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The Port Authority of New York and New Jersey

Revised - Site Investigation and Conceptual Remedial Workplan
Site 1(VCP Site 00615-2)
HHMT - Port Ivory Facility
September 2004

40 Western Avenue, Staten Island, New York
HMM 232952

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, Albany, New York 12233-7016
Phone: (518) 402-9768 • FAX: (518) 402-9773
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

July 2, 2004

Mr. Edward Aldrich
Port Authority of New York and New Jersey
Two Gateway Center, 14th Floor
Newark, New Jersey 07102

Re: HHMT - Port Ivory Facility
Site 1, ID # V00615-2
Site Investigation/Remedial Action Work Plan

Dear Mr. Aldrich:

10/22/04 ↓

The New York State Department of Environmental Conservation (NYSDEC) has reviewed the April 2003 report titled "Port Authority of New York and New Jersey Site Investigation and Conceptual Remedial Action Work Plan, Operable Unit 1, HHMT - Port Ivory Facility". The following comments are offered:

General comments

ok

Frequent references to the Appendices and the lack of discussion of data in the text makes the report difficult to follow. Data summary tables and discussion of the data should be included in the text to make the document more comprehensible.

ok

It is very difficult to determine which borings depicted on the maps were installed during this investigation as opposed to historic investigations. **All** of the different sample reference/identification numbers should be explained in a key on the maps.

ok

In future submittals for the remaining operable units please simplify the sample identification designations. There are various letters and numbers designated to the samples collected during OU-1 that make it confusing and difficult to read the data tables. Also, please do not assign the similar identification numbers to different sample locations (e.g., Wood-3 and Wood-03).

ok

The report should include an onsite and offsite exposure assessment which presents actual or potentially complete exposure pathways. Since future operations will presumably not use chemicals or products associated with the former Proctor and Gamble operations, evaluation of exposure to site contaminants should not be limited to potential residential receptors. Qualitative evaluation of potential exposures should also include the potential for future site occupants to be exposed to site contaminants.

check w/ Ed

The NYSDEC does not have copies of the Phase 1 work plans and reports, the Environmental Site Investigation Work Plan (ESIW), the Remedial Investigation Work Plan

(RIW) and related plans (Health and Safety Plan (HASP) , Quality Assurance Project Plan (QAPP), Field Standard Operating Procedures Manual, etc.). Copies of these documents should be submitted to the Department.

ok

Please note that the recommended soil cleanup objectives (RSCOs) provided in the New York State Department of Environmental Conservation (NYSDEC) Technical and Administration Guidance Memorandum 4046 (TAGM) are **guidance values, not standards.**

ok

The NYSDEC requires a minimum one week notice for **all** field investigation and remediation activities performed at the site. If work is of a continuous nature, weekly updates of upcoming field activities would be appreciated.

not done - need explanation

Due to the presence of volatile and semi-volatile organic compound contamination on-site, a soil gas survey should be completed which focuses on areas where future development of the site calls for enclosed structures where soil gas impacts may cause adverse impacts to future building occupants. These samples should be biased to areas of the greatest volatile and semi-volatile organic compound contamination as indicated by sample analysis and PID measurements. Please submit a soil gas sampling plan for agency review as part of the next revised submittal. If no such structures are proposed for Operable Unit 1, a soil gas survey is unnecessary .

Page 2, Section 2.0

ok

The second paragraph states that some of the UST areas could not be investigated because of interferences related to building demolition or other construction-related activities. It is unclear how many of these areas have not been addressed. A March 2003 date has been given for the start of investigation of these areas. Has this work started yet? It further states that the Remedial Investigation successfully delineated the horizontal and vertical extent of the petroleum/non-petroleum oils in soil. These statements seem to be inconsistent with one another. How could it be that some of the UST areas have not been fully characterized due to surface activities or obstructions, yet all soils throughout the entire site have been fully delineated? Please clarify.

ok

Also in the second paragraph it states that hot-spot excavation has been identified as the appropriate remedial action for certain petroleum/non-petroleum areas and that the remainder of the areas will be addressed through site redevelopment. What is the mechanism in site redevelopment which will cause contaminated areas to be remediated? Do you mean that during redevelopment, additional contaminated areas will be excavated, or that the development will put into place impermeable surface barriers which will eliminate exposure. Please explain.

Page 10, Section 4.1

ok

Please clarify what the "issue associated with Bridge Creek" is. Is this referring to the precipitate on the creek shores? More discussion should be provided in the text.

Page 13, Section 4.2.1

ok check if gw done @ UST-6

In the second paragraph it states that information from the various P&G reports indicated that toluene had impacted groundwater in the northern part on OU-1. The PA designated this area as UST-6 and indicated that some investigative work was completed here and presented in Section 5.3.1. However, sampling in this area appears to have included only soil samples and not groundwater samples. Were groundwater samples collected at this location? Based on the P&G data, groundwater sampling should be conducted in this area.

Page 16, Section 4.2.3

~ ok

The first paragraph discusses the presence of floating product in Area F1 as "vegetable oils and other petroleum products". This statement implies that vegetable oils are a petroleum product. Further, in the second paragraph of the following page (Page 17), it is implied that groundwater samples were collected to characterize this and other areas, however, there is no indication in this section or accompanying maps that any groundwater samples were collected to determine if floating product still exists in Area F1.

ok

In every data map, whether the subject is soil or groundwater, all sample locations are included. This makes finding locations very difficult. Please include maps in the report which show locations of just groundwater or soil, not both together.

Page 19, Section 4.2.6

ok

At the end of the first paragraph, it states that samples collected to evaluate former structures were collected from a "discrete 6-inch interval within the upper four feet of the soil". Please explain the basis for the selection of the 6-inch interval at these locations and other soil sample locations elsewhere throughout the site.

Page 23, Section 5.0

ok

It states that samples were analyzed by a "New York certified analytical laboratory". The authors should provide the name of each laboratory that performed chemical analysis for the project and should note whether the laboratory is certified through New York State's Environmental Laboratory Approval Program (ELAP) for the analyses.

Page 24, Section 5.2

ok

In the last paragraph, the reference to Section 5.2 should be changed to Section 6.2.

Page 25, Section 5.3

ok

In this and the other sections which describe the collection of soil samples, please define the selection criteria used in determining which soil intervals were collected for analysis. Further, in some of the areas of concern (AOC), many of the soil borings that exhibited definite signs of ok

contamination (e.g., strong petroleum odor and elevated PID readings) were not analyzed. Instead, borings that lacked these indicators of contamination and were a further distance away from the AOC were analyzed. Collection of samples in this manner could bias the site characterization to indicate less contamination in the AOCs. Please explain the reasoning behind this approach to the site investigation.

ok

Please provide the photoionization detector (PID) measurements for all soil boring logs and groundwater monitoring well installation logs.

Page 26, Section 5.3.2

ok

It states in this section that several samples (do you mean borings?) proposed for the above listed AOCs were not able to be installed due to the presence of utilities or other physical impediments such as reinforced concrete. Which proposed borings were not able to be installed? Are these borings in critical areas where contamination is known or spills have occurred? Are there plans to install these borings once the impediments are removed? Please discuss.

Page 29, Section 5.5

ok

Due to the volatile nature of site contaminants, groundwater samples should be collected using low-flow methods and not bailers. Please apply this method during future groundwater sampling.

Page 30, Section 5.6 and Figure 5

ok

In the second paragraph it states that three surface water samples were collected (SW-1, SW-2 and SW-3) yet Figure 5 identifies five surface water samples. Please resolve the discrepancy.

Page 31, Section 6.0

ok

It would be very helpful in the understanding of the subsurface characteristics of the site to construct one or more geologic cross sections which show the stratigraphic/hydrogeologic relationships across the site, or at least for this report, across Operable Unit 1.

Page 34, Section 6.3

ok

It states in this section that the analytical data has been compared to current NYSDEC regulatory criteria including NYSDEC Spill Technology and Remediation Series (STARS) Memo No. 1, Petroleum Contaminated Soil Guidance Policy and Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels (TAGM 4046), however these guidance tables could not be found in the report. Further, in December 2000, STARS was incorporated into TAGM 4046 so that the only guidance which should be referenced is TAGM 4046. Remove all references to the STARS guidance. Guidance values should be presented in column form as part of each page of each table so that the data can easily be compared to the guidance value. Data which exceeds the guidance value should be presented in bold type so that it stands out.

Page 35, Section 6.3.1

ok When presenting a discussion of the data, please reference the figures and tables that the particular section is referring to. This applies to all sections in the report.

Page 35, Section 6.3.2

ok It states in this section that the total SVOC concentration was below the NYSDEC guidance criteria for all samples from Operable Unit 1. Please state what this concentration is. Please see comment below (Page 37, Section 6.3.7) with respect to the applicability of the total SVOC criteria in TAGM 4046.

Page 36, Section 6.3.3

ok Please state the guidance criteria for PCBs is surface and subsurface soils (1 ppm and 10 ppm, respectively) and present the results for samples (or ranges for the group of samples) which exceed these criteria.

Page 36, Section 6.3.5

ok Please see comment Page 34, Section 6.3 with respect to presenting guidance values in the report. Again, also provide ranges of data in the body of the report.

Page 37, Section 6.3.7

not addressed What is the basis for using a guidance value of 10,000 ppm for TPHC and O/G? TAGM 4046 allows for up to 500 ppm total SVOCs (50 ppm for individual SVOCs) and up to 10 ppm total VOCs as a Recommended Soil Cleanup Objective (RSCO), however, these values would generally be unacceptable, particularly if individual contaminants were carcinogenic or if groundwater is threatened. It would be more appropriate to highlight samples exceeding 10,000 **ppb.** Please reference Figures 11 and 12 in this section (see comment Page 35, Section 6.3.1) and include data for samples which exceed the 10,000 ppb criteria.

Page 38, Section 6.3.8

not addressed here The elevated pH values for soil samples collected from the by-product fill material at the site (values up to13) is a concern primarily as it relates to potential impacts to surface water bodies on and adjacent to the site, for which pH criteria exists. Additional studies should be conducted to determine if this material has impacted, or has the potential to impact, these water bodies. Remedial measures may be necessary to insure that such impacts are addressed.

Page 38 to 40, Section 6.4

ok As previously indicated, in reviewing the "SI Results" section for groundwater, the results are not really discussed in this section and various subsections, just references to tables. Please discuss the data in the report, providing ranges for constituents which exceed criteria along with any noteworthy samples which show elevated levels. Further, a discussion of the significance of the results should be presented in the text.

Page 40, Section 6.4.8

not addressed See comment Page 38, Section 6.3.8.

Page 40, Section 6.5

ok For the sediment and surface water sampling conducted at Bridge Creek, why were only metals and pH evaluated? Why were other constituents sampled for throughout the study area in soil and groundwater samples not analyzed for in these samples? Please provide ranges of data exceeding criteria as well as providing the NYSDEC Sediment Screening Criteria and Surface Water Quality Standards to compare this data to.

Page 44, Section 7.1

not discussed In the section on pH it states that the higher pH values are from locations in the northern portion of the operable unit (OU-1). It should be noted that there was only 1 pH sample collected form the southern half of OU-1 and that this apparent distribution may be related to a lack of samples from this area.

Page 44 and 45, Section 7.1

not addressed It states in the that the elevated pH in soils has not adversely impacted surface waters, however, soils have negatively impacted groundwater. While it is pointed out that groundwater pH values are elevated, the point is not made that some of the pH values in groundwater are very high and originate from a potential characteristic waste material due to the high pH.

Page 46, Section 7.2

not well! See comment Page 38, Section 6.3.8.

Page 47, Section 7.3

ok Please discuss in this section why the nature and extent of precipitates in the creek have decreased significantly over the past decade and why future development will continue to enhance the environmental quality of the creek.

Page 48, Section 7.4

not really

The second paragraph discusses the nature of the fill material in OU-1 as being characterized primarily by elevated pH values and the presence of metals and that no additional actions are proposed with regard to the presence of this fill material, except in conjunction with redevelopment of the site. As previously stated, pH levels associated with the fill material are significantly elevated and impacting groundwater quality. See comment Page 38, Section 6.3.8.

Page 49, Section 8.1

not in this section

The installation of test pits is being proposed in the UST areas because geophysical surveys in these areas were unable to detect potential USTs due to surface and subsurface interferences. However in reviewing Sections 10 and 11, test pitting does not appear to have been utilized in these areas. It is understood that at least one UST area (UST5) was inaccessible prior to the report being issued and was to be investigated and reported on at a later time. Were test pits utilized in these areas to assist in identifying potential USTs?

Page 50, Section 8.2

ok

Please see comment Page 34, Section 6.3 with respect to the use of the STARS regulatory criteria.

Page 51, Section 9.0

ok

The second to last sentence which reads "Also, the RI investigation for Area UST2 was included in the RI for the Area UST2 and..." is confusing and should be rewritten.

Page 52, Section 9.1

ok

This section describes the method employed to collect samples for the additional delineation borings. Three samples were collected from each boring; one from the 0-2 foot interval, one at the water table interface and one at the midpoint between the two. This would be appropriate except if obvious contamination was identified in the boring based on PID or sensory indications. Were these other factors considered when sampling these borings? Please discuss.

Page 55, Section 9.1.5 and 9.1.6

ok

Have the RI activities been completed for Areas PD-8 and UST5 and, if so, please include in the revised submittal of this report.

Page 56, Section 9.2.2

ok

It states in this section that NYSDEC does not have guidance threshold values for individual PAH or total PAH compounds. NYSDEC has Recommended Soil Cleanup Objectives (RSCO) defined in Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels (TAGM 4046) for these individual compounds. As stated in comment Page 37, Section 6.3.7, the total SVOC criteria of 500 ppm has limited application, particularly if the individual contaminants are known carcinogens.

Page 57, Section 9.2.2

ok

As previously stated, rather than providing qualitative descriptions of contaminant concentrations (ie "slightly elevated"), please provide ranges for contaminants which exceed RSCO values.

Page 60, Section 11.0

not addressed

In the third paragraph of the section "Summary and Proposed Remedial Actions", which discusses other site contaminants, there is no discussion of the onsite pH issue. Please see previous comments on this issue and discuss in this section.

Please incorporate the above comments into a revised Site Investigation and Remedial Action Work Plan. If you have any questions, don't hesitate to call me at (518) 402-9767. Please note change of address and phone number.

Sincerely,

Thomas Gibbons
Project Manager
Remedial Bureau B, Section D
Division of Environmental Remediation

cc: R. Cozzy/File
T. Gibbons

ec: D. D'Ambrosio (DEE - Tarrytown)
G. Laccetti (DOH)
S. Selmer (DOH)
D. Walsh (Reg. 2)

PORT IVORY - OPERABLE UNIT 1

Appendix D: Guidance on Consistency Review Checklist

The following chart provides additional guidance on completing the Consistency Review Checklist (Appendix C). When completing Appendix C, the reviewer should document in the "Notes" column generally how each requirement below is met.

ok?	*Item*	*Notes*
	Technical Components of Voluntary Cleanup Agreement	
☐	▸ Is a signed application on file?	A complete and signed application must be on file before approving the VCA.
☐	▸ Is the definition of Contemplated Use consistent with §3.3?	Understanding the Contemplated Use is necessary to determine if the investigation/remedy is adequate. Depending upon the contaminants involved and site conditions, it may be necessary to be more specific than generic descriptions (e.g., "industrial/commercial") to evaluate potential exposures or releases to the environment.
☐	▸ Is the definition of existing contamination consistent with §3.4?	Within the limits of available information, the definition should be broad enough to cover everything to be investigated and remediated but not so broad as to be unsupported.
☐	▸ Is the definition of the site clear?	The Volunteer should provide a clear definition of the site boundaries. This is needed both for establishing the scope of the investigation and remediation phases and for defining the extent of contamination. If a Volunteer wishes to obtain a Release for the entire property, the investigation and remediation must address the entire property.
☐	▸ Is the description of the volunteer status clear?	Is the Volunteer a PRP, innocent owner, or innocent non-owner? The status influences the Volunteer's eligibility and their obligations to perform off-site investigations and remediation.
☐	▸ Has a listing package/deferral been prepared?	If enough information exists at this stage to determine that a listing package should be drafted, the procedures in §4.5 should be followed.
	Investigation Work Plans	
☑	▸ Have the prior uses/contamination been described?	The Volunteer should identify the prior uses of the site and any specific processes or chemicals that were used. This greatly assists in developing and confirming the scope of work.
☑	▸ Have the surrounding land uses been described?	This information is needed to support the exposure assessments and the site investigation. It can also influence the types of site use restrictions or controls that may be needed.

	ok?	*Item*	*Notes*
	☑	▸ Is the scope adequate to define the nature and extent of contamination?	All investigations must contain reliable information that adequately defines the nature and extent of site contamination and, if applicable, threats to fish and wildlife resources.
	☑	▸ Are adequate methods of investigation proposed?	The methods used to acquire and handle environmental samples and data must be specified (in SOPs).
Check w/ Tim	☐	▸ Is there adequate QA/QC?	At a minimum, each work plan must address the QA/QC requirements given in Section 2 of the draft DER Technical Guide so that the environmental data acquired during the project will be reproducible, accurate, representative, comparable, and complete.
	☑	▸ Have the source areas been defined?	The scope of the investigation must be sufficient to determine if the site contains "source areas" (see §6.4), and if so, to define their extent.
	☐ No	▸ Have on & off-site exposure assessments been performed?	All Volunteers must complete on-site and off-site exposure assessments. The work plan should give enough detail to document that the assessment will adequately characterize all actual/potential public health and environmental exposures due to site contamination.
Don't think offsite is required	☑	▸ Have off-site issues been adequately addressed? If not, provide explanation. Yes	Depending upon the Volunteer's status, off-site issues range from completing qualitative exposure assessments to full investigation and remediation. The off-site scope of work must be appropriate for the type of Volunteer and site conditions.
Not needed	☑	▸ need risk assessment?	If the use of existing cleanup guidance combined with the results of the exposure assessments will not be sufficient to define site-specific remedial goals, a quantitative risk assessment may be needed. The project manager should consult with the appropriate VCP Coordinator and the NYSDOH before a decision is made to complete a risk assessment.
	☑	▸ adequate documentation and reporting?	The work plan should specify the information that will be included in the final report to ensure that the information supplied will be sufficient for making remedial decisions.
Check	☐	▸ fish & wildlife impact analysis?	A decision must be made by DFW if a site-specific fish and wildlife impact analysis is needed and if so, if the scope given in the work plan is adequate.
	☐ No	▸ adequate worker HASP?	The Volunteer's consultant is responsible for preparing a worker HASP that meets all regulatory requirements. The Project Manager completes an informal review to determine if the HASP addresses known site issues.

ok?	*Item*	*Notes*
☐ Need to do for RAWP	▸ CP requirements completed (mailing list, document repository, fact sheet)?	A fact sheet should be sent to those on the mailing list so that notice of the field work is received at least one week prior to the start of work.
☐	▸ DOH Project Manager written concurrence?	A written concurrence letter (on DOH letterhead) is needed from the DOH Project Manager.
		Investigation Final Report
☑	▸ Did the investigation substantially comply with the work plan?	This is an overall evaluation of the adequacy of the investigation. If unexpected conditions makes it necessary to do additional work, another work plan should be developed.
☑	▸ Are any deviations from the work plan sufficiently described?	The significance of any omissions or problems should be evaluated to determine if more work is needed.
☑ Mostly	▸ Did the investigation adequately define the nature and extent of the contamination and identify source areas?	The final report should clearly define the contaminants of concern, impacted media, volumes and limits of contamination, concentration ranges, and additional information as needed to define the nature and extent of contamination.
☐ No	▸ Does the report include an on-and off-site exposure assessment?	The results of the exposure assessments should be presented with clear conclusions about actual or potentially complete exposure pathways.
☐ No	▸ Was a DUSR included with the report?	The DUSR must be complete and indicate if the data is useable. Problems with the data must be identified and resolved.
Comments rec'd from Briget C.	▸ Has the report been approved by NYSDOH, DFW&MR and other appropriate reviewers?	All reviewers should have had an adequate opportunity to review and comment upon the report. The Project Manager should obtain written approvals from reviewers.
No listing required	▸ Registry status reviewed?	The Project Manager must decide if the results of the investigation indicate the need to prepare a deferred listing package or lift an existing deferral.
		Remedial Action Work Plan
☐	▸ Are there adequate remedial goals?	Unambiguous remedial goals for each media must be specified in the work plan which clearly indicate the cleanup standard to be achieved before a final release could be issued to the Volunteer. The basis and/or source of the cleanup standards must be specified.

ok?	Item	Notes
☐	▸ Has the remedy been assessed by a PE against the factors listed in §375-1.10(c)?	Although a feasibility study is not required for most VCP sites, the Volunteer must support the proposed remedy by showing how the remedy would achieve the objectives as compared against the evaluation factors in 6 NYCRR Part 375. This should be documented in a report (see §7) that is prepared and sealed by a professional engineer. Class 2 sites must go through the typical PRAP/ROD process.
☐	▸ Will the remedy mitigate threats on & off-site?	The Remedial Action Work Plan should identify the threats posed to public health and the environment and explain how the remedy would mitigate those threats.
☐	▸ Has the obvious contamination been addressed?	Every remedy should halt or prevent significant health and environmental exposures resulting from the release of contaminants.
☐	▸ Is source control necessary?	If source areas exist at the site, in most cases they should be removed or treated rather than contained.
☐	▸ is the remedy adequately documented (engineering report, PRAP/ROD)?	Class 2 sites must go through the normal PRAP/ROD process. Other sites must have an adequate work plan and engineering report.
☐	▸ Is there adequate OM&M?	If the protectiveness of the remedy relies upon continuing OM&M, there must be a plan that specifies the actions, inspections, and reporting that will occur to ensure that the remedy continues to remain protective.
☐	▸ Are there adequate site use restrictions?	If the protectiveness of the remedy depends upon site use restrictions such as groundwater or property use restrictions, they must be clearly identified and placed in an enforceable instrument.
☐	▸ Has adequate post-remediation verification sampling been performed with the appropriate QA/QC?	With some exceptions, post-remediation verification samples are required to demonstrate that the remedial action objectives have been met. Data used to show compliance with the RAOs must be part of a DUSR.
☐	▸ adequate worker and community HASPs?	If the remedy could create exposures to the community, a CHASP must be in place. Documentation air monitoring may be necessary. HASPs must be prepared by a competent person.
☐	▸ CP requirements completed (fact sheet, ENB notice, 30-day comment period)?	The approval letter for the RAWP should not be issued until the citizen participation requirements have been completed. Public meetings are not necessary but may be helpful in some cases.

ok?	*Item*	*Notes*
☐	▸ does SEQR apply? addressed?	SEQR issues must be resolved before the RAWP is approved.
☐	▸ Concurrence letter from Director DOH BEEI?	The DOH concurrence letter from the Director of the BEEI must be in place prior to approval of the RAWP.
	Remedial Action Final Report	
☐	▸ Did the remediation substantially comply with the work plan?	This is an overall evaluation of the completeness of the remedy in comparison to the requirements of the RAWP.
☐	▸ Are any deviations from the work plan sufficiently described?	Any changes from the RAWP must be evaluated by the Project Manager to determine if additional work is necessary.
☐	▸ Were the remedial goals clearly met?	The Report must provide enough information for the Project Manager to determine if the goals have been obtained.
☐	▸ Was a DUSR included with the report?	The DUSR must be complete and indicate if the data is useable. Problems with the data must be identified and resolved.
☐	▸ Was the report certified by a NYS P.E.? Correct language?	The report must be certified by an individual/firm (in compliance with the State Education Law). The certification should include the exact language from §7.3.
☐	▸ Have we received proof of institutional controls?	Evidence that institutional controls are in place must be submitted within 30 days of DEC's approval of the instrument.
☐	▸ Does the report contain adequate as-builts?	The Report should contain as-builts as necessary to document the extent and location of the remedial activities.
☐	▸ Does the report contain an adequate OM&M Plan (if applicable)?	For remedies that include ongoing OM&M, the report should contain a complete and approvable OM&M Plan.
☐	▸ Has the report been approved by NYSDOH, DFW&MR and other appropriate reviewers?	Written concurrence is needed from each reviewer. The NYSDOH signoff comes from the NYSDOH Project Manager.
☐	▸ Registry status reviewed?	The Project Manager must decide if the results of the remediation indicate the need to prepare a deferred listing package or lift an existing deferral.
☐	▸ should the definition of existing contamination be revised?	If the results of the investigation or remediation of the site indicate the need to amend the definition of existing contamination, this should be arranged with the Project Attorney prior to drafting the release letter.

Hatch Mott
MacDonald

September 15, 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: HHMT – Port Ivory Facility
ID #'s V00615, V00674, V00675
VCA deadline extension request

Dear Mr. Gibbons:

In response to the September 8, 2004 New York State Department of Environmental Conservation (NYSDEC) Voluntary Cleanup Agreements (VCAs) milestones letter, Hatch Mott MacDonald (HMM) on behalf of The Port Authority of New York and New Jersey (PANYNJ) is requesting a seven (7) day submittal extension for the Site 3 draft Site Investigation and conceptual Remedial Work Plan (SI/RWP). The effective submittal date as stated in the VCA agreement is September 23, 2004. The requested extended effective date for the Site 3 SI/RWP would be September 30, 2004.

With regard to the Site 1 SI/RWP and Site 2 draft SI/RWP, these reports will be submitted to the NYSDEC within the effective date of the VCAs, September 23, 2004.

If you have questions or need further information, please contact me at 973.912.2581.

Very truly yours,

Hatch Mott MacDonald

Brian Kennedy
Geologist
T 973.912.2581 F 973.912.2400
brian.kennedy@hatchmott.com

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AHL

cc: E. Aldrich

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Hatch Mott
MacDonald

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

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)

Table of Contents

List of Appendices

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

List of Tables

(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 this site. Specifically, the Port Authority intends to utilize the 40 Western Avenue Site, no 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; Site 1 will be utilized as part of the intermodal facility.

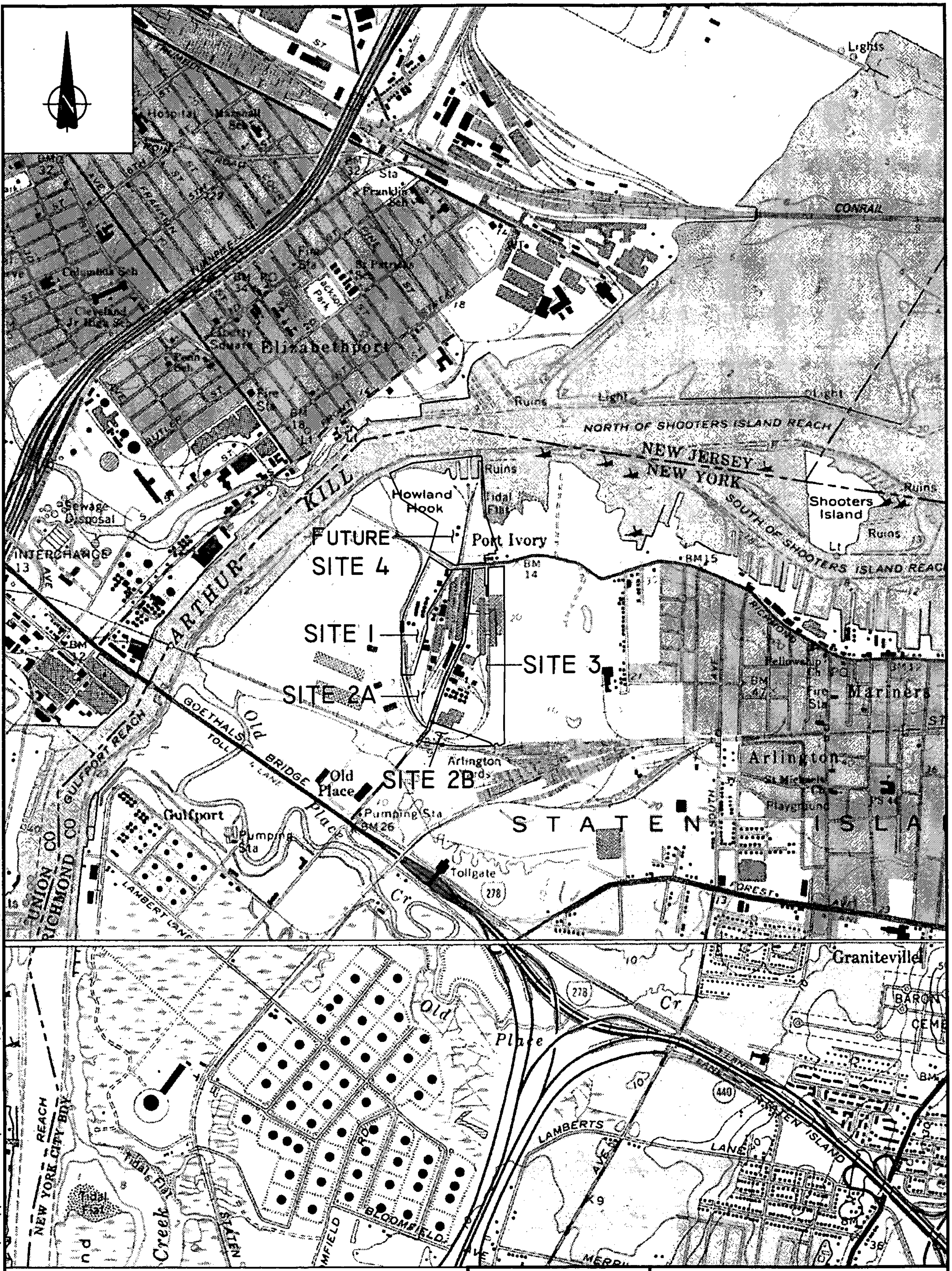
As part of the overall site redevelopment, the Port Authority entered into the New York State Department of Environmental Conservation (NYSDEC) Voluntary Cleanup Program (VCP) in July 2004 (VCP Agreement Site V-00615-2, VCP Index Number W2-0957-02-04). The Port Authority's objective for entering into the VCP program with NYSDEC was 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 this site. Thus, the Port Authority agreed to address the HHMT-Port Ivory Facility as individual "Sites", and present assessment, investigation and remedial action information/documentation for each individual Site. This report addresses Site 1, which consists of the northwestern portion of Block 1400, Lot 1. HMM, on behalf of the Port Authority previously submitted a report for Site 1 (*Site Investigation and Conceptual Remedial Action Workplan, Operable Unit 1*) dated April 2003. The report presented herein reflects an updated version of the April 2003 Report, which includes a summary of additional efforts undertaken since January 2003 and additional information requested by the NYSDEC in its July 2004 comment letter.

Overall, the assessment and investigation activities undertaken at Site 1 have revealed the presence of historic fill material; and several contaminants at relatively low concentrations in samples collected from soil and groundwater at Site 1. 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 and investigation 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 Site 1 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 40 Western Avenue Site. 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 Phase I 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 identified Areas Of Concern (AOCs) and subsequently, to implement the proposed Site Investigation (SI) activities for the entire 40 Western Avenue Site. The purpose of the SI was to assess current (year 2000) environmental conditions at this site.

Based on the findings of the SI and subsequent to the Port Authority's purchase of the facility (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 (9) potential UST areas; three of the nine potential UST areas were identified on Site 1. The objective of the delineation was to resolve these issues in preparation for redevelopment of the entire 40 Western Avenue Site; upon transfer of ownership the property was designated as the Howland Hook Marine Terminal (HHMT) – Port Ivory Facility. The remedial investigation (RI) of petroleum/non-petroleum investigation 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 the proposed RI efforts for potential UST Areas (UST2, UST5 and UST6) at Site 1, further assessment of these areas was accomplished through the performance of certain demolition actions including removal of concrete pads and building footings. Thus, the potential UST Areas were evaluated in the spring/summer of 2002 extending into the spring 2003. As described later in this report, the activities did not reveal the presence of any USTs at the UST2 Area but did reveal the presence of previously closed tanks at the UST5 and UST6 Areas. The 2002/2003 RI successfully delineated the horizontal and vertical extent of petroleum/non-petroleum oils in soil at the accessible areas of Site 1. Based on the field screening and analytical results from the RI, hot-spot excavation was identified as the appropriate remedial action (RA) for identified petroleum/non-petroleum-impacted areas. To accommodate site redevelopment efforts, hot-spot excavation at certain potential petroleum impacted areas has been implemented and information pertaining to



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

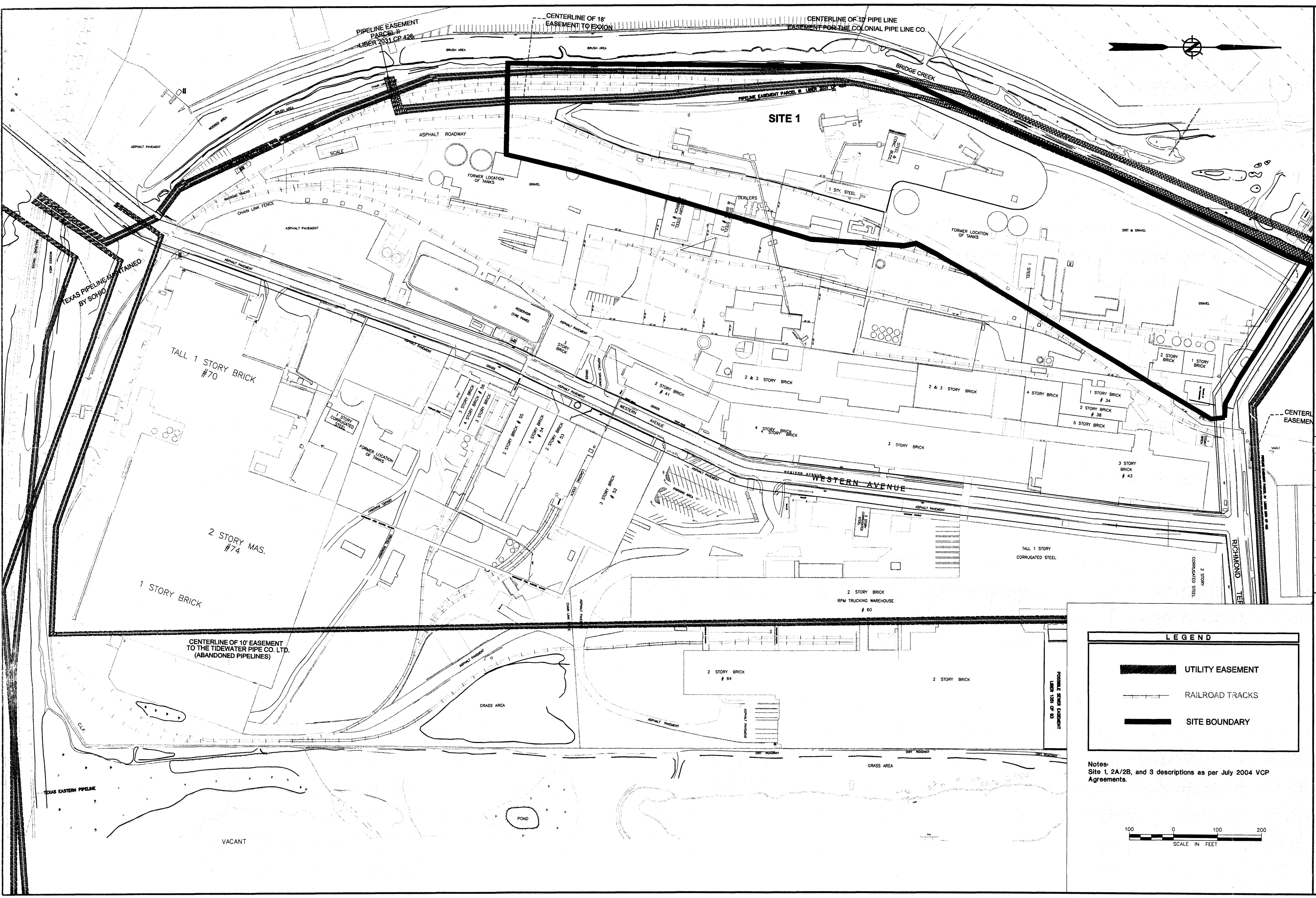
P:\232952wmd\Operable Unit Reports\Operable Unit 3\Post VCP Revisions\Figures\POST VCP Mapping 8-11-04\Drafts\Figure 1.Site Location Plan 8-11-04.dwg 9/13/04 3:59 pm excavation and post-excavation (confirmation) sampling is presented herein (See Section 12). The remaining residual contaminants will be 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 protection of 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 of 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 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 (know 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 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 sites. The four sites have been defined as follows: Site 1 consists of the northwestern portion of Block 1400, Lot 1; Site 2 consists of the eastern and southern portions of Block 1400, Lot 1, 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 the future location of 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 1 pursuant to the July VCP Agreement (VCP Agreement Site V-00615-2). Figure 2 presents the limits of Site 1 in relation to the remainder of the HHMT-Port Ivory Facility and presents the numeric designations and physical limits of the three other sites.

2.1 Objective

The objective of this report is to describe the actions undertaken to characterize, delineate and address contamination present in environmental media at Site 1. This report includes a summary of analytical data as well as field observations generated through the performance of sampling and other evaluation efforts. Analytical data

P:\232952wmd\Operable Unit Reports\Operable Unit 1\Mapping\POST VCP Mapping 8-11-04\3rd Drafts, PA Revisions\SITE 1 Figures 8-25-04.dwg 9/20/04 4:21 pm



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

Sheet of

THE PORT AUTHORITY OF NY & NJ

ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

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

SITE 1 SITE LAYOUT

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

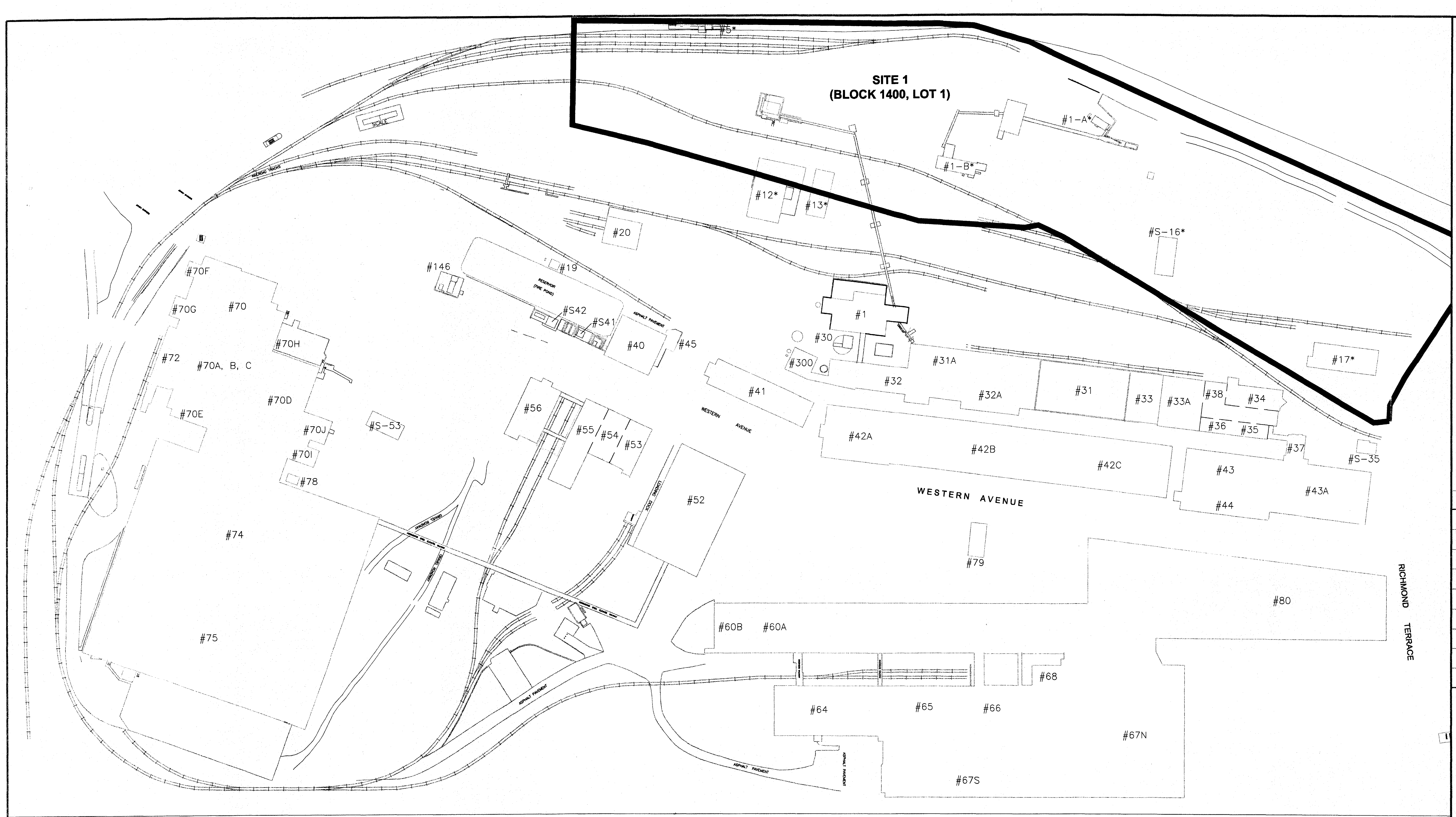
Drawing Number FIGURE 2

from the site and remedial investigations are 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 1 has been included in Section 3.1 of this report. The specific sampling and investigation described in this report were developed based on a predetermined end-use for the entire HHMT-Port Ivory Facility including Site 1. The Port Authority is redeveloping this former industrial site for use as an intermodal/container storage facility with Site 1 functioning as the intermodal component of the facility.

2.2 Site Location and Description

As previously stated, the 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 site center, is 40 degrees 38 minutes 15 seconds (N)/74 degrees 10 minutes 50 seconds (W). This report addresses Site 1, which consists of the northwestern portion of Block 1400, Lot 1. At the time of the Phase I and SI activities, the site was owned by P&G; the Port Authority purchased the site from P&G in December 2000 and the site is now known as HHMT - Port Ivory Facility. Subsequent to the purchase of the site, the Port Authority performed RI activities. The Port Authority has also addressed some of the petroleum- impacted areas and certain 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 1 encompasses 14.95 acres of the 123.75 acre former manufacturing facility. At the time of the Port Authority's purchase, the site was improved by 68 site buildings; Site 1 was improved by five buildings (Buildings 1-A, 1-B, 5, S-16 and 17) 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. Generally, Site 1 was utilized for storage, offices, wood processing tasks and some limited soap manufacturing activities. Site 1 is predominantly characterized by buildings and ancillary structures associated with former wood burning operations, railroad tracks and sidings, offices and former AST and storage areas. P&G reportedly initiated manufacturing operations in the early 1900s and ceased operations in approximately 1991. A summary of the site buildings present during the Phase I ESA and Year 2000 SI is provided in Table 1.



BUILDING 1	WOODBURNING BOILER
***BUILDING 1A**	**WOOD PROCESS**
***BUILDING 1B**	**WOOD RECLAIM**
***BUILDING 5**	**RAILROAD SCALE HOUSE**
***BUILDING 12**	**MACHINE SHOP**
***BUILDING 13**	**ENGINEERING**
***BUILDING S-16**	**BAR SOAP SHOP**
***BUILDING 17**	**OFFICES AT STU SHOP**
BUILDING 19	FIRE PUMP HOUSE
BUILDING 20	LOCOMOTIVE HOUSE
BUILDING 30	FRESH WATER PUMP HOUSE
BUILDING 31	COMET WAREHOUSE
BUILDING 31A	GLYCERINE HOUSE
BUILDING 32	BOILER HOUSE
BUILDING 32A	BOILER HOUSE
BUILDING 33	KETTLE HOUSE #1
BUILDING 33A	COMET MAKING (KETTLE HOUSE #3)
BUILDING 34	COMET WAREHOUSE
BUILDING 35	COMET PACKING
BUILDING S-35	NORTH GATE HOUSE

BUILDING 36	COMET WAREHOUSE
BUILDING 38	LIQUIDS MAKING (HSC)
BUILDING 40	CAFETERIA
BUILDING 41	OFFICES
BUILDING S-41	NATURAL GAS METER HOUSE
BUILDING S-42	TRANSFORMER SHELTER
BUILDING 42A	BAR SOAP STORAGE
BUILDING 42B	BAR SOAP PROCESSING/PACKAGING
BUILDING 42C	LIQUIDS/SOLO PACKING AND STORAGE
BUILDING 43	LSP GRANULES
BUILDING 43A	LSP GRANULES
BUILDING 44	LSP GRANULES
BUILDING 45	MAIN GATE GUARD HOUSE
BUILDING 46	SEWAGE PUMP STATION
BUILDING 300	WATER TREATMENT
BUILDING 52	FINISHED PRODUCTS
BUILDING 53	FOOD OFFICE/LOCKER ROOM
BUILDING S-53	TEMPORARY STORAGE
BUILDING 54	DEODORIZER
BUILDING 55	HARDENING

BUILDING 64	WAREHOUSE BUILDING
BUILDING 65	WAREHOUSE BUILDING
BUILDING 66	WAREHOUSE BUILDING
BUILDING 67N	WAREHOUSE BUILDING
BUILDING 67S	WAREHOUSE BUILDING
BUILDING 70	CITRUS OFFICE
BUILDING 70A	DHBM MAKING
BUILDING 70B	DHBM PACKING
BUILDING 70 C & 70D	WAREHOUSE
BUILDING 70F	DHBM KITCHEN
BUILDING 70G	DHBM COTACTOR BUILDING
BUILDING 70I	PERSONNEL
BUILDING 70J	CITRUS SHOP
BUILDING 72	DHBM LOADING DOCK
BUILDING 74	WAREHOUSE BUILDING
BUILDING 75	WAREHOUSE BUILDING
BUILDING 78	COMPRESSOR BUILDING
BUILDING 79	OFFICE
BUILDING 80	WAREHOUSE BUILDING

BUILDING 56	OIL REFINERY
BUILDING 60	WAREHOUSE BUILDING
BUILDING 60A	WAREHOUSE BUILDING
BUILDING 60B	WAREHOUSE BUILDING

NOTES:
1. THIS MAP REPRESENTS YEAR 2000 SITE CONDITIONS.
2. BUILDINGS LOCATED WITHIN SITE 1 ARE PRESENTED IN BOLD TEXT.
2. BUILDING THAT HAVE BEEN DOMOLISHED ARE PRECEEDED WITH AN ASTERISK (*).

100 0 100 200
SCALE IN FEET

Sheet of

THE PORT AUTHORITY
OF NY & NJ

ENGINEERING PROGRAM MANAGER

DRAFT

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

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

SITE 1
BUILDING LOCATION PLAN
(YEAR 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
		RP

Date

Contract Number

Drawing Number FIGURE 3

Table 1
Summary of Site 1 Buildings – Year 2000
Site 1: HHMT - Port Ivory Facility

Building Identification	Reported Information	Observations/Comments
Building 1A/ Wood Process	This three-story building, encompassing 4,332 square feet, was built in 1983 in conjunction with the facility's former wood fueling system. Operations formerly conducted in this building consisted of the crushing and pulverizing of wood into wood chips. Wood is reported to have been delivered to the site and unloaded into a hopper and conveyor belt system located to the north of this building. The conveyor belt entered the building on the third floor and directed wood products into the crushing/pulverizing machine located in this building. Processed wood was loaded onto a second conveyor system which exited through the southern wall of the building. The processed wood was stored in an area to the south of the building until needed in the boiler unit.	Inspection of this building noted same to be constructed with concrete floors and sheet metal walls and ceilings.
Building 1B/ Wood Reclaim	This one-story building, encompassing 1,070 square feet, was built in 1983 in conjunction with the operation of the facility's former wood fueling system. Wood chips are reported to have been transferred to a blow pipe system located within this building. The wood chips were loaded into the building through a doorway along the western side of the building. The building is reported to have housed a "blower" system which was used to transfer wood chips, via a 14" diameter pipe, to Building 1 (i.e., the Wood Burning Boiler located on Site 2). According to P&G, the "blow pipe" system of moving the wood chips was replaced with the previously described conveyor belt system associated with Building 1.	Inspection of the building noted same to be constructed with a concrete floor, a combination of concrete and metal walls and a metal deck ceiling. An electric room was accessed via the eastern exterior of the building. The electric room was noted to house several pad mounted switch boxes and breaker panels.
Building 5/ Railroad Scale House	This one-story building was built in 1957 and occupies 132 square feet. This building is reported to have housed the equipment utilized in the operation of a railroad scale. The scale is reported to have been located underneath the railroad siding situated east of the scale house. According to a representative of P&G, the scale is electronic and is enclosed in a pit constructed with concrete base and walls.	The building was noted to be constructed with brick walls, a concrete ceiling and a vinyl floor with 12"x 12" tiles.

Table 1
Summary of Site 1 Buildings – Year 2000
Site 1: HHMT - Port Ivory Facility

Building Identification	Reported Information	Observations/Comments
Building 12/ Machine Shop (Partially located on Site 1)	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 1)	This two-story 6,040 square foot building was built in 1916 and 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.
Building S-16/ Bar Soap Shop	This one-story 2,700 square foot building was built in 1977 and was utilized as a machine shop for the bar soap process.	This building is constructed with a concrete floor and sheet metal walls and ceilings. Several floor drains, including a floor drain set in a concrete diked area are located within this building. According to a representative of P&G, 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. No septic systems or dry wells are reported to be present at the subject site. Visual inspection of the underlying concrete flooring noted the integrity of same to be intact.
Building 17/ Offices @UST Shop	This two-story 13,362 square foot building was built in 1930 and was utilized as a machine shop (first floor) and administrative offices (second floor) for the manufactured soap granules process.	The first floor of this building is constructed with a concrete floor, brick walls and a concrete ceiling. A single overhead door is located along the southern wall of the facility and provides access to the southern exterior of the building. Visual inspection of the underlying concrete flooring noted minor staining. However, the floor appeared to be intact and free of breaches in its integrity. Two floor drains are located on the first floor of this building. Refer to Building S-16 information for comments on facility floor drains.

NOTES:

(1) 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.

(2) 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.

Table 1
Summary of Site 1 Buildings – Year 2000
Site 1: HHMT - Port Ivory Facility

(3) 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.

(4) 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.

(5) 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.

(6) 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.

P:\232952wmd\Operable Unit Reports\Operable Unit 1\Operable Unit 1 Table 1 buildinginspection summary.doc

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 1 as well as the remainder of the HHMT-Port Ivory Facility is presented on Figure 2.

The entire HHMT-Port Ivory Facility, including Site 1, 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 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 subject site. With regard to Site 1, Colonial Pipeline and Exxon (now known as ExxonMobil) maintain easements. Colonial Pipeline maintains a 10-foot pipeline easement that extends in a north/south direction along the western property boundary of Site 1. The easement initiates south of Site 2A, traverses through that Site entering the southwestern corner of Site 1, continues across Richmond Terrace and through the western portion of Future Site 4 (Block 1309, Lot 10) and finally terminates at the northern end of Future Site 4 (Block 1309, Lot 10). ExxonMobil maintains an 18-foot easement that is located east of the Colonial Pipeline easement. This easement parallels the Colonial Pipeline easement throughout Site 1, however, this easement extends in an easterly direction along the southern boundary of Future Site 4 (Block 1309, Lot 10) beyond Richmond Terrace. The locations of the easements are presented on Figure 2. ✓

3.0 BACKGROUND

In the early 1900s, P&G developed portions of the current site for use as a consumer goods manufacturing facility. The initial development included portions of Sites 1, 2A and Future Site 4. Over the years, P&G acquired additional acreage (Site 2B and Site 3 also known as Block 1338, Lot 1) and emplaced fill materials at low-lying areas of Sites 1, 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 1 and a summary of historical operations specific to Site 1 are in the following sections.

3.1 Site 1 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 Sites 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 1. Given the placement of the fill material prior to the Port Authority's ownership of the site, the presence of the 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 P&G's operation of the facility. However, in general, Sites 1 and 2A (Block 1400, Lot 1) were utilized as a single facility for soap and glycerin manufacturing and utility functions (i.e., boiler houses, wood processing for the boilers, locomotive maintenance, etc.). The activities performed at Site 1 consisted primarily of wood processing and storage. However, some office, machine shop and soap manufacturing activities are reported to have been performed in Buildings S-16 and 17 and in an additional building formerly located north of Building S-16. Components of the internal railroad system, which connects to the regional system at the southern end of the subject site, were located at Site 1. Portions of the inactive system remain at Site 1.

Historical information sources also identify structures and ASTs that were present at the site during initial assessment activities. Approximately four additional buildings were formerly (pre-year 2000) located at Site 1. One building (or several small attached buildings) was located on the southern end of Site 1, west of Buildings 12 and 13. Historical mapping indicates that the southern building was utilized as a metal shop. A second building was located southwest of Building 1-B and is referenced as a coke plant. A third building was located at the current Building 1-A location and is referenced as a furnace building. Lastly, a fourth building was located on the northeastern portion of Site 1 and is referenced as being utilized for processing. Also, a portion of a fifth building referenced as a Kettle House was located northeast of the former processing building and south of Building 17. As the majority of this fifth building was located on Site 2A, it will be further described in the Site 2A/2B Report (July 2004 Agreement VCP Site V-00674-2). Based on historical mapping and information provided in reports prepared by P&G, the following materials were stored in ASTs present at Site 1 and/or were maintained at storage areas at Site 1: caustics, various vegetable and fish oils, fuel oil, waste oil, soap, spent acids, spent nickel catalyst, grease, coke and rosin. The storage methods are not identified on the maps. A few of the 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 three areas (referenced herein as UST2, UST5 and UST6) on Site 1. Historical information indicates the following tank contents: oil in one or more tanks at Areas UST2 and UST5 and alcohol/toluene in a tank at Area UST6. *

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 1, 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, gravel and non-soil materials 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 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 1 two wells, MW-1D and MW-6D, were installed to evaluate the deeper aquifer (Section 3.2.2 and 6.1.2). At both locations bedrock was present at a depth of approximately 70 feet bgs in Site 1.

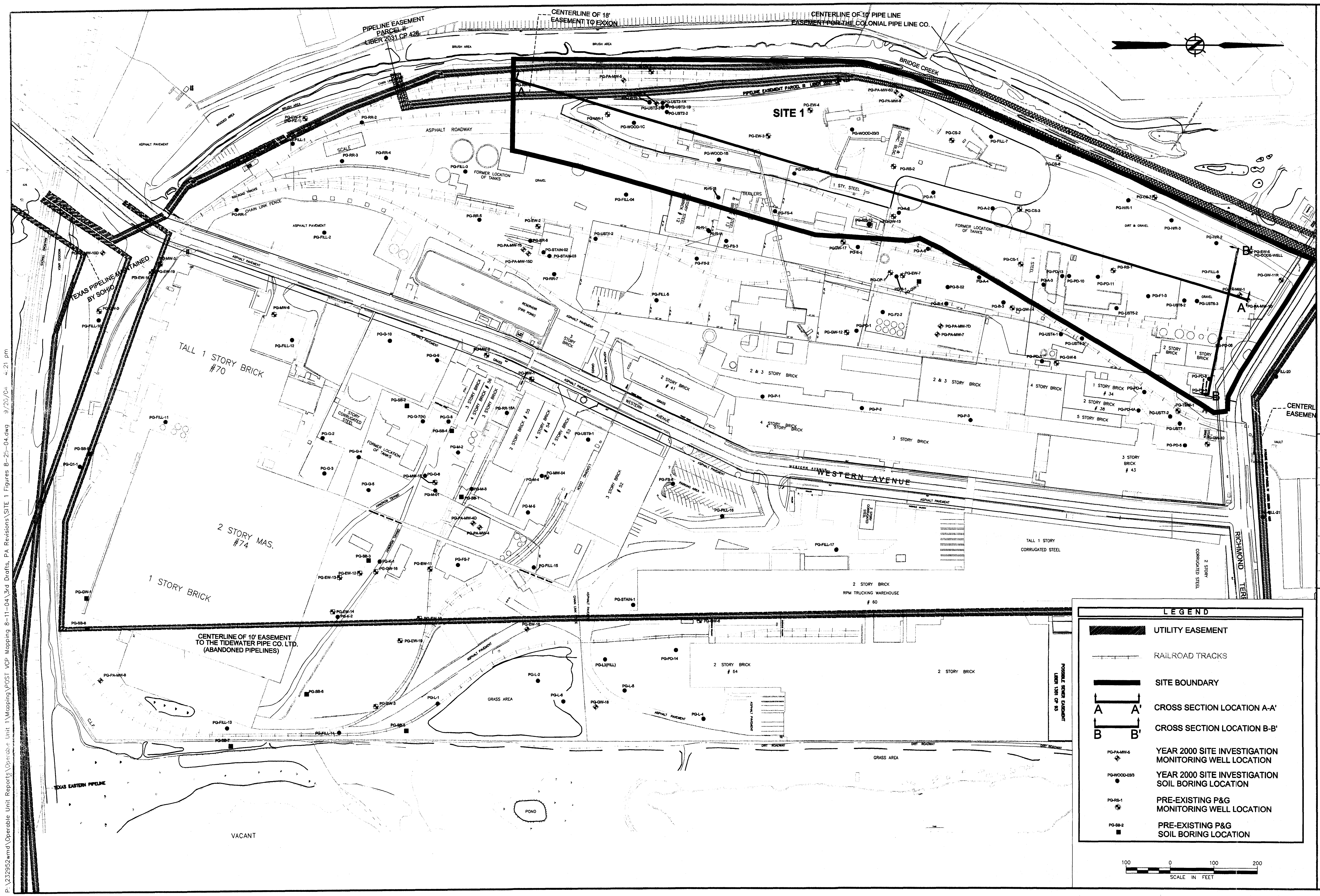
The Passaic Formation underlies Site 1, as well as the remainder of the subject site, and consists of reddish-brown to greyish-red siltstone and shale, with a maximum thickness of 3,600 meters. The Passaic Formation exhibits very little primary porosity. However, characteristic vertical or near vertical 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 P&G placed fill material upon tidal salt-marsh or sand deposits at Site 1 to raise the elevation of the land to allow for development and indicated that the soil strata of the site was consistent with that documented in the site area. The presence of fill material at Site 1 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 2.74 to 12 feet bgs across Site 1; 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 1 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); where groundwater was encountered at a depth of approximately 22 feet bgs. The PAMW-11D location (at Site 3) coincides with a higher topographic location, as compared to the rest of the site. In the shallow sections of bedrock in the area (+/-



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THE PORT AUTHORITY
OF NY & NJ

ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

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

SITE 1
CROSS-SECTION LOCATION PLAN

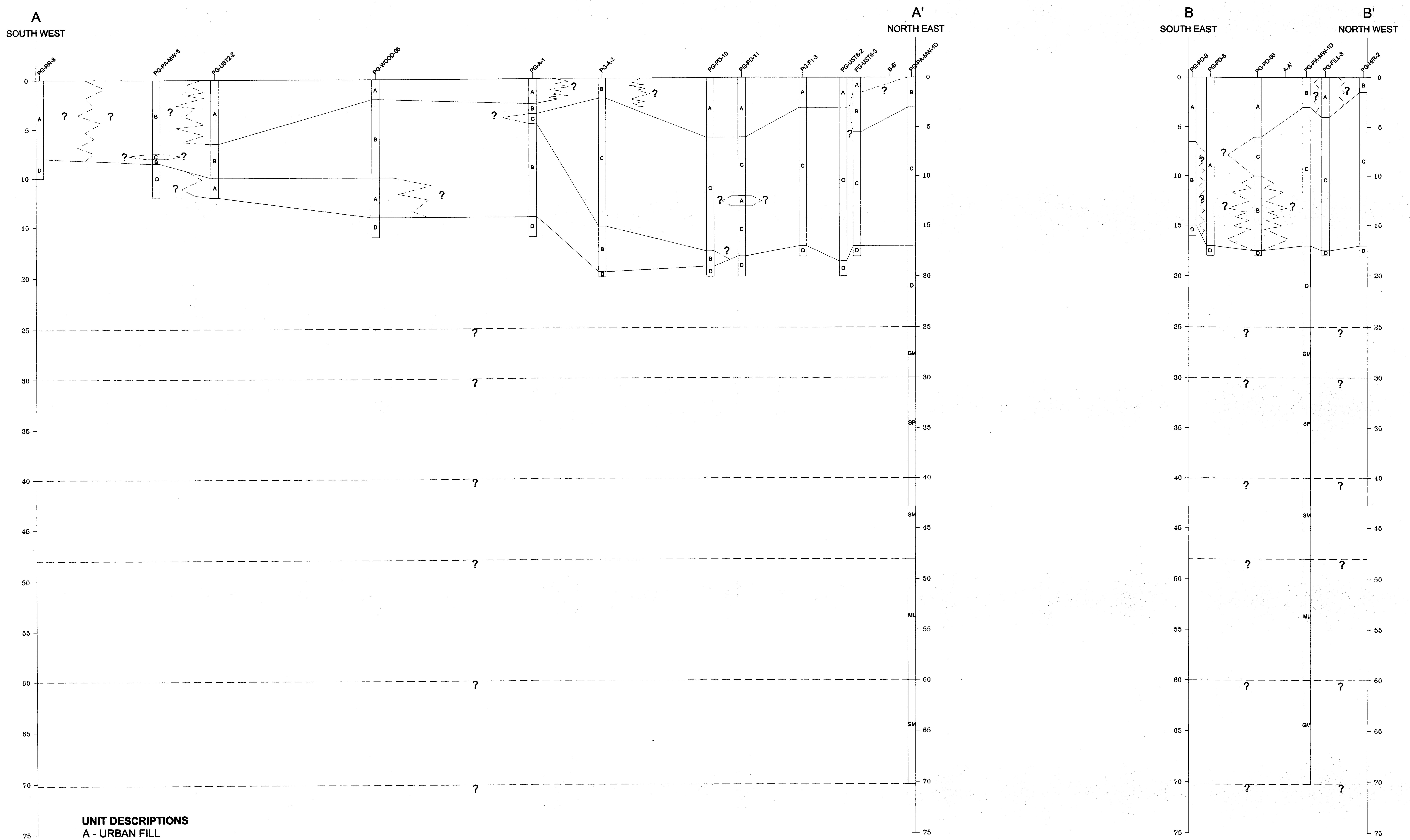
This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without its written consent.

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
GM - BROWN, GRAVEL, SAND, AND SILT
SP - POORLY GRADED, CLEAN SAND
SM - FINE RED/BROWN, SAND, AND SOME SILT
ML - SILT AND FINE SAND

PROFILE

Sheet of

THE PORT AUTHORITY
OF NY & NJ

ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

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

SITE 1
CROSS-SECTIONS
A-A' AND B-B'

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 5**

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 shales and sandstones. 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 limited review of this issue. Observations during excavation activities associated with building demolition and utility repair/removal indicates the potential for tidal influences at the HHMT-Port Ivory Facility.

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 environmental site investigation workplan (ESIW) was developed to address the entire site including both area-specific AOCs and site-wide AOCs 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 1. However, given the site-wide perspective of the ESIW, the information presented in this section also includes or references efforts undertaken at other Sites (Sites 2A/2B and 3), 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 both soil and groundwater as well as 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 HHMT-Port Ivory Facility. To facilitate review, information pertaining to Site 1 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.

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

Table 2

Summary of Historical Environmental Reports and Information

Site 1: 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 and 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.
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 this Block 1400 portion of the site. 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.	No specific conclusions are provided in report.

Table 2

Summary of Historical Environmental Reports and Information
Site 1: 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 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.**
	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 are attributed to migration from upgradient sources.**
	Area E: A steel UST designed to 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.**
	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.**

Table 2
Summary of Historical Environmental Reports and Information
Site 1: 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 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, 13, 14, 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.
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 bsgs. 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.

Table 2
Summary of Historical Environmental Reports and Information
Site 1: 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 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.
	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.

Table 2

Summary of Historical Environmental Reports and Information

Site 1: 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 Soil and Groundwater Environmental Investigation, Tax Block 1338S, Dames & Moore, April 20, 1992	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.	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.
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.

Table 2

Summary of Historical Environmental Reports and Information

Site 1: 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.
	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 Site 1, northwestern portion of Site 2 and southwestern portion of Site 4.	The level and extent of the TPHC is reported to be consistent with results of previous investigations.

Table 2

Summary of Historical Environmental Reports and Information

Site 1: HHMT - Port Ivory Facility[(1)]

Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results [(2)]	Report Conclusions
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 **including on tank located at Building 1B**. 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.**
	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.
	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.**

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

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 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.
	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.

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

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 from an area adjacent to Building 1B. 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.
***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.**

Table 2

Summary of Historical Environmental Reports and Information

Site 1: HHMT - Port Ivory Facility$^{(1)}$

Report Identification	Report Topic Area(s) Of Concern	Description of Activities and Analytical Results $^{(2)}$	Report Conclusions
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 (GW-16 and GW-1) near Area K had been impacted by industrial activities. The report states that soil investigations performed by Dames & Moore and Recon identified the presence of TPHC, VO compounds and BN compounds 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 included in the materials provided for HMM's review. However, the October 1993 report states that the November 1992 report provides a summary of delineation efforts at Area K. With regard to the delineation efforts at Area K, Recon is reported to have installed 54 test pits, performed field screening and collected and analyzed 17 soil samples. The delineation effort reportedly 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 petroleum 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.
***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.**

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

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.**
	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.**

Table 2

Summary of Historical Environmental Reports and Information

Site 1: HHMT - Port Ivory Facility[(1)]

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	**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.**
	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 HMM 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.**
	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 PHC, toluene and pH.**

Table 2
Summary of Historical Environmental Reports and Information
Site 1: HHMT - Port Ivory Facility$^{(1)}$

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 1: 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, 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 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. 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.

(1) Information provided in this table is as presented in the listed reports. Information pertaining to Site is presented in bold type.
(2) Activities and results are as described in the reports. All activities were performed by or on behalf of P&G.

Table 3
Summary of Environmental Database Listings – Year 2000
Site 1: 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 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.

Table 3
Summary of Environmental Database Listings – Year 2000
Site 1: HHMT - Port Ivory Facility

Database	Database Date	Additional Information
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 42,000 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 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.

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 de-listing of the subject site from the NYS database. A copy of the correspondence issued by the NYSDEC is included in Appendix A.

The NYSDEC LTANKS List includes listings for two tank removals at locations within Site 1. The areas are located east of Building 1-B (case number 920-3697) and southwest of Building 17 (spill number 8907474). Case number 920-3697 is associated with the removal of a 1,000 gallon tank formerly containing diesel oil and the excavation of approximately 50 tons of impacted soil. No documentation of case closure was provided for the 1,000 gallon diesel tank at Building 1-B. Case number 8907474 is associated with the abandonment (closure in place) of a 10,000 gallon tank formerly containing toluene in 1989. The NYSDEC issued a spill case closure for the toluene tank in August of 1990. Given that these tank removals occurred with NYSDEC oversight, 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.

4.2 Sampling Progam

The AOCs identified at the site through performance of the Phase I ESA are as follows: Potential 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 Landfill, Railroad Tracks and Sidings, Surface Staining, Pits and Drains, Former Structures, Listing of the Site (P&G) 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 1 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 1. Please note, no investigative efforts were included for three of the 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 as 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 surface staining or the Closed C&D Landfill since neither of these AOCs relates to Site 1.

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 below saturated depths at certain site locations.

4.2.1 USTs

According to P&G, no active oil/water separators or USTs were present at the HHMT-Port Ivory Facility in 2000. However, USTs were formerly utilized at the subject site to store toluene and various petroleum products including 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 and one tank containing toluene at the HMMT-Port Ivory Facility. Based on the information in the environmental database and in reports provided by P&G, one UST was removed (1,000 gallon tank formerly containing diesel fuel) and one UST was closed-in-place (10,000 gallon tank formerly containing toluene) within Site 1. All tank closures including those for Site 1 are reported to have been 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 entire site is provided in Table 3. In addition, UST removal/closure efforts undertaken for tanks located at Site 1 (1,000 diesel tank and the 10,000 gallon toluene tank) are described below and information provided in P&G reports in presented in Table 2. Given that the removal/abandonment actions were performed with NYSDEC oversight, no SI actions were proposed for soil at the two former UST areas located at Site 1. 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 locations at the site, UST1-UST9. Three of the potential tank areas, UST2, UST5 and UST6 were identified at Site 1. The SI included additional activities to evaluate the three potential UST areas located at Site 1 and the site-wide groundwater SI included a review of groundwater quality at locations throughout Site 1.

Former Tank Areas

A single 1,000 gallon steel tank formerly containing diesel fuel was removed from the area east of Building 1-B in 1991. Fifty tons (approximately) of impacted soil was removed from the area surrounding the tank. Analytical results from soil sampling revealed the presence of polynuclear aromatic hydrocarbon (PAH) compounds in excess of NYSDEC standards (in place at that time) in two of the four samples collected from this area. The P&G report did not recommend any additional efforts with regard to the tank removal. The NYSDEC case number assigned to the UST removal is #920-3697. In 1989, P&G performed closure activities for a 10,000 gallon UST formerly containing toluene located southwest of Building 17. Information from various P&G reports indicated that toluene had impacted groundwater in the northern portion of Site 1. The NYSDEC assigned a Spill Number, #8907474, to the toluene tank in October 1989 and issued a Spill Case Closure letter in August 1990. It should be noted that upon taking ownership of the site, the Port Authority obtained mapping which indicated that the potential tank area designated as UST6 corresponds with the toluene tank area; a discussion of potential tank areas is provided in the following paragraph. Although the ESIW did not propose sampling at the toluene tank area, the UST6 Area was slated for investigation as part of the potential UST area evaluation and groundwater sampling was performed at this portion of Site 1. The investigative effort undertaken at potential tank area, UST6 are described in Sections 5.2 and 5.3.1.

As stated above, three of the potential tank areas, UST2, UST5 and UST6 were identified at Site 1. 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) identified on the Sanborn Maps. 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 of the SI for this site (Section 4.2.8), 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 field 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 three potential UST Areas located within Site 1 (UST2, UST5 and UST6) are presented on Figures 6 and 7. As previously stated, information made available to HMM after the completion of the SI has revealed that potential tank area, UST6, corresponds with the toluene tank area which was closed in place by P&G. The specific SI activities implemented for soil at the three potential tank areas, UST2, UST5 and UST6, located within Site 1 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. Given the proximity of Bridge Creek to Site 1, this issue is addressed within this report. The reports provided by P&G summarized the investigations undertaken by P&G to evaluate the precipitate issue and 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 as well as 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 based on results from prior P&G investigative efforts. The SI activities performed to evaluate this AOC are presented in Section 5.6 and analytical results are presented in Section 6.5.

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. 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 vast majority of these AOCs located at the HHMT-Port Ivory Facility. In addition, some of the available reports commented upon the presence of black staining in the soil and free-phase floating product (free product) on the water surface in monitoring wells. The reports identify and describe remedial efforts undertaken by P&G with regard to the three following areas/issues: the C&D Landfill, the presence of PCBs in soil at Area F1 and USTs. 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 and two of the USTs, a 1,000 gallon diesel tank and a 10,000 gallon toluene tank, are located on Site 1. Actions undertaken (by P&G) at the two UST areas are described in Section 4.2.1 of this report and actions undertaken at Area F1 are described below.

Area F1 is located at the north-central portion of Site 1. According to a March 1993 report, *Area F Soil Remediation Report*, prepared by Recon Systems, Inc., P&G excavated soil and performed confirmatory soil sampling to address previously delineated PCB contamination in soil at Area F1. The report states that P&G first identified Area F1 as an AOC during a SI performed, on their behalf, by Dames & Moore. The PCB contamination is reported to have been delineated through a soil boring investigation performed by Recon in 1992. Although reports identified the presence of TPHC and oil/grease in samples from the unsaturated zone, P&G regarded the presence of PCBs as the only issue of concern with respect to Area F1. Excavation activities were performed in February 1993 and 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 mg/kg. The excavation was extended to a depth of approximately 3 feet bgs. 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 five samples. Detectable levels of Aroclor-1254 were identified in the remaining four samples with the highest concentration recorded at 0.49 mg/kg, below the NYSDEC standard for PCBs of 1 mg/kg. Based on the analytical results, P&G did not propose any further action for this area. However, as P&G did not supply the Port Authority with documentation from the NYSDEC regarding closure of this matter, an evaluation of Area F1 was included in the SI. The specifics of the SI performed at the F1 Area are presented in Section 5.3.2.

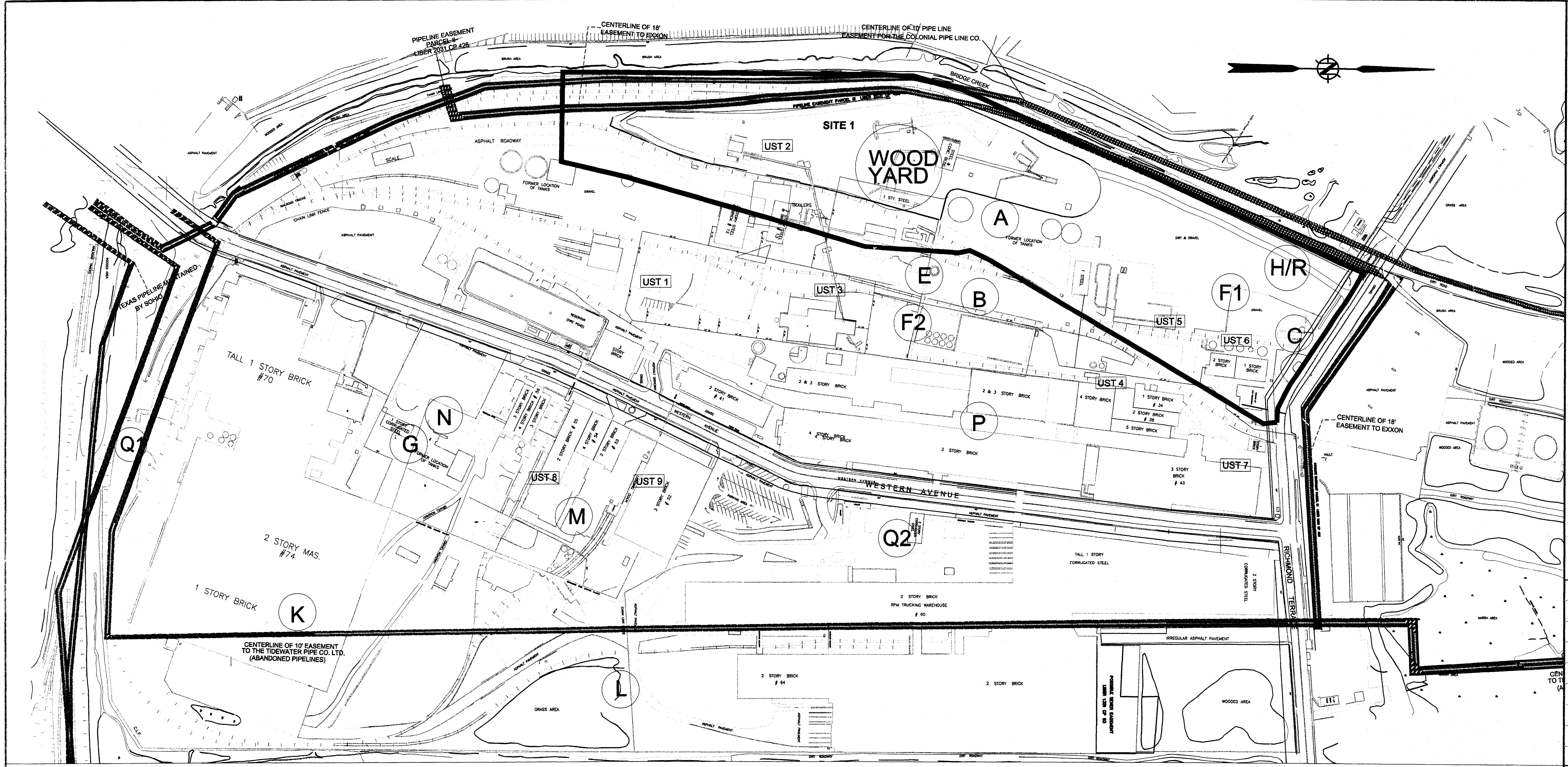
Except as detailed for USTs and Area F1, the P&G reports do not identify or describe any remedial actions undertaken, by P&G, to address contaminants identified in soil at other areas of Site 1. Rather, P&G asserted, in reports, that the contaminants detected in soil at Site 1, as well as the rest of 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 was attributed to prior usage of vegetable oils and 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 immediately surrounding area. However, a few of the reports prepared in the early 1990s included recommendations to address free product and elevated pH in groundwater at Block 1400 (Sites 1 and 2A) including the northern portion of Site 1.

Given the identification of contaminants in soil and groundwater at the site as well as the length of time, which had elapsed since P&G's investigative activities (the majority of sampling was performed in the early 1990s) and limited remedial efforts, 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 1 are as follows: Area A, Area C, Area F1 (previous remediation for the presence of PCBs), Area H/R and the Wood Yard. The locations of the P&G AOCs are presented on Figure 6. The number of samples proposed for each of the P&G 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 and a discussion of site-wide historic fill material and investigative efforts proposed to address same, as related to Site 1, are presented in Section 4.2.7. Given the presence of fill throughout the HHMT-Port Ivory Facility, the SI was designed to integrate the evaluation of the historic 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 as well as 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 historic 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 and 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 SI for groundwater was also designed to review conditions at certain AOCs. The groundwater component of the SI is presented in Section 4.2.8.



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 1 ARE PRESENTED IN BOLD TYPE.

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

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

LEGEND

▨	UTILITY EASEMENT
┼┼	RAILROAD TRACKS
▬	SITE BOUNDARY
Ⓐ	AREA OF CONCERN
UST 5	POTENTIAL UST AREAS

120 0 120 240
SCALE IN FEET

Sheet of

THE PORT AUTHORITY
OF NY & NJ

ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

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

SITE 1
P&G DESIGNATED
AREAS OF CONCERN (AOC)

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

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 and 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 were adequate to assess 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 the conclusion that the railroad system had not impacted soil at the HHMT-Port Ivory Facility. As the NYSDEC has not established a program for the evaluation of current or former railroad systems, 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 proposed 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 borings proposed to evaluate this AOC also would be utilized to evaluate other AOCs and 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 6 of the 27 soil borings at Site 1. As previously stated, it was proposed to install all soil borings to a depth of approximately 15 feet below surface grade. However, the sampling proposed for this AOC included the collection of samples from a discrete 6-inch interval within the upper four feet of the soil. The sampling program proposed an analytical suite comprised of TPHC, VO+10, base neutral (BN) compounds, PCBs and TAL metals.

4.2.5 Pits and Drains

Pits and drains were noted at both interior and exterior site locations. Many of the pits and drains were noted to be sealed or filled with gravel. 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 above, the SI included a review of pits and drains through visual inspection, as possible, followed by/combined with the installation and sampling of soil borings. Specifically, 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. Seven of the 28 soils borings were to be installed at Site 1. 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 historic 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 and to analyze the samples 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.

4.2.6 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 1, review of historical information sources revealed the following: the presence of additional structures (buildings and tanks) at the Wood Yard; the presence of ASTs west and north of Buildings 12 and 13 (buildings and structures east and south of Buildings 12 and 13 will be addressed in the Site 2A/2B Report); a building north of Building S-16; ASTs at Area A; and, structures extending from or adjacent to Building 17. In addition, review of historical information sources also revealed the presence of discolored areas, debris piles and possible historic fill material at various site locations. The discolored areas, debris piles and historic fill material are addressed under Section 4.2.7, Historic Fill Material. Concerns associated with former railroad tracks and sidings are discussed in Section 4.2.4.

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.). Based on the locations of former structures and debris piles, it was proposed to install and sample twenty-six soil borings to address this AOC. Nine of the twenty-six soil borings were to be installed at Site 1. As previously stated, it was proposed to utilize all soil borings for the evaluation of site-wide historic 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. 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. Specific sample selection within the designated interval was to be based upon the results of field screening.

4.2.7 Historic Fill Material

According to representatives of P&G and information provided in reports provided by same, 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 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 specific composition of the fill is reported to vary with location. Information from P&G's various 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. Also, reports provided by P&G described the presence of black staining in site soil at a few locations at the HHMT-Port Ivory Facility.

No comprehensive report was provided which summarized the locations and concentrations of fill material, contaminants both related and unrelated to fill material, and/or 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 historic 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 provides sufficient site coverage with regard to the evaluation of historic 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 these for information pertaining to historic 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 23 additional soil borings to provide adequate site-wide coverage with regard to historic fill. Two (Fill-7 and Fill-8) of the 23 soil borings were to be installed in Site 1. In total, the evaluation of other AOCs included the installation and sampling of 97 soil borings. Therefore, the site-wide historic fill evaluation included a total of 120 soil borings; the total did not include those proposed for UST areas since the number and locations of same were to be based upon GPR/EM survey results (See Section 4.2.1) or the five additional borings slated for visual review of the former sludge pond at Area L at Site 3.

Twenty-six soil borings were proposed to evaluate historic fill at Site 1. 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 historic fill material at the site, it was proposed to perform a visual assessment of soil conditions at each soil boring location. To determine if contaminants are present in historic fill material, it was proposed to obtain samples from each type of fill material and submit same for laboratory analysis. The goal of the fill evaluation program was to determine the extent and nature of the various historic 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 historic fill material noted to be present at the site, regardless if the historic fill was situated within the saturated zone.

4.2.8 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 at the HHMT-Port Ivory Facility during initial assessment efforts, however, no free product was observed in existing wells located in Site 1. As the majority of the groundwater sampling presented in the P&G reports was performed 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 this site included the sampling of a representative number of the 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); it was assumed that five existing wells from Site 1 would be included in the sampling program.

Based on information regarding groundwater quality and the presence of fill material provided in P&G reports, it was proposed to install and sample 17 shallow monitoring wells at locations at the interior and around the perimeter of the site. Five of the 17 wells were to be located on Site 1. In addition, given that information provided by P&G indicated that a confining layer exists below the noted fill material at some site locations, 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 1. Upon

*

completion of well installation activities, it was proposed to collect samples from a portion of the existing wells (assumed to be 14 site wells including 5 wells on Site 1) and all newly installed wells (assumed to be 17 wells with 5 wells installed on Site 1) and analyze the samples for TPHC, TCL, oil and grease and pH. Prior to the performance of sampling, it was proposed to redevelop existing monitoring wells included in the proposed sampling program.

As stated in Section 4.2.1, temporary wells were proposed for UST areas 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. In addition, 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. These protocol's are presented in the Port Authority *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. 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 was evaluated in accordance with Division of Environmental Remediation Data Usability Summary Report (DUSR) guidelines. * The DUSR associated with the SI will be provided under separate cover. If desired by the NYSDEC under the VCP Program, the Port Authority will provide a copy of the *Field Standard Operating Procedures Manual.*

5.0 SI - FIELD INVESTIGATION

This section describes the SI activities undertaken to evaluate the AOCs identified at Site 1. Due to the site-wide nature of many of the AOCs, numerous sample locations were utilized to evaluate multiple AOCs at Site 1. 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 1 were utilized as part of the site-wide fill evaluation. Also, the investigation 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 by sampling unique strata situated below the saturated zone.

This SI included investigation of soil and groundwater at Site 1 as well as sediment, and surface water of the adjacent Bridge Creek. The soil component of the Site 1 SI consisted of the installation of 26 soil borings and the collection of 61 soil samples for laboratory analysis, excluding UST area samples. Due to the presence of reinforced concrete and/or utilities, it was not possible to install five of the soil borings proposed for Site 1. The soil borings that could not be installed were as follows: Wood-2 and Wood-4 (Wood Yard), F1-1 and F1-2 (F1 Area) and PD-12 (pits and drains). Given the comprehensive nature of the SI and the overall sampling frequency at Site 1, the Port Authority proposed to review field information and analytical results and determine if additional efforts would be necessary at these five locations. Additional information related to the evaluations accomplished at the Wood Yard, Area F1 and for pits and drains are presented in the following sections. The potential UST investigation included the performance of a GPR/EM survey, the installation of eight soil borings, the collection of 16 soil samples from the soil borings installed at the three potential UST areas on Site 1 as well as the installation and sampling of one temporary monitoring well. In total, the SI for soil at Site 1 included the installation of 42 soil borings and the collection of 77 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 (PA-TMW-02) and the two deeper wells installed at locations, PAMW-1D and PAMW-6D. The purpose of the temporary well was to obtain groundwater quality information to supplement soil quality information provided through soil sampling at the UST2 Area. The purpose of the deeper wells was to establish shallow/deep well pairs at certain site locations for use in groundwater evaluation effort. Given the close proximity of other soil borings to the three well locations (i.e., PA-TMW-02, PAMW-1D, PAMW-6D), 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 five existing wells, reviewing wells for the presence of free product (free-phase floating product) and visual inspection and the collection and laboratory analysis of 11 groundwater samples (five newly installed wells, five existing wells, and one temporary well). In addition, a sheen was noted on the groundwater surface of temporary well, PG-TMW-02. Given that insufficient product was present to collect for analysis, a groundwater sample was collected from this well and submitted for laboratory analysis. The surface water/sediment evaluation included the collection and analysis of three surface water samples and five sediment samples from Bridge Creek.

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 1, as feasible, are presented on Figure 7. ✓

All sampling and other field investigation activities were performed in accordance with the Port Authority *Field Standard Operating Procedures Manual* dated January 1995 and New York State Department of Environmental Conservation (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 using 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 facility 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. The Port Authority or HMM did not observe operations and therefore could not assess issues associated with daily operating practices including housekeeping, hazardous material and petroleum storage, etc.

