY 30, 2003
Contract Number HH-233.827
Drawing Number SK3

THE PORT AUTHORITY OF NY & NJ



SK16

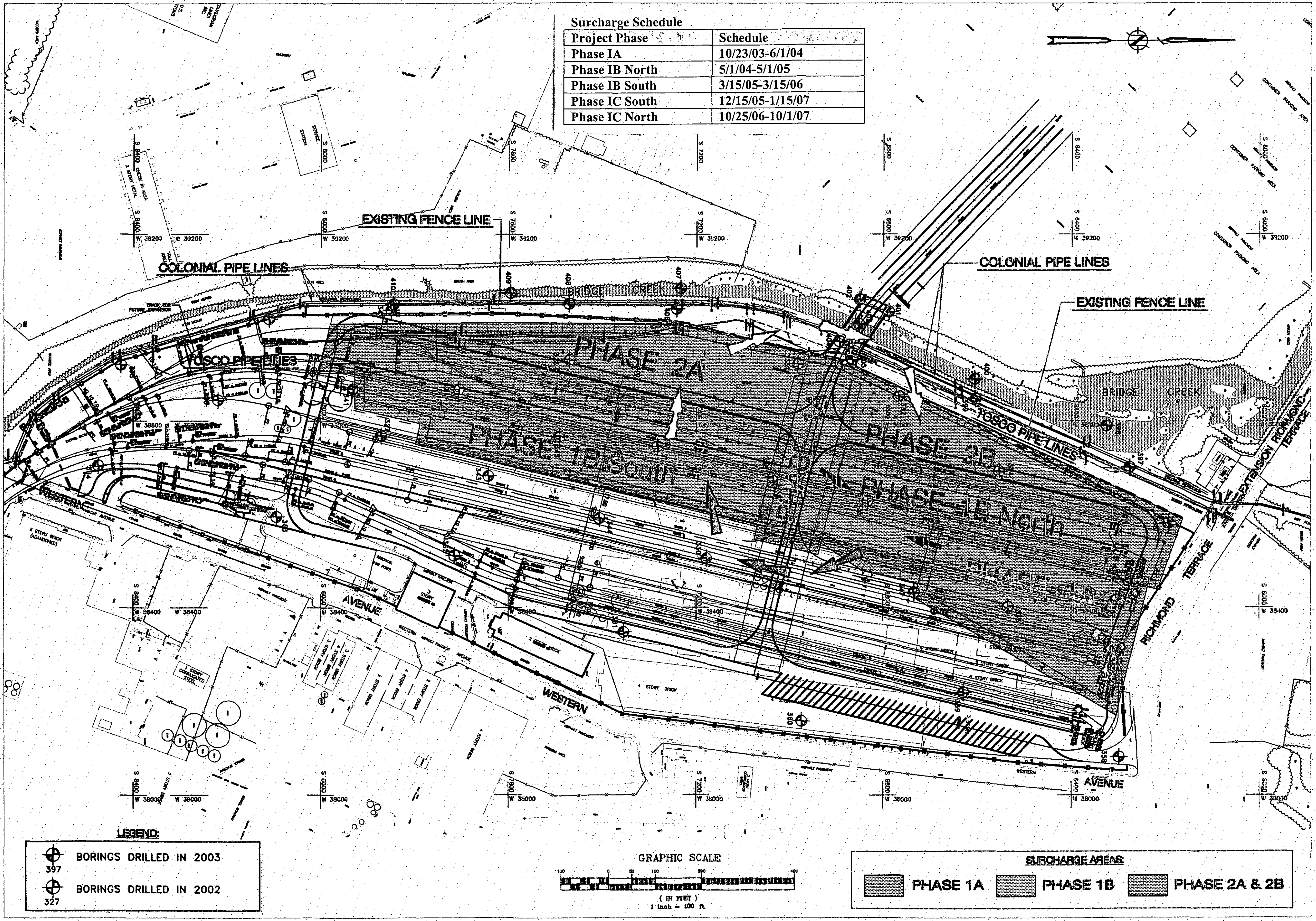
REVISED LAYOUT – OCTOBER 13, 2003

PORT IVORY INTERMODAL FACILITY

DMJM+HARRIS
AN AECOM COMPANY

Surcharge Schedule

Project Phase	Schedule
Phase IA	10/23/03-6/1/04
Phase IB North	5/1/04-5/1/05
Phase IB South	3/15/05-3/15/06
Phase IC South	12/15/05-1/15/07
Phase IC North	10/25/06-10/1/07



LEGEND:

⊕ 397	BORINGS DRILLED IN 2003
⊕ 327	BORINGS DRILLED IN 2002

SURCHARGE AREAS:

▨ PHASE 1A ▨ PHASE 1B ▨ PHASE 2A & 2B

Sheet 1 of

THE PORT AUTHORITY
OF NY & NJ

CHIEF GEOTECHNICAL ENGINEER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

HOWLAND HOOK MARINE TERMINAL

GEOTECHNICAL

Title
PORT IVORY

SEQUENCING OF SURCHARGE AREAS

S. SHETH	G. LAUTENSCHLAGER	S. SHETH
Designed by	Drawn by	Checked by

Date SEPTEMBER 29, 2003

Contract Number

Drawing Number SK1

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THE PORT AUTHORITY OF NY & NJ

Engineering Department
Construction Division
Materials Engineering Section

BORING REPORT

SHEET 1 OF 3

PROJECT HMMT - Port Ivory Surcharge Test	NAME OF CONTRACTOR Craig Drilling	BORING NO. PG-ST-1S	SURFACE ELEV.
LOCATION As Laid out in field as per Drawing North Side		CONTRACT NO. 426-99-006	DATE 10/23/02

SPOON 2 "O.D. 1 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 'A' Monitor
HAMMER Auto 140 # FALL 30 "
HAMMER # FALL "
DRILLER D Cooke
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
10/21/02	12 45 P	3.7	While Hand Augering

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-[1] COV'D	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE 0.0
Hand	0	Hand Auger	Fill	1	
Auger					Fill - RCA - Recycled Concrete Agg
				2 A	Same 3.0
				B	Fill - Crushed Stone
	5			3	
					Same 6.0
Hollow		1 - WOH		4	
Stem		WOH	19"		Fill White & Gray Limestone Slurry
Augers		W O		5	
	10	H	23"		Same
		W O		6	
		H	24"		Same
		W O		7	
		H	24"		Same
	15	W O		8	
		H	24"		Same
		W O		9	
		H	20"		Same
		W O		10 A	Fill - Green Limestone Slurry 19.0
	20	H	16"	B	Black Peat 20.0
					Bottom of Boring
					All Samples checked with PID Meter
	25				No Samples Saved, All Discarded

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

PORT AUTHORITY OF NY & NJ

Engineering Department - Materials Division

Well Installation Report

Sheet 2 of 3

PROJECT HHMT-Port Ivory Surcharge Test				CONTRACT NO. 426-99-006
LOCATION As Laid out in field as per Drawing North Side				CONTRACTOR Craig Drilling
WELL NO. PG-ST-15	WELL TYPE 'B' Monitor	INSPECTOR D Hoax	DRILLER D Cooke	DATE 10/24/02