5.1 Pre-Investigation Field Activities

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

- Site walk(s)
- 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.
- Coordination with site operations personnel as well as former P&G employees to discuss boring and monitoring well locations and possible underground utilities.

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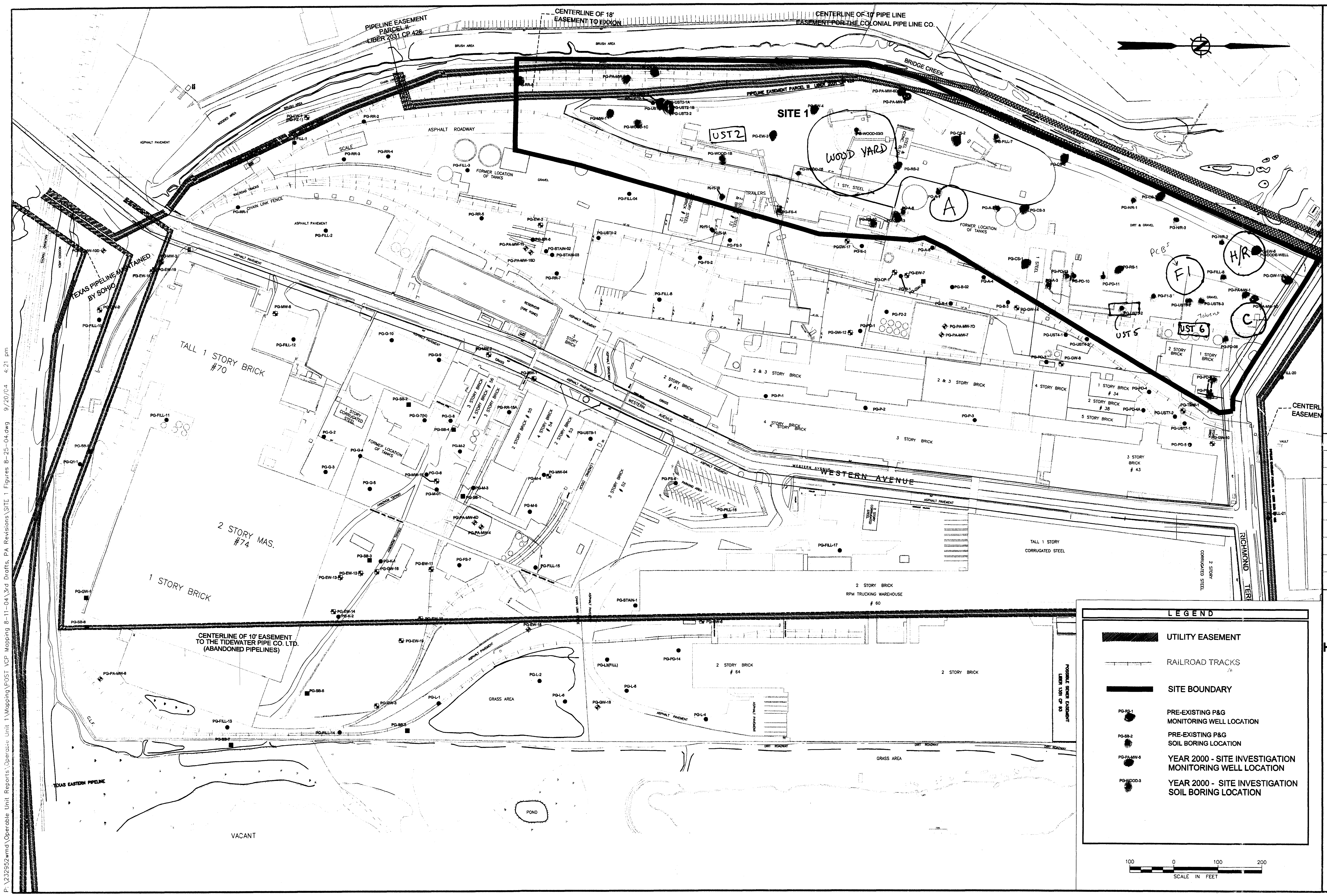

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THE PORT AUTHORITY
OF NY & NJ

ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

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

SITE 1
SITE INVESTIGATION
SAMPLE LOCATION 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.

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number FIGURE 7

Table 4
Summary of SI Investigative Actions and Sampling – Year 2000
Site 1: HHMT - Port Ivory Facility (1)

AOC	Description of Issues	Description of Actions and Sampling	Sampling Methodology
Potential USTs (UST1 to UST9)	Sanborn Maps identified nine areas which may include USTs: UST1, **UST2**, UST3, UST4, **UST5**, **UST6**, UST7, UST8, UST9	GPR/EM Survey performed at each area to attempt to identify tanks.	Soil E418.1, SW6010, SW7471, SW8081, SW8082, SW8260, SW8270, SW9014, SW9045 SW9065, SW9071
		16 soil borings were installed at the site with 8 soil borings in Site 1: 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 16 samples from Site 1were 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(8-9), UST2-3(12-14),** 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(1.5-2), UST6-3(14-16),** 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 one temporary well from Site 1 were installed and sampled: TMW-01 and **TMW-02**	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.	Sediment SW6010, SW7471
		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.**	Surface Water 200.7, E245.2, 335.2

Table 4
Summary of SI Investigative Actions and Sampling – Year 2000
Site 1: HHMT - Port Ivory Facility (1)

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. Areas at Site 1: **A,C,F1, H/R, Wood Yard**	Soil borings were installed and sampled. 58 soil borings were installed at the site with 13 soil borings at Site 1: **A-1, A-2, A-3,** A-4, A-5, **A-6,** B-02 (B-02A), B-1, B-3, B-4, **PAMW-1,** PAMW-1D (not sampled), 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-1B(not sampled), **WOOD-01C, WOOD-3, WOOD-03, WOOD-05.** 108 soil samples from the site with 30 samples from Site 1 that were submitted for laboratory analysis: **A-1(2-4), A-2(0-2), A-2(2-4), A-2(6-8), A-3(2-4), A-3(6-8), A-3(10-12),** 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-03(0.5-2), WOOD-03 (2-4), WOOD-3(2-4), WOOD-3(6-8), WOOD-05(0-2), WOOD-05(2-4), WOOD-05(4-6), WOOD-05(6-8), WOOD-05(8-10) and WOOD-05(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 at the site with 4 at Site 1 were installed: **A-1, A-2, A-3,** A-4, A-5, **A-6,** 10 samples from the site with 7 samples from Site 1 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		4 soil borings were installed: B-1, B-02, B-3, B-4 11 samples 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.	Soil E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071

Table 4
Summary of SI Investigative Actions and Sampling – Year 2000
Site 1: HHMT - Port Ivory Facility (1)

Area C Former Oleum AST and Acid Wastewater Area/Block 1400		2 soil borings were installed: **PAMW-1** and **PAMW-1D** 3 samples were submitted for laboratory analysis: **PAMW-1(2-4), PAMW-1 (4-6), and PAMW-1(10-12).** 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: E-1. 3 samples 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 at the site was installed and is located in Site 1: **F1-3** 2 samples from the site in Site 1 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: F2-2. 2 samples 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. 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).	Soil E418.1, SW6010, SW7471 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 at the site, all located in Site 1, were installed: **H/R-1, H/R-2 and H/R-3.** 6 samples, all from borings located in Site 1, 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

Table 4
Summary of SI Investigative Actions and Sampling – Year 2000
Site 1: HHMT - Port Ivory Facility (1)

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.
Area P Former Product Unloading Pit/Block 1400		3 soil borings were installed: P-1, P-2 and P-3. 6 soil samples 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, Q1-1. 2 samples 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 at the site, all located in Site 1, were installed: **WOOD-1B(not sampled), WOOD-01C, WOOD-03, WOOD-3 and WOOD-05.** 11 samples, all from boring located in Site 1, were submitted for laboratory analysis: **WOOD-01C(10-12), WOOD-03(0.5-2), WOOD-03(2-4), WOOD-3(2-4), WOOD-3(6-8), WOOD-05(0-2), WOOD0-5(2-4), WOOD-05(4-6), WOOD-05(6-8), WOOD-05(8-10) and WOOD-05(14-16).**	Soil E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071

Table 4
Summary of SI Investigative Actions and Sampling – Year 2000
Site 1: HHMT - Port Ivory Facility (1)

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 6 soil borings at Site 1 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**. 46 samples from the site with 12 samples from Site 1 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)**.	Soil E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071
Surface 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 were installed: STAIN-1, STAIN-02, STAIN-03, STAIN-3B, RR-06 and RR-07. 12 samples 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

Table 4
Summary of SI Investigative Actions and Sampling – Year 2000
Site 1: HHMT - Port Ivory Facility [(1)]

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 were installed at the site with 6 soil borings at Site 1: PD-1, PD-3, PD-4, PD-4A(not sampled), 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, with 11 samples collected from soil borings installed at Site 1 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, 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.	Soil borings were installed and sampled at areas formerly occupied by structures, debris piles and discolored areas. 26 soil borings were installed at the site with 9 soil borings at Site 1: **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-05,** RR-01, RR-04, RR-05, PD-1, PD-3, PD-4A(not sampled), **PD-8, PD-9, PD-11,** and PD-13(not sampled). 52 samples, with 25 samples collected from soil borings installed at Site 1 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-03(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-05(0-2), WOOD-05(2-4), WOOD-05(4-6), WOOD-05(6-8), WOOD-05(8-10), WOOD-05(14-16), WOOD-3(2-4), WOOD-3(6-8)**, RR-01(0-2), RR-01(2-4), RR-04(0-2), RR-04(2-4), RR-05(0-2), RR-05(8-10), 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).**	Soil E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071

Table 4
Summary of SI Investigative Actions and Sampling – Year 2000
Site 1: HHMT - Port Ivory Facility (1)

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. All soil borings were evaluated for the presence of fill material. The following additional soil borings were installed to complete the site-wide fill characterization. 23 soil borings with 2 soil borings at Site 1 were installed: Fill-1(not sampled), 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 (Fill-18), PAMW-12(Fill-19), PAMW-13(Fill-23), and PAMW-14D(Fill-24). 60 samples, with 5 samples from soil borings installed at Site 1 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), PA-MW-11D(0-2), PA-MW-12(0-2), PA-MW-12(2-4), PA-MW-12(4-6), PA-MW-12(6-8), PA-MW-13(0-2), PA-MW-13(2-4), PA-MW-14D(0-2) and PA-MW-14D(4-6).	Soil E418.1, SW6010, SW7471 SW8081, SW8082, SW8260 SW8270, SW9014, SW9045 SW9065, SW9071

Table 4

Summary of SI Investigative Actions and Sampling – Year 2000

Site 1: HHMT - Port Ivory Facility (1)

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 wells at Site 1 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-4D, **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, 1 at Site 1 were installed and sampled: TMW-01 and **TMW-02.** The following 14 existing wells at the site, 5 of which are located in Site 1, were included in the sampling effort: EW-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 free product material from 4 wells: 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

Notes:

(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 1 are presented in bold type.

(3): The prefix "PG" has not been included for soil borings, samples or well designations.

- Coordination with representatives of the pipeline companies concerning the presence of various pipelines that transect the site.
- Coordination with representatives of the local utility companies and authorities regarding the location of public utilities.
- Supervised personnel from Hager-Richter Geoscience, Inc (Hager-Richter) field screening 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 three locations at Site 1. 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 of the following site areas:

- Area UST2: South of the feeder house in the Wood Yard
- Area UST5: South and West of Building 17
- Area UST6: West of Building 17

HMM retained Hager-Richter GeoScience, Inc., (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 B 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 and 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 using a stainless steel trowel to the appropriate laboratory containers. Upon completion of the soil boring, the abandoned borehole was pressure-grouted with a cement-bentonite mixture 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 1 are presented in Table 4 and 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 C. As previously stated, soil borings and samples were utilized to evaluate multiple AOCs at Site 1. 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

Three potential UST areas (UST2, UST5 and UST6) were identified at Site 1. 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 eight soil borings were installed to evaluate potential UST Areas. Five soil borings were installed and sampled at Area UST2 (UST2-1, UST2-1A, UST2-1B, UST2-2, and UST2-3). Ten soil samples were collected from the soil borings installed at Area UST2 and submitted for laboratory analyses. In addition, one temporary well TMW-02 was installed and sampled at Area UST2. One soil boring, UST5-2, was installed at Area UST5. It was not possible to install additional soil borings at this area due to the presence of concrete and potential utilities. One soil sample was collected from UST5-2 and submitted for laboratory analysis. Two soil borings, UST6-2 and UST6-3, were installed at Area UST6. It was not possible to install proposed sample UST6-1 due to the presence of a

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location	**Recommended**	**PG-A-1**	**PG-A-2**	**PG-A-2**	**PG-A-3**	**PG-A-3**	**PG-A-3**	**PG-A-6**
Sample Date	**Soil**	12/2/2000	11/29/2000	11/29/2000	11/16/2000	11/16/2000	11/16/2000	11/10/2000
Sample ID	**Cleanup**	PG-A-01	PG-A-02	PG-A-02	PG-A-03	PG-A-03	PG-A-03	PG-A-06
Sample Depth	**Objective**	2-4'	0-2'	2-4'	2.4-4'	6-8'	10-12'	1-3'
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	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
1,1,2-TRICHLOROETHANE	6	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
1,1-DICHLOROETHANE	0.2	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
1,1-DICHLOROETHYLENE	0.4	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
1,2-DICHLOROETHANE	0.1	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
1,2-DICHLOROPROPANE	NS	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
2-CHLOROETHYL VINYL ETHER	NS	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
ACROLEIN	NS	0.019 U	0.016 U	0.028 U	4.7 U	3.7 U	3.2 U	0.020 U
ACRYLONITRILE	NS	0.0087 U	0.0073 U	0.013 U	0.58 U	0.45 U	0.39 U	0.0094 U
BENZENE	0.06	0.0012 U	0.0011 U	0.0019 U	0.31 U	0.25 U	0.21 U	0.0014 U
BROMODICHLOROMETHANE	NS	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
BROMOFORM	NS	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
BROMOMETHANE	NS	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
CARBON TETRACHLORIDE	0.6	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
CHLOROBENZENE	1.7	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
CHLOROETHANE	1.9	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
CHLOROFORM	0.3	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
CHLOROMETHANE	NS	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
CIS-1,3-DICHLOROPROPENE	NS	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
DIBROMOCHLOROMETHANE	NS	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
DICHLOROMETHANE	0.1	0.0096 B	0.0047 JB	0.0047 JB	1.6 U	1.2 U	1.1 U	0.0068 U
ETHYLBENZENE	5.5	0.0012 U	0.0011 U	0.0019 U	0.31 U	0.25 U	0.21 U	0.0014 U
M&P-XYLENES	1.2*	0.0025 U	0.0021 U	0.0038 U	0.63 U	0.49 U	0.42 U	0.0027 U
METHYLBENZENE	1.5	0.0012 U	0.0011 U	0.0019 U	0.31 U	0.25 U	0.21 U	0.0014 U
O-XYLENE	*1.2**	*0.0012 U*	*0.0011 U*	*0.0019 U*	0.31 U	0.25 U	0.21 U	0.0014 U
TETRACHLOROETHYLENE	1.4	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
TRICHLOROETHYLENE	0.7	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
VINYL CHLORIDE	0.2	0.0062 U	0.0053 U	0.0094 U	1.6 U	1.2 U	1.1 U	0.0068 U
TOTAL VOCs	10	0.0096	0.0047	0.0047	ND	ND	ND	ND

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

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG.**	**PG-FS-1B** 11/17/2000 PG-FS-01B 1-2' MG/KG	**PG-FS-1B** 11/17/2000 PG-FS-01B 6-7' MG/KG	**PG-FS-1B** 11/17/2000 PG-FS-01B 12-13.5' MG/KG	**PG-FS-4** 11/15/2000 PG-FS04 0-2' MG/KG	**PG-FS-4** 11/15/2000 PG-FS04 2-4' MG/KG	**PG-FILL-7** 12/4/2000 PG-FILL7 1-2.5' MG/KG	**PG-FILL-7** 12/4/2000 PG-FILL7 2.5-4' MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
1,1,2-TRICHLOROETHANE	6	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
1,1-DICHLOROETHANE	0.2	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
1,1-DICHLOROETHYLENE	0.4	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
1,2-DICHLOROETHANE	0.1	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
1,2-DICHLOROPROPANE	NS	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
2-CHLOROETHYL VINYL ETHER	NS	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
ACROLEIN	NS	0.15 U	0.024 U	0.029 U	0.020 U	0.022 U	0.016 U	0.017 U
ACRYLONITRILE	NS	0.069 U	0.011 U	0.013 U	0.0091 U	0.010 U	0.0075 U	0.0078 U
BENZENE	0.06	0.010 U	0.0016 U	0.0019 U	0.0013 U	0.0015 U	0.0011 U	0.0011 U
BROMODICHLOROMETHANE	NS	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
BROMOFORM	NS	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
BROMOMETHANE	NS	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
CARBON TETRACHLORIDE	0.6	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
CHLOROBENZENE	1.7	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
CHLOROETHANE	1.9	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
CHLOROFORM	0.3	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
CHLOROMETHANE	NS	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
CIS-1,3-DICHLOROPROPENE	NS	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
DIBROMOCHLOROMETHANE	NS	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
DICHLOROMETHANE	0.1	0.080	0.0038 JB	0.0059 JB	0.0050 JB	0.0036 JB	0.0038 JB	0.0019 JB
ETHYLBENZENE	5.5	0.010 U	0.0016 U	0.0019 U	0.0013 U	0.0015 U	0.0011 U	0.0011 U
M&P-XYLENES	1.2*	0.011 J	0.0032 U	0.0038 U	0.0026 U	0.0029 U	0.0022 U	0.0022 U
METHYLBENZENE	1.5	0.078	0.0016 U	0.0019 U	0.0013 U	0.0015 U	0.0011 U	0.0011 U
O-XYLENE	1.2*	0.010 U	0.0016 U	0.0019 U	0.0013 U	0.0015 U	0.0011 U	0.0011 U
TETRACHLOROETHYLENE	1.4	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
TRICHLOROETHYLENE	0.7	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
VINYL CHLORIDE	0.2	0.050 U	0.0081 U	0.0096 U	0.0066 U	0.0074 U	0.0054 U	0.0056 U
TOTAL VOCs	10	0.158	0.0038	0.0059	0.005	0.0036	0.0038	0.0019

U Undetectable Levels

ND Not Detected

NS No Standard

* Total Xylene Recommended Cleanup Standard

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location	**Recommended**	**PG-FILL-7**	**PG-FILL-8**	**PG-FILL-8**	**PG-H/R-1**	**PG-H/R-1**	**PG-H/R-2**
Sample Date	**Soil**	12/4/2000	12/2/2000	12/2/2000	12/2/2000	12/2/2000	11/10/2000
Sample ID	**Cleanup**	PG-FILL7	PG-FILL08	PG-FILL08	PG-H/R-01	PG-H/R-01	PG-H/R-2
Sample Depth	**Objective**	10-12'	0-2'	6-8'	1-3'	3-4.5'	0-1.5'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
1,1,2-TRICHLOROETHANE	6	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
1,1-DICHLOROETHANE	0.2	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
1,1-DICHLOROETHYLENE	0.4	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
1,2-DICHLOROETHANE	0.1	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
1,2-DICHLOROPROPANE	NS	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
2-CHLOROETHYL VINYL ETHER	NS	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
ACROLEIN	NS	0.032 U	0.018 U	0.031 U	0.021 U	0.030 U	0.017 U
ACRYLONITRILE	NS	0.015 U	0.0082 U	0.014 U	0.0095 U	0.014 U	0.0079 U
BENZENE	0.06	0.0021 U	0.0012 U	0.0021 U	0.0014 U	0.0020 U	0.0011 U
BROMODICHLOROMETHANE	NS	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
BROMOFORM	NS	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
BROMOMETHANE	NS	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
CARBON TETRACHLORIDE	0.6	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
CHLOROBENZENE	1.7	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
CHLOROETHANE	1.9	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
CHLOROFORM	0.3	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
CHLOROMETHANE	NS	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
CIS-1,3-DICHLOROPROPENE	NS	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
DIBROMOCHLOROMETHANE	NS	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
DICHLOROMETHANE	0.1	0.0052 JB	0.0037 JB	0.0069 JB	0.0035 JB	0.0068 JB	0.0021 JB
ETHYLBENZENE	5.5	0.0021 U	0.0012 U	0.0021 U	0.0014 U	0.0020 U	0.0011 U
M&P-XYLENES	1.2*	0.0043 U	0.0024 U	0.0042 U	0.0027 U	0.0040 U	0.0023 U
METHYLBENZENE	1.5	0.0021 U	0.0012 U	0.0021 U	0.0014 U	0.0020 U	0.0011 U
O-XYLENE	1.2*	0.0021 U	0.0012 U	0.0021 U	0.0014 U	0.0020 U	0.0011 U
TETRACHLOROETHYLENE	1.4	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
TRICHLOROETHYLENE	0.7	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
VINYL CHLORIDE	0.2	0.011 U	0.0060 U	0.010 U	0.0068 U	0.010 U	0.0057 U
TOTAL VOCs	10	0.0052	0.0037	0.0069	0.0035	0.0068	0.0021

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

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended Soil Cleanup Objective MG/KG**	**PG-H/R-2** 11/10/2000 PG-H/R-2 1.5-3.5' MG/KG	**PG-H/R-3** 11/10/2000 PG-H/R-3 0.3-1' MG/KG	**PG-H/R-3** 11/10/2000 PG-H/R-3 1-3' MG/KG	**PG-F1-3** 11/10/2000 PG-F1-3 1-3' MG/KG	**PG-F1-3** 11/10/2000 PG-F1-3 3-5' MG/KG	**PG-PD-6** 11/21/2000 PG-PD-06 6-8' MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
1,1,2-TRICHLOROETHANE	6	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
1,1-DICHLOROETHANE	0.2	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
1,1-DICHLOROETHYLENE	0.4	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
1,2-DICHLOROETHANE	0.1	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
1,2-DICHLOROPROPANE	NS	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
2-CHLOROETHYL VINYL ETHER	NS	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
ACROLEIN	NS	0.027 U	0.018 U	0.026 U	2.2 U	0.030 U	0.16 U
ACRYLONITRILE	NS	0.012 U	0.0083 U	0.012 U	1.0 U	0.014 U	0.074 U
BENZENE	0.06	0.0018 U	0.0012 U	0.0018 U	0.15 U	0.0020 U	0.011 U
BROMODICHLOROMETHANE	NS	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
BROMOFORM	NS	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
BROMOMETHANE	NS	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
CARBON TETRACHLORIDE	0.6	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
CHLOROBENZENE	1.7	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
CHLOROETHANE	1.9	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
CHLOROFORM	0.3	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
CHLOROMETHANE	NS	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
CIS-1,3-DICHLOROPROPENE	NS	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
DIBROMOCHLOROMETHANE	NS	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
DICHLOROMETHANE	0.1	0.0041 JB	0.0024 JB	0.0088 U	**0.22 J**	0.0040 JB	0.025 JB
ETHYLBENZENE	5.5	0.0018 U	0.0012 U	0.0018 U	0.25	0.0020 U	0.011 U
M&P-XYLENES	1.2*	0.0036 U	0.0024 U	0.0035 U	**0.80***	0.0040 U	0.021 U
METHYLBENZENE	1.5	0.0018 U	0.0012 U	0.0018 U	0.33	0.019	0.025
O-XYLENE	1.2*	0.0018 U	0.0012 U	0.0018 U	**0.44***	0.0020 U	0.011 U
TETRACHLOROETHYLENE	1.4	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
TRICHLOROETHYLENE	0.7	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
VINYL CHLORIDE	0.2	0.0089 U	0.0060 U	0.0088 U	0.74 U	0.010 U	0.053 U
TOTAL VOCs	10	0.0041	0.0024	ND	1.46	0.0230	0.05

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

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-PD-6** 11/21/2000 PG-PD-06 12-14' MG/KG	**PG-PD-8** 11/29/2000 PG-PD-8 2-4' MG/KG	**PG-PD-8** 11/29/2000 PG-PD-8 8-10' MG/KG	**PG-PD-8** 11/29/2000 PG-PD-8 16-17' MG/KG	**PG-PD-9** 12/4/2000 PG-PD-09 4-6' MG/KG	**PG-PD-9** 12/4/2000 PG-PD-09 8-10' MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.019 U	0.0016 J	0.066	0.050 U	0.0074 U	0.038 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
1,1,2-TRICHLOROETHANE	6	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
1,1-DICHLOROETHANE	0.2	0.019 U	0.0069 U	0.0072 J	0.050 U	0.0074 U	0.038 U
1,1-DICHLOROETHYLENE	0.4	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
1,2-DICHLOROETHANE	0.1	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
1,2-DICHLOROPROPANE	NS	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
2-CHLOROETHYL VINYL ETHER	NS	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
ACROLEIN	NS	0.058 U	0.021 U	0.10 U	0.15 U	0.022 U	0.11 U
ACRYLONITRILE	NS	0.027 U	0.0096 U	0.046 U	0.069 U	0.010 U	0.053 U
BENZENE	0.06	0.035	0.0068	0.044	0.021	0.0015 U	0.0076 U
BROMODICHLOROMETHANE	NS	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
BROMOFORM	NS	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
BROMOMETHANE	NS	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
CARBON TETRACHLORIDE	0.6	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
CHLOROBENZENE	1.7	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
CHLOROETHANE	1.9	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
CHLOROFORM	0.3	0.019 U	0.028	0.021 J	0.050 U	0.0027 J	0.038 U
CHLOROMETHANE	NS	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
CIS-1,3-DICHLOROPROPENE	NS	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
DIBROMOCHLOROMETHANE	NS	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
DICHLOROMETHANE	0.1	0.010 JB	0.0037 JB	0.019 JB	0.043 JB	0.0046 JB	0.018 JB
ETHYLBENZENE	5.5	0.012	0.0014 U	0.0073	0.010	0.0015 U	0.0076 U
M&P-XYLENES	1.2*	0.029	0.0019 J	0.017	0.019 J	0.0029 U	0.015 U
METHYLBENZENE	1.5	0.28	0.31	**3.3**	**1.8**	0.0015 U	0.020
O-XYLENE	1.2*	0.018	0.0014 U	0.0071	0.010 U	0.0015 U	0.0076 U
TETRACHLOROETHYLENE	1.4	0.019 U	0.0031 J	0.0078 J	0.050 U	0.0074 U	0.038 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
TRICHLOROETHYLENE	0.7	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
VINYL CHLORIDE	0.2	0.019 U	0.0069 U	0.033 U	0.050 U	0.0074 U	0.038 U
TOTAL VOCs	10	0.384	0.3551	3.4964	1.893	0.0073	0.038

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

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-PD-10** 11/28/2000 PG-PD-10 2-4' MG/KG	**PG-PD-10** 11/28/2000 PG-PD-10 6-8' MG/KG	**PG-PD-11** 11/27/2000 PG-PD-11 4-6' MG/KG	**PG-RR-8** 12/1/2000 PG-RR-08 2-4' MG/KG	**PG-RR-8** 12/1/2000 PG-RR-08 6-8' MG/KG	**PG-RR-10** 12/2/2000 PG-RR10 2-2.5' MG/KG	**PG-RR-10** 12/2/2000 PG-RR10 8-10' MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
1,1,2-TRICHLOROETHANE	6	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
1,1-DICHLOROETHANE	0.2	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
1,1-DICHLOROETHYLENE	0.4	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
1,2-DICHLOROETHANE	0.1	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
1,2-DICHLOROPROPANE	NS	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
2-CHLOROETHYL VINYL ETHER	NS	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
ACROLEIN	NS	0.017 U	0.038 U	0.026 U	0.023 U	0.021 U	0.020 U	0.020 U
ACRYLONITRILE	NS	0.0080 U	0.018 U	0.012 U	0.011 U	0.0096 U	0.0094 U	0.0091 U
BENZENE	0.06	0.0011 U	0.0026 U	0.0018 U	0.0016 U	0.0014 U	0.0014 U	0.0013 U
BROMODICHLOROMETHANE	NS	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
BROMOFORM	NS	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
BROMOMETHANE	NS	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
CARBON TETRACHLORIDE	0.6	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
CHLOROBENZENE	1.7	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
CHLOROETHANE	1.9	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
CHLOROFORM	0.3	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
CHLOROMETHANE	NS	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
CIS-1,3-DICHLOROPROPENE	NS	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
DIBROMOCHLOROMETHANE	NS	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
DICHLOROMETHANE	0.1	0.0068 B	0.022 B	0.0028 JB	0.0026 JB	0.0022 JB	0.0047 JB	0.0067 B
ETHYLBENZENE	5.5	0.0020	0.0026 U	0.0018 U	0.0016 U	0.0014 U	0.0014 U	0.0013 U
M&P-XYLENES	1.2*	0.0043	0.0051 U	0.0035 U	0.0031 U	0.0028 U	0.0027 U	0.0017 J
METHYLBENZENE	1.5	0.0017	0.0031	0.0018 U	0.0016 U	0.0014 U	0.0014 U	0.0013 U
O-XYLENE	1.2*	0.0023	0.0026 U	0.0018 U	0.0016 U	0.0014 U	0.0014 U	0.0013 U
TETRACHLOROETHYLENE	1.4	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
TRICHLOROETHYLENE	0.7	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
VINYL CHLORIDE	0.2	0.0057 U	0.013 U	0.0088 U	0.0078 U	0.0069 U	0.0068 U	0.0066 U
TOTAL VOCs	10	0.0171	0.0251	0.0028	0.0026	0.0022	0.0047	0.0084

U Undetectable Levels

ND Not Detected

NS No Standard

* Total Xylene Recommended Cleanup Standard

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location Sample Date Sample ID Sample Depth Concentration	Recommended Soil Cleanup Objective MG/KG	PG-UST2-1 11/30/2000 PG-UST2-1 6-7' MG/KG	PG-UST2-1 11/30/2000 PG-UST2-1 8-10' MG/KG	PG-UST2-1A 11/30/2000 PG-UST2-1A 0-2' MG/KG	PG-UST2-1B 11/30/2000 PG-UST2-1B 2-4' MG/KG	PG-UST2-1B 11/30/2000 PG-UST2-1B 4-5.5' MG/KG	PG-UST2-2 11/30/2000 PG-UST2-2 4-5.5' MG/KG	PG-UST2-2 11/30/2000 PG-UST2-2 10-12' MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
1,1,2-TRICHLOROETHANE	6	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
1,1-DICHLOROETHANE	0.2	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
1,1-DICHLOROETHYLENE	0.4	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
1,2-DICHLOROETHANE	0.1	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
1,2-DICHLOROPROPANE	NS	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
2-CHLOROETHYL VINYL ETHER	NS	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
ACROLEIN	NS	0.018 U	0.090 U	0.068 U	0.021 U	0.017 U	0.017 U	0.019 U
ACRYLONITRILE	NS	0.0082 U	0.042 U	0.032 U	0.0099 U	0.0077 U	0.0080 U	0.0089 U
BENZENE	0.06	0.0012 U	0.0060 U	0.0045 U	0.0014 U	0.0011 U	0.0011 U	0.0013 U
BROMODICHLOROMETHANE	NS	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
BROMOFORM	NS	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
BROMOMETHANE	NS	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
CARBON TETRACHLORIDE	0.6	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
CHLOROBENZENE	1.7	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
CHLOROETHANE	1.9	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
CHLOROFORM	0.3	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
CHLOROMETHANE	NS	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
CIS-1,3-DICHLOROPROPENE	NS	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
DIBROMOCHLOROMETHANE	NS	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
DICHLOROMETHANE	0.1	0.0089 B	0.035 B	0.0091 JB	0.0031 JB	0.011 B	0.0030 JB	0.0067 B
ETHYLBENZENE	5.5	0.0012 U	0.0060 U	0.0045 U	0.0016	0.0021	0.0011 U	0.0013 U
M&P-XYLENES	1.2*	0.0024 U	0.0082 J	0.0091 U	0.0029 U	0.0032	0.0023 U	0.0026 U
METHYLBENZENE	1.5	0.0012 U	0.0060 U	0.0045 U	0.0014 U	0.0013	0.0011 U	0.0013 U
O-XYLENE	1.2*	0.0012 U	0.011	0.0045 U	0.0014 U	0.0054	0.0011 U	0.0013 U
TETRACHLOROETHYLENE	1.4	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
TRICHLOROETHYLENE	0.7	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
VINYL CHLORIDE	0.2	0.0060 U	0.030 U	0.023 U	0.0071 U	0.0056 U	0.0057 U	0.0064 U
TOTAL VOCs	10	0.0089	0.0542	0.0091	0.0047	0.023	0.0030	0.0067

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

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended Soil Cleanup Objective** **MG/KG**	**PG-UST2-3** 12/1/2000 PG-UST2-3 2-4' MG/KG	**PG-UST2-3** 12/1/2000 PG-UST2-3 7.5-9' MG/KG	**PG-UST2-3** 12/1/2000 PG-UST2-3 12-14' MG/KG	**PG-UST5-2** 11/27/2000 PG-UST5-2 4-6' MG/KG	**PG-UST6-2** 11/28/2000 PG-UST6-2 4-6' MG/KG	**PG-UST6-2** 11/28/2000 PG-UST6-2 8-10' MG/KG	**PG-UST6-2** 11/28/2000 PG-UST6-2 16-18' MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
1,1,2-TRICHLOROETHANE	6	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
1,1-DICHLOROETHANE	0.2	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.0048 J	0.0067 J	0.0066 J
1,1-DICHLOROETHYLENE	0.4	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
1,2-DICHLOROETHANE	0.1	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
1,2-DICHLOROPROPANE	NS	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
2-CHLOROETHYL VINYL ETHER	NS	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
ACROLEIN	NS	0.019 U	0.12 U	0.029 U	0.028 U	0.030 U	0.035 U	0.037 U
ACRYLONITRILE	NS	0.0086 U	0.058 U	0.013 U	0.013 U	0.014 U	0.016 U	0.017 U
BENZENE	0.06	0.0012 U	0.0083 U	0.0047	0.0019 U	0.0020 U	0.0023 U	0.0024 U
BROMODICHLOROMETHANE	NS	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
BROMOFORM	NS	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
BROMOMETHANE	NS	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
CARBON TETRACHLORIDE	0.6	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
CHLOROBENZENE	1.7	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
CHLOROETHANE	1.9	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
CHLOROFORM	0.3	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
CHLOROMETHANE	NS	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
CIS-1,3-DICHLOROPROPENE	NS	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
DIBROMOCHLOROMETHANE	NS	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
DICHLOROMETHANE	0.1	0.0057 JB	0.018 JB	0.0039 JB	0.0029 JB	0.0098 JB	0.011 JB	0.0094 JB
ETHYLBENZENE	5.5	0.0012 U	0.0083 U	0.018	0.0019 U	0.0037	0.0027	0.0024 U
M&P-XYLENES	1.2*	0.0025 U	0.017 U	0.0045	0.0037 U	0.0040 U	0.0047 U	0.0028 J
METHYLBENZENE	1.5	0.0012 U	0.0083 U	0.0056	0.0019 U	0.0020 U	0.0075	0.0024 U
O-XYLENE	1.2*	0.0012 U	0.0083 U	0.0041	0.0019 U	0.0020 U	0.0030	0.0024 U
TETRACHLOROETHYLENE	1.4	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
TRICHLOROETHYLENE	0.7	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
VINYL CHLORIDE	0.2	0.0062 U	0.042 U	0.0096 U	0.0093 U	0.010 U	0.012 U	0.012 U
TOTAL VOCs	10	0.0057	0.018	0.0408	0.0029	0.0183	0.0309	0.0188

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

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location	**Recommended**	**PG-UST6-3**	**PG-UST6-3**	**PG-WOOD-1C**	**PG-WOOD-03**	**PG-WOOD-03**	**PG-WOOD-3**
Sample Date	**Soil**	11/28/2000	11/28/2000	11/9/2000	11/10/2000	11/10/2000	11/29/2000
Sample ID	**Cleanup**	PG-UST6-3	PG-UST6-3	PG-WD-01C	PG-WD-03	PG-WD-03	PG-WOOD-3
Sample Depth	**Objective**	1.5-2'	14-16'	10-12'	0.5-2'	2-4'	2-4'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
1,1,2-TRICHLOROETHANE	6	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
1,1-DICHLOROETHANE	0.2	0.0059 U	0.019 J	0.0093 U	0.0056 U	0.0059 U	0.0059 U
1,1-DICHLOROETHYLENE	0.4	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
1,2-DICHLOROETHANE	0.1	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
1,2-DICHLOROPROPANE	NS	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
2-CHLOROETHYL VINYL ETHER	NS	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
ACROLEIN	NS	0.018 U	0.23 U	0.028 U	0.017 U	0.018 U	0.018 U
ACRYLONITRILE	NS	0.0082 U	0.11 U	0.013 U	0.0077 U	0.0082 U	0.0082 U
BENZENE	0.06	0.0012 U	0.016 U	0.0019 U	0.0011 U	0.0012 U	0.0012 U
BROMODICHLOROMETHANE	NS	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
BROMOFORM	NS	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
BROMOMETHANE	NS	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
CARBON TETRACHLORIDE	0.6	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
CHLOROBENZENE	1.7	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
CHLOROETHANE	1.9	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
CHLOROFORM	0.3	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
CHLOROMETHANE	NS	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
CIS-1,3-DICHLOROPROPENE	NS	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
DIBROMOCHLOROMETHANE	NS	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
DICHLOROMETHANE	0.1	0.0063 B	0.076 JB	0.0088 JB	0.0028 JB	0.0025 JB	0.0058 JB
ETHYLBENZENE	5.5	0.0012 U	0.016 U	0.0019 U	0.0011 U	0.0012 U	0.0012 U
M&P-XYLENES	1.2*	0.0024 U	0.031 U	0.0037 U	0.0022 U	0.0024 U	0.0024 U
METHYLBENZENE	1.5	0.0020	0.016 U	0.0019 U	0.0011 U	0.0012 U	0.0012 U
O-XYLENE	1.2*	0.0012 U	0.016 U	0.0019 U	0.0011 U	0.0012 U	0.0012 U
TETRACHLOROETHYLENE	1.4	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
TRICHLOROETHYLENE	0.7	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
VINYL CHLORIDE	0.2	0.0059 U	0.078 U	0.0093 U	0.0056 U	0.0059 U	0.0059 U
TOTAL VOCs	10	0.0083	0.095	0.0088	0.0028	0.0025	0.0058

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

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location	**Recommended**	**PG-WOOD-3**	**PG-WOOD-05**	**PG-WOOD-05**	**PG-WOOD-05**	**PG-WOOD-05**	**PG-WOOD-05**
Sample Date	**Soil**	11/29/2000	11/7/2000	11/7/2000	11/7/2000	11/7/2000	11/7/2000
Sample ID	**Cleanup**	PG-WOOD-3	PG-WD-05	PG-WD-05	PG-WD-05	PG-WD-05	PG-WD-05
Sample Depth	**Objective**	6-8'	0-2'	2-4'	4-6'	6-8'	8-10'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
1,1,2-TRICHLOROETHANE	6	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
1,1-DICHLOROETHANE	0.2	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
1,1-DICHLOROETHYLENE	0.4	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
1,2-DICHLOROETHANE	0.1	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
1,2-DICHLOROPROPANE	NS	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
2-CHLOROETHYL VINYL ETHER	NS	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
ACROLEIN	NS	0.029 U	0.018 U	0.018 U	0.018 U	0.021 U	0.025 U
ACRYLONITRILE	NS	0.014 U	0.0083 U	0.0083 U	0.0083 U	0.0095 U	0.012 U
BENZENE	0.06	0.0020 U	0.0012 U	0.0012 U	0.0012 U	0.0014 U	0.0017 U
BROMODICHLOROMETHANE	NS	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
BROMOFORM	NS	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
BROMOMETHANE	NS	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
CARBON TETRACHLORIDE	0.6	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
CHLOROBENZENE	1.7	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
CHLOROETHANE	1.9	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
CHLOROFORM	0.3	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
CHLOROMETHANE	NS	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
CIS-1,3-DICHLOROPROPENE	NS	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
DIBROMOCHLOROMETHANE	NS	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
DICHLOROMETHANE	0.1	0.0089 JB	0.0060 U	0.0060 U	0.0043 J	0.0079	0.0085 U
ETHYLBENZENE	5.5	0.0020 U	0.0012 U	0.0012 U	0.0012 U	0.0014 U	0.0017 U
M&P-XYLENES	1.2*	0.0039 U	0.0024 U	0.0024 U	0.0024 U	0.0027 U	0.0034 U
METHYLBENZENE	1.5	0.0020 U	0.0012 U	0.0012 U	0.0012 U	0.0014 U	0.0017 U
O-XYLENE	1.2*	0.0020 U	0.0012 U	0.0012 U	0.0012 U	0.0014 U	0.0017 U
TETRACHLOROETHYLENE	1.4	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
TRICHLOROETHYLENE	0.7	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
VINYL CHLORIDE	0.2	0.0098 U	0.0060 U	0.0060 U	0.0060 U	0.0068 U	0.0085 U
TOTAL VOCs	10	0.0089	ND	ND	0.0043	0.0079	ND

U Undetectable Levels

ND Not Detected

NS No Standard

* Total Xylene Recommended Cleanup Standard

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-WOOD-05** 11/7/2000 PG-WD-05 14-16' MG/KG	**PG-PA-MW-1** 11/22/2000 PG-PAMW1 3-4.5' MG/KG	**PG-PA-MW-1** 11/22/2000 PG-PAMW1 4.5-6' MG/KG	**PG-PA-MW-1** 11/22/2000 PG-PAMW1 10-12' MG/KG	**PG-PA-MW-5** 11/9/2000 PG-PAMW-05 0-2' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 1.5-3' MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
1,1,2-TRICHLOROETHANE	6	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
1,1-DICHLOROETHANE	0.2	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
1,1-DICHLOROETHYLENE	0.4	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
1,2-DICHLOROETHANE	0.1	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
1,2-DICHLOROPROPANE	NS	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
2-CHLOROETHYL VINYL ETHER	NS	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
ACROLEIN	NS	0.052 U	0.025 U	0.031 U	0.028 U	0.017 U	0.016 U
ACRYLONITRILE	NS	0.024 U	0.011 U	0.014 U	0.013 U	0.0081 U	0.0075 U
BENZENE	0.06	0.0034 U	0.0016 U	0.0021 U	0.0022	0.0012 U	0.0011 U
BROMODICHLOROMETHANE	NS	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
BROMOFORM	NS	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
BROMOMETHANE	NS	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
CARBON TETRACHLORIDE	0.6	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
CHLOROBENZENE	1.7	0.018	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
CHLOROETHANE	1.9	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
CHLOROFORM	0.3	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
CHLOROMETHANE	NS	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
CIS-1,3-DICHLOROPROPENE	NS	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
DIBROMOCHLOROMETHANE	NS	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
DICHLOROMETHANE	0.1	0.0086 JB	0.0035 JB	0.0051 JB	0.0045 JB	0.0052 JB	0.0041 J
ETHYLBENZENE	5.5	0.0084	0.0016 U	0.0021 U	0.0019 U	0.0012 U	0.0011 U
M&P-XYLENES	1.2*	0.0047 J	0.0033 U	0.0042 U	0.0028 J	0.0023 U	0.0022 U
METHYLBENZENE	1.5	0.024	0.0016 U	0.0021 U	0.0041	0.0012 U	0.0011 U
O-XYLENE	1.2*	0.0034 U	0.0016 U	0.0021 U	0.0019 U	0.0012 U	0.0011 U
TETRACHLOROETHYLENE	1.4	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
TRICHLOROETHYLENE	0.7	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
VINYL CHLORIDE	0.2	0.017 U	0.0082 U	0.010 U	0.0093 U	0.0058 U	0.0054 U
TOTAL VOCs	10	0.0637	0.0035	0.0051	0.0136	0.0052	0.0041

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

Table 5A
Soil Analytical Results
Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 3-4.5' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 4.5-6' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 6-8' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 8.5-10' MG/KG
1,1,1-TRICHLOROETHANE	0.8	0.0058 U	0.0057 U	0.0062 U	0.0085 U
1,1,2,2-TETRACHLOROETHANE	0.6	0.0058 U	0.0057 U	0.0062 U	0.0085 U
1,1,2-TRICHLOROETHANE	6	0.0058 U	0.0057 U	0.0062 U	0.0085 U
1,1-DICHLOROETHANE	0.2	0.0058 U	0.0057 U	0.0062 U	0.0085 U
1,1-DICHLOROETHYLENE	0.4	0.0058 U	0.0057 U	0.0062 U	0.0085 U
1,2-DICHLOROETHANE	0.1	0.0058 U	0.0057 U	0.0062 U	0.0085 U
1,2-DICHLOROPROPANE	NS	0.0058 U	0.0057 U	0.0062 U	0.0085 U
2-CHLOROETHYL VINYL ETHER	NS	0.0058 U	0.0057 U	0.0062 U	0.0085 U
ACROLEIN	NS	0.017 U	0.017 U	0.019 U	0.025 U
ACRYLONITRILE	NS	0.0081 U	0.0080 U	0.0087 U	0.012 U
BENZENE	0.06	0.0012 U	0.0011 U	0.0012 U	0.0017 U
BROMODICHLOROMETHANE	NS	0.0058 U	0.0057 U	0.0062 U	0.0085 U
BROMOFORM	NS	0.0058 U	0.0057 U	0.0062 U	0.0085 U
BROMOMETHANE	NS	0.0058 U	0.0057 U	0.0062 U	0.0085 U
CARBON TETRACHLORIDE	0.6	0.0058 U	0.0057 U	0.0062 U	0.0085 U
CHLOROBENZENE	1.7	0.0058 U	0.0057 U	0.0062 U	0.0085 U
CHLOROETHANE	1.9	0.0058 U	0.0057 U	0.0062 U	0.0085 U
CHLOROFORM	0.3	0.0058 U	0.0057 U	0.0062 U	0.0085 U
CHLOROMETHANE	NS	0.0058 U	0.0057 U	0.0062 U	0.0085 U
CIS-1,3-DICHLOROPROPENE	NS	0.0058 U	0.0057 U	0.0062 U	0.0085 U
DIBROMOCHLOROMETHANE	NS	0.0058 U	0.0057 U	0.0062 U	0.0085 U
DICHLOROMETHANE	0.1	0.0036 J	0.0040 JB	0.0050 J	0.0059 J
ETHYLBENZENE	5.5	0.0012 U	0.0011 U	0.0012 U	0.0017 U
M&P-XYLENES	1.2*	0.0023 U	0.0023 U	0.0025 U	0.0034 U
METHYLBENZENE	1.5	0.0012 U	0.0011 U	0.0012 U	0.0017 U
O-XYLENE	1.2*	0.0012 U	0.0011 U	0.0012 U	0.0017 U
TETRACHLOROETHYLENE	1.4	0.0058 U	0.0057 U	0.0062 U	0.0085 U
TRANS-1,2-DICHLOROETHYLENE	0.3	0.0058 U	0.0057 U	0.0062 U	0.0085 U
TRANS-1,3-DICHLOROPROPENE	0.3	0.0058 U	0.0057 U	0.0062 U	0.0085 U
TRICHLOROETHYLENE	0.7	0.0058 U	0.0057 U	0.0062 U	0.0085 U
VINYL CHLORIDE	0.2	0.0058 U	0.0057 U	0.0062 U	0.0085 U
TOTAL VOCs	10	0.0036	0.004	0.005	0.0059

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended Soil Cleanup Objective MG/KG**	**PG-A-1** 12/2/2000 PG-A-01 2-4' MG/KG	**PG-A-2** 11/29/2000 PG-A-02 0-2' MG/KG	**PG-A-2** 11/29/2000 PG-A-02 2-4' MG/KG	**PG-A-2** 11/16/2000 PG-A-02 6-8' MG/KG	**PG-A-3** 11/16/2000 PG-A-03 2.4-4' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
1,2-BENZPHENANTHRACENE	NS	0.26	0.18 U	0.31 U	9.3 U	0.42 U
1,2-DICHLOROBENZENE	7.9	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
1,2-DIPHENYLHYDRAZINE	NS	0.042 U	0.035 U	0.063 U	NA	0.083 U
1,4-DICHLOROBENZENE	8.5	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
2,4,6-TRICHLORORPHENOL	0.1	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
2,4-DICHLOROPHENOL	0.4	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
2,4-DIMETHYLPHENOL	NS	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
2,4-DINITROPHENOL	0.200 or MDL	0.42 U	0.35 U	0.63 U	19 U	0.83 U
2,4-DINITROTOLUENE	NS	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
2,6-DINITROTOLUENE	1	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
2-CHLORORNAPHTHALENE	NS	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
2-CHLOROPHENOL	0.8	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
2-NITROPHENOL	0.330 or MDL	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
3,3'-DICHLOROBENZIDINE	N/A	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
4-BROMOPHENYLPHENYL ETHER	NS	0.21 U	0.18 U	0.31 U	NA	0.42 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
4-NITROPHENOL	0.100 or MDL	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
ACENAPHTHENE	50.0 ***	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
ACENAPHTHYLENE	41	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
ANTHRACENE	50.0 ***	0.076 J	0.18 U	0.31 U	9.3 U	0.42 U
BENZIDINE	NS	0.42 U	0.35 U	0.63 U	19 U	0.83 U
BENZO[A]ANTHRACENE	0.224 or MDL	**0.24**	0.18 U	0.31 U	9.3 U	0.42 U
BENZO[A]PYRENE	0.061 or MDL	**0.19 J**	0.18 U	0.31 U	9.3 U	0.42 U
BENZO[B]FLOURANTHENE	1.1	0.28	0.18 U	0.31 U	9.3 U	0.42 U
BENZO[G,H,I]PERYLENE	50.0 ***	0.10 J	0.18 U	0.31 U	9.3 U	0.42 U
BENZO[K]FLOURANTHENE	1.1	0.14 J	0.18 U	0.31 U	9.3 U	0.42 U
BENZYL BUTYL PHTHALATE	50.0 ***	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
BIS(2-CHLOROETHYL)ETHER	NS	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.24 B	0.25 B	0.45 B	9.3 U	0.42 U
DI-N-BUTYL PHTHALATE	8.1	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
DI-N-OCTYL PHTHALATE	50.0 ***	0.082 JB	0.18 U	0.074 J	9.3 U	0.25 JB
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	**0.063 J**	0.18 U	0.31 U	9.3 U	0.42 U
DIETHYL PHTHALATE	7.1	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
DIMETHYL PHTHALATE	2	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
FLUORANTHENE	50	0.36	0.18 U	0.31 U	9.3 U	0.42 U
FLUORENE	50	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
HEXACHLORO-1,3-BUTADIENE	NS	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
HEXACHLOROBENZENE	0.41	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
HEXACHLOROCYCLOPENTADIENE	NS	0.62 U	0.53 U	0.94 U	9.3 U	1.2 U
HEXACHLOROETHANE	NS	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
INDENO[1,2,3-CD]PYRENE	3.2	0.10 J	0.18 U	0.31 U	9.3 U	0.42 U
ISOPHORORNE	4.4	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
M-DICHLOROBENZENE	NS	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
N-NITROSODIMETHYLAMINE	NS	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
N-NITROSODIPHENYLAMINE	NS	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
NAPHTHALENE	13	0.16 J	0.18 U	0.31 U	9.3 U	0.42 U
NITROBENZENE	0.200 or MDL	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
PENTACHLOROPHENOL	1.0 or MDL	0.21 U	0.18 U	0.31 U	9.3 U	0.42 U
PHENANTHRENE	50	0.38	0.18 U	0.31 U	9.3 U	0.42 U
PHENOL	0.03 or MDL	0.21 U	0.18 U	0.31 U	9.3 U	**0.28 J**
PYRENE	50	0.34	0.18 U	0.31 U	9.3 U	0.42 U
TOTAL SVOCs	500	3.011	0.25	0.524	ND	0.53

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-A-3** 11/16/2000 PG-A-03 6-8' MG/KG	**PG-A-3** 11/16/2000 PG-A-03 10-12' MG/KG	**PG-A-6** 11/10/2000 PG-A-06 1-3' MG/KG	**PG-F1-3** 11/10/2000 PG-F1-3 1-3' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.33 U	0.28 U	0.23 U	0.99 U
1,2-BENZPHENANTHRACENE	NS	0.33 U	0.28 U	0.72	0.79 J
1,2-DICHLOROBENZENE	7.9	0.33 U	0.28 U	0.23 U	0.99 U
1,2-DIPHENYLHYDRAZINE	NS	0.065 U	0.056 U	0.045 U	0.20 U
1,4-DICHLOROBENZENE	8.5	0.33 U	0.28 U	0.23 U	0.99 U
2,4,6-TRICHLORORPHENOL	0.1	0.33 U	0.28 U	0.23 U	0.99 U
2,4-DICHLOROPHENOL	0.4	0.33 U	0.28 U	0.23 U	0.99 U
2,4-DIMETHYLPHENOL	NS	0.33 U	0.28 U	0.23 U	0.99 U
2,4-DINITROPHENOL	0.200 or MDL	0.65 U	0.56 U	0.45 U	2.0 U
2,4-DINITROTOLUENE	NS	0.33 U	0.28 U	0.23 U	0.99 U
2,6-DINITROTOLUENE	1	0.33 U	0.28 U	0.23 U	0.99 U
2-CHLORORNAPHTHALENE	NS	0.33 U	0.28 U	0.23 U	0.99 U
2-CHLOROPHENOL	0.8	0.33 U	0.28 U	0.23 U	0.99 U
2-NITROPHENOL	0.330 or MDL	0.33 U	0.28 U	0.23 U	0.99 U
3,3'-DICHLOROBENZIDINE	N/A	0.33 U	0.28 U	0.23 U	0.99 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.33 U	0.28 U	0.23 U	0.99 U
4-BROMOPHENYLPHENYL ETHER	NS	0.33 U	0.28 U	0.23 U	0.99 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.33 U	0.28 U	0.23 U	0.99 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.33 U	0.28 U	0.23 U	0.99 U
4-NITROPHENOL	0.100 or MDL	0.33 U	0.28 U	0.23 U	0.99 U
ACENAPHTHENE	50.0 ***	0.33 U	0.28 U	0.23 U	0.99 U
ACENAPHTHYLENE	41	0.33 U	0.28 U	0.23 U	0.99 U
ANTHRACENE	50.0 ***	0.33 U	0.28 U	0.15 J	0.26 J
BENZIDINE	NS	0.65 U	0.56 U	0.45 U	2.0 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.33 U	0.28 U	**0.65**	**0.59 J**
BENZO[A]PYRENE	0.061 or MDL	0.33 U	0.28 U	**0.67**	**0.42 J**
BENZO[B]FLOURANTHENE	1.1	0.33 U	0.28 U	**1.3**	0.48 J
BENZO[G,H,I]PERYLENE	50.0 ***	0.33 U	0.28 U	0.24	0.26 J
BENZO[K]FLOURANTHENE	1.1	0.33 U	0.28 U	0.23 U	0.20 J
BENZYL BUTYL PHTHALATE	50.0 ***	0.33 U	0.28 U	0.23 U	0.99 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.33 U	0.28 U	0.23 U	0.99 U
BIS(2-CHLOROETHYL)ETHER	NS	0.33 U	0.28 U	0.23 U	0.99 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.33 U	0.28 U	0.23 U	0.99 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.42 B	0.24 JB	0.23 B	0.25 JB
DI-N-BUTYL PHTHALATE	8.1	0.33 U	0.28 U	0.23 U	0.99 U
DI-N-OCTYL PHTHALATE	50.0 ***	0.36 B	0.19 JB	0.054 J	0.99 U
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.33 U	0.28 U	**0.17 J**	0.99 U
DIETHYL PHTHALATE	7.1	0.33 U	0.28 U	0.23 U	0.99 U
DIMETHYL PHTHALATE	2	0.33 U	0.28 U	0.23 U	0.99 U
FLUORANTHENE	50	0.33 U	0.28 U	1.2	0.81 J
FLUORENE	50	0.33 U	0.28 U	0.23 U	0.57 J
HEXACHLORO-1,3-BUTADIENE	NS	0.33 U	0.28 U	0.23 U	0.99 U
HEXACHLOROBENZENE	0.41	0.33 U	0.28 U	0.23 U	0.99 U
HEXACHLOROCYCLOPENTADIENE	NS	0.98 U	0.85 U	0.68 U	3.0 U
HEXACHLOROETHANE	NS	0.33 U	0.28 U	0.23 U	0.99 U
INDENO[1,2,3-CD]PYRENE	3.2	0.33 U	0.28 U	0.27	0.26 J
ISOPHORORNE	4.4	0.33 U	0.28 U	0.23 U	0.99 U
M-DICHLOROBENZENE	NS	0.33 U	0.28 U	0.23 U	0.99 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.33 U	0.28 U	0.23 U	0.99 U
N-NITROSODIMETHYLAMINE	NS	0.33 U	0.28 U	0.23 U	0.99 U
N-NITROSODIPHENYLAMINE	NS	0.33 U	0.28 U	0.23 U	0.99 U
NAPHTHALENE	13	0.33 U	0.28 U	0.23 U	4.3
NITROBENZENE	0.200 or MDL	0.33 U	0.28 U	0.23 U	0.99 U
PENTACHLOROPHENOL	1.0 or MDL	0.33 U	0.28 U	0.23 U	0.99 U
PHENANTHRENE	50	0.073 J	0.28 U	0.66	1.3
PHENOL	0.03 or MDL	**0.26 J**	**0.20 J**	0.23 U	**0.44 J**
PYRENE	50	0.33 U	0.28 U	1.3	0.92 J
TOTAL SVOCs	500	1.113	0.63	7.56	11.06

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** MG/KG	**PG-F1-3** 11/10/2000 PG-F1-3 3-5' MG/KG	**PG-H/R-1** 12/2/2000 PG-H/R-01 1-3' MG/KG	**PG-H/R-1** 12/2/2000 PG-H/R-01 3-4.5' MG/KG	**PG-H/R-2** 11/10/2000 PG-H/R-2 0-1.5' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.33 U	0.23 U	0.33 U	0.19 U
1,2-BENZPHENANTHRACENE	NS	0.33 U	0.086 J	0.33 U	0.20
1,2-DICHLOROBENZENE	7.9	0.33 U	0.23 U	0.33 U	0.19 U
1,2-DIPHENYLHYDRAZINE	NS	0.067 U	0.046 U	0.067 U	0.038 U
1,4-DICHLOROBENZENE	8.5	0.33 U	0.23 U	0.33 U	0.19 U
2,4,6-TRICHLORORPHENOL	0.1	0.33 U	0.23 U	0.33 U	0.19 U
2,4-DICHLOROPHENOL	0.4	0.33 U	0.23 U	0.33 U	0.19 U
2,4-DIMETHYLPHENOL	NS	0.33 U	0.23 U	0.33 U	0.19 U
2,4-DINITROPHENOL	0.200 or MDL	0.67 U	0.46 U	0.67 U	0.38 U
2,4-DINITROTOLUENE	NS	0.33 U	0.23 U	0.33 U	0.19 U
2,6-DINITROTOLUENE	1	0.33 U	0.23 U	0.33 U	0.19 U
2-CHLORORNAPHTHALENE	NS	0.33 U	0.23 U	0.33 U	0.19 U
2-CHLOROPHENOL	0.8	0.33 U	0.23 U	0.33 U	0.19 U
2-NITROPHENOL	0.330 or MDL	0.33 U	0.23 U	0.33 U	0.19 U
3,3'-DICHLOROBENZIDINE	N/A	0.33 U	0.23 U	0.33 U	0.19 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.33 U	0.23 U	0.33 U	0.19 U
4-BROMOPHENYLPHENYL ETHER	NS	0.33 U	0.23 U	0.33 U	0.19 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.33 U	0.23 U	0.33 U	0.19 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.33 U	0.23 U	0.33 U	0.19 U
4-NITROPHENOL	0.100 or MDL	0.33 U	0.23 U	0.33 U	0.19 U
ACENAPHTHENE	50.0 ***	0.33 U	0.23 U	0.33 U	0.19 U
ACENAPHTHYLENE	41	0.33 U	0.23 U	0.33 U	0.19 U
ANTHRACENE	50.0 ***	0.33 U	0.23 U	0.33 U	0.19 U
BENZIDINE	NS	0.67 U	0.46 U	0.67 U	0.38 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.33 U	0.070 J	0.33 U	0.16 J
BENZO[A]PYRENE	0.061 or MDL	0.33 U	**0.066 J**	0.33 U	**0.18 J**
BENZO[B]FLOURANTHENE	1.1	0.33 U	0.10 J	0.33 U	0.26
BENZO[G,H,I]PERYLENE	50.0 ***	0.33 U	0.23 U	0.33 U	0.081 J
BENZO[K]FLOURANTHENE	1.1	0.33 U	0.23 U	0.33 U	0.16 J
BENZYL BUTYL PHTHALATE	50.0 ***	0.33 U	0.23 U	0.33 U	0.19 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.33 U	0.23 U	0.33 U	0.19 U
BIS(2-CHLOROETHYL)ETHER	NS	0.33 U	0.23 U	0.33 U	0.19 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.33 U	0.23 U	0.33 U	0.19 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.28 JB	0.089 JB	0.21 JB	0.26 B
DI-N-BUTYL PHTHALATE	8.1	0.10 J	0.23 U	0.14 JB	0.072 J
DI-N-OCTYL PHTHALATE	50.0 ***	0.33 U	0.049 JB	0.19 JB	0.063 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.33 U	0.23 U	0.33 U	0.052 J
DIETHYL PHTHALATE	7.1	0.33 U	0.23 U	0.33 U	0.19 U
DIMETHYL PHTHALATE	2	0.33 U	0.23 U	0.33 U	0.19 U
FLUORANTHENE	50	0.33 U	0.065 J	0.33 U	0.18 J
FLUORENE	50	0.33 U	0.23 U	0.33 U	0.19 U
HEXACHLORO-1,3-BUTADIENE	NS	0.33 U	0.23 U	0.33 U	0.19 U
HEXACHLOROBENZENE	0.41	0.33 U	0.23 U	0.33 U	0.19 U
HEXACHLOROCYCLOPENTADIENE	NS	1.0 U	0.68 U	1.0 U	0.57 U
HEXACHLOROETHANE	NS	0.33 U	0.23 U	0.33 U	0.19 U
INDENO[1,2,3-CD]PYRENE	3.2	0.33 U	0.23 U	0.33 U	0.088 J
ISOPHORORNE	4.4	0.33 U	0.23 U	0.33 U	0.19 U
M-DICHLOROBENZENE	NS	0.33 U	0.23 U	0.33 U	0.19 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.33 U	0.23 U	0.33 U	0.19 U
N-NITROSODIMETHYLAMINE	NS	0.33 U	0.23 U	0.33 U	0.19 U
N-NITROSODIPHENYLAMINE	NS	0.33 U	0.23 U	0.33 U	0.19 U
NAPHTHALENE	13	0.41	0.11 J	0.33 U	0.19 U
NITROBENZENE	0.200 or MDL	0.33 U	0.23 U	0.33 U	0.19 U
PENTACHLOROPHENOL	1.0 or MDL	0.33 U	0.23 U	0.33 U	0.19 U
PHENANTHRENE	50	0.083 J	0.10 J	0.33 U	0.064 J
PHENOL	0.03 or MDL	0.33 U	0.23 U	0.33 U	0.19 U
PYRENE	50	0.33 U	0.080 J	0.33 U	0.21
TOTAL SVOCs	500	0.873	0.645	0.54	2.03

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-H/R-2** 11/10/2000 PG-H/R-2 1.5-3.5' MG/KG	**PG-H/R-3** 11/10/2000 PG-H/R-3 0.3-1' MG/KG	**PG-H/R-3** 11/10/2000 PG-H/R-3 1-3' MG/KG	**PG-PD-6** 11/21/2000 PG-PD-06 6-8' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.30 U	0.20 U	0.29 U	0.35 U
1,2-BENZPHENANTHRACENE	NS	0.30 U	0.44	0.29 U	0.095 J
1,2-DICHLOROBENZENE	7.9	0.30 U	0.20 U	0.29 U	0.35 U
1,2-DIPHENYLHYDRAZINE	NS	0.060 U	0.040 U	0.058 U	0.071 U
1,4-DICHLOROBENZENE	8.5	0.30 U	0.20 U	0.29 U	0.35 U
2,4,6-TRICHLORORPHENOL	0.1	0.30 U	0.20 U	0.29 U	0.35 U
2,4-DICHLOROPHENOL	0.4	0.30 U	0.20 U	0.29 U	0.35 U
2,4-DIMETHYLPHENOL	NS	0.30 U	0.20 U	0.29 U	0.63
2,4-DINITROPHENOL	0.200 or MDL	0.60 U	0.40 U	0.58 U	0.71 U
2,4-DINITROTOLUENE	NS	0.30 U	0.20 U	0.29 U	0.35 U
2,6-DINITROTOLUENE	1	0.30 U	0.20 U	0.29 U	0.35 U
2-CHLORORNAPHTHALENE	NS	0.30 U	0.20 U	0.29 U	0.35 U
2-CHLOROPHENOL	0.8	0.30 U	0.20 U	0.29 U	0.35 U
2-NITROPHENOL	0.330 or MDL	0.30 U	0.20 U	0.29 U	0.35 U
3,3'-DICHLOROBENZIDINE	N/A	0.30 U	0.20 U	0.29 U	0.35 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.30 U	0.20 U	0.29 U	0.35 U
4-BROMOPHENYLPHENYL ETHER	NS	0.30 U	0.20 U	0.29 U	0.35 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.30 U	0.20 U	0.29 U	0.20 J
4-CHLOROPHENYLPHENYL ETHER	NS	0.30 U	0.20 U	0.29 U	0.35 U
4-NITROPHENOL	0.100 or MDL	0.30 U	0.20 U	0.29 U	0.35 U
ACENAPHTHENE	50.0 ***	0.30 U	0.20 U	0.29 U	0.084 J
ACENAPHTHYLENE	41	0.30 U	0.045 J	0.29 U	0.35 U
ANTHRACENE	50.0 ***	0.30 U	0.081 J	0.29 U	0.088 J
BENZIDINE	NS	0.60 U	0.40 U	0.58 U	0.71 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.30 U	**0.41**	0.29 U	0.11 J
BENZO[A]PYRENE	0.061 or MDL	0.30 U	**0.38**	0.29 U	0.35 U
BENZO[B]FLOURANTHENE	1.1	0.30 U	0.85	0.29 U	0.35 U
BENZO[G,H,I]PERYLENE	50.0 ***	0.30 U	0.13 J	0.29 U	0.35 U
BENZO[K]FLOURANTHENE	1.1	0.30 U	0.20 U	0.29 U	0.35 U
BENZYL BUTYL PHTHALATE	50.0 ***	0.30 U	0.20 U	0.29 U	0.35 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.30 U	0.20 U	0.29 U	0.35 U
BIS(2-CHLOROETHYL)ETHER	NS	0.30 U	0.20 U	0.29 U	0.35 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.30 U	0.20 U	0.29 U	0.35 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.33 B	0.24 B	0.19 JB	0.43 B
DI-N-BUTYL PHTHALATE	8.1	0.087 J	0.20 U	0.29 U	0.35 U
DI-N-OCTYL PHTHALATE	50.0 ***	0.30 U	0.069 J	0.29 U	0.11 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.30 U	**0.082 J**	0.29 U	0.35 U
DIETHYL PHTHALATE	7.1	0.30 U	0.20 U	0.29 U	0.35 U
DIMETHYL PHTHALATE	2	0.30 U	0.20 U	0.29 U	0.35 U
FLUORANTHENE	50	0.30 U	0.49	0.29 U	0.35 J
FLUORENE	50	0.30 U	0.20 U	0.29 U	0.13 J
HEXACHLORO-1,3-BUTADIENE	NS	0.30 U	0.20 U	0.29 U	0.35 U
HEXACHLOROBENZENE	0.41	0.30 U	0.20 U	0.29 U	0.35 U
HEXACHLOROCYCLOPENTADIENE	NS	0.89 U	0.60 U	0.88 U	1.1 U
HEXACHLOROETHANE	NS	0.30 U	0.20 U	0.29 U	0.35 U
INDENO[1,2,3-CD]PYRENE	3.2	0.30 U	0.15 J	0.29 U	0.35 U
ISOPHORORNE	4.4	0.30 U	0.20 U	0.29 U	0.35 U
M-DICHLOROBENZENE	NS	0.30 U	0.20 U	0.29 U	0.35 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.30 U	0.20 U	0.29 U	0.35 U
N-NITROSODIMETHYLAMINE	NS	0.30 U	0.20 U	0.29 U	0.35 U
N-NITROSODIPHENYLAMINE	NS	0.30 U	0.20 U	0.29 U	0.35 U
NAPHTHALENE	13	0.30 U	0.14 J	0.29 U	0.35 J
NITROBENZENE	0.200 or MDL	0.30 U	0.20 U	0.29 U	0.35 U
PENTACHLOROPHENOL	1.0 or MDL	0.30 U	0.20 U	0.29 U	0.35 U
PHENANTHRENE	50	0.30 U	0.33	0.29 U	0.37
PHENOL	0.03 or MDL	0.30 U	0.20 U	0.29 U	0.35 U
PYRENE	50	0.30 U	0.55	0.29 U	0.26 J
TOTAL SVOCs	500	0.417	4.387	0.19	3.207

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended Soil Cleanup Objective** **MG/KG**	**PG-PD-6** 11/21/2000 PG-PD-06 12-14' MG/KG	**PG-PD-8** 11/29/2000 PG-PD-8 2-4' MG/KG	**PG-PD-8** 11/29/2000 PG-PD-8 8-10' MG/KG	**PG-PD-8** 11/29/2000 PG-PD-8 16-17' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.64 U	4.6 U	4.4 U	0.33 U
1,2-BENZPHENANTHRACENE	NS	0.33 J	4.6 U	4.4 U	0.10 J
1,2-DICHLOROBENZENE	7.9	0.64 U	4.6 U	4.4 U	0.33 U
1,2-DIPHENYLHYDRAZINE	NS	0.13 U	0.93 U	0.89 U	0.067 U
1,4-DICHLOROBENZENE	8.5	0.64 U	4.6 U	4.4 U	0.33 U
2,4,6-TRICHLORORPHENOL	0.1	0.64 U	4.6 U	4.4 U	0.33 U
2,4-DICHLOROPHENOL	0.4	0.64 U	4.6 U	4.4 U	0.33 U
2,4-DIMETHYLPHENOL	NS	0.64 U	4.6 U	4.4 U	0.33 U
2,4-DINITROPHENOL	0.200 or MDL	1.3 U	9.3 U	8.9 U	0.67 U
2,4-DINITROTOLUENE	NS	0.64 U	4.6 U	4.4 U	0.33 U
2,6-DINITROTOLUENE	1	0.64 U	4.6 U	4.4 U	0.33 U
2-CHLORORNAPHTHALENE	NS	0.64 U	4.6 U	4.4 U	0.33 U
2-CHLOROPHENOL	0.8	0.64 U	4.6 U	4.4 U	0.33 U
2-NITROPHENOL	0.330 or MDL	0.64 U	4.6 U	4.4 U	0.33 U
3,3'-DICHLOROBENZIDINE	N/A	0.64 U	4.6 U	4.4 U	0.33 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.64 U	4.6 U	4.4 U	0.33 U
4-BROMOPHENYLPHENYL ETHER	NS	0.64 U	4.6 U	4.4 U	0.33 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.64 U	4.6 U	4.4 U	0.33 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.64 U	4.6 U	4.4 U	0.33 U
4-NITROPHENOL	0.100 or MDL	0.64 U	4.6 U	4.4 U	0.33 U
ACENAPHTHENE	50.0 ***	1.2	4.6 U	4.4 U	0.33 U
ACENAPHTHYLENE	41	0.64 U	4.6 U	4.4 U	0.33 U
ANTHRACENE	50.0 ***	1.1	4.6 U	4.4 U	0.33 U
BENZIDINE	NS	1.3 U	9.3 U	8.9 U	0.67 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.42 J	4.6 U	4.4 U	0.078 J
BENZO[A]PYRENE	0.061 or MDL	0.64 U	4.6 U	4.4 U	0.33 U
BENZO[B]FLOURANTHENE	1.1	0.64 U	4.6 U	4.4 U	0.33 U
BENZO[G,H,I]PERYLENE	50.0 ***	0.64 U	4.6 U	4.4 U	0.33 U
BENZO[K]FLOURANTHENE	1.1	0.64 U	4.6 U	4.4 U	0.33 U
BENZYL BUTYL PHTHALATE	50.0 ***	0.64 U	4.6 U	4.4 U	0.33 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.64 U	4.6 U	4.4 U	0.33 U
BIS(2-CHLOROETHYL)ETHER	NS	0.64 U	4.6 U	4.4 U	0.33 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.64 U	4.6 U	4.4 U	0.33 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.65 B	4.6 U	4.4 U	0.33 B
DI-N-BUTYL PHTHALATE	8.1	0.15 JB	4.6 U	4.4 U	0.33 U
DI-N-OCTYL PHTHALATE	50.0 ***	0.64 U	4.6 U	4.4 U	0.099 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.64 U	4.6 U	4.4 U	0.33 U
DIETHYL PHTHALATE	7.1	0.64 U	4.6 U	4.4 U	0.33 U
DIMETHYL PHTHALATE	2	0.64 U	4.6 U	4.4 U	0.33 U
FLUORANTHENE	50	2.1	4.6 U	4.4 U	0.11 J
FLUORENE	50	1.7	4.6 U	4.4 U	0.33 U
HEXACHLORO-1,3-BUTADIENE	NS	0.64 U	4.6 U	4.4 U	0.33 U
HEXACHLOROBENZENE	0.41	0.64 U	4.6 U	4.4 U	0.33 U
HEXACHLOROCYCLOPENTADIENE	NS	1.9 U	14 U	13 U	1.0 U
HEXACHLOROETHANE	NS	0.64 U	4.6 U	4.4 U	0.33 U
INDENO[1,2,3-CD]PYRENE	3.2	0.64 U	4.6 U	4.4 U	0.33 U
ISOPHORORNE	4.4	0.64 U	4.6 U	4.4 U	0.33 U
M-DICHLOROBENZENE	NS	0.64 U	4.6 U	4.4 U	0.33 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.64 U	4.6 U	4.4 U	0.33 U
N-NITROSODIMETHYLAMINE	NS	0.64 U	4.6 U	4.4 U	0.33 U
N-NITROSODIPHENYLAMINE	NS	0.64 U	4.6 U	4.4 U	0.33 U
NAPHTHALENE	13	0.48 J	4.6 U	4.4 U	0.17 J
NITROBENZENE	0.200 or MDL	0.64 U	4.6 U	4.4 U	0.33 U
PENTACHLOROPHENOL	1.0 or MDL	0.64 U	4.6 U	4.4 U	0.33 U
PHENANTHRENE	50	6.5	4.6 U	4.4 U	0.33 U
PHENOL	0.03 or MDL	0.19 J	4.6 U	4.4 U	0.22 J
PYRENE	50	1.3	4.6 U	4.4 U	0.16 J
TOTAL SVOCs	500	16.12	ND	ND	0.997

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-PD-9** 12/4/2000 PG-PD-09 4-6' MG/KG	**PG-PD-9** 12/4/2000 PG-PD-09 8-10' MG/KG	**PG-PD-10** 11/28/2000 PG-PD-10 2-4' MG/KG	**PG-PD-10** 11/28/2000 PG-PD-10 6-8' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.25 U	0.25 U	0.19 U	0.43 U
1,2-BENZPHENANTHRACENE	NS	0.16 J	0.25 U	0.19 U	0.43 U
1,2-DICHLOROBENZENE	7.9	0.25 U	0.25 U	0.19 U	0.43 U
1,2-DIPHENYLHYDRAZINE	NS	0.049 U	0.051 U	0.038 U	0.085 U
1,4-DICHLOROBENZENE	8.5	0.25 U	0.25 U	0.19 U	0.43 U
2,4,6-TRICHLORORPHENOL	0.1	0.25 U	0.25 U	0.19 U	0.43 U
2,4-DICHLOROPHENOL	0.4	0.25 U	0.25 U	0.19 U	0.43 U
2,4-DIMETHYLPHENOL	NS	0.25 U	0.13 J	0.21	0.43 U
2,4-DINITROPHENOL	0.200 or MDL	0.49 U	0.51 U	0.38 U	0.85 U
2,4-DINITROTOLUENE	NS	0.25 U	0.25 U	0.19 U	0.43 U
2,6-DINITROTOLUENE	1	0.25 U	0.25 U	0.19 U	0.43 U
2-CHLORORNAPHTHALENE	NS	0.25 U	0.25 U	0.19 U	0.43 U
2-CHLOROPHENOL	0.8	0.25 U	0.25 U	0.19 U	0.43 U
2-NITROPHENOL	0.330 or MDL	0.25 U	0.25 U	0.19 U	0.43 U
3,3'-DICHLOROBENZIDINE	N/A	0.25 U	0.25 U	0.19 U	0.43 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.25 U	0.25 U	0.19 U	0.43 U
4-BROMOPHENYLPHENYL ETHER	NS	0.25 U	0.25 U	0.19 U	0.43 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.25 U	0.25 U	0.19 U	0.43 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.25 U	0.25 U	0.19 U	0.43 U
4-NITROPHENOL	0.100 or MDL	0.25 U	0.25 U	0.19 U	0.43 U
ACENAPHTHENE	50.0 ***	0.25 U	0.25 U	0.19 U	0.43 U
ACENAPHTHYLENE	41	0.25 U	0.25 U	0.19 U	0.43 U
ANTHRACENE	50.0 ***	0.25 U	0.25 U	0.19 U	0.43 U
BENZIDINE	NS	0.49 U	0.51 U	0.38 U	0.85 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.25 U	0.25 U	0.19 U	0.43 U
BENZO[A]PYRENE	0.061 or MDL	0.25 U	0.25 U	0.19 U	0.43 U
BENZO[B]FLOURANTHENE	1.1	0.064 J	0.058 J	0.19 U	0.43 U
BENZO[G,H,I]PERYLENE	50.0 ***	0.25 U	0.25 U	0.19 U	0.43 U
BENZO[K]FLOURANTHENE	1.1	0.25 U	0.25 U	0.19 U	0.43 U
BENZYL BUTYL PHTHALATE	50.0 ***	0.25 U	0.25 U	0.19 U	0.43 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.25 U	0.25 U	0.19 U	0.43 U
BIS(2-CHLOROETHYL)ETHER	NS	0.25 U	0.25 U	0.19 U	0.43 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.25 U	0.25 U	0.19 U	0.43 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.14 JB	0.26 B	0.27	0.17 J
DI-N-BUTYL PHTHALATE	8.1	0.25 U	0.11 JB	0.19 U	0.12 J
DI-N-OCTYL PHTHALATE	50.0 ***	0.087 JB	0.12 JB	0.076 J	0.11 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.25 U	0.25 U	0.19 U	0.43 U
DIETHYL PHTHALATE	7.1	0.25 U	0.10 J	0.19 U	0.43 U
DIMETHYL PHTHALATE	2	0.25 U	0.20 J	0.19 U	0.43 U
FLUORANTHENE	50	0.25 U	0.25 U	0.19 U	0.43 U
FLUORENE	50	0.25 U	0.25 U	0.19 U	0.43 U
HEXACHLORO-1,3-BUTADIENE	NS	0.25 U	0.25 U	0.19 U	0.43 U
HEXACHLOROBENZENE	0.41	0.25 U	0.25 U	0.19 U	0.43 U
HEXACHLOROCYCLOPENTADIENE	NS	0.74 U	0.76 U	0.57 U	1.3 U
HEXACHLOROETHANE	NS	0.25 U	0.25 U	0.19 U	0.43 U
INDENO[1,2,3-CD]PYRENE	3.2	0.25 U	0.25 U	0.19 U	0.43 U
ISOPHORORNE	4.4	0.25 U	0.25 U	0.19 U	0.43 U
M-DICHLOROBENZENE	NS	0.25 U	0.25 U	0.19 U	0.43 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.25 U	0.25 U	0.19 U	0.43 U
N-NITROSODIMETHYLAMINE	NS	0.25 U	0.25 U	0.19 U	0.43 U
N-NITROSODIPHENYLAMINE	NS	0.25 U	0.25 U	0.19 U	0.43 U
NAPHTHALENE	13	0.064 J	0.13 J	0.046 J	0.43 U
NITROBENZENE	0.200 or MDL	0.25 U	0.25 U	0.19 U	0.43 U
PENTACHLOROPHENOL	1.0 or MDL	0.25 U	0.25 U	0.19 U	0.43 U
PHENANTHRENE	50	0.14 J	0.10 J	0.19 U	0.43 U
PHENOL	0.03 or MDL	0.25 U	**1.3**	0.19 U	**0.091 J**
PYRENE	50	0.051 J	0.059 J	0.19 U	0.43 U
TOTAL SVOCs	500	0.706	2.567	0.602	0.491

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-PD-11** 11/27/2000 PG-PD-11 4-6' MG/KG	**PG-RR-8** 12/1/2000 PG-RR-08 2-4' MG/KG	**PG-RR-8** 12/1/2000 PG-RR-08 6-8' MG/KG	**PG-RR-10** 12/2/2000 PG-RR10 2-2.5' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.29 U	0.26 U	0.23 U	0.23 U
1,2-BENZPHENANTHRACENE	NS	0.29 U	0.058 J	0.084 J	0.47
1,2-DICHLOROBENZENE	7.9	0.29 U	0.26 U	0.23 U	0.23 U
1,2-DIPHENYLHYDRAZINE	NS	0.058 U	0.052 U	0.046 U	0.045 U
1,4-DICHLOROBENZENE	8.5	0.29 U	0.26 U	0.23 U	0.23 U
2,4,6-TRICHLORORPHENOL	0.1	0.29 U	0.26 U	0.23 U	0.23 U
2,4-DICHLOROPHENOL	0.4	0.29 U	0.26 U	0.23 U	0.23 U
2,4-DIMETHYLPHENOL	NS	0.29 U	0.26 U	0.23 U	0.23 U
2,4-DINITROPHENOL	0.200 or MDL	0.58 U	0.52 U	0.46 U	0.45 U
2,4-DINITROTOLUENE	NS	0.29 U	0.26 U	0.23 U	0.23 U
2,6-DINITROTOLUENE	1	0.29 U	0.26 U	0.23 U	0.23 U
2-CHLORORNAPHTHALENE	NS	0.29 U	0.26 U	0.23 U	0.23 U
2-CHLOROPHENOL	0.8	0.29 U	0.26 U	0.23 U	0.23 U
2-NITROPHENOL	0.330 or MDL	0.29 U	0.26 U	0.23 U	0.23 U
3,3'-DICHLOROBENZIDINE	N/A	0.29 U	0.26 U	0.23 U	0.23 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.29 U	0.26 U	0.23 U	0.23 U
4-BROMOPHENYLPHENYL ETHER	NS	0.29 U	0.26 U	0.23 U	0.23 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.29 U	0.26 U	0.23 U	0.23 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.29 U	0.26 U	0.23 U	0.23 U
4-NITROPHENOL	0.100 or MDL	0.29 U	0.26 U	0.23 U	0.23 U
ACENAPHTHENE	50.0 ***	0.29 U	0.26 U	0.23 U	1.7
ACENAPHTHYLENE	41	0.29 U	0.26 U	0.23 U	0.23 U
ANTHRACENE	50.0 ***	0.29 U	0.26 U	0.23 U	0.63
BENZIDINE	NS	0.58 U	0.52 U	0.46 U	0.45 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.29 U	0.26 U	0.055 J	0.39
BENZO[A]PYRENE	0.061 or MDL	0.29 U	0.26 U	0.23 U	0.15 J
BENZO[B]FLOURANTHENE	1.1	0.29 U	0.059 J	0.047 J	0.25
BENZO[G,H,I]PERYLENE	50.0 ***	0.29 U	0.26 U	0.23 U	0.059 J
BENZO[K]FLOURANTHENE	1.1	0.29 U	0.26 U	0.23 U	0.079 J
BENZYL BUTYL PHTHALATE	50.0 ***	0.29 U	0.26 U	0.23 U	0.23 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.29 U	0.26 U	0.23 U	0.23 U
BIS(2-CHLOROETHYL)ETHER	NS	0.29 U	0.26 U	0.23 U	0.23 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.29 U	0.26 U	0.23 U	0.23 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.26 JB	0.16 JB	0.30 B	0.12 JB
DI-N-BUTYL PHTHALATE	8.1	0.33 B	0.17 J	0.095 J	0.23 U
DI-N-OCTYL PHTHALATE	50.0 ***	0.078 J	0.12 J	0.27	0.086 JB
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.29 U	0.26 U	0.23 U	0.23 U
DIETHYL PHTHALATE	7.1	0.29 U	0.26 U	0.23 U	0.23 U
DIMETHYL PHTHALATE	2	0.29 U	0.26 U	0.23 U	0.23 U
FLUORANTHENE	50	0.29 U	0.26 U	0.23 U	1.9
FLUORENE	50	0.29 U	0.26 U	0.23 U	1.3
HEXACHLORO-1,3-BUTADIENE	NS	0.29 U	0.26 U	0.23 U	0.23 U
HEXACHLOROBENZENE	0.41	0.29 U	0.26 U	0.23 U	0.23 U
HEXACHLOROCYCLOPENTADIENE	NS	0.88 U	0.78 U	0.69 U	0.68 U
HEXACHLOROETHANE	NS	0.29 U	0.26 U	0.23 U	0.23 U
INDENO[1,2,3-CD]PYRENE	3.2	0.29 U	0.26 U	0.23 U	0.053 J
ISOPHORORNE	4.4	0.29 U	0.26 U	0.23 U	0.23 U
M-DICHLOROBENZENE	NS	0.29 U	0.26 U	0.23 U	0.23 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.29 U	0.26 U	0.23 U	0.23 U
N-NITROSODIMETHYLAMINE	NS	0.29 U	0.26 U	0.23 U	0.23 U
N-NITROSODIPHENYLAMINE	NS	0.29 U	0.26 U	0.23 U	0.23 U
NAPHTHALENE	13	0.29 U	0.26 U	0.081 J	0.71
NITROBENZENE	0.200 or MDL	0.29 U	0.26 U	0.23 U	0.23 U
PENTACHLOROPHENOL	1.0 or MDL	0.29 U	0.26 U	0.23 U	0.23 U
PHENANTHRENE	50	0.29 U	0.082 J	0.15 J	3.1
PHENOL	0.03 or MDL	0.29 U	0.26 U	0.23 U	0.23 U
PYRENE	50	0.29 U	0.26 U	0.076 J	1.4
TOTAL SVOCs	500	0.668	0.591	1.158	11.997