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

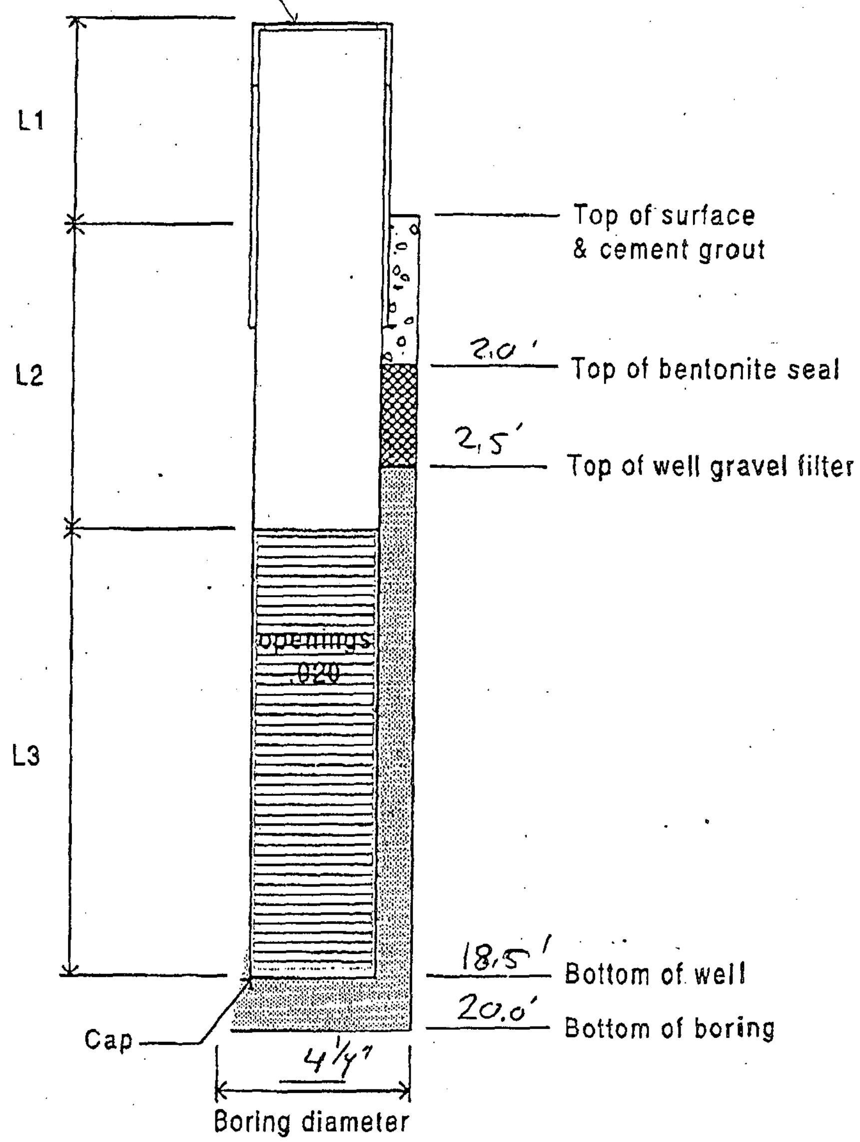
DATE 10/28/02	WATER LEVEL BEFORE 60	WATER LEVEL AFTER 6.0	TAKEN 20 MINUTES AFTER

2" " dia. PVC pipe w/steel locking cap

L1 = 30

L2 = 3.0'

L3 = 15.5'



REMARKS:
Hole Backfilled 18.5-20.0' with Bentonite

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ENGINEERING DEPARTMENT

MATERIALS ENGINEERING DIVISION

PID READINGS

Sheet 3 of 3

PROJECT: HH MT- Port Ivory Surcharge Test

BORING No. PG ST 1S

DATE: 10/23/02

FIELD READINGS BY: DHowe

PID Model: Mini RAE

TIME	SAMPLE No.	IN-SITU Split Spoon Reading	HEAD-Space Reading	BREATHING Zone Reading	REMARKS
AM	1		0.0		
	2A		0.0		
↓	2B		0.0		
PM	3		0.0		
	4		0.0		
	5		0.0		
	6		0.0		
	7		0.0		
	8		0.0		
	9		0.0		
	10A		0.0		
↓	10B		0.3		Post

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THE PORT AUTHORITY OF NY & NJ

Engineering Department
Construction Division
Materials Engineering Section

BORING REPORT

SHEET 1 OF

PROJECT HHMT- Port Ivory Surcharge Test	NAME OF CONTRACTOR Craig Drilling	BORING NO. PG-ST-1D	SURFACE ELEV.
LOCATION As Laid out in field as per Drawings North Side		CONTRACT NO. 426-99-006	DATE 10/24/02

SPOON 2 "O.D. 1 3/8 "I.D.
CASING SIZE HW
HOLE TYPE 'B' Monitor
HAMMER 140 # FALL 30 "
HAMMER # FALL "
DRILLER D Cooke
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
10/24	10^{35}	5.0	While Hand Augering

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3] SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE	
Hand	0	Hand Auger	Full			0.0
Auger				1	Fill- RCA Recycled Concrete Agg	
				2	Same	4.0
	5			3	Fill- Crushed, Stone, Silt, Sand, ETC	
	6					
HW						
Casing					For Strata 6-20' See Log for PG-ST-1S	
	20	1-0		4		
		1-1	8"		Black & Brown Peat	
		WOH-1		5		
		2-2	23"		Same	
	25	WOH-1		6		
		2-2	11"		Same	26.0
		3-3		7		
		4-5	12"		F Grey Sand, Tr Silt	
	30	3-5		8		
		6-7	10"		Same	
	35					

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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Engineering Department
Construction Division
Materials Engineering Section

BORING REPORT

SHEET 2 OF 4

PROJECT: HMMT- Port Ivory Surcharge Test
NAME OF CONTRACTOR: Craig Drilling
BORING NO.: PG-ST- 1D
SURFACE ELEV.:
LOCATION: As Laid out in field as per Drawing North Side
CONTRACT NO.: 426-99-006
DATE: 10/24/02
SPOON: 2 "O.D. 1 3/8 "I.D.
CASING SIZE: HW
HOLE TYPE: "B" Moutor
HAMMER: Auto 140 # FALL 30 "
HAMMER: # FALL "
DRILLER: D Cooke
INSPECTOR: D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE
HW	35	4-4		9	35.0
Casing		5-5	10"		M-F Brown Sand, Tr Silt 37.0
					Bottom of Boring
	40				All Samples checked with PID Meter No Sample Saved, All Discarded
	45				
	50				
	55				
	60				

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

PORT AUTHORITY OF NY & NJ

Engineering Department - Materials Division

Well Installation Report

Sheet 2 of 4

PROJECT HHMT- Port Ivory Surcharge Test				CONTRACT NO. 426-99-006
LOCATION As Laid out in field as per Drawing				CONTRACTOR Craig Drilling
WELL NO. PG ST-10	WELL TYPE 'B' Monitor	INSPECTOR D Howe	DRILLER D Howe	DATE 10/24/02