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-RR-10** 12/2/2000 PG-RR10 8-10' MG/KG	**PG-FS-1B** 11/17/2000 PG-FS-01B 1-2' MG/KG	**PG-FS-1B** 11/17/2000 PG-FS-01B 6-6.5' MG/KG	**PG-FS-1B** 11/17/2000 PG-FS-01B 12-13.5' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	1.1 U	17 U	0.27 U	0.32 U
1,2-BENZPHENANTHRACENE	NS	1.1 U	17 U	0.27 U	0.32 U
1,2-DICHLOROBENZENE	7.9	1.1 U	17 U	0.27 U	0.32 U
1,2-DIPHENYLHYDRAZINE	NS	0.22 U	3.3 U	0.054 U	0.064 U
1,4-DICHLOROBENZENE	8.5	1.1 U	17 U	0.27 U	0.32 U
2,4,6-TRICHLORORPHENOL	0.1	1.1 U	17 U	0.27 U	0.32 U
2,4-DICHLOROPHENOL	0.4	1.1 U	17 U	0.27 U	0.32 U
2,4-DIMETHYLPHENOL	NS	1.1 U	17 U	0.27 U	0.32 U
2,4-DINITROPHENOL	0.200 or MDL	2.2 U	33 U	0.54 U	0.64 U
2,4-DINITROTOLUENE	NS	1.1 U	17 U	0.27 U	0.32 U
2,6-DINITROTOLUENE	1	1.1 U	17 U	0.27 U	0.32 U
2-CHLORORNAPHTHALENE	NS	1.1 U	17 U	0.27 U	0.32 U
2-CHLOROPHENOL	0.8	1.1 U	17 U	0.27 U	0.32 U
2-NITROPHENOL	0.330 or MDL	1.1 U	17 U	0.27 U	0.32 U
3,3'-DICHLOROBENZIDINE	N/A	1.1 U	17 U	0.27 U	0.32 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	1.1 U	17 U	0.27 U	0.32 U
4-BROMOPHENYLPHENYL ETHER	NS	1.1 U	17 U	0.27 U	0.32 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	1.1 U	17 U	0.27 U	0.32 U
4-CHLOROPHENYLPHENYL ETHER	NS	1.1 U	17 U	0.27 U	0.32 U
4-NITROPHENOL	0.100 or MDL	1.1 U	17 U	0.27 U	0.32 U
ACENAPHTHENE	50.0 ***	1.1 U	17 U	0.27 U	0.32 U
ACENAPHTHYLENE	41	1.1 U	17 U	0.27 U	0.32 U
ANTHRACENE	50.0 ***	1.1 U	17 U	0.27 U	0.32 U
BENZIDINE	NS	2.2 U	33 U	0.54 U	0.64 U
BENZO[A]ANTHRACENE	0.224 or MDL	1.1 U	17 U	0.27 U	0.32 U
BENZO[A]PYRENE	0.061 or MDL	1.1 U	17 U	0.27 U	0.32 U
BENZO[B]FLOURANTHENE	1.1	1.1 U	17 U	0.27 U	0.32 U
BENZO[G,H,I]PERYLENE	50.0 ***	1.1 U	17 U	0.27 U	0.32 U
BENZO[K]FLOURANTHENE	1.1	1.1 U	17 U	0.27 U	0.32 U
BENZYL BUTYL PHTHALATE	50.0 ***	1.1 U	17 U	0.27 U	0.32 U
BIS(2-CHLOROETHOXY)METHANE	NS	1.1 U	17 U	0.27 U	0.32 U
BIS(2-CHLOROETHYL)ETHER	NS	1.1 U	17 U	0.27 U	0.32 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	1.1 U	17 U	0.27 U	0.32 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.69 JB	17 U	0.11 J	0.099 J
DI-N-BUTYL PHTHALATE	8.1	1.1 U	17 U	0.27 U	0.32 U
DI-N-OCTYL PHTHALATE	50.0 ***	1.1 U	17 U	0.27 U	0.32 U
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	1.1 U	17 U	0.27 U	0.32 U
DIETHYL PHTHALATE	7.1	1.1 U	17 U	0.27 U	0.32 U
DIMETHYL PHTHALATE	2	1.1 U	17 U	0.27 U	0.32 U
FLUORANTHENE	50	0.26 J	17 U	0.27 U	0.32 U
FLUORENE	50	1.1 U	17 U	0.27 U	0.32 U
HEXACHLORO-1,3-BUTADIENE	NS	1.1 U	17 U	0.27 U	0.32 U
HEXACHLOROBENZENE	0.41	1.1 U	17 U	0.27 U	0.32 U
HEXACHLOROCYCLOPENTADIENE	NS	3.3 U	50 U	0.81 U	0.96 U
HEXACHLOROETHANE	NS	1.1 U	17 U	0.27 U	0.32 U
INDENO[1,2,3-CD]PYRENE	3.2	1.1 U	17 U	0.27 U	0.32 U
ISOPHORORNE	4.4	1.1 U	17 U	0.27 U	0.32 U
M-DICHLOROBENZENE	NS	1.1 U	17 U	0.27 U	0.32 U
N-NITROSO-DI-N-PROPYLAMINE	NS	1.1 U	17 U	0.27 U	0.32 U
N-NITROSODIMETHYLAMINE	NS	1.1 U	17 U	0.27 U	0.32 U
N-NITROSODIPHENYLAMINE	NS	1.1 U	17 U	0.27 U	0.32 U
NAPHTHALENE	13	1.1 U	17 U	0.27 U	0.32 U
NITROBENZENE	0.200 or MDL	1.1 U	17 U	0.27 U	0.32 U
PENTACHLOROPHENOL	1.0 or MDL	1.1 U	17 U	0.27 U	0.32 U
PHENANTHRENE	50	0.44 J	17 U	0.27 U	0.32 U
PHENOL	0.03 or MDL	1.1 U	17 U	0.27 U	0.32 U
PYRENE	50	1.1 U	17 U	0.27 U	0.32 U
TOTAL SVOCs	500	1.39	ND	0.11	0.099

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-FS-4** 11/15/2000 PG-FS04 0.5-1' MG/KG	**PG-FS-4** 11/15/2000 PG-FS04 2-4' MG/KG	**PG-FILL-7** 12/4/2000 PG-FILL7 1-2.5' MG/KG	**PG-FILL-7** 12/4/2000 PG-FILL7 2.5-4' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.22 U	0.25 U	0.18 U	0.19 U
1,2-BENZPHENANTHRACENE	NS	0.28	0.091 J	0.070 J	0.30
1,2-DICHLOROBENZENE	7.9	0.22 U	0.25 U	0.18 U	0.19 U
1,2-DIPHENYLHYDRAZINE	NS	0.044 U	0.049 U	0.036 U	0.037 U
1,4-DICHLOROBENZENE	8.5	0.22 U	0.25 U	0.18 U	0.19 U
2,4,6-TRICHLORORPHENOL	0.1	0.22 U	0.25 U	0.18 U	0.19 U
2,4-DICHLOROPHENOL	0.4	0.22 U	0.25 U	0.18 U	0.19 U
2,4-DIMETHYLPHENOL	NS	0.22 U	0.25 U	0.18 U	0.19 U
2,4-DINITROPHENOL	0.200 or MDL	0.44 U	0.49 U	0.36 U	0.37 U
2,4-DINITROTOLUENE	NS	0.22 U	0.25 U	0.18 U	0.19 U
2,6-DINITROTOLUENE	1	0.22 U	0.25 U	0.18 U	0.19 U
2-CHLORORNAPHTHALENE	NS	0.22 U	0.25 U	0.18 U	0.19 U
2-CHLOROPHENOL	0.8	0.22 U	0.25 U	0.18 U	0.19 U
2-NITROPHENOL	0.330 or MDL	0.22 U	0.25 U	0.18 U	0.19 U
3,3'-DICHLOROBENZIDINE	N/A	0.22 U	0.25 U	0.18 U	0.19 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.22 U	0.25 U	0.18 U	0.19 U
4-BROMOPHENYLPHENYL ETHER	NS	0.22 U	0.25 U	0.18 U	0.19 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.22 U	0.25 U	0.18 U	0.19 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.22 U	0.25 U	0.18 U	0.19 U
4-NITROPHENOL	0.100 or MDL	0.22 U	0.25 U	0.18 U	0.19 U
ACENAPHTHENE	50.0 ***	0.073 J	0.25 U	0.18 U	0.19 U
ACENAPHTHYLENE	41	0.22 U	0.25 U	0.18 U	0.039 J
ANTHRACENE	50.0 ***	0.066 J	0.25 U	0.18 U	0.045 J
BENZIDINE	NS	0.44 U	0.49 U	0.36 U	0.37 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.19 J	0.25 U	0.060 J	0.21
BENZO[A]PYRENE	0.061 or MDL	0.15 J	0.25 U	0.053 J	0.23
BENZO[B]FLOURANTHENE	1.1	0.25	0.25 U	0.083 J	0.36
BENZO[G,H,I]PERYLENE	50.0 ***	0.060 J	0.25 U	0.041 J	0.20
BENZO[K]FLOURANTHENE	1.1	0.24	0.25 U	0.18 U	0.12 J
BENZYL BUTYL PHTHALATE	50.0 ***	0.22 U	0.25 U	0.18 U	0.19 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.22 U	0.25 U	0.18 U	0.19 U
BIS(2-CHLOROETHYL)ETHER	NS	0.22 U	0.25 U	0.18 U	0.19 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.22 U	0.25 U	0.18 U	0.19 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.061 JB	0.15 JB	0.064 JB	0.095 JB
DI-N-BUTYL PHTHALATE	8.1	0.26	0.071 J	0.076 JB	0.060 JB
DI-N-OCTYL PHTHALATE	50.0 ***	0.092 JB	0.15 JB	0.18 U	0.041 JB
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.22 U	0.25 U	0.18 U	0.059 J
DIETHYL PHTHALATE	7.1	0.22 U	0.25 U	0.18 U	0.19 U
DIMETHYL PHTHALATE	2	0.22 U	0.25 U	0.18 U	0.19 U
FLUORANTHENE	50	0.45	0.25 U	0.080 J	0.36
FLUORENE	50	0.077 J	0.25 U	0.18 U	0.19 U
HEXACHLORO-1,3-BUTADIENE	NS	0.22 U	0.25 U	0.18 U	0.19 U
HEXACHLOROBENZENE	0.41	0.22 U	0.25 U	0.18 U	0.19 U
HEXACHLOROCYCLOPENTADIENE	NS	0.66 U	0.74 U	0.54 U	0.56 U
HEXACHLOROETHANE	NS	0.22 U	0.25 U	0.18 U	0.19 U
INDENO[1,2,3-CD]PYRENE	3.2	0.067 J	0.25 U	0.18 U	0.16 J
ISOPHORORNE	4.4	0.22 U	0.25 U	0.18 U	0.19 U
M-DICHLOROBENZENE	NS	0.22 U	0.25 U	0.18 U	0.19 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.22 U	0.25 U	0.18 U	0.19 U
N-NITROSODIMETHYLAMINE	NS	0.22 U	0.25 U	0.18 U	0.19 U
N-NITROSODIPHENYLAMINE	NS	0.22 U	0.25 U	0.18 U	0.19 U
NAPHTHALENE	13	0.093 J	0.25 U	0.051 J	0.21
NITROBENZENE	0.200 or MDL	0.22 U	0.25 U	0.18 U	0.19 U
PENTACHLOROPHENOL	1.0 or MDL	0.22 U	0.25 U	0.18 U	0.19 U
PHENANTHRENE	50	0.38	0.11 J	0.067 J	0.37
PHENOL	0.03 or MDL	0.22 U	0.25 U	0.18 U	0.19 U
PYRENE	50	0.41	0.051 J	0.076 J	0.42
TOTAL SVOCs	500	3.009	0.623	0.651	3.279

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** MG/KG	**PG-FILL-7** 12/4/2000 PG-FILL7 10-12' MG/KG	**PG-FILL-8** 12/2/2000 PG-FILL08 0-2' MG/KG	**PG-FILL-8** 12/2/2000 PG-FILL08 6-8' MG/KG	**PG-UST2-1** 11/30/2000 PG-UST2-1 6-7' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.35 U	0.20 U	0.35 U	0.20 U
1,2-BENZPHENANTHRACENE	NS	0.35 U	0.33	0.35 U	0.59
1,2-DICHLOROBENZENE	7.9	0.35 U	0.20 U	0.35 U	0.20 U
1,2-DIPHENYLHYDRAZINE	NS	0.071 U	0.040 U	0.069 U	0.040 U
1,4-DICHLOROBENZENE	8.5	0.35 U	0.20 U	0.35 U	0.20 U
2,4,6-TRICHLORORPHENOL	0.1	0.35 U	0.20 U	0.35 U	0.20 U
2,4-DICHLOROPHENOL	0.4	0.35 U	0.20 U	0.35 U	0.20 U
2,4-DIMETHYLPHENOL	NS	0.35 U	0.20 U	0.35 U	0.20 U
2,4-DINITROPHENOL	0.200 or MDL	0.71 U	0.40 U	0.69 U	0.40 U
2,4-DINITROTOLUENE	NS	0.35 U	0.20 U	0.35 U	0.20 U
2,6-DINITROTOLUENE	1	0.35 U	0.20 U	0.35 U	0.20 U
2-CHLORORNAPHTHALENE	NS	0.35 U	0.20 U	0.35 U	0.20 U
2-CHLOROPHENOL	0.8	0.35 U	0.20 U	0.35 U	0.20 U
2-NITROPHENOL	0.330 or MDL	0.35 U	0.20 U	0.35 U	0.20 U
3,3'-DICHLOROBENZIDINE	N/A	0.35 U	0.20 U	0.35 U	0.20 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.35 U	0.20 U	0.35 U	0.20 U
4-BROMOPHENYLPHENYL ETHER	NS	0.35 U	0.20 U	0.35 U	0.20 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.35 U	0.20 U	0.35 U	0.20 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.35 U	0.20 U	0.35 U	0.20 U
4-NITROPHENOL	0.100 or MDL	0.35 U	0.20 U	0.35 U	0.20 U
ACENAPHTHENE	50.0 ***	0.35 U	0.20 U	0.35 U	0.18 J
ACENAPHTHYLENE	41	0.35 U	0.065 J	0.35 U	0.20 U
ANTHRACENE	50.0 ***	0.35 U	0.11 J	0.35 U	0.32
BENZIDINE	NS	0.71 U	0.40 U	0.69 U	0.40 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.35 U	**0.26**	0.35 U	**0.47**
BENZO[A]PYRENE	0.061 or MDL	0.35 U	**0.25**	0.35 U	**0.28**
BENZO[B]FLOURANTHENE	1.1	0.35 U	0.50	0.35 U	0.25
BENZO[G,H,I]PERYLENE	50.0 ***	0.35 U	0.22	0.35 U	0.043 J
BENZO[K]FLOURANTHENE	1.1	0.35 U	0.17 J	0.35 U	0.13 J
BENZYL BUTYL PHTHALATE	50.0 ***	0.35 U	0.20 U	0.35 U	0.20 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.35 U	0.20 U	0.35 U	0.20 U
BIS(2-CHLOROETHYL)ETHER	NS	0.35 U	0.20 U	0.35 U	0.20 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.35 U	0.20 U	0.35 U	0.20 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.080 JB	0.20 B	0.15 JB	0.088 J
DI-N-BUTYL PHTHALATE	8.1	0.35 U	0.20 U	0.35 U	0.083 J
DI-N-OCTYL PHTHALATE	50.0 ***	0.35 U	0.078 JB	0.35 U	0.10 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.35 U	**0.075 J**	0.35 U	0.20 U
DIETHYL PHTHALATE	7.1	0.35 U	0.20 U	0.35 U	0.20 U
DIMETHYL PHTHALATE	2	0.35 U	0.048 J	0.35 U	0.20 U
FLUORANTHENE	50	0.35 U	0.40	0.35 U	0.28
FLUORENE	50	0.35 U	0.20 U	0.35 U	0.11 J
HEXACHLORO-1,3-BUTADIENE	NS	0.35 U	0.20 U	0.35 U	0.20 U
HEXACHLOROBENZENE	0.41	0.35 U	0.20 U	0.35 U	0.20 U
HEXACHLOROCYCLOPENTADIENE	NS	1.1 U	0.60 U	1.0 U	0.60 U
HEXACHLOROETHANE	NS	0.35 U	0.20 U	0.35 U	0.20 U
INDENO[1,2,3-CD]PYRENE	3.2	0.35 U	0.20	0.35 U	0.20 U
ISOPHORORNE	4.4	0.35 U	0.20 U	0.35 U	0.20 U
M-DICHLOROBENZENE	NS	0.35 U	0.20 U	0.35 U	0.20 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.35 U	0.20 U	0.35 U	0.20 U
N-NITROSODIMETHYLAMINE	NS	0.35 U	0.20 U	0.35 U	0.20 U
N-NITROSODIPHENYLAMINE	NS	0.35 U	0.20 U	0.35 U	0.20 U
NAPHTHALENE	13	0.35 U	0.040 J	0.35 U	0.088 J
NITROBENZENE	0.200 or MDL	0.35 U	0.20 U	0.35 U	0.20 U
PENTACHLOROPHENOL	1.0 or MDL	0.35 U	0.20 U	0.35 U	0.20 U
PHENANTHRENE	50	0.35 U	0.14 J	0.35 U	0.14 J
PHENOL	0.03 or MDL	0.35 U	0.20 U	0.35 U	0.20 U
PYRENE	50	0.35 U	0.40	0.35 U	0.84
TOTAL SVOCs	500	0.08	3.486	0.15	3.892

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-UST2-1** 11/30/2000 PG-UST2-1 8-10' MG/KG	**PG-UST2-1A** 11/30/2000 PG-UST2-1A 0-2' MG/KG	**PG-UST2-1B** 11/30/2000 PG-UST2-1B 2-4' MG/KG	**PG-UST2-1B** 11/30/2000 PG-UST2-1B 4-5.5' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	6.0 U	0.76 U	0.24 U	3.7 U
1,2-BENZPHENANTHRACENE	NS	12	1.3	0.28	2.5 J
1,2-DICHLOROBENZENE	7.9	6.0 U	0.76 U	0.24 U	3.7 U
1,2-DIPHENYLHYDRAZINE	NS	1.2 U	0.15 U	0.048 U	0.74 U
1,4-DICHLOROBENZENE	8.5	6.0 U	0.76 U	0.24 U	3.7 U
2,4,6-TRICHLORORPHENOL	0.1	6.0 U	0.76 U	0.24 U	3.7 U
2,4-DICHLOROPHENOL	0.4	6.0 U	0.76 U	0.24 U	3.7 U
2,4-DIMETHYLPHENOL	NS	6.0 U	0.76 U	0.24 U	3.7 U
2,4-DINITROPHENOL	0.200 or MDL	12 U	1.5 U	0.48 U	7.4 U
2,4-DINITROTOLUENE	NS	6.0 U	0.76 U	0.24 U	3.7 U
2,6-DINITROTOLUENE	1	6.0 U	0.76 U	0.24 U	3.7 U
2-CHLORORNAPHTHALENE	NS	6.0 U	0.76 U	0.24 U	3.7 U
2-CHLOROPHENOL	0.8	6.0 U	0.76 U	0.24 U	3.7 U
2-NITROPHENOL	0.330 or MDL	6.0 U	0.76 U	0.24 U	3.7 U
3,3'-DICHLOROBENZIDINE	N/A	6.0 U	0.76 U	0.24 U	3.7 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	6.0 U	0.76 U	0.24 U	3.7 U
4-BROMOPHENYLPHENYL ETHER	NS	6.0 U	0.76 U	0.24 U	3.7 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	6.0 U	**0.27 J**	0.059 J	3.7 U
4-CHLOROPHENYLPHENYL ETHER	NS	6.0 U	0.76 U	0.24 U	3.7 U
4-NITROPHENOL	0.100 or MDL	6.0 U	**1.5**	0.24 U	3.7 U
ACENAPHTHENE	50.0 ***	9.2	0.76 U	0.12 J	3.7 U
ACENAPHTHYLENE	41	6.0 U	0.76 U	0.24 U	3.7 U
ANTHRACENE	50.0 ***	11	0.34 J	0.16 J	3.7 U
BENZIDINE	NS	12 U	1.5 U	0.48 U	7.4 U
BENZO[A]ANTHRACENE	0.224 or MDL	**8.8**	**1.1**	0.23 J	**1.7 J**
BENZO[A]PYRENE	0.061 or MDL	**5.9 J**	**0.95**	**0.19 J**	**1.5 J**
BENZO[B]FLOURANTHENE	1.1	**4.1 J**	**1.4**	0.33	**1.4 J**
BENZO[G,H,I]PERYLENE	50.0 ***	4.9 J	0.44 J	0.059 J	1.4 J
BENZO[K]FLOURANTHENE	1.1	**2.3 J**	0.58 J	0.12 J	3.7 U
BENZYL BUTYL PHTHALATE	50.0 ***	6.0 U	1.6	0.090 J	3.7 U
BIS(2-CHLOROETHOXY)METHANE	NS	6.0 U	0.76 U	0.24 U	3.7 U
BIS(2-CHLOROETHYL)ETHER	NS	6.0 U	0.76 U	0.24 U	3.7 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	6.0 U	0.76 U	0.24 U	3.7 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	6.0 U	24	0.44	3.7 U
DI-N-BUTYL PHTHALATE	8.1	6.0 U	0.23 J	0.24 U	3.7 U
DI-N-OCTYL PHTHALATE	50.0 ***	6.0 U	0.20 J	0.11 J	3.7 U
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	6.0 U	0.76 U	0.24 U	3.7 U
DIETHYL PHTHALATE	7.1	6.0 U	0.76 U	0.24 U	3.7 U
DIMETHYL PHTHALATE	2	6.0 U	0.76 U	0.24 U	3.7 U
FLUORANTHENE	50	7.7	1.7	0.63	3.7 U
FLUORENE	50	10	0.76 U	0.19 J	3.7 U
HEXACHLORO-1,3-BUTADIENE	NS	6.0 U	0.76 U	0.24 U	3.7 U
HEXACHLOROBENZENE	0.41	6.0 U	0.76 U	0.24 U	3.7 U
HEXACHLOROCYCLOPENTADIENE	NS	18 U	2.3 U	0.71 U	11 U
HEXACHLOROETHANE	NS	6.0 U	0.76 U	0.24 U	3.7 U
INDENO[1,2,3-CD]PYRENE	3.2	6.0 U	0.44 J	0.058 J	3.7 U
ISOPHORORNE	4.4	6.0 U	0.76 U	0.24 U	3.7 U
M-DICHLOROBENZENE	NS	6.0 U	0.76 U	0.24 U	3.7 U
N-NITROSO-DI-N-PROPYLAMINE	NS	6.0 U	0.76 U	0.24 U	3.7 U
N-NITROSODIMETHYLAMINE	NS	6.0 U	0.76 U	0.24 U	3.7 U
N-NITROSODIPHENYLAMINE	NS	6.0 U	0.76 U	0.24 U	3.7 U
NAPHTHALENE	13	6.0 U	0.76 U	0.15 J	0.85 J
NITROBENZENE	0.200 or MDL	6.0 U	0.76 U	0.24 U	3.7 U
PENTACHLOROPHENOL	1.0 or MDL	6.0 U	0.48 J	0.24 U	3.7 U
PHENANTHRENE	50	31	1.0	0.55	2.2 J
PHENOL	0.03 or MDL	6.0 U	0.76 U	0.24 U	3.7 U
PYRENE	50	45	1.4	0.53	3.2 J
TOTAL SVOCs	500	151.9	38.93	4.296	14.75

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended Soil Cleanup Objective** **MG/KG**	**PG-UST2-2** 11/30/2000 PG-UST2-2 4-5.5' MG/KG	**PG-UST2-2** 11/30/2000 PG-UST2-2 10-12' MG/KG	**PG-UST2-3** 12/1/2000 PG-UST2-3 2-4' MG/KG	**PG-UST2-3** 12/1/2000 PG-UST2-3 7.5-9 MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.19 U	1.1 U	0.21 U	4.2 U
1,2-BENZPHENANTHRACENE	NS	0.11 J	2.6	0.068 J	15
1,2-DICHLOROBENZENE	7.9	0.19 U	1.1 U	0.21 U	4.2 U
1,2-DIPHENYLHYDRAZINE	NS	0.038 U	0.21 U	0.041 U	0.83 U
1,4-DICHLOROBENZENE	8.5	0.19 U	1.1 U	0.21 U	4.2 U
2,4,6-TRICHLORORPHENOL	0.1	0.19 U	1.1 U	0.21 U	4.2 U
2,4-DICHLOROPHENOL	0.4	0.19 U	1.1 U	0.21 U	4.2 U
2,4-DIMETHYLPHENOL	NS	0.19 U	1.1 U	0.21 U	4.2 U
2,4-DINITROPHENOL	0.200 or MDL	0.38 U	2.1 U	0.41 U	8.3 U
2,4-DINITROTOLUENE	NS	0.19 U	1.1 U	0.21 U	4.2 U
2,6-DINITROTOLUENE	1	0.19 U	1.1 U	0.21 U	4.2 U
2-CHLORORNAPHTHALENE	NS	0.19 U	1.1 U	0.21 U	4.2 U
2-CHLOROPHENOL	0.8	0.19 U	1.1 U	0.21 U	4.2 U
2-NITROPHENOL	0.330 or MDL	0.19 U	1.1 U	0.21 U	4.2 U
3,3'-DICHLOROBENZIDINE	N/A	0.19 U	1.1 U	0.21 U	4.2 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.19 U	1.1 U	0.21 U	4.2 U
4-BROMOPHENYLPHENYL ETHER	NS	0.19 U	1.1 U	0.21 U	4.2 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.19 U	1.1 U	0.21 U	4.2 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.19 U	1.1 U	0.21 U	4.2 U
4-NITROPHENOL	0.100 or MDL	0.19 U	1.1 U	0.21 U	4.2 U
ACENAPHTHENE	50.0 ***	0.19 U	1.4	0.21 U	5.1
ACENAPHTHYLENE	41	0.19 U	1.1 U	0.21 U	4.2 U
ANTHRACENE	50.0 ***	0.19 U	2.9	0.21 U	4.2 U
BENZIDINE	NS	0.38 U	2.1 U	0.41 U	8.3 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.066 J	**2.5**	0.21 U	**11**
BENZO[A]PYRENE	0.061 or MDL	0.057 J	**1.4**	0.21 U	**5.8**
BENZO[B]FLOURANTHENE	1.1	0.10 J	0.97 J	0.21 U	**6.8**
BENZO[G,H,I]PERYLENE	50.0 ***	0.19 U	0.39 J	0.21 U	1.1 J
BENZO[K]FLOURANTHENE	1.1	0.19 U	0.53 J	0.21 U	**2.3 J**
BENZYL BUTYL PHTHALATE	50.0 ***	0.36	1.1 U	0.21 U	4.2 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.19 U	1.1 U	0.21 U	4.2 U
BIS(2-CHLOROETHYL)ETHER	NS	0.19 U	1.1 U	0.21 U	4.2 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.19 U	1.1 U	0.21 U	4.2 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.13 J	1.1 U	0.086 JB	4.2 U
DI-N-BUTYL PHTHALATE	8.1	0.084 J	1.1 U	0.042 J	4.2 U
DI-N-OCTYL PHTHALATE	50.0 ***	0.067 J	1.1 U	0.051 J	4.2 U
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.19 U	1.1 U	0.21 U	4.2 U
DIETHYL PHTHALATE	7.1	0.19 U	1.1 U	0.21 U	4.2 U
DIMETHYL PHTHALATE	2	0.19 U	1.1 U	0.21 U	4.2 U
FLUORANTHENE	50	0.066 J	1.6	0.21 U	6.1
FLUORENE	50	0.19 U	2.3	0.21 U	4.2 U
HEXACHLORO-1,3-BUTADIENE	NS	0.19 U	1.1 U	0.21 U	4.2 U
HEXACHLOROBENZENE	0.41	0.19 U	1.1 U	0.21 U	4.2 U
HEXACHLOROCYCLOPENTADIENE	NS	0.57 U	3.2 U	0.62 U	13 U
HEXACHLOROETHANE	NS	0.19 U	1.1 U	0.21 U	4.2 U
INDENO[1,2,3-CD]PYRENE	3.2	0.19 U	1.1 U	0.21 U	4.2 U
ISOPHORORNE	4.4	0.19 U	1.1 U	0.21 U	4.2 U
M-DICHLOROBENZENE	NS	0.19 U	1.1 U	0.21 U	4.2 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.19 U	1.1 U	0.21 U	4.2 U
N-NITROSODIMETHYLAMINE	NS	0.19 U	1.1 U	0.21 U	4.2 U
N-NITROSODIPHENYLAMINE	NS	0.19 U	1.1 U	0.21 U	4.2 U
NAPHTHALENE	13	0.12 J	0.73 J	0.042 J	4.2 U
NITROBENZENE	0.200 or MDL	0.19 U	1.1 U	0.21 U	4.2 U
PENTACHLOROPHENOL	1.0 or MDL	0.19 U	1.1 U	0.21 U	4.2 U
PHENANTHRENE	50	0.15 J	10	0.099 J	9.2
PHENOL	0.03 or MDL	0.19 U	1.1 U	0.21 U	4.2 U
PYRENE	50	0.084 J	9.8	0.21 U	31
TOTAL SVOCs	500	1.394	37.12	0.388	93.4

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-UST2-3** 12/1/2000 PG-UST2-3 12-14' MG/KG	**PG-UST5-2** 11/27/2000 PG-UST5-2 4-6' MG/KG	**PG-UST6-2** 11/28/2000 PG-UST6-2 4-6' MG/KG	**PG-UST6-2** 11/28/2000 PG-UST6-2 8-10' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.32 U	0.31 U	0.33 U	0.39 U
1,2-BENZPHENANTHRACENE	NS	0.24 J	0.31 U	0.33 U	0.39 U
1,2-DICHLOROBENZENE	7.9	0.32 U	0.31 U	0.33 U	0.39 U
1,2-DIPHENYLHYDRAZINE	NS	0.064 U	0.062 U	0.067 U	0.078 U
1,4-DICHLOROBENZENE	8.5	0.32 U	0.31 U	0.33 U	0.39 U
2,4,6-TRICHLORORPHENOL	0.1	0.32 U	0.31 U	0.33 U	0.39 U
2,4-DICHLOROPHENOL	0.4	0.32 U	0.31 U	0.33 U	0.39 U
2,4-DIMETHYLPHENOL	NS	0.32 U	0.31 U	0.33 U	0.39 U
2,4-DINITROPHENOL	0.200 or MDL	0.64 U	0.62 U	0.67 U	0.78 U
2,4-DINITROTOLUENE	NS	0.32 U	0.31 U	0.33 U	0.39 U
2,6-DINITROTOLUENE	1	0.32 U	0.31 U	0.33 U	0.39 U
2-CHLORORNAPHTHALENE	NS	0.32 U	0.31 U	0.33 U	0.39 U
2-CHLOROPHENOL	0.8	0.32 U	0.31 U	0.33 U	0.39 U
2-NITROPHENOL	0.330 or MDL	0.32 U	0.31 U	0.33 U	0.39 U
3,3'-DICHLOROBENZIDINE	N/A	0.32 U	0.31 U	0.33 U	0.39 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.32 U	0.31 U	0.33 U	0.39 U
4-BROMOPHENYLPHENYL ETHER	NS	0.32 U	0.31 U	0.33 U	0.39 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.32 U	0.31 U	0.33 U	0.39 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.32 U	0.31 U	0.33 U	0.39 U
4-NITROPHENOL	0.100 or MDL	0.32 U	0.31 U	0.33 U	0.39 U
ACENAPHTHENE	50.0 ***	0.083 J	0.31 U	0.33 U	0.39 U
ACENAPHTHYLENE	41	0.32 U	0.31 U	0.33 U	0.39 U
ANTHRACENE	50.0 ***	0.13 J	0.31 U	0.33 U	0.39 U
BENZIDINE	NS	0.64 U	0.62 U	0.67 U	0.78 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.20 J	0.073 J	0.33 U	0.39 U
BENZO[A]PYRENE	0.061 or MDL	0.099 J	0.31 U	0.33 U	0.39 U
BENZO[B]FLOURANTHENE	1.1	0.084 J	0.063 J	0.33 U	0.39 U
BENZO[G,H,I]PERYLENE	50.0 ***	0.32 U	0.24 J	0.33 U	0.39 U
BENZO[K]FLOURANTHENE	1.1	0.32 U	0.31 U	0.33 U	0.39 U
BENZYL BUTYL PHTHALATE	50.0 ***	0.32 U	0.31 U	0.33 U	0.39 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.32 U	0.31 U	0.33 U	0.39 U
BIS(2-CHLOROETHYL)ETHER	NS	0.32 U	0.31 U	0.33 U	0.39 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.32 U	0.31 U	0.33 U	0.39 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.36 B	0.24 JB	0.16 J	0.28 J
DI-N-BUTYL PHTHALATE	8.1	0.32 U	0.16 JB	0.14 JB	0.17 JB
DI-N-OCTYL PHTHALATE	50.0 ***	0.42	0.079 J	0.33 U	0.24 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.32 U	0.31 U	0.33 U	0.39 U
DIETHYL PHTHALATE	7.1	0.32 U	0.31 U	0.33 U	0.39 U
DIMETHYL PHTHALATE	2	0.32 U	0.31 U	0.33 U	0.39 U
FLUORANTHENE	50	0.13 J	0.088 J	0.33 U	0.39 U
FLUORENE	50	0.32 U	0.31 U	0.33 U	0.39 U
HEXACHLORO-1,3-BUTADIENE	NS	0.32 U	0.31 U	0.33 U	0.39 U
HEXACHLOROBENZENE	0.41	0.32 U	0.31 U	0.33 U	0.39 U
HEXACHLOROCYCLOPENTADIENE	NS	0.96 U	0.93 U	1.0 U	1.2 U
HEXACHLOROETHANE	NS	0.32 U	0.31 U	0.33 U	0.39 U
INDENO[1,2,3-CD]PYRENE	3.2	0.32 U	0.31 U	0.33 U	0.39 U
ISOPHORORNE	4.4	0.32 U	0.31 U	0.33 U	0.39 U
M-DICHLOROBENZENE	NS	0.32 U	0.31 U	0.33 U	0.39 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.32 U	0.31 U	0.33 U	0.39 U
N-NITROSODIMETHYLAMINE	NS	0.32 U	0.31 U	0.33 U	0.39 U
N-NITROSODIPHENYLAMINE	NS	0.32 U	0.31 U	0.33 U	0.39 U
NAPHTHALENE	13	0.27 J	0.31 U	0.33 U	0.39 U
NITROBENZENE	0.200 or MDL	0.32 U	0.31 U	0.33 U	0.39 U
PENTACHLOROPHENOL	1.0 or MDL	0.32 U	0.31 U	0.33 U	0.39 U
PHENANTHRENE	50	0.14 J	0.11 J	0.33 U	0.39 U
PHENOL	0.03 or MDL	0.32 U	0.21 J	0.33 U	0.086 J
PYRENE	50	0.51	0.12 J	0.33 U	0.39 U
TOTAL SVOCs	500	2.666	1.38	0.3	0.776

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-UST6-2** 11/28/2000 PG-UST6-2 16-18' MG/KG	**PG-UST6-3** 11/28/2000 PG-UST6-3 1.5-2' MG/KG	**PG-UST6-3** 11/28/2000 PG-UST6-3 14-16' MG/KG	**PG-WOOD-1C** 11/9/2000 PG-WD-01C 10-12' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.41 U	0.20 U	0.52 U	0.31 U
1,2-BENZPHENANTHRACENE	NS	0.41 U	1	0.12 J	0.31 U
1,2-DICHLOROBENZENE	7.9	0.41 U	0.20 U	0.52 U	0.31 U
1,2-DIPHENYLHYDRAZINE	NS	0.081 U	0.039 U	0.10 U	0.062 U
1,4-DICHLOROBENZENE	8.5	0.41 U	0.20 U	0.52 U	0.31 U
2,4,6-TRICHLORORPHENOL	0.1	0.41 U	0.20 U	0.52 U	0.31 U
2,4-DICHLOROPHENOL	0.4	0.41 U	0.20 U	0.52 U	0.31 U
2,4-DIMETHYLPHENOL	NS	0.41 U	0.20 U	0.52 U	0.31 U
2,4-DINITROPHENOL	0.200 or MDL	0.81 U	0.39 U	1.0 U	0.62 U
2,4-DINITROTOLUENE	NS	0.41 U	0.20 U	0.52 U	0.31 U
2,6-DINITROTOLUENE	1	0.41 U	0.20 U	0.52 U	0.31 U
2-CHLORORNAPHTHALENE	NS	0.41 U	0.20 U	0.52 U	0.31 U
2-CHLOROPHENOL	0.8	0.41 U	0.20 U	0.52 U	0.31 U
2-NITROPHENOL	0.330 or MDL	0.41 U	0.20 U	0.52 U	0.31 U
3,3'-DICHLOROBENZIDINE	N/A	0.41 U	0.20 U	0.52 U	0.31 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.41 U	0.20 U	0.52 U	0.31 U
4-BROMOPHENYLPHENYL ETHER	NS	0.41 U	0.20 U	0.52 U	0.31 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.41 U	0.20 U	0.52 U	0.31 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.41 U	0.20 U	0.52 U	0.31 U
4-NITROPHENOL	0.100 or MDL	0.41 U	0.20 U	0.52 U	0.31 U
ACENAPHTHENE	50.0 ***	0.41 U	0.14 J	0.52 U	0.31 U
ACENAPHTHYLENE	41	0.41 U	0.042 J	0.52 U	0.31 U
ANTHRACENE	50.0 ***	0.41 U	0.30	0.52 U	0.31 U
BENZIDINE	NS	0.81 U	0.39 U	1.0 U	0.62 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.41 U	**0.99**	0.12 J	0.31 U
BENZO[A]PYRENE	0.061 or MDL	0.41 U	**0.92**	0.52 U	0.31 U
BENZO[B]FLOURANTHENE	1.1	0.41 U	**1.5**	0.52 U	0.31 U
BENZO[G,H,I]PERYLENE	50.0 ***	0.41 U	0.28	0.52 U	0.20 J
BENZO[K]FLOURANTHENE	1.1	0.41 U	0.59	0.52 U	0.31 U
BENZYL BUTYL PHTHALATE	50.0 ***	0.41 U	0.20 U	0.52 U	0.31 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.41 U	0.20 U	0.52 U	0.31 U
BIS(2-CHLOROETHYL)ETHER	NS	0.41 U	0.20 U	0.52 U	0.31 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.41 U	0.20 U	0.52 U	0.31 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.34 J	0.20 U	0.24 J	0.28 JB
DI-N-BUTYL PHTHALATE	8.1	0.16 JB	0.093 JB	0.52 U	0.13 JB
DI-N-OCTYL PHTHALATE	50.0 ***	0.17 J	0.20 U	0.14 J	0.13 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.41 U	**0.14 J**	0.52 U	0.31 U
DIETHYL PHTHALATE	7.1	0.41 U	0.20 U	0.52 U	0.31 U
DIMETHYL PHTHALATE	2	0.41 U	0.20 U	0.52 U	0.31 U
FLUORANTHENE	50	0.17 J	2.1	0.19 J	0.31 U
FLUORENE	50	0.41 U	0.18 J	0.52 U	0.31 U
HEXACHLORO-1,3-BUTADIENE	NS	0.41 U	0.20 U	0.52 U	0.31 U
HEXACHLOROBENZENE	0.41	0.41 U	0.20 U	0.52 U	0.31 U
HEXACHLOROCYCLOPENTADIENE	NS	1.2 U	0.59 U	1.6 U	0.93 U
HEXACHLOROETHANE	NS	0.41 U	0.20 U	0.52 U	0.31 U
INDENO[1,2,3-CD]PYRENE	3.2	0.41 U	0.28	0.52 U	0.31 U
ISOPHORORNE	4.4	0.41 U	0.20 U	0.52 U	0.31 U
M-DICHLOROBENZENE	NS	0.41 U	0.20 U	0.52 U	0.31 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.41 U	0.20 U	0.52 U	0.31 U
N-NITROSODIMETHYLAMINE	NS	0.41 U	0.20 U	0.52 U	0.31 U
N-NITROSODIPHENYLAMINE	NS	0.41 U	0.20 U	0.52 U	0.31 U
NAPHTHALENE	13	0.087 J	0.22	0.52 U	0.31
NITROBENZENE	0.200 or MDL	0.41 U	0.20 U	0.52 U	0.31 U
PENTACHLOROPHENOL	1.0 or MDL	0.41 U	0.20 U	0.52 U	0.31 U
PHENANTHRENE	50	0.16 J	0.92	0.17 J	0.31 U
PHENOL	0.03 or MDL	**0.51**	0.20 U	0.52 U	0.31 U
PYRENE	50	0.12 J	1.8	0.18 J	0.31 U
TOTAL SVOCs	500	1.717	11.495	1.16	1.05

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended Soil Cleanup Objective** **MG/KG**	**PG-WOOD-03** 11/10/2000 PG-WD-03 0.5-2' MG/KG	**PG-WOOD-03** 11/10/2000 PG-WD-03 2-4' MG/KG	**PG-WOOD-3** 11/29/2000 PG-WOOD-3 2-4' MG/KG	**PG-WOOD-3** 11/29/2000 PG-WOOD-3 6-8' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.19 U	0.20 U	0.20 U	0.33 U
1,2-BENZPHENANTHRACENE	NS	0.060 J	1.1	0.15 J	0.33 U
1,2-DICHLOROBENZENE	7.9	0.19 U	0.20 U	0.20 U	0.33 U
1,2-DIPHENYLHYDRAZINE	NS	0.037 U	0.039 U	0.039 U	0.065 U
1,4-DICHLOROBENZENE	8.5	0.19 U	0.20 U	0.20 U	0.33 U
2,4,6-TRICHLORORPHENOL	0.1	0.19 U	0.20 U	0.20 U	0.33 U
2,4-DICHLOROPHENOL	0.4	0.19 U	0.20 U	0.20 U	0.33 U
2,4-DIMETHYLPHENOL	NS	0.19 U	0.20 U	0.20 U	0.33 U
2,4-DINITROPHENOL	0.200 or MDL	0.37 U	0.39 U	0.39 U	0.65 U
2,4-DINITROTOLUENE	NS	0.19 U	0.20 U	0.20 U	0.33 U
2,6-DINITROTOLUENE	1	0.19 U	0.20 U	0.20 U	0.33 U
2-CHLORORNAPHTHALENE	NS	0.19 U	0.20 U	0.20 U	0.33 U
2-CHLOROPHENOL	0.8	0.19 U	0.20 U	0.20 U	0.33 U
2-NITROPHENOL	0.330 or MDL	0.19 U	0.20 U	0.20 U	0.33 U
3,3'-DICHLOROBENZIDINE	N/A	0.19 U	0.20 U	0.20 U	0.33 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.19 U	0.20 U	0.20 U	0.33 U
4-BROMOPHENYLPHENYL ETHER	NS	0.19 U	0.20 U	0.20 U	0.33 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.19 U	0.20 U	0.20 U	0.33 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.19 U	0.20 U	0.20 U	0.33 U
4-NITROPHENOL	0.100 or MDL	0.19 U	0.20 U	0.20 U	0.33 U
ACENAPHTHENE	50.0 ***	0.19 U	0.088 J	0.20 U	0.33 U
ACENAPHTHYLENE	41	0.19 U	0.14 J	0.20 U	0.33 U
ANTHRACENE	50.0 ***	0.19 U	0.32	0.20 U	0.33 U
BENZIDINE	NS	0.37 U	0.39 U	0.39 U	0.65 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.047 J	0.95	0.10 J	0.33 U
BENZO[A]PYRENE	0.061 or MDL	0.039 J	0.97	0.11 J	0.33 U
BENZO[B]FLOURANTHENE	1.1	0.086 J	2.5	0.18 J	0.33 U
BENZO[G,H,I]PERYLENE	50.0 ***	0.19 U	0.31	0.11 J	0.33 U
BENZO[K]FLOURANTHENE	1.1	0.19 U	0.20 U	0.073 J	0.33 U
BENZYL BUTYL PHTHALATE	50.0 ***	0.19 U	0.20 U	0.20 U	0.33 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.19 U	0.20 U	0.20 U	0.33 U
BIS(2-CHLOROETHYL)ETHER	NS	0.19 U	0.20 U	0.20 U	0.33 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.19 U	0.20 U	0.20 U	0.33 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.40 B	0.23 B	0.17 JB	0.34 B
DI-N-BUTYL PHTHALATE	8.1	0.19 U	0.20 U	0.20 U	0.33 U
DI-N-OCTYL PHTHALATE	50.0 ***	0.052 J	0.089 J	0.20 U	0.067 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.19 U	0.20 U	0.20 U	0.33 U
DIETHYL PHTHALATE	7.1	0.19 U	0.20 U	0.20 U	0.33 U
DIMETHYL PHTHALATE	2	0.19 U	0.20 U	0.20 U	0.33 U
FLUORANTHENE	50	0.090 J	1.6	0.14 J	0.33 U
FLUORENE	50	0.19 U	0.11 J	0.20 U	0.33 U
HEXACHLORO-1,3-BUTADIENE	NS	0.19 U	0.20 U	0.20 U	0.33 U
HEXACHLOROBENZENE	0.41	0.19 U	0.20 U	0.20 U	0.33 U
HEXACHLOROCYCLOPENTADIENE	NS	0.56 U	0.59 U	0.59 U	0.98 U
HEXACHLOROETHANE	NS	0.19 U	0.20 U	0.20 U	0.33 U
INDENO[1,2,3-CD]PYRENE	3.2	0.19 U	0.33	0.096 J	0.33 U
ISOPHORORNE	4.4	0.19 U	0.20 U	0.20 U	0.33 U
M-DICHLOROBENZENE	NS	0.19 U	0.20 U	0.20 U	0.33 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.19 U	0.20 U	0.20 U	0.33 U
N-NITROSODIMETHYLAMINE	NS	0.19 U	0.20 U	0.20 U	0.33 U
N-NITROSODIPHENYLAMINE	NS	0.19 U	0.20 U	0.20 U	0.33 U
NAPHTHALENE	13	0.19 U	0.20	0.070 J	0.33 U
NITROBENZENE	0.200 or MDL	0.19 U	0.20 U	0.20 U	0.33 U
PENTACHLOROPHENOL	1.0 or MDL	0.19 U	0.20 U	0.20 U	0.33 U
PHENANTHRENE	50	0.070 J	1.1	0.12 J	0.33 U
PHENOL	0.03 or MDL	0.19 U	0.20 U	0.20 U	0.33 U
PYRENE	50	0.10 J	1.5	0.15 J	0.33 U
TOTAL SVOCs	500	0.944	11.217	1.469	0.407

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-WOOD-05** 11/7/2000 PG-WD-05 0-2' MG/KG	**PG-WOOD-05** 11/7/2000 PG-WD-05 2-4' MG/KG	**PG-WOOD-05** 11/7/2000 PG-WD-05 4-6' MG/KG	**PG-WOOD-05** 11/7/2000 PG-WD-05 6-8' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.20 U	1.0 U	0.20 U	0.23 U
1,2-BENZPHENANTHRACENE	NS	0.20 U	1.0 U	0.20 U	0.23 U
1,2-DICHLOROBENZENE	7.9	0.20 U	1.0 U	0.20 U	0.23 U
1,2-DIPHENYLHYDRAZINE	NS	0.040 U	0.20 U	0.040 U	0.046 U
1,4-DICHLOROBENZENE	8.5	0.20 U	1.0 U	0.20 U	0.23 U
2,4,6-TRICHLORORPHENOL	0.1	0.20 U	1.0 U	0.20 U	0.23 U
2,4-DICHLOROPHENOL	0.4	0.20 U	1.0 U	0.20 U	0.23 U
2,4-DIMETHYLPHENOL	NS	0.20 U	1.0 U	0.20 U	0.23 U
2,4-DINITROPHENOL	0.200 or MDL	0.40 U	2.0 U	0.40 U	0.46 U
2,4-DINITROTOLUENE	NS	0.20 U	1.0 U	0.20 U	0.23 U
2,6-DINITROTOLUENE	1	0.20 U	1.0 U	0.20 U	0.23 U
2-CHLORORNAPHTHALENE	NS	0.20 U	1.0 U	0.20 U	0.23 U
2-CHLOROPHENOL	0.8	0.20 U	1.0 U	0.20 U	0.23 U
2-NITROPHENOL	0.330 or MDL	0.20 U	1.0 U	0.20 U	0.23 U
3,3'-DICHLOROBENZIDINE	N/A	0.20 U	1.0 U	0.20 U	0.23 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.20 U	1.0 U	0.20 U	0.23 U
4-BROMOPHENYLPHENYL ETHER	NS	0.20 U	1.0 U	0.20 U	0.23 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.20 U	1.0 U	0.20 U	0.23 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.20 U	1.0 U	0.20 U	0.23 U
4-NITROPHENOL	0.100 or MDL	0.20 U	1.0 U	0.20 U	0.23 U
ACENAPHTHENE	50.0 ***	0.20 U	1.0 U	0.20 U	0.23 U
ACENAPHTHYLENE	41	0.20 U	1.0 U	0.20 U	0.23 U
ANTHRACENE	50.0 ***	0.20 U	1.0 U	0.20 U	0.23 U
BENZIDINE	NS	0.40 U	2.0 U	0.40 U	0.46 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.20 U	1.0 U	0.20 U	0.23 U
BENZO[A]PYRENE	0.061 or MDL	0.20 U	1.0 U	0.20 U	0.23 U
BENZO[B]FLOURANTHENE	1.1	0.20 U	1.0 U	0.20 U	0.23 U
BENZO[G,H,I]PERYLENE	50.0 ***	0.20 U	1.0 U	0.20 U	0.23 U
BENZO[K]FLOURANTHENE	1.1	0.20 U	1.0 U	0.20 U	0.23 U
BENZYL BUTYL PHTHALATE	50.0 ***	0.20 U	1.0 U	0.20 U	0.23 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.20 U	1.0 U	0.20 U	0.23 U
BIS(2-CHLOROETHYL)ETHER	NS	0.20 U	1.0 U	0.20 U	0.23 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.20 U	1.0 U	0.20 U	0.23 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.21	1.0 U	0.20 U	0.23 U
DI-N-BUTYL PHTHALATE	8.1	0.20	1.0 U	0.20 U	0.23 U
DI-N-OCTYL PHTHALATE	50.0 ***	0.097 JB	1.0 U	0.050 JB	0.23 U
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.20 U	1.0 U	0.20 U	0.23 U
DIETHYL PHTHALATE	7.1	0.20 U	1.0 U	0.20 U	0.23 U
DIMETHYL PHTHALATE	2	0.20 U	1.0 U	0.20 U	0.23 U
FLUORANTHENE	50	0.20 U	1.0 U	0.20 U	0.23 U
FLUORENE	50	0.20 U	1.0 U	0.20 U	0.23 U
HEXACHLORO-1,3-BUTADIENE	NS	0.20 U	1.0 U	0.20 U	0.23 U
HEXACHLOROBENZENE	0.41	0.20 U	1.0 U	0.20 U	0.23 U
HEXACHLOROCYCLOPENTADIENE	NS	0.60 U	3.0 U	0.60 U	0.68 U
HEXACHLOROETHANE	NS	0.20 U	1.0 U	0.20 U	0.23 U
INDENO[1,2,3-CD]PYRENE	3.2	0.20 U	1.0 U	0.20 U	0.23 U
ISOPHORORNE	4.4	0.20 U	1.0 U	0.20 U	0.23 U
M-DICHLOROBENZENE	NS	0.20 U	1.0 U	0.20 U	0.23 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.20 U	1.0 U	0.20 U	0.23 U
N-NITROSODIMETHYLAMINE	NS	0.20 U	1.0 U	0.20 U	0.23 U
N-NITROSODIPHENYLAMINE	NS	0.20 U	1.0 U	0.20 U	0.23 U
NAPHTHALENE	13	0.20 U	1.0 U	0.20 U	0.23 U
NITROBENZENE	0.200 or MDL	0.20 U	1.0 U	0.20 U	0.23 U
PENTACHLOROPHENOL	1.0 or MDL	0.20 U	1.0 U	0.20 U	0.23 U
PHENANTHRENE	50	0.20 U	1.0 U	0.20 U	0.23 U
PHENOL	0.03 or MDL	0.20 U	1.2	0.20 U	0.23 U
PYRENE	50	0.20 U	1.0 U	0.20 U	0.23 U
TOTAL SVOCs	500	0.507	1.2	0.05	ND

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended Soil Cleanup Objective** **MG/KG**	**PG-WOOD-05** 11/7/2000 PG-WD-05 8-10' MG/KG	**PG-WOOD-05** 11/7/2000 PG-WD-05 14-16' MG/KG	**PG-PA-MW-1** 11/22/2000 PG-PAMW1 3-4.5' MG/KG	**PG-PA-MW-1** 11/22/2000 PG-PAMW1 4.5-6' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.28 U	0.57 U	0.27 U	0.35 U
1,2-BENZPHENANTHRACENE	NS	0.28 U	0.57 U	0.27 U	0.35 U
1,2-DICHLOROBENZENE	7.9	0.28 U	0.57 U	0.27 U	0.35 U
1,2-DIPHENYLHYDRAZINE	NS	0.056 U	0.11 U	0.055 U	0.069 U
1,4-DICHLOROBENZENE	8.5	0.28 U	0.57 U	0.27 U	0.35 U
2,4,6-TRICHLORORPHENOL	0.1	0.28 U	0.57 U	0.27 U	0.35 U
2,4-DICHLOROPHENOL	0.4	0.28 U	0.57 U	0.27 U	0.35 U
2,4-DIMETHYLPHENOL	NS	0.28 U	0.57 U	0.27 U	0.35 U
2,4-DINITROPHENOL	0.200 or MDL	0.56 U	1.1 U	0.55 U	0.69 U
2,4-DINITROTOLUENE	NS	0.28 U	0.57 U	0.27 U	0.35 U
2,6-DINITROTOLUENE	1	0.28 U	0.57 U	0.27 U	0.35 U
2-CHLORORNAPHTHALENE	NS	0.28 U	0.57 U	0.27 U	0.35 U
2-CHLOROPHENOL	0.8	0.28 U	0.57 U	0.27 U	0.35 U
2-NITROPHENOL	0.330 or MDL	0.28 U	0.57 U	0.27 U	0.35 U
3,3'-DICHLOROBENZIDINE	N/A	0.28 U	0.57 U	0.27 U	0.35 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.28 U	0.57 U	0.27 U	0.35 U
4-BROMOPHENYLPHENYL ETHER	NS	0.28 U	0.57 U	0.27 U	0.35 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.28 U	0.57 U	0.27 U	0.35 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.28 U	0.57 U	0.27 U	0.35 U
4-NITROPHENOL	0.100 or MDL	0.28 U	0.57 U	0.27 U	0.35 U
ACENAPHTHENE	50.0 ***	0.28 U	0.57 U	0.27 U	0.35 U
ACENAPHTHYLENE	41	0.28 U	0.57 U	0.27 U	0.35 U
ANTHRACENE	50.0 ***	0.28 U	0.57 U	0.27 U	0.35 U
BENZIDINE	NS	0.56 U	1.1 U	0.55 U	0.69 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.28 U	0.57 U	0.27 U	0.35 U
BENZO[A]PYRENE	0.061 or MDL	0.28 U	0.57 U	0.27 U	0.35 U
BENZO[B]FLOURANTHENE	1.1	0.28 U	0.57 U	0.27 U	0.35 U
BENZO[G,H,I]PERYLENE	50.0 ***	0.28 U	0.57 U	0.27 U	0.35 U
BENZO[K]FLOURANTHENE	1.1	0.28 U	0.57 U	0.27 U	0.35 U
BENZYL BUTYL PHTHALATE	50.0 ***	0.28 U	0.57 U	0.27 U	0.35 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.28 U	0.57 U	0.27 U	0.35 U
BIS(2-CHLOROETHYL)ETHER	NS	0.28 U	0.57 U	0.27 U	0.35 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.28 U	0.57 U	0.27 U	0.35 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.28 U	0.57 U	0.42 B	0.55 B
DI-N-BUTYL PHTHALATE	8.1	0.16 J	0.29 J	0.067 JB	0.10 JB
DI-N-OCTYL PHTHALATE	50.0 ***	0.28 U	0.16 JB	0.068 J	0.10 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.28 U	0.57 U	0.27 U	0.35 U
DIETHYL PHTHALATE	7.1	0.28 U	0.57 U	0.27 U	0.35 U
DIMETHYL PHTHALATE	2	0.28 U	0.57 U	0.27 U	0.35 U
FLUORANTHENE	50	0.28 U	0.57 U	0.27 U	0.35 U
FLUORENE	50	0.28 U	0.57 U	0.27 U	0.35 U
HEXACHLORO-1,3-BUTADIENE	NS	0.28 U	0.57 U	0.27 U	0.35 U
HEXACHLOROBENZENE	0.41	0.28 U	0.57 U	0.27 U	0.35 U
HEXACHLOROCYCLOPENTADIENE	NS	0.85 U	1.7 U	0.82 U	1.0 U
HEXACHLOROETHANE	NS	0.28 U	0.57 U	0.27 U	0.35 U
INDENO[1,2,3-CD]PYRENE	3.2	0.28 U	0.57 U	0.27 U	0.35 U
ISOPHORORNE	4.4	0.28 U	0.57 U	0.27 U	0.35 U
M-DICHLOROBENZENE	NS	0.28 U	0.57 U	0.27 U	0.35 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.28 U	0.57 U	0.27 U	0.35 U
N-NITROSODIMETHYLAMINE	NS	0.28 U	0.57 U	0.27 U	0.35 U
N-NITROSODIPHENYLAMINE	NS	0.28 U	0.57 U	0.27 U	0.35 U
NAPHTHALENE	13	0.13 J	0.57 U	0.27 U	0.35 U
NITROBENZENE	0.200 or MDL	0.28 U	0.57 U	0.27 U	0.35 U
PENTACHLOROPHENOL	1.0 or MDL	0.28 U	0.57 U	0.27 U	0.35 U
PHENANTHRENE	50	0.28 U	0.57 U	0.27 U	0.35 U
PHENOL	0.03 or MDL	0.28 U	0.57 U	0.27 U	0.35 U
PYRENE	50	0.28 U	0.57 U	0.27 U	0.35 U
TOTAL SVOCs	500	0.29	0.45	0.555	0.75

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-PA-MW-1** 11/22/2000 PG-PAMW1 10-12' MG/KG	**PG-PA-MW-5** 11/9/2000 PG-PAMW-05 0-2' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-PAMW-6 0-2' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 1.5-3' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.31 U	0.19 U	0.18 U	0.18 U
1,2-BENZPHENANTHRACENE	NS	0.31 U	0.53	1.3	1.3
1,2-DICHLOROBENZENE	7.9	0.31 U	0.19 U	0.18 U	0.18 U
1,2-DIPHENYLHYDRAZINE	NS	0.062 U	0.039 U	NA	0.036 U
1,4-DICHLOROBENZENE	8.5	0.31 U	0.19 U	0.18 U	0.18 U
2,4,6-TRICHLORORPHENOL	0.1	0.31 U	0.19 U	0.18 U	0.18 U
2,4-DICHLOROPHENOL	0.4	0.31 U	0.19 U	0.18 U	0.18 U
2,4-DIMETHYLPHENOL	NS	0.31 U	0.19 U	0.18 U	0.18 U
2,4-DINITROPHENOL	0.200 or MDL	0.62 U	0.39 U	0.36 U	0.36 U
2,4-DINITROTOLUENE	NS	0.31 U	0.19 U	0.18 U	0.18 U
2,6-DINITROTOLUENE	1	0.31 U	0.19 U	0.18 U	0.18 U
2-CHLORORNAPHTHALENE	NS	0.31 U	0.19 U	0.18 U	0.18 U
2-CHLOROPHENOL	0.8	0.31 U	0.19 U	NA	0.18 U
2-NITROPHENOL	0.330 or MDL	0.31 U	0.19 U	0.18 U	0.18 U
3,3'-DICHLOROBENZIDINE	N/A	0.31 U	0.19 U	0.18 U	0.18 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.31 U	0.19 U	0.18 U	0.18 U
4-BROMOPHENYLPHENYL ETHER	NS	0.31 U	0.19 U	NA	0.18 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.31 U	0.19 U	0.18 U	0.18 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.31 U	0.19 U	0.18 U	0.18 U
4-NITROPHENOL	0.100 or MDL	0.31 U	0.19 U	0.18 U	0.18 U
ACENAPHTHENE	50.0 ***	0.31 U	0.19 U	0.38	0.38
ACENAPHTHYLENE	41	0.31 U	0.076 J	0.16 J	0.16 J
ANTHRACENE	50.0 ***	0.31 U	0.068 J	2.7	2.7
BENZIDINE	NS	0.62 U	0.39 U	0.36 U	0.36 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.31 U	**0.33**	**1.1**	**1.1**
BENZO[A]PYRENE	0.061 or MDL	0.31 U	**0.31**	**1.2**	**1.2**
BENZO[B]FLOURANTHENE	1.1	0.31 U	0.48	**2.2**	**2.2**
BENZO[G,H,I]PERYLENE	50.0 ***	0.31 U	0.18 J	0.43	0.43
BENZO[K]FLOURANTHENE	1.1	0.31 U	0.34	0.18 U	0.18 U
BENZYL BUTYL PHTHALATE	50.0 ***	0.31 U	0.19 U	0.18 U	0.18 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.31 U	0.19 U	NA	0.18 U
BIS(2-CHLOROETHYL)ETHER	NS	0.31 U	0.19 U	0.18 U	0.18 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.31 U	0.19 U	0.18 U	0.18 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.19 JB	0.17 JB	0.18 U	0.18 U
DI-N-BUTYL PHTHALATE	8.1	0.096 JB	0.19 U	0.18 U	0.18 U
DI-N-OCTYL PHTHALATE	50.0 ***	0.083 J	0.064 J	0.038 J	0.038 J
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.31 U	**0.12 J**	**0.28**	**0.28**
DIETHYL PHTHALATE	7.1	0.31 U	0.19 U	0.18 U	0.18 U
DIMETHYL PHTHALATE	2	0.31 U	0.19 U	0.18 U	0.18 U
FLUORANTHENE	50	0.072 J	0.36	2.2	2.2
FLUORENE	50	0.31 U	0.19 U	0.26	0.26
HEXACHLORO-1,3-BUTADIENE	NS	0.31 U	0.19 U	NA	0.18 U
HEXACHLOROBENZENE	0.41	0.31 U	0.19 U	NA	0.18 U
HEXACHLOROCYCLOPENTADIENE	NS	0.93 U	0.58 U	NA	0.54 U
HEXACHLOROETHANE	NS	0.31 U	0.19 U	NA	0.18 U
INDENO[1,2,3-CD]PYRENE	3.2	0.31 U	0.22	0.47	0.47
ISOPHORORNE	4.4	0.31 U	0.19 U	0.18 U	0.18 U
M-DICHLOROBENZENE	NS	0.31 U	0.19 U	0.18 U	0.18 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.31 U	0.19 U	0.18 U	0.18 U
N-NITROSODIMETHYLAMINE	NS	0.31 U	0.19 U	0.18 U	0.18 U
N-NITROSODIPHENYLAMINE	NS	0.31 U	0.19 U	0.18 U	0.18 U
NAPHTHALENE	13	0.31 U	0.79	0.33	0.33
NITROBENZENE	0.200 or MDL	0.31 U	0.19 U	0.18 U	0.18 U
PENTACHLOROPHENOL	1.0 or MDL	0.31 U	0.19 U	0.18 U	0.18 U
PHENANTHRENE	50	0.11 J	0.67	1.6	1.6
PHENOL	0.03 or MDL	**0.084 J**	0.19 U	1.4 U	0.18 U
PYRENE	50	0.31 U	0.40	2	2.0
TOTAL SVOCs	500	0.635	5.108	16.648	16.648

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

Table 5B
Soil Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 3-4.5' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 4.5-6' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 6-8' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 8.5-10' MG/KG
1,2,4-TRICHLOROBENZENE	3.4	0.19 U	0.19 U	0.21 U	0.28 U
1,2-BENZPHENANTHRACENE	NS	0.22	0.12 J	0.080 J	0.12 J
1,2-DICHLOROBENZENE	7.9	0.19 U	0.19 U	0.21 U	0.28 U
1,2-DIPHENYLHYDRAZINE	NS	0.039 U	0.038 U	0.042 U	0.056 U
1,4-DICHLOROBENZENE	8.5	0.19 U	0.19 U	0.21 U	0.28 U
2,4,6-TRICHLORORPHENOL	0.1	0.19 U	0.19 U	0.21 U	0.28 U
2,4-DICHLOROPHENOL	0.4	0.19 U	0.19 U	0.21 U	0.28 U
2,4-DIMETHYLPHENOL	NS	0.19 U	0.19 U	0.21 U	0.28 U
2,4-DINITROPHENOL	0.200 or MDL	0.39 U	0.38 U	0.42 U	0.56 U
2,4-DINITROTOLUENE	NS	0.19 U	0.19 U	0.21 U	0.28 U
2,6-DINITROTOLUENE	1	0.19 U	0.19 U	0.21 U	0.28 U
2-CHLORORNAPHTHALENE	NS	0.19 U	0.19 U	0.21 U	0.28 U
2-CHLOROPHENOL	0.8	0.19 U	0.19 U	0.21 U	0.28 U
2-NITROPHENOL	0.330 or MDL	0.19 U	0.19 U	0.21 U	0.28 U
3,3'-DICHLOROBENZIDINE	N/A	0.19 U	0.19 U	0.21 U	0.28 U
4,6-DINITRO-O-CRESOL	0.100 or MDL	0.19 U	0.19 U	0.21 U	0.28 U
4-BROMOPHENYLPHENYL ETHER	NS	0.19 U	0.19 U	0.21 U	0.28 U
4-CHLORO-3-METHYLPHENOL	0.240 or MDL	0.19 U	0.19 U	0.21 U	0.28 U
4-CHLOROPHENYLPHENYL ETHER	NS	0.19 U	0.19 U	0.21 U	0.28 U
4-NITROPHENOL	0.100 or MDL	0.19 U	0.19 U	0.21 U	0.28 U
ACENAPHTHENE	50.0 ***	0.19 U	0.19 U	0.21 U	0.28 U
ACENAPHTHYLENE	41	0.19 U	0.19 U	0.21 U	0.28 U
ANTHRACENE	50.0 ***	0.052 J	0.19 U	0.21 U	0.28 U
BENZIDINE	NS	0.39 U	0.38 U	0.42 U	0.56 U
BENZO[A]ANTHRACENE	0.224 or MDL	0.14 J	0.072 J	0.21 U	0.061 J
BENZO[A]PYRENE	0.061 or MDL	0.12 J	0.049 J	0.21 U	0.28 U
BENZO[B]FLOURANTHENE	1.1	0.20	0.059 J	0.21 U	0.063 J
BENZO[G,H,I]PERYLENE	50.0 ***	0.065 J	0.19 U	0.21 U	0.28 U
BENZO[K]FLOURANTHENE	1.1	0.19 U	0.049 J	0.21 U	0.28 U
BENZYL BUTYL PHTHALATE	50.0 ***	0.19 U	0.19 U	0.21 U	0.28 U
BIS(2-CHLOROETHOXY)METHANE	NS	0.19 U	0.19 U	0.21 U	0.28 U
BIS(2-CHLOROETHYL)ETHER	NS	0.19 U	0.19 U	0.21 U	0.28 U
BIS(2-CHLOROISOPROPYL)ETHER	NS	0.19 U	0.19 U	0.21 U	0.28 U
BIS(2-ETHYHEXYL)PHTHALATE	50.0 ***	0.055 J	0.19 U	0.21 U	0.076 J
DI-N-BUTYL PHTHALATE	8.1	0.060 J	0.072 J	0.063 J	0.068 J
DI-N-OCTYL PHTHALATE	50.0 ***	0.060 J	0.079 J	0.21 U	0.28 U
DIBENZ[A,H]ANTHRACENE	0.014 or MDL	0.040 J	0.19 U	0.21 U	0.28 U
DIETHYL PHTHALATE	7.1	0.19 U	0.19 U	0.21 U	0.28 U
DIMETHYL PHTHALATE	2	0.19 U	0.19 U	0.21 U	0.28 U
FLUORANTHENE	50	0.18 J	0.094 J	0.21 U	0.085 J
FLUORENE	50	0.19 U	0.19 U	0.21 U	0.28 U
HEXACHLORO-1,3-BUTADIENE	NS	0.19 U	0.19 U	0.21 U	0.28 U
HEXACHLOROBENZENE	0.41	0.19 U	0.19 U	0.21 U	0.28 U
HEXACHLOROCYCLOPENTADIENE	NS	0.58 U	0.57 U	0.62 U	0.85 U
HEXACHLOROETHANE	NS	0.19 U	0.19 U	0.21 U	0.28 U
INDENO[1,2,3-CD]PYRENE	3.2	0.059 J	0.19 U	0.21 U	0.28 U
ISOPHORORNE	4.4	0.19 U	0.19 U	0.21 U	0.28 U
M-DICHLOROBENZENE	NS	0.19 U	0.19 U	0.21 U	0.28 U
N-NITROSO-DI-N-PROPYLAMINE	NS	0.19 U	0.19 U	0.21 U	0.28 U
N-NITROSODIMETHYLAMINE	NS	0.19 U	0.19 U	0.21 U	0.28 U
N-NITROSODIPHENYLAMINE	NS	0.19 U	0.19 U	0.21 U	0.28 U
NAPHTHALENE	13	0.22	0.15 J	0.21 U	0.28 U
NITROBENZENE	0.200 or MDL	0.19 U	0.19 U	0.21 U	0.28 U
PENTACHLOROPHENOL	1.0 or MDL	0.19 U	0.19 U	0.21 U	0.28 U
PHENANTHRENE	50	0.46	0.26	0.12 J	0.093 J
PHENOL	0.03 or MDL	0.19 U	0.19 U	0.21 U	0.28 U
PYRENE	50	0.21	0.10 J	0.21 U	0.11 J
TOTAL SVOCs	500	2.141	1.104	0.263	0.676

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

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 1 HHMT-Port Ivory Facility

Location	**Recommended**	**PG-A-1**	**PG-A-2**	**PG-A-2**	**PG-A-2**	**PG-A-3**	**PG-A-3**
Sample Date	**Soil**	12/2/2000	11/29/2000	11/29/2000	11/16/2000	11/16/2000	11/16/2000
Sample ID	**Cleanup**	PG-A-01	PG-A-02	PG-A-02	PG-A-2	PG-A-03	PG-A-03
Sample Depth	**Objective**	2-4'	0-2'	2-4'	6-8'	2.4-4'	6-8'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.0042 U	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
4,4'-DDE	2.1	0.013	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
4,4'-DDT	2.1	0.012	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
ALDRIN	0.041	0.0042 U	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
ALPHA-BHC	0.11	0.0042 U	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
BETA-BHC	0.2	0.0042 U	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
CHLORDANE	0.54	0.0083 U	0.035 U	0.013 U	0.0093 U	0.017 U	0.013 U
DELTA-BHC	0.3	0.0042 U	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
DIELDRIN	0.044	0.0042 U	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
ENDOSULFAN I	0.9	0.0042 U	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
ENDOSULFAN II	0.9	0.0042 U	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
ENDOSULFAN SULFATE	1	0.0042 U	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
ENDRIN	0.1	0.0042 U	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
ENDRIN ALDEHYDE	NS	0.0042 U	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
ENDRIN KETONE	NS	0.0042 U	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
GAMMA-BHC (LINDANE)	0.06	0.0042 U	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
HEPTACHLOR	0.1	0.0042 U	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
HEPTACHLOR EPOXIDE	0.02	0.0042 U	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
METHOXYCHLOR	NS	0.0042 U	0.018 U	0.0063 U	0.0046 U	0.0083 U	0.0065 U
TOXAPHENE	NS	0.042 U	0.18 U	0.063 U	0.063 U	0.083 U	0.065 U
AROCLOR 1016	NS	0.021 U	0.018 U	0.031 U	0.023 U	0.042 U	0.033 U
AROCLOR 1221	NS	0.021 U	0.018 U	0.031 U	0.023 U	0.042 U	0.033 U
AROCLOR 1232	NS	0.021 U	0.018 U	0.031 U	0.023 U	0.042 U	0.033 U
AROCLOR 1242	NS	0.021 U	0.018 U	0.031 U	0.023 U	0.042 U	0.033 U
AROCLOR 1248	NS	0.021 U	0.018 U	0.031 U	0.023 U	0.042 U	0.033 U
AROCLOR 1254	NS	0.021 U	0.018 U	0.031 U	0.023 U	0.042 U	0.033 U
AROCLOR 1260	NS	0.058	0.018 U	0.031 U	0.023 U	0.042 U	0.033 U
TOTAL PCBs	1.0(Surface)/ 10(Subsurface)	0.058	ND	ND	ND	ND	ND

U Undetectable Levels
ND Not Detected
NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 1 HHMT-Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-A-3** 11/16/2000 PG-A-03 10-12' MG/KG	**PG-A-6** 11/10/2000 PG-A-06 1-3' MG/KG	**PG-F1-3** 11/10/2000 PG-F1-3 1-3' MG/KG	**PG-F1-3** 11/10/2000 PG-F1-3 3-5' MG/KG	**PG-H/R-1** 12/2/2000 PG-H/R-01 1-3' MG/KG	**PG-H/R-1** 12/2/2000 PG-H/R-01 3-4.5' MG/KG
4,4'-DDD	2.9	0.0056 U	0.0045 U	0.02 U	0.0067 U	0.0046 U	0.0067 U
4,4'-DDE	2.1	0.0056 U	0.0045 U	0.02 U	0.0067 U	0.0046 U	0.0067 U
4,4'-DDT	2.1	0.0056 U	0.01	0.02 U	0.0067 U	0.0046 U	0.0067 U
ALDRIN	0.041	0.0056 U	0.0045 U	0.02 U	0.0067 U	0.0046 U	0.0067 U
ALPHA-BHC	0.11	0.0056 U	0.0045 U	0.02 U	0.0067 U	0.0046 U	0.0067 U
BETA-BHC	0.2	0.0056 U	0.0045 U	0.02 U	0.0067 U	0.0046 U	0.0067 U
CHLORDANE	0.54	0.011 U	0.009 U	0.04 U	0.013 U	0.0091 U	0.013 U
DELTA-BHC	0.3	0.0056 U	0.0045 U	0.02 U	0.0067 U	0.0046 U	0.0067 U
DIELDRIN	0.044	0.0056 U	0.0048	0.02 U	0.0067 U	0.0046 U	0.0067 U
ENDOSULFAN I	0.9	0.0056 U	0.0045 U	0.02 U	0.0067 U	0.0046 U	0.0067 U
ENDOSULFAN II	0.9	0.0056 U	0.0045 U	0.02 U	0.0067 U	0.0046 U	0.0067 U
ENDOSULFAN SULFATE	1	0.0056 U	0.0045 U	0.02 U	0.0067 U	0.0046 U	0.0067 U
ENDRIN	0.1	0.0056 U	0.0045 U	0.19	0.012	0.0046 U	0.0067 U
ENDRIN ALDEHYDE	NS	0.0056 U	0.0069	0.02 U	0.0067 U	0.0046 U	0.0067 U
ENDRIN KETONE	NS	0.0056 U	0.0045 U	0.02 U	0.0067 U	0.0046 U	0.0067 U
GAMMA-BHC (LINDANE)	0.06	0.0056 U	0.0073	0.02 U	0.0067 U	0.0046 U	0.0067 U
HEPTACHLOR	0.1	0.0056 U	0.0045 U	0.02 U	0.0067 U	0.0046 U	0.0067 U
HEPTACHLOR EPOXIDE	0.02	0.0056 U	0.0045 U	0.02 U	0.0067 U	0.0046 U	0.0067 U
METHOXYCHLOR	NS	0.0056 U	0.0045 U	0.02 U	0.0067 U	0.0046 U	0.0067 U
TOXAPHENE	NS	0.056 U	0.045 U	0.2 U	0.067 U	0.046 U	0.067 U
AROCLOR 1016	NS	0.028 U	0.023 U	0.02 U	0.033 U	0.023 U	0.033 U
AROCLOR 1221	NS	0.028 U	0.023 U	0.02 U	0.033 U	0.023 U	0.033 U
AROCLOR 1232	NS	0.028 U	0.023 U	0.02 U	0.033 U	0.023 U	0.033 U
AROCLOR 1242	NS	0.028 U	0.023 U	0.02 U	0.033 U	0.023 U	0.033 U
AROCLOR 1248	NS	0.028 U	0.023 U	0.02 U	0.033 U	0.023 U	0.033 U
AROCLOR 1254	NS	0.028 U	0.023 U	0.13	0.033 U	0.023 U	0.033 U
AROCLOR 1260	NS	0.028 U	0.079	0.02 U	0.033 U	0.028	0.033 U
TOTAL PCBs	1.0(Surface)/ 10(Subsurface)	ND	0.079	0.13	ND	0.028	ND

U Undetectable Levels

ND Not Detected

NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 1 HHMT-Port Ivory Facility

Location	**Recommended**	**PG-H/R-2**	**PG-H/R-2**	**PG-H/R-3**	**PG-H/R-3**	**PG-PD-6**	**PG-PD-6**
Sample Date	**Soil**	11/10/2000	11/10/2000	11/10/2000	11/10/2000	11/21/2000	11/21/2000
Sample ID	**Cleanup**	PG-H/R-2	PG-H/R-2	PG-H/R-3	PG-H/R-3	PG-PD-06	PG-PD-06
Sample Depth	**Objective**	0-1.5'	1.5-3.5'	0.3-1'	1-3'	6-8'	12-14'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.0038 U	0.006 U	0.0081	0.0058 U	0.0071 U	0.013 U
4,4'-DDE	2.1	0.02	0.006 U	0.094	0.0058 U	0.0071 U	0.013 U
4,4'-DDT	2.1	0.016	0.006 U	0.04	0.0058 U	0.0071 U	0.013 U
ALDRIN	0.041	0.0038 U	0.006 U	0.004 U	0.0058 U	0.0071 U	0.013 U
ALPHA-BHC	0.11	0.0038 U	0.006 U	0.004 U	0.0058 U	0.0071 U	0.013 U
BETA-BHC	0.2	0.0038 U	0.006 U	0.004 U	0.0058 U	0.0071 U	0.013 U
CHLORDANE	0.54	0.0076 U	0.012 U	0.008 U	0.012 U	0.014 U	0.026 U
DELTA-BHC	0.3	0.0038 U	0.006 U	0.004 U	0.0058 U	0.0071 U	0.013 U
DIELDRIN	0.044	0.0038 U	0.006 U	0.016	0.0058 U	0.0071 U	0.013 U
ENDOSULFAN I	0.9	0.0038 U	0.006 U	0.004 U	0.0058 U	0.0071 U	0.013 U
ENDOSULFAN II	0.9	0.0038 U	0.006 U	0.004 U	0.0058 U	0.0071 U	0.013 U
ENDOSULFAN SULFATE	1	0.0038 U	0.006 U	0.004 U	0.0058 U	0.0071 U	0.013 U
ENDRIN	0.1	0.0079	0.006 U	0.004 U	0.0058 U	0.0071 U	0.013 U
ENDRIN ALDEHYDE	NS	0.0038 U	0.006 U	.0076	0.0058 U	0.0071 U	0.013 U
ENDRIN KETONE	NS	0.0038 U	0.006 U	0.004 U	0.0058 U	0.0071 U	0.013 U
GAMMA-BHC (LINDANE)	0.06	0.0038 U	0.006 U	0.0044	0.0058 U	0.0071 U	0.013 U
HEPTACHLOR	0.1	0.0038 U	0.006 U	0.004 U	0.0058 U	0.0071 U	0.013 U
HEPTACHLOR EPOXIDE	0.02	0.0038 U	0.006 U	0.004 U	0.0058 U	0.0071 U	0.013 U
METHOXYCHLOR	NS	0.0038 U	0.006 U	0.004 U	0.0058 U	0.0071 U	0.013 U
TOXAPHENE	NS	0.038 U	0.06 U	0.04 U	0.058 U	0.071 U	0.13 U
AROCLOR 1016	NS	0.019 U	0.03 U	0.02 U	0.029 U	0.035 U	0.064 U
AROCLOR 1221	NS	0.019 U	0.03 U	0.02 U	0.029 U	0.035 U	0.064 U
AROCLOR 1232	NS	0.019 U	0.03 U	0.02 U	0.029 U	0.035 U	0.064 U
AROCLOR 1242	NS	0.019 U	0.03 U	0.02 U	0.029 U	0.035 U	0.064 U
AROCLOR 1248	NS	0.019 U	0.03 U	0.02 U	0.029 U	0.035 U	0.064 U
AROCLOR 1254	NS	0.019 U	0.03 U	0.02 U	0.029 U	0.051	0.064 U
AROCLOR 1260	NS	0.15	0.03 U	0.26	0.029 U	0.035 U	0.064 U
TOTAL PCBs	1.0(Surface)/ 10(Subsurface)	0.15	ND	0.26	ND	0.051	ND

U Undetectable Levels
ND Not Detected
NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 1 HHMT-Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-PD-8** 11/29/2000 PG-PD-8 2-4' MG/KG	**PG-PD-8** 11/29/2000 PG-PD-8 8-10' MG/KG	**PG-PD-8** 11/29/2000 PG-PD-8 16-17' MG/KG	**PG-PD-9** 12/4/2000 PG-PD-09 4-6' MG/KG	**PG-PD-9** 12/4/2000 PG-PD-09 8-10' MG/KG	**PG-PD-10** 11/28/2000 PG-PD-10 2-4' MG/KG
4,4'-DDD	2.9	0.046 U	0.022 U	0.033 U	0.0049 U	0.0051 U	0.0038 U
4,4'-DDE	2.1	0.046 U	0.022 U	0.033 U	0.046	0.0051 U	0.0038 U
4,4'-DDT	2.1	0.046 U	0.022 U	0.033 U	0.0049 U	0.0051 U	0.0038 U
ALDRIN	0.041	0.046 U	0.022 U	0.033 U	0.0049 U	0.0051 U	0.0038 U
ALPHA-BHC	0.11	0.046 U	0.022 U	0.033 U	0.0049 U	0.0051 U	0.0038 U
BETA-BHC	0.2	0.046 U	0.022 U	0.033 U	0.0049 U	0.0051 U	0.0038 U
CHLORDANE	0.54	0.093 U	0.044 U	0.067 U	0.068	0.01 U	0.0077 U
DELTA-BHC	0.3	0.046 U	0.022 U	0.033 U	0.0049 U	0.0051 U	0.0038 U
DIELDRIN	0.044	0.046 U	**0.054**	0.4	0.04	0.0051 U	0.0038 U
ENDOSULFAN I	0.9	0.046 U	0.022 U	0.033 U	0.0049 U	0.0051 U	0.0038 U
ENDOSULFAN II	0.9	0.046 U	0.022 U	0.033 U	0.0049 U	0.0051 U	0.0038 U
ENDOSULFAN SULFATE	1	0.046 U	0.022 U	0.033 U	0.0049 U	0.0051 U	0.0038 U
ENDRIN	0.1	0.075	**0.16**	**0.39**	0.072	0.0051 U	0.0038 U
ENDRIN ALDEHYDE	NS	0.046 U	0.022 U	0.033 U	0.0049 U	0.0051 U	0.0038 U
ENDRIN KETONE	NS	0.046 U	0.022 U	0.033 U	0.0049 U	0.0051 U	0.0038 U
GAMMA-BHC (LINDANE)	0.06	0.046 U	0.022 U	0.033 U	0.0049 U	0.0051 U	0.0038 U
HEPTACHLOR	0.1	0.046 U	0.022 U	0.033 U	0.043	0.0051 U	0.0038 U
HEPTACHLOR EPOXIDE	0.02	0.046 U	0.022 U	**0.09**	0.0097	0.0051 U	0.0038 U
METHOXYCHLOR	NS	0.046 U	0.022 U	0.033 U	0.0049 U	0.0051 U	0.0038 U
TOXAPHENE	NS	0.46 U	0.22 U	0.33 U	0.049 U	0.051 U	0.038 U
AROCLOR 1016	NS	0.023 U	0.022 U	0.033 U	0.025 U	0.025 U	0.019 U
AROCLOR 1221	NS	0.023 U	0.022 U	0.033 U	0.025 U	0.025 U	0.019 U
AROCLOR 1232	NS	0.023 U	0.022 U	0.033 U	0.025 U	0.025 U	0.019 U
AROCLOR 1242	NS	0.023 U	0.022 U	0.033 U	0.025 U	0.025 U	0.019 U
AROCLOR 1248	NS	0.023 U	0.022 U	0.033 U	0.025 U	0.025 U	0.019 U
AROCLOR 1254	NS	0.023 U	0.24	0.95	0.67	0.025 U	0.019 U
AROCLOR 1260	NS	0.023 U	0.022 U	0.033 U	0.025 U	0.025 U	0.019 U
TOTAL PCBs	1.0(Surface)/ 10(Subsurface)	ND	0.24	0.95	0.67	ND	ND