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

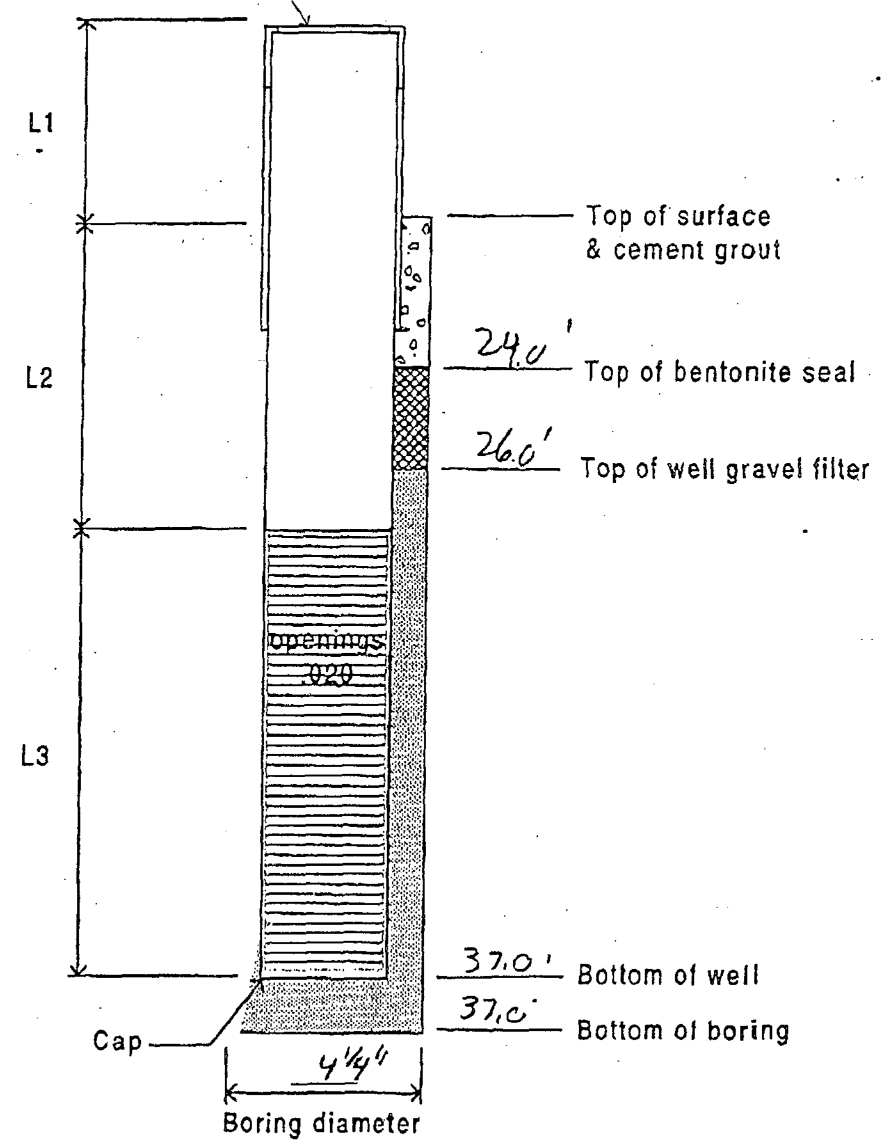
DATE 10/28/02	WATER LEVEL BEFORE 15.1	WATER LEVEL AFTER 15.1	TAKEN 10 MINUTES AFTER

2" dia. PVC pipe w/steel locking cap

L1 = 3.0'

L2 = 27.0'

L3 = 10.0'



REMARKS:

THE PORT AUTHORITY OF N.Y & N.J.

ENGINEERING DEPARTMENT

MATERIALS ENGINEERING DIVISION

PID READINGS

Sheet 4 of 4

PROJECT: HMMT - Port Ivory Surcharge Test

BORING No. PG - ST - 10 **DATE:** 10/24/02

FIELD READINGS BY: D How **PID Model:** Mini RAE

TIME	SAMPLE No.	IN-SITU Split Spoon Reading	HEAD-Space Reading	BREATHING Zone Reading	REMARKS
AM	1		0.0		
	2		00		
	3		00		
	4		0.0		
	5		0.0		
PM	6		0.0		
	7		0.0		
	8		0.0		
	9		0.0		

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THE PORT AUTHORITY OF NY & NJ

Engineering Department
Construction Division
Materials Engineering Section

BORING REPORT

SHEET 1 OF 3

PROJECT HMMT - Port Ivory Surcharge Test	NAME OF CONTRACTOR Craig Drilling	BORING NO. PG ST 25	SURFACE ELEV.
LOCATION As Laid out in field as per drawing West Side		CONTRACT NO. 426-99-006	DATE 10/25/02

SPOON 2 "O.D. 1 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 3" Diameter
HAMMER Auto 140 # FALL 30 "
HAMMER # FALL "
DRILLER D Cooke
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
10/25/02	8⁴⁵	3.0	While Hand Augering

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-[1] COV'D	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE	
	0					0.0
Hand		Hand Auger	Full	1 A	Fill - Cinders, Gravel, Crushed Stone, Concrete, ETC	1.0
Auger				B	Fill - White & Grey Limestone Slurry	
				2	Same	
	5			3	Same	
Hollow		W				
Stem		O H	24"	4	Same	
Augers		W O				
	10	H	24"	5	Same	
		2-2		6		
		1-1	22"		Same Tr. wood	
		1-0		7		
		1-1	23"		Same	
	15	4-2		8		
		1-2	5"		Same Tr. of wood	
		W O		9		
		H	12"		Same	18.0
		2-1		10		
	20	1-2	22"		Black & Brown Peat	20.0
					Bottom of Boring	
					All Samples Checked with 810 Meter	
					No Samples Saved, All Discarded	
	25					

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

PORT AUTHORITY OF NY & NJ

Engineering Department - Materials Division

Well Installation Report

Sheet 2 of 3

PROJECT HHMT - Port Ivory Surcharge Test				CONTRACT NO. 426-95-006
LOCATION As Laid out in field as per Drawing West Side				CONTRACTOR Craig Drilling
WELL NO. PG ST 25	WELL TYPE 'A' Monitor	INSPECTOR D Howe	DRILLER D Cooke	DATE 10/25/02

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

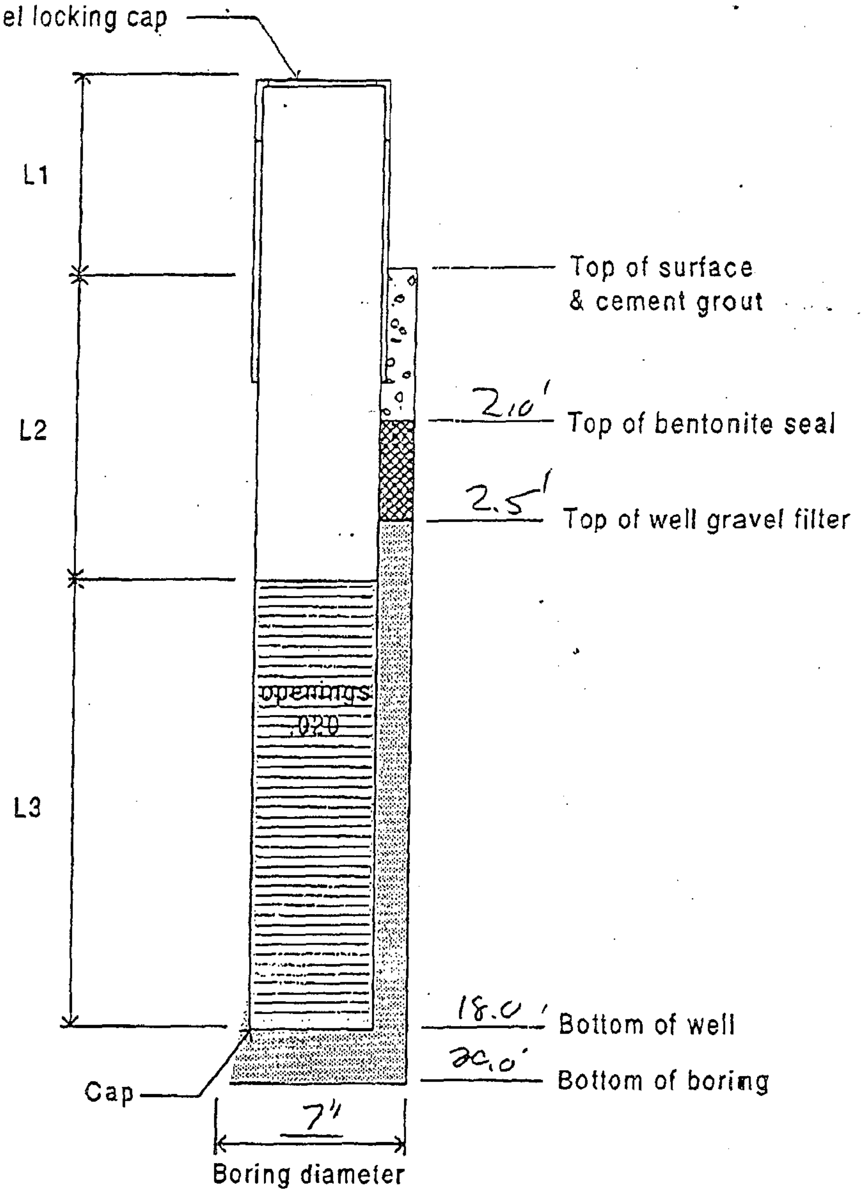
DATE 10/28/02	WATER LEVEL BEFORE 5.0'	WATER LEVEL AFTER 5.0'	TAKEN 15 MINUTES AFTER

2" " dia. PVC pipe w/steel locking cap

L1 = 3.0'

L2 = 3.0'

L3 = 15.0'



REMARKS:
Hole Back filled 18.0-20.0 with Bentonite

THE PORT AUTHORITY OF N.Y & N.J.

ENGINEERING DEPARTMENT

MATERIALS ENGINEERING DIVISION

PID READINGS

Sheet 3 of 3

PROJECT: HH MT · Port Ivory Surcharge Test

BORING No. PG ST 25 **DATE:** 10/25/02

FIELD READINGS BY: D Horn **PID Model:** Mini RAE

TIME	SAMPLE No.	IN-SITU Split Spoon Reading	HEAD-Space Reading	BREATHING Zone Reading	REMARKS
AM	1.A		0.0		
	1B		0.0		
	2		0.0		
	3		0.0		
	4		0.0		
	5		0.0		
	6		0.0		
	7		0.0		
	8		0.0		
	9		0.0		
↓	10		0.7		Post

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THE PORT AUTHORITY OF NY & NJ

Engineering Department
Construction Division
Materials Engineering Section

BORING REPORT

SHEET 1 OF 3

PROJECT HHMT- Port Ivory Surcharge Test	NAME OF CONTRACTOR Craig Drilling	BORING NO. PG-ST-2D	SURFACE ELEV.
LOCATION As Laid out in field as Per Drawing West Side		CONTRACT NO. 426-95-006	DATE 10/25/02

SPOON 2 "O.D. 1 3/8 "I.D.
CASING SIZE HW
HOLE TYPE 'B' Monitor
HAMMER 140 # FALL Auto 30 "
HAMMER # FALL "
DRILLER D Cook
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
10/25	1 pm	3.0	while Hand Augering

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ________ LINE LOCATES CHANGE OF PROFILE	0.0
Hand	0	Hand Auger	Full	1 A	Fill- Cinders, Gravel, Crushed stone, Sand, ETC	1.0
Auger				B	Fill White & Gray Limestone Slurry	
				2	Same	
	5			3		
	6				Same	
HW						
Casing					For Strata 6-20' See Log for PGST 2D	
	20					
		WOH		4		
		1-1	14"		Black & Brown Peat	
		1-2		5 A	Same	23.0
		2-2	18"	B	M-F Black Sand, Tr Silt	
	25					25.0
		2-2		6		
		3-5	7"		F Gray Sand, Tr Silt	
	30				All Samples checked with PID Meter	
					No Samples Saved, All Discarded	
						32.0
		2-3		7		
		5-4	9"		F Brown Sand, Tr Silt	34.0
	35				Bottom of Boring	

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

PORT AUTHORITY OF NY & NJ

Engineering Department - Materials Division

Well Installation Report

Sheet 2 of 3

PROJECT: HHMT-Port Ivory Surcharge Test

CONTRACT NO.: 426-99-006

LOCATION: As laid out in field as per Drawing West Side

CONTRACTOR: Craig Drilling

WELL NO.	WELL TYPE	INSPECTOR	DRILLER	DATE
PG-ST-20	"B" Monitor	D Howe	D Cooke	10/28/02

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

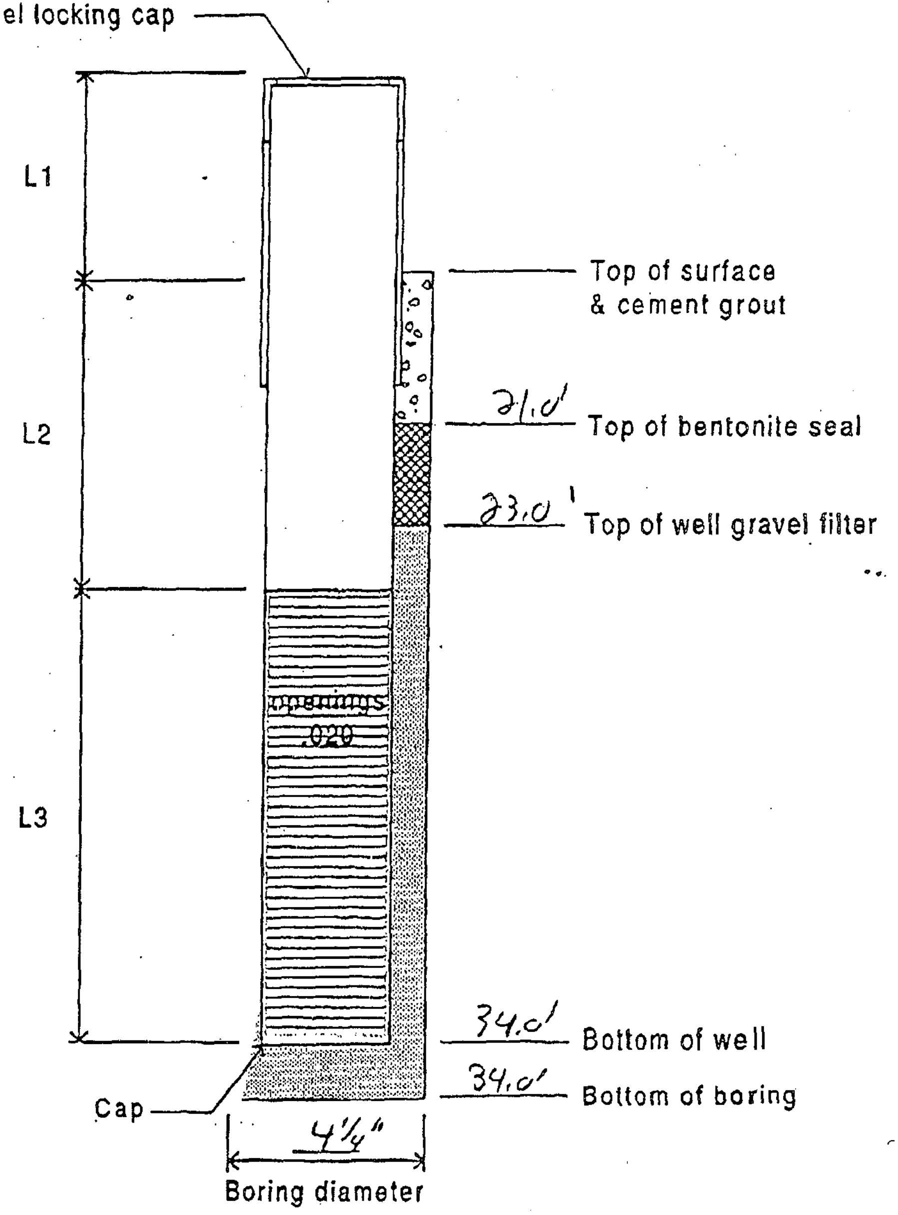
DATE	WATER LEVEL BEFORE	WATER LEVEL AFTER	TAKEN ... MINUTES AFTER
10/28/01	14.0	14.0	10