U Undetectable Levels
ND Not Detected
NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 1 HHMT-Port Ivory Facility

Location	**Recommended**	**PG-PD-10**	**PG-PD-11**	**PG-RR-8**	**PG-RR-8**	**PG-RR-10**	**PG-RR-10**
Sample Date	**Soil**	11/28/2000	11/27/2000	12/1/2000	12/1/2000	12/2/2000	12/2/2000
Sample ID	**Cleanup**	PG-PD-10	PG-PD-11	PG-RR-08	PG-RR-08	PG-RR10	PG-RR10
Sample Depth	**Objective**	6-8'	4-6'	2-4'	6-8'	2-2.5'	8-10'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.0085 U	0.0058 U	0.0052 U	0.0046 U	0.0045 U	0.0044 U
4,4'-DDE	2.1	0.0085 U	0.0058 U	.0078	0.0046 U	0.0045 U	0.0044 U
4,4'-DDT	2.1	0.0085 U	.0073	0.02	0.0046 U	0.0045 U	0.0044 U
ALDRIN	0.041	0.0085 U	0.0058 U	0.0052 U	0.0046 U	0.0045 U	0.0044 U
ALPHA-BHC	0.11	0.0085 U	0.0058 U	0.0052 U	0.0046 U	0.0045 U	0.0044 U
BETA-BHC	0.2	0.0085 U	0.0058 U	0.0052 U	0.0046 U	0.0045 U	0.0044 U
CHLORDANE	0.54	0.017 U	0.012 U	0.01 U	0.0093 U	0.009 U	0.0088 U
DELTA-BHC	0.3	0.0085 U	0.0058 U	0.0052 U	0.0046 U	0.0045 U	0.0044 U
DIELDRIN	0.044	0.0085 U	0.0058 U	0.0052 U	0.0046 U	0.0045 U	0.0044 U
ENDOSULFAN I	0.9	0.0085 U	0.0058 U	0.0052 U	0.0046 U	0.0045 U	0.0044 U
ENDOSULFAN II	0.9	0.0085 U	0.0058 U	0.0052 U	0.0046 U	0.0045 U	0.0044 U
ENDOSULFAN SULFATE	1	0.0085 U	0.0058 U	0.0052 U	0.0046 U	0.0045 U	0.0044 U
ENDRIN	0.1	0.0085 U	0.0058 U	0.0052 U	0.0046 U	0.0045 U	0.0044 U
ENDRIN ALDEHYDE	NS	0.0085 U	0.0058 U	0.0052 U	0.0046 U	0.0045 U	0.0044 U
ENDRIN KETONE	NS	0.0085 U	0.0058 U	0.0052 U	0.0046 U	0.0045 U	0.0044 U
GAMMA-BHC (LINDANE)	0.06	0.0085 U	0.0058 U	0.0052 U	0.0046 U	0.0045 U	0.0044 U
HEPTACHLOR	0.1	0.0085 U	0.0058 U	0.0052 U	0.0046 U	0.0045 U	0.0044 U
HEPTACHLOR EPOXIDE	0.02	0.0085 U	0.0058 U	0.0052 U	0.0046 U	0.0045 U	0.0044 U
METHOXYCHLOR	NS	0.0085 U	0.0058 U	0.0052 U	0.0046 U	0.0045 U	0.0044 U
TOXAPHENE	NS	0.085 U	0.058 U	0.052 U	0.046 U	0.045 U	0.044 U
AROCLOR 1016	NS	0.043 U	0.029 U	0.026 U	0.023 U	0.023 U	0.022 U
AROCLOR 1221	NS	0.043 U	0.029 U	0.026 U	0.023 U	0.023 U	0.022 U
AROCLOR 1232	NS	0.043 U	0.029 U	0.026 U	0.023 U	0.023 U	0.022 U
AROCLOR 1242	NS	0.043 U	0.029 U	0.026 U	0.023 U	0.023 U	0.022 U
AROCLOR 1248	NS	0.043 U	0.029 U	0.026 U	0.023 U	0.023 U	0.022 U
AROCLOR 1254	NS	0.043 U	0.029 U	0.026 U	0.023 U	0.023 U	0.022 U
AROCLOR 1260	NS	0.043 U	0.029 U	0.026 U	0.023 U	0.023 U	0.022 U
TOTAL PCBs	1.0(Surface)/ 10(Subsurface)	ND	ND	ND	ND	ND	ND

U Undetectable Levels
ND Not Detected
NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 1 HHMT-Port Ivory Facility

Location	**Recommended Soil Cleanup Objective MG/KG**	**PG-FS-1B**	**PG-FS-1B**	**PG-FS-1B**	**PG-FS-4**	**PG-FS-4**	**PG-FILL-7**
Sample Date		11/17/2000	11/17/2000	11/17/2000	11/15/2000	11/15/2000	12/4/2000
Sample ID		PG-FS-01B	PG-FS-01B	PG-FS-01B	PG-FS04	PG-FS04	PG-FILL7
Sample Depth		1-2'	6-6.5'	12-13.5'	0.5-1'	2-4'	1-2.5'
Concentration		MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
4,4'-DDE	2.1	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
4,4'-DDT	2.1	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
ALDRIN	0.041	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
ALPHA-BHC	0.11	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
BETA-BHC	0.2	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
CHLORDANE	0.54	0.13 U	0.011 U	0.013 U	0.035	0.0098 U	0.0072 U
DELTA-BHC	0.3	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
DIELDRIN	0.044	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
ENDOSULFAN I	0.9	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
ENDOSULFAN II	0.9	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
ENDOSULFAN SULFATE	1	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
ENDRIN	0.1	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
ENDRIN ALDEHYDE	NS	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
ENDRIN KETONE	NS	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
GAMMA-BHC (LINDANE)	0.06	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
HEPTACHLOR	0.1	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
HEPTACHLOR EPOXIDE	0.02	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
METHOXYCHLOR	NS	0.067 U	0.0054 U	0.0064 U	0.0044 U	0.0049 U	0.0036 U
TOXAPHENE	NS	0.67 U	0.054 U	0.064 U	0.044 U	0.049 U	0.036 U
AROCLOR 1016	NS	0.17 U	0.027 U	0.032 U	0.022 U	0.025 U	0.018 U
AROCLOR 1221	NS	0.17 U	0.027 U	0.032 U	0.022 U	0.025 U	0.018 U
AROCLOR 1232	NS	0.17 U	0.027 U	0.032 U	0.022 U	0.025 U	0.018 U
AROCLOR 1242	NS	0.17 U	0.027 U	0.032 U	0.022 U	0.025 U	0.018 U
AROCLOR 1248	NS	0.17 U	0.027 U	0.032 U	0.022 U	0.025 U	0.018 U
AROCLOR 1254	NS	0.17 U	0.027 U	0.032 U	0.022 U	0.025 U	0.018 U
AROCLOR 1260	NS	0.17 U	0.027 U	0.032 U	0.055	0.025 U	0.018 U
TOTAL PCBs	1.0(Surface)/ 10(Subsurface)	ND	ND	ND	0.055	ND	ND

U Undetectable Levels

ND Not Detected

NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 1 HHMT-Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-FILL-7** 12/4/2000 PG-FILL7 2.5-4' MG/KG	**PG-FILL-7** 12/4/2000 PG-FILL7 10-12' MG/KG	**PG-FILL-8** 12/2/2000 PG-FILL08 0-2' MG/KG	**PG-FILL-8** 12/2/2000 PG-FILL08 6-8' MG/KG	**PG-UST2-1** 11/30/2000 PG-UST2-1 6-7' MG/KG	**PG-UST2-1** 11/30/2000 PG-UST2-1 8-10' MG/KG
4,4'-DDD	2.9	0.0037 U	0.0071 U	0.004 U	0.0069 U	0.02 U	0.02 U
4,4'-DDE	2.1	0.0037 U	0.0071 U	0.004 U	0.0069 U	0.02 U	0.02 U
4,4'-DDT	2.1	0.0037 U	0.02	0.13	0.0069 U	0.02 U	0.02 U
ALDRIN	0.041	0.0037 U	0.0071 U	0.004 U	0.0069 U	0.02 U	0.02 U
ALPHA-BHC	0.11	0.0037 U	0.0071 U	0.004 U	0.0069 U	0.02 U	0.02 U
BETA-BHC	0.2	0.0037 U	0.0071 U	0.004 U	0.0069 U	0.02 U	0.02 U
CHLORDANE	0.54	0.0075 U	0.014 U	0.0079 U	0.014 U	0.04 U	0.04 U
DELTA-BHC	0.3	0.0037 U	0.0071 U	0.004 U	0.0069 U	0.02 U	0.02 U
DIELDRIN	0.044	0.0037 U	0.0071 U	0.037	0.0069 U	0.02 U	0.02 U
ENDOSULFAN I	0.9	0.0037 U	0.0071 U	0.004 U	0.0069 U	0.02 U	0.02 U
ENDOSULFAN II	0.9	0.0037 U	0.0071 U	0.004 U	0.0069 U	0.02 U	0.02 U
ENDOSULFAN SULFATE	1	0.0037 U	0.0071 U	0.004 U	0.0069 U	0.02 U	0.02 U
ENDRIN	0.1	0.0037 U	0.0071 U	0.089	0.0069 U	0.02 U	0.02 U
ENDRIN ALDEHYDE	NS	0.0037 U	0.019	0.11	0.0069 U	0.02 U	0.02 U
ENDRIN KETONE	NS	0.0037 U	0.0071 U	0.004 U	0.0069 U	0.02 U	0.02 U
GAMMA-BHC (LINDANE)	0.06	0.0037 U	0.0071 U	0.004 U	0.0069 U	0.02 U	0.02 U
HEPTACHLOR	0.1	0.0037 U	0.0071 U	0.004 U	0.0069 U	0.02 U	0.02 U
HEPTACHLOR EPOXIDE	0.02	0.0037 U	0.0071 U	0.004 U	0.0069 U	0.02 U	0.02 U
METHOXYCHLOR	NS	0.0037 U	0.0071 U	0.004 U	0.0069 U	0.02 U	0.02 U
TOXAPHENE	NS	0.037 U	0.071 U	0.04 U	0.069 U	0.2 U	0.2 U
AROCLOR 1016	NS	0.019 U	0.035 U	0.02 U	0.035 U	0.02 U	0.02 U
AROCLOR 1221	NS	0.019 U	0.035 U	0.02 U	0.035 U	0.02 U	0.02 U
AROCLOR 1232	NS	0.019 U	0.035 U	0.02 U	0.035 U	0.02 U	0.02 U
AROCLOR 1242	NS	0.019 U	0.035 U	0.02 U	0.035 U	0.02 U	0.02 U
AROCLOR 1248	NS	0.019 U	0.035 U	0.02 U	0.035 U	0.02 U	0.02 U
AROCLOR 1254	NS	0.019 U	0.035 U	0.02 U	0.035 U	0.02 U	0.02 U
AROCLOR 1260	NS	0.019 U	0.15	1.5	0.035 U	0.02 U	0.02 U
TOTAL PCBs	1.0(Surface)/ 10(Subsurface)	ND	0.15	**1.5**	ND	ND	ND

U Undetectable Levels

ND Not Detected

NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 1 HHMT-Port Ivory Facility

Location	**Recommended**	**PG-UST2-1A**	**PG-UST2-1B**	**PG-UST2-1B**	**PG-UST2-2**	**PG-UST2-2**	**PG-UST2-3**
Sample Date	**Soil**	11/30/2000	11/30/2000	11/30/2000	11/30/2000	11/30/2000	12/1/2000
Sample ID	**Cleanup**	PG-UST2-1A	PG-UST2-1B	PG-UST2-1B	PG-UST2-2	PG-UST2-2	PG-UST2-3
Sample Depth	**Objective**	0-2'	2-4'	4-5.5'	4-5.5'	10-12'	2-4'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0041 U
4,4'-DDE	2.1	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0041 U
4,4'-DDT	2.1	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0041 U
ALDRIN	0.041	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0041 U
ALPHA-BHC	0.11	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0041 U
BETA-BHC	0.2	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0041 U
CHLORDANE	0.54	0.03 U	0.048 U	0.037 U	0.0077 U	0.043 U	0.0082 U
DELTA-BHC	0.3	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0041 U
DIELDRIN	0.044	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0041 U
ENDOSULFAN I	0.9	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0041 U
ENDOSULFAN II	0.9	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0041 U
ENDOSULFAN SULFATE	1	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0041 U
ENDRIN	0.1	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0041 U
ENDRIN ALDEHYDE	NS	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0078
ENDRIN KETONE	NS	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0079
GAMMA-BHC (LINDANE)	0.06	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0041 U
HEPTACHLOR	0.1	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0041 U
HEPTACHLOR EPOXIDE	0.02	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0041 U
METHOXYCHLOR	NS	0.015 U	0.024 U	0.019 U	0.0038 U	0.021 U	0.0041 U
TOXAPHENE	NS	0.15 U	0.24 U	0.19 U	0.038 U	0.21 U	0.041 U
AROCLOR 1016	NS	0.076 U	0.024 U	0.019 U	0.019 U	0.021 U	0.021 U
AROCLOR 1221	NS	0.076 U	0.024 U	0.019 U	0.019 U	0.021 U	0.021 U
AROCLOR 1232	NS	0.076 U	0.024 U	0.019 U	0.019 U	0.021 U	0.021 U
AROCLOR 1242	NS	0.076 U	0.024 U	0.019 U	0.019 U	0.021 U	0.021 U
AROCLOR 1248	NS	0.076 U	0.024 U	0.019 U	0.019 U	0.021 U	0.021 U
AROCLOR 1254	NS	0.076 U	0.024 U	0.019 U	0.019 U	0.021 U	0.021 U
AROCLOR 1260	NS	0.096	0.024 U	0.031	0.019 U	0.021 U	0.056
TOTAL PCBs	1.0(Surface)/ 10(Subsurface)	0.096	ND	0.031	ND	ND	0.056

U Undetectable Levels
ND Not Detected
NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 1 HHMT-Port Ivory Facility

Location	**Recommended**	**PG-UST2-3**	**PG-UST2-3**	**PG-UST5-2**	**PG-UST6-2**	**PG-UST6-2**	**PG-UST6-2**
Sample Date	**Soil**	12/1/2000	12/1/2000	11/27/2000	11/28/2000	11/28/2000	11/28/2000
Sample ID	**Cleanup**	PG-UST2-3	PG-UST2-3	PG-UST5-2	PG-UST6-2	PG-UST6-2	PG-UST6-2
Sample Depth	**Objective**	7.5-9'	12-14'	4-6'	4-6'	8-10'	16-18'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.056 U	0.0064 U	0.0062 U	0.0067 U	0.0078 U	0.0081 U
4,4'-DDE	2.1	0.056 U	0.0064 U	0.0062 U	0.0067 U	0.0078 U	0.0081 U
4,4'-DDT	2.1	0.056 U	0.0064 U	0.022	0.0067 U	0.0078 U	0.0081 U
ALDRIN	0.041	0.056 U	0.0064 U	0.0062 U	0.0067 U	0.0078 U	0.0081 U
ALPHA-BHC	0.11	0.056 U	0.0064 U	0.0062 U	0.0067 U	0.0078 U	0.0081 U
BETA-BHC	0.2	0.056 U	0.0064 U	0.0062 U	0.0067 U	0.0078 U	0.0081 U
CHLORDANE	0.54	0.11 U	0.013 U	0.012 U	0.013 U	0.016 U	0.016 U
DELTA-BHC	0.3	0.056 U	0.0064 U	0.0062 U	0.0067 U	0.0078 U	0.0081 U
DIELDRIN	0.044	0.056 U	0.0064 U	0.0077	0.0067 U	0.0078 U	0.0081 U
ENDOSULFAN I	0.9	0.056 U	0.0064 U	0.0062 U	0.0067 U	0.0078 U	0.0081 U
ENDOSULFAN II	0.9	0.056 U	0.0064 U	0.0062 U	0.0067 U	0.0078 U	0.0081 U
ENDOSULFAN SULFATE	1	0.056 U	0.0064 U	0.0062 U	0.0067 U	0.0078 U	0.0081 U
ENDRIN	0.1	0.056 U	0.0064 U	0.0062 U	0.0067 U	0.0078 U	0.0081 U
ENDRIN ALDEHYDE	NS	0.056 U	0.0064 U	0.0062 U	0.0067 U	0.0078 U	0.0081 U
ENDRIN KETONE	NS	0.056 U	0.0064 U	0.0062 U	0.0067 U	0.0078 U	0.0081 U
GAMMA-BHC (LINDANE)	0.06	0.056 U	0.0064 U	0.0062 U	0.0067 U	0.0078 U	0.0081 U
HEPTACHLOR	0.1	0.056 U	0.0064 U	0.0062 U	0.0067 U	0.0078 U	0.0081 U
HEPTACHLOR EPOXIDE	0.02	0.056 U	0.0064 U	0.0062 U	0.0067 U	0.0078 U	0.0081 U
METHOXYCHLOR	NS	0.056 U	0.0064 U	0.0062 U	0.0067 U	0.0078 U	0.0081 U
TOXAPHENE	NS	0.56 U	0.064 U	0.062 U	0.067 U	0.078 U	0.081 U
AROCLOR 1016	NS	0.028 U	0.032 U	0.031 U	0.033 U	0.039 U	0.041 U
AROCLOR 1221	NS	0.028 U	0.032 U	0.031 U	0.033 U	0.039 U	0.041 U
AROCLOR 1232	NS	0.028 U	0.032 U	0.031 U	0.033 U	0.039 U	0.041 U
AROCLOR 1242	NS	0.028 U	0.032 U	0.031 U	0.033 U	0.039 U	0.041 U
AROCLOR 1248	NS	0.028 U	0.032 U	0.031 U	0.033 U	0.039 U	0.041 U
AROCLOR 1254	NS	0.028 U	0.032 U	0.031 U	0.033 U	0.039 U	0.041 U
AROCLOR 1260	NS	0.028 U	0.032 U	0.069	0.033 U	0.039 U	0.041 U
TOTAL PCBs	1.0(Surface)/ 10(Subsurface)	ND	ND	0.069	ND	ND	ND

U Undetectable Levels
ND Not Detected
NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 1 HHMT-Port Ivory Facility

Location	**Recommended**	**PG-UST6-3**	**PG-UST6-3**	**PG-WOOD-1C**	**PG-WOOD-03**	**PG-WOOD-3**	**PG-WOOD-3**
Sample Date	**Soil**	11/28/2000	11/28/2000	11/9/2000	11/10/2000	11/29/2000	11/29/2000
Sample ID	**Cleanup**	PG-UST6-3	PG-UST6-3	PG-WD-01C	PG-WD-03	PG-WOOD-3	PG-WOOD-3
Sample Depth	**Objective**	1.5-2'	14-16'	10-12'	0.5-2'	2-4'	6-8'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.0039 U	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
4,4'-DDE	2.1	0.0039 U	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
4,4'-DDT	2.1	0.14	0.01 U	0.0062 U	.012	0.02 U	0.0065 U
ALDRIN	0.041	0.0039 U	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
ALPHA-BHC	0.11	0.0039 U	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
BETA-BHC	0.2	0.0039 U	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
CHLORDANE	0.54	0.0078 U	0.021 U	0.012 U	0.015 U	0.039 U	0.013 U
DELTA-BHC	0.3	0.0039 U	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
DIELDRIN	0.044	**0.077**	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
ENDOSULFAN I	0.9	0.0039 U	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
ENDOSULFAN II	0.9	0.0039 U	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
ENDOSULFAN SULFATE	1	0.0039 U	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
ENDRIN	0.1	0.1	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
ENDRIN ALDEHYDE	NS	0.029	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
ENDRIN KETONE	NS	0.0039 U	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
GAMMA-BHC (LINDANE)	0.06	0.0039 U	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
HEPTACHLOR	0.1	0.0039 U	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
HEPTACHLOR EPOXIDE	0.02	**0.036**	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
METHOXYCHLOR	NS	0.0039 U	0.01 U	0.0062 U	0.0074 U	0.02 U	0.0065 U
TOXAPHENE	NS	0.039 U	0.1 U	0.062 U	0.074 U	0.2 U	0.065 U
AROCLOR 1016	NS	0.02 U	0.052 U	0.031 U	0.019 U	0.02 U	0.033 U
AROCLOR 1221	NS	0.02 U	0.052 U	0.031 U	0.019 U	0.02 U	0.033 U
AROCLOR 1232	NS	0.02 U	0.052 U	0.031 U	0.019 U	0.02 U	0.033 U
AROCLOR 1242	NS	0.02 U	0.052 U	0.031 U	0.019 U	0.02 U	0.033 U
AROCLOR 1248	NS	0.02 U	0.052 U	0.031 U	0.019 U	0.02 U	0.033 U
AROCLOR 1254	NS	0.27	0.052 U	0.031 U	0.019 U	0.02 U	0.033 U
AROCLOR 1260	NS	0.02 U	0.052 U	0.031 U	0.16	0.02 U	0.033 U
TOTAL PCBs	1.0(Surface)/ 10(Subsurface)	0.27	ND	ND	0.16	ND	ND

U Undetectable Levels

ND Not Detected

NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 1 HHMT-Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-WOOD-05** 11/7/2000 PG-WD-05 0-2' MG/KG	**PG-WOOD-05** 11/7/2000 PG-WD-05 2-4' MG/KG	**PG-WOOD-05** 11/7/2000 PG-WD-05 4-6' MG/KG	**PG-WOOD-05** 11/7/2000 PG-WD-05 6-8' MG/KG	**PG-WOOD-05** 11/7/2000 PG-WD-05 8-10' MG/KG	**PG-WOOD-05** 11/7/2000 PG-WD-05 14-16' MG/KG
4,4'-DDD	2.9	0.004 U	0.004 U	0.004 U	0.0046 U	0.0056 U	0.011 U
4,4'-DDE	2.1	0.004 U	0.004 U	0.004 U	0.0046 U	0.0056 U	0.011 U
4,4'-DDT	2.1	0.004 U	.13	0.004 U	0.0046 U	0.0056 U	0.011 U
ALDRIN	0.041	0.004 U	0.004 U	0.004 U	0.0046 U	0.0056 U	0.011 U
ALPHA-BHC	0.11	0.004 U	0.004 U	0.004 U	0.0046 U	0.0056 U	0.011 U
BETA-BHC	0.2	0.004 U	0.004 U	0.004 U	0.0046 U	0.0056 U	0.011 U
CHLORDANE	0.54	0.008 U	0.008 U	0.008 U	0.0091 U	0.011 U	0.023 U
DELTA-BHC	0.3	0.004 U	0.004 U	0.004 U	0.0046 U	0.0056 U	0.011 U
DIELDRIN	0.044	0.004 U	.027	0.004 U	0.0046 U	0.0056 U	0.011 U
ENDOSULFAN I	0.9	0.004 U	.0047	0.004 U	0.0046 U	0.0056 U	0.011 U
ENDOSULFAN II	0.9	0.004 U	0.004 U	0.004 U	0.0046 U	0.0056 U	0.011 U
ENDOSULFAN SULFATE	1	0.004 U	0.004 U	0.004 U	0.0046 U	0.0056 U	0.011 U
ENDRIN	0.1	0.004 U	.0089	0.004 U	0.0046 U	0.0056 U	0.011 U
ENDRIN ALDEHYDE	NS	0.004 U	0.004 U	0.004 U	0.0046 U	0.0056 U	0.011 U
ENDRIN KETONE	NS	0.004 U	.0099	0.004 U	0.0046 U	0.0056 U	0.011 U
GAMMA-BHC (LINDANE)	0.06	0.004 U	0.004 U	0.004 U	0.0046 U	0.0056 U	0.011 U
HEPTACHLOR	0.1	0.004 U	0.004 U	0.004 U	0.0046 U	0.0056 U	0.011 U
HEPTACHLOR EPOXIDE	0.02	0.004 U	.0065	0.004 U	0.0046 U	0.0056 U	0.011 U
METHOXYCHLOR	NS	0.004 U	0.004 U	0.004 U	0.0046 U	0.0056 U	0.011 U
TOXAPHENE	NS	0.04 U	0.04 U	0.04 U	0.046 U	0.056 U	0.11 U
AROCLOR 1016	NS	0.02 U	0.02 U	0.02 U	0.023 U	0.028 U	0.057 U
AROCLOR 1221	NS	0.02 U	0.02 U	0.02 U	0.023 U	0.028 U	0.057 U
AROCLOR 1232	NS	0.02 U	0.02 U	0.02 U	0.023 U	0.028 U	0.057 U
AROCLOR 1242	NS	0.02 U	0.02 U	0.02 U	0.023 U	0.028 U	0.057 U
AROCLOR 1248	NS	0.02 U	0.02 U	0.02 U	0.023 U	0.028 U	0.057 U
AROCLOR 1254	NS	0.02 U	1.1	0.02 U	0.049	0.028 U	0.057 U
AROCLOR 1260	NS	0.02 U	0.02 U	0.02 U	0.023 U	0.028 U	0.057 U
TOTAL PCBs	1.0(Surface)/ 10(Subsurface)	ND	1.1	ND	0.049	ND	ND

U Undetectable Levels

ND Not Detected

NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 1 HHMT-Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-PA-MW-1** 11/22/2000 PG-PAMW1 3-4.5' MG/KG	**PG-PA-MW-1** 11/22/2000 PG-PAMW1 4.5-6' MG/KG	**PG-PA-MW-1** 11/22/2000 PG-PAMW1 10-12' MG/KG	**PG-PA-MW-5** 11/9/2000 PG-PAMW-05 0-2' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 1.5-3' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 1.5-3' MG/KG
4,4'-DDD	2.9	0.0055 U	0.0069 U	0.0062 U	0.023	0.0036 U	0.0036 U
4,4'-DDE	2.1	0.0055 U	0.0069 U	0.0062 U	0.12	0.0036 U	0.014
4,4'-DDT	2.1	0.0055 U	0.0069 U	0.0062 U	0.14	0.019	0.019
ALDRIN	0.041	0.0055 U	0.0069 U	0.0062 U	0.0039 U	0.0036 U	0.0036 U
ALPHA-BHC	0.11	0.0055 U	0.0069 U	0.0062 U	0.0039 U	0.0036 U	0.0036 U
BETA-BHC	0.2	0.0055 U	0.0069 U	0.0062 U	0.0039 U	0.0036 U	0.0036 U
CHLORDANE	0.54	0.011 U	0.014 U	0.012 U	0.0078 U	0.0072 U	0.0072 U
DELTA-BHC	0.3	0.0055 U	0.0069 U	0.0062 U	0.0039 U	0.0036 U	0.0036 U
DIELDRIN	0.044	0.0055 U	0.0069 U	0.0062 U	0.0043	0.0036 U	0.0036 U
ENDOSULFAN I	0.9	0.0055 U	0.0069 U	0.0062 U	0.0039 U	0.0036 U	0.0036 U
ENDOSULFAN II	0.9	0.0055 U	0.0069 U	0.0062 U	0.0039 U	0.0036 U	0.0036 U
ENDOSULFAN SULFATE	1	0.0055 U	0.0069 U	0.0062 U	0.0039 U	0.0036 U	0.0036 U
ENDRIN	0.1	0.0055 U	0.0069 U	0.0062 U	0.0039 U	0.0036 U	0.0036 U
ENDRIN ALDEHYDE	NS	0.0055 U	0.0069 U	0.0062 U	0.0039 U	0.0054	0.0054
ENDRIN KETONE	NS	0.0055 U	0.0069 U	0.0062 U	0.0039 U	0.0036U	0.006
GAMMA-BHC (LINDANE)	0.06	0.0055 U	0.0069 U	0.0062 U	0.0039 U	0.0036 U	0.0036 U
HEPTACHLOR	0.1	0.0055 U	0.0069 U	0.0062 U	0.0039 U	0.0036 U	0.0036 U
HEPTACHLOR EPOXIDE	0.02	0.0055 U	0.0069 U	0.0062 U	0.0039 U	0.0036 U	0.0036 U
METHOXYCHLOR	NS	0.0055 U	0.0069 U	0.0062 U	0.0039 U	0.0036U	0.0036 U
TOXAPHENE	NS	0.055 U	0.069 U	0.062 U	0.039 U	0.036 U	0.036 U
AROCLOR 1016	NS	0.027 U	0.035 U	0.031 U	0.019 U	0.019 U	0.018 U
AROCLOR 1221	NS	0.027 U	0.035 U	0.031 U	0.019 U	0.019 U	0.018 U
AROCLOR 1232	NS	0.027 U	0.035 U	0.031 U	0.019 U	0.019 U	0.018 U
AROCLOR 1242	NS	0.027 U	0.035 U	0.031 U	0.019 U	0.019 U	0.018 U
AROCLOR 1248	NS	0.027 U	0.035 U	0.031 U	0.019 U	0.019 U	0.018 U
AROCLOR 1254	NS	0.027 U	0.035 U	0.031 U	0.019 U	0.019 U	0.018 U
AROCLOR 1260	NS	0.027 U	0.035 U	0.031 U	0.019 U	0.019 U	0.095
TOTAL PCBs	1.0(Surface)/ 10(Subsurface)	ND	ND	ND	ND	ND	0.095

U Undetectable Levels
ND Not Detected
NS No Standard

Table 5C
Soil Analytical Results
Pesticides and PCBs
Site 1 HHMT-Port Ivory Facility

Location	**Recommended**	**PG-PA-MW-6**	**PG-PA-MW-6**	**PG-PA-MW-6**	**PG-PA-MW-6**
Sample Date	**Soil**	11/7/2000	11/7/2000	11/7/2000	11/7/2000
Sample ID	**Cleanup**	PG-MWPA-06	PG-MWPA-06	PG-MWPA-06	PG-MWPA-06
Sample Depth	**Objective**	3-4.5'	4.5-6'	6-8'	8.5-10'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG
4,4'-DDD	2.9	0.0039 U	0.0038 U	0.0042 U	0.0056 U
4,4'-DDE	2.1	0.0058	0.0038 U	0.0042 U	0.0056 U
4,4'-DDT	2.1	0.017	0.0038 U	0.0042 U	0.0056 U
ALDRIN	0.041	0.0039 U	0.0038 U	0.0042 U	0.0056 U
ALPHA-BHC	0.11	0.0039 U	0.0038 U	0.0042 U	0.0056 U
BETA-BHC	0.2	0.0039 U	0.0038 U	0.0042 U	0.0056 U
CHLORDANE	0.54	0.0078 U	0.0077 U	0.0083 U	0.011 U
DELTA-BHC	0.3	0.0039 U	0.0038 U	0.0042 U	0.0056 U
DIELDRIN	0.044	0.0039 U	0.0038 U	0.0042 U	0.0056 U
ENDOSULFAN I	0.9	0.0039 U	0.0038 U	0.0042 U	0.0056 U
ENDOSULFAN II	0.9	0.0039 U	0.0038 U	0.0042 U	0.0056 U
ENDOSULFAN SULFATE	1	0.0039 U	0.0038 U	0.0042 U	0.0056 U
ENDRIN	0.1	0.0039 U	0.0038 U	0.0042 U	0.0056 U
ENDRIN ALDEHYDE	NS	0.0039 U	0.0038 U	0.0042 U	0.0056 U
ENDRIN KETONE	NS	0.0039 U	0.0038 U	0.0042 U	0.0056 U
GAMMA-BHC (LINDANE)	0.06	0.0039 U	0.0038 U	0.0042 U	0.0056 U
HEPTACHLOR	0.1	0.0039 U	0.0038 U	0.0042 U	0.0056 U
HEPTACHLOR EPOXIDE	0.02	0.0039 U	0.0038 U	0.0042 U	0.0056 U
METHOXYCHLOR	NS	0.0039 U	0.0038 U	0.0042 U	0.0056 U
TOXAPHENE	NS	0.039 U	0.038 U	0.042 U	0.056 U
AROCLOR 1016	NS	0.019 U	0.019 U	0.021 U	0.028 U
AROCLOR 1221	NS	0.019 U	0.019 U	0.021 U	0.028 U
AROCLOR 1232	NS	0.019 U	0.019 U	0.021 U	0.028 U
AROCLOR 1242	NS	0.019 U	0.019 U	0.021 U	0.028 U
AROCLOR 1248	NS	0.019 U	0.019 U	0.021 U	0.028 U
AROCLOR 1254	NS	0.019 U	0.019 U	0.021 U	0.028 U
AROCLOR 1260	NS	0.077	0.019 U	0.021 U	0.028 U
TOTAL PCBs	1.0(Surface)/ 10(Subsurface)	0.077	ND	ND	ND

U Undetectable Levels

ND Not Detected

NS No Standard

Table 5D
Soil Analytical Results
Metals
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-A-1** 12/2/2000 PG-A-01 2-4' MG/KG	**PG-A-2** 11/29/2000 PG-A-02 0-2' MG/KG	**PG-A-2** 11/29/2000 PG-A-02 2-4' MG/KG	**PG-A-2** 11/16/2000 PG-A-02 6-8' MG/KG	**PG-A-3** 11/16/2000 PG-A-03 2.4-4' MG/KG	**PG-A-3** 11/16/2000 PG-A-03 6-8' MG/KG	**PG-A-3** 11/16/2000 PG-A-03 10-12' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	2400	1400	1600 U	2000	14000	8000	10000
ANTIMONY	SB	3.8	1.5 U	2.7 U	2 U	3.6 U	2.8 U	2.5 U
ARSENIC	7.5 or SB	**73**	2.1 U	**36**	3.6	5 U	5.4	3.4 U
BARIUM	300 or SB	78	11	20	57	97	190	73
BERYLLIUM	0.16 (HEAST) or SB	**.85**	0.42 U	0.75 U	0.56 U	**2.2**	**5.3**	**1.6**
CADMIUM	1 or SB	0.37 U	0.32 U	0.57 U	0.42 U	0.75 U	0.59 U	0.51 U
CALCIUM METAL	35,000*	8100	9800	340000	3800	33000	27000	34000
CHROMIUM	10 or SB	**120**	5.5	7.5 U	5.6 U	**130**	**39**	**22**
COBALT	30 or SB	4.7	1.7 U	3.1 U	2.3 U	12	19	**61**
COPPER	25 or SB	**110**	7.4	7.2 U	17	**42**	25	**28**
IRON	2,000 or SB	**38000**	**4600**	4500 U	**4800**	**9600**	**13000**	**11000**
LEAD	500*	330	10	7.5 U	6.7	21	21	22
MAGNESIUM	5,000*	1400	1700	1700	820 U	**12000**	2800	**7400**
MANGANESE	5,000*	170	77	31 U	22 U	230	520	470
NICKEL	13 or SB	**69**	4.4	4.6 U	0.2 U	**93**	**44**	**23**
POTASSIUM	43,000*	140	190	210 U	7.4	17000	4100	5100
SELENIUM	2 or SB	**4.5**	2.6 U	4.7 U	560 U	6.2 U	4.9 U	4.2 U
SILVER	SB	0.62 U	0.53 U	0.94 U	3.5 U	1.2 U	0.98 U	0.85 U
SODIUM	8,000*	500 U	420 U	2900	0.69 U	**64000**	**73000**	**48000**
THALLIUM	300*	1.5 U	1.3 U	2.3 U	560 U	3 U	2.4 U	2 U
VANADIUM	150 or SB	62	11 U	19 U	1.7 U	32	31	19
ZINC	20 or SB	**400**	17	**31**	14 U	**70**	**71**	**54**
MERCURY	0.1	**0.37**	0.15 U	0.27 U	**35**	0.35 U	**0.33**	0.24 U

U Undetectable Levels

SB Site Background

* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-A-6** 11/10/2000 PG-A-06 1-3' MG/KG	**PG-F1-3** 11/10/2000 PG-F1-3 1-3' MG/KG	**PG-F1-3** 11/10/2000 PG-F1-3 3-5' MG/KG	**PG-H/R-1** 12/2/2000 PG-H/R-01 1-3' MG/KG	**PG-H/R-1** 12/2/2000 PG-H/R-01 3-4.5' MG/KG	**PG-H/R-2** 11/10/2000 PG-H/R-2 0-1.5' MG/KG	**PG-H/R-2** 11/10/2000 PG-H/R-2 1.5-3.5' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	4100	3500	1900	3300	1100	4300	1500 U
ANTIMONY	SB	4.1	1.7 U	2.9 U	2 U	2.9 U	1.6 U	2.6 U
ARSENIC	7.5 or SB	**52**	**12**	4 U	**11**	4 U	**21**	3.6 U
BARIUM	300 or SB	210	100	20 U	72	20 U	120	18 U
BERYLLIUM	0.16 (HEAST) or SB	**2.1**	**.82**	0.8 U	0.55 U	0.8 U	**.59**	0.71 U
CADMIUM	1 or SB	0.41 U	**2.5**	0.6 U	0.41 U	0.6 U	.35	0.54 U
CALCIUM METAL	35,000*	35000	**44000**	**370000**	**230000**	**360000**	23000	**390000**
CHROMIUM	10 or SB	**33**	**25**	**14**	5.5 U	8 U	**34**	7.1 U
COBALT	30 or SB	16	7.5	3.3 U	2.3 U	3.3 U	5.4	2.9 U
COPPER	25 or SB	**360**	**50**	8.3	19	7.6 U	**57**	6.8 U
IRON	2,000 or SB	**29000**	**11000**	4700 U	**15000**	1500	**16000**	4200 U
LEAD	500*	**630**	63	8.7	29	8 U	100	7.1 U
MAGNESIUM	5,000*	**5600**	3900	**5500**	3900	3500	4100	3100
MANGANESE	5,000*	180	240	34	58	57	200	30
NICKEL	13 or SB	**200**	**99**	7.9	**33**	4.9 U	**62**	4.4 U
POTASSIUM	43,000*	540 U	550	800 U	190	220 U	450 U	710 U
SELENIUM	2 or SB	**4.1**	3 U	5 U	3.4 U	5 U	2.8 U	4.5 U
SILVER	SB	0.68 U	0.6 U	1 U	0.68 U	1 U	0.57 U	0.89 U
SODIUM	8,000*	540 U	480 U	2800	1500	2600	970	2400
THALLIUM	300*	1.6 U	1.4 U	4	1.6 U	2.4 U	1.4 U	3.4
VANADIUM	150 or SB	24	34	20 U	26	20 U	110	130
ZINC	20 or SB	**1800**	**270**	20 U	**1100**	**32**	**330**	18 U
MERCURY	0.1	**0.75**	0.17 U	0.28 U	0.19 U	0.28 U	**0.26**	0.25 U

U Undetectable Levels
SB Site Background
* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** MG/KG	**PG-H/R-3** 11/10/2000 PG-H/R-3 0.3-1' MG/KG	**PG-H/R-3** 11/10/2000 PG-H/R-3 1-3' MG/KG	**PG-PD-6** 11/21/2000 PG-PD-06 6-8' MG/KG	**PG-PD-6** 11/21/2000 PG-PD-06 12-14' MG/KG	**PG-PD-8** 11/29/2000 PG-PD-8 2-4' MG/KG	**PG-PD-8** 11/29/2000 PG-PD-8 8-10' MG/KG	**PG-PD-8** 11/29/2000 PG-PD-8 16-17' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	3700	1500 U	3600	5500	3200	4100	4200
ANTIMONY	SB	1.9	2.5 U	3.1 U	5.6 U	2 U	1.9 U	2.9 U
ARSENIC	7.5 or SB	**120**	3.8	4.3 U	**14**	3.3	**20**	**13**
BARIUM	300 or SB	180	18 U	27	160	40	82	72
BERYLLIUM	0.16 (HEAST) or SB	**.89**	0.7 U	0.85 U	1.5 U	0.56 U	**0.93**	0.8 U
CADMIUM	1 or SB	.44	0.53 U	0.64 U	**51**	0.42 U	0.4 U	0.6 U
CALCIUM METAL	35,000*	27000	**360000**	**270000**	**150000**	5200	1300 U	3900
CHROMIUM	10 or SB	**46**	7 U	10	15 U	7.4	**25**	**16**
COBALT	30 or SB	5.5	2.9 U	3.5 U	6.3 U	2.3 U	9.1	8.5
COPPER	25 or SB	**120**	6.7 U	13	**560**	11	**52**	**110**
IRON	2,000 or SB	**23000**	4100 U	5000 U	**9300**	**4100**	**81000**	**32000**
LEAD	500*	190	7 U	12	340	8.5	74	70
MAGNESIUM	5,000*	**9300**	4100	3000	**58000**	820 U	790 U	1200 U
MANGANESE	5,000*	130	62	58	190	22 U	120	150
NICKEL	13 or SB	**49**	4.3 U	8.8	**120**	6.2	**24**	**28**
POTASSIUM	43,000*	480 U	700 U	850 U	1500 U	150 U	150 U	360
SELENIUM	2 or SB	**4**	4.4 U	5.3 U	9.6 U	3.5 U	**5.2**	5 U
SILVER	SB	0.6 U	0.88 U	1.1 U	1.9 U	0.7	0.67 U	1.1
SODIUM	8,000*	480 U	2200	2300	9700	550 U	590	1100
THALLIUM	300*	1.4 U	3.8	2.6 U	4.6 U	1.7 U	1.6 U	2.4 U
VANADIUM	150 or SB	71	18 U	21 U	38 U	14 U	26	22
ZINC	20 or SB	**390**	18 U	**46**	**4500**	14 U	**73**	**90**
MERCURY	0.1	**0.83**	0.25 U	0.3 U	0.55 U	0.2 U	**0.47**	0.28 U

U Undetectable Levels

SB Site Background

* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-PD-9** 12/4/2000 PG-PD-09 4-6' MG/KG	**PG-PD-9** 12/4/2000 PG-PD-09 8-10' MG/KG	**PG-PD-10** 11/28/2000 PG-PD-10 2-4' MG/KG	**PG-PD-10** 11/28/2000 PG-PD-10 6-8' MG/KG	**PG-PD-11** 11/27/2000 PG-PD-11 4-6' MG/KG	**PG-RR-8** 12/1/2000 PG-RR-08 2-4' MG/KG	**PG-RR-8** 12/1/2000 PG-RR-08 6-8' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	2000	1400	1700	16000	1800	900	590
ANTIMONY	SB	2.1 U	2.2 U	1.7 U	3.7 U	2.5 U	2.3 U	2 U
ARSENIC	7.5 or SB	3.3	**22**	2.3 U	5.1 U	3.5 U	**88**	**32**
BARIUM	300 or SB	56	46	17	180	25	60	26
BERYLLIUM	0.16 (HEAST) or SB	0.59 U	0.61 U	0.46 U	**2.6**	0.7 U	0.62 U	0.56 U
CADMIUM	1 or SB	0.44 U	0.45 U	0.34 U	0.77 U	0.53 U	0.47 U	0.42 U
CALCIUM METAL	35,000*	2000	2300	7600	35000	**270000**	1600	1400 U
CHROMIUM	10 or SB	**17**	8.4	4.6 U	**36**	**19**	6.2 U	5.6 U
COBALT	30 or SB	3.5	6.1	1.9 U	25	2.9 U	2.6	2.3 U
COPPER	25 or SB	**33**	**28**	17	**44**	9.4	17	11
IRON	2,000 or SB	**20000**	**21000**	**4100**	**10000**	4100 U	**13000**	**25000**
LEAD	500*	68	51	290	31	9	8.3	7
MAGNESIUM	5,000*	870 U	890 U	780	5300	3700	570 U	500 U
MANGANESE	5,000*	28	62	19	210	46	110	22 U
NICKEL	13 or SB	12	**22**	**38**	**86**	8.7	7	6.7
POTASSIUM	43,000*	590 U	610 U	460 U	24000	750	190	350
SELENIUM	2 or SB	3.7 U	3.8 U	2.9 U	6.4 U	4.4 U	3.9 U	**3.7**
SILVER	SB	0.74 U	0.76 U	0.57 U	1.3 U	0.88	0.78 U	0.69 U
SODIUM	8,000*	680	610 U	460 U	13000	1900	620 U	550 U
THALLIUM	300*	1.8 U	1.8 U	1.4 U	3.1 U	2.1 U	1.9 U	1.7 U
VANADIUM	150 or SB	15 U	15 U	11 U	26 U	18 U	16 U	14 U
ZINC	20 or SB	**37**	**62**	**2600**	**230**	**74**	**150**	**120**
MERCURY	0.1	0.21 U	0.22 U	0.16 U	0.36 U	0.25 U	0.22 U	0.2 U

U Undetectable Levels
SB Site Background
* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	***Recommended*** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-RR-10** 12/2/2000 PG-RR10 2-2.5' MG/KG	**PG-RR-10** 12/2/2000 PG-RR10 8-10' MG/KG	**PG-FS-1B** 11/17/2000 PG-FS-01B 1-2' MG/KG	**PG-FS-1B** 11/17/2000 PG-FS-01B 6-6.5' MG/KG	**PG-FS-1B** 11/17/2000 PG-FS-01B 12-13.5' MG/KG	**PG-FS-4** 11/15/2000 PG-FS04 0.5-1' MG/KG	**PG-FS-4** 11/15/2000 PG-FS04 2-4' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	10000	2300	1700 U	6100	1600 U	1100	1400
ANTIMONY	SB	3.8	1.9 U	2.9 U	2.3 U	2.8 U	4.7	2.1 U
ARSENIC	7.5 or SB	**58**	**34**	**12**	**20**	3.8 U	6	5.9
BARIUM	300 or SB	190	36	230	140	19	80	86
BERYLLIUM	0.16 (HEAST) or SB	**.96**	**0.8**	0.8 U	**0.81**	0.77 U	**1.3**	**.73**
CADMIUM	1 or SB	0.41 U	0.39 U	0.6 U	**2**	0.58 U	**1.1**	0.44 U
CALCIUM METAL	35,000*	**120000**	9800	12000	**240000**	**340000**	3900	2100
CHROMIUM	10 or SB	5.4 U	5.3 U	8 U	6.5 U	7.7 U	**13**	6.9
COBALT	30 or SB	3.3	7.5	3.3 U	3.1	3.2 U	5.7	3.6
COPPER	25 or SB	**71**	**27**	**190**	**180**	**45**	**320**	**130**
IRON	2,000 or SB	**18000**	**28000**	**38000**	**31000**	4500 U	**9100**	**13000**
LEAD	500*	52	21	130	63	14	370	120
MAGNESIUM	5,000*	**10000**	1600	1700	**7500**	**6500**	1500	870 U
MANGANESE	5,000*	99	27	190	120	43	51	35
NICKEL	13 or SB	**15**	**20**	**30**	**66**	4.7 U	**68**	**30**
POTASSIUM	43,000*	1100	270	800 U	650 U	770 U	530 U	590 U
SELENIUM	2 or SB	3.4 U	**4.1**	5 U	4 U	4.8 U	3.3 U	3.7 U
SILVER	SB	0.68 U	0.87	1 U	0.81 U	0.96 U	0.66 U	0.74 U
SODIUM	8,000*	1200	530 U	3400	1700	2700	530 U	590 U
THALLIUM	300*	1.6 U	1.6 U	2.4 U	1.9 U	2.3 U	1.6 U	1.8 U
VANADIUM	150 or SB	18	14	20 U	30	19 U	13 U	15 U
ZINC	20 or SB	**54**	**760**	**290**	**550**	**30**	**890**	**630**
MERCURY	0.1	0.19 U	0.19 U	0.28 U	0.23 U	0.27 U	**1.5**	0.21 U

U Undetectable Levels

SB Site Background

* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-FILL-7** 12/4/2000 PG-FILL7 1-2.5' MG/KG	**PG-FILL-7** 12/4/2000 PG-FILL7 2.5-4' MG/KG	**PG-FILL-7** 12/4/2000 PG-FILL7 10-12' MG/KG	**PG-FILL-8** 12/2/2000 PG-FILL08 0-2' MG/KG	**PG-FILL-8** 12/2/2000 PG-FILL08 6-8' MG/KG	**PG-UST2-1** 11/30/2000 PG-UST2-1 6-7' MG/KG	**PG-UST2-1** 11/30/2000 PG-UST2-1 8-10' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	4000	4100	3200	4200	1700	2300	3200
ANTIMONY	SB	1.6	6.8	3.1 U	1.7 U	3 U	1.7 U	1.7 U
ARSENIC	7.5 or SB	24	**170**	4.3 U	**26**	4.2 U	4.8	**7.9**
BARIUM	300 or SB	65	230	63	130	21 U	32	39
BERYLLIUM	0.16 (HEAST) or SB	0.43 U	0.45 U	0.85 U	**1**	0.83 U	0.48 U	0.48 U
CADMIUM	1 or SB	0.33 U	**2.4**	0.64 U	**1.1**	0.62 U	0.36 U	0.36 U
CALCIUM METAL	35,000*	18000	**42000**	**340000**	23000	1000 U	750	3200
CHROMIUM	10 or SB	**71**	**270**	8.5 U	**31**	8.3 U	5.4	4.8 U
COBALT	30 or SB	6.1	14	3.5 U	8.3	3.4 U	2 U	2.4
COPPER	25 or SB	**35**	**670**	**94**	**95**	8.3	**28**	**35**
IRON	2,000 or SB	**17000**	**82000**	5000 U	**31000**	1300	**7600**	**8500**
LEAD	500*	50	340	8.5 U	320	8.3 U	19	11
MAGNESIUM	5,000*	4200	**7200**	**12000**	**11000**	**10000**	710	3100
MANGANESE	5,000*	370	1900	38	310	69	48	130
NICKEL	13 or SB	**97**	**290**	5.2 U	**95**	5.1 U	9.7	5.8
POTASSIUM	43,000*	430 U	450 U	850 U	400	230 U	310	410
SELENIUM	2 or SB	2.7 U	**3.4**	5.3 U	3 U	5.2 U	3 U	3 U
SILVER	SB	0.54 U	0.56 U	1.1 U	0.6 U	3.1	0.6 U	0.6 U
SODIUM	8,000*	430 U	520	1100	480 U	3900	660	640
THALLIUM	300*	1.3 U	1.3 U	2.6 U	1.4 U	2.5 U	1.4 U	1.4 U
VANADIUM	150 or SB	33	52	21 U	38	21 U	12 U	12
ZINC	20 or SB	**66**	**480**	21 U	**500**	**54**	**21**	**29**
MERCURY	0.1	**0.38**	**0.75**	0.3 U	**0.32**	0.3 U	0.17 U	0.17 U

U Undetectable Levels
SB Site Background
* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** MG/KG	**PG-UST2-1A** 11/30/2000 PG-UST2-1A 0-2' MG/KG	**PG-UST2-1B** 11/30/2000 PG-UST2-1B 2-4' MG/KG	**PG-UST2-1B** 11/30/2000 PG-UST2-1B 4-5.5' MG/KG	**PG-UST2-2** 11/30/2000 PG-UST2-2 4-5.5' MG/KG	**PG-UST2-2** 11/30/2000 PG-UST2-2 10-12' MG/KG	**PG-UST2-3** 12/1/2000 PG-UST2-3 2-4' MG/KG	**PG-UST2-3** 12/1/2000 PG-UST2-3 7.5-9' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	2100	1500	2900	1800	2200	1600	19000
ANTIMONY	SB	6.6 U	2.1 U	1.6 U	1.7 U	1.9 U	1.8 U	2.4 U
ARSENIC	7.5 or SB	**18**	5.3	3.7	**11**	2.9	**56**	**58**
BARIUM	300 or SB	**330**	200	66	58	26	95	250
BERYLLIUM	0.16 (HEAST) or SB	1.8 U	0.57 U	0.44 U	**.52**	0.51 U	0.49 U	**1.1**
CADMIUM	1 or SB	1.4 U	0.43 U	0.33 U	0.34 U	0.38 U	0.37 U	0.5 U
CALCIUM METAL	35,000*	8400	2400	14000	6100	3100	3900	**240000**
CHROMIUM	10 or SB	**37**	**13**	5.9	4.7	5.1 U	4.9 U	8.7
COBALT	30 or SB	7.5 U	2.4 U	2.5	7.4	2.1	3	3.2
COPPER	25 or SB	**61**	22	21	21	**51**	21	**28**
IRON	2,000 or SB	11000 U	**3500**	**9600**	**15000**	**7600**	**32000**	**9700**
LEAD	500*	400	250	52	21	12	20	38
MAGNESIUM	5,000*	1600 U	600	1100	620	720	510	**10000**
MANGANESE	5,000*	250	36	110	50	51	20 U	180
NICKEL	13 or SB	**19**	4.4	**16**	**19**	3.5	10	11
POTASSIUM	43,000*	500 U	170	430	230	380	840	2400
SELENIUM	2 or SB	11 U	3.6 U	2.8 U	2.9 U	3.2 U	**4.3**	4.2 U
SILVER	SB	2.3 U	0.71 U	0.56 U	0.57 U	0.64 U	.63	1.2
SODIUM	8,000*	1800 U	570 U	440 U	460 U	870	490 U	4700
THALLIUM	300*	5.5 U	1.7 U	1.3 U	1.4 U	1.5 U	1.5 U	2 U
VANADIUM	150 or SB	45 U	18	14	11 U	13 U	17	38
ZINC	20 or SB	**350**	**170**	**48**	16	**28**	14	**83**
MERCURY	0.1	0.65 U	0.2 U	0.16 U	0.16 U	0.18 U	0.18 U	0.24 U

U Undetectable Levels
SB Site Background
* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** MG/KG	**PG-UST2-3** 12/1/2000 PG-UST2-3 12-14' MG/KG	**PG-UST5-2** 11/27/2000 PG-UST5-2 4-6' MG/KG	**PG-UST6-2** 11/28/2000 PG-UST6-2 4-6' MG/KG	**PG-UST6-2** 11/28/2000 PG-UST6-2 8-10' MG/KG	**PG-UST6-2** 11/28/2000 PG-UST6-2 16-18' MG/KG	**PG-UST6-3** 11/28/2000 PG-UST6-3 1.5-2' MG/KG	**PG-UST6-3** 11/28/2000 PG-UST6-3 14-16' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	3700	2400	1700 U	2000 U	2000 U	2400	3300
ANTIMONY	SB	2.8 U	2.7 U	2.9 U	3.4 U	3.5 U	3.4	4.5 U
ARSENIC	7.5 or SB	**9.4**	3.7 U	4 U	4.7 U	4.9 U	**10**	6.2 U
BARIUM	300 or SB	46	56	20 U	23 U	45	**420**	86
BERYLLIUM	0.16 (HEAST) or SB	0.77 U	0.74 U	0.8 U	0.93 U	0.98 U	0.47 U	1.2 U
CADMIUM	1 or SB	0.58 U	0.56 U	0.6 U	0.7 U	0.73 U	**3.9**	**14**
CALCIUM METAL	35,000*	**73000**	**240000**	**300000**	**320000**	**330000**	**55000**	**140000**
CHROMIUM	10 or SB	7.7 U	7.4 U	8 U	9.3 U	9.8 U	**34**	13 U
COBALT	30 or SB	3.2 U	3.1 U	3.3 U	3.8 U	4 U	4	5.2 U
COPPER	25 or SB	**37**	25	7.6 U	8.8 U	**33**	**240**	**480**
IRON	2,000 or SB	**6000**	**4700**	4700 U	5500 U	5800 U	**14000**	7400 U
LEAD	500*	19	16	8 U	9.3 U	21	460	170
MAGNESIUM	5,000*	3700	2000	4700	**8000**	**16000**	**16000**	**40000**
MANGANESE	5,000*	66	59	42	38	46	160	94
NICKEL	13 or SB	7.1	12	4.9 U	5.7 U	8.3	**39**	**86**
POTASSIUM	43,000*	590	740 U	800 U	930 U	980 U	580	1300 U
SELENIUM	2 or SB	4.8 U	4.6 U	5 U	5.8 U	6.1 U	2.9 U	7.8 U
SILVER	SB	0.96 U	0.93 U	1 U	1.2 U	1.2 U	0.59 U	1.6 U
SODIUM	8,000*	5600	1700	2200	3100	**12000**	710	6900
THALLIUM	300*	2.3 U	2.2 U	2.4 U	2.8 U	2.9 U	1.4 U	3.7 U
VANADIUM	150 or SB	19 U	25	20 U	23 U	24 U	24	31 U
ZINC	20 or SB	**67**	**100**	20 U	23 U	**240**	**600**	**2300**
MERCURY	0.1	**0.37**	0.26 U	0.28 U	0.33 U	0.35 U	**1**	**0.61**

U Undetectable Levels
SB Site Background
* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-WOOD-1C** 11/9/2000 PG-WD-01C 10-12' MG/KG	**PG-WOOD-03** 11/10/2000 PG-WD-03 0.5-2' MG/KG	**PG-WOOD-03** 11/10/2000 PG-WD-03 2-4' MG/KG	**PG-WOOD-3** 11/29/2000 PG-WOOD-3 2-4' MG/KG	**PG-WOOD-3** 11/29/2000 PG-WOOD-3 6-8' MG/KG	**PG-WOOD-05** 11/7/2000 PG-WD-05 0-2' MG/KG	**PG-WOOD-05** 11/7/2000 PG-WD-05 2-4' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	3100	930 U	4500	3900	1600 U	1500	1300
ANTIMONY	SB	2.7 U	1.6 U	2.3	2.6	2.8 U	1.7 U	2.8
ARSENIC	7.5 or SB	**11**	2.8	**310**	**29**	3.9 U	2.4 U	**27**
BARIUM	300 or SB	69	15	260	120	38	21	250
BERYLLIUM	0.16 (HEAST) or SB	0.74 U	0.44 U	**1.3**	**1**	0.78 U	0.48 U	0.48 U
CADMIUM	1 or SB	0.56 U	0.33 U	0.47	0.37	0.59 U	0.36 U	0.36 U
CALCIUM METAL	35,000*	3600	31000	22000	**35000**	**400000**	1200 U	7400
CHROMIUM	10 or SB	7.5	6.3	**20**	**110**	7.8 U	7.4	**12**
COBALT	30 or SB	7.6	1.8 U	15	5.2	3.2 U	2 U	2 U
COPPER	25 or SB	**39**	15	**210**	**110**	7.5 U	8.1	**59**
IRON	2,000 or SB	**9900**	**3800**	**44000**	**31000**	4600 U	**4000**	**8200**
LEAD	500*	29	20	460	**580**	7.8 U	13	130
MAGNESIUM	5,000*	1100 U	**18000**	4700	4200	4000	710 U	2000
MANGANESE	5,000*	49	47	200	220	69	28	55
NICKEL	13 or SB	**20**	3.2	**170**	**53**	4.8 U	2.9 U	12
POTASSIUM	43,000*	740 U	440 U	470 U	310	490	84 U	150
SELENIUM	2 or SB	4.6 U	2.8 U	**5**	**3.9**	4.9 U	3 U	**3 U**
SILVER	SB	1.4	0.56 U	0.62	0.59 U	0.98 U	0.6 U	0.6 U
SODIUM	8,000*	830	440 U	470 U	470 U	2300	110 U	110 U
THALLIUM	300*	2.2 U	1.3 U	1.4 U	1.4 U	2.4 U	1.4 U	1.4 U
VANADIUM	150 or SB	19 U	20	39	28	20 U	24	16
ZINC	20 or SB	**92**	17	**700**	**250**	20 U	**21**	**190**
MERCURY	0.1	0.26 U	0.16 U	**0.38**	**0.48**	0.28 U	0.34 U	**0.41**

U Undetectable Levels
SB Site Background
* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** MG/KG	**PG-WOOD-05** 11/7/2000 PG-WD-05 4-6' MG/KG	**PG-WOOD-05** 11/7/2000 PG-WD-05 6-8' MG/KG	**PG-WOOD-05** 11/7/2000 PG-WD-05 8-10' MG/KG	**PG-WOOD-05** 11/7/2000 PG-WD-05 14-16' MG/KG	**PG-PA-MW-1** 11/22/2000 PG-PAMW1 3-4.5' MG/KG	**PG-PA-MW-1** 11/22/2000 PG-PAMW1 4.5-6' MG/KG	**PG-PA-MW-1** 11/22/2000 PG-PAMW1 10-12' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	1300	2500	2000	14000	1400 U	1700 U	1700
ANTIMONY	SB	1.7 U	2 U	2.5 U	5 U	2.4 U	3 U	2.7 U
ARSENIC	7.5 or SB	**11**	**28**	**8.7**	6.9 U	3.3 U	4.2 U	3.7 U
BARIUM	300 or SB	33	54	36	34 U	16 U	21 U	21
BERYLLIUM	0.16 (HEAST) or SB	0.48 U	0.55 U	0.68 U	1.4 U	0.66 U	0.83 U	0.74 U
CADMIUM	1 or SB	0.36 U	0.41 U	0.51 U	1 U	0.49 U	0.62 U	0.56 U
CALCIUM METAL	35,000*	1200 U	1400 U	11000	7700	**310000**	**310000**	**210000**
CHROMIUM	10 or SB	4.8 U	6	6.8 U	**24**	6.6 U	8.3 U	7.4 U
COBALT	30 or SB	2.5	6.6	6.7	5.7 U	2.9	3.4 U	3.1 U
COPPER	25 or SB	**34**	**37**	20	13 U	**61**	7.9 U	**67**
IRON	2,000 or SB	**3300**	**7500**	**6600**	**19000**	3900 U	4900 U	4400 U
LEAD	500*	4.8 U	32	22	14 U	69	8.3 U	42
MAGNESIUM	5,000*	710 U	810 U	1000 U	**6200**	1700	3600	**13000**
MANGANESE	5,000*	20 U	27	38	110	43	39	42
NICKEL	13 or SB	7.6	**15**	**17**	**19**	**29**	5.1 U	**25**
POTASSIUM	43,000*	270	320	320	2600	660 U	830 U	740 U
SELENIUM	2 or SB	3 U	3.4 U	4.2 U	8.6 U	4.1 U	5.2 U	4.6 U
SILVER	SB	0.6 U	0.68 U	0.85 U	1.7 U	0.82 U	1 U	0.93 U
SODIUM	8,000*	110 U	120 U	810	6000	2300	2000	2000
THALLIUM	300*	1.4 U	1.6 U	2 U	4.1 U	2 U	2.5 U	2.2 U
VANADIUM	150 or SB	12 U	14 U	17 U	40	16 U	21 U	19 U
ZINC	20 or SB	19	**94**	**56**	**360**	**190**	21 U	**260**
MERCURY	0.1	0.17 U	0.19 U	0.24 U	0.49 U	0.23 U	0.3 U	0.26 U

U Undetectable Levels
SB Site Background
* Eastern USA Background

Table 5D
Soil Analytical Results
Metals
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-PA-MW-5** 11/9/2000 PG-PAMW-05 0-2' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 0-2' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 1.5-3' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 3-4.5' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 4.5-6' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 6-8' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 8.5-10' MG/KG
ALUMINUM (FUME OR DUST)	33,000*	3100	4300	4300	7800	6000	1100 U	1400 U
ANTIMONY	SB	1.7 U	1.7	1.7	1.7 U	1.7 U	1.8 U	2.5 U
ARSENIC	7.5 or SB	**260**	150	**150**	**36**	**24**	**16**	3.4 U
BARIUM	300 or SB	200	120	120	180	170	50	53
BERYLLIUM	0.16 (HEAST) or SB	**0.85**	0.43 U	0.43 U	**.49**	0.46 U	0.5 U	0.68 U
CADMIUM	1 or SB	0.35 U	0.33 U	0.33 U	0.35 U	0.34 U	0.37 U	0.51 U
CALCIUM METAL	35,000*	33000	13000	13000	11000	4300	1300 U	1700 U
CHROMIUM	10 or SB	**15**	28	**28**	**32**	**13**	5.1	6.8 U
COBALT	30 or SB	6.4	7	7	6.8	10	2.7	2.8 U
COPPER	25 or SB	**70**	58	**58**	**46**	**36**	15	7.7
IRON	2,000 or SB	**23000**	24000	**24000**	**30000**	**28000**	**19000**	4000 U
LEAD	500*	100	73	73	31	17	6.8	6.8 U
MAGNESIUM	5,000*	**13000**	3800	3800	810	680 U	740 U	**6800**
MANGANESE	5,000*	120	200	200	92	140	20 U	27 U
NICKEL	13 or SB	**24**	0.28	**26**	**17**	**26**	8.1	4.1 U
POTASSIUM	43,000*	470 U	26	190	320	330	460	120 U
SELENIUM	2 or SB	**3.5**	190	2.7 U	**3.3**	**3.9**	**3.5**	4.2 U
SILVER	SB	0.58 U	2.7 U	.68	0.58 U	0.57 U	0.62 U	1.8
SODIUM	8,000*	470 U	0.68	370	350	290	260	3000
THALLIUM	300*	1.4 U	370	1.3 U	1.4 U	1.4 U	1.5 U	2 U
VANADIUM	150 or SB	37	1.3 U	38	24	20	13 U	17 U
ZINC	20 or SB	**320**	38	**120**	**34**	**48**	13 U	17 U
MERCURY	0.1	**1**	120	**0.28**	**0.22**	0.16 U	0.18 U	0.24 U

U Undetectable Levels
SB Site Background
* Eastern USA Background

Table 5E
TPHC, Oil and Grease, Cyanide, pH, and Total Phenolics
Site 1 HHMT - Port Ivory Facility

Location	**Recommended**	**PG-A-1**	**PG-A-2**	**PG-A-2**	**PG-A-3**	**PG-A-3**	**PG-A-3**	**PG-A-6**
Sample Date	**Soil**	12/2/2000	11/29/2000	11/29/2000	11/16/2000	11/16/2000	11/16/2000	11/10/2000
Sample ID	**Cleanup**	PG-A-01	PG-A-02	PG-A-02	PG-A-03	PG-A-03	PG-A-03	PG-A-06
Sample Depth	**Objective**	2-4'	0-2'	2-4'	2.4-4'	6-8'	10-12'	1-3'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
PETROLEUM HYDROCARBONS	NS	61	36 U	64 U	85 U	67 U	100	66
OIL & GREASE	NS	1100	91	130	850	430	670	490
CYANIDE	***	0.31 U	0.26 U	0.47 U	0.63 U	0.49 U	0.42 U	0.58
pH	NS	7.6	8.0	8.4	12	12	13	7.4
TOTAL PHENOLICS	NS	5.1	1.3 U	2.4 U	3.1 U	2.4 U	2.1 U	1.7 U

U Undetectable Levels

NS No Standard

*** 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
TPHC, Oil and Grease, Cyanide, pH, and Total Phenolics
Site 1 HHMT - Port Ivory Facility

Location	**Recommended**	**PG-F1-3**	**PG-F1-3**	**PG-H/R-1**	**PG-H/R-1**	**PG-H/R-2**	**PG-H/R-2**	**PG-H/R-3**
Sample Date	**Soil**	11/10/2000	11/10/2000	12/2/2000	12/2/2000	11/10/2000	11/10/2000	11/10/2000
Sample ID	**Cleanup**	PG-F1-3	PG-F1-3	PG-H/R-01	PG-H/R-01	PG-H/R-2	PG-H/R-2	PG-H/R-3
Sample Depth	**Objective**	1-3'	3-5'	1-3'	3-4.5'	0-1.5'	1.5-3.5'	0.3-1'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
PETROLEUM HYDROCARBONS	NS	1600	68 U	47 U	68 U	40	61 U	59
OIL & GREASE	NS	**17000**	250	91 U	130 U	310	310	390
CYANIDE	***	0.30 U	0.50 U	0.34 U	0.5 U	0.45 U	0.45 U	0.30 U
pH	NS	7.9	8.7	8.2	8.4	8.0	8.3	8.1
TOTAL PHENOLICS	NS	16	2.5 U	1.7 U	2.5 U	1.4 U	2.2 U	1.5 U

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Table 5E
TPHC, Oil and Grease, Cyanide, pH, and Total Phenolics
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-H/R-3** 11/10/2000 PG-H/R-3 1-3' MG/KG	**PG-PD-6** 11/21/2000 PG-PD-06 6-8' MG/KG	**PG-PD-6** 11/21/2000 PG-PD-06 12-14' MG/KG	**PG-PD-8** 11/29/2000 PG-PD-8 2-4' MG/KG	**PG-PD-8** 11/29/2000 PG-PD-8 8-10' MG/KG	**PG-PD-8** 11/29/2000 PG-PD-8 16-17' MG/KG	**PG-PD-9** 12/4/2000 PG-PD-09 4-6' MG/KG
PETROLEUM HYDROCARBONS	NS	60 U	72 U	210	1600	2500	780	160
OIL & GREASE	NS	270	470	6200	**19000**	**31000**	**17000**	450
CYANIDE	***	0.44 U	0.53 U	0.96 U	1.2	0.46	0.52	0.37 U
pH	NS	8.4	7.3	10	4.6	4.8	5.8	5.4
TOTAL PHENOLICS	NS	2.2 U	2.7 U	25	3.1	7.3	2.5 U	1.8 U

U Undetectable Levels

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Table 5E
TPHC, Oil and Grease, Cyanide, pH, and Total Phenolics
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-PD-9** 12/4/2000 PG-PD-09 8-10' MG/KG	**PG-PD-10** 11/28/2000 PG-PD-10 2-4' MG/KG	**PG-PD-10** 11/28/2000 PG-PD-10 6-8' MG/KG	**PG-PD-11** 11/27/2000 PG-PD-11 4-6' MG/KG	**PG-RR-8** 12/1/2000 PG-RR-08 2-4' MG/KG	**PG-RR-8** 12/1/2000 PG-RR-08 6-8' MG/KG	**PG-RR-10** 12/2/2000 PG-RR10 2-2.5' MG/KG
PETROLEUM HYDROCARBONS	NS	350	1700	93	60 U	64	47 U	170
OIL & GREASE	NS	900	**42000**	530	630	170	240	250
CYANIDE	***	0.38 U	0.29 U	0.64 U	0.44 U	0.39 U	0.35 U	0.34 U
pH	NS	7.2	5.9	11	7.9	6.8	7.6	8.0
TOTAL PHENOLICS	NS	1.9 U	1.4 U	4.3	2.2 U	2.0 U	10	1.7 U

U Undetectable Levels

NS No Standard

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

Table 5E
TPHC, Oil and Grease, Cyanide, pH, and Total Phenolics
Site 1 HHMT - Port Ivory Facility

Location	**Recommended**	**PG-RR-10**	**PG-FS-1B**	**PG-FS-1B**	**PG-FS-1B**	**PG-FS-4**	**PG-FS-4**	**PG-FILL-7**
Sample Date	**Soil**	12/2/2000	11/17/2000	11/17/2000	11/17/2000	11/15/2000	11/15/2000	12/4/2000
Sample ID	***Cleanup***	PG-RR10	PG-FS-01B	PG-FS-01B	PG-FS-01B	PG-FS04	PG-FS04	PG-FILL7
Sample Depth	**Objective**	8-10'	1-2'	6-6.5'	12-13.5'	0.5-1'	2-4'	1-2.5'
Concentration	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
PETROLEUM HYDROCARBONS	NS	4900	6900	62	65 U	170	50 U	43
OIL & GREASE	NS	**31000**	**110000**	460	130 U	1400	330	72 U
CYANIDE	***	0.33 U	0.50 U	0.40 U	0.48 U	0.56	0.53	0.27 U
pH	NS	7.0	7.8	8.0	8.3	7.4	5.3	11
TOTAL PHENOLICS	NS	1.6 U	2.5 U	2.0 U	2.4 U	1.6 U	1.8 U	1.4 U

U Undetectable Levels
NS No Standard
*** Site Specfifc Standard

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Table 5E
TPHC, Oil and Grease, Cyanide, pH, and Total Phenolics
Site 1 HHMT - Port Ivory Facility

Location	**Recommended**	**PG-FILL-7**	**PG-FILL-7**	**PG-FILL-8**	**PG-FILL-8**	**PG-UST2-1**	**PG-UST2-1**	**PG-UST2-1A**
Sample Date	**Soil**	12/4/2000	12/4/2000	12/2/2000	12/2/2000	11/30/2000	11/30/2000	11/30/2000
Sample ID	**Cleanup**	PG-FILL7	PG-FILL7	PG-FILL08	PG-FILL08	PG-UST2-1	PG-UST2-1	PG-UST2-1A
Sample Depth	**Objective**	2.5-4'	10-12'	0-2'	6-8'	6-7'	8-10'	0-2'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
PETROLEUM HYDROCARBONS	NS	72	72 U	120	71 U	970	**11000**	120
OIL & GREASE	NS	75 U	160	1100	140 U	2000	**36000**	610
CYANIDE	***	0.28 U	0.53 U	0.3 U	0.52 U	0.35	0.3 U	1.1 U
pH	NS	8.3	11	8.5	10	7.8	8.4	7.0
TOTAL PHENOLICS	NS	1.4 U	2.7 U	1.5 U	2.6 U	1.5 U	1.5 U	5.7 U

U Undetectable Levels

NS No Standard

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

Table 5E
TPHC, Oil and Grease, Cyanide, pH, and Total Phenolics
Site 1 HHMT - Port Ivory Facility

Location	**Recommended**	**PG-UST2-1B**	**PG-UST2-1B**	**PG-UST2-2**	**PG-UST2-2**	**PG-UST2-3**	**PG-UST2-3**	**PG-UST2-3**
Sample Date	**Soil**	11/30/2000	11/30/2000	11/30/2000	11/30/2000	12/1/2000	12/1/2000	12/1/2000
Sample ID	**Cleanup**	PG-UST2-1B	PG-UST2-1B	PG-UST2-2	PG-UST2-2	PG-UST2-3	PG-UST2-3	PG-UST2-3
Sample Depth	**Objective**	2-4'	4-5.5'	4-5.5'	10-12'	2-4'	7.5-9'	12-14'
Concentration	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
PETROLEUM HYDROCARBONS	NS	130	4900	39 U	2800	42 U	**15000**	480
OIL & GREASE	NS	160	**27000**	77 U	**26000**	82 U	**37000**	1800
CYANIDE	***	0.36 U	0.28 U	0.29 U	0.32 U	0.31 U	0.42 U	0.48 U
pH	NS	7.0	8.2	7.7	8.3	7.4	8.2	8.4
TOTAL PHENOLICS	NS	1.8 U	1.4 U	1.4 U	1.6 U	7.2	10	2.4 U

U Undetectable Levels

NS No Standard

*** Site Specfifc Standard

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

Table 5E
TPHC, Oil and Grease, Cyanide, pH, and Total Phenolics
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** MG/KG	**PG-UST5-2** 11/27/2000 PG-UST5-2 4-6' MG/KG	**PG-UST6-2** 11/28/2000 PG-UST6-2 4-6' MG/KG	**PG-UST6-2** 11/28/2000 PG-UST6-2 8-10' MG/KG	**PG-UST6-2** 11/28/2000 PG-UST6-2 16-18' MG/KG	**PG-UST6-3** 11/28/2000 PG-UST6-3 1.5-2' MG/KG	**PG-UST6-3** 11/28/2000 PG-UST6-3 14-16' MG/KG	**PG-WOOD-1C** 11/9/2000 PG-WD-01C 10-12' MG/KG
PETROLEUM HYDROCARBONS	NS	170	68 U	79 U	83 U	150	130	69
OIL & GREASE	NS	1100	290	260	160 U	780	1600	540
CYANIDE	***	0.46 U	0.50 U	0.58 U	0.61 U	0.29 U	0.78 U	0.46 U
pH	NS	8.0	9.7	12	12	9.9	12	8.2
TOTAL PHENOLICS	NS	2.3 U	2.5 U	2.9 U	3.1 U	1.5 U	3.9 U	2.3 U

U Undetectable Levels

NS No Standard

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Table 5E
TPHC, Oil and Grease, Cyanide, pH, and Total Phenolics
Site 1 HHMT - Port Ivory Facility

Location	**Recommended**	**PG-WOOD-03**	**PG-WOOD-03**	**PG-WOOD-3**	**PG-WOOD-3**	**PG-WOOD-05**	**PG-WOOD-05**	**PG-WOOD-05**
Sample Date	**Soil**	11/10/2000	11/10/2000	11/29/2000	11/29/2000	11/7/2000	11/7/2000	11/7/2000
Sample ID	**Cleanup**	PG-WD-03	PG-WD-03	PG-WOOD-3	PG-WOOD-3	PG-WD-05	PG-WD-05	PG-WD-05
Sample Depth	**Objective**	0.5-2'	2-4'	2-4'	6-8'	0-2'	2-4'	4-6'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
PETROLEUM HYDROCARBONS	NS	710	73	140	67 U	41 U	1000	47
OIL & GREASE	NS	2800	1200	1300	130	80 U	**13000**	250
CYANIDE	***	0.28 U	0.29 U	16	3.2	0.30 U	0.30 U	0.30 U
pH	NS	7.4	7.7	8.2	9.0	7.2	7.1	7.1
TOTAL PHENOLICS	NS	1.4 U	1.5 U	1.6	3.7	1.5 U	1.5 U	1.5 U

U Undetectable Levels

NS No Standard

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Table 5E
TPHC, Oil and Grease, Cyanide, pH, and Total Phenolics
Site 1 HHMT - Port Ivory Facility

Location	**Recommended**	**PG-WOOD-05**	**PG-WOOD-05**	**PG-WOOD-05**	**PG-PA-MW-1**	**PG-PA-MW-1**	**PG-PA-MW-1**	**PG-PA-MW-5**
Sample Date	**Soil**	11/7/2000	11/7/2000	11/7/2000	11/22/2000	11/22/2000	11/22/2000	11/9/2000
Sample ID	**Cleanup**	PG-WD-05	PG-WD-05	PG-WD-05	PG-PAMW1	PG-PAMW1	PG-PAMW1	PG-PAMW-05
Sample Depth	**Objective**	6-8'	8-10'	14-16'	2-4'	4-6'	10-12'	0-2'
Concentration	**MG/KG**	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
PETROLEUM HYDROCARBONS	NS	95	58 U	110	56 U	71 U	63 U	42
OIL & GREASE	NS	**18000**	110 U	410	110 U	140 U	120 U	310
CYANIDE	***	0.34 U	0.42 U	0.86 U	0.41 U	0.52 U	0.46 U	0.29 U
pH	NS	6.8	7.5	7.7	7.7	7.8	11	7.7
TOTAL PHENOLICS	NS	1.7 U	2.1 U	4.3 U	2.0 U	2.6 U	2.3 U	1.4 U

U Undetectable Levels

NS No Standard

*** 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
TPHC, Oil and Grease, Cyanide, pH, and Total Phenolics
Site 1 HHMT - Port Ivory Facility

Location **Sample Date** **Sample ID** **Sample Depth** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **MG/KG**	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 1.5-3' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 3-4.5' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 4.5-6' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 6-8' MG/KG	**PG-PA-MW-6** 11/7/2000 PG-MWPA-06 8.5-10' MG/KG
PETROLEUM HYDROCARBONS	NS	72	74	87	43 U	58 U
OIL & GREASE	NS	72 U	78 U	190	180	110 U
CYANIDE	***	0.52	4.4	3.5	2.9	18
pH	NS	6.9	7.0	5.5	4.5	10
TOTAL PHENOLICS	NS	1.4 U	1.5 U	1.4 U	1.6 U	2.1 U

U Undetectable Levels

NS No Standard

*** Site Specfifc Standard

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

subsurface utility. Five soil samples were collected from the soil borings installed at UST6 and submitted for laboratory analysis. Sample designations and depths are summarized in Table 4 under the Potential UST heading. All samples were analyzed for the parameters specified in the ESIW and listed on Table 4.

5.3.2 Previously Identified AOCs (Areas A, C, F1, H/R and Wood Yard)

Thirteen soil borings were installed in Site 1 to evaluate those AOCs previously identified by P&G and located on Site 1 (Areas A, C, F1, H/R and Wood Yard). With respect to the above listed areas, it was not possible to install four of the proposed soil borings: Wood-2 and Wood-4 at the Wood Yard and F1-1 and F1-2 at Area F1. 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 the Wood Yard and Area F1.

Four soil borings (A-1, A-2, A-3 and A-6) were installed at Site 1 to evaluate Area A. Eight soil samples were collected from the soil borings and submitted for laboratory analysis. It should be noted that two soil borings installed to evaluate the eastern limit of Area A, soil borings A-4 and A-5, are situated in Site 2A.

Two soil borings were installed to evaluate Area C, PAMW-1 and PAMW-1D. The two soil borings were converted to monitoring wells and utilized to evaluate groundwater quality at Area C. Information collected from installation and sampling of these two wells was also incorporated into the site-wide groundwater investigation. Three soil samples were collected from PAMW-1 and submitted for laboratory analysis.

One soil boring, F1-3, was installed at Area F1 with two soil samples submitted for laboratory analysis.

Three soil borings were installed at Area H/R (H/R-1, 2 and 3) with six samples submitted for laboratory analysis.

Five soil borings (Wood-1B, Wood-1C, Wood-03, Wood-3 and Wood-05) were installed at the Wood Yard with 11 samples submitted for laboratory analysis. No samples were obtained from soil boring Wood-1B. Please note, Wood-03 and Wood-3 reflect separate soil boring locations. Soil boring Wood-3 encountered refusal at 4 to 5 feet bgs. To obtain further subsurface information from this area, soil boring Wood-3 was constructed immediately adjacent to Wood-03 and additional soil samples were collected. Due to the scale of the mapping, the two borings are illustrated as one location,Wood-03/3. However, summary tables present analytical results under the individual location identifiers. 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*

Six soil borings were installed and sampled within Site 1 to evaluate this AOC. The six soil borings are as follows: RR-8, RR-10, PAMW-5, PAMW-6, H/R-3 and Wood-01C. Twelve samples were collected and submitted for laboratory analysis. 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 *Pits and Drains*

Eight soil borings were proposed to evaluate pits and drains at Site 1. Due to the presence of utilities, it was not possible to install two of the proposed soil borings (PD-7 and PD-12). Three soil borings were proposed to evaluate pits/drains at the area northeast of Building 1A. Two of the three soil borings, PD-10 and PD-11 were installed at the proposed locations and it was determined that the two soil borings provided adequate coverage with respect to pits and drains at Site 1. However, the need for additional sampling was to be based upon field screening information and analytical results from sampling at the PD-10 and PD-11 locations. Four soil borings were proposed to evaluate pits/drains at Building 17. Three of the four soil borings, PD-6, PD-8 and PD-9 were installed at the proposed locations and it was determined that the three soil borings provided adequate coverage with respect to pits and drains at Site 1. However, the need for additional sampling was to be based upon field screening information and analytical results from sampling at the PD-6, PD-8 and PD-9 locations.

Six soil borings were installed at locations within Site 1 to evaluate pits and drains. The soil borings are as follows: PD-6, PD-8, PD-9, PD-10, PD-11 and PAMW-5. Eleven 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. 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 *Former Structures*

Nine soil borings were installed at locations within Site 1 to evaluate this AOC. The soil borings are as follows: FS-1B, FS-4, A-3, Wood-01C, Wood-3, Wood-5, PD-8, PD-9 and PD-11. Twenty-five 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 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.

5.3.6 Historic Fill Material

As previously stated, all soil borings installed during the site investigation were utilized as part of the site-wide fill evaluation. Similarly, all soil borings installed at Site 1 were utilized to characterize fill material at this portion of the HHMT-Port Ivory facility. Two additional soil borings, Fill-7 and Fill-8, were installed at locations within Site 1 to evaluate fill material. Five samples were collected from the two soil borings and submitted for laboratory analysis. Thus, a total of 42 soil borings were installed and sampled (including locations at potential UST areas) to evaluate fill material at Site 1. Please note, the information provided in Table 4 under the Fill Material heading presented information related to the two additional soil borings installed to evaluate 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

how many existed prior to these installations?

The site-wide groundwater investigation included in the installation and sampling of 17 wells and the sampling of 14 existing wells. Five monitoring wells (PAMW-1, PAMW-1D, PAMW-5, PAMW-6, PAMW-6D) and one temporary well (TMW-02) were installed at Site 1. 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 1, monitoring wells were placed to create shallow/deep well pairs (PAMW-1/1D and PAMW-6/6D).

6 total

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 seal consisting of bentonite pellets was placed over the sand pack of the wells. The elevation of the top of the bentonite pellet 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 pellets of bentonite. The remaining annular space was backfilled with a cement/bentonite grout mix.