2" " dia. PVC pipe w/steel locking cap

L1 = 3.0'

L2 = 24.0'

L3 = 10.0



REMARKS:

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ENGINEERING DEPARTMENT

MATERIALS ENGINEERING DIVISION

PID READINGS

Sheet 3 of 3

PROJECT: HH MT Port Ivory Surcharge Test	
BORING No. PG ST 20	**DATE:** 10/25/02
FIELD READINGS BY: DHowe	**PID Model:** Mini RAE

TIME	SAMPLE No.	IN-SITU Split Spoon Reading	HEAD-Space Reading	BREATHING Zone Reading	REMARKS
PM	1A		0.0		
	1B		0.0		
	2		0.0		
	3		0.0		
	4		0.2		Peat
	5A		0.3		"
	5B		0.0		
	6		0.0		
↓	7		0.0		

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BORING REPORT

SHEET 1 OF 3

PROJECT HAMT - Port Ivory Surcharge Test	NAME OF CONTRACTOR Craig Drilling	BORING NO. PG-ST - 35	SURFACE ELEV.
LOCATION As Laid out in field as per Drawing South Side		CONTRACT NO. 426-99-006	DATE 10/22/02

SPOON 2 " O.D. 1 3/8 " I.D.
CASING SIZE Augers
HOLE TYPE "B" Monitor
HAMMER Auto 140 # FALL 30 "
HAMMER # FALL "
DRILLER D Cooke
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
10/22/02	8 15	2.5	While Hand Augering

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. [2] NO.	[3] SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE	
	0					0.0
Hand Auger		Hand Auger	Fill	1	Fill - Crushed Stone, Silt, Gravel, Cobbles, ETC	2.0
				2	Fill - Grey & White Limestone Slurry	
	5			3	Same	
Hollow Stem Augers		WOH	24"	4	Same	
	10	WOH	24"	5	Same	
		WOH	22"	6	Same	
		WOH 1-1	20"	7	Same	
	15	WOH	12"	8	Same	
		WOH	18"	9 A	Same	17.5
				B	Black Peat	18.0
					Bottom of Boring	
	20					
					All Samples checked with PID Meter	
					No Samples saved, All Discarded	
	25					

NOTES: 1 — Length recovered: 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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Well Installation Report

Sheet 2 of 3

PROJECT HHMT- Port Ivory				CONTRACT NO. 426-99-006
LOCATION As Laid out in field as per Drawing South Side				CONTRACTOR Craig Drilling
WELL NO. PG-ST 35	WELL TYPE "A" Monitor	INSPECTOR D Howe	DRILLER D Cocko	DATE 10/22/02

Well Development Report

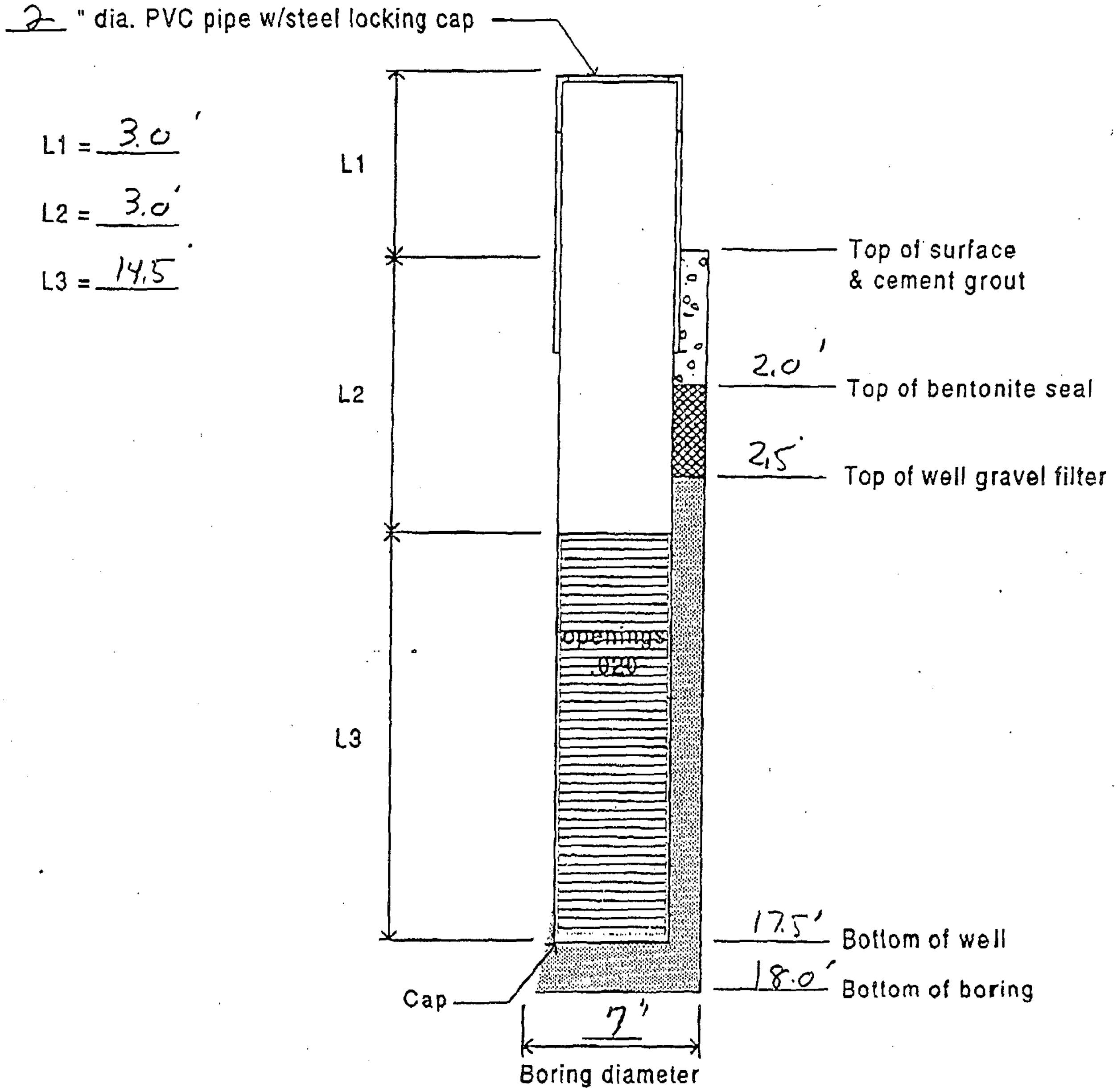
(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

DATE 10/23/02	WATER LEVEL BEFORE 4.0'	WATER LEVEL AFTER 4.7'	TAKEN 15 MINUTES AFTER

L1 = 3.0'

L2 = 3.0'

L3 = 14.5'



REMARKS: Hole Backfilled 17.5–18.0' with Bentonite

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PID READINGS

Sheet 3 of 3

PROJECT: NYMT- Port Ivory Surcharge Test

BORING No. PG-ST-35 **DATE:** 10/22/02

FIELD READINGS BY: D Hom **PID Model:** Mini RAE

TIME	SAMPLE No.	IN-SITU Split Spoon Reading	HEAD-Space Reading	BREATHING Zone Reading	REMARKS
AM	1		0.0		
	2		0.0		
	3		0.0		
	4		0.0		
	5		0.0		
	6		0.0		
	7		0.0		
	8		0.0		
	9A		0.0		
	9B		0.2		Rest

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BORING REPORT

SHEET 1 OF 3

PROJECT HH MT - Port Ivory	NAME OF CONTRACTOR Craig Drilling	BORING NO. PG-ST-30	SURFACE ELEV.
LOCATION As Laid out in field as per Drawing, South Side		CONTRACT NO. 426-99-006	DATE 10/22/02

SPOON 2 "O.D. 1 3/8 "I.D.
CASING SIZE Hw
HOLE TYPE 'B' Mounted
HAMMER 140 # FALL Auto 30 "
HAMMER # FALL "
DRILLER D Cooke
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
10/22/02	11am	25	while Hand Augering

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3] SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE	0.0
Hand	0	Hand Auger	Full	1		
Auger					Fill- Crushed Stone, Silt, Gravel, Sand, Wood, ETC	2.0
				2		
					Fill - Gray & White Limestone Slurry	
	5			3		
	6				Same	
Hw					For Strata 6'-18' See Log for PG-ST-35	
Casing						
	18	WO				
		H	12"	4	Black & Brown Peat	
	20	WO				
		H	13	5	Same	
		1-1				
		2-3	23	6	Same Tr of F Black Sand in Tip of spoon	24.0
	25	1-1		7		
		2-2	7"		F Brown Gray Sand, Tr Silt	
					All Samples checked with PID Meter	
					No Samples saved, All Discarded	
	30	3-5				
		8-8	7"	8	F Grey Sand, Tr Silt	
		2-3				
	35	6-7	12"	9	Same	35.0

Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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Well Installation Report

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PROJECT HM MT- Port Ivory Surcharge Test	CONTRACT NO. 426-99-006
LOCATION As Laid out in field as per Drawing South Side	CONTRACTOR Craig Drilling

WELL NO. PG-ST-30	WELL TYPE 'B' Monitor	INSPECTOR D Hove	DRILLER D Cook	DATE 10/23/02

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

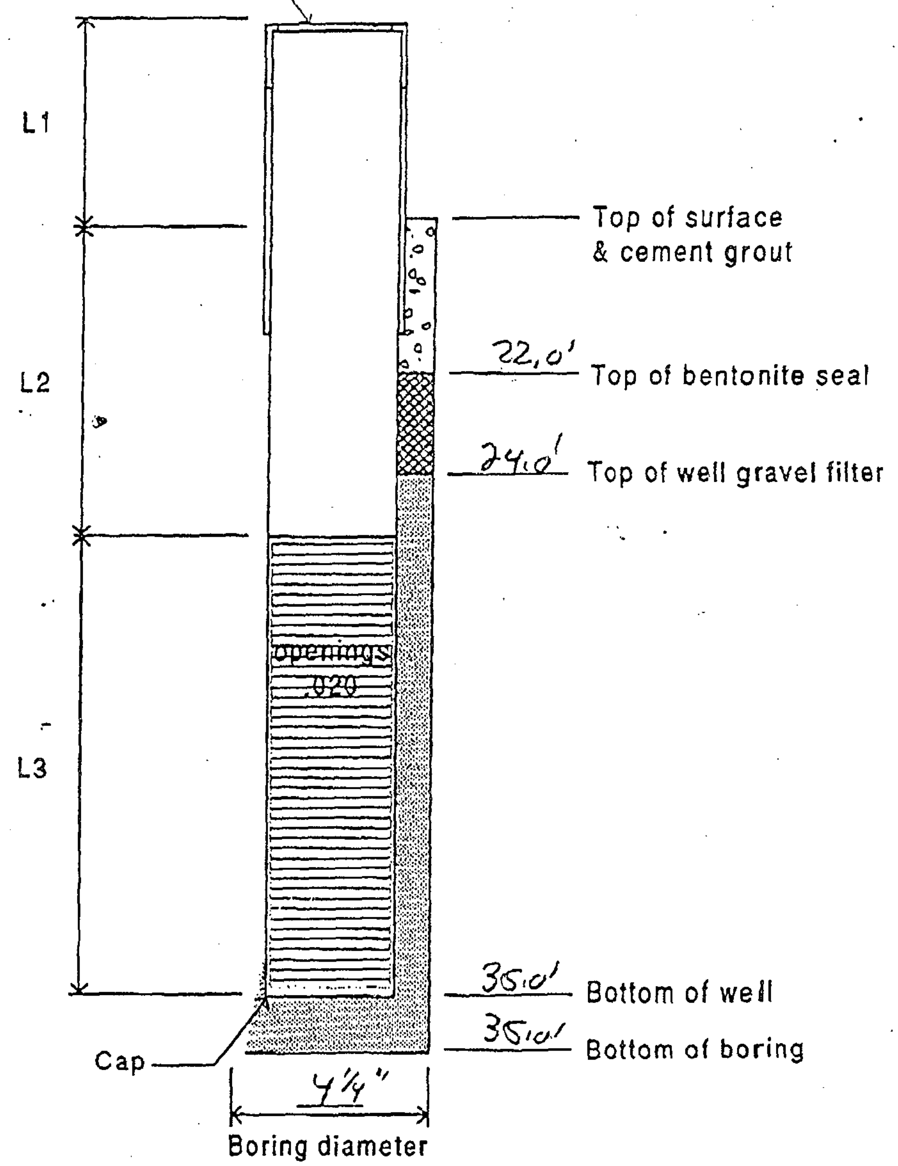
DATE 10/23/02	WATER LEVEL BEFORE 13.5	WATER LEVEL AFTER 13.5	TAKEN 15 MINUTES AFTER