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 fitting a 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 as well as 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 were developed. All existing wells included in the sampling program 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 phase product (if present), and depth to bottom of each monitoring well was obtained and recorded. No free phase product was detected in monitoring wells at Site 1. However, a sheen was noted on the water surface of the temporary well, PG-TMW-02. *

All monitoring wells were purged prior to sampling. Purging was accomplished by removing a predetermined volume of standing water using 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 the following: 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 to the water table. 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, 11 groundwater samples were collected from wells located on Site 1 as part of the site-wide groundwater investigation. Specifically, the following wells were sampled: PG-PA-MW-1, PG-PA-MW-1D, PG-PA-MW-5, PG-PA-MW-6, PG-PA-MW-6D, (five new wells), PG-TMW-02 (one temporary well); and, PG-CS-7, PG-EW-3, PG-EW-6, PG-RS-1 and PG-RS-2 (five existing wells). As noted above, a sheen was noted on the water surface of PG-TMW-02 during sampling. As no measurable free product was present, a sample was collected from this well in accordance with the above outlined procedures and submitted for laboratory analysis. *

Figure 7 shows 20 wells (incl new wells) exist on Site 1

6 new
14 old

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. The material was not observed to be present 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. The specifics of the sampling for each media are described below.

HMM collected surface water samples from Bridge Creek using laboratory-cleaned glass containers. Samples were obtained from the downstream location first and then progressed upstream, so as to avoid collecting disrupted sediments in the surface water samples. The locations of the three surface water samples (i.e., SED-SW1, SED-SW2 and SED-SW3) are depicted on Figure 7; the reference to "SED" in the sample identification name for the surface water samples presented on Figure 7 reflects the collection of sediment from corresponding

not on Figure 7

streambank locations. The surface water samples were analyzed for TAL metals and pH based on the findings of prior investigative efforts performed by P&G.

HMM obtained five sediment/precipitate samples (SED-SW1, SED-SW2, SED-SW3, SED-4 and SED-5) located within the limits of Bridge Creek. A stainless steel trowel was used to obtain the sediment/precipitate samples from the shallow depth. The samples were then placed directly into the appropriate laboratory containers. The locations of the five sediment samples are depicted on Figure 7; the reference to "SW" in the sample identification name for three of the sediment samples presented on Figure 7 reflects the collection of surface water samples at these locations. The sediment/precipitate samples were analyzed for TAL metals.

not on figure

6.0 SI- RESULTS

The SI for Site 1 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 historic 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, groundwater, surface water and sediment conditions are described below.

6.1.1 Soil

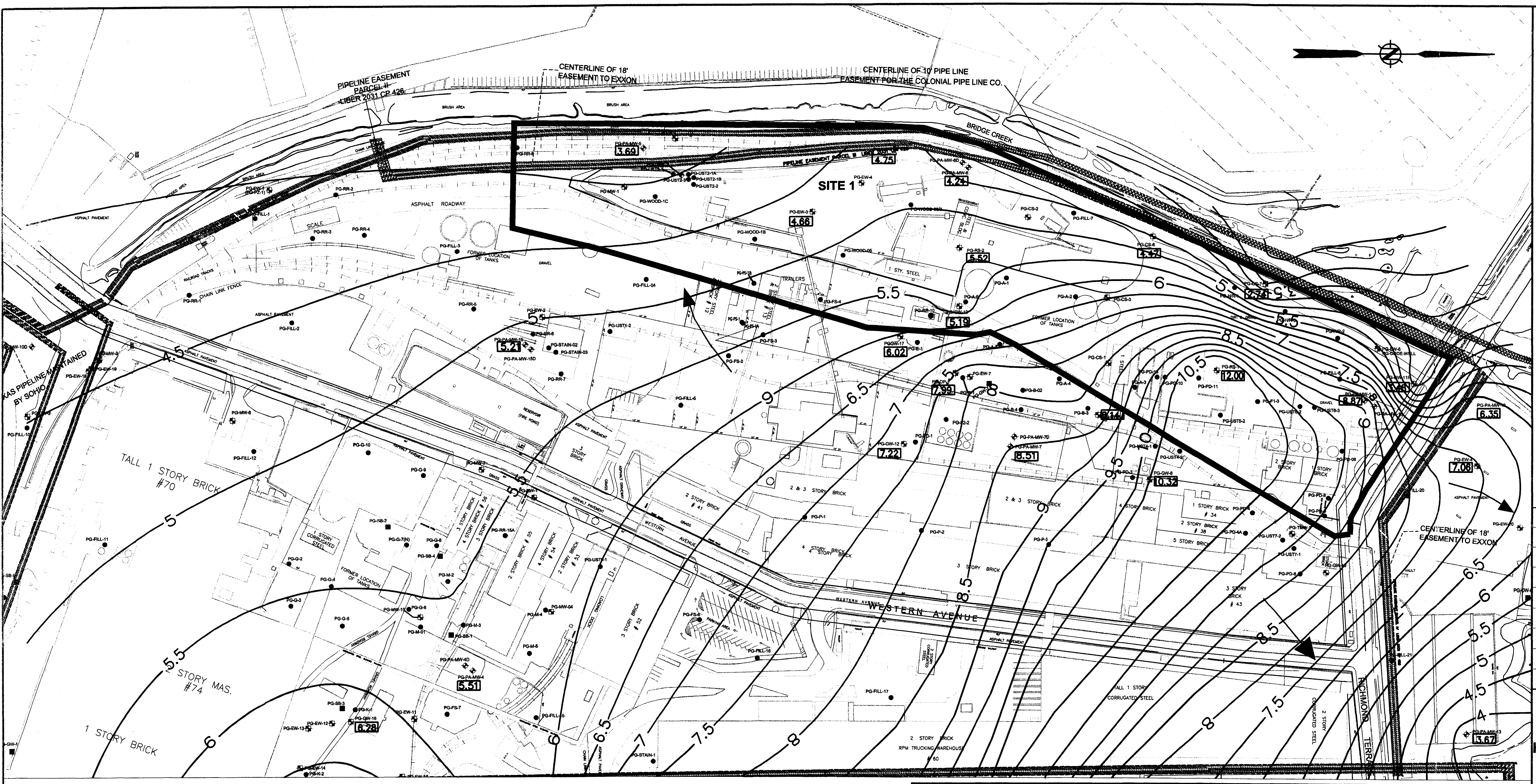
Three general types of historic fill material were identified through the SI program with regard to Site 1: (1) urban fill including soil fill, vegetative debris, construction debris (wood, bricks, glass, concrete); (2) cinder fill consisting primarily of ash and ash-type materials with some slag; and, (3) by-products from production 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 1. The second type of fill material, cinders, was noted to be present in significant quantities in certain locations. In particular, cinder fill was noted to be present at the northern portion of Site 1 at soil boring locations PD-8 and PG-PAMW-1 as well as at the southern portion of Site 1 at soil boring locations PG-PAMW-5, FS-1B, A-1, A-2, A-3, A-6, Wood-01C, RR-8 and RR-10. The third type of fill material, by-product fill, was encountered just underneath the surface as well as at varying depths across Site 1. The by-product fill ranged in color from various stacks of white to green to blue to gray and to black in numerous locations of Site 1. The by-product fill material was readily distinguishable from the other fill types encountered. With very small grain sizes it takes on paste-/powder-like characteristics when wet. The by-product fill is located across the majority of Site 1 in varying depths and thickness: PG-PAMW-1 (3-17 feet bgs), H/R-2 (1-16 feet bgs), H/R-3 (1-17 feet bgs), PD-6 (6-10 feet bgs), Fill-7 (10-23 feet bgs), Fill-8 (4-17.5 feet bgs), PD-10 (5-17 feet bgs), PD-11 (6-17 feet bgs), MW-6 (8.5-20 feet bgs), A-2 (2-15 feet bgs), A-3 (8-12 feet bgs), UST2-3 (9-14 feet bgs), UST5-2 (4-14 feet bgs), UST6-2 (3-18 feet bgs), UST6-3 (5.3-17 feet bgs), and FS-1B (7-13 feet bgs). The by-product fill was not observed in soil borings PD-8, FS-4, RR-8, A-6, Wood-5 or UST2-2.

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 feet bgs in PA-MW-5 to 30 feet bgs in PA-MW-14D. The peat layer was noted to be present at most, but not all, boring locations. SI soil boring logs, including those logs for borings, which were finished as monitoring wells are provided in Appendix C. Figure 5, Cross-Section, presents soil conditions at Site 1.

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 (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 30 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 conditions specific to Site 1.

Figure 8 depicts the plot of the 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 or heterogeneous 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



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NOTES:
1. ELEVATION IN FEET ABOVE MEAN SEA LEVEL (BOGART SYSTEM)
2. 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

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)
HHMT-PORT IVORY FACILITY

SITE 1
WATER TABLE CONTOUR MAP, SHALLOW WELLS, 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.

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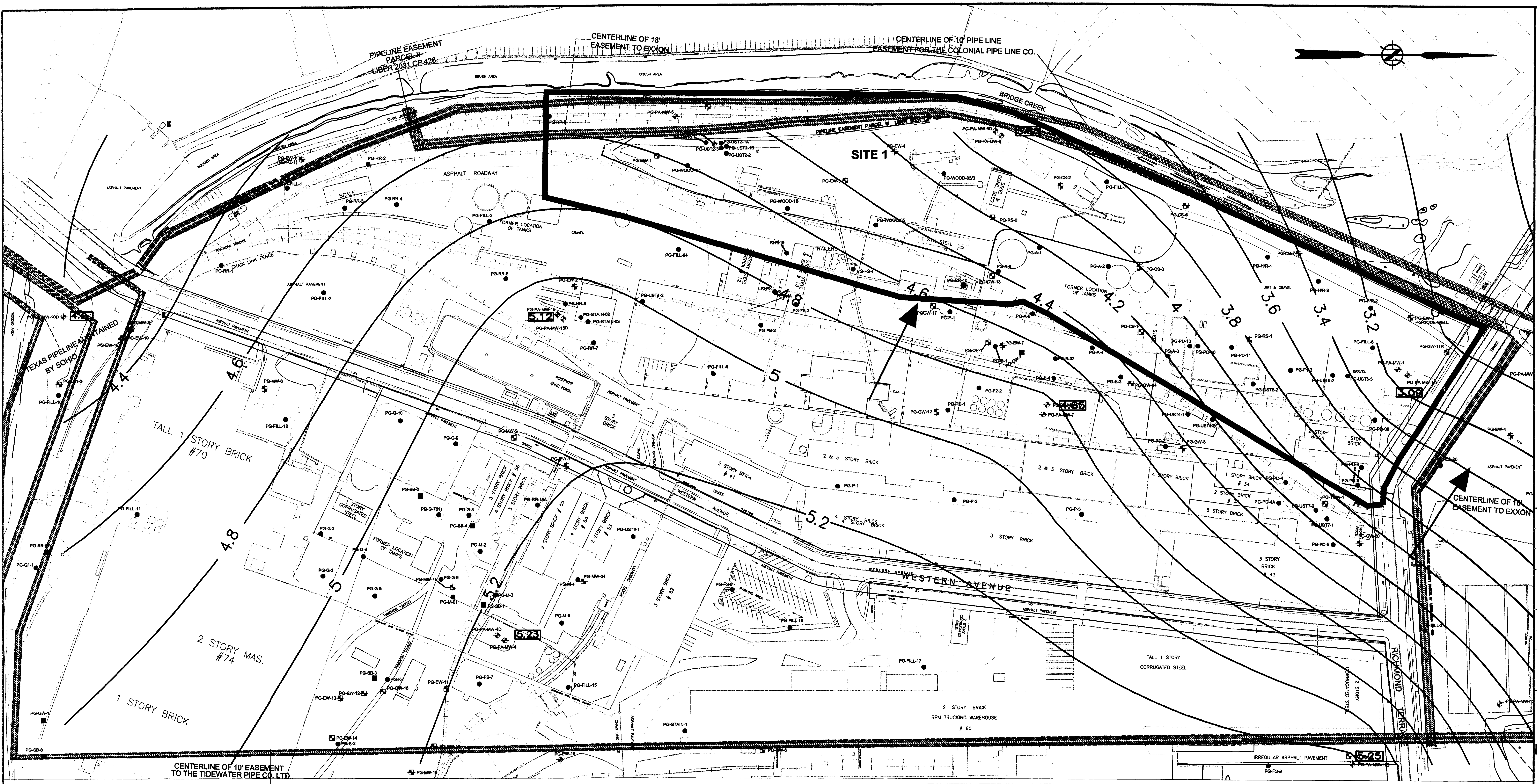
from northwest to southeast, across the northern portion of the site. Groundwater flow direction in the upper aquifer across Site 1, is generally from the east to the west flowing towards Bridge Creek. Steep hydraulic gradients are mapped for the northwest portion of Site 1, adjacent to Bridge Creek. Less permeable historic fill materials (by-product fill) deposited in this portion of the site may contribute to the mounding/hydraulic divide effects observed in this portion of the site. Flow dynamics in the upper aquifer of Site 1, must take into consideration the low permeability and low porosity characteristics of the historic, by-product fill material. The thicknesses and depths of the historic 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 (Sites 2 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.

Figure 9 depicts the plot of the deep overburden aquifer potentiometer surface for the November 2000 groundwater-sampling event. As depicted on Figure 9, Potentiometer Surface Contour Map, the deep overburden saturated zone exhibits a more uniform isotropic flow. A hydraulic gradient of 0.0021 ft/ft across was calculated across the site and groundwater is observed flowing toward the adjacent surface water bodies (Bridge Creek to the west, the Arthur Kill to the west/southwest and the Kill Van Kull to the North). This contrasts with Figure 8 for the shallow overburden aquifer underlying Site 1, 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 deeper underlying aquifer. Thus, establishing predominantly horizontal flow conditions in each of these saturated overburden zones.

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-1D and MW-6D). As described previously, deep wells were screened in the first encountered permeable formation beneath the observed (or inferred) depth of the peat layer.

HMM employed the use of data loggers to assess whether groundwater movement beneath the subject sites was influenced by the tidal fluctuations of the adjacent to the northern end of Future Site 4. Data loggers were placed in four shallow groundwater monitoring wells and one deep groundwater-monitoring well to monitor ground water 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



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

100 0 100 200
SCALE IN FEET

LEGEND

▨	UTILITY EASEMENT	—4.5—	POTENTIOMETRIC CONTOUR
—┼—┼—	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) HHMT-PORT IVORY FACILITY

SITE 1 WATER TABLE CONTOUR MAP, DEEP WELLS, 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.

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Date

Contract Number

Drawing Number FIGURE 9

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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.

6.1.3 Surface Water

Bridge Creek is located on 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). The NYSDEC, 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 water can support fish survival and limited fishing. No discoloration of surface water in the stream was noted at the time of sampling. Bridge Creek is considered a tidal, saline stream due to the influence of the Arthur Kill.

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 three potential locations at Site 1 (UST2, UST5 and UST6). 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 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 (Area UST2), a temporary well (TMW-02) was installed, in addition to soil borings, to further evaluate the subsurface conditions and attempt to identify impacts to groundwater, if any. Discussions of the sampling frequency for the three potential UST areas are provided in Section 5.3.1.

6.3 Soil Analytical Data

As described in Section 5, 77 soil samples were collected from 42 soil borings at Site 1. The locations of the SI soil borings are presented on Figure 7. The samples 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-5E. Figures 10 through 15 provide soil boring locations as well as pertinent analytical data. 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

VOCs were either not detected or were detected below NYSDEC TAGM RSCOs in all but three of the soil samples collected from Site 1: F1-3 (1-3 feet), PD-8 (8-10 feet) and PD-8 (16-17 feet). Specifically, F1-3 exhibited an exceedance of total xylenes (combined total of o&p-xylenes and m-xylene) and dichloromethane and two samples from soil boring PD-8 exhibited exceedances of methylbenzene (toluene). In these instances, the contaminant was detected only marginally above the established RSCO. Dichloromethane was detected at a concentration of 0.22 mg/kg and total xylenes were detected at 1.24 mg/kg in the sample from F1-3. Methylbenzene was detected at 3.3 mg/kg and 1.8 mg/kg, respectively. The total VOC concentration was below the NYSDEC guidance criteria of 10 mg/kg for all samples from Site 1 including the results for the three above listed samples: total VOCs have been calculated and are presented in Table 5A. In fact, the highest concentration of total VOCs is 3.43 mg/kg, detected in sample PD-8 (8-10 feet). 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 1. 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 1: benzo(b)fluoranthene, benzo(a)pyrene, benzo(a)anthracene, dibenz(a,h)anthracene, benzo(k)flouranthene, 4-chloro-3-methylphenol, 4-nitrophenol and phenol. Analytical results did not reveal the presence of any single SVOC in excess of 50 mg/kg

PG-PA-MW-5

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.33	0' to 2'
Benzo[a]pyrene :	0.31	0' to 2'
Dibenz[a,h]anthracene :	0.12 J	0' to 2'

PG-UST2-1

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.47	6' to 7'
Benzo[a]pyrene :	0.28	6' to 7'
1,2-Benzphenanthracene	12	8' to 10'
Benzo[a]anthracene :	8.8	8' to 10'
Benzo[a]pyrene :	5.9 J	8' to 10'
Benzo[b]flouranthene:	4.1 J	8' to 10'
Dibenz[a,h]anthracene :	2.3 J	8' to 10'

PG-UST2-3

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	11	7.5' to 9'
Benzo[a]pyrene :	5.8	7.5' to 9'
Benzo[b]flouranthene:	6.8	7.5 to 9'
Benzo[k]flouranthene:	2.3 J	7.5' to 9'
Benzo[a]pyrene :	0.099 J	12' to 14'

PG-UST2-2

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	2.5	10' to 12'
Benzo[a]pyrene :	1.4	10' to 12'

PG-WOOD-05

ANALYTE	RES	DEPTH
SVOC		
Phenol:	1.2	2' to 4'

PG-FS-4

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.15 J	0.5' to 1'

PG-UST2-1A

ANALYTE	RES	DEPTH
SVOC		
4-Nitrophenol	1.5	0' to 2'
Benzo[a]anthracene :	1.1	0' to 2'
Benzo[a]pyrene :	0.95	0' to 2'
Benzo[b]flouranthene:	1.4	0' to 2

PG-UST2-1B

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.19 J	2' to 4'
Benzo[a]anthracene :	1.7 J	4' to 5.5'
Benzo[a]pyrene :	1.5 J	4' to 4.5'
Benzo[b]flouranthene:	1.4 J	4' to 5.5'

PG-WOOD-03

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.95	2' to 4'
Benzo[a]pyrene :	0.97	2' to 4'
Benzo[b]flouranthene:	2.5	2' to 4'

PG-PA-MW-6

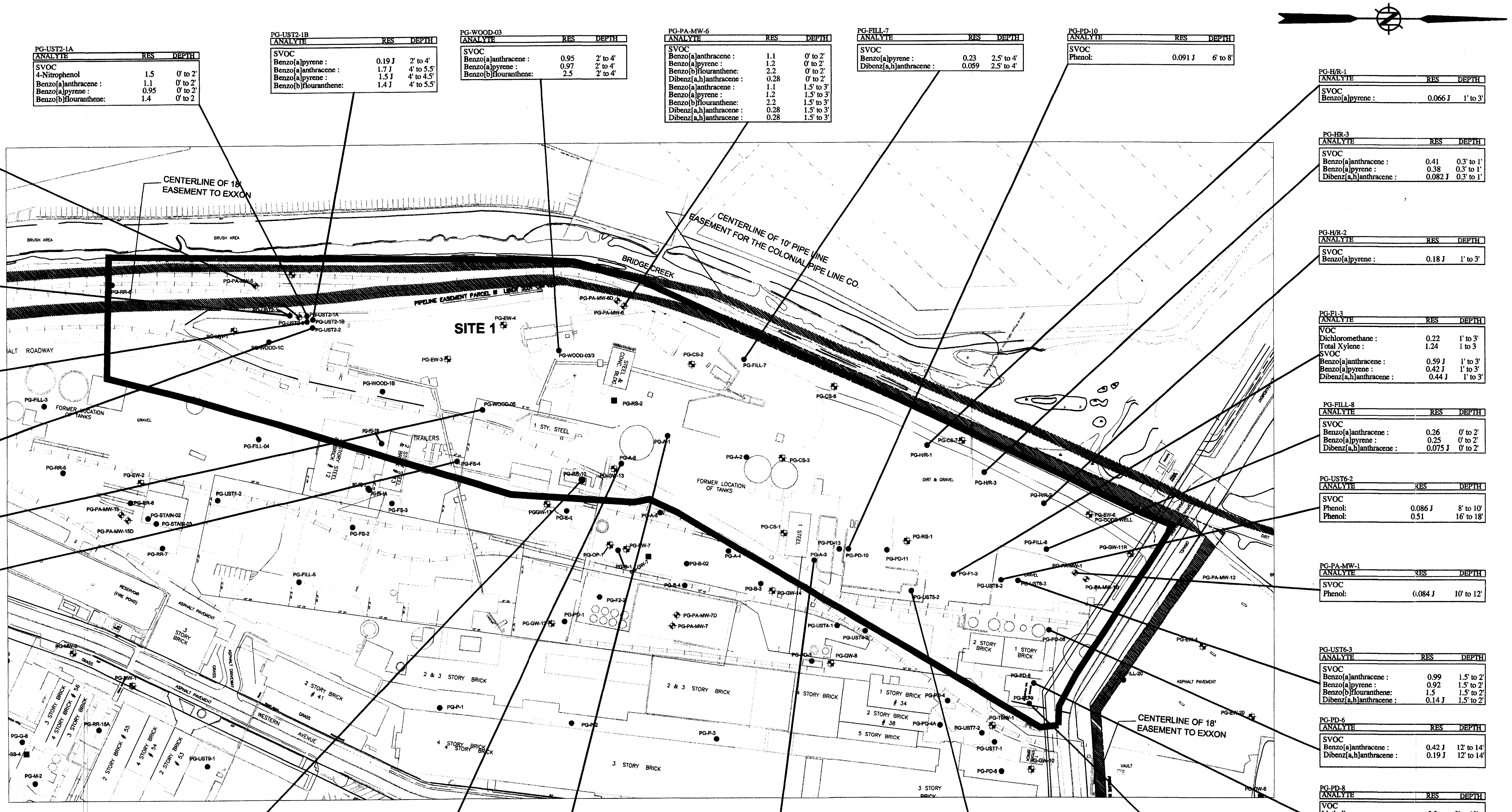
ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	1.1	0' to 2'
Benzo[a]pyrene :	1.2	0' to 2'
Benzo[b]flouranthene:	2.2	0' to 2'
Dibenz[a,h]anthracene :	0.28	0' to 2'
Benzo[a]anthracene :	1.1	1.5' to 3'
Benzo[a]pyrene :	1.2	1.5' to 3'
Benzo[b]flouranthene:	2.2	1.5' to 3'
Dibenz[a,h]anthracene :	0.28	1.5' to 3'
Dibenz[a,h]anthracene :	0.28	1.5' to 3'

PG-FILL-7

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.23	2.5' to 4'
Dibenz[a,h]anthracene :	0.059	2.5' to 4'

PG-PD-10

ANALYTE	RES	DEPTH
SVOC		
Phenol:	0.091 J	6' to 8'



PG-H/R-1

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.066 J	1' to 3'

PG-HR-3

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.41	0.3' to 1'
Benzo[a]pyrene :	0.38	0.3' to 1'
Dibenz[a,h]anthracene :	0.082 J	0.3' to 1'

PG-H/R-2

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.18 J	1' to 3'

PG-F1-3

ANALYTE	RES	DEPTH
VOC		
Dichloromethane :	0.22	1' to 3'
Total Xylene ;	1.24	1 to 3
SVOC		
Benzo[a]anthracene :	0.59 J	1' to 3'
Benzo[a]pyrene :	0.42 J	1' to 3'
Dibenz[a,h]anthracene :	0.44 J	1' to 3'

PG-FILL-8

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.26	0' to 2'
Benzo[a]pyrene :	0.25	0' to 2'
Dibenz[a,h]anthracene :	0.075 J	0' to 2'

PG-UST6-2

ANALYTE	RES	DEPTH
SVOC		
Phenol:	0.086 J	8' to 10'
Phenol:	0.51	16' to 18'

PG-PA-MW-1

ANALYTE	RES	DEPTH
SVOC		
Phenol:	0.084 J	10' to 12'

PG-UST6-3

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.99	1.5' to 2'
Benzo[a]pyrene :	0.92	1.5' to 2'
Benzo[b]flouranthene:	1.5	1.5' to 2'
Dibenz[a,h]anthracene :	0.14 J	1.5' to 2'

PG-PD-6

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.42 J	12' to 14'
Dibenz[a,h]anthracene :	0.19 J	12' to 14'

PG-PD-8

ANALYTE	RES	DEPTH
VOC		
Methylbenzene :	3.3	8' to 10'
Methylbenzene :	1.8	16' to 17'
SVOC		
Phenol:	0.22 J	16' to 17'

PG-RR-10

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.39	2' to 2.5'
Benzo[a]pyrene :	0.15 J	2' to 2.5'

PG-A-6

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.65	1' to 3'
Benzo[a]pyrene :	0.67	1' to 3'
Benzo[b]flouranthene:	1.3	1' to 3'
Dibenz[a,h]anthracene :	0.17	1' to 3'

PG-A-1

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.24	2' to 4'
Benzo[a]pyrene :	0.19 J	2' to 4'
Dibenz[a,h]anthracene :	0.063 J	0' to 2'

PG-A-3

ANALYTE	RES	DEPTH
SVOC		
Phenol:	0.28 J	2.4' to 4'
Phenol:	0.26 J	6.0' to 8.0'
Phenol:	0.20 J	10' to 12'

PG-UST5-2

ANALYTE	RES	DEPTH
SVOC		
Phenol:	0.21 J	4' to 6'

PG-PD-9

ANALYTE	RES	DEPTH
SVOC		
Phenol:	1.3	8' to 10'

RECOMENDED SOIL CLEANUP OBJECTIVES

COMPOUND	RSCO (mg/kg)
VOC	
Dichloromethane :	0.1
Methylbenzene :	1.5
Total Xylene :	1.2
SVOC	
4-Chloro-3-Methylphenol :	0.240 or MDL
4-Nitrophenol:	0.100 or MDL
Benzo[a]anthracene :	0.224 of MDL
Benzo[a]pyrene :	0.061 or MLD
Benzo[b]flouranthene:	1.1
Benzo[k]flouranthene:	1.1
Dibenz[a,h]anthacene :	0.014 or MDL
Phenol:	0.03 or MDL

MDL - METHOD DETECTION LIMIT
NS - NO STANDARD

100 0 100 200
SCALE IN FEET

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
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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THE PORT AUTHORITY
OF NY & NJ

ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

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

SITE 1 DISTRIBUTION OF VOCs AND SVOCs 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.

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Date

Contract Number

Drawing Number **FIGURE 10**

P:\232952wmd\Operable Unit Reports\Operable Unit 1\Mapping\POST VCP Mapping 8-11-04\3rd Drafts, PA Revisions\SITE 1 ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/20/04 4:29 pm

does not include C-PAHs

in samples from Site 1; the highest concentration of a single SVOC was pyrene at a concentration of 45 mg/kg in sample UST2-1 (8 to 10 feet). All total SVOC concentrations were below the NYSDEC guidance criteria of 500 mg/kg for total SVOCs. Total SVOCs ranged from not-detected (5 samples) to 151.9 mg/kg in sample UST2-1 (8 to 10 feet). It should be noted that a temporary monitoring well (TMW-02) was installed at the UST2 Area based on field observations. Analytical information from groundwater sampling is presented in Section 6.4. However, with respect to SVOC concentrations identified in sample UST2-1, it should be noted that no VOCs or SVOCs were detected in groundwater at this locations. Please refer to Table 5B and Figure 10 for a summary of SVOC results for soil at Site 1. Total SVOCs have been calculated and are presented in Table 5B.

All C-pah's are very low but several exceed TAGM

6.3.3 *Polychlorinated Biphenyls*

Two specific PCBs, Aroclor 1254 and Aroclor 1260 were detected in several soil samples from Site 1. Aroclor 1254 was detected in 8 samples and Aroclor 1260 was detected in 14 samples. One sample from the surficial interval, Fill-8 (0-2 feet) exhibited a concentration slightly in excess of the RSCO for surface soil of 1 mg/kg. Aroclor 1260 was detected at a concentration of 1.5 mg/kg in Sample Fill-8 (0-2 feet). None of the samples collected from the subsurface exceed 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. V. minor exceedances PCB's.

6.3.4 Pesticides

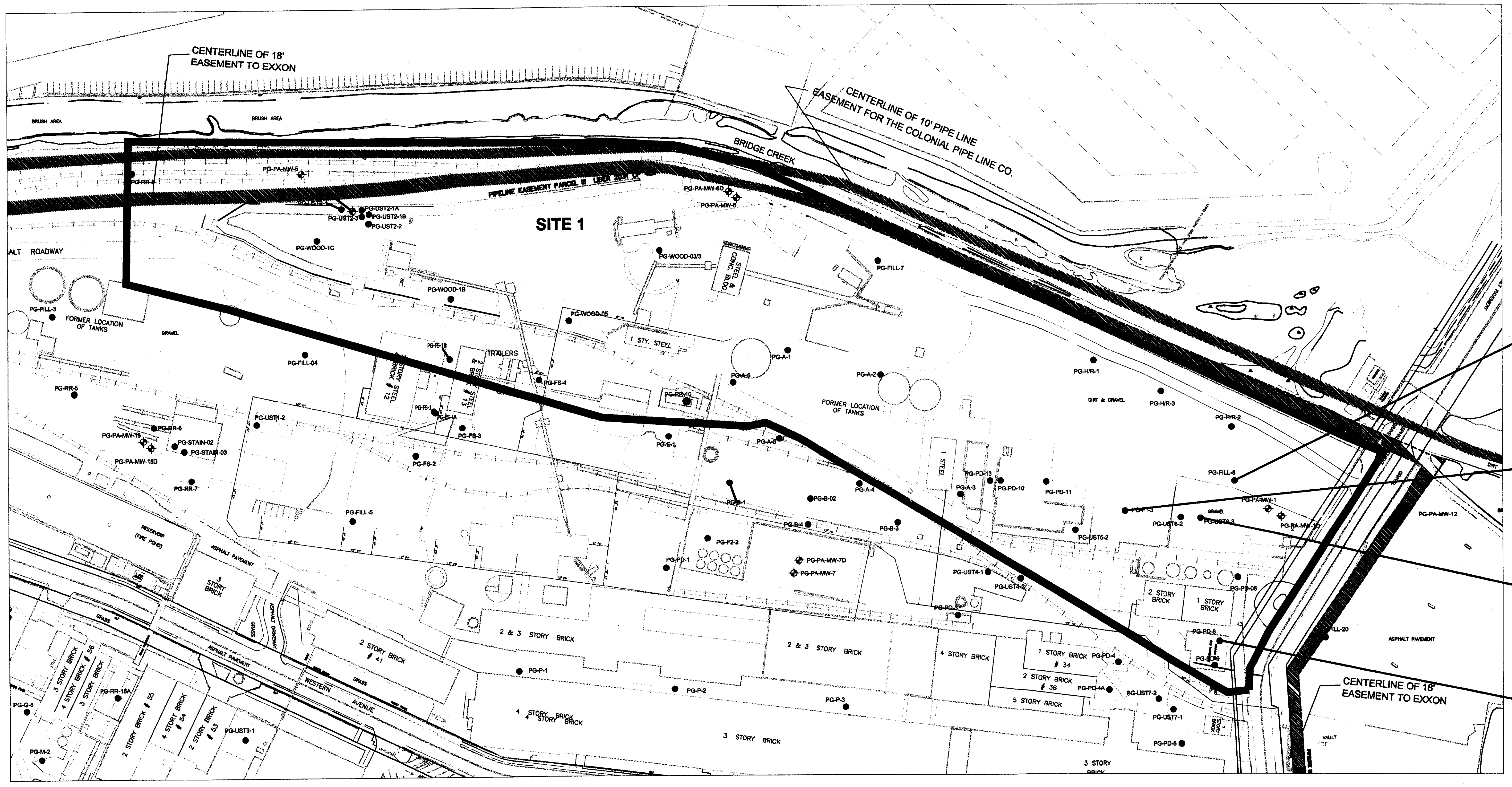
Three pesticide compounds, endrin, dieldrin and heptachlor epoxide, were detected in excess of corresponding TAGM RSCOs in samples collected from Site 1. Specifically, endrin was detected at concentrations in excess of its corresponding NYDEC TAGM RSCO in three samples range; heptachlor epoxide was detected in excess of its corresponding RSCO in two samples range and dieldrin was detected in excess of its corresponding RSCO in two samples range. Please refer to Table 5C and Figure 11 for a summary of pesticides results.

V. minor exceedances ~~however no samples other than [illegible] type of site~~

6.3.5 Metals

All TAL metals were detected in at least one soil sample collected as part of the SI of Site 1. The NYSDEC TAGM generally regards site background as an appropriate concentration for the 24 TAL metals and only provides RSCOs for only 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 historic 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 RSCO, the upper limit

P:\232952wmd\Operable Unit Reports\Operable Unit 1\Mapping\POST VCP Mapping 8-11-04\3rd Drafts, PA Revisions\SITE 1 ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/20/04 4:29 pm



PG-FILL-8

ANALYTE	RES	DEPTH
AROCLOR 1254	1.5	0 to 2
TOTAL PCBs	1.5	0 to 2

PG-F1-3

ANALYTE	RES	DEPTH
ENDRIN	0.19	1 to 3
ENDRIN	0.012	3 to 5

PG-UST6-3

ANALYTE	RES	DEPTH
DIELDRIN :	0.077	1.5 to 2
ENDRIN	0.1	1.5 to 2
HEPTACHLOR EPOXIDE :	0.036	1.5 to 2

PG-PD-8

ANALYTE	RES	DEPTH
DIELDRIN :	0.054	8 to 10
ENDRIN	0.16	8 to 10
DIELDRIN :	0.40	16 to 17
ENDRIN	0.39	16 to 17
HEPTACHLOR EPOXIDE :	0.09	16 to 17

100 0 100 200
SCALE IN FEET

RECOMENDED SOIL CLEANUP OBJECTIVES

COMPOUND	RSCO (mg/kg)
DIELDRIN :	0.044
ENDRIN :	0.1
HEPTACHLOR EPOXIDE :	0.02
AROCLOR 1250 :	NS
TOTAL PCBs :	1 (SURFACE)

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

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	ANALYTE	INDICATES COMPOUND FOR WHICH LABORATORY ANALYSIS WAS CONDUCTED
PG-PA-MW-6 ⊕	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION	RES	CONTAMINANT CONCENTRATION IN MG/KG
PG-WOOD-03/3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION	DEPTH	DEPTH IN FEET BELOW GROUND SURFACE

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ENGINEERING DEPARTMENT

Title

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

SITE 1 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.

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Date

Contract Number

Drawing Number **FIGURE 11**

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 exceedances of RSCOs in one or more soil samples for 12 of the 13 of the metals with established guidance criteria; vanadium was not detected in excess of its RSCO in any of the soil samples from Site 1. With the exception of manganese and potassium, the remaining metals were detected in excess of the upper limit of the background standards in one or more samples collected from the site. 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. Analytical results from this sampling performed at Site 1 revealed concentrations of lead ranging from not detected to 630 mg/kg. The Eastern US Background guidance for lead is 500 mg/kg. Analytical results revealed the presence of lead above the Eastern US Background guidance in two soil samples: lead was detected at 630 mg/kg in sample PG-A-6 (1 to 3 feet) and at 580 mg/kg in sample Wood-3 (2 to 4 feet). Concentrations of arsenic, cadmium, chromium and mercury ranged from not detected to above corresponding RSCOs. Arsenic, a common fill contaminant, was detected above its RSCO in approximately half of the samples collected from Site 1, with the majority of the elevated concentrations ranging from just above the RSCO of 7.5 mg/kg to 50 mg/kg. Chromium was detected above its RSCO in fewer samples, with only six samples exhibiting concentrations above the Eastern US Background guidance for arsenic of 40 mg/kg. Mercury was detected above its RSCO in approximately one quarter of the samples, with only two samples exhibiting concentrations in excess of 1 mg/kg. Cadmium was detected above its RSCO in only 6 of 76 soil samples, with only two samples exhibiting concentrations in excess of 4 mg/kg. Please refer to Table 5D and Figure 12 for a summary of metals results.

Pb

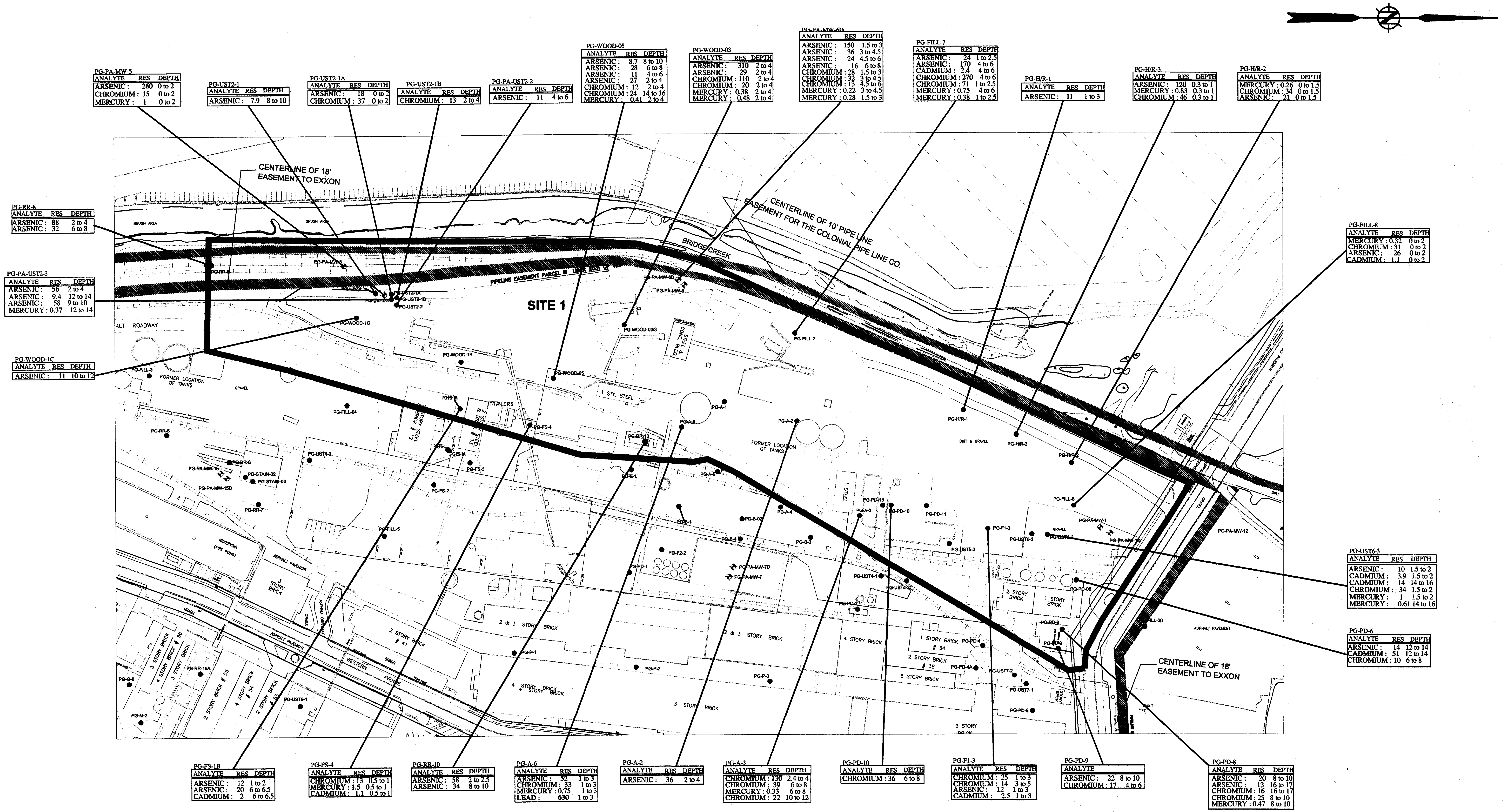
X

6 samples which range between 3 and 18 ppm — rest about 1 ppm or less.

6.3.6 Cyanide and Total Phenolics

Cyanide was detected in several soil samples collected from Site 1. In the majority of instances, cyanide was detected at a concentration of less than 1 mg/kg. However, seven samples collected from Site 1 revealed the presence of cyanide at a concentration greater than 1 mg/kg. The seven samples reflect only 3 site locations: PD-8, Wood-3 and PG-MW-6. 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.

no figure,
for cyanide



PG-PA-MW-5

ANALYTE	RES	DEPTH
ARSENIC :	260	0 to 2
CHROMIUM :	15	0 to 2
MERCURY :	1	0 to 2

PG-UST2-1

ANALYTE	RES	DEPTH
ARSENIC :	7.9	8 to 10

PG-UST2-1A

ANALYTE	RES	DEPTH
ARSENIC :	18	0 to 2
CHROMIUM :	37	0 to 2

PG-UST2-1B

ANALYTE	RES	DEPTH
CHROMIUM :	13	2 to 4

PG-PA-UST2-2

ANALYTE	RES	DEPTH
ARSENIC :	11	4 to 6

PG-WOOD-05

ANALYTE	RES	DEPTH
ARSENIC :	8.7	8 to 10
ARSENIC :	28	6 to 8
ARSENIC :	11	4 to 6
ARSENIC :	27	2 to 4
CHROMIUM :	12	2 to 4
CHROMIUM :	24	14 to 16
MERCURY :	0.41	2 to 4

PG-WOOD-03

ANALYTE	RES	DEPTH
ARSENIC :	310	2 to 4
ARSENIC :	29	2 to 4
CHROMIUM :	110	2 to 4
CHROMIUM :	20	2 to 4
MERCURY :	0.38	2 to 4
MERCURY :	0.48	2 to 4

PG-PA-MW-6D

ANALYTE	RES	DEPTH
ARSENIC :	150	1.5 to 3
ARSENIC :	36	3 to 4.5
ARSENIC :	24	4.5 to 6
ARSENIC :	16	6 to 8
CHROMIUM :	28	1.5 to 3
CHROMIUM :	32	3 to 4.5
CHROMIUM :	13	4.5 to 6
MERCURY :	0.22	3 to 4.5
MERCURY :	0.28	1.5 to 3

PG-FILL-7

ANALYTE	RES	DEPTH
ARSENIC :	24	1 to 2.5
ARSENIC :	170	4 to 6
CADMIUM :	2.4	4 to 6
CHROMIUM :	270	4 to 6
CHROMIUM :	71	1 to 2.5
MERCURY :	0.75	4 to 6
MERCURY :	0.38	1 to 2.5

PG-H/R-1

ANALYTE	RES	DEPTH
ARSENIC :	11	1 to 3

PG-H/R-3

ANALYTE	RES	DEPTH
ARSENIC :	120	0.3 to 1
MERCURY :	0.83	0.3 to 1
CHROMIUM :	46	0.3 to 1

PG-H/R-2

ANALYTE	RES	DEPTH
MERCURY :	0.26	0 to 1.5
CHROMIUM :	34	0 to 1.5
ARSENIC :	21	0 to 1.5

PG-RR-8

ANALYTE	RES	DEPTH
ARSENIC :	88	2 to 4
ARSENIC :	32	6 to 8

PG-PA-UST2-3

ANALYTE	RES	DEPTH
ARSENIC :	56	2 to 4
ARSENIC :	9.4	12 to 14
ARSENIC :	58	9 to 10
MERCURY :	0.37	12 to 14

PG-WOOD-1C

ANALYTE	RES	DEPTH
ARSENIC :	11	10 to 12

PG-FILL-8

ANALYTE	RES	DEPTH
MERCURY :	0.32	0 to 2
CHROMIUM :	31	0 to 2
ARSENIC :	26	0 to 2
CADMIUM :	1.1	0 to 2

PG-UST6-3

ANALYTE	RES	DEPTH
ARSENIC :	10	1.5 to 2
CADMIUM :	3.9	1.5 to 2
CADMIUM :	14	14 to 16
CHROMIUM :	34	1.5 to 2
MERCURY :	1	1.5 to 2
MERCURY :	0.61	14 to 16

PG-PD-6

ANALYTE	RES	DEPTH
ARSENIC :	14	12 to 14
CADMIUM :	51	12 to 14
CHROMIUM :	10	6 to 8

PG-FS-1B

ANALYTE	RES	DEPTH
ARSENIC :	12	1 to 2
ARSENIC :	20	6 to 6.5
CADMIUM :	2	6 to 6.5

PG-FS-4

ANALYTE	RES	DEPTH
CHROMIUM :	13	0.5 to 1
MERCURY :	1.5	0.5 to 1
CADMIUM :	1.1	0.5 to 1

PG-RR-10

ANALYTE	RES	DEPTH
ARSENIC :	58	2 to 2.5
ARSENIC :	34	8 to 10

PG-A-6

ANALYTE	RES	DEPTH
ARSENIC :	52	1 to 3
CHROMIUM :	33	1 to 3
MERCURY :	0.75	1 to 3
LEAD :	630	1 to 3

PG-A-2

ANALYTE	RES	DEPTH
ARSENIC :	36	2 to 4

PG-A-3

ANALYTE	RES	DEPTH
CHROMIUM :	130	2.4 to 4
CHROMIUM :	39	6 to 8
MERCURY :	0.33	6 to 8
CHROMIUM :	22	10 to 12

PG-PD-10

ANALYTE	RES	DEPTH
CHROMIUM :	36	6 to 8

PG-F1-3

ANALYTE	RES	DEPTH
CHROMIUM :	25	1 to 3
CHROMIUM :	14	3 to 5
ARSENIC :	12	1 to 3
CADMIUM :	2.5	1 to 3

PG-PD-9

ANALYTE		
ARSENIC :	22	8 to 10
CHROMIUM :	17	4 to 6

PG-PD-8

ANALYTE	RES	DEPTH
ARSENIC :	20	8 to 10
ARSENIC :	13	16 to 17
CHROMIUM :	16	16 to 17
CHROMIUM :	25	8 to 10
MERCURY :	0.47	8 to 10

☐ ELEVATED METALS

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-03/3 ●	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

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

SITE 1 DISTRIBUTION OF SELECT METALS IN SOIL, SITE INVESTIGATION

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Drawing Number FIGURE 12

P:\232952wmd\Operable Unit Reports\Operable Unit 1\Mapping\POST VCP Mapping 8-11-04\3rd Drafts, PA Revisions\SITE 1 ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/20/04 4:29 pm

Total phenolics were detected in 11 samples collected from Site 1. The concentrations ranged from 1.6 mg/kg to 25 mg/kg. 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.

6.3.7 Petroleum Hydrocarbons/Oil and Grease

Ignored comment !!

TPHC and O/G were detected in the majority of SI soil samples collected from Site 1 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 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 and 500 mg/kg for total SVOCs.

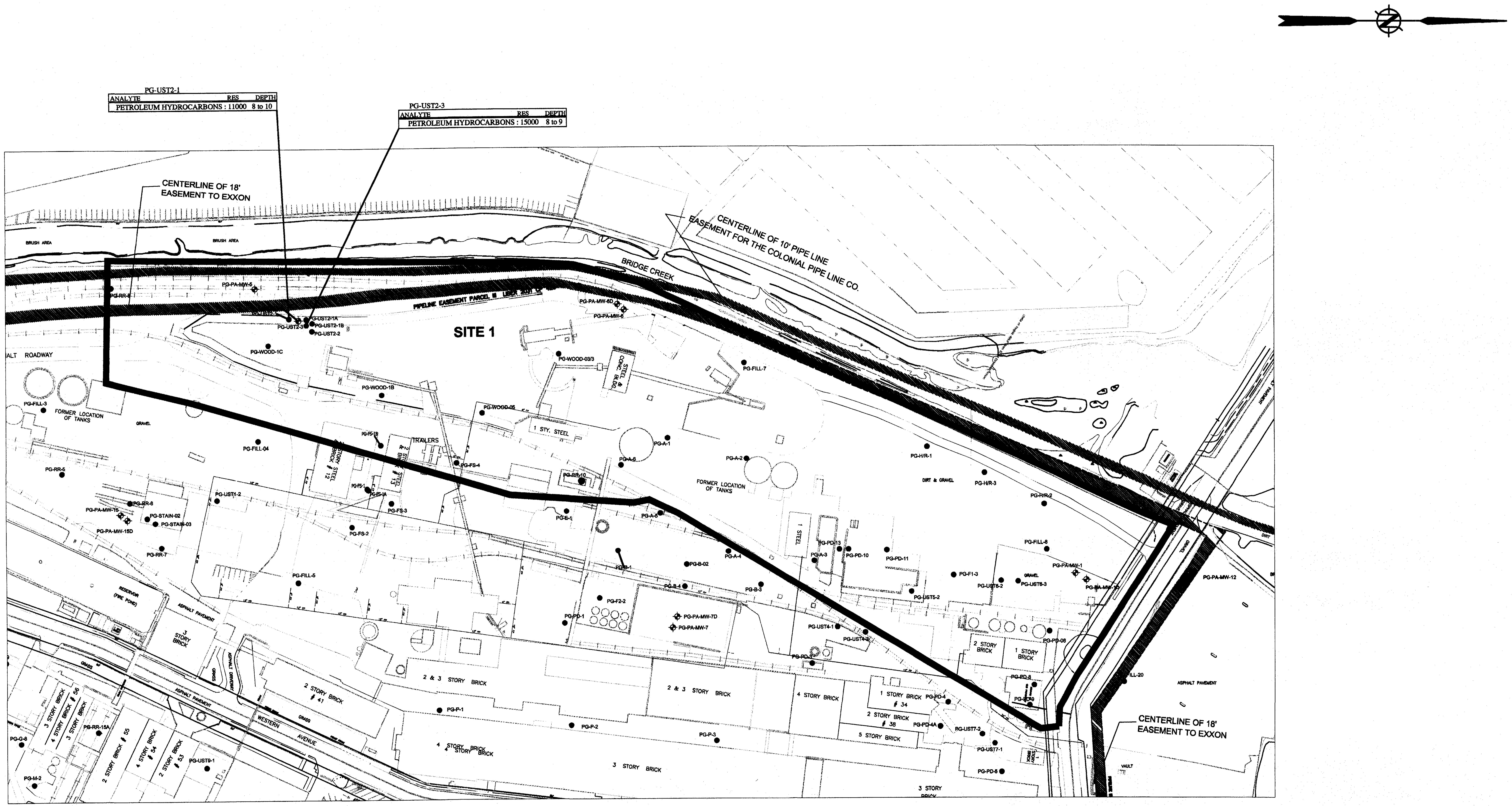
check comments

Overall, two samples from Site 1 exhibited concentrations of TPHC in excess of 10,000 mg/kg. Both samples were collected from the Area UST2, UST2-1 (8 to 10 feet) and UST2-3 (7.5 to 9 feet). The samples also exhibited concentrations of O/G in excess of 10,000 mg/kg. Neither sample exhibited concentrations of individual or total VOCs in excess of corresponding RSCOs. With regard to SVOC concentrations, base neutral (BN) compound, generally PAH compounds were detected in these samples. Although a few of the individual BN compounds were detected in excess of RSCO's, none of the detected concentrations was in excess of the 50 mg/kg NYSDEC guidance threshold for individual SVOCs. Further, neither sample exhibited a total SVOC concentration in excess of the 500 mg/kg guidance criteria of 500 mg/kg for total SVOCs in soil.

O/G were detected at a concentration in excess of 10,000 mg/kg in 13 samples collected from locations throughout Site 1. As stated above, only two samples from Site 1 exhibited concentrations of TPHC in excess of 10,000 mg/kg and both samples also exhibited concentrations of O/G 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 1 ranged from 4.5 to 13 with the majority, approximately 68%, of the values falling between 7.0 and 8.5. It should be noted that all of the samples exhibiting



100 0 100 200
SCALE IN FEET

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	ANALYTE	INDICATES COMPOUND FOR WHICH LABORATORY ANALYSIS WAS CONDUCTED
PG-PA-MW-5	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION	RES	CONTAMINANT CONCENTRATION IN MG/KG
PG-WOOD-03/3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION	DEPTH	DEPTH IN FEET BELOW GROUND SURFACE

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

SITE 1
DISTRIBUTION OF TPHC IN SOIL,
SITE INVESTIGATION

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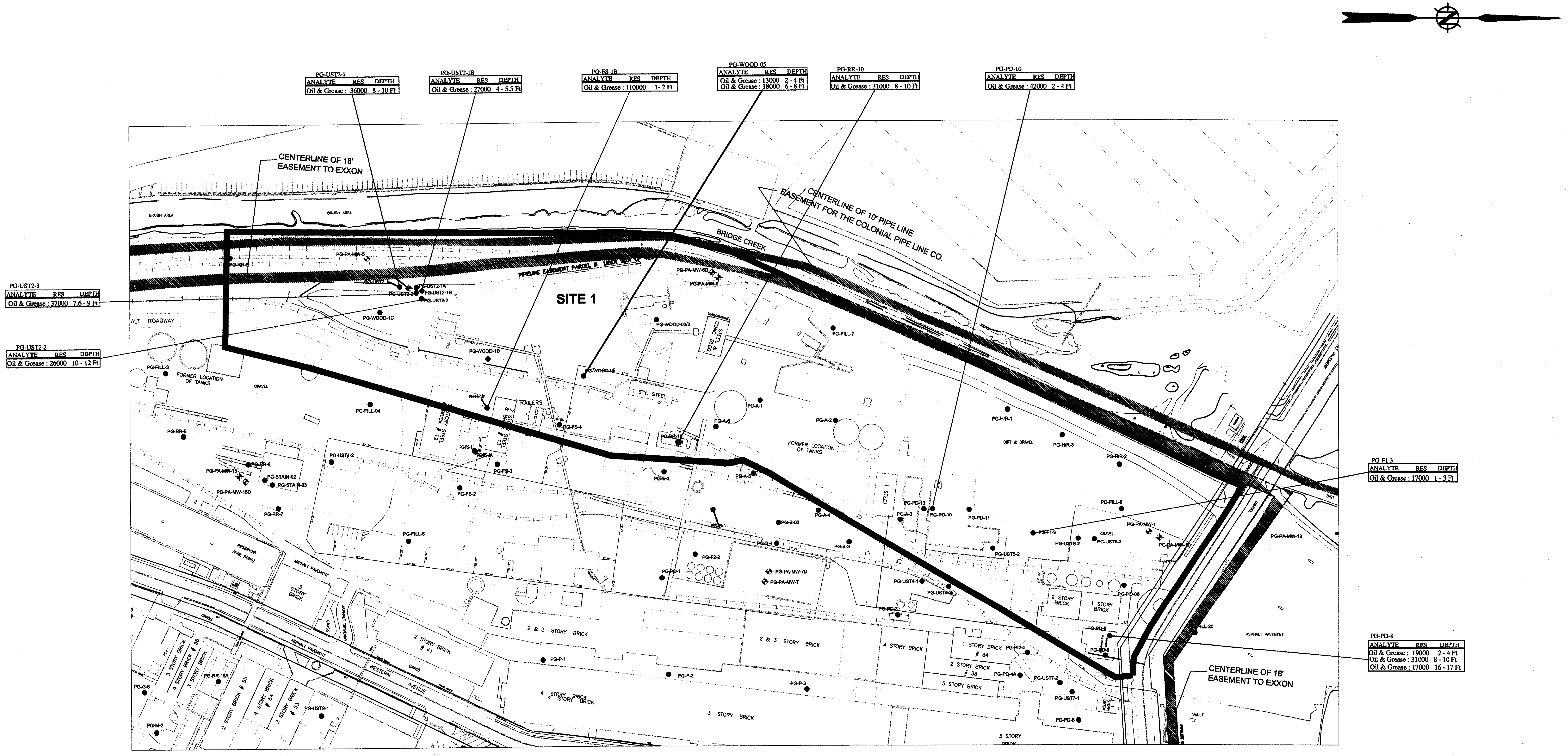
Drawing Number FIGURE 13

P:\232952wmd\Operable Unit Reports\Operable Unit 1\Mapping\POST VCP Mapping 8-11-04\3rd Drafts, PA Revisions\SITE 1 ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/20/04 4:29 pm



PG-UST2-1

ANALYTE	RES	DEPTH
Oil & Grease :	36000	8 - 10 Ft

PG-UST2-1B

ANALYTE	RES	DEPTH
Oil & Grease :	27000	4 - 5.5 Ft

PG-FS-1B

ANALYTE	RES	DEPTH
Oil & Grease :	110000	1- 2 Ft

PG-WOOD-05

ANALYTE	RES	DEPTH
Oil & Grease :	13000	2 - 4 Ft
Oil & Grease :	18000	6 - 8 Ft

PG-RR-10

ANALYTE	RES	DEPTH
Oil & Grease :	31000	8 - 10 Ft

PG-PD-10

ANALYTE	RES	DEPTH
Oil & Grease :	42000	2 - 4 Ft

PG-UST2-3

ANALYTE	RES	DEPTH
Oil & Grease :	37000	7.6 - 9 Ft

PG-UST2-2

ANALYTE	RES	DEPTH
Oil & Grease :	26000	10 - 12 Ft

PG-FI-3

ANALYTE	RES	DEPTH
Oil & Grease :	17000	1 - 3 Ft

PG-PD-8

ANALYTE	RES	DEPTH
Oil & Grease :	19000	2 - 4 Ft
Oil & Grease :	31000	8 - 10 Ft
Oil & Grease :	17000	16 - 17 Ft

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.

L E G E N D

▨	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	ANALYTE	INDICATES COMPOUND FOR WHICH LABORATORY ANALYSIS WAS CONDUCTED
PG-PA-MW-6 ⯐	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION	RES	CONTAMINANT CONCENTRATION IN MG/KG
PG-WOOD-03/3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION	DEPTH	DEPTH IN FEET BELOW GROUND SURFACE

P:\232952wmd\Operable Unit Reports\Operable Unit 1\Mapping\POST VCP Mapping 8-11-04\3rd Drafts, PA Revisions\SITE 1 ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/20/04 4:29 pm

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

SITE 1 DISTRIBUTION OF OIL AND GREASE IN SOIL, SITE INVESTIGATION

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Drawing Number **FIGURE 14**

pH concentrations at or above 11 were collected from by-product fill material present at the site. Please refer to Table 5E and Figure 15 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 five of the existing monitoring wells in Site 1. 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 . Figure 7 presents monitoring well locations and Figure 16 presents pertinent groundwater analytical data for Site 1. For discussion purposes, the results have been compared, as appropriate, to current NYSDEC Ambient Water Quality Standards and Guidance Values (SVGs). The NYSDEC SVGs assume that groundwater is classified as GA, potential drinking water source. Given the location of the site and the potential for water to be saline, the published SVGs are not appropriate for use at this site. However, at this time, these 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

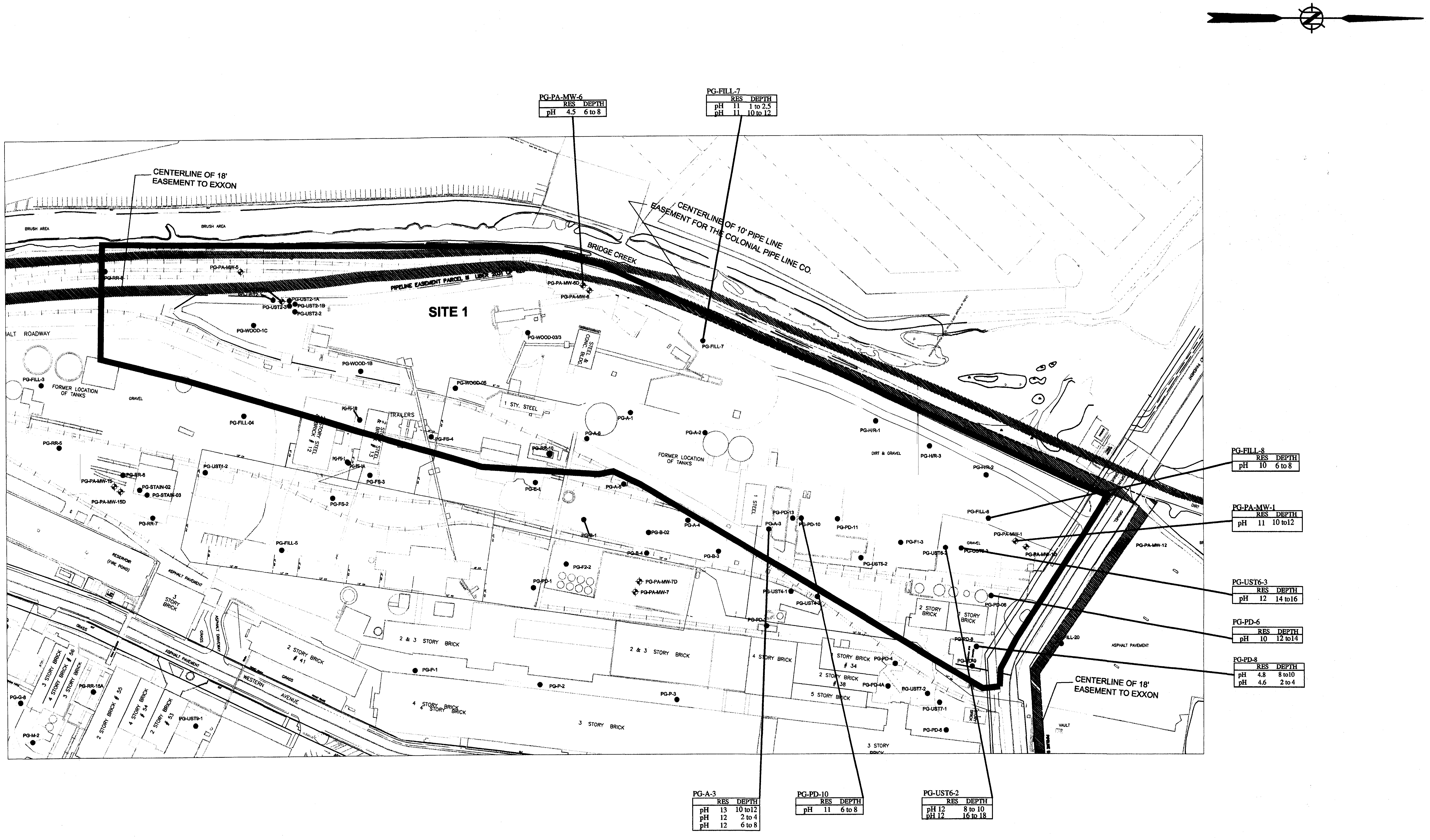
VOCs were either not detected or were detected below NYSDEC groundwater SVGs in all but one groundwater sample in Site 1. The sample from monitoring well PG-CS-7, located at the northwestern portion of Site 1, exhibited exceedances of ethylbenzene and m&p xylenes. Specifically, ethylbenzene was detected at a concentration of 6.7 ug/l and total xylenes were detected at 21.3 ug/l in the groundwater sample from CS-7. Please refer to Table 6A and Figure 16 for VOC results.

very minor exceedances

6.4.2 Semi-Volatile Organic Compounds

V. minor

Only two SVOCs, bis(2ethylhexyl) phthalate and phenol were detected at concentrations in excess of corresponding NYSDEC groundwater SVG. Bis(2ethylhexyl)phthalate was detected in excess of its SVG of 5 ug/l in only a single groundwater sample from Site 1. This compound was detected at a concentration of 8.5 ug/l in the sample from PA-MW-1D located at the northern portion of Site 1. 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. Phenol was detected at a concentration in excess of its SVG in samples from five wells. Phenol was not detected in samples from any



PG-PA-MW-6

	RES	DEPTH
pH	4.5	6 to 8

PG-FILL-7

	RES	DEPTH
pH	11	1 to 2.5
pH	11	10 to 12

PG-FILL-8

	RES	DEPTH
pH	10	6 to 8

PG-PA-MW-1

	RES	DEPTH
pH	11	10 to12

PG-UST6-3

	RES	DEPTH
pH	12	14 to16

PG-PD-6

	RES	DEPTH
pH	10	12 to14

PG-PD-8

	RES	DEPTH
pH	4.8	8 to10
pH	4.6	2 to 4

PG-A-3

	RES	DEPTH
pH	13	10 to12
pH	12	2 to 4
pH	12	6 to 8

PG-PD-10

	RES	DEPTH
pH	11	6 to 8

PG-UST6-2

	RES	DEPTH
pH 12		8 to 10
pH 12		16 to 18

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	ANALYTE	INDICATES COMPOUND FOR WHICH LABORATORY ANALYSIS WAS CONDUCTED
		RES	pH VALUE IDENTIFIED IN SOIL
PG-PA-MW-6	YEAR 2000 SITE INVESTIGATION MONITORING WELL LOCATION	DEPTH	DEPTH IN FEET BELOW GROUND SURFACE
PG-WOOD-03/3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION		

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Drawing Number FIGURE 15

P:\232952wmd\Operable Unit Reports\Operable Unit 1\Mapping\POST VCP Mapping 8-11-04\3rd Drafts, PA Revisions\SITE 1 ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/20/04 4:29 pm

6A
Groundwater Analytical Results
Volatile Organic Compounds
Site 1 HHMT-Port Ivory Facility

Location Sample Date Concentration in UG/L	Recommended Groundwater Cleanup Standard UG/L	Recommended Groundwater Cleanup Guidance UG/L	PG-CS-7 11/24/2000 UG/L	PG-EW-3 11/24/2000 UG/L	PG-EW-6 11/24/2000 UG/L	PG-PA-MW-1D 11/29/2000 UG/L	PG-PA-MW-1 11/28/2000 UG/L	PG-PA-MW-5 11/24/2000 UG/L	PG-PA-MW-6 11/27/2000 UG/L	PG-PA-MW-6D 11/30/2000 UG/L	PG-RS-1 11/24/2000 UG/L	PG-RS-2 11/24/2000 UG/L	PG-TMW-02 12/2/2000 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	0.88 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	0.84 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	1.0 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	0.70 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	0.82 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	0.88 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	0.88 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	2.2 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	6.0 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	13 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	0.64 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	0.60 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	0.64 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	1.1 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	0.46 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	0.50 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	1.0 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	0.90 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	0.64 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	0.70 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	0.82 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	1.7 U	0.85 U	0.85 U	0.85 U	0.85 U
ETHYLBENZENE	5	NG	**6.7**	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.30 U	0.15 U	0.15 U	0.15 U	0.15 U
M&P-XYLENES	5&5	NG	**18(total M&P)**	0.81 U	0.81 U	0.81 U	0.61 U	0.81 U	1.6 U	0.81 U	0.81 U	0.81 U	0.81 U
METHYLBENZENE	5	NG	4.9	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.48 U	0.24 U	2.4	0.24 U	0.24 U
O-XYLENE	5	NG	3.3	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.72 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	0.68 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	0.92 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	0.48 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	0.74 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	0.67 U	0.67 U	0.67 U	1.3 U	0.67 U	0.67 U	0.67 U	0.67 U

U Undetectable Levels
NS No Standard
NG No Guidance

B

Groundwater Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT-Port Ivory Facility

Location Sample Date Concentration in UG/L	Recommended Groundwater Cleanup Standard UG/L	Recommended Groundwater Cleanup Guidance UG/L	**PG-CS-7** 11/24/2000 UG/L	**PG-EW-3** 11/24/2000 UG/L	**PG-EW-6** 11/24/2000 UG/L	**PG-PA-MW-1D** 11/29/2000 UG/L	**PG-PA-MW-1** 11/28/2000 UG/L	**PG-PA-MW-5** 11/24/2000 UG/L	**PG-PA-MW-6** 11/27/2000 UG/L	**PG-PA-MW-6D** 11/30/2000 UG/L	**PG-RS-1** 11/24/2000 UG/L	**PG-RS-2** 11/24/2000 UG/L	**PG-TMW-02** 12/2/2000 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	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
1,2-BENZPHENANTHRACENE	NS	0.002	0.30 U	**1.2**	0.30 U	0.30 U	0.30 U	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	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
1,2-DIPHENYLHYDRAZINE	NS	NG	0.24 U	1.2	0.24 U	0.24 U	0.24 U	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	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	2.1 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	2.0 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	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	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	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	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	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	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	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	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	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	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 J	1.9 J	1.9 U	1.9 U	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	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	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	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	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	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	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
BENZO(A)ANTHRACENE	NS	0.002	0.20 U	**1.2**	0.20 U	0.20 U	0.20 U	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	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	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	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	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
BENZYL BUTYL PHTHALATE	NS	50	0.29 U	1.1	0.29 U	0.29 U	0.29 U	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	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	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	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
BIS(2-ETHYLHEXYL)PHTHALATE	5	NG	2.1	2.6	0.37 U	**8.2**	**5.3 B**	1.9	0.37 U	2.3 B	2.1	1.6	4.6 B
DI-N-BUTYL PHTHALATE	50	NG	0.26 U	1.0	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	1.5	0.26 U	0.26 U	0.26 U
DI-N-OCTYL PHTHALATE	NS	50	0.80 U	1.3	0.80 U	0.80 U	2.0 B	0.80 U	0.80 U	1.3	0.80 U	0.80 U	1.1 B
DIBENZ[A,H]ANTHRACENE	NS	NG	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	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	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	1.6	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
FLUORANTHENE	NS	50	0.29 U	1.4	0.29 U	0.29 U	0.29 U	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	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	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	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	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	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U

Tab

Groundwater Analytical Results
Semi-Volatile Organic Compounds
Site 1 HHMT-Port Ivory Facility

Location Sample Date Concentration in UG/L	Recommended Groundwater Cleanup Standard UG/L	Recommended Groundwater Cleanup Guidance UG/L	**PG-CS-7** 11/24/2000 UG/L	**PG-EW-3** 11/24/2000 UG/L	**PG-EW-6** 11/24/2000 UG/L	**PG-PA-MW-1D** 11/29/2000 UG/L	**PG-PA-MW-1** 11/28/2000 UG/L	**PG-PA-MW-5** 11/24/2000 UG/L	**PG-PA-MW-6** 11/27/2000 UG/L	**PG-PA-MW-6D** 11/30/2000 UG/L	**PG-RS-1** 11/24/2000 UG/L	**PG-RS-2** 11/24/2000 UG/L	**PG-TMW-02** 12/2/2000 UG/L
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	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	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	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	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	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	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
NAPHTHALENE	NS	10	2.0	0.36 U	0.36 U	0.36 U	1.0	0.36 U	0.36 U	0.36 U	9.6	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	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	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
PHENANTHRENE	NS	50	0.27 U	1.6	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
PHENOL	1(Total Phenols)	NG	**1.8**	1.2 U	**29**	1.2 U	**33**	1.2 U	**2.1**	1.2 U	**16**	1.2 U	1.2 U
PYRENE	NS	50	0.27 U	1.4	0.27 U	0.27 U	0.27 U	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

Tabl
Groundwater Analytical Results
Pesticides and PCB's
Site 1 HHMT-Port Ivory Facility

Location Sample Date Concentration in UG/L	Recommended Groundwater Cleanup Standard UG/L	Recommended Groundwater Cleanup Guidance UG/L	**PG-CS-7** 11/24/2000 UG/L	**PG-EW-3** 11/24/2000 UG/L	**PG-EW-6** 11/24/2000 UG/L	**PG-PA-MW-1D** 11/29/2000 UG/L	**PG-PA-MW-1** 11/28/2000 UG/L	**PG-PA-MW-5** 11/24/2000 UG/L	**PG-PA-MW-6** 11/27/2000 UG/L	**PG-PA-MW-6D** 11/30/2000 UG/L	**PG-RS-1** 11/24/2000 UG/L	**PG-RS-2** 11/24/2000 UG/L	**PG-TMW-02** 12/2/2000 UG/L
4,4'-DDD	0.3	NG	0.02 U	0.02 U	0.02 U	0.02 U	0.1 U	0.02 U	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	0.1 U	0.02 U	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	0.1 U	0.02 U	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	0.1 U	0.02 U	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	0.1 U	0.02 U	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	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	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	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	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	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	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	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	0.1 U	0.02 U	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	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	0.02 U	0.1 U	0.02 U	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	0.1 U	0.02 U	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	0.1 U	0.02 U	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	0.1 U	0.02 U	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	0.1 U	0.02 U	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	0.1 U	0.02 U	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	0.1 U	0.02 U	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	0.1 U	0.02 U	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	0.1 U	0.02 U	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	0.1 U	0.02 U	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	0.1 U	0.02 U	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	0.1 U	0.02 U	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	1 U	1 U	1 U	1 U	1 U	1 U

U Undetectable Levels
NS No Standard
NG No Guidance
** Total PCBs

Tabl
Groundwater Analytical Results
Metals
Site 1 HHMT-Port Ivory Facility

Location Sample Date Concentration in UG/L	Recommended Groundwater Cleanup Standard UG/L	Recommended Groundwater Cleanup Guidance UG/L	**PG-CS-7** 11/24/2000 UG/L	**PG-EW-3** 11/24/2000 UG/L	**PG-EW-6** 11/24/2000 UG/L	**PG-PA-MW-1D** 11/29/2000 UG/L	**PG-PA-MW-1** 11/28/2000 UG/L	**PG-PA-MW-5** 11/24/2000 UG/L	**PG-PA-MW-6** 11/27/2000 UG/L	**PG-PA-MW-6D** 11/30/2000 UG/L	**PG-RS-1** 11/24/2000 UG/L	**PG-RS-2** 11/24/2000 UG/L	**PG-TMW-02** 12/2/2000 UG/L
ALUMINUM (FUME OR DUST)	NS	NG	180	170	130	58 U	610	500	430	260	260	2200	58 U
ANTIMONY	3	NG	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U
ARSENIC	25	NG	3.6 U	**26**	3.6 U	13	3.6 U	**55**	**83**	3.6 U	17	3.7	**54**
BARIUM	1000	NG	23	160	160	62	75	34	23 U	68	23 U	110	23 U
BERYLLIUM	NS	3	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	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	1.4 U	1.4 U	1.4 U	**16**	1.4 U
CALCIUM METAL	NS	NG	14000	39000	460000	36000	230000	96000	1900	180000	22000	22000	140000
CHROMIUM	50	NG	16 U	16 U	16 U	16 U	16 U	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	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	20 U	20 U	20 U	20 U	20 U
IRON	300***	NG	**310**	**1200*****	88 U	**5100*****	88 U	**3200*****	120	**15000*****	88 U	**12000*****	**690*****
LEAD	25	NG	3.4 U	3.4 U	4.6	3.4 U	3.4 U	6.2	3.4 U	3.4 U	3.4 U	9.9	3.4 U
MAGNESIUM	NS	35000	13000	**99000**	400	**79000**	260 U	14000	5500	**430000**	13000	10000	**58000**
MANGANESE	300***	NG	12 U	**28*****	12 U	**90*****	12 U	**290*****	12 U	**1200*****	12 U	**120*****	**140*****
NICKEL	100	NG	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
POTASSIUM	NS	NG	19000	46000	20000	39000	40000	6100	100000	81000	25000	77000	17000
SELENIUM	10	NG	20 U	20 U	20 U	20 U	20 U	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	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
SODIUM	20000	NG	**230000**	**220000**	**770000**	**840000**	**210000**	**55000**	**900000**	**4000000**	**150000**	**330000**	**400000**
THALLIUM	NS	0.5	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
VANADIUM	NS	NG	4.8	6.8	4.3 U	12	4.3 U	4.8	50	4.3 U	5.9	21	10
ZINC	NS	2000	20 U	26	20 U	20 U	20 U	55	20 U	20 U	20 U	70	25
MERCURY	0.7	NG	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	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

Tabl[illegible]E
Groundwater Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 1 HHMT-Port Ivory Facility

Location **Sample Date**		Recommended Groundwater Cleanup Standard	Recommended Groundwater Cleanup Guidance	**PG-CS-7** 11/24/2000	**PG-EW-3** 11/24/2000	**PG-EW-6** 11/24/2000	**PG-PA-MW-1D** 11/28/2000	**PG-PA-MW-1** 11/29/2000	**PG-PA-MW-5** 11/24/2000
PETROLEUM HYDROCARBONS	MG/L	NS	NG	1.0 U	1.2	1.1 U	2.4	1.0 U	1.0 U
OIL & GREASE	ug/L	15,000MAX	NG	22	22	15	0.66	0.15	1.0 U
CYANIDE	MG/L	0.2	NG	0.01 U	0.01 U	0.01 U	0.01 U	0.016	0.01 U
*pH	pH units	NS	NG	9.16	8.23	12.82	12.35	7.07	6.76
TOTAL PHENOLICS	MG/L	0.001	NG	0.05 U	0.05 U	0.05 U	0.22	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

Table
Groundwater Analytical Results
TPHC, Oil and Grease, pH, Cyanide and Total Phenolics
Site 1 HHMT-Port Ivory Facility

Location **Sample Date**		Recommended Groundwater Cleanup Standard	Recommended Groundwater Cleanup Guidance	**PG-PA-MW-6** 11/27/2000	**PG-PA-MW-6D** 11/30/2000	**PG-RS-1** 11/24/2000	**PG-RS-2** 11/24/2000	**PG-TMW-02** 12/2/2000
PETROLEUM HYDROCARBONS	MG/L	NS	NG	1.0 U	1.0 U	1.0 U	1.0 U	10
OIL & GREASE	ug/L	15,000MAX	NG	13	21	21	14	7.8
CYANIDE	MG/L	0.2	NG	0.013	0.01 U	0.01 U	0.01 U	0.01 U
*pH	pH units	NS	NG	11.36	7.08	11.24	8.54	7.1
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 other wells at Site 1. The detected concentrations ranged from 1.8 ug/l (CS-7) to 33 ug/l (PA-MW-1). In addition, 1,2-benzophenanthracene and benzo(a)anthracene were detected at concentrations in excess of recommended cleanup guidance values in the sample from PG-EW-3 located in the southcentral portion of Site 1. 1,2-benzophenanthracene and benzo(a)anthracene were both detected at a concentration of 1.2 ug/l in the sample from EW-3. Please refer to Table 6B and Figure 16 for a summary of SVOC results.

6.4.3 Polychlorinated Biphenyls

No PCBs were detected in the groundwater samples from Site 1. Please refer to Table 6C and Figure 16 for a summary of PCB results.

6.4.4 Pesticides

No pesticides were detected in groundwater samples collected from Site 1. Please refer to Table 6C and Figure 16 for a summary of pesticides results.

6.4.5 Metals

Numerous TAL metals were detected in one or more groundwater samples collected as part of the groundwater investigation of Site 1. However, only five TAL metals were detected at concentrations in excess of corresponding NYSDEC groundwater SVGs. The five metals detected at elevated concentrations in one or more groundwater sample are as follows: arsenic, iron, manganese, sodium, and cadmium. Iron and sodium were detected in excess of NYSDEC groundwater SVGs in several groundwater samples collected from wells located throughout Site 1. Comparatively, manganese and cadmium were detected in excess of NYSDEC groundwater SVGs in only a single sample; manganese was detected at 1200 ug/l in the sample from PG-PAMW-6D and cadmium was detected at 16 ug/l in the sample from PG-RS-2. Arsenic was detected at a concentration in excess of its recommended cleanup standard of 25 ug/l in samples from four wells: arsenic was detected at 26 ug/l in the sample from EW-3, at 55 ug/l in the sample from PA-MW-5, at 83 ug/l in the sample from PA-MW-6 and at 54 ug/l in the sample from TMW-02 (a temporary well). Please refer to Table 6D and Figure 16 for a summary of metals results.

V. minor exceedances

6.4.6 Cyanide and Total Phenolics

Cyanide was detected in only two of the groundwater samples collected from wells at Site 1. Both concentrations were below the NYSDEC SVG for cyanide. Please refer to Table 6E for a summary of cyanide results.

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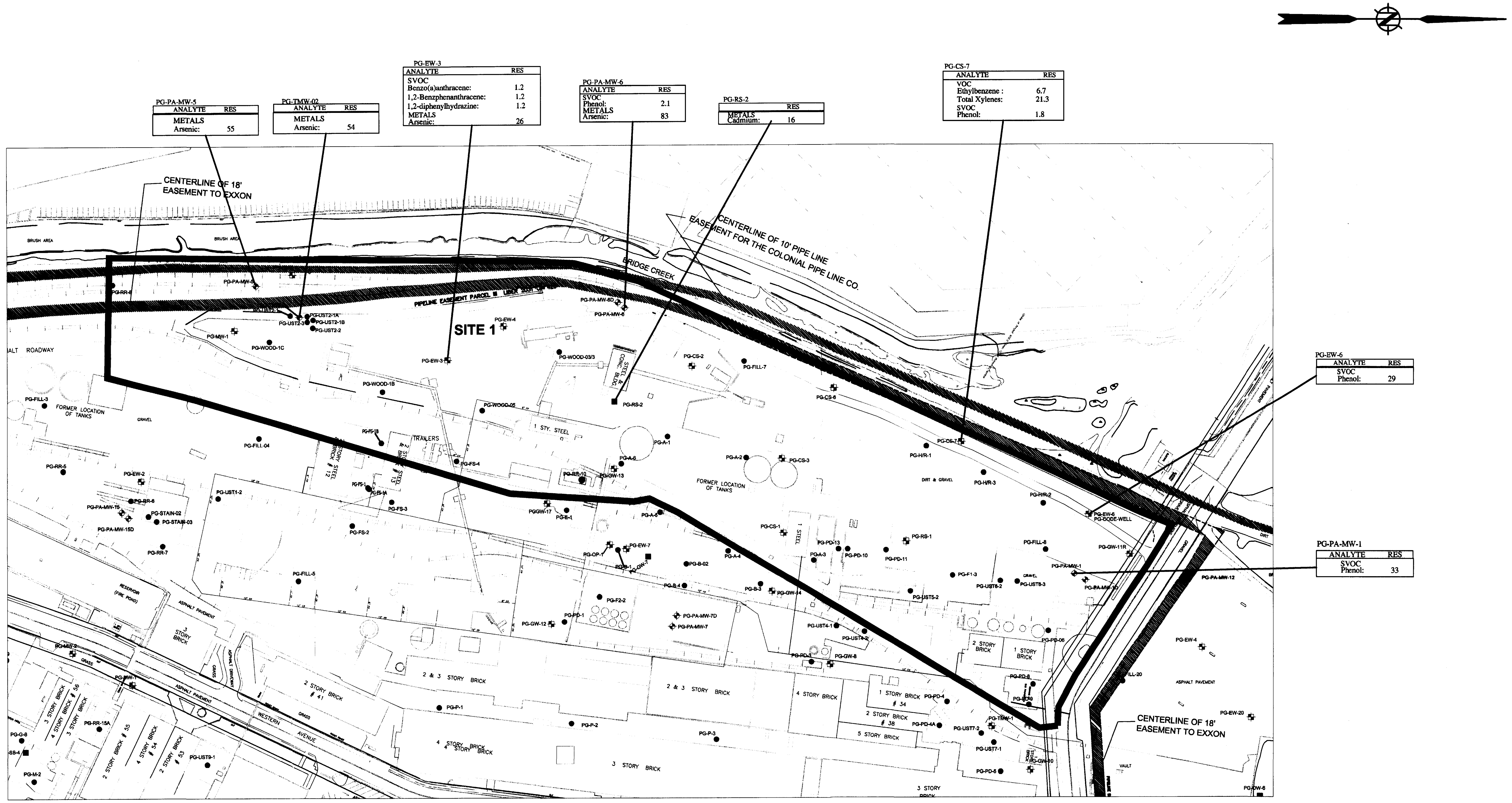

PG-PA-MW-5

ANALYTE	RES
METALS	
Arsenic:	55

PG-TMW-02

ANALYTE	RES
METALS	
Arsenic:	54

PG-EW-3

ANALYTE	RES
SVOC	
Benzo(a)anthracene:	1.2
1,2-Benzphenanthracene:	1.2
1,2-diphenylhydrazine:	1.2
METALS	
Arsenic:	26

PG-PA-MW-6

ANALYTE	RES
SVOC	
Phenol:	2.1
METALS	
Arsenic:	83

PG-RS-2

	RES
METALS	
Cadmium:	16

PG-CS-7

ANALYTE	RES
VOC	
Ethylbenzene :	6.7
Total Xylenes:	21.3
SVOC	
Phenol:	1.8

PG-EW-6

ANALYTE	RES
SVOC	
Phenol:	29

PG-PA-MW-1

ANALYTE	RES
SVOC	
Phenol:	33

100 0 100 200
SCALE IN FEET

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-03/3 ●	YEAR 2000 SITE INVESTIGATION SOIL BORING LOCATION
PG-RS-1 ⊞	PRE-EXISTING P&G MONITORING WELL LOCATION
PG-SS-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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ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

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

SITE 1
DISTRIBUTION OF METALS, VOCs, AND SVOCs IN GROUNDWATER, 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 16**

P:\232952wmd\Operable Unit Reports\Operable Unit 1\Mapping\POST VCP Mapping 8-11-04\3rd Drafts, PA Revisions\SITE 1 ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/22/04 4:12 pm

Total phenolics were detected in only one of the groundwater samples collected from Site 1. Please refer to Table 6E for a summary of total phenolic results.

6.4.7 Petroleum Hydrocarbons/Oil and Grease

TPHC was detected in only three groundwater samples (PG-EW-3, PG-PA-MW-1 and PG-TW-02) from Site 1. Detectable concentrations of TPHC included: 1.2 mg/L in the sample from PG-EW-3, 2.4 mg/L in the sample from PG-PA-MW-1D, and 10 mg/L in the sample from the temporary well, TMW-02. In contrast, O/G was detected in ten of 11 the groundwater samples. The detectable concentrations of O/G ranged from 0.15 mg/L in the sample from PG-PA-MW-1D to 22 mg/L in the samples from PG-EW-3 and PG-EW-6. Please refer to Table 6E for a summary of TPHC and O/G results.

6.4.8 pH

Laboratory analysis for pH was performed on one sample from Site 1, PG-PA-MW-6. The laboratory recorded pH value for the sample from this well was 11. 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 1 ranged from 6.76 to 12.82 with pH recorded at levels of over 9 in five samples. The lowest pH recorded was 6.76 at well PG-PA-MW-5 and the highest pH recorded was 12.35 at PG-PA-MW-1D. The field recorded pH values are included on groundwater sampling logs, which are provided in Appendix D.

6.5 Sediment and Surface Water Analytical Data

Five sediment/precipitate and three surface water samples were collected from Bridge Creek and submitted for TAL Metals. In addition, pH values were recorded for surface water samples. The analytical parameters were selected based upon findings from investigative efforts performed by P&G. The analytical results for HMM's sampling efforts are presented in Tables 7 and 8 and are summarized on Figure 17. Please note, the samples are identified on Figure 17 as SED-SW-1, SED-SW-2, SED-SW-3, SED-4 and SED-5 to reflect the collection of both sediment and surface water at locations 1, 2 and 3. However, analytical tables identify the sample utilizing only the contaminant class prefix; for example, the sediment sample from location one is identified as SED-1 rather than SED-SW-1. 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

PG-SED-SW-1
(PG-SED-1)

ANALYTE	RESULTS (MG/KG)
ARSENIC	16
CHROMIUM	52
IRON (%)*	20,000
LEAD*	160
MERCURY	1.1
NICKEL	48
SILVER	1.8
ZINC*	610

(PG-SW-1)

ANALYTE	RESULTS (ug/L)
LEAD	2,900
MAGNESIUM	360,000
MERCURY	0.93

PG-SED-SW-2
(PG-SED-2)

ANALYTE	RESULTS (MG/KG)
ARSENIC	19
CADMIUM	0.64
CHROMIUM	49
IRON (%)*	23,000
LEAD*	380
MERCURY	92
NICKEL*	90
SILVER*	4.3
ZINC*	600

(PG-SW-2)

ANALYTE	RESULTS (ug/L)
LEAD	3,800
MAGNESIUM	380,000

PG-SED-SW-3
(PG-SED-3)

ANALYTE	RESULTS (MG/KG)
ARSENIC	14
CHROMIUM	30
LEAD*	310
MERCURY	29
NICKEL	33
ZINC*	510

(PG-SW-3)

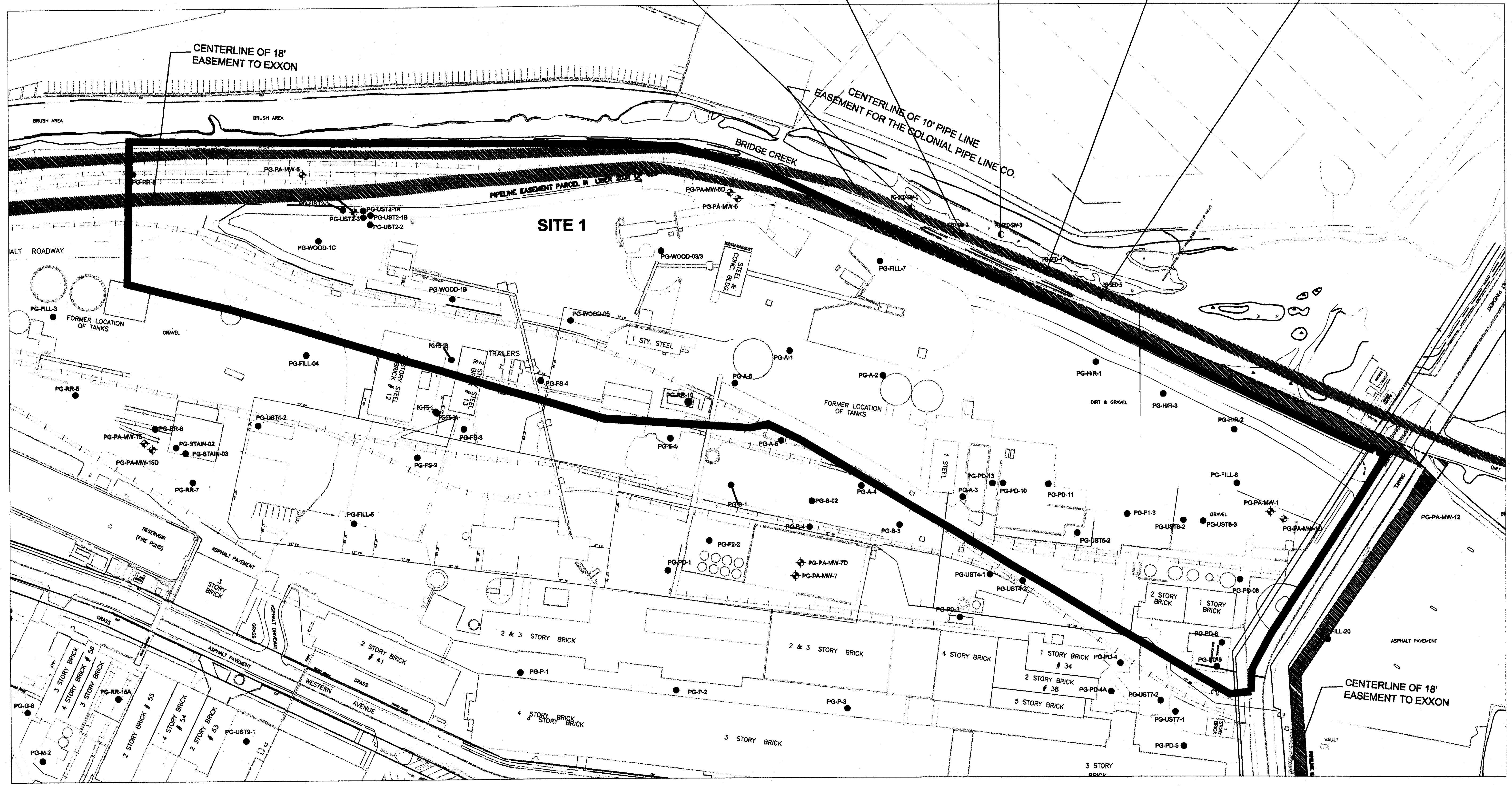
ANALYTE	RESULTS (ug/L)
ARSENIC	57
BERYLLIUM**	4.1
CADMIUM	9.8
CHROMIUM	220
COPPER	790
IRON	63,000
LEAD	650
MAGNESIUM	320,000
MANGANESE	690
NICKEL	140
ZINC**	2,500

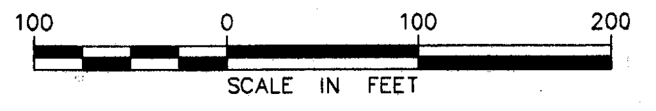
PG-SED-4

ANALYTE	RESULTS (MG/KG)
ARSENIC	11
CHROMIUM	78
IRON (%)*	23,000
LEAD*	200
MERCURY*	2.6
NICKEL*	53
SILVER*	2.5
ZINC*	650

PG-SED-5

ANALYTE	RESULTS (MG/KG)
ARSENIC	12
CHROMIUM	82
IRON (%)	25,000
LEAD*	190
MERCURY*	2.6
NICKEL	45
SILVER*	2.5
ZINC*	560





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
IRON (%)*	2% (20,000)	4% (40,000)
LEAD*	31	110
MERCURY	0.2	1.3
NICKEL*	16	50
SILVER*	1.0	2.2
ZINC*	120	270

MG/KG = ug/g

NYSDEC RECOMENDED SURFACE WATER
CLEANUP STANDARDS AND CLEANUP
GUIDANCE VALUES (RSCS AND RSCG)

ANALYTE	RSCS (ug/L)	RSCG (ug/L)
ARSENIC	50	NG
BERYLLIUM**	NS	3
CADMIUM	5	NG
CHROMIUM	50	NG
COPPER	200	NG
IRON	300	NG
LEAD	50	NG
MAGNESIUM	35,000	NG
MANGANESE	300	NG
NICKEL	100	NG
ZINC**	NS	NG
MERCURY	0.7	2,000

NS - NO STANDARD
NG - NO GUIDANCE VALUE

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.

** – INDICATES THAT SURFACE WATER RESULTS ONLY EXCEED THE RECOMENDED SURFACE WATER CLEANUP GUIDANCE (RSCG).

1. SEDIMENT RESULTS ARE RECORDED IN mg/kg. SURFACE WATER RESULTS ARE RECORDED IN ug/L
2. THIS MAP PRESENTS CONCENTRATIONS OF METALS THAT EXCEED NYSDEC RSCS AND RSCG VALUES.
3. pH RESULTS ARE IN STANDARD pH UNITS.
4. 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 NO VALUES OF pH WERE DETECTED AT THESE LEVELS.

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-SED-SW5 ◐	YEAR 2000 SITE INVESTIGATION SEDIMENT AND SURFACE WATER SAMPLE LOCATION
ANALYTE	INDICATES COMPOUND FOR WHICH LABORATORY ANALYSIS WAS CONDUCTED

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OF NY & NJ

ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

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

SITE 1 ANALYTICAL RESULTS, SEDIMENT AND SURFACE WATER, 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 17

P:\232952wmd\Operable Unit Reports\Operable Unit 1\Mapping\POST VCP Mapping 8-11-04\3rd Drafts, PA Revisions\SITE 1 ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/20/04 4:29 pm

Table 7
Sediment Analytical Results
Metals
Site 1 HHMT-Port Ivory Facility

Location	Sediment Criteria	Sediment Criteria	SED-1	SED-2	SED-3	SED-4	SED-5
Sample Date	Lowest Effect Level	Severe Effect Level	11/21/2000	11/21/2000	11/21/2000	11/21/2000	11/21/2000
Concentration	ug/g	ug/g	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
ALUMINUM (FUME OR DUST)	NS	NS	4100	3400	1900	5800	5700
ANTIMONY	2.0	25.0	3.2 U	2.7 U	2.3 U	5 U	5.2 U
ARSENIC	6.0	33.0	16	19	14	11	12
BARIUM	NS	NS	72	70	32	96	98
BERYLLIUM	NS	NS	0.89 U	0.74 U	0.63 U	1.4 U	1.4 U
CADMIUM	0.6	9.0	0.67 U	0.64	0.53	1 U	1.1 U
CALCIUM METAL	NS	NS	2700	3500	2700	4600	5200
CHROMIUM	26.0	110.0	52	49	30	78	82
COBALT	NS	NS	4.9	5.8	3.4	6	5.9 U
COPPER	NS	NS	130	160	61	180	190
IRON (%)	2% (20,000)	4% (40,000)	20000	23000	18000	23000	25000
LEAD	31.0	110.0	160	380	310	200	190
MAGNESIUM	NS	NS	5100	6400	2700	5200	5900
MANGANESE	460.0	1100.0	130	120	100	160	180
MERCURY	0.2	1.3	1.1	.92	.29	2.6	2.6
NICKEL	16.0	50.0	48	90	33	53	45
POTASSIUM	NS	NS	1200	740 U	630 U	1400 U	1900
SELENIUM	NS	NS	5.6 U	4.6 U	4 U	8.6 U	8.9 U
SILVER	1.0	2.2	1.8	4.3	0.79 U	2.5	2.5
SODIUM	NS	NS	8000	2200	1300	5300	13000
THALLIUM	NS	NS	2.7 U	2.2 U	1.9 U	4.1 U	4.3 U
VANADIUM	NS	NS	24	27	18	43	36 U
ZINC	120.0	270.0	610	600	510	650	560

NS	No Standard
U	Undetectable Levels
▦	Above LEL
▒	Above SEL

ug/g = MG/KG

Table 8
Surface Water Analytical Results
Metals and pH
Site 1 HHMT-Port Ivory Facility

Location **Date** **Concentration**	Recommended Surface Water Cleanup Standard ug/l	Recommended Surface Water Cleanup Guidance ug/l	SW-1 11/21/2000 ug/l	SW-2 11/21/2000 ug/l	SW-3 11/21/2000 ug/l
ALUMINUM	NS	NG	1400	1700	25000
ANTIMONY	3	NG	3.3U	3.3U	3.3U
ARSENIC	50	NG	3.6	5.2	**57**
BARIUM	1000	NG	71	70	440
BERYLLIUM	NS	3	2.5U	2.5U	**4.1**
CADMIUM	5	NG	1.4U	1.4U	**9.8**
CALCIUM	NS	NG	150000	150000	160000
CHROMIUM	50	NG	16U	16U	**220**
COBALT	NS	NG	4.6U	4.6U	16
COPPER	200	NG	43	51	**790**
IRON	300	NG	**2900**	**3800**	**63000**
LEAD	50	NG	21	29	**650**
MAGNESIUM	35000	NG	**360000**	**380000**	**320000**
MANGANESE	300	NG	190	180	**690**
NICKEL	100	NG	15U	15U	**140**
POTASSIUM	NS	NG	130000	140000	110000
SELENIUM	10	NG	20U	20U	20U
SILVER	50	NG	5.2U	5.2U	5.2U
SODIUM	NS	NG	3500000	3600000	2800000
THALLIUM	NS	0.5	3.1U	3.1U	3.1U
VANADIUM	NS	NG	4.3U	4.3U	100
ZINC	NS	2000	130	130	**2500**
pH (150.1)	NS	NS	8.1	8.2	7.5
MERCURY (245.1)	0.7	NG	**0.93**	0.54	0.55

NG No Guidance
NS No Standard
U Undetectable Levels

Sediment Screening establishes two levels of protection for sediments; detections below the first level area, lowest effect level (LEL), are considered "not contaminated"; detections above the first level but below the second level, severe effect level (SEL), 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.

6.5.1 Metals

A number of TAL metals were detected in one or more samples of sediment/precipitate and surface water. Nine metals were detected above either the first level (LEL) or second level (SEL) of NYSDEC screening criteria in one or more sediment/precipitate samples. Four metals were detected at concentrations above the LEL but below the SEL, arsenic (five samples), cadmium (one sample), chromium (five samples) and, iron (four samples). Mercury (two samples), nickel (two samples), and silver (three samples) exceeded the second level screening criteria, SEL, in one or more sediment samples. Arsenic was detected at concentrations ranging from 11 mg/kg in SED-4 to 19 mg/kg in SED-2, all concentrations were above the LEL but below the SEL for arsenic. Cadmium was detected at 0.64 mg/kg in SED-2, slightly above the LEL but below the SEL. Chromium was detected at concentrations ranging from 30 mg/kg in SED-3 to 82 mg/kg in SED-5, all concentrations were above the LEL but below the SEL. Mercury was detected above the LEL in all five samples but below the SEL in three samples: concentrations of mercury ranged from 0.29 mg/kg in SED-3 to 2.6 mg/kg in both SED-4 and SED-5. Nickel was detected above the LEL in all five samples but below the SEL in three samples: concentrations of nickel ranged from 33 mg/kg in SED-3 to 90 mg/kg in SED-2. Silver was detected above the LEL in four samples and above the SEL in three of the four samples exhibiting detectable concentrations of silver; concentrations of silver ranged from not detected in SED-3 to 4.3 mg/kg in SED-2. Lead and zinc exceeded the second level screening criteria, SEL, in all five sediment/precipitate samples. Lead was detected at concentrations ranging from 160 mg/kg in SED-1 to 380 mg/kg in SED-2. Zinc was detected at concentrations ranging from 510 mg/kg in SED-3 to 650 mg/kg in SED-4.

Analytical results revealed the presence of several metals at concentrations in excess of NYSDEC guidance criteria in one or more surface water samples. Two metals, iron and magnesium, were detected above the NYSDEC Recommended Surface Water Cleanup Standard (RSWCS) in all three samples. Iron was detected at concentrations ranging from 2900 ug/l in SW-01 to 6300 ug/l in SW-03 and magnesium was detected at concentrations ranging from 32000 ug/l in SW-03 to 38000 in SW-02. One additional metal, mercury, was

Pb is worthy of mentioning as SW levels v. high!

detected above the recommended standard in the samples from SW-01 but below the standard in the other two samples. In addition, several metals (arsenic, cadmium, copper, lead, manganese and nickel) were detected above the recommended standard and two metals (beryllium and zinc) were detected at concentrations above the recommended surface water cleanup guidance criteria; the NYSDEC does not currently maintain a RSWCS for beryllium and zinc. Please refer to Tables 7 and 8 for metals results for sediment and surface water respectively. Figure 17 presents sample locations and analytical results for both surface water and sediment.

some of these results are high

6.5.2 pH

The pH recorded for surface water samples ranged from 7.5 to 8.2. The lowest pH value of 7.5 was recorded at the most downstream location, SW-03. The other two pH readings of 8.1 and 8.2 were taken from SW-01 and SW-2 respectfully. Please refer to Table 8 for pH results for surface water.

7.0 SI – DISCUSSION/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 historic fill materials and identified several potential "oil" impacted areas including potential UST Areas. Analytical data have revealed the presence of contaminants at concentrations in excess of current NYSDEC regulatory guidance criteria in samples from soil, sediment/precipitate, surface water and groundwater. However, the data generally indicate 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 a geo-technical evaluation. As such, it does not identify or address any issues associated with the physical elements of the historic fill material including issues associated with future construction activities.

7.1 Soil

Volatile Organic Compounds

Analytical results identified the presence of only three VOCs, (total xylenes, dichloromethane, and methylbenzene (toluene), at concentrations in excess of NYSDEC guidance criteria for soil in only two of 77 soil samples collected from Site 1 including soil samples collected from the three potential UST areas. Total xylenes and dichloromethane were detected at an elevated concentration a single sample collected from the surficial interval of soil boring F1-3. Methylbenzene (toluene) was detected slightly above the NYSDEC guidance criteria in the 8 to 10 foot and 16 to 17 foot samples from soil boring PD-8.

Dichloromethane was detected at a concentration only slightly above the NYSDEC guidance criteria. This contaminant was not detected in other samples from this location and was detected in the laboratory blank (and flagged as a blank contaminant) in other samples analyzed on the same date. Thus, it is likely that its occurrence is not related to site activities. Total xylenes were detected only marginally above NYSDEC guidance criteria in the surficial sample collected from soil boring F1-3. This contaminant was not detected in the deeper sample from this boring and was not detected in other soil samples collected from borings in the vicinity of F1-3. However, this contaminant was detected at a concentration above NYSDEC guidance criteria in a groundwater sample collected from well PG-CS-7, situated approximately 300 feet west of F1-3. Based on the presence of a groundwater divide at the northwestern portion of Block 1400 (coinciding with the boundary line between Sites 1 and 2A), it is difficult to determine flow patterns in the overburden aquifer in the F1-3 area. However, it appears that F1-3 is located upgradient of monitoring well PG-CS-7.

Methylbenzene (toluene) was detected slightly above the NYSDEC guidance criteria in the 8 to 10 foot sample and the 16 to 17 foot sample from soil boring PD-8.

Based on analytical results, additional actions were proposed to further evaluate soil conditions at the F1-3 and PD-8 locations. Please refer to the proposed actions in Section 8.

discuss C-PAHs specifically

Semi-Volatile Organic Compounds

Analytical results indicate the presence of several SVOCs at concentrations in excess of NYSDEC guidance criteria in soil samples collected from Site 1. No single SVOC was detected in excess of the 50 mg/kg guidance threshold for individual SVOCs and no total SVOCs concentrations were in excess of the 500 mg/kg guidance threshold for this class of contaminants. Specifically, 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. The relatively low concentrations of PAH compounds detected in soil samples is not unexpected given that fill material was emplaced at the Site 1 area in conjunction with site development and that Site 1, as well as the remainder of the site, has been utilized in an industrial capacity for approximately 100 years. The groundwater component of the SI did not reveal that PAH compounds were an issue with respect to Site 1. Given the low levels of PAH compounds in soil and the proposed future site usage, no further action was proposed with regard to this class of contaminants.

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 1. The presence of metals in soil at this site was not unexpected given that indigenous soils 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 1 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 1. First, analytical data from the soil component of this SI has revealed the presence of elevated concentrations of arsenic at locations throughout Site 1 as well as the remainder of the HHMT-Port Ivory Facility. 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 the Site 1 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 and railroad tie chemical preservatives. Arsenic has historically been used in wood preservation chemicals utilized for such products as railroad ties. Therefore, the presence of this metal is considered ubiquitous to Site 1 based upon the connection of arsenic and railroad materials. Further, the anticipated usage of Site 1 consists of an intermodal facility, which will include a rail system. Although arsenic was detected in Site 1 groundwater, only 4 of 11 groundwater samples exhibited a concentration in excess of NYDEC 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.

Overall, the presence of metals in soil did not appear to have negatively impacted groundwater at Site 1. Therefore, based on the 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.

No discussion of spatial distribution of samples.

pH

Investigative efforts at the site have revealed that pH in soil at Site 1 ranges from 4.5 to 13, 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 11, appear to be most frequently recorded in samples collected from locations situated at the northern portion of Site 1. Based on visual review of soil borings from the SI, the area noted to exhibit higher pH concentrations generally corresponds with the presence of by-product fill material. Likewise, the levels of pH recorded during groundwater sampling indicate higher pH values for groundwater at areas characterized by by-product fill material. However, 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. Although pH issues at Site 1 appear to be associated with fill material, the presence of the fill material does not appear to have negatively impacted surrounding surface water. Fill material will be addressed in conjunction with overall site redevelopment. *

groundwater

Potential Oil Impacted Areas (TPHC/Oil & Grease)

Visual observations and the results of laboratory analyses have identified several potential "oil" impacted areas at Site 1. These areas include: several areas observed to include black staining and a distinct petroleum odor, two areas exhibiting levels of petroleum related VOCs slightly above NYSDEC criteria and several 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. No free product was noted on the groundwater surface in wells at Site 1, however, a sheen was noted on the groundwater surface of temporary well, PG-TMW-02. Black staining of soil was noted at numerous locations. Taken in concert with analytical results, it appeared that "oil" impacts might be present at the following locations: Southern Portion of the Wood Yard/UST-2 Area (including PG-TMW-02), Wood-5 Area, FS-1 Area, Area A and PD-8 Area. Based on field observations and analytical results, additional actions to evaluate potential "oil" issues for soil were proposed for the following areas: Southern Portion of the Wood Yard/UST-2 Area (including PG-TMW-02), Wood-5 Area, FS-1 Area, Area A and PD-8 Area.

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.

Investigative efforts did not identify "oil" impacted areas in proximity to potential UST areas UST5 or UST6. However, additional actions were proposed at each 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 two other potential UST areas.

7.2 Groundwater

Volatile Organic Compounds

Analytical results identified the presence of only two VOCs, ethylbenzene and total xylenes at concentrations in excess of NYSDEC guidance criteria in the groundwater sample from only one monitoring well, PG-CS-7. No other VOCs were detected at elevated concentrations in the sample from PG-CS-7 or any other groundwater samples collected as part of the SI groundwater investigation at Site 1. 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.

Semi-Volatile Organic Compounds

Analytical results indicate the presence of only two SVOCs, bis(2-ethylhexyl)phthalate and phenol, at concentrations in excess of NYSDEC guidance criteria. Bis(2-ethylhexyl)phthalate, detected in only a single sample from PG-PA-MW-1D, is a common laboratory contaminant and is unlikely to be an issue with regard to this site. Phenol was detected at an elevated concentration in samples from five wells and was not detected in samples from any other well at Site 1. In addition, 1,2-benzphenanthracene and benzo(a)anthracene were detected at concentrations in excess of recommended cleanup guidance values in the sample from PG-EW-3 located in the southcentral portion of Site 1. The presence of relatively few SVOCs did not reveal a need for additional investigative or delineation actions relative to this class of contaminants in groundwater.

Metals

Analytical data revealed the presence of only five TAL metals (arsenic, cadmium, manganese, iron and sodium) at concentrations in excess of NYSDEC guidance criteria in groundwater samples. Three of these metals, 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. With regard to arsenic and cadmium, the former was only detected at an elevated concentration in four samples and the latter was only detected at an elevated concentration in a single sample. The presence of these metals is not unexpected given the urban nature of Site 1 as well as the site area. Therefore, no further actions were proposed with regard to metals in groundwater at Site 1.

pH

Investigative efforts at the site have revealed that pH in groundwater ranges from 6.72 to 12.82 with pH recorded above 9 at several locations. However, 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, the need for additional review of environmental quality of pH in groundwater will be reviewed as part of development planning and evaluation.

Potential Oil Impacted Areas (TPHC/Oil & Grease)

Visual observations and the results of laboratory analyses identified one potential "oil" issue with regard to groundwater at Site 1. Specifically, the investigation identified the presence of a sheen on the groundwater surface of temporary well, PG-TMW-02. The SI sampling program included the collection and analysis of a sample from this well. Analytical results from that testing revealed the presence of both O/G and TPHC in the sample from PG-TMW-02. Based on field observations and analytical results, additional actions were proposed for the area of the above listed well. Please note, PG-TMW-02 is located within the Wood Yard/UST-2 Area described in Section 7.1. Please refer to Section 8 for a discussion of proposed RI efforts.

7.3 Bridge Creek - Surface Water/Sediment

Samples from surface water and sediment of Bridge Creek revealed the presence of several metals at concentrations in excess of NYSDEC guidance and screening criteria. The metals present in the surface water and sediment were also noted to be present on-site. The similarity in the contaminant profiles may indicate that site activities have impacted the stream corridor. However, based on information provided in P&G reports, 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 such material is expected to remain stable or decrease in frequency. 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 with regard to Bridge Creek. It should be noted that 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 Bridge Creek will be reviewed as part of development planning and evaluation.

off site

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 historic fill: urban fill including soil fill, vegetative debris, construction debris (wood, bricks, glass, concrete), cinder fill consisting primarily of ash and ash-type materials with some slag; and by-products from production 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 of historic 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 historic 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 at Site 1. However, cinder fill was notably absent at the northwestern corner of Site 1. The third type of historic 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 on Site 1.

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 historic 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 are typically present in urban fill material, especially those containing cinders. 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 investigative or delineation efforts were proposed with regard to the presence of historic fill material at Site 1. 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 1 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 has revealed the

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presence of several potential petroleum impacted areas, which required further evaluation/delineation prior redevelopment of Site 1. As such, the Port Authority developed a remedial investigation workplan (RIW) to further evaluate three potential UST areas as well as five other site 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. The DUSR associated with RI sampling will be provided under separate cover.

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 1 (UST2, UST5 and UST6) 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 UST2, UST5 and UST6 are presented on Figure 18.

8.2 Proposed Actions - Potential Petroleum-Impacted Areas

As previously stated, visual observations and the results of laboratory analyses identified several areas on Site 1, which were impacted by petroleum or non-petroleum oil materials. These identified areas include the following: the location of one well exhibiting a sheen on the groundwater surface (PG-TMW-02); several areas observed to include black staining and a distinct petroleum odor; two locations with potential petroleum related VOC exceedances; and several 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 UST2 (including soil boring locations UST2-1, UST2-1B and UST2-3, potential UST2 area and temporary well location PG-TMW-02), Area Wood-5, Area FS-1, Area A (soil boring location A-2) and Area PD-8. It should be noted that delineation actions were also proposed at the A-5 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. Thus, a discussion of RI activities for the A-5 location is also provided in this report. In addition, an overview of delineation efforts performed at the Areas GW-14 and B-3; these areas are situated in Site 2A. It is important to note that some or all of the potential petroleum or "oil" impacts which were observed are likely to be 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.

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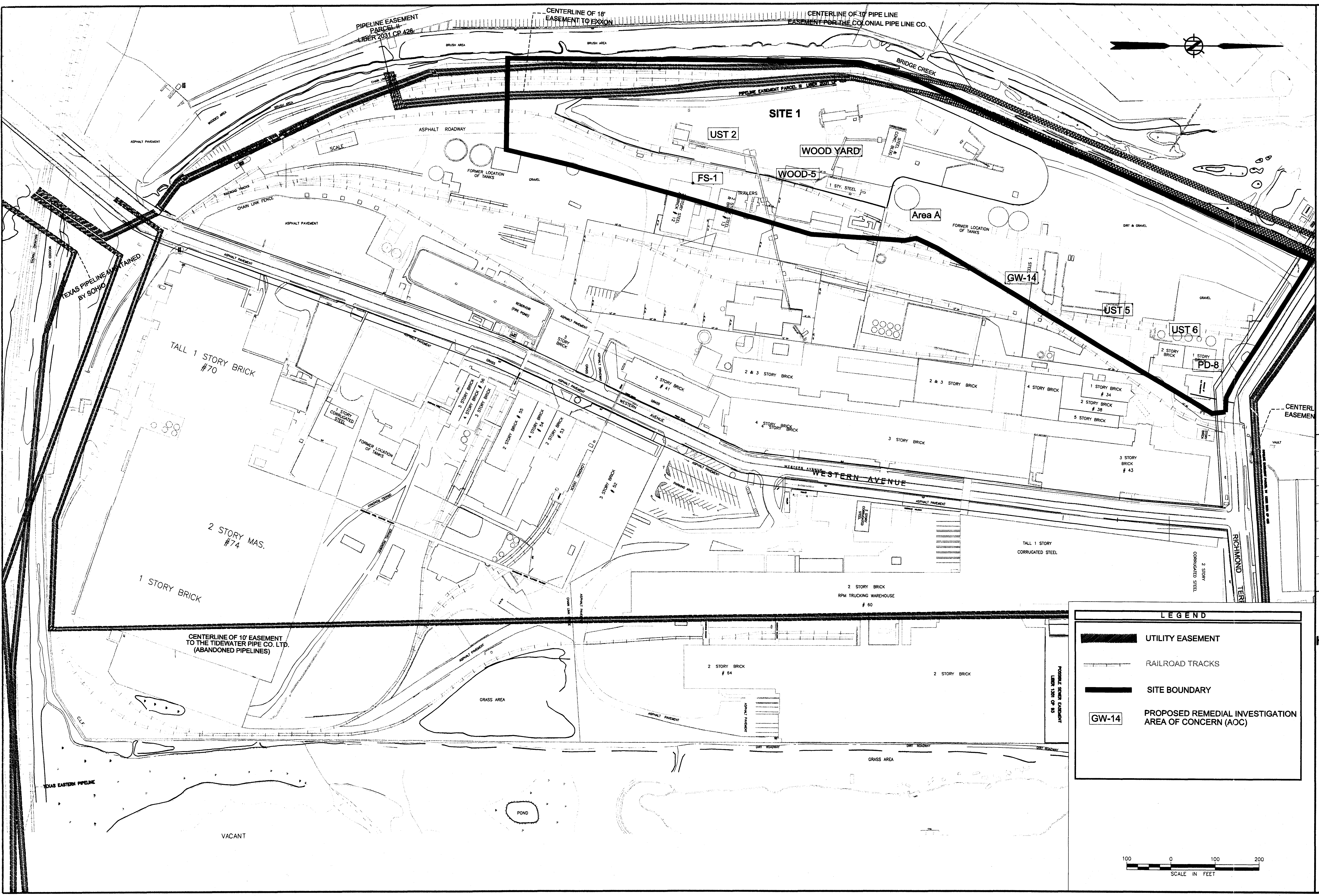

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**THE PORT AUTHORITY
OF NY & NJ**

ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

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

SITE 1
PROPOSED REMEDIAL INVESTIGATION AREAS OF CONCERN (AOCs)

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.

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Drawing Number FIGURE 18

The RI for the five above listed areas was to be accomplished through the installation and sampling of soil borings; the same actions were proposed for other site areas including locations A-5, GW-14 and B-3, all located on Site 2A. 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 locations of the Area UST2 (including soil boring locations UST2-1, UST2-1B and UST2-3 and the PG-TMW-02 location), Area Wood-5, Area FS-1 (the FS-1B location), Area A (soil boring location A-2) and Area PD-8 are presented on Figure 18.

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9.0 RI - FIELD INVESTIGATION

The objective of the RI was to determine the extent of potential petroleum impacts in soil at Site 1. No additional groundwater investigation was proposed as part of the RI for Site 1. 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 UST6 in January 2003 and at UST5 in March of 2003. The UST removal effort is described in Section 10; the removal is not considered a remedial action since the tank was previously closed in place with NYSDEC approval. A summary of the soil borings and samples are presented in Table 9. The soil boring locations are presented on Figure 19. The RI (Site 1) included the following areas: Area UST2 (including soil boring locations UST2-1, UST2-1B and UST2-3, the PG-TMW-02 location), Area Wood-5, Area FS-1, Area A (soil boring location A-2) and Area UST6 as well as the northern, southern and western delineation of location A-5 (Site 2A) and the western delineations of locations GW-14 and B-3 (Site 2A). The RI investigation for Area UST2 was accomplished through the installation and sampling of soil borings. To date, no USTs have been identified at the Area UST2. Due to concurrent building demolition activities, it was not possible to implement the proposed RI activities at Area PD-8. As described under Section 9.1.5, the PD-8 location was not accessible during the May through July 2002 period. Subsequently, a review of analytical results and field observations as well as proposed groundwater evaluation actions for a surcharging pilot study (See Section 13) indicted that no RI actions were necessary at Area PD-8.

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P:\232952wmd\Operable Unit Reports\Operable Unit 1\Mapping\POST VCP Mapping 8-11-04\3rd Drafts, PA Revisions\SITE 1 ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/20/04 4:29 pm

UST2-1N5-S1

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.18 J	0' to 2'

UST2-1N5-S2

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.067 J	2' to 4'

UST2-1N5-S3

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.58	4' to 5'
Benzo[a]pyrene :	0.5	4' to 5'
Chrysene :	0.55	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'

WOOD5-N1-S1

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.12 J	0' to 2'

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'

UST2-1W2-S1

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.075 J	0' to 2'

UST2-1W2-S2

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.084 J	0' to 2'

UST2-2S1-S2

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.11 J	2' to 4'

UST2-1AE-S1

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	1.3	0' to 2'
Benzo[a]pyrene :	1.8	0' to 2'
Benzo[b]flouranthene:	3.6	0' to 2'
Dibenzo[a,h)Anthracene :	1.9	0' to 2'
Chrysene :	0.11 J	0' to 2'

UST2-1AE-S2

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.17 J	0' to 2'

FS1BS2-S1

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

FS1BS2-S3

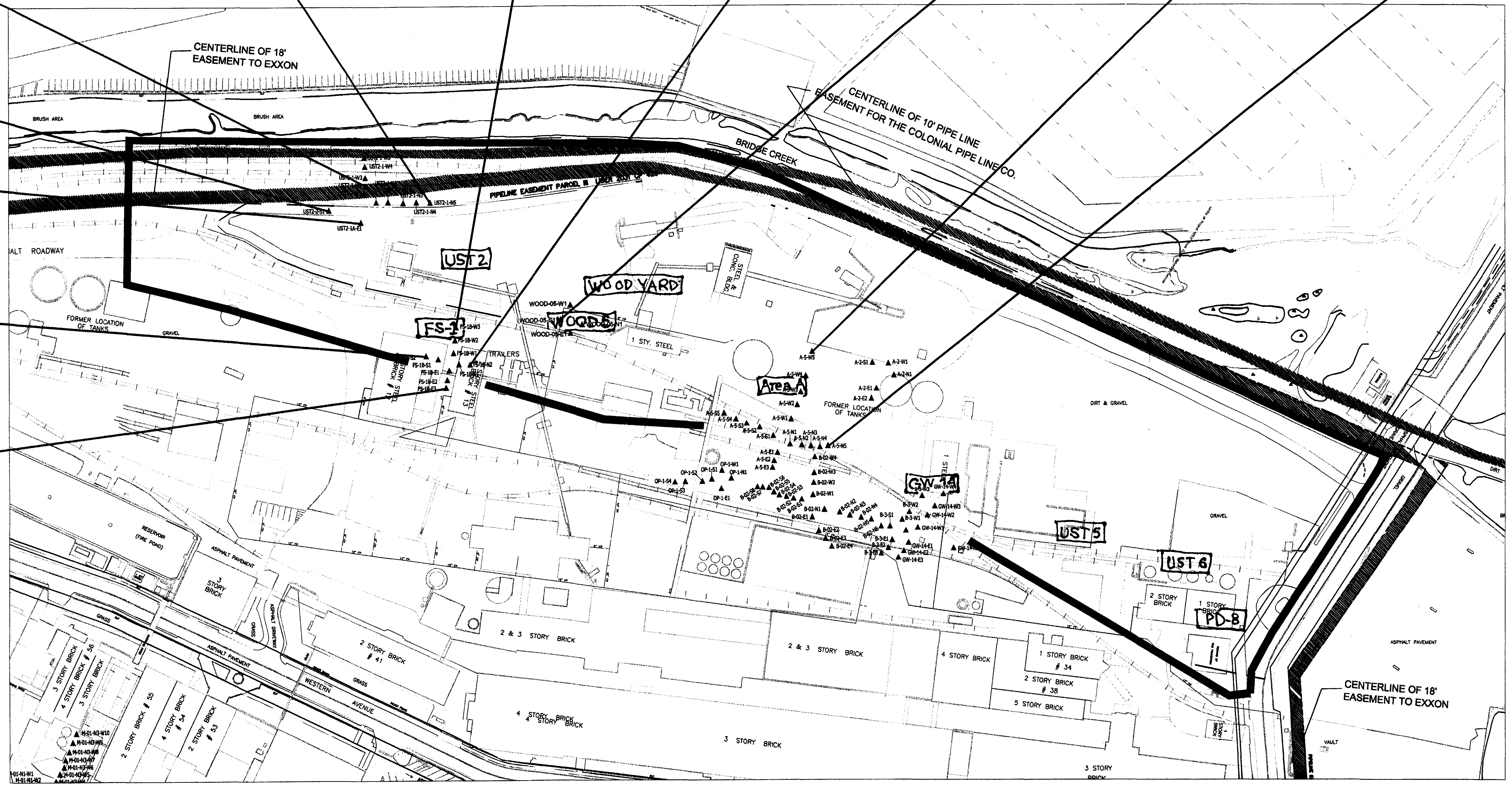
ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.78	4' to 5'
Benzo[a]pyrene :	0.65	4' to 5'
Chrysene :	0.91	4' to 5'

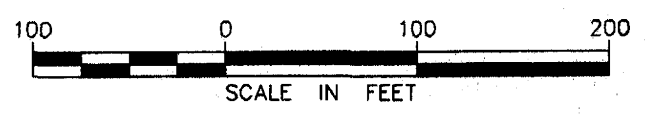
FS1BE3-S1

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'





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
Dibenzo(a,h)Anthracene :	0.014 or MDL

MDL - METHOD DETECTION LIMIT

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	ANALYTE	INDICATES COMPOUND FOR WHICH LABORATORY ANALYSIS WAS CONDUCTED
┼	RAILROAD TRACKS	RES	CONTAMINANT CONCENTRATION IN MG/KG
■	SITE BOUNDARY	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).
▲ A-5-WS	HMM REMEDIAL INVESTIGATION SAMPLE LOCATION	DEPTH	DEPTH IN FEET BELOW GROUND SURFACE

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THE PORT AUTHORITY
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ENGINEERING PROGRAM MANAGER

No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

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

SITE 1
SAMPLE LOCATIONS AND ANALYTICAL RESULTS MAP, 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.

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Date

Contract Number

Drawing Number **FIGURE 19**

Hatch Mott MacDonald

Table 9
Summary of Remedial Investigation Sampling
Site 1: HHMT - Port Ivory Facility

Initial AOC	SI Location(s)	Description of Issues	Description of Actions and Sampling	Analytical Parameters (Soil)
Potential USTs (UST2, UST5 and USTS6)	**UST-2** **(including soil boring locations UST2-1, UST2-1A, UST2-2 and TMW-02)**	Sanborn Maps identified three potential UST areas at Site 1, UST2, UST5 and UST6. The SI at UST2 also revealed indications of potential petroleum impacts at soil borings UST2-1, UST2-1A,UST2-2 and temporary well location TMW-02. RI actions have not been implemented at UST5 and UST6 has been addressed through remedial actions.	12 soil borings were installed: UST2-1-N1, UST2-1-N2, UST2-1-N3, UST2-1-N4, UST2-1-N5, UST2-1A-E1, UST2-2-S1, UST2-1-W1, UST2-1-W2, UST2-1-W3, UST2-1-W4 and UST2-1-W5. 9 soil samples were submitted for laboratory analysis: UST2-1N5-S1(0-2'), UST2-1N5-S2(2-4'), UST2-1N5-S3(4-6'), UST2-2S1-S2(2-4'), UST2-2S1-S3(4-6'), UST2-1AE-S1(0-2'), UST2-1AE-S2(2-4'), UST2-1W2-S1(0-2'), and UST2-1W2-S2(2-4').	VOC 8270; BN 8260
Wood Yard	**Wood-5**	The SI at the Wood Yard identified potential petroleum impacts at the soil boring Wood-5 location.	4 soil borings were installed: Wood-05-N1, Wood-05-E1, Wood-05-S1, and Wood-05-W1. 11 soil samples were submitted for laboratory analysis: Wood5-E1-S1(0-2'), Wood5-E1-S2(2-4'), Wood5-E1-S3(4-6'), Wood5-N1-S1(0-2'), Wood5-N1-S2(2-4'), Wood5-N1-S3(4-6'), Wood5-W1-S1(0-2'), Wood5-W1-S2(2-4'), Wood5-W1-S3(4-6'), Wood5-S1-S1(0-2'), Wood5-S1-S2(2-4').	VOC 8270; BN 8260
Area A	**A-2 & A-5 (north, south and west)**	Area A is located within both Site 1 and 2A. The SI of Area A identified potential petroleum impacts at several boring locations including A-2 and A-5. Location A-2 and associated RI soil borings are situated within Site 1. Soil boring A-5 is located in Site 2. However, RI soil borings installed to the north, south and west are situated within Site 1.	5 soil borings were installed at Site 1to evaluate location A-2: A-2-W1, A-2-S1, A-2-N1, A-2-E1, A-2-E2, 7 soil samples were collected from A-2 RI borings and submitted to the lab for analysis: A2-W1-S1(0-2'), A2W1-S2(2-4'), A2W1-S3(4-6'), A2S1-S1(0-2'), A2N1-S1(0-2'), A2N1-S2(2-4'), A2N1-S3(4-6') 18 soil borings were installed to evaluate location A-5: A-5-S5, A-5-S4, A-5-S3, A-5-S2, A-5-S1, A-5-N1, A-5-N2, A-5-N3, A-5-N4, A-5-N5, A-5-W5, A-5-W4, A-5-W3, A-5-W2, A-5-W1, A-5-E1, A-5-E2, and A-5-E3 8 soil samples were collected from A-5 RI borings located in Site 1 and submitted to the lab for analysis: A5W5-S1 (0-2'), A5W5-S2 (2-4'), A5W5-S3 (4-6'), A5N5-S1 (0-2'), A5N5-S2 (2-3'), A5S5-S1 (0-2'), A5S5-S2 (2-4'), and A5S5-S3 (4-6').	VOC 8270; BN 8260

Table 9
Summary of Remedial Investigation Sampling
Site 1: HHMT - Port Ivory Facility

Initial AOC	SI Location(s)	Description of Issues	Description of Actions and Sampling	Analytical Parameters (Soil)
Former Structures	**FS-1 (FS-1B)**	Sanborn Maps and aerial photographs revealed the presence of former structures at various locations throughout Site 1. The SI identified potential petroleum impacts at the FS-1B loation.	10 soil borings were installed in four directions from FS-1B: FS-1B-S2, FS-1B-S1, FS-1B-E3, FS-1B-E2, FS-1B-E1, FS-1B-N1, FS-1B-N2, FS-1B-W1, FS-1B-W2, and FS-1B-W3. 9 soil samples were submitted for laboratory analysis: FS1BN2-S2(2-4'), FS1BN2-S3(4-6'), FS1BW3-S1(0-2'), FS1BW3-S2(2-4'), FS1BW3-S3(4-6'), FS1BS2-S1(0-2'), FS1BS2-S3(4-6'), FS1BE3-S1 (0-2') and FS1BE3-S4(5-5.5').	VOC 8270; BN 8260
Area B	**B-3**	Area B is located within Site 2A. The SI of Area B identified potential petroleum impacts at soil boring B-3 location. Soil boring B-3 is located in Site 2A. However, one soil boring installed to the west of B-3 is located within Site 1.	1 soil boring installed to evaluate location B-3 is located in Site 1: B-3-W3. No soil sample was collected from the boring because of the close proximity to soil boring GW-14-W4. Please see comments for GW-14.	VOC 8270; BN 8260
Monitoring Wells	**GW-14**	The SI revealed a sheen on the groundwater surface of monitoring well GW-14 which is located in Site 2A. Two RI soil borings installed to the west of GW-14 are located within Site 1.	8 soil borings installed to evaluate location GW-14: GW-14-E1, GW-14-E2, GW-14-E2, GW-14-W1, GW-14-W2, GW-14-W3 GW-14-W4, and GW-14-N3. 1 soil sample was submitted for laboratory analysis: GW-14-W4 (4-4.5').	VOC 8270; BN 8260

Additional information pertaining to PD-8 is provided in Section 9.1.5. 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 9.✓Field observations are presented in Table 10.✓

9.1.1 Area UST2

It was proposed to install test pits soil borings surrounding three soil boring locations (UST2-1, UST2-1B and UST2-3) and a temporary monitoring well, the PG-TMW-02 location installed as part of the SI. However, given the close proximity of the soil borings to one another, these four locations were considered a single AOC for the purposes of delineation. In addition, given ongoing site activity, soil borings were utilized to evaluate this area rather than test pits. Twelve soil borings were installed at locations north, south, east and west of soil boring UST2-1. Soil samples were field screened as described in Section 9.1 resulting the establishment of endpoints at variable distances extending from the AOC centroid (i.e, center boring UST-2-1). Specifically, soil borings were installed as follows: five soil borings were installed to the north; one soil boring was installed to the east; one soil boring was installed to the south and five soil borings were installed to the west. The distances in each direction were as follows: 75 feet to the north, 15 feet to the east, 15 feet to the south and 75 feet to the west. Nine 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 9. ✓

9.1.2 Area Wood-5

As proposed, soil borings were installed surrounding SI soil boring Wood-5. One soil boring was installed 15 feet to the north, south, east, and west (total of four soil borings). Eleven soil samples were collected from various depths of the soil borings and were submitted for laboratory analysis. The soil boring and sample designations, sample depths and analytical parameters are provided in Table 9. ✓

9.1.3 Area FS-1

As proposed, soil borings were installed surrounding SI soil boring FS-1B. Ten soil borings were installed at locations north, south, east and west of soil boring FS-1B. Soil samples were field screened as described in Section 9.1 resulting the establishment of endpoints 30 to 45 feet from this soil boring. Specifically, soil borings were installed as follows: two soil borings were installed to the north; three soil borings were installed to the east; two soil borings were installed to the south and three soil borings were installed to the west. It should be noted that the two soil borings installed to the east are located on Site 2. The distances in each direction were as follows: 30 feet to the north, 45 feet to the east, 30 feet to the south and 45 feet to the west. Ten soil samples

Table 10
Summary of RI Field Observations
Site 1: 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.	**UST-2 Area Block 1400**	UST2-1-W1	15' W of UST2	5/22/02	0-2' m-c Grv, dk brn-blk slty Sd, misc. fill (cndrs) 2-3' m-c Grv, dk brn-blk slty Sd, misc. fill (cndrs) 3-4' lt brn-org f-m Sd, f-m Grv 4-5.2' lt brn-org f-m Sd, f-m Grv 5.2-6' dk brn slty Sd, f-m Grv ; strng odor (440 PID) Gw @ 5' bsg	Yes	No
2.	**UST-2 Area Block 1400**	UST2-1-W2	30' W of UST2-1	5/22/02	0-2' m-c Grv, dk brn-blk slty Sd, s cndrs; odor (76 PID) 2-4' m-c Grv, dk brn-blk slty Sd, cndrs; strng odor 123.2 PID) 4-5' m-c Grv, dk brn-blk slty Sd, cndrs Gw @ 5' bsg	Yes	Yes AB 57969-70 5/22/02
3.	**UST-2 Area Block 1400**	UST2-1-W3	45' W of UST-2	5/22/02	0-2' dk brn-blk slty Sd, cndrs, m-c Grv; strng odors (150.6 PID) 2-4' dk brn-blk slty Sd, cndrs, coal; strng odors (150.1 PID) 4-5' dk brn-blk slty Sd, cndrs, m-c Grv Gw @ 4.5'	Yes	No
4.	**UST-2 Area Block 1400**	UST2-1-W4	60' W of UST-2	5/22/02	0-2' dk brn- blk slty Sd, s cndrs, m-c Grv (PID 219.2) 2-4' dk brn-blk slty Sd, cndrs, coal pcs Gw @ 4' bsg	Yes	No
5.	**UST-2 Area Block 1400**	UST2-1-W5	75' W of UST-2	5/22/02	0-2' dk brn-blk slt Sd, m-c Grv, cndrs, brk (PID 417) 2-4' dk brn-blk slty Sd, m-c Grv, cndrs, brk, coal,ash Gw @ 4' bsg	Yes	No
6.	**UST-2 Area Block 1400**	UST2-1-N1	15' N of UST-2	5/22/02	0-2' dk brn-blk slty Sd, m-c Grv; cndrs, coals, brk 2-2.4' dk brn-blk slty Sd, m-c Grv; cndrs, coals, brk 2.4-4' Brn-blk slt Sd, s slag cndrs 4-5' Brn-blk slt Sd, s slag cndrs Gw @ 5'	Yes	No

Table 10
Summary of RI Field Observations
Site 1: 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)
7.	**UST-2 Area Block 1400**	UST2-1-N2	30' N of UST-2	5/22/02	0-2' dk brn-blk slty Sd, m-c Grv; cndrs, coal, ash, slag, brk (PID 273.9) 2-3.5' dk brn-blk slty Sd, m-c Grv; cndrs, coal, ash, slag, brk (PID 263.3) 3.5-4' dk brn-blk slty Sd, m-c Grv; cndrs, coal, ash, slag, brk 4-5' dk brn-blk slty Sd, m-c Grv; cndrs, coal, ash, slag, brk (PID 417) Gw @ 5' bsg	Yes	No
8.	**UST-2 Area Block 1400**	UST2-1-N3	45' N of UST-2	5/22/02	0-2' dk brn-blk slty Sd, m-c Grv; cndrs, coal, ash, slag, brk (PID 388.4) 2-4' dk brn-blk slty Sd, m-c Grv; cndrs, coal, ash, slag, brk (PID 227.9) 4-5' dk brn-blk slty Sd, m-c Grv; cndrs, coal, ash, slag, brk (PID 72.1) Gw @ 5'	Yes	No
9.	**UST-2 Area Block 1400**	UST2-1-N4	60' N of UST-2	5/22/02	0-2' Dk brn-blk slty Sd, m-c Grv (PID 322) 2-2.2' Dk brn-blk slty Sd, m-c Grv (PID 364.1) 2.2-4 red brn Sd, cndrs, coal pcs 4-5' dk brn slty Sd, s cndrs (PID 423.3) Gw @ 5' bsg	Yes	No
10	**UST-2 Area Block 1400**	UST2-1-N5	75' N of UST-2	5/23/02	0-2' dk brn-blk slty Sd, m-c Grv; cndrs, brk, coal pcs 2-3.5' dk brn-blk slty Sd, m-c Grv; cndrs, brk, coal pcs 3.5-4' red brn slty Sd 4-5' red brn slty Sd Gw @ 5' bsg	Yes	Yes AB 58210-12 5/23/02
11	**UST-2 Area Block 1400**	UST2-1A-E1	15' E of UST-2	5/23/02	0-2' dk brn-blk slty Sd; s cndrs, coal, slag, wd 2-4' dk brn-blk slty Sd; s cndrs, coal, slag, wd Gw @ 4' bsg	Yes	Yes AB 58215-6 5/23/02

Table 10
Summary of RI Field Observations
Site 1: 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)
12	**UST-2 Area Block 1400**	UST2-2-S1	15' S of UST-2	5/23/02	0-2' dk brn-blk slty Sd, c Grv; cndrs, slag, coal pcs, brk 2-4' dk brn-blk slty Sd, s cndrs,slag, coal pcs 4-5' dk brn-blk slty Sd, s cndrs,slag, coal pcs Gw @ 5' bsg	Yes	Yes AB 58213-4 5/23/02
13	**Wood-5 Area Block 1400**	Wd-5-E1	10' E of Wood-5	5/23/02	0-0.5' topsoil, wd pcs 0.5-1.3' Sd, t. slt, wd pcs 1.3-2' dk brn-blk slt Sd; f Grv, cndrs, slag 2-4' dk brn-blk slt Sd; f Grv, cndrs, slag 4-6' dk brn-blk slt Sd; f Grv, cndrs, slag Gw @ 6' bsg	Yes	Yes AB 58199-201 5/23/02
14	**Wood-5 Area Block 1400**	Wd-5-N1	15' N of Wood-5	5/23/02	0-0.3' topsoil, wd pcs 0.3' 1.4' lt. Brn Sd 1.4-2' dk brn-blk slt Sd; f Grv, cndrs, slag 2-4' dk brn-blk slt Sd; f Grv, cndrs, slag 4-6' dk brn-blk slt Sd; f Grv, cndrs, slag Gw @ 6' bsg	Yes	Yes AB58202-4 5/23/02
15	**Wood-5 Area Block 1400**	Wd-5-W1	15' W of Wood-5	5/23/02	0-0.2' topsoil wd pcs 0.2-1' lt. Brn Sd 1-1.5' brn Sd 1.5-2' dk brn-blk slt Sd; f Grv, cndrs, slag 2-4' dk brn-blk slt Sd; f Grv, cndrs, slag 4-6' dk brn-blk slt Sd; f Grv, cndrs, slag Gw @ 6' bsg	Yes	Yes AB58205-7 5/23/02
16	**Wood-5 Area Block 1400**	Wd-5-S1	15' S of Wood-5	5/23/02	0-0.2' top soil, wd pcs 0.2-1.3' brn sand 1.3-2' dk brn-blk slt Sd; f Grv, cndrs, slag 2-4' dk brn-blk slt Sd; f Grv, cndrs, slag Gw @ 4'	Yes	Yes AB58208-9

Table 10
Summary of RI Field Observations
Site 1: 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)
17	**FS-1 Area Block 1400**	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
18	**FS-1 Area Block 1400**	PG-FS-1B-E2	30’E of FS-1B *located in Site 2A	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
19	**FS-1 Area Block 1400**	PG-FS-1B-E3	45’E of FS-1B *located in Site 2A	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
20	**FS-1 Area Block 1400**	FS-1B-N1	15’ N of FS-1B	6/3/02	0-0.6’ brn slt Sd, Grv, brk 0.6-0.9’ concrete rbl 0.9-2’ blk Sd slt, cndrs, Grv 2-4.5’ blk Sd slt, cndrs, Grv 4.5-5’ wht diatomaceous earth Gw @ 5’ bsg	Yes	No

Table 10
Summary of RI Field Observations
Site 1: 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)
21	**FS-1 Area Block 1400**	FS-1B-N2	30' N of FS-1B	6/3/02	0-0.7' brn slt Sd, Grv 0.7-1' concrete rbl 1-2' blk slt Sd, cndrs, Grv 2-4' blk slt Sd, cndrs, Grv 4-5' blk slt Sd, cndrs, Grv 5-5.1' diatomaceous earth Gw @ 5' bsg	Yes	Yes AB58958-9
22	**FS-1 Area Block 1400**	FS-1B-S1	15' S of FS-1B	6/3/02	0-0.7' brn Sd slt, Grv, cndrs, brk 0.7-1' asphalt 1-2' blk slt Sd, Grv, brk, cndrs 2-4' blk slt Sd, Grv, brk, coal, cndrs 4-6' blk slt Sd, Grv, brk, coal, cndrs, wd; odor Gw @ 4' bsg	Yes	No
23	**FS-1 Area Block 1400**	FS-1B-S2	30' S of FS-1B	6/3/02	0-0.7' brn slt Sd, Grv, brk 0.7-1' asphalt 1-2' blk slt Sd, Grv, brk, coal, cndrs, slag 2-4' blk slt Sd, Grv, brk, coal, cndrs, slag 4-5' blk slt Sd, Grv, brk, coal, cndrs, slag Gw @ 5'	Yes	Yes
24	**FS-1 Area Block 1400**	FS-1B-W1	15'W of FS-1B	6/3/02	0-1' brn grvly Sd, t. slt 1-2' gray Grv. ,Blk cndrs 2-2.5' cndrs 2.5-4' blk Sdy Grv, diatomaceous earth, wd Gw @ 4' bsg	Yes	No
25	**FS-1 Area Block 1400**	FS-1B-W2	30'W of FS-1B	6/3/02	0-1' brn grvly Sd, t. slt 1-2' brn grvly Sd, cndrs 2-3' brn, rust grvly Sd diatomaceous earth 3-5' wd, grvly Sd, lt. Brn diatomaceous earth & Grv. Gw @ 5'bsg.	Yes	No

Table 10
Summary of RI Field Observations
Site 1: 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)
26	**FS-1 Area Block 1400**	FS-1B-W3	45' W of FS-1B	6/4/02	0-0.1' asphalt 0.1-0.5' Grv sub base 0.5-1' c Grv 1-1.6' blk Sd slt, Grv, cndrs 1.6-2' blk Sd slt, brn-blk cndrs 2-4' blk Sd slt, Grv, brn-blk cndrs Gw @ 4' bsg	Yes	YesAB58960-2
27	**A-2 Area Block 1400**	PG-A-2-E1	15' E of A-2	5/21/01	0-1.3' lt brn f–m Sd 1.3-2' gry brn f Sd, m-c Grv 2-2.2' gry brn f Sd, m-c Grv 2.2-3' f-m Grv, aggregate road base 3-4' slt cl, Grv 4' OBSTRUCTION concrete	Yes	No
28	**A-2 Area Block 1400**	PG-A-2-E2	30' E of A-2	5/21/01	0-1.3' lt brn f-m Sd, s Grv 1.3-2' lt brn f-m Sd, wd particles 2-2.5' OBSTRUCTION	Yes	No
29	**A-2 Area Block 1400**	PG-A-2-N1	15' N of A-2	5/21/01	0-0.2' asphalt 0.2-2' lt. Brn f-m Sd, s Grv 2-4' lt. Brn f-m Sd, s Grv 4-6' lt. Brn f-m Sd, s Grv 6-8' lt. Brn f-m Sd, s Grv Gw @ 6' bsg	Yes	Yes AB 57965-7 5/21/02

Table 10
Summary of RI Field Observations
Site 1: 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)
30	**A-2 Area Block 1400**	PG-A-2-S1	15' S of A-2	5/21/01	0-0.4' lt. Brn f-m Sd, fil 0.4-0.6' asphalt 0.6-2'lt. Brn f-m Sd 2-3.5' lt brn f-m Sd 3.5-4' lt brn f-m Sd, f-m Grv 4-4.2' lt brn f-m Sd, f-m Grv 4.2-4.8' cndrs 4.8-5.0' cndrs, s Grv 5.0-5.2' wht. diatomaceous earth 5.2-8' wht. Diatomaceous earth, s Sd GW @ 3.5' bsg	Yes	Yes AB57963-4 5/21/02
31	**A-2 Area Block 1400**	PG-A-2-W1	15' W of A-2	5/21/01	0-0.2' asphalt 0.2-0.3' gravel 0.3-2' lt. Brn f-m Sd 2-4' lt. Brn f-m Sd 4-6' lt. Brn f-m Sd Gw @ 5' bsg	Yes	Yes AB57960-2 5/21/02
32	**A-5 Area Block 1400**	PG-A-5-S1	15' S of A-5	5/24/02	0-2' brn-dk brn slty Sd, f-m Grv, crushed concrete 2-3.1' brn-dk brn slty Sd, f-m Grv, crushed concrete 3.1-3.7' brk/ cl pipe 3.7-4' lt. Brn Sd 4-4.2' lt. Brn Sd 4.2-5' blk slit Sd,; strng petroleum. odor, Gw @ 5' bsg	Yes	No
33	**A-5 Area Block 1400**	PG-A-5-S2	30' S of A-5	5/24/02	0-2' brn-dk brn slt Sd, f-m Grv 2-4' brn-dk brn slt Sd, f-m Grv 4-4.1' brn-dk brn slt Sd, f-m Grv 4.1-5' blk slt Sd; sli odor Gw @ 5' bsg	Yes	No

Table 10
Summary of RI Field Observations
Site 1: 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)
34	**A-5 Area Block 1400**	PG-A-5-S3	45' S of A-5	5/24/02	0-2' brn-dk brn slt Sd, f-m Grv 2-4' dk brn slt Sd, stn soil, cndrs; sli odor 4-5' dk brn slt Sd, stn soil, cndrs; sli odor, sheen on water Gw@ 5' bsg	Yes	No
35	**A-5 Area Block 1400**	PG-A-5-S4	60' S of A-5	5/24/02	0-2' brn-dk brn slt Sd, f-m Grv 2-2.1' brn-dk brn slt Sd, f-m Grv 2.1-2.8' cndrs, Grv 2.8-4' blk slt Sd, s cndrs 4-5' blk slt Sd, s cndrs; sli odor, sli sheen Gw @ 5'	Yes	No
36	**A-5 Area Block 1400**	PG-A-5-S5	75' S of A-5	5/24/02	0-1.9' brn-dk brn slt Sd, f-m Grv 1.9-2'cndrs/slag, diatomaceous earth 2-3' cndrs/slag, diatomaceous earth 3-4' blk slt Sd, s cndrs/slag; no odor 4-5' blk slt Sd, s cndrs/slag; no odor Gw @ 5' bsg	Yes	Yes AB58335-7 5/24/02
37	**A-5 Area Block 1400**	PG-A-5-N1	15' N of A-5	5/28/02	0-2'Grv, dk brn slt Sd 2-2.2' Grv, dk brn slt Sd 2.2-4' cndrs, s slag 4-5' cndrs, s slag Gw @ 5' bsg	Yes	No
38	**A-5 Area Block 1400**	PG-A-5-N2	30' N of A-5	5/28/02	0-1.8' Grv, dk brn slt Sd 1.8-2' cndrs, Grv, blk slt Sd 2-3' cndrs, Grv, blk slt Sd; sli odor (18.3 PID) Gw @ 3'	Yes	No

Table 10
Summary of RI Field Observations
Site 1: 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)
39	**A-5 Area Block 1400**	PG-A-5-N3	45' N of A-5	5/28/02	0-1.9' Grv, dk brn slt Sd 1.9-2' blk slt Sd, cndrs, sli odor 2-3' blk slt Sd, cndrs; odor. Gw @ 3' bsg	Yes	No
40	**A-5 Area Block 1400**	PG-A-5-N4	60' N of A-5	5/28/02	0-1.8' Grv, dk brn slt Sd 1.8-2' blk slt Sd, cndrs; odor 2-3.2' blk slt Sd, cndrs; odor Gw @ 3.2' bsg	Yes	No
41	**A-5 Area Block 1400**	PG-A-5-N5	75'N of A-5	5/28/02	0-2' Grv, dk brn slt Sd 2-3.4' blk cndrs, Grv; no odors, no sheen Gw @ 3.4' bsg	Yes	Yes AB 58483-4 5/28/02
42	**A-5 Area Block 1400**	PG-A-5-W1	15' W of A-5	5/28/02	0-0.8' Grv 0.8-2' dk brn-blk slt Sd 2-2.6' dk brn-blk slt Sd 2.6-3.0' diatomaceous earth; no odor, no sheen Gw @ 3' bsg	Yes	No
43	**A-5 Area Block 1400**	PG-A-5-W2	30' W of A-5	5/28/02	0-0.7' Grv 0.7-2' dk brn-brn slt Sd, Grv 2-3' dk brn-brn slt Sd, Grv, cndrs; sheen on Gw table Gw @ 3' bsg	Yes	No
44	**A-5 Area Block 1400**	PG-A-5-W3	45' W of A-5	5/28/02	0-0.1' Grv 0.1-1' brn Sd, t. slt 1-2' brn-blk slt Sd, Grv 2-3' brn-blk slt Sd, Grv 3-4' diatomaceous earth 4-6' diatomaceous earth; sli odor/sheen Gw @ 3' bsg	Yes	No

Table 10
Summary of RI Field Observations
Site 1: 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)
45	**A-5 Area Block 1400**	PG-A-5-W4	60' W of A-5	5/28/02	0-0.2' Grv 0.2-2' brn slt Sd, Grv 2-3' brn-blk slt Sd, Grv, cndrs 3-4' diatomaceous earth 4-5' diatomaceous earth 5-6' cndrs; odor, sheen Gw @ 3.5'	Yes	No
46	**A-5 Area Block 1400**	PG-A-5-W5	75' w of A-5	5/29/02	0-1.7' Grv, dk brn slt Sd 1.7-2' diatomaceous earth 2-3' blk-brn slt Sd, cndrs, Grv 3-4' diatomaceous earth 4-5.8' blk slt Sd, cndrs, slag; no odor, no sheen 5.8-6.0' diatomaceous earth Gw @ 4'	Yes	Yes AB 58487-89 5/28/02
47	**GW-14 Area Block 1400**	PG-GW-14-W3	15'W of GW-14	6/20/02	0-4" asphalt 4"-1' blk f Sd slt, 1 ½" Grv 1-2' reddish brn m-f Sd; sheen developed on Gw Gw @ 2.5' bsg	Yes	No
48	**GW-14 Area Block 1400**	PG-GW-14-W4	15'W of GW14-W3	7/19/02	0-4" concrete rbl, cndrs, rebar 4"-1' concrete rbl, cndrs, rebar 1-2' concrete rbl, cndrs 2-3' concrete rbl, cndrs 3-4' blk f Sd, cndrs 4-5' blk-gry Cl Gw @ 4.5' bsg	Yes	Yes
49	**B-3 Area Block 1400**	PG-B-3-W2	45' W of B-3	6/21/02	0-6" asphalt 6"-1' blk f Sd, mix 1" Grv and cndrs 1-2' blk f Sd, mix 1" Grv and cndrs 2-3' blk f Sd, mix 1" Grv and cndrs, sli odors, stn soil, product in Gw Gw @ 3' bsg	Yes	No

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 9.

9.1.4 Area A

Area A is located in both Sites 1 and 2A. Based on the SI, RI actions were proposed for two soil borings installed to evaluate Area A, A-2 and A-5. Soil boring A-2 is located within Site 1 and soil boring A-5 is located within Site 2A. However, many of the RI soil borings installed to delineate the extent of potential petroleum impacts to the north, south and west of location A-5 are located within Site 1. As such, RI actions for both A-2 and A-5 are presented herein, as appropriate.

9.1.4.1 Area A-2

As proposed, soil borings were installed surrounding SI soil boring A-2. Five soil borings were installed at locations north, south, east and west of soil boring A-2. Soil samples were field screened as described in Section 9.1 resulting the establishment of endpoints 15 to 30 feet from this soil boring. One soil boring was installed to the north, south and west at distances of approximately 15 feet from location A-2. Two soil borings were installed to the east of soil boring A-2 , both encountering reinforced concrete at depths ranging from 2.5 to 4.0 feet bgs. Field observations from these borings did not identify indications of petroleum impacts in soil situated above the concrete obstruction. Given the results of field screening and information indicating that the concrete pad was likely to be of substantial size, no further RI was performed to the east of A-2. Rather, it was determined that additional subsurface review would be conducted during RA activities, as necessary based on field screening. Based on the above, the distances in each direction were as follows: 15 feet to the north, south and west and 45 feet to the east. Eight 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 9.

9.1.4.2 Area A-5

As proposed, soil borings were installed surrounding SI soil boring A-5. Eighteen soil borings were installed at locations north, south, east and west of soil boring A-5. Specifically, soil borings were installed as follows: five soil borings were installed to the north; three soil boring were installed to the east; and, five soil borings were installed to the south and west. 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, 45 feet to the east, 75 feet to the west and 75 feet to the south. All soil borings installed to the north, south and west are situated within Site 1 and the soil borings installed to the east are situated within Site 2A. Eight soil samples were collected from various depths of endpoint soil borings (to the north, south and west) and were submitted for laboratory analyses. The soil boring and sample designations, sample depths and analytical parameters are provided in Table 9.

9.1.5 Area PD-8

Due to building demolition activities, the Area PD-8 was not accessible during the RI. The RI for this area was proposed to delineate the presence of toluene slightly in excess of the NYSDEC guidance criteria in samples collected from 8 to 10 feet bgs and 16 to 17 feet bgs. As previously described in this report (Section 4.2.1), P&G performed closure activities for a 10,000 gallon UST formerly containing toluene. The NYSDEC issued a Spill Case Closure (to P&G) for this matter in August 1990. Given the proximity of the former tank to the PD-8 location, it appears that the presence of toluene in soil at this location is attributable to the former UST. Given that the source of the toluene was removed and that other soil samples collected from this area did not exhibit concentrations of this contaminant in excess of NYSDEC guidance criteria, RI action did not appear warranted with regard to soil at location PD-8. Further, as described in Section 13, the Port Authority proposed to evaluate groundwater at this portion of Site 1 as part of the proposed surcharging pilot study. Therefore, any groundwater impacts would be identified through the proposed pilot study.

9.1.6 Area UST5

The RIW included the installation of test pits at the Area UST5. The purpose of the proposed test pits was to confirm that USTs did not exist at this area. During 2002 and 2003, contractors retained by the Port Authority initiated building and site demolition activities at Site 1. As part of those activities, the contractors removed concrete building footings and slabs, which allowed for visual review of the potential UST areas, including Area UST5. Investigative efforts at the UST5 Area revealed the presence of subsurface structures including concrete building footings/foundation elements, trenches, piping, catch basins, and concrete manholes and a UST within a concrete vault. Based on the other subsurface items, it appeared that the identified UST was likely utilized as part of an oil/water separator system. The UST measure approximately 15 feet with a diameter of 8 feet and was filled with sand. Upon removal, no holes were observed in the tank. No visual indications of petroleum were observed with regard to the interior of the concrete vault and field screening did not reveal any elevated readings on the PID. Groundwater was encountered during removal of the surrounding concrete vault. No visual indications or sheen were observed with regard to groundwater. Soil in this area was noted to include quantities of by-product fill material with a white coloration. No sampling was performed since the "closed" tank was noted to be situated within a concrete vault and field screening did not reveal any indications of contamination. Further, no additional information is provided with regard to this tank since it appears to have been part of an oil/water separator system.

9.1.7 Area UST6

As described above, contractors retained by the Port Authority initiated building and site demolition activities at Site 1 in 2002. As part of those activities, the contractors removed concrete building footings and slabs, which allowed for visual review of the potential UST areas, including Area UST6. These activities identified the presence of an UST at this location. As such, the Port Authority removed the tank. As previously stated in this report, review of mapping obtained subsequent to the performance of the SI revealed that the toluene tank closed in place by P&G corresponded with the tank present at Area UST6. The tank removal is further described under Section 12.0.

9.1.8 Areas GW-14 and B-3

The SI identified potential petroleum impacts at locations GW-14 and B-3, both located on Site 2A. However, the RI borings installed to delineate the western extent of potential contaminants at these areas were located within Site 1. Specifically, three borings (GW-14-W2, GW-14-W3 and GW-14-W4) to evaluate location GW-4 and one boring (B-3-W3) were installed at the eastern portion of Site 1. During RI activities, it was determined that GW-14 and B-3 (as well as B-2, situated on Site 2A) would be considered a single AOC. As such, a soil sample was collected from the westernmost soil boring, GW-14-W4. The soil boring and sample designations, sample depths and analytical parameters are provided in Table 9.

9.2 RI - Analytical Results (Soil)

As described in the preceding section, 46 soil samples were collected from 49 delineation soil borings installed at Site 1 to delineate potential petroleum impacts identified in the SI. Please note, the totals include soil borings and samples installed at Site 1 only. As described in the previous section, RI sampling of certain locations included the collection of samples at both Site 1 and Site 2A. However, as appropriate, soil borings installed at Site 2A are included in the ensuing analytical discussion.

The locations of the RI soil borings are presented on Figure 19. 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 9 identifies soil boring and sample designations and Table 10 presents the findings of field screening including soil characterization. The analytical results for HMM's sampling efforts of soil are presented in Tables 11A and 11B. 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 corresponding NYSDEC guidance criteria in soil samples collected from the RI samples. 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 11A, presents analytical results from VOC analysis.

9.2.2 PAH Compounds

The majority of PAH compounds were either not detected or were detected below corresponding NYSDEC RSCOs. Five PAH compounds were detected in excess of corresponding RSCOs in one or more samples from the RI sampling: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene. All PAH compounds were detected below 1 mg/kg with the exception of a single sample collected from Area UST2, which revealed concentrations of PAH compounds ranging from not-detected to 3.6 mg/kg. Specifically, UST2-1AE-S1 (0 to 2 feet) revealed the following contaminant concentrations: benzo(a)anthracene at 1.3 mg/kg; benzo(a)pyrene at 1.8 mg/kg; benzo(b)flouranthene at 3.6 mg/kg; chrysene at 1.9 mg/kg; and, dibenzo(a,h)anthracene at 0.11 mg/kg. The NYSDEC has not established guidance threshold values for 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. Table 11B presents analytical results from PAH compound analysis. A brief summary of the PAH compounds detected at each AOC is presented below.