2 " dia. PVC pipe w/steel locking cap

L1 = 3.0'

L2 = 25.0'

L3 = 10.0



REMARKS:

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ENGINEERING DEPARTMENT

MATERIALS ENGINEERING DIVISION

PID READINGS

Sheet 3 of 3

PROJECT: HHMT- Port Ivory Surcharge Test

BORING No. PG-ST-30 **DATE:** 10/22/02

FIELD READINGS BY: DHowe **PID Model:** Mini RAE

TIME	SAMPLE No.	IN-SITU Split Spoon Reading	HEAD-Space Reading	BREATHING Zone Reading	REMARKS
AM	1.		0.0		
	2		0.0		
	3		0.0		
	4		0.0		
	5		0.0		
PM	6		00		
	7		0.0		
	8		0.0		
	9		00		

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BORING REPORT

SHEET 1 OF 3

PROJECT: HMMT-Port Ivory Surcharge Test
NAME OF CONTRACTOR: Craig Drilling
BORING NO.: PG-ST-45
SURFACE ELEV.:
LOCATION: As Laid out in field as per Drawing East Side
CONTRACT NO.: 426-99-006
DATE: 10/18/02
SPOON: 2 " O.D. 1 3/8 " I.D.
CASING SIZE: Auger
HOLE TYPE: "A" Monitor
HAMMER: 140 # FALL 30 " Auto
HAMMER: # FALL "
DRILLER: D Cooke
INSPECTOR: D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
10/18	11 30	3.0	While Hand Augering

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3] SAMPLE DESCRIPTION AND REMARKS ___ LINE LOCATES CHANGE OF PROFILE	
	0					0.0
Hand Auger		Hand Auger	Full	1 A	Fill - RCA Recycled Concrete Agg	1.0
				1 B	Fill- Crushed Stone, Silt, Sand, Concrete, Etc	
				2 A	Same	3.0
				2 B	Fill White & Gray Limestone Slurry	
	5			3	Same	
Hollow Stem Augers		1-1 WOH	21"	4	Same	
	10	WOH	24"	5	Same	
		WOH 1-1	11"	6	Same	
		WOH	9"	7	Same	
	15	WOH	17"	8	Same	
		WOH	15"	9	Same	
		WOH		10 A	Same	19.0
	20	1-1	20"	10 B	Black Peat	20.0
					Bottom of Boring	
					All Samples checked with PID Meter	
					No Samples Saved All Discarded	
	25					

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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Well Installation Report

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PROJECT: HHMT- Port Ivory Surcharge Test

CONTRACT NO.: 426-95-006

LOCATION: As Laid out in field as per Drawing East Side

CONTRACTOR: Craig Drilling

WELL NO.: PG- ST - 45

WELL TYPE: "A" Monitor

INSPECTOR: D Howe

DRILLER: D Cooke

DATE: 10/18/02

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

DATE 10/18/02

WATER LEVEL BEFORE 3.7

WATER LEVEL AFTER 3.7

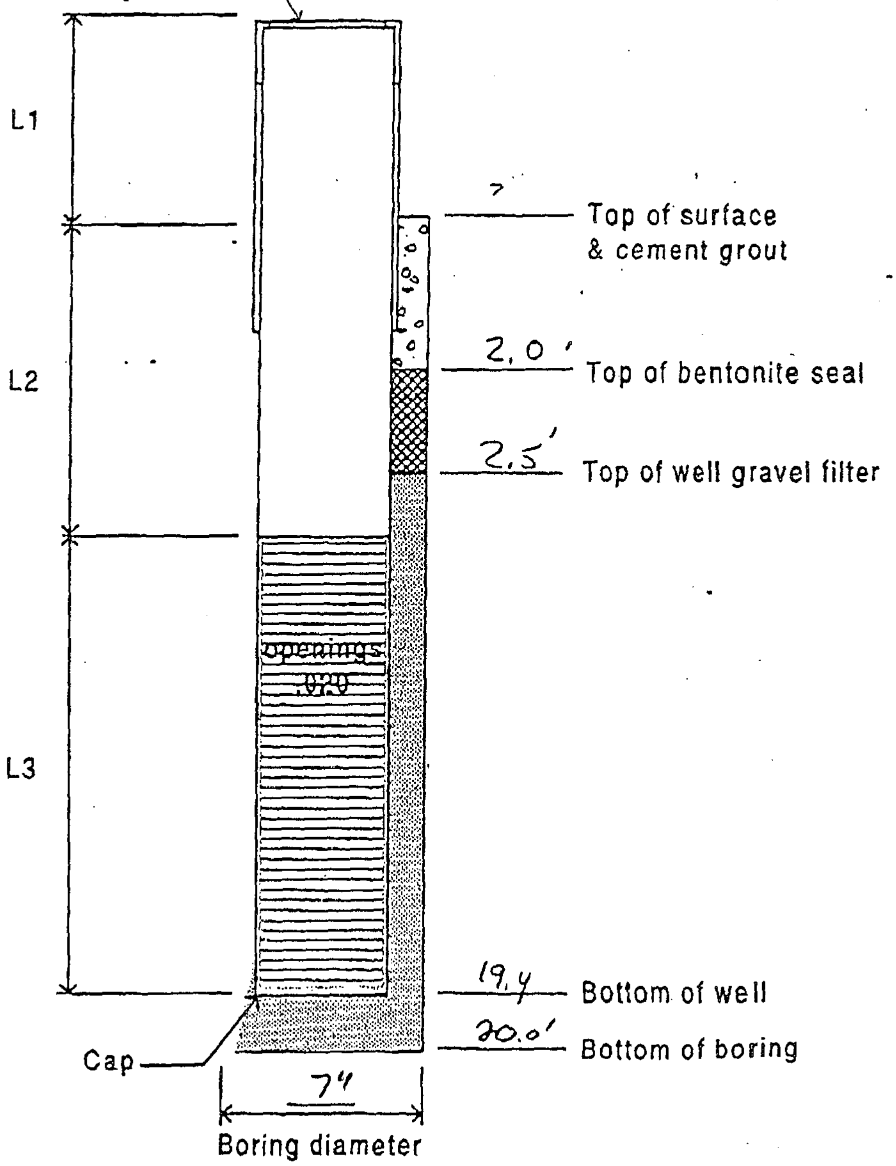
TAKEN 10 MINUTES AFTER

2" " dia. PVC pipe w/steel locking cap

L1 = 2.6'

L2 = 3.4'

L3 = 16.0'



REMARKS: Hole Back filled 19.4 - 20.0 with Bentonite

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PID READINGS

Sheet 3 of 3

PROJECT: HHMT – Port Ivory Surcharge Test

BORING No. PG-ST-45 **DATE:** 10/18/02

FIELD READINGS BY: DHowe **PID Model:** Mini RAE

TIME	SAMPLE No.	IN-SITU Split Spoon Reading	HEAD-Space Reading	BREATHING Zone Reading	REMARKS
AM	1A		0.0		
	1B		0.0		
	2A		0.0		
	2B		0.0		
	3		0.0		
	4		0.0		
	5		0.0		
PM	6		0.0		
	7		0.0		
	8		0.0		
	9		0.0		
	10A		0.0		
	10B		0.0		

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BORING REPORT

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PROJECT HHMT - Port Ivory Surcharge Test	NAME OF CONTRACTOR Craig Drilling	BORING NO. PG-ST-40	SURFACE ELEV.
LOCATION As Laid out in field as per Drawing East Side		CONTRACT NO. 426-99-006	DATE 10/21/02

SPOON 2 "O.D. 1 3/8 "I.D.

CASING SIZE HW

HOLE TYPE "B" Monitor

HAMMER Auto 140 # FALL 30 "

HAMMER # FALL "

DRILLER D Cooke

INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
10/21/02	9	3.0	while Hand Augering

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE
	0				0.0
Hard		Hand Auger	Fill	1 A	Fill- RCA Recycled Concrete Agg 1.0
Auger				B	Fill Crushed Stone
				2 A	Same 3.0
				B	Fill White & Gray Limestone slurry
	5			3	
	6				Same
HW					
Casing					
					No Sampling 6-20 See Log for
					PG ST 45 for strata 6'-20'
	20	W O H			
		1-2	23"	4	Brown & Black Peat
		1-2		5	
		2-3	22"		Same Tr F Dk Gray Sand in Tip of Spoon 24.0'
		WOH		6	
	25	WOH-2	19"		F Dk Gray Sand, Tr Silt
					All Samples checked with PID Meter
					No Samples Saved, All Discarded
	30				30.0
		2-3		7	
		4-3	12"		F Brown Sand, Tr Silt
	33				
		3-3		8	
	35	8-8	13"		F Brown & Gray Sand, Tr Silt 35.0'

Bottom of Boring

NOTES: 1 — Length recovered; 0" — Loss of Sample, T — Trap used
2 — U = undisturbed; A = auger; OER = open end rod; V = vane
3 — Log depth of change in color of wash water, loss of water, artesian water, sand heave in casing, etc.

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Well Installation Report

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PROJECT HHMT - Port Ivory Surcharge Test				CONTRACT NO. 426-99-006
LOCATION As Laid out in Field as Per Drawing East Side				CONTRACTOR Craig Drilling
WELL NO. PG-ST-4D	WELL TYPE "B" Monitor	INSPECTOR D Howe	DRILLER D Cooks	DATE 10/21/02

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

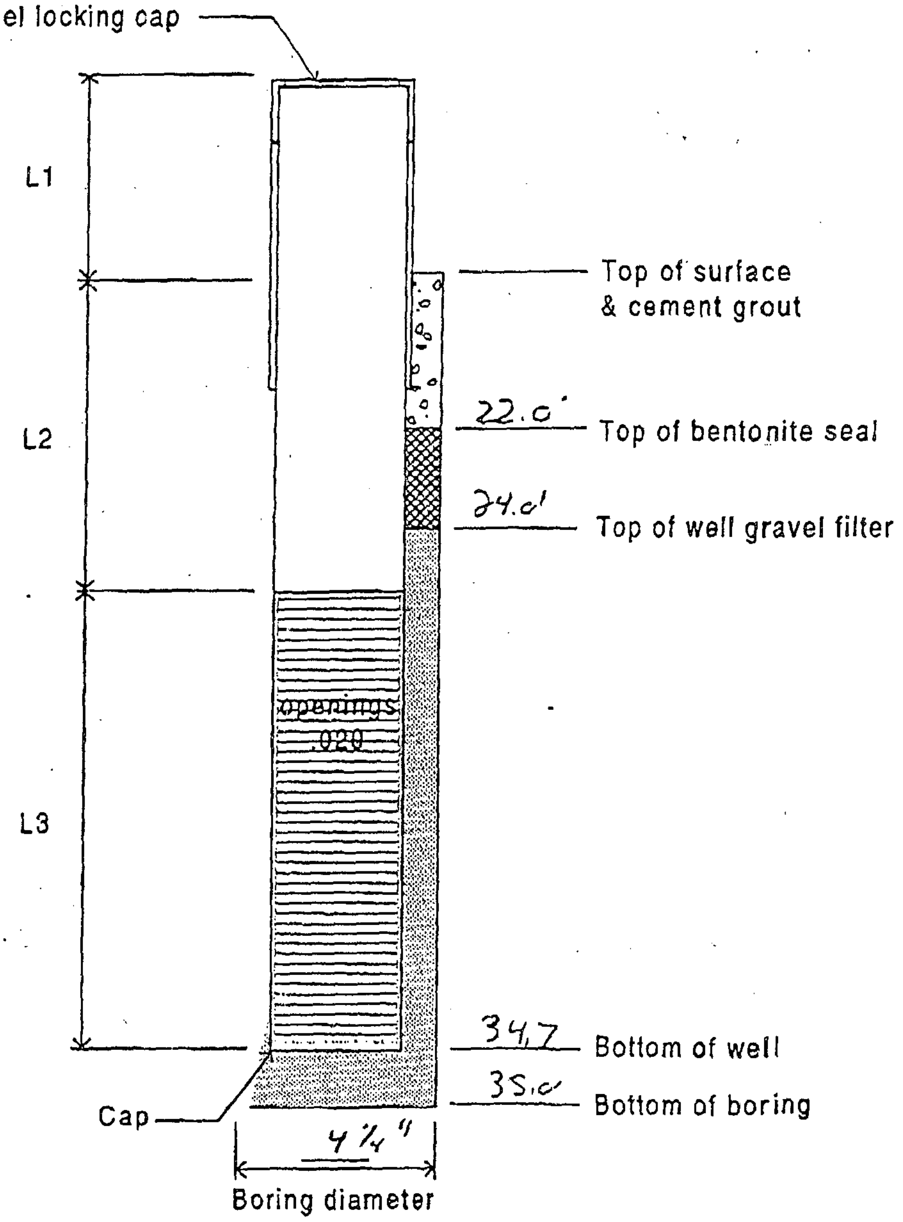
DATE 10/21/02	WATER LEVEL BEFORE 13.5	WATER LEVEL AFTER 13.5	TAKEN 15 MINUTES AFTER

2" " dia. PVC pipe w/steel locking cap

L1 = 3.3'

L2 = 24.7'

L3 = 10.0'



Top of bentonite seal: 22.0'

Top of well gravel filter: 24.0'

Bottom of well: 34.7

Bottom of boring: 35.0

Boring diameter: 4 1/4"

ARKS:

Hole Back filled 34.7 To 35.0 with well Gravel

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ENGINEERING DEPARTMENT

MATERIALS ENGINEERING DIVISION

PID READINGS

Sheet 3 of 3

PROJECT: HHMT- Port Ivory Surcharge Test

BORING No. PG- ST 40

DATE: 10/21/02

FIELD READINGS BY: DHa

PID Model: Mini RAE

TIME	SAMPLE No.	IN-SITU Split Spoon Reading	HEAD-Space Reading	BREATHING Zone Reading	REMARKS
AM	1A		0.0		
	1B		0.0		
	2A		0.0		
	2B		0.0		
	3		0.0		
	4		0.2		PaJ
	5		0.3		PaJ
	6		0.0		
	7		0.0		
	8		0.0		