Area FS-1

Benzo(a)pyrene, benzo(a)anthracene, dibenzo(a,h)anthracene and chrysene were detected at slightly elevated concentrations in several samples from this AOC. The total PAH compound concentration in samples collected from the FS-1 endpoint samples ranged from 0.187 mg/kg in sample FS1BN2-S3 (discrete 6-inch sample collected from the 4 to 6 foot interval) to 8.015 mg/kg in sample FS1BE3-S1 (the discrete 6-inch sample collected

Table 11A
Soil Analytical Results
Volatile Organic Compounds
Site 1 - HHMT Port Ivory Facility

Location	**Recommended**	**FS1BN2-S2**	**FS1BN2-S3**	**FS1BW3-S1**	**FS1BW3-S2**	**FS1BW3-S3**
Sample Date	**Soil**	6/4/2002	6/4/2002	6/4/2002	6/4/2002	6/4/2002
Area ID	**Cleanup**	PG-FS-1B	PG-FS-1B	PG-FS-1B	PG-FS-1B	PG-FS-1B
Sample Depth (feet)	**Objective**	2-4'	4-6'	0-2'	2-4'	4-6'
Concentration	**mg/kg**	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2,4-trimethylbenzene	3.4	0.0011U	0.0012U	0.0011U	0.0013U	0.0013U
1,3,5-trimethylbenzene	NS	0.0011U	0.0012U	0.0011U	0.0013U	0.0013U
4-isopropyltoluene	NS	0.0011U	0.0012U	0.0011U	0.0013U	0.0013U
Benzene	0.06	0.0011U	0.0012U	0.0011U	0.0013U	0.0013U
Ethylbenzene	5.5	0.0011U	0.0012U	0.0011U	0.0013U	0.0013U
Isopropylbenzene	NS	0.0011U	0.0012U	0.0011U	0.0013U	0.0013U
M&P Xylenes	1.2*	0.0023U	0.0024U	0.0023U	0.0026U	0.0027U
Methyl-t-butyl ether	NS	0.0011U	0.0012U	0.0011U	0.0013U	0.0013U
Naphthalene	13	0.0011U	0.0012U	0.0011U	0.0013U	0.0013U
N-Butylbenzene	NS	0.0011U	0.0012U	0.0011U	0.0013U	0.0013U
N-Propylbenzene	NS	0.0011U	0.0012U	0.0011U	0.0013U	0.0013U
O-Xylene	1.2*	0.0011U	0.0012U	0.0011U	0.0013U	0.0013U
Sec-Butylbenzene	NS	0.0011U	0.0012U	0.0011U	0.0013U	0.0013U
t-Butyl Alcohol	NS	0.011U	0.012U	0.011U	0.013U	0.013U
T-Butylbenzene	NS	0.0011U	0.0012U	0.0011U	0.0013U	0.0013U
Toluene	1.5	0.0011U	0.0012U	0.0011U	0.0013U	0.0013U
Total VOCs	10	ND	ND	ND	ND	ND

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

Table 11A
Soil Analytical Results
Volatile Organic Compounds
Site 1 - HHMT Port Ivory Facility

Location	**Recommended**	**FS1BS2-S1**	**FS1BS2-S3**	**FS1BE3-S1***	**FS1BE3-S4***	**A2-W1-S1**	**A2W1-S2**
Sample Date	**Soil**	6/3/2002	6/3/2002	6/3/2002	6/3/2002	5/21/2002	5/21/2002
Area ID	**Cleanup**	PG-FS-1B	PG-FS-1B	PG-FS-1B	PG-FS-1B	PG-A-2	PG-A-2
Sample Depth (feet)	**Objective**	0-2'	4-5'	0-2'	5-5.5'	0-2'	2-4'
Concentration	**mg/kg**	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2,4-trimethylbenzene	3.4	0.0011U	0.0012U	0.0011U	0.0013	0.0011U	0.0011U
1,3,5-trimethylbenzene	NS	0.0011U	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U
4-isopropyltoluene	NS	0.0011U	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U
Benzene	0.06	0.0011U	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U
Ethylbenzene	5.5	0.0011U	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U
Isopropylbenzene	NS	0.0011U	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U
M&P Xylenes	1.2*	0.0023U	0.0025U	0.0022U	0.0023U	0.0022U	0.0023U
Methyl-t-butyl ether	NS	0.0011U	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U
Naphthalene	13	0.0011U	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U
N-Butylbenzene	NS	0.0011U	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U
N-Propylbenzene	NS	0.0011U	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U
O-Xylene	1.2*	0.0011U	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U
Sec-Butylbenzene	NS	0.0011U	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U
t-Butyl Alcohol	NS	0.011U	0.012U	0.011U	0.011U	0.011U	0.011U
T-Butylbenzene	NS	0.0011U	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U
Toluene	1.5	0.0011U	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U
Total VOCs	10	ND	ND	ND	0.0013	ND	ND

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

Table 11A
Soil Analytical Results
Volatile Organic Compounds
Site 1 - HHMT Port Ivory Facility

Location	**Recommended**	**A2W1-S3**	**A2S1-S1**	**A2S1-S2**	**A2N1-S1**	**A2N1-S2**	**A2N1-S3**
Sample Date	**Soil**	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002	5/21/2002
Area ID	**Cleanup**	PG-A-2	PG-A-2	PG-A-2	PG-A-2	PG-A-2	PG-A-2
Sample Depth (feet)	**Objective**	4-6'	0-2'	2-4'	0-2'	2-4'	4-6'
Concentration	**mg/kg**	mg.kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2,4-trimethylbenzene	3.4	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U	0.0012U
1,3,5-trimethylbenzene	NS	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U	0.0012U
4-isopropyltoluene	NS	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U	0.0012U
Benzene	0.06	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U	0.0012U
Ethylbenzene	5.5	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U	0.0012U
Isopropylbenzene	NS	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U	0.0012U
M&P Xylenes	1.2*	0.0023U	0.0023U	0.0023U	0.0023U	0.0023U	0.0023U
Methyl-t-butyl ether	NS	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U	0.0012U
Naphthalene	13	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U	0.0012U
N-Butylbenzene	NS	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U	0.0012U
N-Propylbenzene	NS	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U	0.0012U
O-Xylene	1.2*	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U	0.0012U
Sec-Butylbenzene	NS	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U	0.0012U
t-Butyl Alcohol	NS	0.012U	0.011U	0.011U	0.011U	0.011U	0.012U
T-Butylbenzene	NS	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U	0.0012U
Toluene	1.5	0.0012U	0.0011U	0.0011U	0.0011U	0.0011U	0.0012U
Total VOCs	10	ND	ND	ND	ND	ND	ND

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

Table 11A
Soil Analytical Results
Volatile Organic Compounds
Site 1 - HHMT Port Ivory Facility

Location	**Recommended**	**PG5S5-S-1**	**PG-5S5-S2**	**PG-5S5-S3**	**A5N5-S1**	**A5N5-S2**
Sample Date	**Soil**	5/24/2002	5/24/2002	5/24/2002	5/28/2002	5/28/2002
Area ID	**Cleanup**	PG-A-5	PG-A-5	PG-A-5	PG-A-5	PG-A-5
Sample Depth (feet)	**Objective**	0-2'	2-4'	4-6'	0-2'	2-3'
Concentration	**mg/kg**	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2,4-trimethylbenzene	3.4	0.0013U	0.0012U	0.0013U	0.0014U	0.0016U
1,3,5-trimethylbenzene	NS	0.0013U	0.0012U	0.0013U	0.0014U	0.0016U
4-isopropyltoluene	NS	0.0013U	0.0012U	0.0013U	0.0014U	0.0016U
Benzene	0.06	0.0013U	0.0012U	0.0013U	0.0014U	0.0016U
Ethylbenzene	5.5	0.0013U	0.0012U	0.0013U	0.0014U	0.0016U
Isopropylbenzene	NS	0.0013U	0.0012U	0.0013U	0.0014U	0.0016U
M&P Xylenes	1.2*	0.0026U	0.0024U	0.0025U	0.0027U	0.0031U
Methyl-t-butyl ether	NS	0.0013U	0.0012U	0.0013U	0.0014U	0.0016U
Naphthalene	13	0.0013U	0.0012U	0.0013U	0.0014U	0.0016U
N-Butylbenzene	NS	0.0013U	0.0012U	0.0013U	0.0014U	0.0016U
N-Propylbenzene	NS	0.0013U	0.0012U	0.0013U	0.0014U	0.0016U
O-Xylene	1.2*	0.0013U	0.0012U	0.0013U	0.0014U	0.0016U
Sec-Butylbenzene	NS	0.0013U	0.0012U	0.0013U	0.0014U	0.0016U
t-Butyl Alcohol	NS	0.013U	0.012U	0.013U	0.014U	0.016U
T-Butylbenzene	NS	0.0013U	0.0012U	0.0013U	0.0014U	0.0016U
Toluene	1.5	0.0013U	0.0012U	0.0013U	0.0014U	0.0016U
Total VOCs	10	ND	ND	ND	ND	ND

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

Table 11A
Soil Analytical Results
Volatile Organic Compounds
Site 1 - HHMT Port Ivory Facility

Location	**Recommended**	**A5W5-S1**	**A5W5-S2**	**A5W5-S3**	**UST2-1N5-S1**	**UST2-1N5-S2**
Sample Date	**Soil**	5/29/2002	5/29/2002	5/29/2002	5/23/2002	5/23/2002
Area ID	**Cleanup**	PG-A-5	PG-A-5	PG-A-5	PG-UST-2	PG-UST-2
Sample Depth (feet)	**Objective**	0-2'	2-4'	4-6'	0-2'	2-4'
Concentration	**mg/kg**	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2,4-trimethylbenzene	3.4	0.0012U	0.0019U	0.0013U	0.0012U	0.0012U
1,3,5-trimethylbenzene	NS	0.0012U	0.0019U	0.0013U	0.0012U	0.0012U
4-isopropyltoluene	NS	0.0012U	0.0019U	0.0013U	0.0012U	0.0012U
Benzene	0.06	0.0012U	0.0019U	0.0013U	0.0013	0.0012U
Ethylbenzene	5.5	0.0012U	0.0019U	0.0013U	0.0012U	0.0012U
Isopropylbenzene	NS	0.0012U	0.0019U	0.0013U	0.0012U	0.0012U
M&P Xylenes	1.2*	0.0025U	0.0037U	0.0027U	0.0014J	0.0024U
Methyl-t-butyl ether	NS	0.0012U	0.0019U	0.0013U	0.0012U	0.0012U
Naphthalene	13	0.0012U	0.0019U	0.0013U	0.0012U	0.0012U
N-Butylbenzene	NS	0.0012U	0.0019U	0.0013U	0.0012U	0.0012U
N-Propylbenzene	NS	0.0012U	0.0019U	0.0013U	0.0012U	0.0012U
O-Xylene	1.2*	0.0012U	0.0019U	0.0013U	0.0012U	0.0012U
Sec-Butylbenzene	NS	0.0012U	0.0019U	0.0013U	0.0012U	0.0012U
t-Butyl Alcohol	NS	0.012U	0.019U	0.013U	0.012U	0.012U
T-Butylbenzene	NS	0.0012U	0.0019U	0.0013U	0.0012U	0.0012U
Toluene	1.5	0.0012U	0.0019U	0.0013U	0.0026	0.0012U
Total VOCs	10	ND	ND	ND	0.0053	ND

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

Table 11A
Soil Analytical Results
Volatile Organic Compounds
Site 1 - HHMT Port Ivory Facility

Location **Sample Date** **Area ID** **Sample Depth (feet)** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **mg/kg**	**UST2-1N5-S3** 5/23/2002 PG-UST-2 4-5' mg/kg	**UST2-2S1-S2** 5/23/2002 PG-UST-2 2-4' mg/kg	**UST2-2S1-S3** 5/23/2002 PG-UST-2 4-5' mg/kg	**UST2-1AE-S1** 5/23/2002 PG-UST-2 0-2' mg/kg	**UST2-1AE-S2** 5/23/2002 PG-UST-2 2-4' mg/kg
1,2,4-trimethylbenzene	3.4	0.0012U	0.0013U	0.0014U	0.0012U	0.0013U
1,3,5-trimethylbenzene	NS	0.0012U	0.0013U	0.0014U	0.0012U	0.0013U
4-isopropyltoluene	NS	0.0012U	0.0013U	0.0014U	0.0012U	0.0013U
Benzene	0.06	0.0012U	0.0013U	0.0014U	0.0012U	0.0013U
Ethylbenzene	5.5	0.0012U	0.0013U	0.0014U	0.0012U	0.0013U
Isopropylbenzene	NS	0.0012U	0.0013U	0.0014U	0.0012U	0.0013U
M&P Xylenes	1.2*	0.0023U	0.0026U	0.0029U	0.0024U	0.0025U
Methyl-t-butyl ether	NS	0.0012U	0.0013U	0.0014U	0.0012U	0.0013U
Naphthalene	13	0.0012U	0.0013U	0.0014U	0.0012U	0.0013U
N-Butylbenzene	NS	0.0012U	0.0013U	0.0014U	0.0012U	0.0013U
N-Propylbenzene	NS	0.0012U	0.0013U	0.0014U	0.0012U	0.0013U
O-Xylene	1.2*	0.0012U	0.0013U	0.0014U	0.0012U	0.0013U
Sec-Butylbenzene	NS	0.0012U	0.0013U	0.0014U	0.0012U	0.0013U
t-Butyl Alcohol	NS	0.012U	0.013U	0.014U	0.012U	0.013U
T-Butylbenzene	NS	0.0012U	0.0013U	0.0014U	0.0012U	0.0013U
Toluene	1.5	0.0012U	0.0013U	0.0014U	0.0012U	0.0013U
Total VOCs	10	ND	ND	ND	ND	ND

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

Table 11A
Soil Analytical Results
Volatile Organic Compounds
Site 1 - HHMT Port Ivory Facility

Location	**Recommended**	**UST2-1W2-S1**	**UST2-1W2-S2**	**Wood5-E1-S1**	**Wood5-E1-S2**	**Wood5-E1-S3**
Sample Date	**Soil**	5/22/2002	5/22/2002	5/23/2002	5/23/2002	5/23/2002
Area ID	**Cleanup**	PG-UST-2	PG-UST-2	PG-Wood-5	PG-Wood-5	PG-Wood-5
Sample Depth (feet)	**Objective**	0-2'	0-2'	0-2'	2-4'	4-6'
Concentration	**mg/kg**	mg/kg	mg.kg	mgkg	mg/kg	mg/kg
1,2,4-trimethylbenzene	3.4	0.0012U	0.0013U	0.0012U	0.0012U	0.0012U
1,3,5-trimethylbenzene	NS	0.0012U	0.0013U	0.0012U	0.0012U	0.0012U
4-isopropyltoluene	NS	0.0012U	0.0013U	0.0017	0.013	0.0066
Benzene	0.06	0.0012U	0.0013U	0.0012U	0.0012U	0.0012U
Ethylbenzene	5.5	0.0012U	0.0013U	0.0012U	0.0012U	0.0012U
Isopropylbenzene	NS	0.0012U	0.0013U	0.0012U	0.0012U	0.0012U
M&P Xylenes	1.2*	0.0024U	0.0026U	0.0025U	0.0024U	0.0024U
Methyl-t-butyl ether	NS	0.0012U	0.0013U	0.0012U	0.0012U	0.0012U
Naphthalene	13	0.0012U	0.0013U	0.0012U	0.0012U	0.0012U
N-Butylbenzene	NS	0.0012U	0.0013U	0.0012U	0.0012U	0.0012U
N-Propylbenzene	NS	0.0012U	0.0013U	0.0012U	0.0012U	0.0012U
O-Xylene	1.2*	0.0012U	0.0013U	0.0012U	0.0012U	0.0012U
Sec-Butylbenzene	NS	0.0012U	0.0013U	0.0012U	0.0012U	0.0012U
t-Butyl Alcohol	NS	0.012U	0.013U	0.013U	0.012U	0.012U
T-Butylbenzene	NS	0.0012U	0.0013U	0.0012U	0.0012U	0.0012U
Toluene	1.5	0.0012U	0.0013U	0.0012U	0.0012U	0.0012U
Total VOCs	10	ND	ND	0.0017	0.013	0.0066

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

Table 11A
Soil Analytical Results
Volatile Organic Compounds
Site 1 - HHMT Port Ivory Facility

Location **Sample Date** **Area ID** **Sample Depth (feet)** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **mg/kg**	**Wood5-N1-S1** 5/23/2002 PG-Wood-5 0-2' mg/kg	**Wood5-N1-S2** 5/23/2002 PG-Wood-5 2-4' mg/kg	**Wood5-N1-S3** 5/23/2002 PG-Wood-5 4-6' mf/kg	**Wood5-W1-S1** 5/23/2002 PG-Wood-5 0-2' mg/kg	**Wood5-W1-S2** 5/23/2002 PG-Wood-5 2-4' mg/kg
1,2,4-trimethylbenzene	3.4	0.0011U	0.0012U	0.0013U	0.0011U	0.0012U
1,3,5-trimethylbenzene	NS	0.0011U	0.0012U	0.0013U	0.0011U	0.0012U
4-isopropyltoluene	NS	0.0011U	0.0012U	0.0013U	0.0016	0.022
Benzene	0.06	0.0011U	0.0012U	0.0013U	0.0011U	0.0012U
Ethylbenzene	5.5	0.0011U	0.0012U	0.0013U	0.0011U	0.0012U
Isopropylbenzene	NS	0.0011U	0.0012U	0.0013U	0.0011U	0.0012U
M&P Xylenes	1.2*	0.0022U	0.0025U	0.0027U	0.0022U	0.0024U
Methyl-t-butyl ether	NS	0.0011U	0.0012U	0.0013U	0.0011U	0.0012U
Naphthalene	13	0.0011U	0.0012U	0.0013U	0.0011U	0.0012U
N-Butylbenzene	NS	0.0011U	0.0012U	0.0013U	0.0011U	0.0012U
N-Propylbenzene	NS	0.0011U	0.0012U	0.0013U	0.0011U	0.0012U
O-Xylene	1.2*	0.0011U	0.0012U	0.0013U	0.0011U	0.0012U
Sec-Butylbenzene	NS	0.0011U	0.0012U	0.0013U	0.0011U	0.0012U
t-Butyl Alcohol	NS	0.011U	0.013U	0.013U	0.011U	0.012U
T-Butylbenzene	NS	0.0011U	0.0012U	0.0013U	0.0011U	0.0012U
Toluene	1.5	0.0011U	0.0012U	0.0013U	0.0011U	0.002
Total VOCs	10	ND	ND	ND	0.0016	0.024

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

Table 11A
Soil Analytical Results
Volatile Organic Compounds
Site 1 - HHMT Port Ivory Facility

Location	**Recommended**	**Wood5-W1-S3**	**Wood5-S1-S1**	**Wood5-S1-S2**	**GW-14-W4**
Sample Date	**Soil**	5/23/2002	5/23/2002	5/23/2002	7/19/2002
Area ID	**Cleanup**	PG-Wood-5	PG-Wood-5	PG-Wood-5	PG-GW-14
Sample Depth (feet)	**Objective**	4-6'	0-2'	2-4'	4-4.5'
Concentration	**mg/kg**	mg/kg	mg/kg	mg/kg	mg/kg
1,2,4-trimethylbenzene	3.4	0.0012U	0.0011U	0.0012U	0.0013U
1,3,5-trimethylbenzene	NS	0.0012U	0.0011U	0.0012U	0.0013U
4-isopropyltoluene	NS	0.0062	0.0011U	0.004	0.0013U
Benzene	0.06	0.0012U	0.0011U	0.0012U	0.0013U
Ethylbenzene	5.5	0.0012U	0.0011U	0.0012U	0.0013U
Isopropylbenzene	NS	0.0012U	0.0011U	0.0012U	0.0013U
M&P Xylenes	1.2*	0.0024U	0.0022U	0.0024U	0.0026U
Methyl-t-butyl ether	NS	0.0012U	0.0011U	0.0012U	0.0013U
Naphthalene	13	0.0012U	0.0011U	0.0012U	0.0013U
N-Butylbenzene	NS	0.0012U	0.0011U	0.0012U	0.0013U
N-Propylbenzene	NS	0.0012U	0.0011U	0.0012U	0.0013U
O-Xylene	1.2*	0.0012U	0.0011U	0.0012U	0.0013U
Sec-Butylbenzene	NS	0.0012U	0.0011U	0.0012U	0.0013U
t-Butyl Alcohol	NS	0.012U	0.011U	0.012U	0.013U
T-Butylbenzene	NS	0.0012U	0.0011U	0.0012U	0.0013U
Toluene	1.5	0.0012U	0.0011U	0.0012U	0.0013U
Total VOCs	10	0.0062	ND	0.004	ND

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

Table 11B
Soil Analytical Results
PAH Compounds
Site 1 - HHMT Port Ivory Facility

Location	**Recommended**	**FS1BN2-S2**	**FS1BN2-S3**	**FS1BW3-S1**	**FS1BW3-S2**	**FS1BW3-S3**
Sample Date	**Soil**	6/4/2002	6/4/2002	6/4/2002	6/4/2002	6/4/2002
Area ID	**Cleanup**	PG-FS-1B	PG-FS-1B	PG-FS-1B	PG-FS-1B	PG-FS-1B
Sample Depth (feet)	**Objective**	2-4'	4-6'	0-2'	2-4'	4-6'
Concentration	**mg/kg**	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	41	0.38U	0.4U	0.38U	0.43U	0.44U
Anthracene	50	0.08J	0.4U	0.041J	0.43U	0.44U
Benzo(a)anthracene	0.224 or MDL	0.22J	0.4U	0.19J	0.22J	0.12J
Benzo(a)pyrene	0.061 or MDL	**0.21J**	0.4U	**0.18J**	**0.19J**	**0.089J**
Benzo(b)fluoranthene	1.1	0.29J	0.4U	0.34J	0.25J	0.2J
Benzo(g,h,I)perylene	50	0.19J	0.4U	0.18J	0.15J	0.096J
Benzo(k)fluoranthene	1.1	0.084J	0.4U	0.09J	0.074J	0.44U
Chrysene	0.4	0.24J	0.041J	0.28J	0.27J	0.18J
Dibenzo(a,h)Anthracene	0.014 or MDL	**0.049J**	0.4U	**0.059J**	0.43U	0.44U
Fluoranthene	50	0.41	0.048J	0.25J	0.3J	0.15J
Fluorene	50	0.38U	0.4U	0.045J	0.053J	0.44U
Indeno(1,2,3-cd)pyrene	3.2	0.15J	0.4U	0.13J	0.12J	0.08J
Naphthalene	13	0.056J	0.4U	0.42	0.15J	0.11J
Phenanthrene	50	0.35J	0.045J	0.42	0.36J	0.2J
Pyrene	50	0.4	0.053J	0.26J	0.41J	0.19J
Total PAH Compounds	500	2.723	0.187	2.885	2.547	1.415

U Undetectable Levels
ND Not Detectived
MDL Method Detection Limit

Table 11B
Soil Analytical Results
PAH Compounds
Site 1 - HHMT Port Ivory Facility

Location	**Recommended**	**FS1BS2-S1**	**FS1BS2-S3**	**FS1BE3-S1***	**FS1BE3-S4***	**A2-W1-S1**
Sample Date	**Soil**	6/3/2002	6/3/2002	6/3/2002	6/3/2002	5/21/2002
Area ID	**Cleanup**	PG-FS-1B	PG-FS-1B	PG-FS-1B	PG-FS-1B	PG-A-2
Sample Depth (feet)	**Objective**	0-2'	4-5'	0-2'	5-5.5'	0-2'
Concentration	**mg/kg**	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	41	0.38U	0.054J	0.16J	0.075J	0.37U
Anthracene	50	0.38U	0.21J	0.27J	0.068J	0.37U
Benzo(a)anthracene	0.224 or MDL	0.16J	**0.78**	**0.62**	0.17J	0.37U
Benzo(a)pyrene	0.061 or MDL	**0.14J**	**0.65**	**0.64**	**0.19J**	0.37U
Benzo(b)fluoranthene	1.1	0.33J	0.77	0.89	0.31J	0.37U
Benzo(g,h,I)perylene	50	0.075J	0.16J	0.19J	0.072J	0.37U
Benzo(k)fluoranthene	1.1	0.12J	0.35J	0.44	0.11J	0.37U
Chrysene	0.4	0.31J	**0.91**	**0.57**	0.17J	0.37U
Dibenzo(a,h)Anthracene	0.014 or MDL	0.38U	0.41U	0.37U	0.38U	0.37U
Fluoranthene	50	0.2J	0.58	1.4	0.32J	0.057J
Fluorene	50	0.38U	0.07J	0.15J	0.38U	0.37U
Indeno(1,2,3-cd)pyrene	3.2	0.073J	0.15J	0.21J	0.078J	0.37U
Naphthalene	13	0.23J	0.12J	0.075J	0.14J	0.37U
Phenanthrene	50	0.47	1.2	1.2	0.27J	0.041J
Pyrene	50	0.31J	1.7	1.2	0.33J	0.056J
Total PAH Compounds	500	2.418	7.704	8.015	2.303	0.154

U Undetectable Levels
ND Not Detectived
MDL Method Detection Limit

Table 11B
Soil Analytical Results
PAH Compounds
Site 1 - HHMT Port Ivory Facility

Location **Sample Date** **Area ID** **Sample Depth (feet)** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **mg/kg**	**A2W1-S2** 5/21/2002 PG-A-2 2-4' mg/kg	**A2W1-S3** 5/21/2002 PG-A-2 4-6' mg/kg	**A2S1-S1** 5/21/2002 PG-A-2 0-2' mg/kg	**A2S1-S2** 5/21/2002 PG-A-2 2-4' mg/kg	**A2N1-S1** 5/21/2002 PG-A-2 0-2' mg/kg
Acenaphthene	41	0.38U	0.39U	0.38U	0.38U	0.38U
Anthracene	50	0.38U	0.39U	0.38U	0.38U	0.38U
Benzo(a)anthracene	0.224 or MDL	0.38U	0.39U	0.38U	0.38U	0.38U
Benzo(a)pyrene	0.061 or MDL	0.38U	0.39U	0.38U	0.38U	0.38U
Benzo(b)fluoranthene	1.1	0.38U	0.39U	0.38U	0.38U	0.38U
Benzo(g,h,I)perylene	50	0.38U	0.39U	0.38U	0.38U	0.38U
Benzo(k)fluoranthene	1.1	0.38U	0.39U	0.38U	0.38U	0.38U
Chrysene	0.4	0.38U	0.39U	0.38U	0.38U	0.38U
Dibenzo(a,h)Anthracene	0.014 or MDL	0.38U	0.39U	0.38U	0.38U	0.38U
Fluoranthene	50	0.38U	0.39U	0.38U	0.38U	0.38U
Fluorene	50	0.38U	0.39U	0.38U	0.38U	0.38U
Indeno(1,2,3-cd)pyrene	3.2	0.38U	0.39U	0.38U	0.38U	0.38U
Naphthalene	13	0.38U	0.39U	0.38U	0.38U	0.38U
Phenanthrene	50	0.38U	0.39U	0.38U	0.38U	0.38U
Pyrene	50	0.38U	0.39U	0.38U	0.38U	0.38U
Total PAH Compounds	500	ND	ND	ND	ND	ND

U Undetectable Levels
ND Not Detectived
MDL Method Detection Limit

Table 11B
Soil Analytical Results
PAH Compounds
Site 1 - HHMT Port Ivory Facility

Location **Sample Date** **Area ID** **Sample Depth (feet)** **Concentration**	**Recommended** **Soil** **Cleanup** **Objective** **mg/kg**	**A2N1-S2** 5/21/2002 PG-A-2 2-4' mg/kg	**A2N1-S3** 5/21/2002 PG-A-2 4-6' mg/kg	**PG5S5-S-1** 5/24/2002 PG-A-5 0-2' mg/kg	**PG-5S5-S2** 5/24/2002 PG-A-5 2-4' mg/kg	**PG-5S5-S3** 5/24/2002 PG-A-5 4-6' mg/kg
Acenaphthene	41	0.38U	0.39U	0.44U	0.41U	0.42U
Anthracene	50	0.38U	0.39U	0.44U	0.41U	0.42U
Benzo(a)anthracene	0.224 or MDL	0.38U	0.39U	0.065 J	0.41U	0.42U
Benzo(a)pyrene	0.061 or MDL	0.38U	0.39U	0.055 J	0.41U	0.42U
Benzo(b)fluoranthene	1.1	0.38U	0.39U	0.16 J	0.41U	0.42U
Benzo(g,h,I)perylene	50	0.38U	0.39U	0.047 J	0.41U	0.42U
Benzo(k)fluoranthene	1.1	0.38U	0.39U	0.055 J	0.41U	0.42U
Chrysene	0.4	0.38U	0.39U	0.15 J	0.045J	0.42U
Dibenzo(a,h)Anthracene	0.014 or MDL	0.38U	0.39U	0.44U	0.41U	0.42U
Fluoranthene	50	0.38U	0.39U	0.099 J	0.41U	0.42U
Fluorene	50	0.38U	0.39U	0.44U	0.41U	0.42U
Indeno(1,2,3-cd)pyrene	3.2	0.38U	0.39U	0.047 J	0.41U	0.42U
Naphthalene	13	0.38U	0.39U	0.092 J	0.41U	0.42U
Phenanthrene	50	0.38U	0.39U	0.12 J	0.057 J	0.055J
Pyrene	50	0.38U	0.39U	0.081 J	0.41U	0.42U
Total PAH Compounds	500	ND	ND	0.971	0.102	0.055

U Undetectable Levels
ND Not Detectived
MDL Method Detection Limit

Table 11B
Soil Analytical Results
PAH Compounds
Site 1 - HHMT Port Ivory Facility

Location **Sample Date** **Area ID** **Sample Depth (feet)** **Concentration**	**Recommended Soil Cleanup Objective mg/kg**	**A5N5-S1** 5/28/2002 PG-A-5 0-2' mg/kg	**A5N5-S2** 5/28/2002 PG-A-5 2-3' mg/kg	**A5W5-S1** 5/29/2002 PG-A-5 0-2' mf/kg	**A5W5-S2** 5/29/2002 PG-A-5 2-4' mg/kg	**A5W5-S3** 5/29/2002 PG-A-5 4-6' mg/kg
Acenaphthene	41	0.11	0.52U	0.046J	0.62U	0.44U
Anthracene	50	0.23	0.52U	0.16J	0.62U	0.44U
Benzo(a)anthracene	0.224 or MDL	**0.28**	0.1	**0.55**	0.62U	0.44U
Benzo(a)pyrene	0.061 or MDL	**0.29**	**0.074**	**0.47**	0.62U	0.44U
Benzo(b)fluoranthene	1.1	0.76	0.17	0.8	0.081J	0.072J
Benzo(g,h,I)perylene	50	0.22	0.52U	0.13J	0.62U	0.44U
Benzo(k)fluoranthene	1.1	0.24	0.067	0.35J	0.62U	0.44U
Chrysene	0.4	0.4	0.14	**0.5**	0.62U	0.087J
Dibenzo(a,h)Anthracene	0.014 or MDL	0.45U	0.52U	0.41U	0.62U	0.44U
Fluoranthene	50	0.85	6.1	0.97	0.62U	0.052J
Fluorene	50	0.12	0.52U	0.41U	0.62U	0.44U
Indeno(1,2,3-cd)pyrene	3.2	0.26	0.52U	0.15J	0.62U	0.44U
Naphthalene	13	0.37	0.17	0.15J	0.62U	0.44U
Phenanthrene	50	0.61	0.52U	0.64	0.62U	0.088J
Pyrene	50	0.52	0.25	0.53	0.62U	0.44U
Total PAH Compounds	500	5.26	7.071	5.446	0.081	0.299

U	Undetectable Levels
ND	Not Detectived
MDL	Method Detection Limit

Table 11B
Soil Analytical Results
PAH Compounds
Site 1 - HHMT Port Ivory Facility

Location	**Recommended**	**UST2-1N5-S1**	**UST2-1N5-S2**	**UST2-1N5-S3**	**UST2-2S1-S2**	**UST2-2S1-S3**
Sample Date	**Soil**	5/23/2002	5/23/2002	5/23/2002	5/23/2002	5/23/2002
Area ID	**Cleanup**	PG-UST-2	PG-UST-2	PG-UST-2	PG-UST-2	PG-UST-2
Sample Depth (feet)	**Objective**	0-2'	2-4'	4-5'	2-4'	4-5'
Concentration	**mg/kg**	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	41	0.39U	0.4U	0.049J	0.43U	0.48U
Anthracene	50	0.056J	0.40U	0.24J	0.063J	0.48U
Benzo(a)anthracene	0.224 or MDL	0.22J	0.1J	**0.58**	0.16J	0.11J
Benzo(a)pyrene	0.061 or MDL	**0.18J**	**0.067J**	**0.5**	**0.11J**	0.076J
Benzo(b)fluoranthene	1.1	0.34J	0.15J	0.77	0.21J	0.16J
Benzo(g,h,I)perylene	50	0.054J	0.40U	0.17J	0.43U	0.48U
Benzo(k)fluoranthene	1.1	0.15J	0.40U	0.21J	0.084J	0.48U
Chrysene	0.4	0.26J	0.18J	**0.55**	0.2J	0.27J
Dibenzo(a,h)Anthracene	0.014 or MDL	0.39U	0.40U	0.39U	0.43U	0.48U
Fluoranthene	50	0.38J	0.14J	1.3	0.19J	0.1J
Fluorene	50	0.39U	0.40U	0.067J	0.43U	0.48U
Indeno(1,2,3-cd)pyrene	3.2	0.057J	0.40U	0.18J	0.43U	0.48U
Naphthalene	13	0.8	0.27J	0.39U	0.86	0.19J
Phenanthrene	50	0.68	0.42	1.1	0.76	0.32J
Pyrene	50	0.29J	0.12J	1	0.18J	0.086J
Total PAH Compounds	500	3.467	1.447	5.816	2.817	1.312

U Undetectable Levels
ND Not Detectived
MDL Method Detection Limit

Table 11B
Soil Analytical Results
PAH Compounds
Site 1 - HHMT Port Ivory Facility

Location	**Recommended**	**UST2-1AE-S1**	**UST2-1AE-S2**	**UST2-1W2-S1**	**UST2-1W2-S2**	**Wood5-E1-S1**
Sample Date	**Soil**	5/23/2002	5/23/2002	5/22/2002	5/22/2002	5/23/2002
Area ID	**Cleanup**	PG-UST-2	PG-UST-2	PG-UST-2	PG-UST-2	PG-Wood-5
Sample Depth (feet)	**Objective**	0-2'	2-4'	0-2'	0-2'	0-2'
Concentration	**mg/kg**	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	41	0.27J	0.42U	0.40U	0.43U	0.42U
Anthracene	50	0.45	0.049J	0.40U	0.43U	0.42U
Benzo(a)anthracene	0.224 or MDL	**1.3**	0.095J	0.086J	0.1J	0.42U
Benzo(a)pyrene	0.061 or MDL	**1.8**	**0.17J**	**0.075J**	**0.084J**	0.42U
Benzo(b)fluoranthene	1.1	**3.6**	0.34J	0.13J	0.15J	0.07J
Benzo(g,h,I)perylene	50	0.94	0.083J	0.054J	0.047J	0.42U
Benzo(k)fluoranthene	1.1	0.99	0.13J	0.053J	0.43U	0.42U
Chrysene	0.4	**1.9**	0.18J	0.097J	0.17J	0.42U
Dibenzo(a,h)Anthracene	0.014 or MDL	**0.11J**	0.42U	0.40U	0.43U	0.42U
Fluoranthene	50	1.5	0.17J	0.098J	0.11J	0.076J
Fluorene	50	0.21J	0.42U	0.40U	0.43U	0.42U
Indeno(1,2,3-cd)pyrene	3.2	0.99	0.088J	0.041J	0.43U	0.42U
Naphthalene	13	0.2J	0.051J	0.15J	0.37J	0.42U
Phenanthrene	50	1.1	0.16J	0.16J	0.44	0.42U
Pyrene	50	1.3	0.13J	0.082J	0.098J	0.055J
Total PAH Compounds	500	16.66	1.646	1.026	1.569	0.201

U Undetectable Levels
ND Not Detectived
MDL Method Detection Limit

Table 11B
Soil Analytical Results
PAH Compounds
Site 1 - HHMT Port Ivory Facility

Location	**Recommended**	**Wood5-E1-S2**	**Wood5-E1-S3**	**Wood5-N1-S1**	**Wood5-N1-S2**	**Wood5-N1-S3**
Sample Date	**Soil**	5/23/2002	5/23/2002	5/23/2002	5/23/2002	5/23/2002
Area ID	**Cleanup**	PG-Wood-5	PG-Wood-5	PG-Wood-5	PG-Wood-5	PG-Wood-5
Sample Depth (feet)	**Objective**	2-4'	4-6'	0-2'	2-4'	4-6'
Concentration	**mg/kg**	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	41	2.0U	0.41U	0.37U	2.1U	0.44U
Anthracene	50	2.0U	0.41U	0.076J	2.1U	0.44U
Benzo(a)anthracene	0.224 or MDL	2.0U	0.41U	0.11J	2.1U	0.44U
Benzo(a)pyrene	0.061 or MDL	2.0U	0.41U	**0.12J**	2.1U	0.44U
Benzo(b)fluoranthene	1.1	2.0U	0.41U	0.4	0.22J	0.44U
Benzo(g,h,I)perylene	50	2.0U	0.41U	0.071J	2.1U	0.44U
Benzo(k)fluoranthene	1.1	2.0U	0.41U	0.14J	2.1U	0.44U
Chrysene	0.4	2.0U	0.41U	0.16J	2.1U	0.44U
Dibenzo(a,h)Anthracene	0.014 or MDL	2.0U	0.41U	0.37U	2.1U	0.44U
Fluoranthene	50	2.0U	0.41U	0.24J	2.1U	0.44U
Fluorene	50	2.0U	0.41U	0.37U	2.1U	0.44U
Indeno(1,2,3-cd)pyrene	3.2	2.0U	0.41U	0.081J	2.1U	0.44U
Naphthalene	13	2.0U	0.41U	0.061J	0.38J	0.44U
Phenanthrene	50	2.0U	0.41U	0.16J	0.44J	0.44U
Pyrene	50	2.0U	0.41U	0.3J	2.1U	0.44U
Total PAH Compounds	500	ND	ND	1.919	1.04	ND

U Undetectable Levels
ND Not Detectived
MDL Method Detection Limit

Table 11B
Soil Analytical Results
PAH Compounds
Site 1 - HHMT Port Ivory Facility

Location	**Recommended**	**Wood5-W1-S1**	**Wood5-W1-S2**	**Wood5-W1-S3**	**Wood5-S1-S1**	**Wood5-S1-S2**	**GW-14-W4**
Sample Date	**Soil**	5/23/2002	5/23/2002	5/23/2002	5/23/2002	5/23/2002	7/19/2002
Area ID	**Cleanup**	PG-Wood-5	PG-Wood-5	PG-Wood-5	PG-Wood-5	PG-Wood-5	PG-GW-14
Sample Depth (feet)	**Objective**	0-2'	2-4'	4-6'	0-2'	2-4'	4-4.5'
Concentration	**mg/kg**	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Acenaphthene	41	0.36U	3.9U	2.0U	0.36U	2.0U	0.094J
Anthracene	50	0.36U	3.9U	2.0U	0.36U	2.0U	1.1
Benzo(a)anthracene	0.224 or MDL	0.36U	3.9U	2.0U	0.36U	2.0U	0.68
Benzo(a)pyrene	0.061 or MDL	0.36U	3.9U	2.0U	0.36U	2.0U	0.49
Benzo(b)fluoranthene	1.1	0.36U	3.9U	2.0U	0.36U	0.27J	0.85
Benzo(g,h,I)perylene	50	0.36U	3.9U	2.0U	0.36U	2.0U	0.094J
Benzo(k)fluoranthene	1.1	0.36U	3.9U	2.0U	0.36U	2.0U	0.40J
Chrysene	0.4	0.36U	3.9U	2.0U	0.36U	0.21J	0.98
Dibenzo(a,h)Anthracene	0.014 or MDL	0.36U	3.9U	2.0U	0.36U	2.0U	0.43U
Fluoranthene	50	0.36U	3.9U	2.0U	0.36U	0.25J	1.8
Fluorene	50	0.36U	3.9U	2.0U	0.36U	2.0U	0.15J
Indeno(1,2,3-cd)pyrene	3.2	0.36U	3.9U	2.0U	0.36U	2.0U	0.11 J
Naphthalene	13	0.36U	3.9U	2.0U	0.36U	0.36J	0.40 J
Phenanthrene	50	0.36U	3.9U	2.0U	0.36U	0.41J	1.3
Pyrene	50	0.36U	3.9U	2.0U	0.36U	0.43J	1.6
Total PAH Compounds	500	ND	ND	ND	ND	1.93	10.048

U Undetectable Levels
ND Not Detected
MDL Method Detection Limit

from the surficial interval). Again, none of the samples exhibited a PAH concentration in excess of the guidance threshold of 50 mg/kg for individual PAH compounds or a total PAH concentration in excess of the guidance threshold of 500 mg/kg for total PAH compounds.

Area A

No PAH compounds were detected at concentrations in excess of corresponding RSCOs in the samples collected from endpoint soil borings installed to delineate the A-2 location. Benzo(a)anthracene and benzo(a)pyrene were detected at slightly elevated concentrations in a few samples from endpoint borings installed the A-5 location. The total PAH compound concentration in samples from the A-5 location ranged from 0.055 mg/kg in sample PG-A5S5-S3 (discrete 6-inch sample collected from the 4 to 6 foot interval) to 7.071 mg/kg in sample PG-A5N5-S2 (discrete 6-inch sample collected from the 2 to 3 foot interval). Again, none of the samples exhibited a PAH concentration in excess of the guidance threshold of 50 mg/kg for individual PAH compounds or a total PAH concentration in excess of the guidance threshold of 500 mg/kg for total PAH compounds.

Area UST2

Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene and dibenzo(a,h)anthracene were detected at slightly elevated concentrations in several samples collected from endpoint borings at this AOC. The total PAH compound concentration in samples from Area UST2 ranged from 1.026 mg/kg in sample UST2-1W2-S1 (discrete 6-inch sample collected from the 0 to 2 foot interval) to 16.66 mg/kg in sample UST2-1AE-S1 (discrete 6-inch sample collected from the 0 to 2 foot interval). Again, none of the samples exhibited a PAH concentration in excess of the guidance threshold of 50 mg/kg for individual PAH compounds or a total PAH concentration in excess of the guidance threshold of 500 mg/kg for total PAH compounds.

Area Wood-5

Benzo(a)pyrene was detected at a slightly elevated concentration in a single sample from this AOC; benzo(a)pyrene was detected at a concentration of 0.12 mg/kg in sample Wood5-N1-S1 (discrete 6-inch sample collected from the 0 to 2 foot interval). Again, none of the samples exhibited a PAH concentration in excess of the guidance threshold of 50 mg/kg for individual PAH compounds or a total PAH concentration in excess of the guidance threshold of 500 mg/kg for total PAH compounds.

Area GW-14/B-3

Benzo(a)anthracene and benzo(a)pyrene were detected at slightly elevated concentrations in the sample collected from the endpoint boring installed to the delineate the western limit of this AOC, located on Site 2A. The sample did not exhibit a PAH concentration in excess of the guidance threshold of 50 mg/kg for individual PAH compounds or a total PAH concentration in excess of the guidance threshold of 500 mg/kg for total PAH compounds. Further information pertaining to Area GW-14/B-3 is provided in the Site 2A/2B Report.

9.3 RI SUMMARY

RI activities were proposed for seven general areas at Site 1: Area UST2, Area Wood-5, Area FS-1, Area A, Area PD-8, Area UST5 and Area UST6. Due to building demolition activities and other site activities, it was not possible to implement the proposed RI activities at Area PD-8. However, further review of analytical results revealed that RI actions at Area PD-8 were not warranted. In addition, the proposed remedial strategy at the UST2 Area was modified to utilize soil borings rather than test pits. Further, although RI activities were not performed at Area UST 5 and UST6, ongoing site construction activities identified the location of an oil/water separator system at Area UST5 and the former toluene tank at Area UST6. Decommissioning actions performed at UST5 are provided in Section 9.2. 6 and tank removal actions performed at Area UST6 are presented in Section 11 of this report. Also, the majority of soil borings installed to evaluate SI soil boring A-5 (located on Site 2A) and a few soil borings installed to evaluate monitoring well GW-14 and soil boring B-3 (both located on Site 2A) were located within Site 1. Thus, the soil borings installed and sampled on Site 1 for those AOCs have been discussed in this report.

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Field screening identified the limits of the petroleum impacts 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 1 has successfully delineated petroleum impacts at Area UST2, Area Wood-5, Area FS-1, location A-2 of Area A, the northern, southern and western limits of the A-5 location of Area A located on Site 2A and the western limit of the Area GW-14/B-3 located on Site 2A. Based on the results of the RI, the Port Authority has reviewed remedial alternatives to address potential petroleum impacts at Site 1. The remedial alternatives analysis included an assessment of contaminant exposure based on information gained through the performance of the SI and RI. The exposure assessment is presented in Section 10. Given the redevelopment plan (i.e., the contemplated use) for Site 1, it was determined that the most appropriate remedial alternative to address petroleum-impacted areas is hot-spot excavation with off-site disposal. A discussion of the selected remedial alternative is presented in Section 12.

10.0 EXPOSURE ASSESSMENT

This Exposure Assessment (EA) addresses conditions at Site 1. 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 the subject site or Site 1. Site 1 encompasses 14.95 acres and, at the time of Port Authority purchase, was improved by five buildings and portions of two others. Site 1 is characterized by ancillary structures and buildings associated with former wood burning operations, railroad tracks and sidings, offices and former AST, UST, and storage areas. Site 1 is serviced by connections to the potable water and sanitary system of New York City. No septic systems and/or potable water wells are reported to be located or have been located on or near the site. Groundwater is not utilized for potable purposes at the site or in the site area. Storm water generated on the site is directed via a sheet flow to on-site catch basins. These catch basins discharge, through the facility's underground stormwater sewer system, to the adjacent waterways, roadways, and marshland. Bridge Creek, though not directly located on the site, is situated immediately west of Site 1 and therefore was included in SI developed for Site 1. 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.

In addition, several utility easements and pipelines traverse the subject site. Colonial Pipeline and Exxon (now known as ExxonMobil) maintain the easements. Colonial Pipeline maintains a 10-foot pipeline easement that extends in a north/south direction along the western property boundary of Site 1. The easement initiates in the far southwestern corner of Site 2B, runs along the southern and southwestern corner into Site 2A, traverses through that unit entering the southwestern corner of Site 1, continues across Richmond Terrace and through the western portion of Future Site 4 (Block 1309, Lot 10) and finally terminates at the northern end of Future Site 4 (Block 1309, Lot 10). ExxonMobil maintains an 18-foot easement that is located east of the Colonial Pipeline easement. 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 (Future Site 4), beyond Richmond Terrace.

10.2 Nature of On-Site Contaminants

The SI activities described earlier in this Report included investigation of the soil at Site 1. The SI for soil at Site 1 included the installation and sampling of 42 soil borings and the collection of 77 soil samples. Only three volatile organic compounds (VOCs), total xylenes, dichloromethane and methylbenzene (toluene), were identified at concentrations in excess of NYSDEC guidance criteria for soil in only 3 of 77 soil samples collected from Site 1. Several semi-volatile organic compounds (SVOCs), predominantly PAH compounds, were identified at concentrations in excess of NYSDEC guidance criteria in soil samples. These SVOCs compounds included pyrene, phenanthrene, naphthalene, fluorene, fluoranthene, benzo(g,h.i)perylene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(a)anthracene, indeno(1,2,3-cd)pyrene, anthracene, 2,4-dimethylphenol, 1-2-benzphenanthracene, and phenol. Given the low levels of PAH compounds in soil and the proposed future site usage, no further action was proposed with regard to SVOCs. A variety of metals were identified at a wide range of concentrations including exceedances of NYSDEC guidance criteria, but the metals did not appear to have negatively impacted groundwater. Therefore, based on the future site development, no further action was proposed with regard to metals in soil. One PCB, Aroclor 1260, was detected in excess of the RSCO for surface soil and three pesticide compounds, endrin, dieldrin and heptachlor epoxide, were detected in excess of corresponding TAGM RSCOs in a few soil samples. TPHC and O/G (oil and grease) were detected in a number of soil samples. Although the NYSDEC has not established guidance criteria for these compounds, only two samples were noted to exhibit concentrations of TPHC in excess of 10,000 mg/kg with the highest concentration being 15,000 mg/kg. O/G was detected more frequently at concentrations above 10,000 mg/kg. Investigative efforts revealed pH levels in soil samples ranging from 4.5 to 13, with most values falling between 7.0 and 8.5. The pH issue appeared to be associated with historic fill material, and results did not indicate that the historic fill material had negatively impacted surrounding surface water or groundwater. As such, it appears appropriate to address historic fill material in conjunction with overall site redevelopment. Several potential "oil" impacted areas were identified, but the findings of the SI and RI indicate that non-petroleum materials may have impacted some of these areas. Further sampling efforts (i.e. remedial/delineation investigation) performed at several oil-impacted areas delineated the extent of "impacted" areas. Analytical results from endpoint samples revealed a low levels of a few PAH compounds and did not reveal the presence of VOCs.

The groundwater investigation at Site 1 included the following tasks: installation of 5 new monitoring wells, one temporary well; recording water levels from all newly installed wells and five existing wells; reviewing of wells for the presence of free phase floating product; and, the collection and laboratory analysis of 11 groundwater samples. Laboratory analysis of 11 groundwater samples identified only two VOCs, ethylbenzene and total xylenes, at concentrations in excess of NYSDEC guidance criteria from a single well, PG-CS-7. Analytical results revealed the presence of only two SVOCs, bis(2-ethylhexyl)phthalate and phenols. Bis(2-ethylhexyl)phthalate was identified in excess of NYSDEC guidance criteria in the sample from PG-PAMW-1D and phenol was detected in five wells. As previously discussed, bis(2-ethylhexyl)phthalate is a common laboratory contaminant and is unlikely to be an issue with regard to this site. Five TAL metals (arsenic, cadmium, manganese, iron and sodium) were identified in excess of NYSDEC guidance criteria. The presence of these metals was not unexpected given the urban nature of the site and therefore no further action was proposed with regard to metals in groundwater. The pH in groundwater ranged from 6.72 to 12.82 with pH recorded above 9 at several locations. No additional actions were proposed with regard to contaminants or pH levels in groundwater, due to a lack of potable use and downgradient receptors. RI actions were implemented in the area surrounding temporary well, PG-TMW-02, due to the presence of a sheen on the groundwater surface and other indications of potential petroleum impacts. The RI activities delineated the extent of potential petroleum impacts in soil and did not identify any additional potential groundwater impacts at this area.

As previously described, the assessment of this site included an evaluation of sediment and surface water of the portion of Bridge Creek adjacent to Site 1. This evaluation consisted of a visual review of conditions along Bridge Creek as well as the collection and laboratory analysis of five sediment samples and three surface water samples. Several metals were identified at concentrations in excess of NYSDEC guidance and screening criteria in surface water and sediment samples. Given that the Port Authority's development of the site will continue to enhance the quality of Bridge Creek, no further action was proposed with regard to Bridge Creek.

Overall, the investigation activities undertaken at Site 1 have revealed the presence of historic fill material as well as a variety of contaminants at relatively low concentrations in samples collected from soil, sediment, surface water and groundwater. 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.

Based on the findings of the SI, HMM performed RI activities to delineate the presence of petroleum impacts at certain site locations. The RI also included efforts at the two locations, which had exhibited concentrations in excess of NYSDEC guidance criteria for two VOCs. 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 1. 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 NYSDEC guidance criteria or standards as defined earlier in this report) of contaminants in samples collected from environmental media at Site 1. 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 76 soil samples collected from Site 1.

In groundwater, the only two VOCs (ethylbenzene and m&p xylenes) and two SVOCs, (phenol and bis(2-ethylhexyl) phthalate), were detected in excess of NYSDEC groundwater standards. The TAL metals iron, arsenic, and sodium were detected in excess of NYSDEC groundwater standards. In sediment, the metals arsenic, cadmium, chromium, iron, lead, mercury, nickel, silver and zinc exceeded NYSDEC screening criteria in sediment/precipitate samples. Analytical results revealed the presence of several metals 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 1. 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 populations are situated in the immediate vicinity of the site. 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 tend to stabilize contaminants in the soil and fill material by impending infiltration and 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 1.

LG. BOLD TYPE

11.0 UST REMOVAL

During the demolition of the concrete foundation located in the vicinity of Building 17, 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 toluene tank, which had been closed in place by P&G. Based on information provided by P&G, the NYSDEC had allowed P&G to leave the tank in place and had issued a spill case closure letter (letter of August 1990) in response to P&G's tank closure efforts. Although the NYSDEC had not required P&G to remove the tank, the Port Authority elected to implement such measures to avoid any future issues.

In January 2003, the Port Authority removed surface soil and determined that the tank had been previously filled with inert materials (bricks, stone and sand) and was located within a concrete vault. Subsequently, the Port Authority removed the tank and the surrounding concrete vault. No indications of contamination were observed during tank or vault removal. Given the prior NYSDEC approved closure and the lack of any evidence of contamination through field screening, no soil sampling was performed at this area. Subsequently, the area was backfilled with soil from above and surrounding the tank as well as processing concrete from demolished on-site buildings. Based on the above described tank removal actions, no further action is proposed with regard to Area UST6.

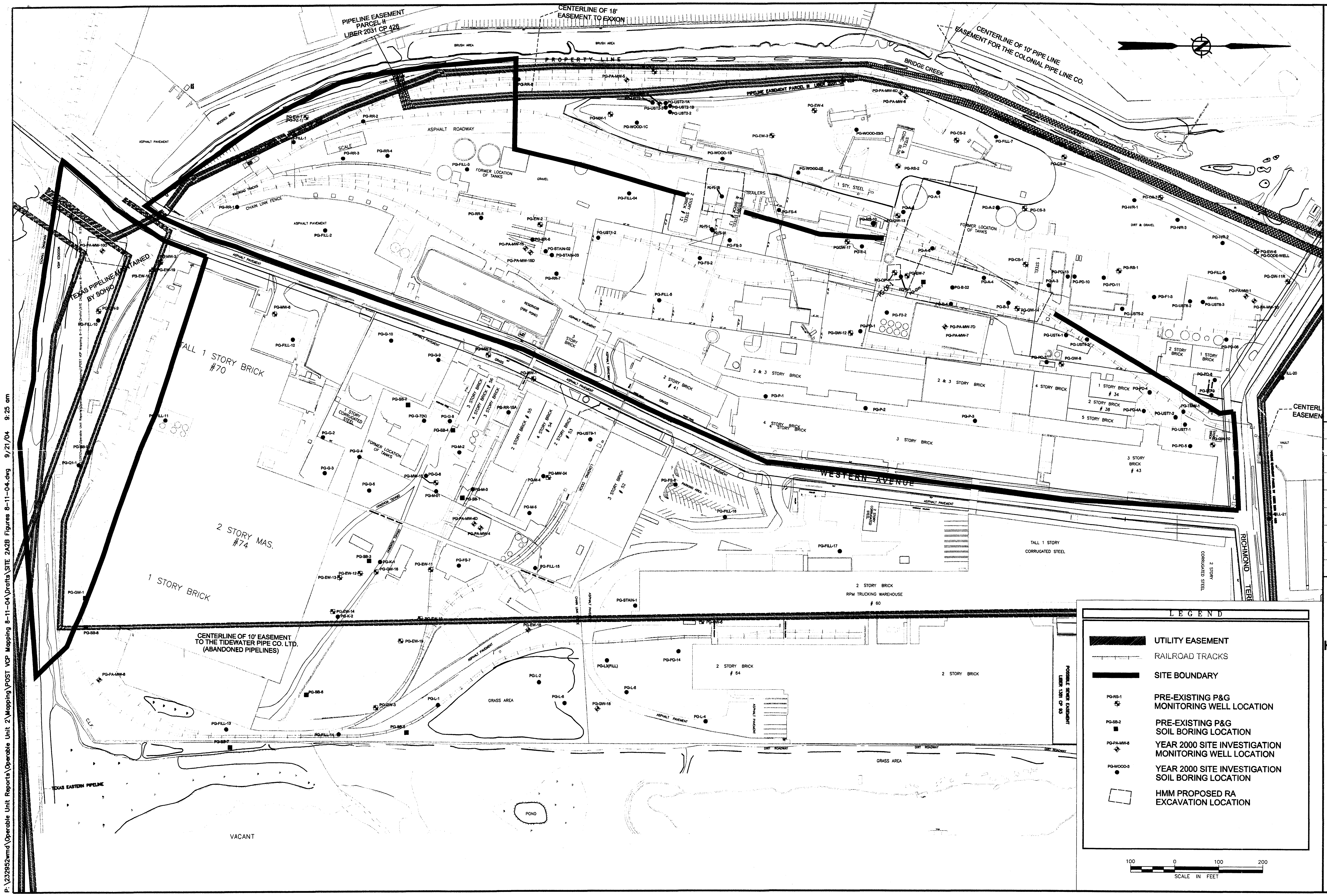
12.0 SUMMARY AND PROPOSED REMEDIAL ACTIONS

12.1 Proposed Remedial Actions

The SI of Site 1 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 based on 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. 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 1. Subsequently, the RI successfully delineated the extent of potential petroleum issues at all but one location (Area PD-8) and the RI in conjunction with other field efforts has resolved UST related issues at the three potential UST areas. As previously discussed, the RI proposed for Area PD-8 was not deemed warranted based upon analytical results from other locations and proposed groundwater efforts proposed as part of the surcharge pilot study. As described in Sections 9 and 11, efforts at Area UST5 revealed the presence of an oil/water separator system and efforts at Area UST6 revealed the presence of a former toluene tank, which had been closed by P&G. Additional RI efforts performed at UST2 did not identify the presence of tanks at that area.

Based on the information gained through the RI and the intended future usage of Site 1, hot-spot excavation was identified as the appropriate remedial action to address potential petroleum-impacted soil at the following areas: Area FS-1, Area A-2/A-5, Area Wood-5 and Area UST2. It was proposed to remove "delineated" hot spots of 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. For completeness, information on remedial actions performed at Area B-2/B-3 and Area GW-14 have been included herein.

With regard to other site contaminants including fill material, the SI and RI activities identified the presence of contaminants at Site 1, 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 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 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



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THE PORT AUTHORITY
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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

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 20**

P:\232952wmd\Operable Unit Reports\Operable Unit 2\Mapping\POST VCP Mapping 8-11-04\Drafts\SITE 2A2B Figures 8-11-04.dwg 9/21/04 9:25 am 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 historic 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 1. A summary of the excavation and sampling at 1 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.

12.2.1 FS-1 Area

The Area FS-1 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. The majority of the excavation is located on Site 1, with approximately one-quarter of the excavation in Site 2A. 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.

low levels

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

*

?

end point data show
low levels remaining

P:\232952wmd\Operable Unit Reports\Operable Unit 1\Mapping\POST VCP Mapping 8-11-04\3rd Drafts, PA Revisions\SITE 1 ANALYTICAL RESULTS FIGURES 8-11-04.dwg 9/22/04 4:10 pm

FS1-7

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	1.4	4.5' to 5'
Benzo[a]pyrenc :	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

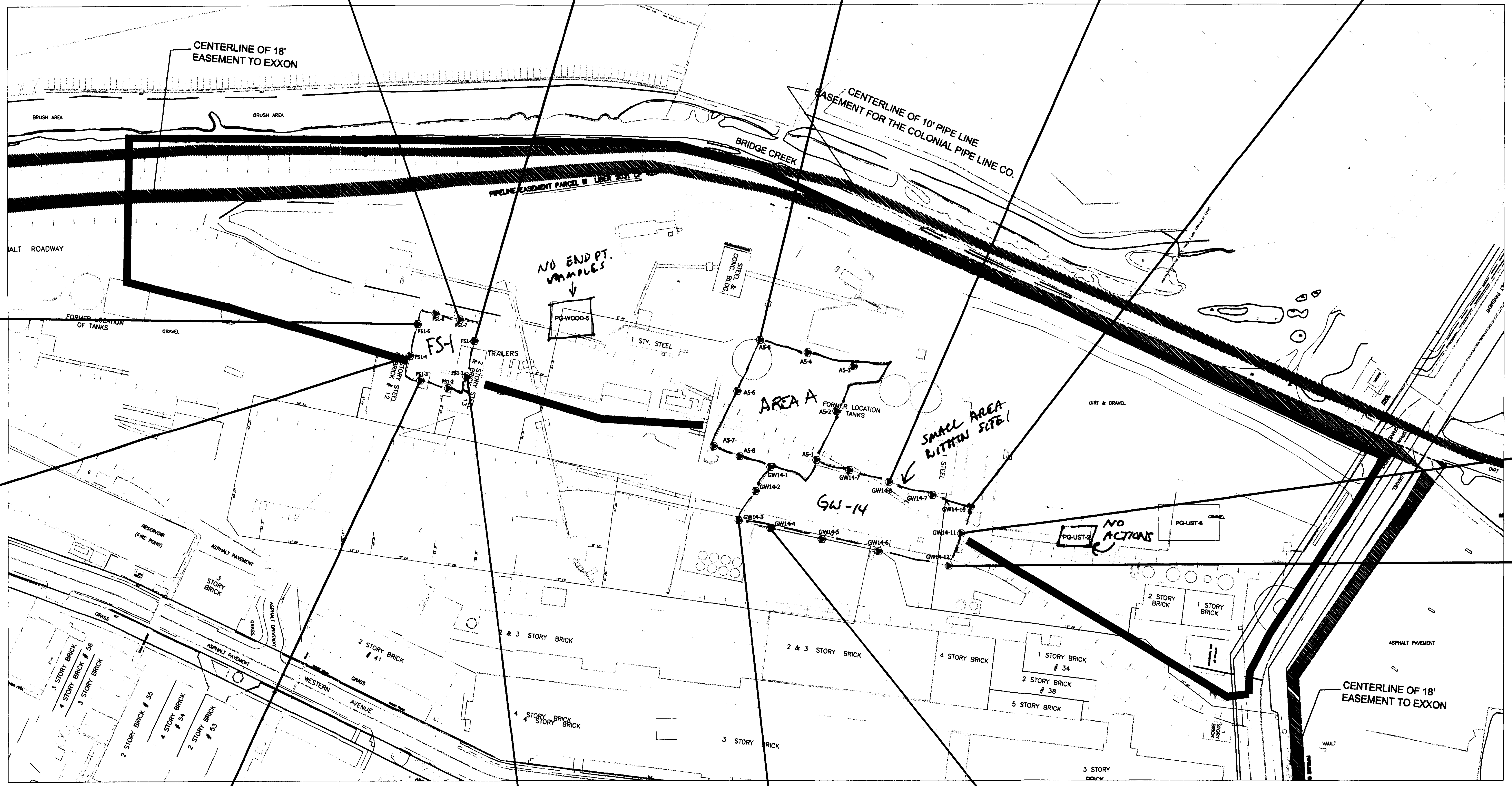
ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracene :	0.26 J	3' to 3.5'
Benzo[a]pyrene :	0.17 J	3' to 3.5'

FS1-5

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.24 J	4.5' to 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'
Chrysenc :	2.3	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		
Bcnzo[a]pyrene :	0.11 J	3' to 3.5'

GW14-11

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]pyrene :	0.10 J	3' to 3.5'

GW14-12

ANALYTE	RES	DEPTH
SVOC		
Benzo[a]anthracenc :	0.27 J	3' to 3.5'
Benzo[a]pyrene :	0.24 J	3' to 3.5'

100 0 100 200
SCALE IN FEET

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]flouranthenc:	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
☐	HMM REMEDIAL ACTION EXCAVATION 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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No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

Title

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

SITE 1 HOT SPOT EXCAVATION LIMITS AND CONFIRMATION SAMPLE ANALYTICAL RESULTS, REMEDIAL ACTION

Designed by Drawn by Checked by

Date

Contract Number

Drawing Number **FIGURE 21**

Table 12
Summary of Remedial Actions and Sampling
Site 1: -HHMT Port Ivory Facility

Initial SI AOC	SI Soil Boring Location	Description of Issues	Description of Actions and Sampling	Analytical Parameters
FS-1 Area	**FS-1B**	The RI investigation delineated impacted soil surrounding soil boring FS-1B.	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 feet 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 8270; BN 8260
Area A	**A-2 and A-5**	The RI investigation delineated impacted soil at locations A-2 and A-5 at Area A.	An excavation was conducted at A-5 and A-2; the excavation at these two areas was combined into a single excavation area based upon field observations. The excavation was extended to groundwater to address visual signs of petroleum impacts. Soil samples were collected from 3.0 to 3.5 feet below ground surface. The excavation measured approximately 170 feet by 147 feet wide. 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. Samples were taken from the base of the sidewalls at the 0.0 - 0.5 foot interval above the groundwater table. Excavated soil was stockpiled on site awaiting off-site disposal. The majority of this excavation is located on Site 1, with only a small area at Site 2A.	VOC 8270; BN 8260

Hatch Mott
MacDonald

Table 12
Summary of Remedial Actions and Sampling
Site 1: -HHMT Port Ivory Facility

Initial SI AOC	SI Soil Boring Location	Description of Issues	Description of Actions and Sampling	Analytical Parameters
UST – 2 Area	**UST-2**	The RI investigation delineated impacted soil at UST-2.	Due to on-going demolition activities the remedial actions for this area were not performed in 2002/2003. The appropriate remedial action for this area is being reviewed with respect to proposed development activities.	Not Applicable
Wood Yard	**Wood-5**	The RI investigation delineated impacted soil at Wood-5.	The delineated area surrounding Wood-5 was excavated to the groundwater table. The excavation area measured 30 feet by 30 feet and was extended to the limits defined by the RI. No samples were collected from the resultant excavation based on field observations as well as analytical results from the RI which had revealed few detections of VOCs or PAH Compounds.	Not Applicable

mg/kg in sample FS1-4. 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. Analytical results are presented in Table 13A and 13B.

12.2.2 Area A-2/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, including location A-2. 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. The majority of the excavation is located on Site 1, with approximately one-quarter of the excavation in Site 2A. 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 14A and 14B for a summary of the analytical results.

12.2.3 Area B-3/B-2/Area GW-14

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. 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. The majority (approximately three-quarters) of the excavation is located on Site 2A, with the remainder (approximately 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

Table 13A
Soil Analytical Results
FS1 Area
Volatile Organic Compounds
Site 1 - 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 13B
Soil Analytical Results
FS1 Area
PAH Compounds
Site 1 - HHMT-Port Ivory Facility

Location	**Recommended Soil Cleanup Objective mg/kg**	**FS1-1**	**FS1-2**	**FS1-3**	**FS1-4**	**FS1-5**	**FS1-6**	**FS1-7**	**FS1-8**
Sample Date		12/3/2002	12/3/2002	12/3/2002	12/3/2002	12/3/2002	12/3/2002	12/3/2002	12/3/2002
Sample Depth (ft)		4.5-5.0	4.5-5.0	4.5-5.0	4.5-5.0	4.5-5.0	4.5-5.0	4.5-5.0	4.5-5.0
Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	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 Coumpounds	500	4.54	0.49	1.489	13.96	1.929	1.516	17.8	2.323

U Undetectable Levels
MDL Method Detection Limit

Table 14A
Soil Analytical Results
A5 Area
Volatile Organic Compounds
Site 1 - 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	0.0072	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 14B
Soil Analytical Results
A5 Area
PAH Compounds
Site 1 - 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

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 VOCs (8270). VOCs were either not detected or were detected at concentrations below corresponding RSCOs. No 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 15A and 15B for a summary of all analytical results.

↑ end pt samples show
low concentration

12.2.4 Area Wood-5

The Area Wood-5 excavation was extended to the locations of the RI soil borings, which were located approximately 15 feet to the north, east, south and west of location Wood-5. The excavation was advanced to a depth of approximately 3.5 feet bgs. Field screening did not identify the presence of petroleum impacts along sidewalls and limited evidence of such impacts were observed with respect to removed soil. Inspection of excavation sidewalls noted the presence of yellow-tan sands with some fine brown silt/clays with limited

Table 15A
Soil Analytical Results
GW14 Area
Volatile Organic Compounds
Site 1 - HHMT-Port Ivory Facility

Location	**Recommended Soil Cleanup Objective mg/kg**	**GW14-1**	**GW14-2**	**GW14-3**	**GW14-4**	**GW14-5**	**GW14-6**
Sample Date		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
Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	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 15A
Soil Analytical Results
GW14 Area
Volatile Organic Compounds
Site 1 - 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 15B
Soil Analytical Results
GW14 Area
PAH Compounds
Site 1 - 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	**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
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

observation of cinders. Based on a visual review and analytical results from RI sampling, the issue at this location appears to have been associated with residual cinder material (ubiquitous to the fill material) rather than petroleum. Thus, no confirmation samples were warranted or obtained for Area Wood-5.

12.2.5 Area UST2

No excavation activities have been performed at Area UST2. This area is currently undergoing geotechnical review with respect to proposed redevelopment. As such, the Port Authority will provide additional information pertaining to remedial actions at Area UST2 under separate cover.

13.0 SUMMARY OF PROPOSED SITE DEVELOPMENT ACTIONS

The Port Authority is currently redeveloping Site 1 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 E 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. Additional site development information is provided on a schematic drawing designated as SK16 and dated October 13, 2003; drawing SK16 is also provided in Appendix E. At this time, no buildings are located at Site 1 and current development plans do not include the construction of any buildings within the limits of Site 1. 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 E.

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. 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 16A (BTEX), 16B (phenols), and 16 (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 16A-16C.

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. 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 16C. 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 surface water and 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 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

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

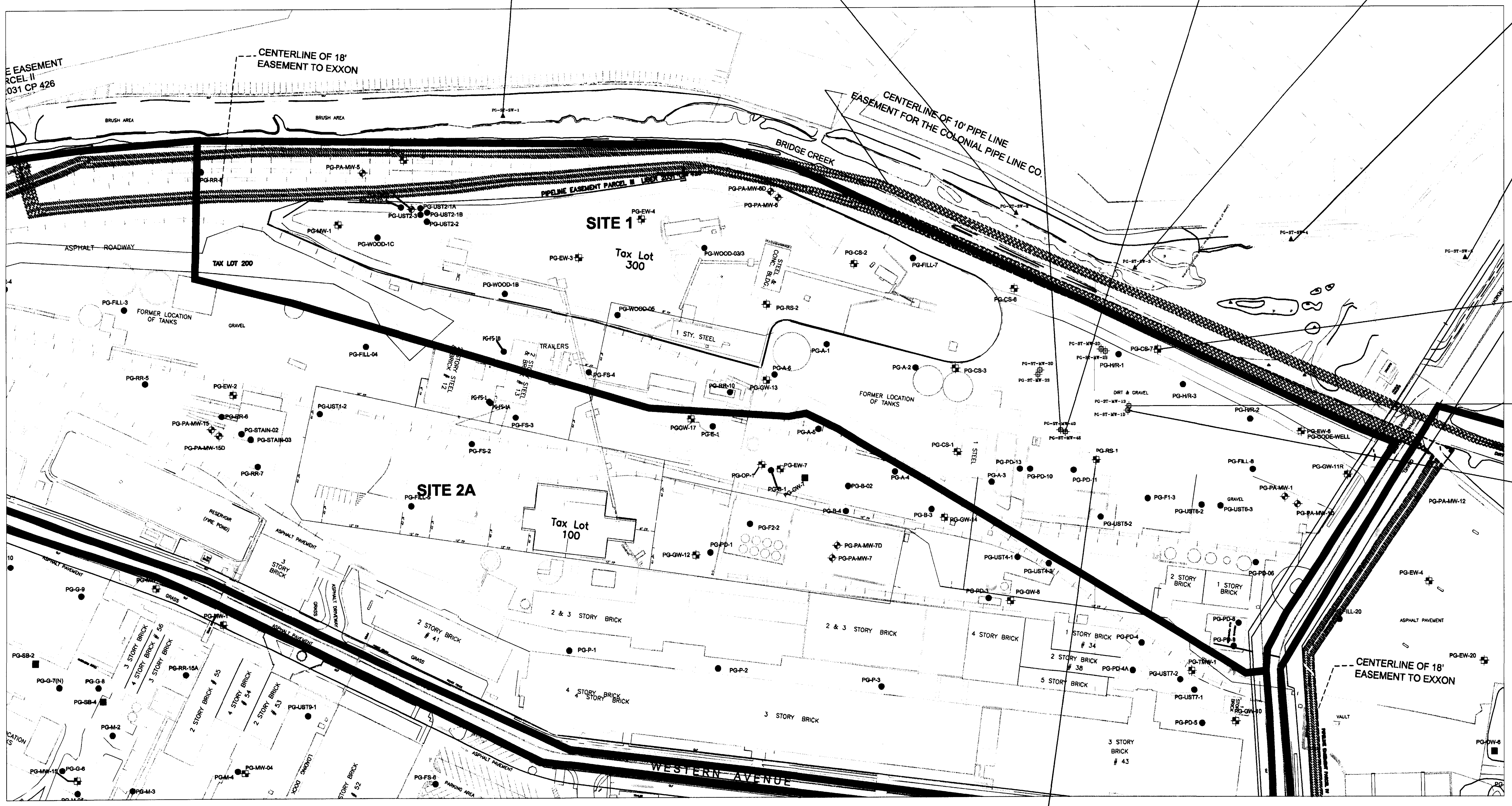
DATE SAMPLED	12/2/2002
MATRIX	GROUNDWATER
ANALYTE	RESULTS (ug/L)
BTEX	
M&P-XYLENES	7

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

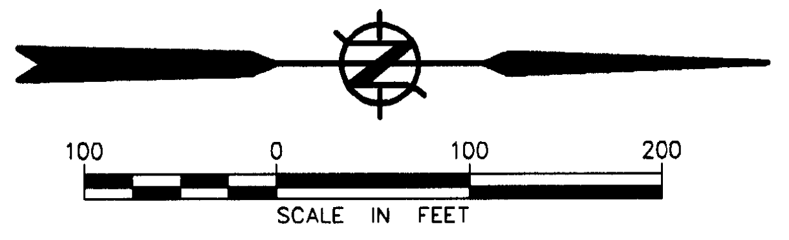
DATE SAMPLED	11/8/2002
MATRIX	GROUNDWATER
ANALYTE	RESULTS (ug/L)
METALS	
IRON (unfiltered)	1,400***
IRON (filtered)	950***
SODIUM (unfiltered)	32,000
SODIUM (filtered)	33,000

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.

L E G E N D

▨	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**

Table 16A
Surcharge Pilot Study -Groundwater Results
BTEX
Site 1: HHMT - Port Ivory Facility

Location	Recommended Groundwater Cleanup Standard UG/L	Recommended Groundwater Cleanup Guidance UG/L	CS-7	RS-1	FB-1	TB-1	CS-7	RS-1	TB-1	FB-1	TB-1	CS-7	RS-1
Date			10/15/2002	10/15/2002	10/15/2002	10/15/2002	11/6/2002	11/6/2002	11/6/2002	11/6/2002	11/7/2002	12/2/2002	12/2/2002
LAB ID#			AB70453	AB70455	AB70457	AB70459	AB72292	AB72294	AB72304	AB72305	AB72397	AB74079	AB74081
Concentration			UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	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

Table 16B
Surcharge Pilot Study - Groundwater Results
Acid Extractables
Site 1: 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 16B
Surcharge Pilot Study - Groundwater Results
Acid Extractables
Site 1: 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

Table 16C
Surcharge Pilot Study - Groundwater and Surface Water Results
Metals and pH
Site 1: 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

ST-SW1 through ST-SW5 represents samples collected from surface water

*** 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 16C
Surcharge Pilot Study - Groundwater and Surface Water Results
Metals and pH
Site 1: 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

ST-SW1 through ST-SW5 represents samples collected from

*** 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 16C
Surcharge Pilot Study - Groundwater and Surface Water Results
Metals and pH
Site 1: 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

ST-SW1 through ST-SW5 represents samples collected from

*** 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 16C
Surcharge Pilot Study - Groundwater and Surface Water Results
Metals and pH
Site 1: 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

ST-SW1 through ST-SW5 represents samples collected from

*** 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 16C
Surcharge Pilot Study - Groundwater and Surface Water Results
Metals and pH
Site 1: 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

ST-SW1 through ST-SW5 represents samples collected from

*** 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

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 1 from 2000 through 2003. By and large, assessment and investigation efforts identified relatively few environmental issues with respect to Site 1. 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 Site 1 as well as Sites 2A/2B 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 a previously closed UST (closed in place by P&G) and an abandoned oil/water separator system from Site 1. With regard to the presence of fill material, the SI/RI activities identified the presence of contaminants at Site 1, 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 1 or Bridge Creek, situated adjacent to the western property boundary of Site 1 and 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 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 1 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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Division of Environmental Remediation
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625 Broadway, Albany, New York 12233-7014
Phone: (518) 402-9564 • **FAX:** (518) 402-9557
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Erin M. Crotty
Commissioner

RECEIVED
KILLAM GROUP, INC.
27 BLEEKER ST., MILLBURN NJ 07041

MAR 27 2002

REFER: Springer
DATE SEEN:
REFER BACK TO:

March 25, 2002

Mr. Charles Springer
Killam Associates
27 Bleeker Street
PO Box 1008
Millburn, NJ 07041-1008

Dear Mr. Springer:

Re: Proctor & Gamble Site, Western Ave.
Staten Island, Richmond County, NY

This letter is to confirm our phone conversation of earlier today regarding the Proctor and Gamble Site located on Western Avenue in Staten Island, New York. The site was formerly listed on the *New York State Registry of Inactive Hazardous Waste Disposal Sites* (site # 243002). It was removed from the registry due to the lack of disposal of a consequential amount hazardous waste. In addition, the site is currently not designated a site on the *Inventory of Hazardous Substance Waste Disposal Sites*. The Proctor & Gamble site was considered for, but not included in this inventory.

Please feel free to call me at the above number or e-mail me at emzuk@gw.dec.state.ny.us. if you have any further questions.

Sincerely,

Elaine M. Zuk
Senior Engineering Geologist
Eastern Investigation Section

HAGER-RICHTER
GEOSCIENCE, INC.

GEOPHYSICAL SURVEY
PROCTOR & GAMBLE
PORT IVORY FACILITY
STATEN ISLAND, NEW YORK

Prepared for:

Killam Associates
27 Bleeker Street
PO Box 1008
Millburn, New Jersey 07041-1008

Prepared by:

Hager-Richter Geoscience, Inc.
8 Industrial Way - D10
Salem, New Hampshire 03079

File 00D59
December, 2000

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.

TABLE OF CONTENTS

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.

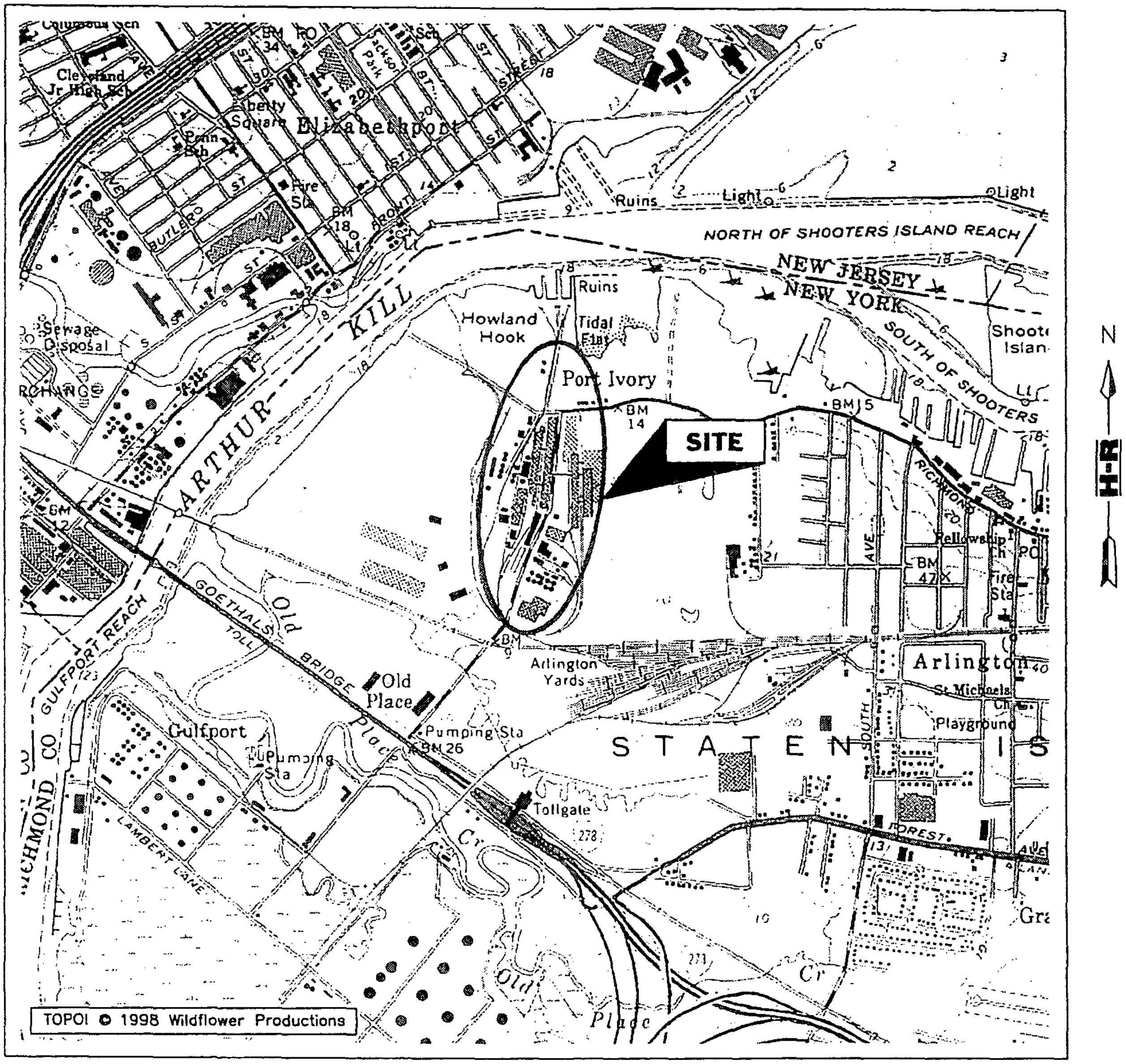
5. LIMITATIONS

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.



LOCATION

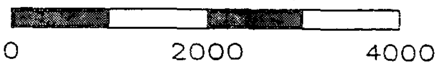
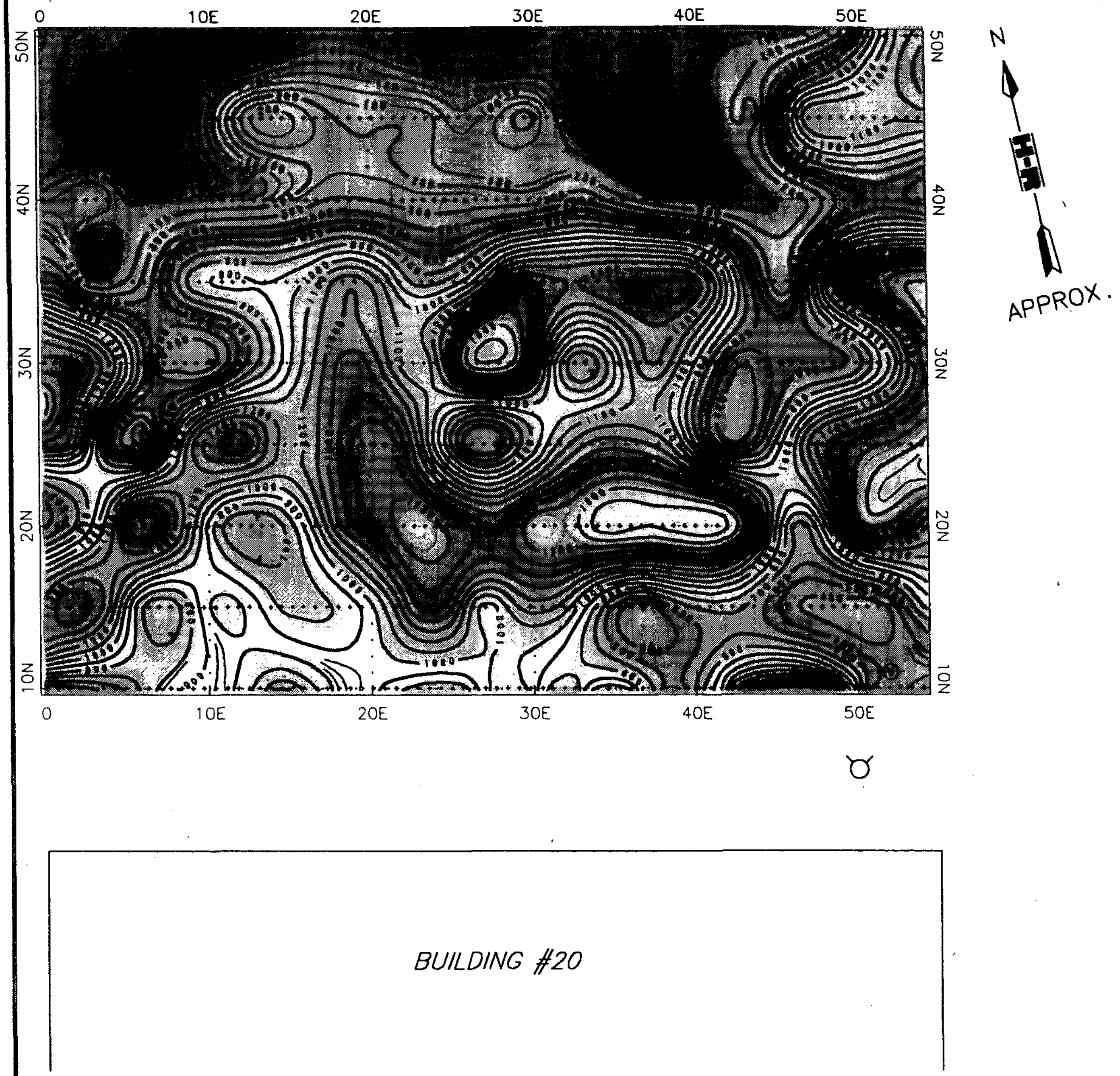


Figure 1
General Site Location
Procter & Gamble Port Ivory Facility
Staten Island, New York

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
♉	HYDRANT

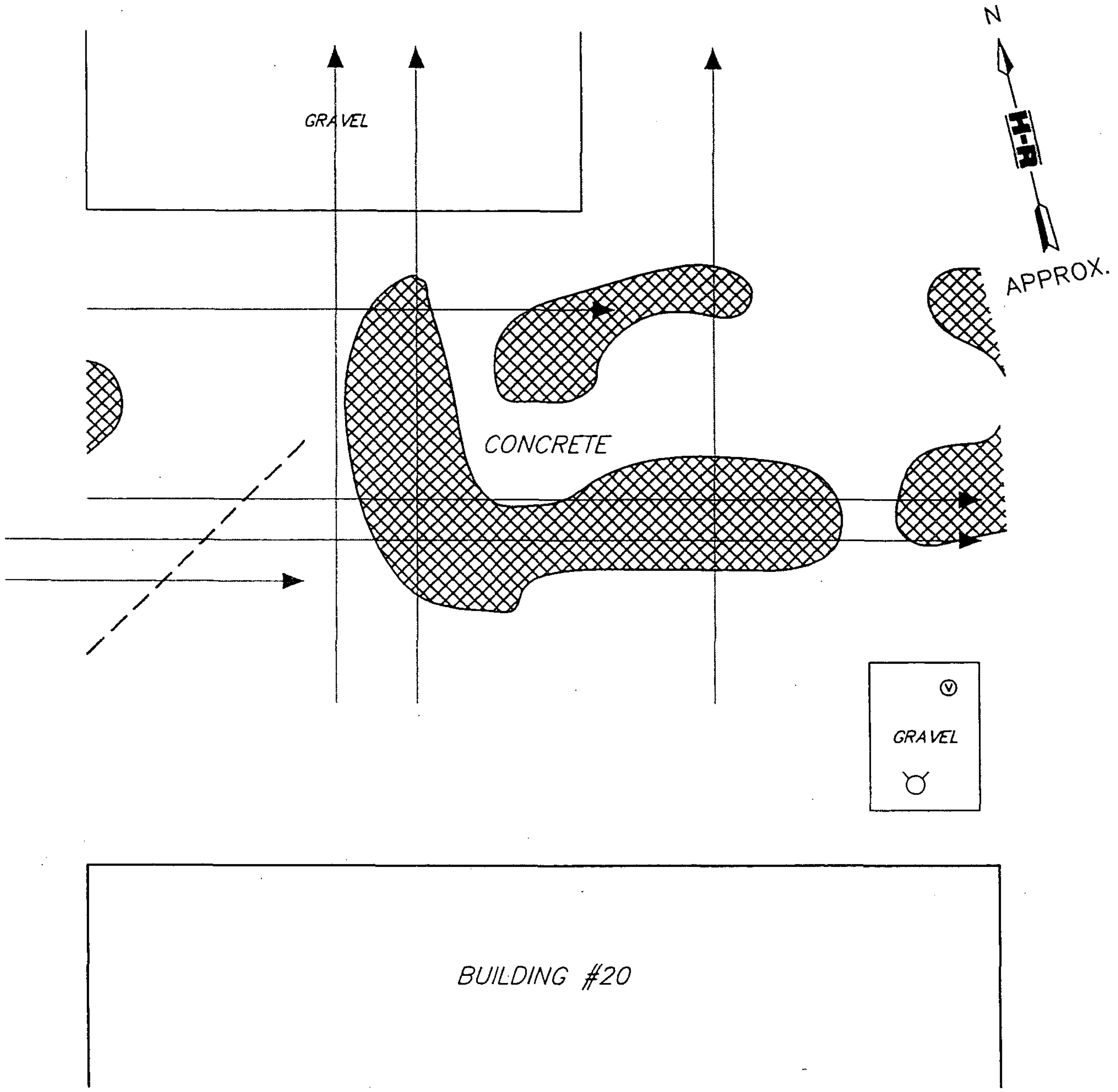
SCALE (feet)

0 10 20

Figure 2
EM61 Survey – UST Area 1
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59 | December, 2000

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



LEGEND

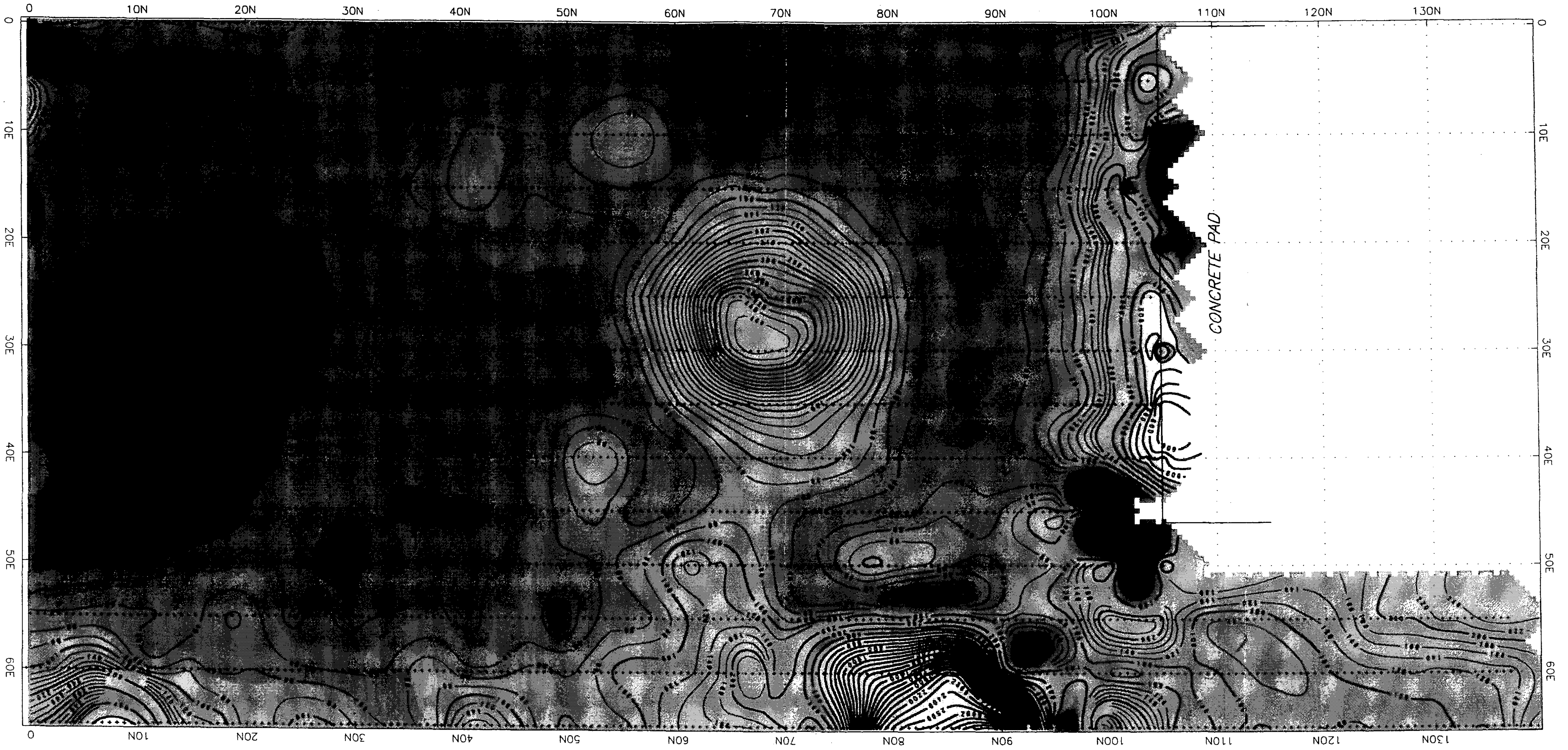
NOTES:

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

☐V WATER VALVE

⊕ MONITORING WELL

SCALE (feet)

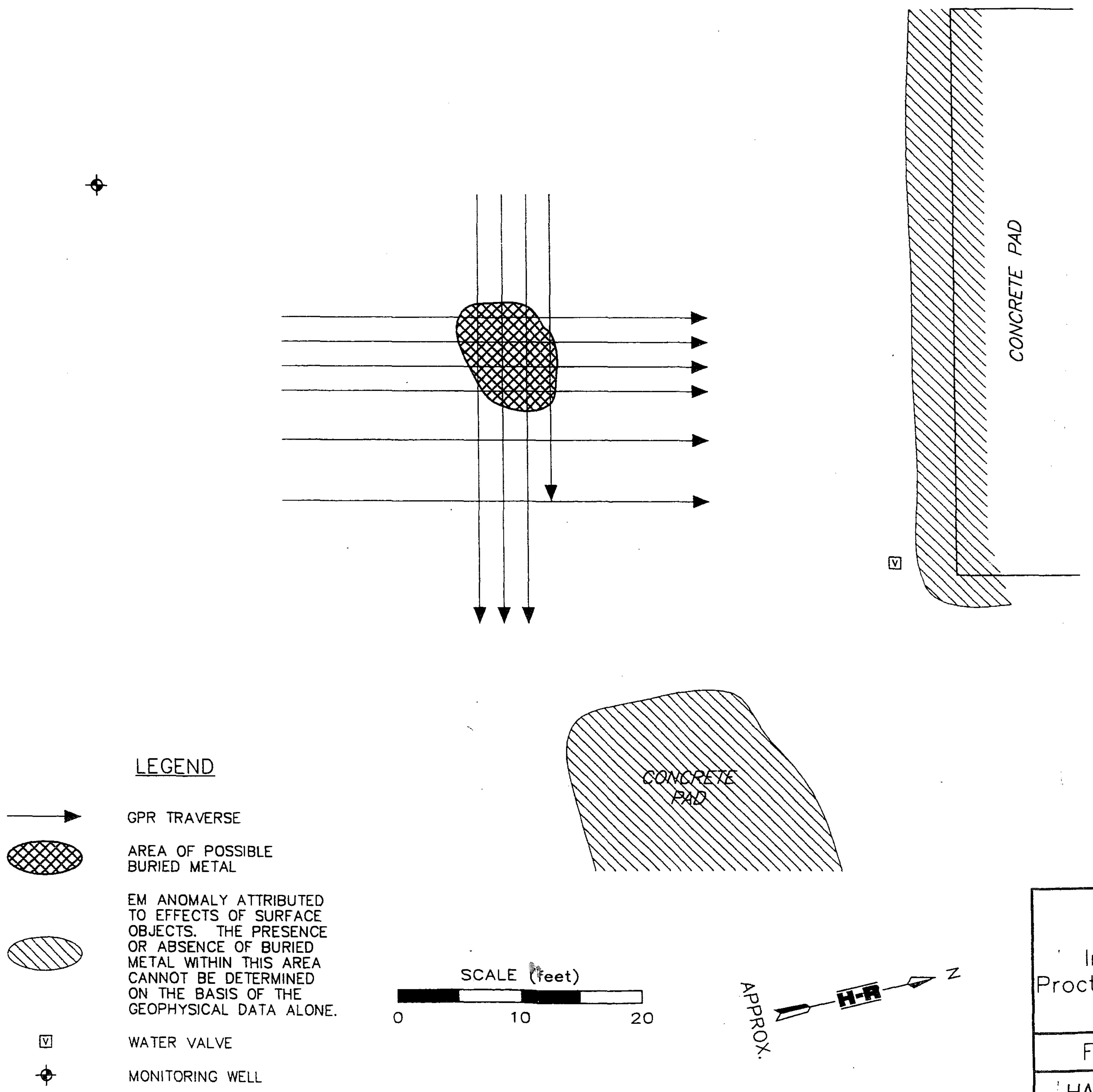
0 10 20

APPROX. N

Figure 4
EM61 Survey - UST Area 2
Procter & Gamble Port Ivory Facility
Staten Island, New York

File 00D59 | December, 2000

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



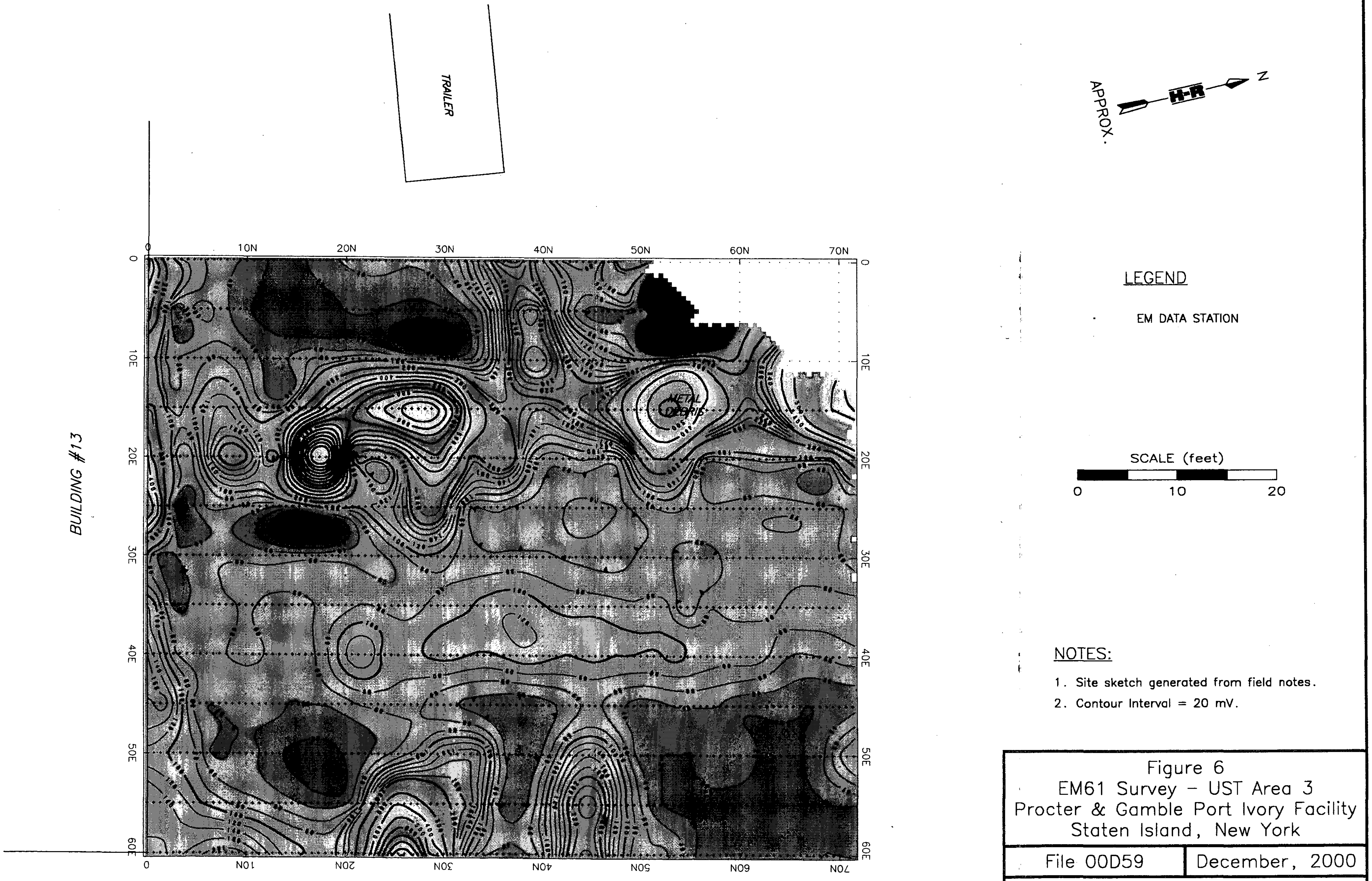
NOTE:

Site sketch generated from field notes.

Figure 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



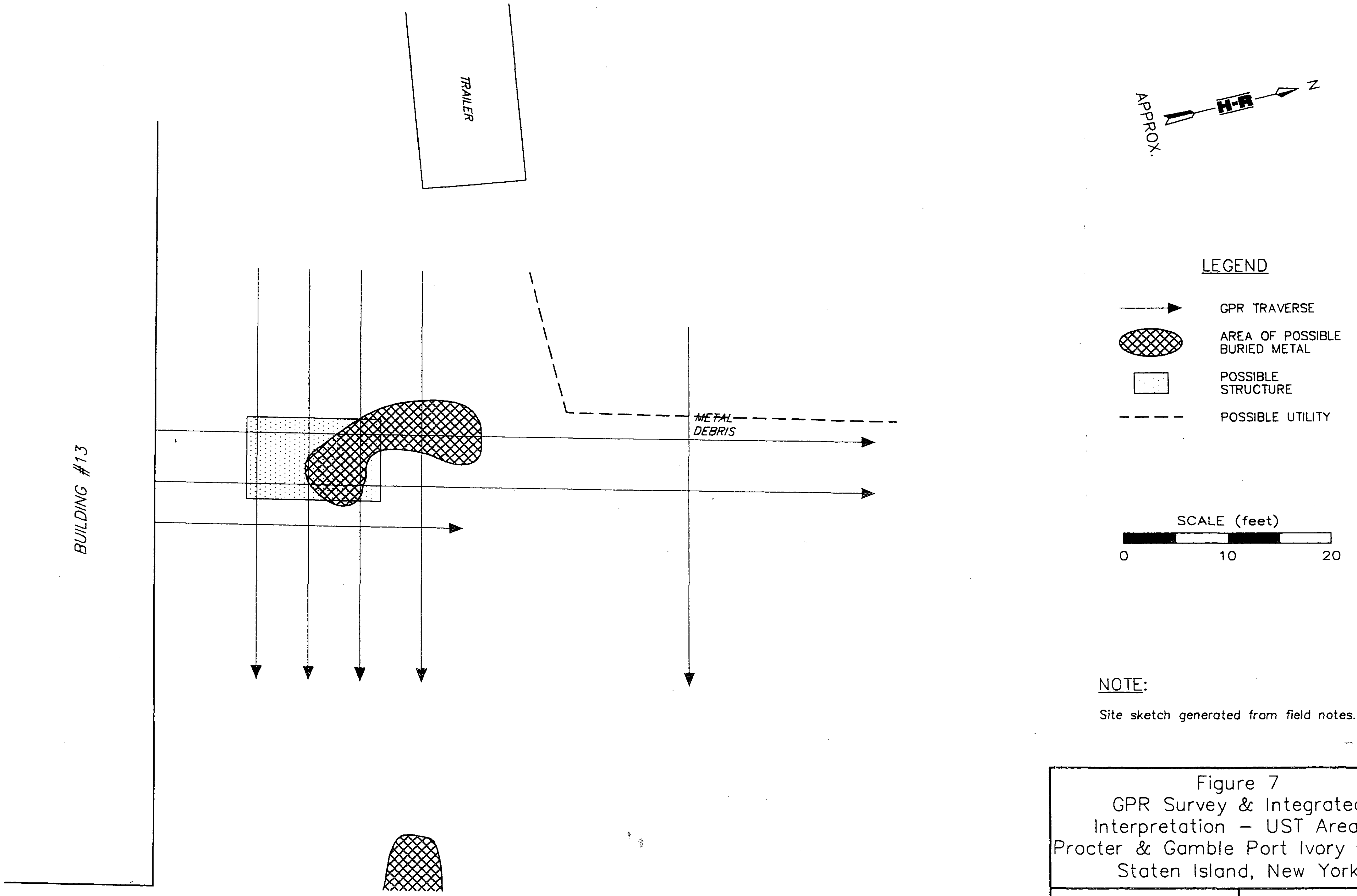
NOTES:

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

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



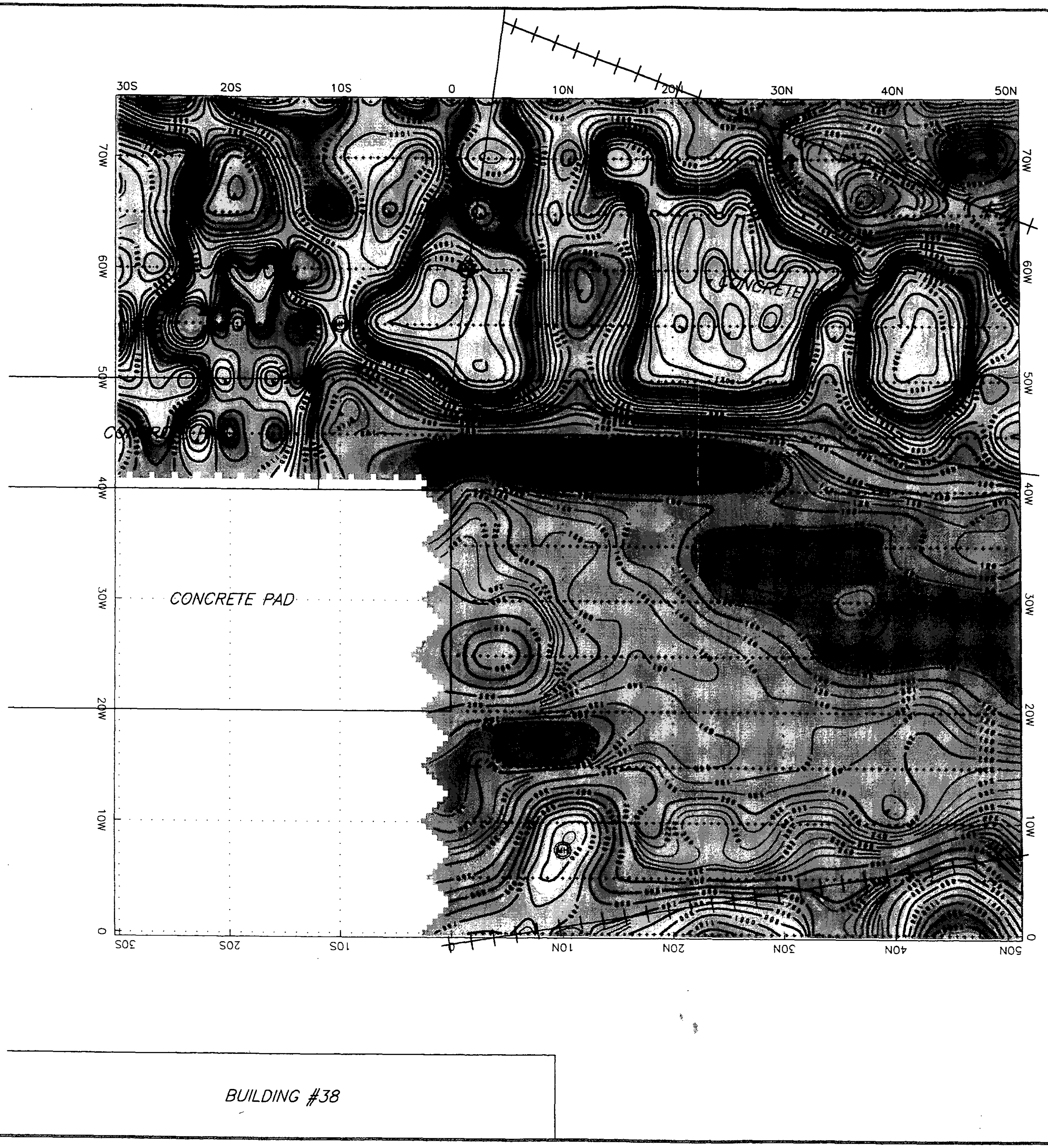
NOTE:

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

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



APPROX.
H-R
N

LEGEND

·	EM DATA STATION
◎	MANHOLE
┼┼┼	RAILROAD TRACK

SCALE (feet)
0 10 20

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

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire

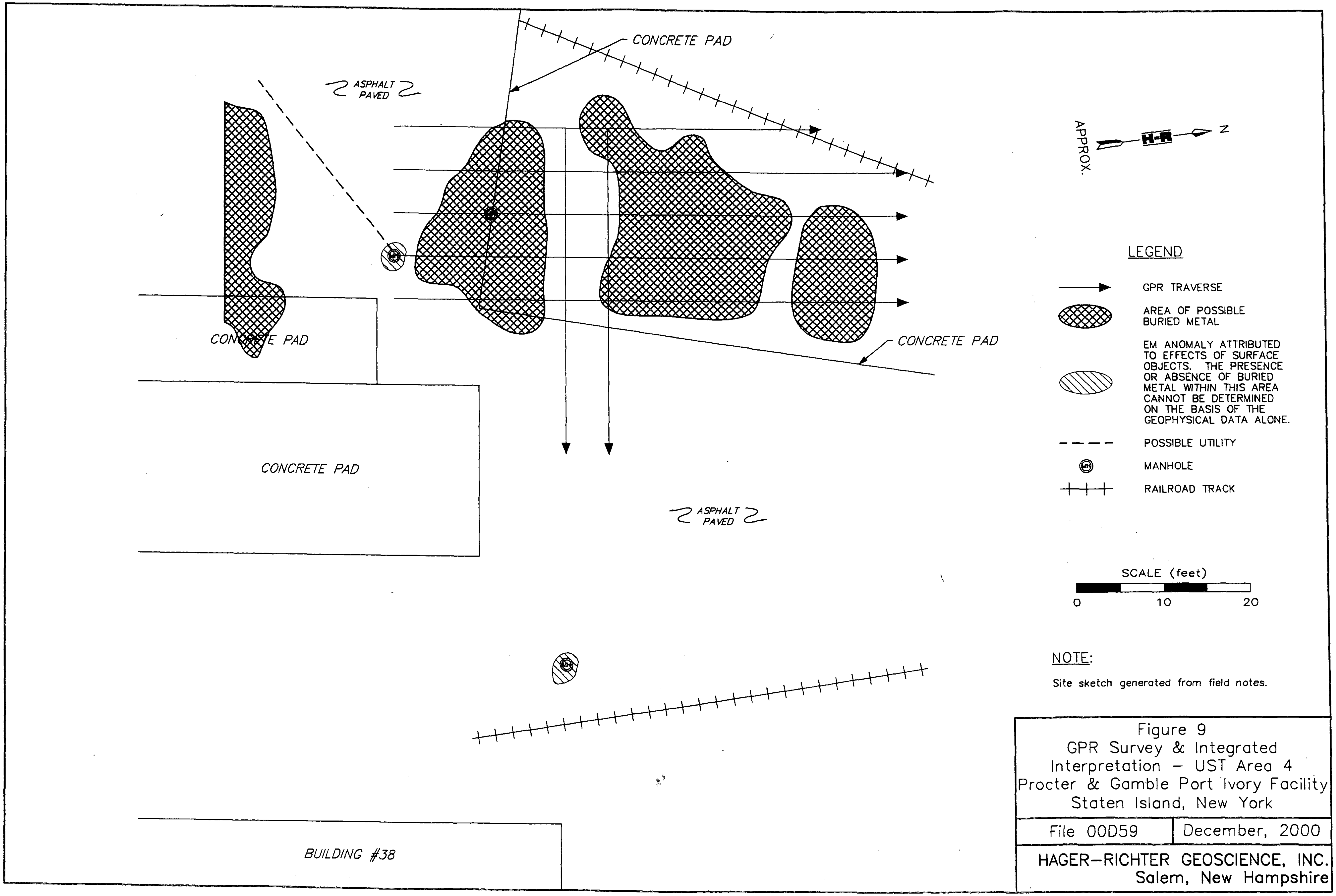
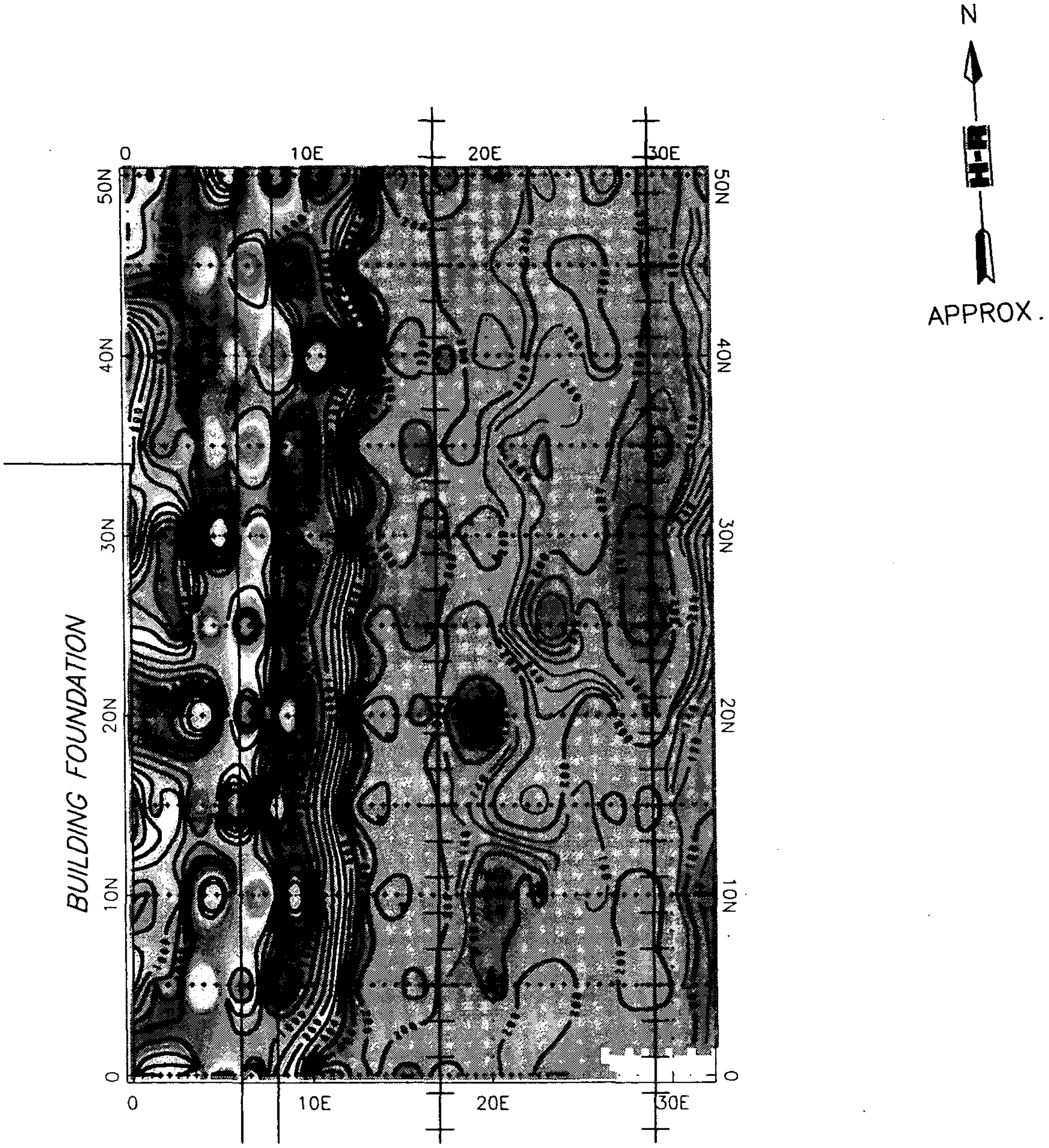


Figure 9
GPR Survey & Integrated
Interpretation – UST Area 4
Procter & Gamble Port Ivory Facility
Staten Island, New York

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)

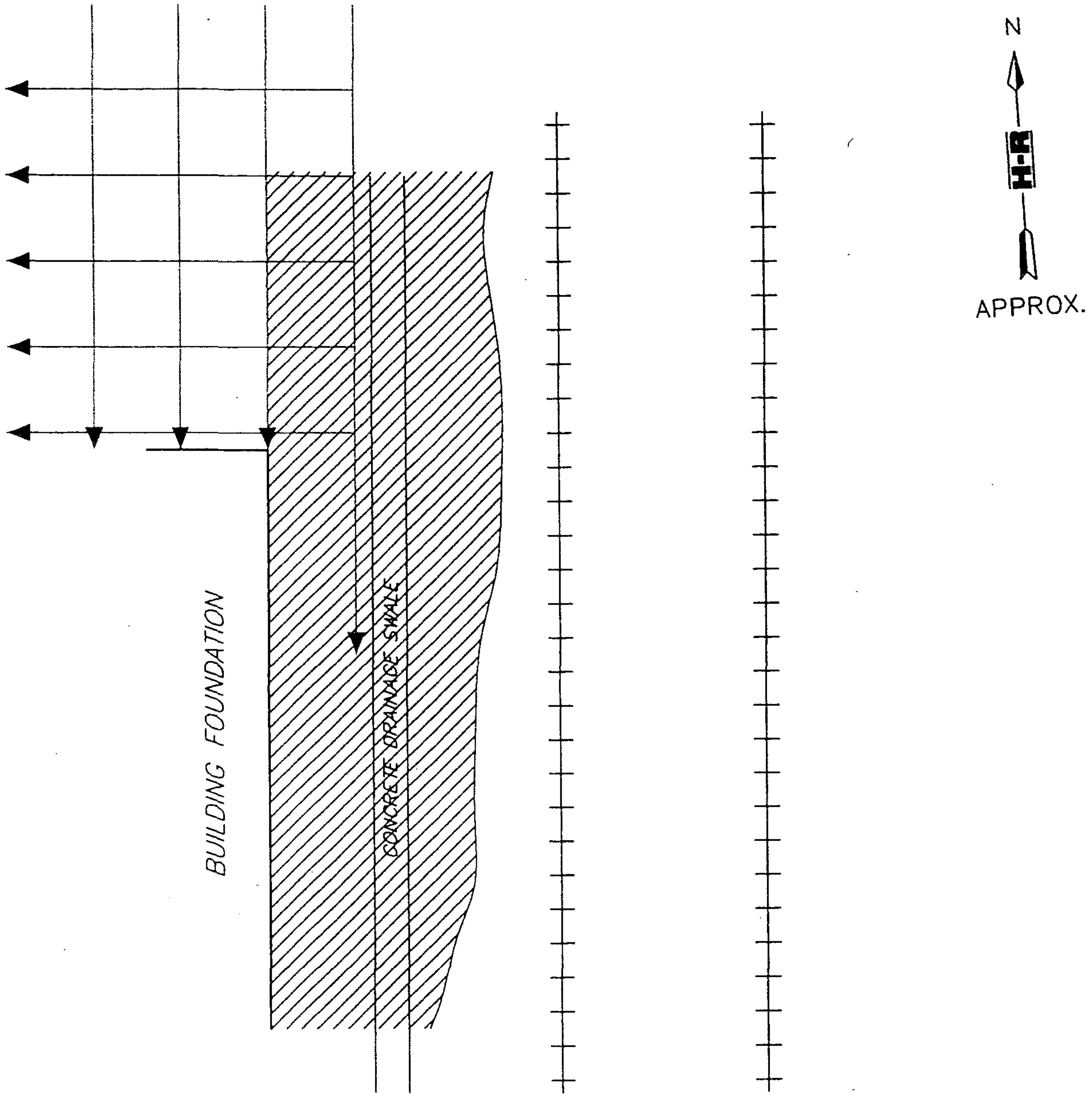
0 10 20

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

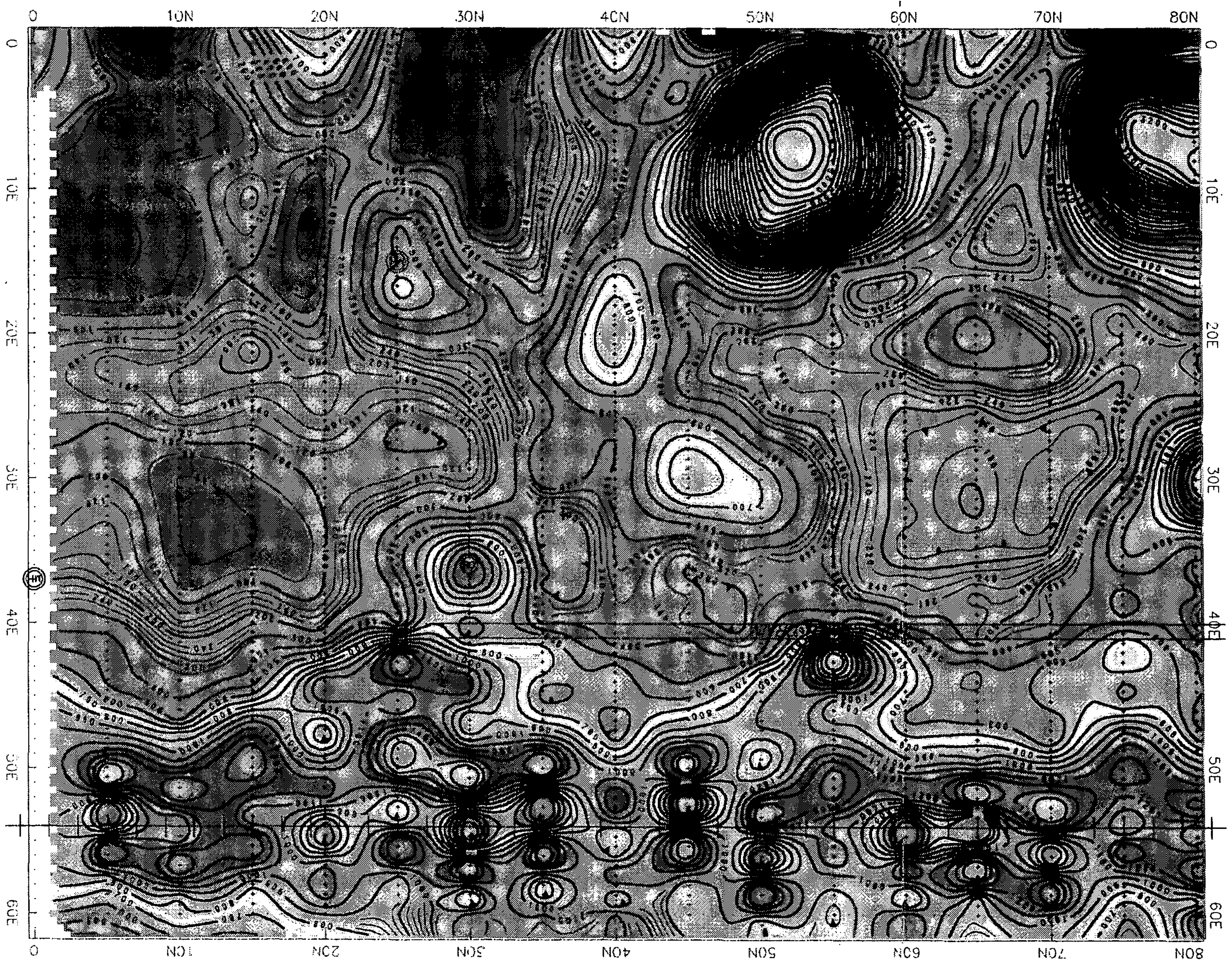
NOTE:

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. N

LEGEND

·	EM DATA STATION
Ⓜ	MANHOLE
Ⓒ	CATCH BASIN
┼┼┼	RAILROAD TRACK

SCALE (feet)

0 10 20

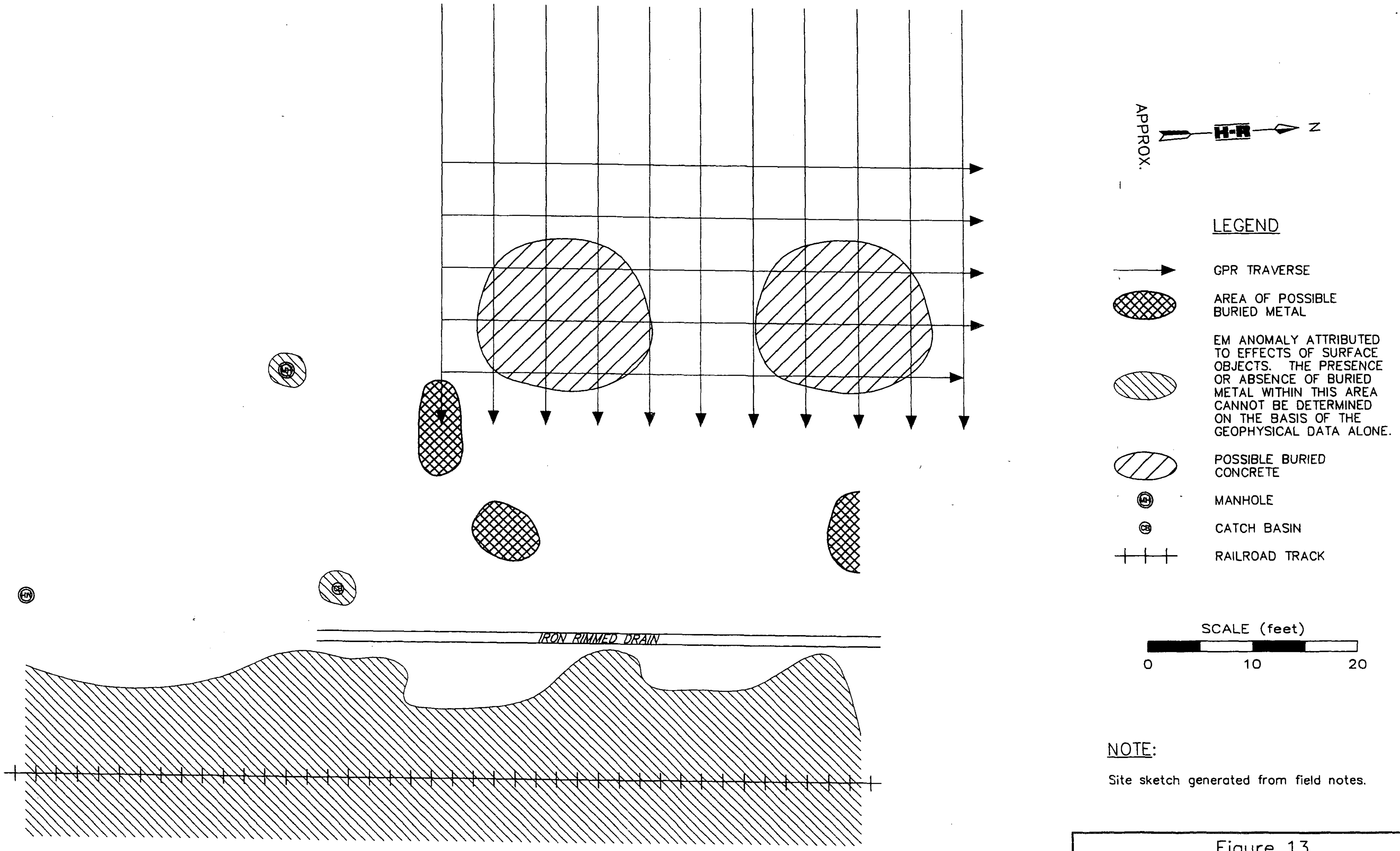
NOTES:

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



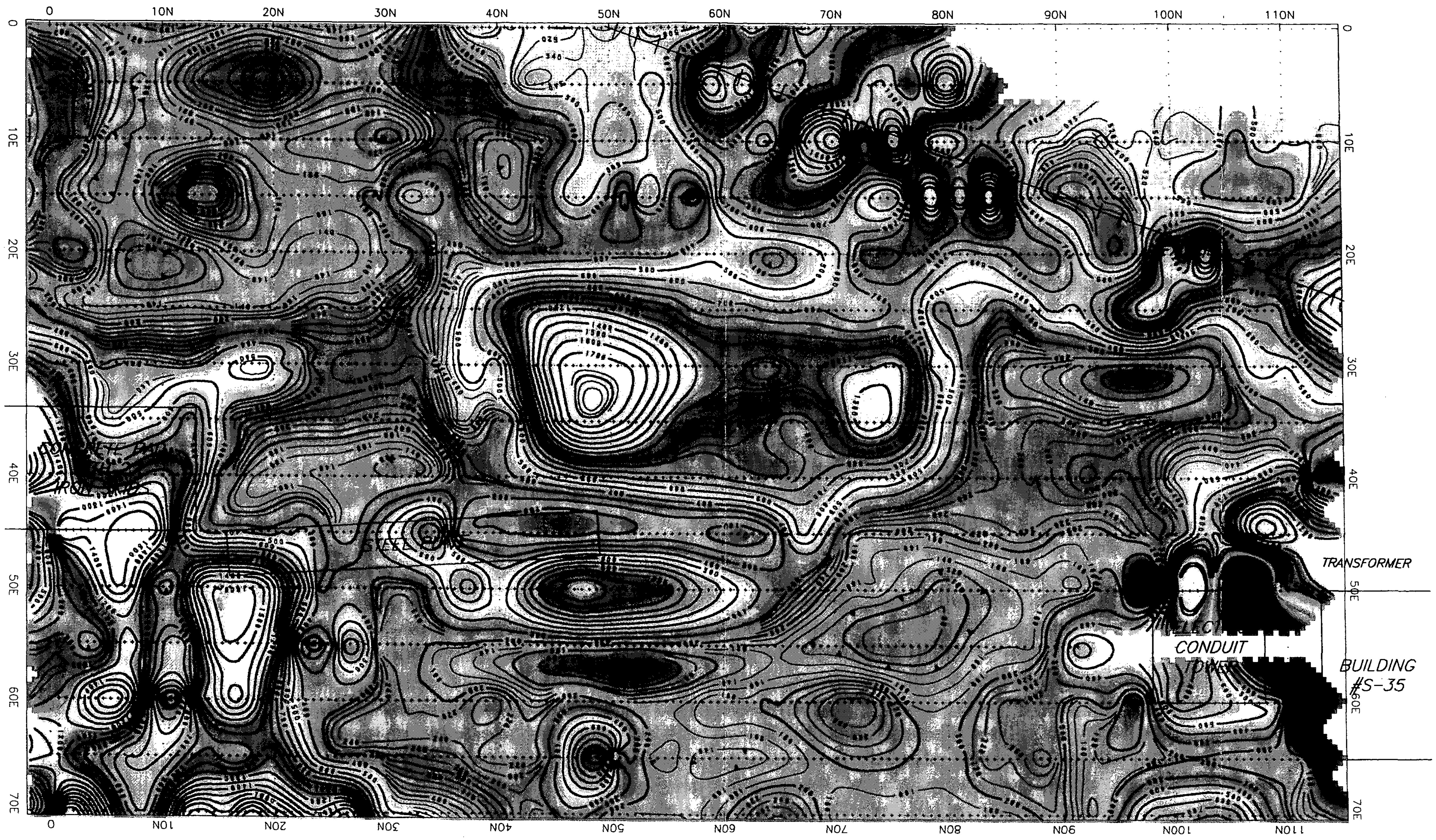
NOTE:

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



NOTES:

1. Site sketch generated from field notes.
2. Contour interval = 20 mV.

LEGEND

·	EM DATA STATION
Ⓜ	MANHOLE
♉	HYDRANT
┼┼┼	RAILROAD TRACK

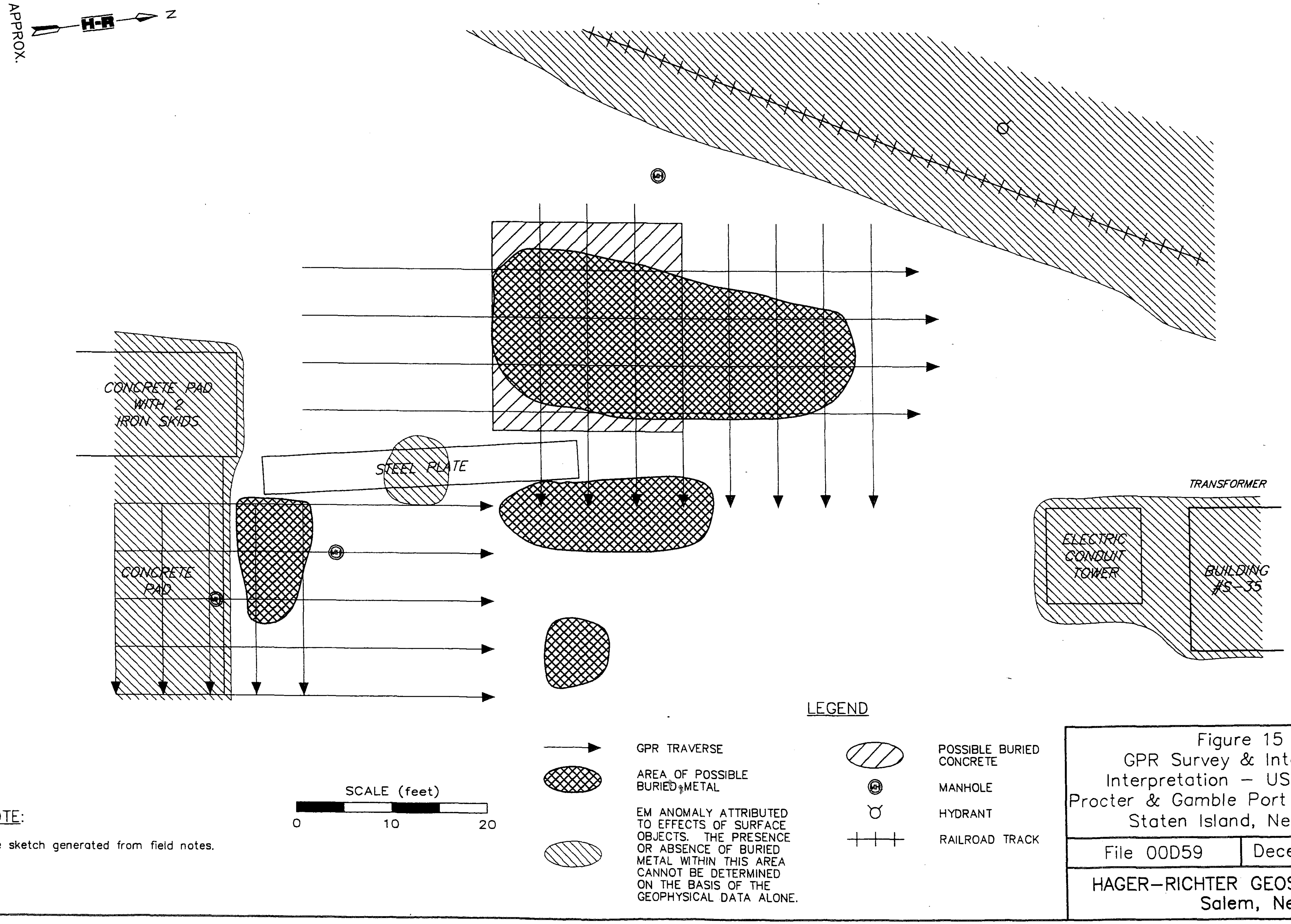
SCALE (feet)
0 10 20

APPROX. N

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



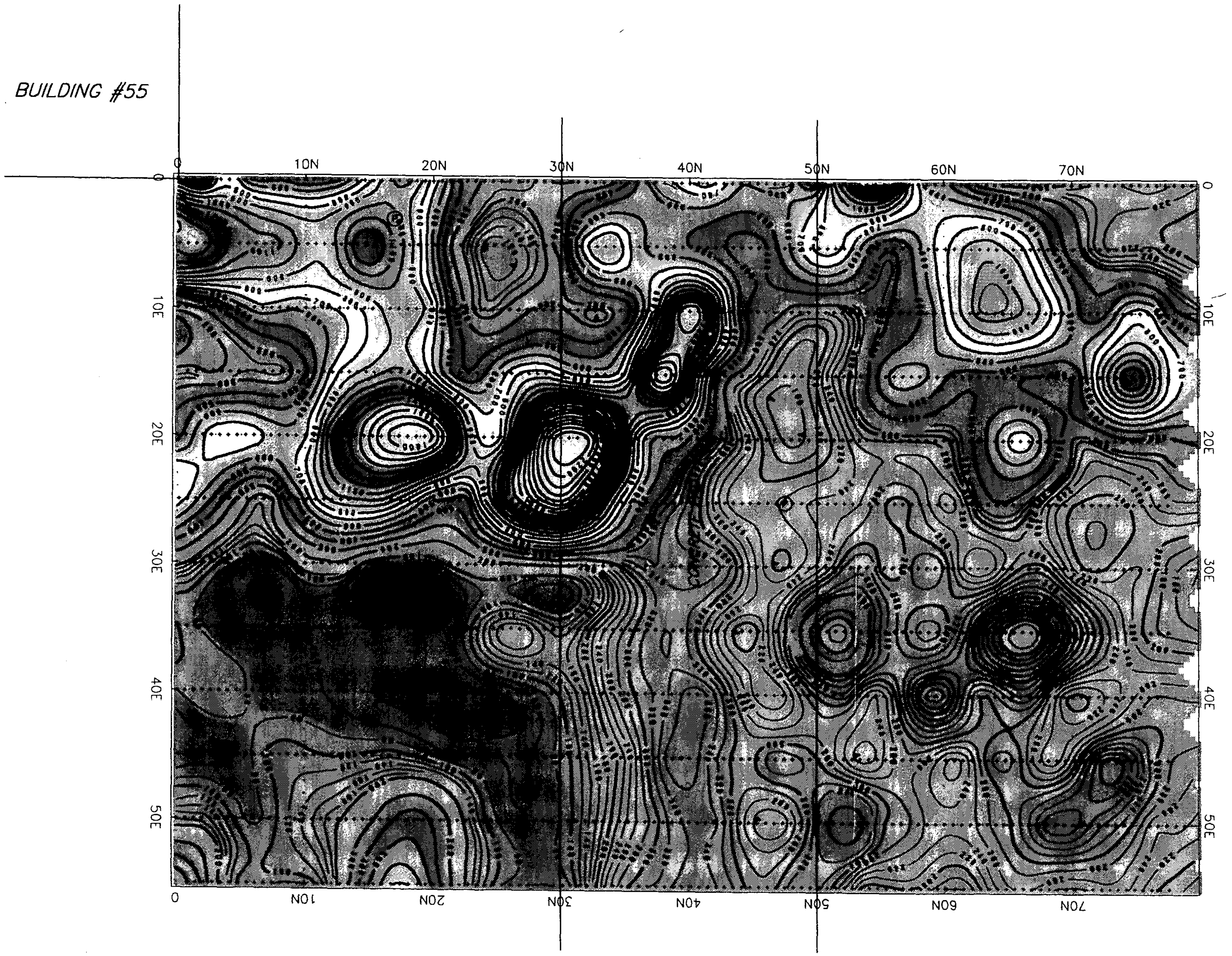
NOTE:

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

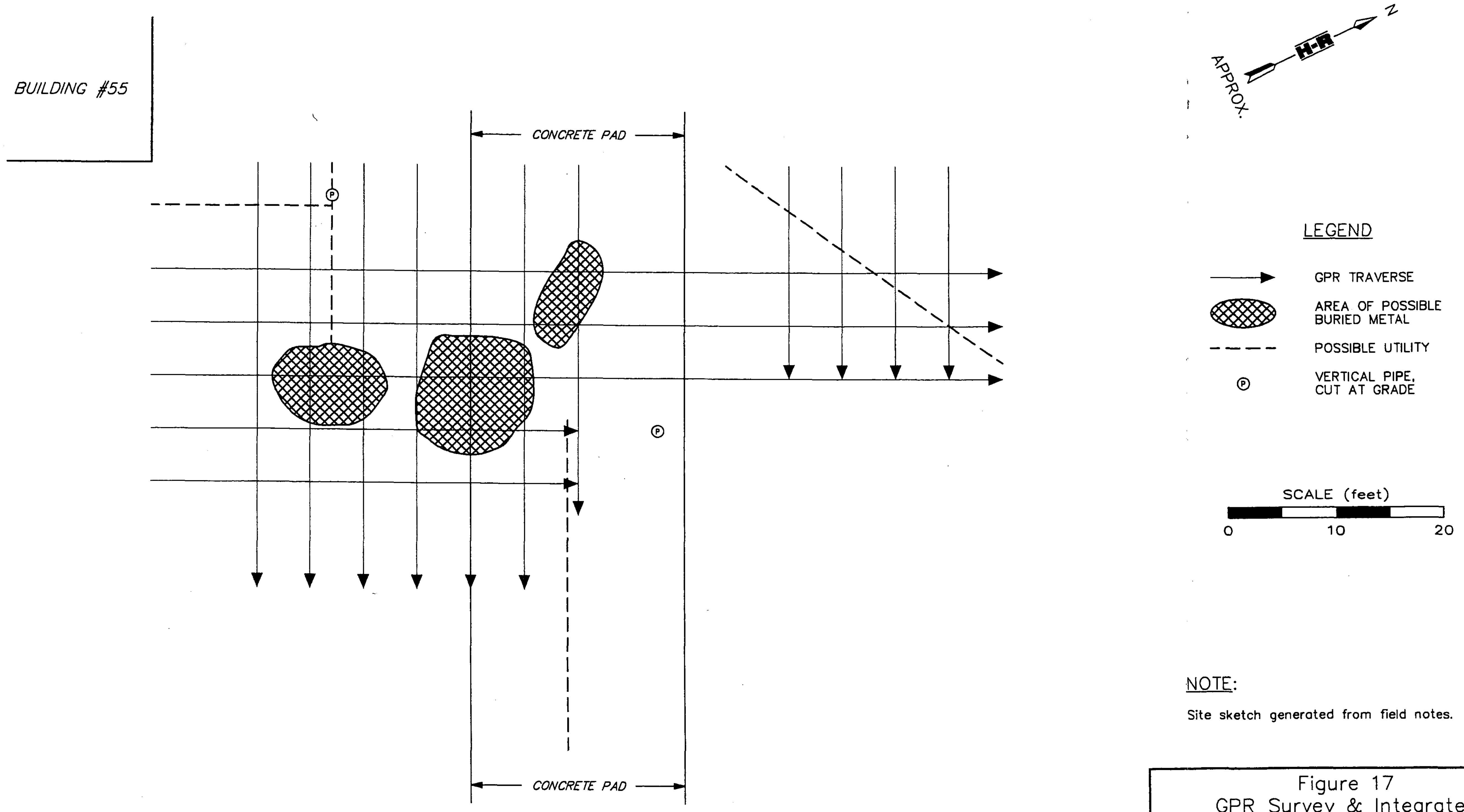
NOTES:

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



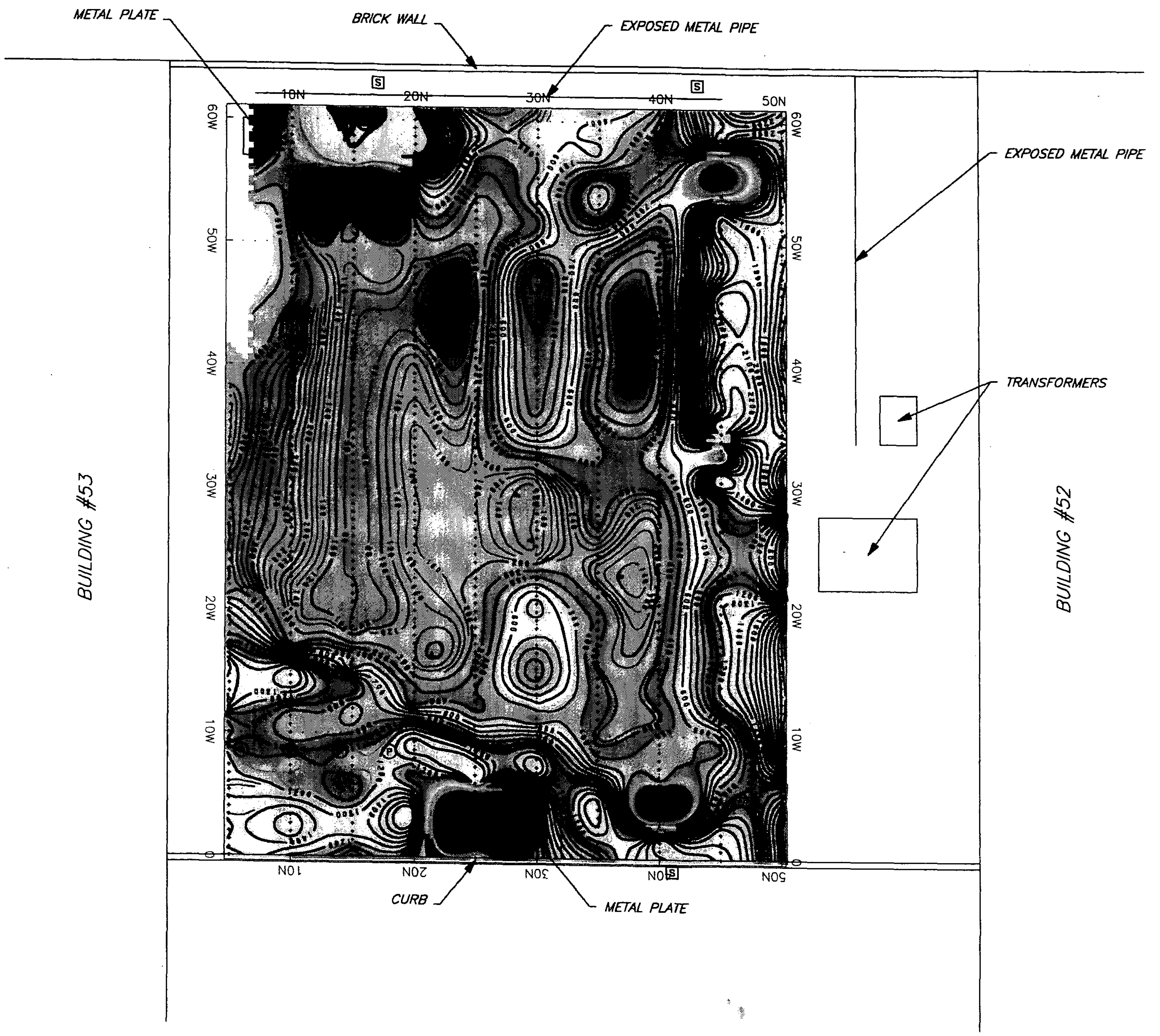
NOTE:

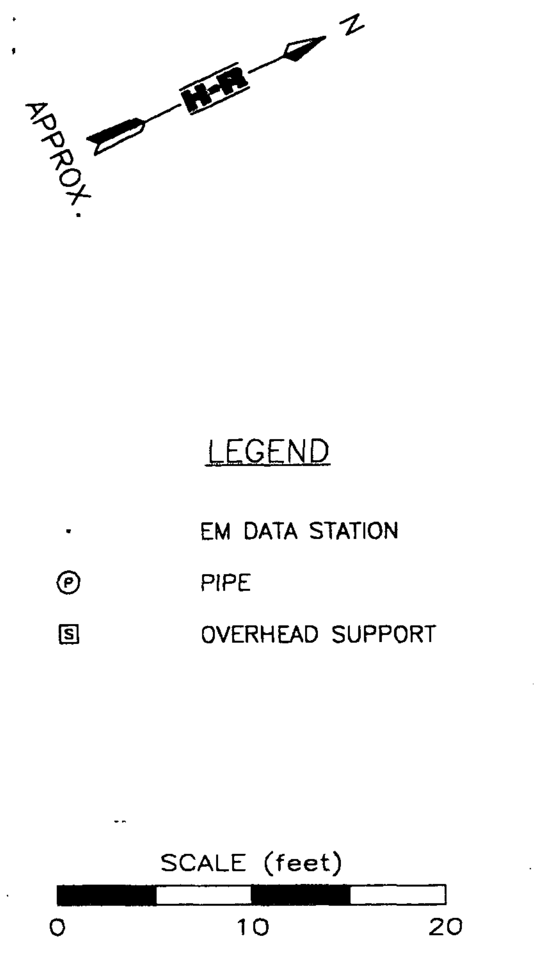
Site sketch generated from field notes.

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





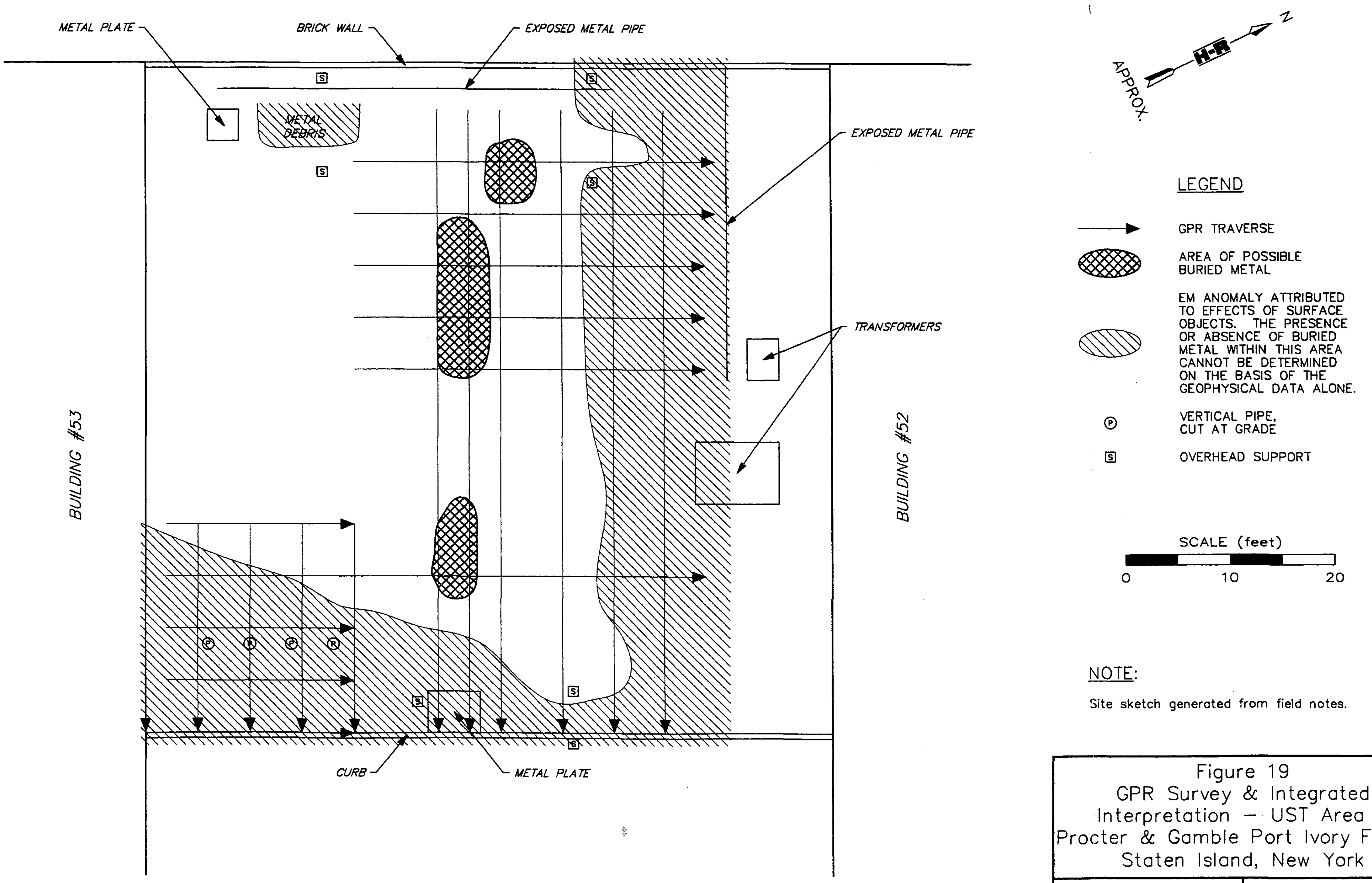
NOTES:

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



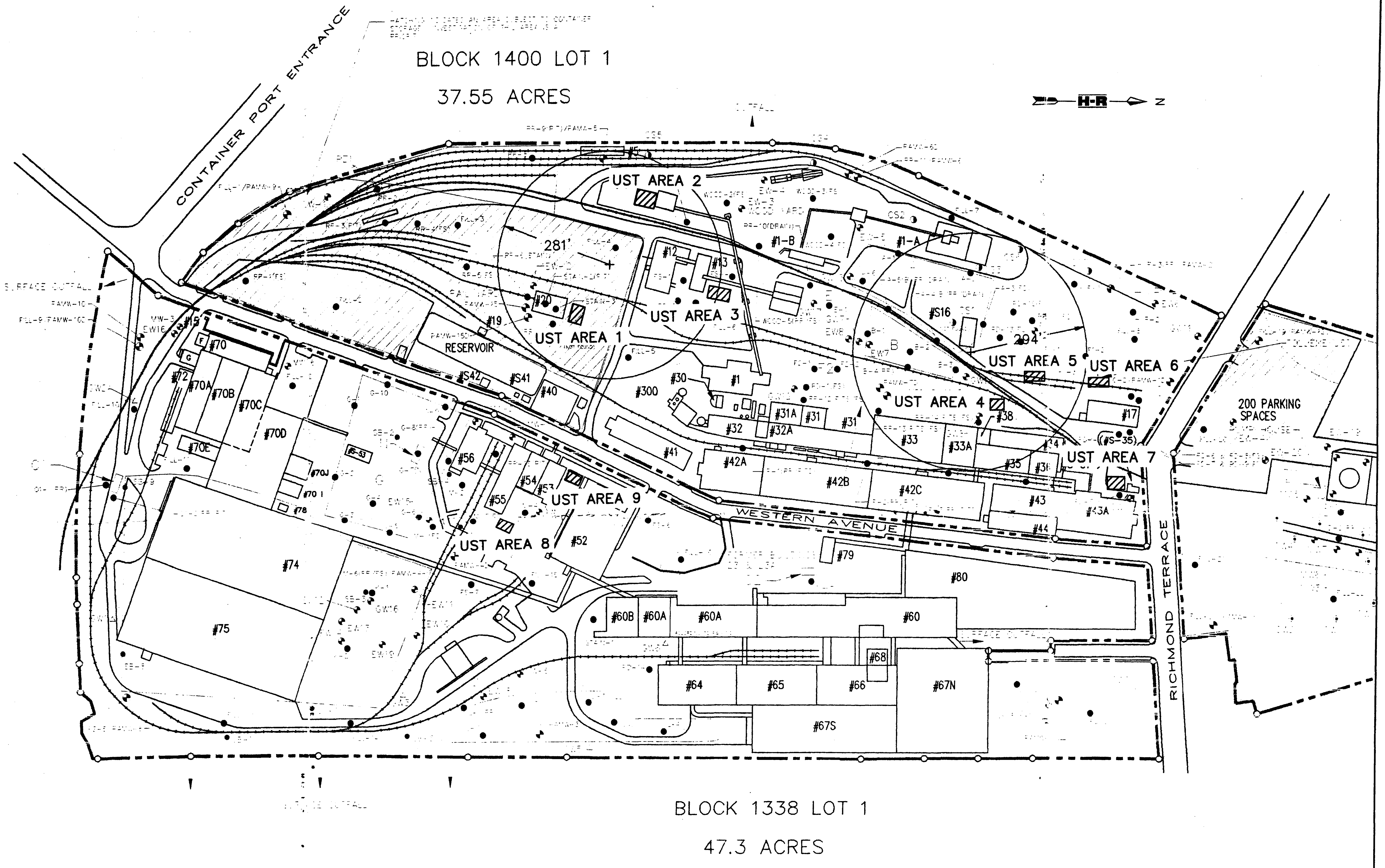
NOTE:

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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THE PORT AUTHORITY OF NY & NJ

Engineering Department
Construction Division
Materials Engineering Section

BORING REPORT

SHEET 1 OF 4

PROJECT Port Ivory P&G Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. PA-MW-1	SURFACE ELEV.
LOCATION NW Corner of Site, Near Richmond Terr 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 "A" Monitor
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER J Craig
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/22	10⁰⁵	4.5	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 Augr	Full		
Auger		↓	↓		Crushed Stone, Gravel, Sand, Cinders, Etc
↓					3.0
				1	Fill- white Diatomaceous Earth Ph-7
	5				
				2	Fill White & Gray Diatomaceous Earth Ph-7
[illegible]ow		1-1			
Stem		1-1	24"	3	Fill Gray Diatomaceous Earth Ph-7
Augers		1-1		4	
↓		1-1	24"		Fill - white & Gray Diatomaceous Earth Ph-7
	10	1-0		5	
		0-0	16"		Same Ph-13
		1-0		6	
		1-0	20"		Same Ph-13
		1-0		7	
	15	0-0	24"		Same Ph-13
		1-1		8 A	Fill- Brown, Green, Grey, white Diatomaceous Eart Ph-13 17.0
		3-4	18"	B	Brown Peat Ph7 18.0
					Bottom of Boring
	20				
					All Samples checked with PID
					Meter, S# 1,2,5 & 8B 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.

PORT AUTHORITY OF NY & NJ

Engineering Department - Materials Division

Well Installation Report

Sheet 2 of 4

ECT Port Ivory P&G Site Block 1400 Lot 1				CONTRACT NO. 426-99-006
LOCATION NW Corner of Site, Near Richmond Terr				CONTRACTOR Craig Drilling
WELL NO. PA-MW-1	WELL TYPE 'A' Monitor	INSPECTOR D Howe	DRILLER J Craig	DATE 11/22/00

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

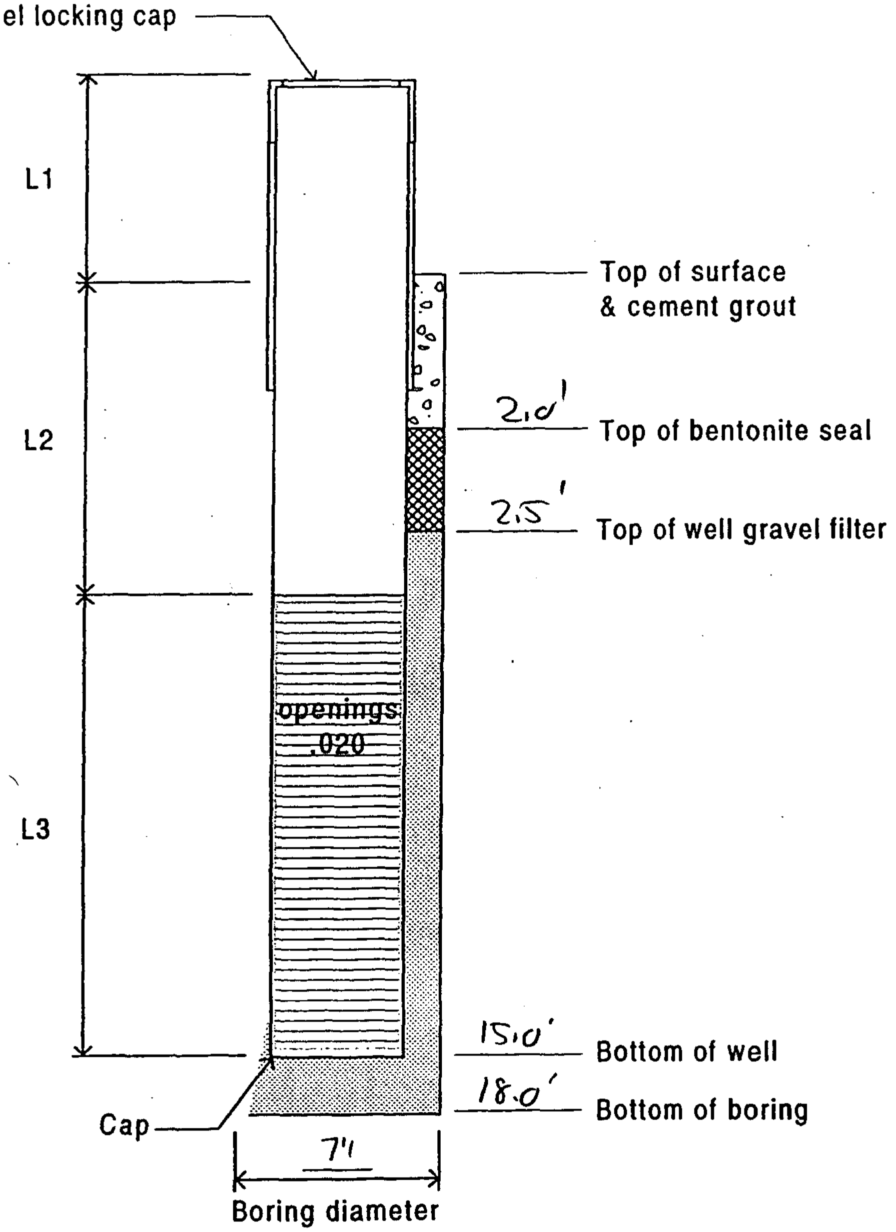
DATE 11/24/00	WATER LEVEL BEFORE 7.5'	WATER LEVEL AFTER 10.1'	TAKEN 10 MINUTES AFTER

2'' " dia. PVC pipe w/steel locking cap

L1 = 3.0'

L2 = 3.0'

L3 = 12.0'



Top of surface & cement grout

2.0' Top of bentonite seal

2.5' Top of well gravel filter

15.0' Bottom of well

18.0' Bottom of boring

7'' Boring diameter

MARKS:

Hole Backfilled 15-18' with Bentonite

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THE PORT AUTHORITY OF NY & NJ

Engineering Department
Construction Division
Materials Engineering Section

BORING REPORT

SHEET 1 OF 5

PROJECT: Port Ivory P&G S.To
NAME OF CONTRACTOR: Craig Drilling
BORING NO.: PAMW-1D
SURFACE ELEV.:
LOCATION: ±10' North of PAMW-1, NW Corner of S.To, Block 1400 Lot 1
CONTRACT NO.: 426-99-006
DATE: 11/22/00
SPOON: 2 "O.D. 1 3/8 "I.D.
CASING SIZE: HW
HOLE TYPE: A' Monitor
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER: J Craig
INSPECTOR: D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/22	3P	4.0	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		
Augr					For Strata 0-18' See Log for PAMW-1
	5				
Casing					
	15				
					18.0'
Drill	20	W O H	20'	1	9.8 ppm Brown Peat Ph-7
Ahead With Rocut		W O H	20"	2	4.8 ppm Same Ph-7
		1-2-1-4	21"	3	2.1 ppm Same Ph-7
					25.0
	25	2-3 4-3	14"	4	Ph-7 M-F Brown Sand, Tr Gravel, Tr Silt
	30				

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
Construction Division
Materials Engineering Section

BORING REPORT

SHEET 2 OF 5

PROJECT PorT Ivory P&G SiTe	**NAME OF CONTRACTOR** Craig Drilling	**BORING NO.** PAMW-1D	**SURFACE ELEV.**
LOCATION ±10' North of PAMW-1, NW corner of site, Block 1400 LoT 1		**CONTRACT NO.** 486-99-006	**DATE** 11/24/00

SPOON 2 "O.D. 1 3/8 "I.D.
CASING SIZE Revert
HOLE TYPE "D" Monitor
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER J Craig
INSPECTOR DHoue

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 30.0
Drill	30	3-4		5	Ph-6
Ahead		4-4	16"		M-F Gray Sand, Tr Gravel, Tr SilT
with					
Revert					
	35	3-3		6	Ph-7
		4-5	12"		F Gray Sand, Tr SilT, Tr Gravel 32.0
					F Red Brown Sand in tip of spoon ↗
	40	4-7		7	Ph-7
		7-8	10"		F Brown Sand, Tr SilT, Tr Gravel
	45	7-4		8	Ph-7
		5-4	14"		M-F Brown Sand, Tr SilT, Tr Gravel
					48.0
					Rods chattering
	50	9-18		9	No Ph Reading
		25-30	8"		Red Brown Clayey SilT, LiTTle F Sand, Tr Gravel
↓	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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THE PORT AUTHORITY OF NY & NJ

Engineering Department
Construction Division
Materials Engineering Section

BORING REPORT

SHEET 3 OF 5

PROJECT Port Ivory P&G Site
NAME OF CONTRACTOR Craig Drilling
BORING NO. PA MW-1D
SURFACE ELEV.
LOCATION ±10' North of PA MW-1 NW Corner of Site Block 1400 Lot 1
CONTRACT NO. 426-99-006
DATE 11/24/00
SPOON 2 "O.D. 1 3/8 "I.D.
CASING SIZE Revert
HOLE TYPE "D" Monitor
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER J Craig
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
	55				55.0
Drill		30-100/5" 6/1"		10	No Ph Reading Little M-F Sand
Ahead		24-26 *	11"		Decomposed Red Shale, Little Red Brown clayey silt,
with					
Revert					
					60.0
	60				
		27-31		11	No Ph Reading
		36-40	13"		M-F Red Brown Sand, Little Red Shale, Tr Clayey Silt
					65.0
	65	37-46		12	No Ph Reading Tr Silt
		36-42	7"		Decomposed Red Shale, Little M-F Red Brown Sand,
	70	100/2" 50/0' *	2"	13	Decomposed Red Shale, Tr F Sand 70.2
					Refusal, Bottom of Boring
	75				
	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

PORT AUTHORITY OF NY & NJ
Engineering Department - Materials Division

Well Installation Report

Sheet 4 of 5

CT				CONTRACT NO.
Port Ivory P&G Site				426-98-006
LOCATION				CONTRACTOR
±10' North of PA MW-1D				Craig Drilling
WELL NO.	WELL TYPE	INSPECTOR	DRILLER	DATE
PA MW-1D	"A" Monitor	D Howe	J Craig	11/24/00

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

DATE	WATER LEVEL BEFORE	WATER LEVEL AFTER	TAKEN MINUTES AFTER

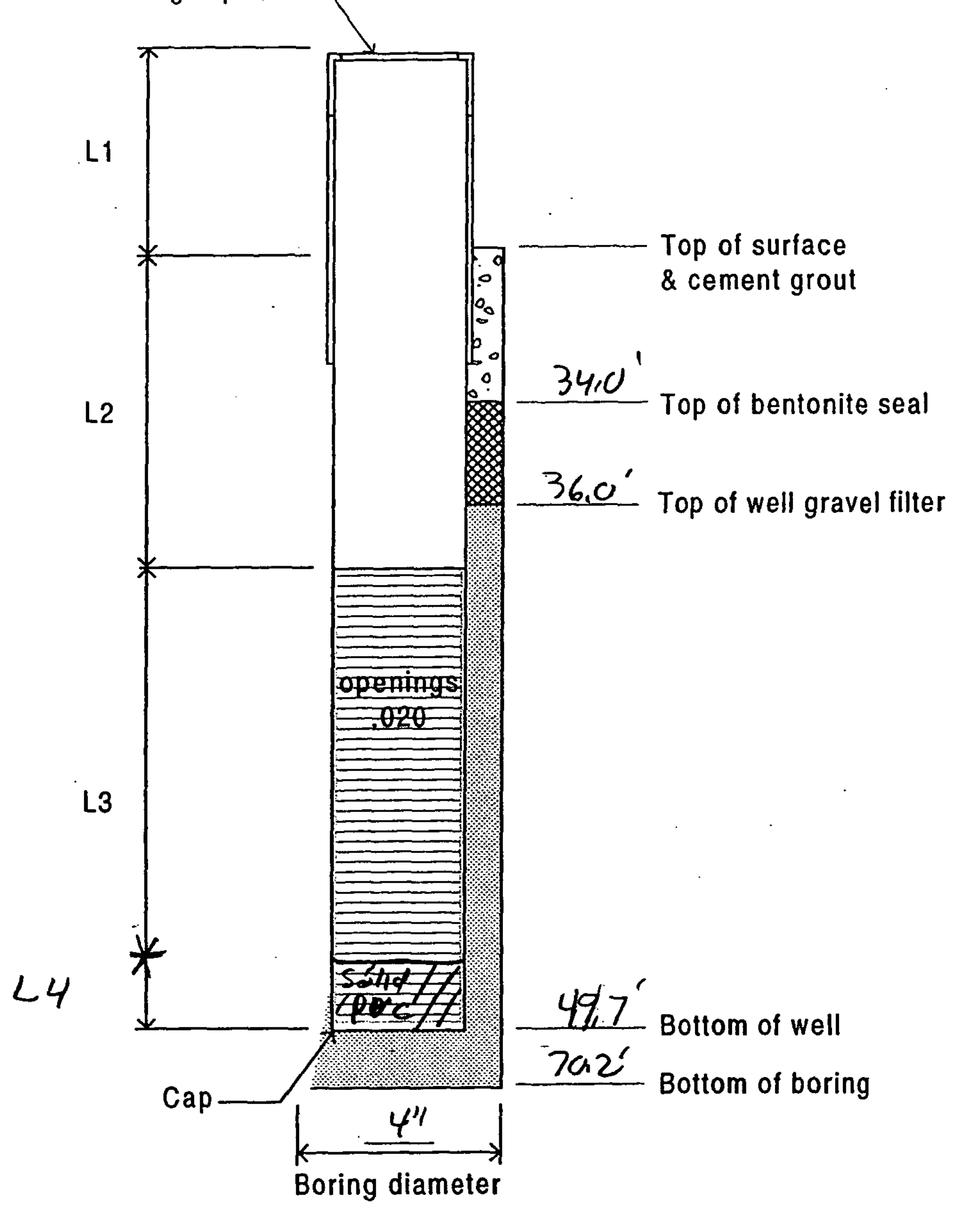
2" " dia. PVC pipe w/steel locking cap

L1 = 3.3'

L2 = 38.0'

L3 = 10.0'

L4 = 2.0'



MARKS:			
Hole Back filled		55.0-70.2	with Hole Plug
"	"	47.7-55.0	with well Gravel

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Engineering Department
Construction Division
Materials Engineering Section

BORING REPORT

				SHEET 1 OF 4
PROJECT Port Ivory P&G Site	NAME OF CONTRACTOR Craig Drilling		BORING NO. PDMW-5	SURFACE ELEV.
LOCATION East Side of RR car Scale Block 1400 Lot 1			CONTRACT NO. 426-99-006	DATE 11/9/00

SPOON 3 "O.D. 2 3/8 "I.D.	CASING SIZE Augers	HOLE TYPE "A" Monitor
HAMMER Safety 140 # FALL 30 "	HAMMER # FALL "	
DRILLER S Burns		
INSPECTOR D Howe		

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/9/00	3 pm	4.0	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	Crushed Stone	0.5
Auger		↓	↓		Misc Fill - Cinders, Ashes, Gravel, ETC 0.1	
↓				2	Same 0.1	
	5	↓	↓	3	Same 0.3	
low		5-3		4 A	Same	7.5
Stem		2-1	7"	B	Fill - Diatomaceous Earth (White) 0.1	8.0
Augers		3-1		5 A	Misc Fill - Cinders Ashes, ETC 0.1	8.5
				B	~~Brown Peat~~ ~~0.1~~	9.5
↓	10	1-2	23"	C	Fill - Diatomaceous Earth White 0.1	10.0
		WOH-1		6		
		0-1	14"		Brown Peat 4.7ppm	12.0
					Bottom of Boring	
	15					
					All Samples checked with PID Meter	
					S# 1-3 Saved for Testing S# To Be Tested	
					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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Well Installation Report

Sheet 2 of 4

ECT Port Ivory P&G Site				CONTRACT NO. 426-99-006
LOCATION East of RR Car Scale				CONTRACTOR Craig Drilling
WELL NO. PA MW-5	WELL TYPE 'A' Monitor	INSPECTOR D Nowe	DRILLER S Burns	DATE 11/9/00

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

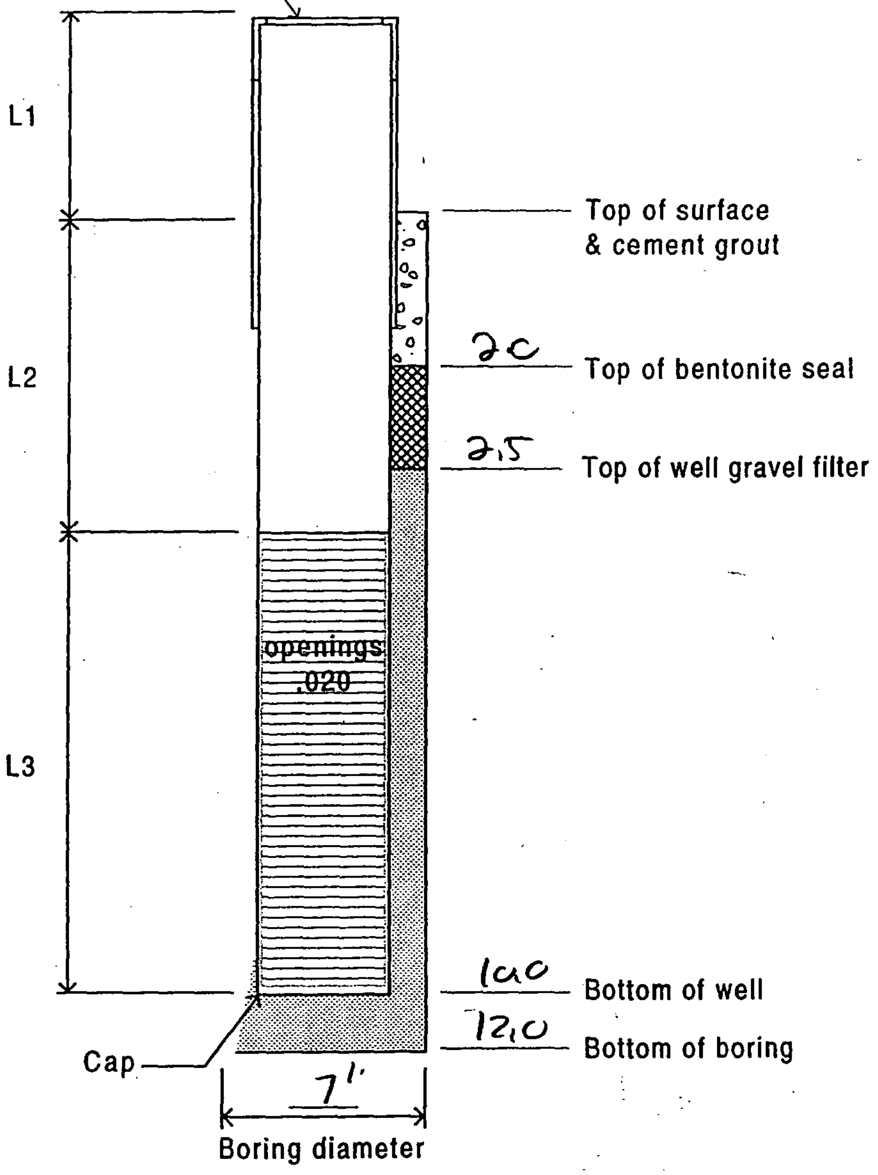
DATE 11/9/00	WATER LEVEL BEFORE 7.1'	WATER LEVEL AFTER 7.4	TAKEN 10 MINUTES AFTER

2" " dia. PVC pipe w/steel locking cap

L1 = 3.0'

L2 = 3.0'

L3 = 7.0'



MARKS: Hole Back Filled 10-12' with Bentonite

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BORING REPORT

SHEET 1 OF 4

PROJECT Port Ivory P&G Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. PA-MW-6	SURFACE ELEV.
LOCATION West Side of Wood Dumping Ramp Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 11/7/00

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
11/7/00	1:20 P	9.0	S# 5

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		Hard Auger	Full		Asphalt DGABC	0.2 1.5
Auger				1	Misc Fill- Cinders, Coal, Brick, Wood, Sand, ETC	
				2	Misc Fill Cinders, Ashes, Gravel, ET	
	5			3	Same	
[illegible]llow		8-6		4		
Stem		5-5	18"		Misc Fill Cinders, Ashes, ETC Same	8.5
Augers		2-0		5		
	10	1-2	24"		Fill-Filter Material (White) Diatomaceous Earth	
		WOH		6		
		WOH-1	24"		Same	
		WOR-WOH		7		
		1-2	24"		Same	
	15	1-2		8	Fill- Filter Material, (White), Diatomaceous Earth	
		2-2	24"		Tr M-F Grey Sand Near Bottom of Sample	
		WOH-1		9		
		0-1	24"		Fill-Filter Material, (White & Grey) Diatomaceous Earth	18.0
		3-3		10		
	20	4-4	20"		Brown Peat	20.0
					Bottom of Boring	
					All Samples checked with PID Meter	
					S# 1-5 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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Well Installation Report

Sheet 2 of 4

PROJECT Port Ivory PdG Site				CONTRACT NO. 426-99-006
LOCATION West Side of Wood Dumping Ramp Block 1400 Lot 1				CONTRACTOR Craig
WELL NO. PA MW-6	WELL TYPE 'A" Monitor	INSPECTOR D Howe	DRILLER S Burns	DATE 11/7/00

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

DATE 11/8/00	WATER LEVEL BEFORE 8.0	WATER LEVEL AFTER 8.0	TAKEN 60 MINUTES AFTER

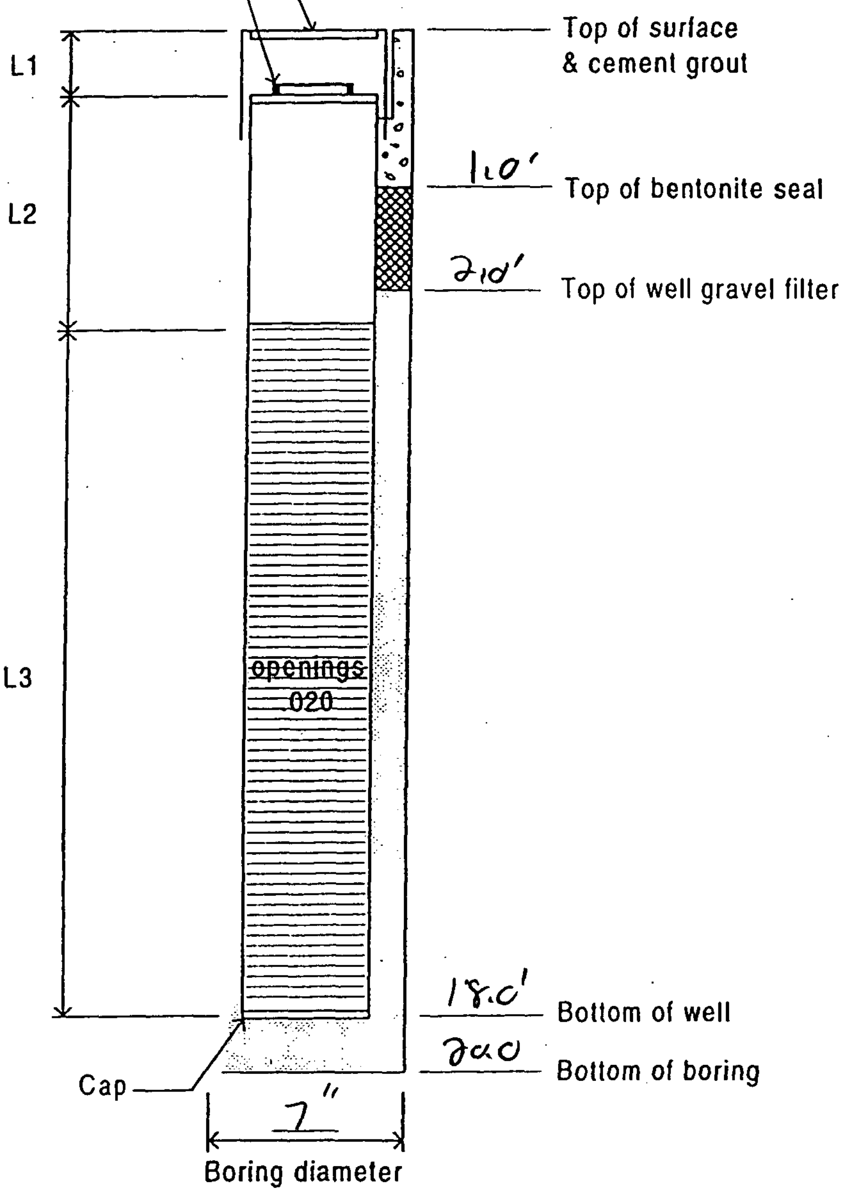
9" dia. Manhole cover

2" dia. PVC pipe w/ locking cap

L1 = 0.3'

L2 = 3.7'

L3 = 14.0'



REMARKS:
Hole Back filled 18.0-20.0 with Bentonite

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BORING REPORT

SHEET 1 OF 1

PROJECT: Port Ivory P&G Site

NAME OF CONTRACTOR: Craig Drilling

BORING NO.: PA-MW-6DA

SURFACE ELEV.:

LOCATION: West of Wood Dumpsey Ramp, ±15' North of PA-MW-6 Block 1400 Lot 1

CONTRACT NO.: 426-99-006

DATE: 11/7/0

SPOON "O.D. "I.D.

CASING SIZE:

HOLE TYPE: 1

HAMMER # FALL "

HAMMER # FALL "

DRILLER: S Burns

INSPECTOR: D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/7		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
					Asphalt	0.2
					DGABC	2.0
					MISC Fill – Cinders Gravel, Sand ER	2.4
					Bottom of Boring	
	5				Obstruction, Flat Concrete Slab	
					No Samples Saved	
	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 1

PROJECT: Port Ivory PdG Site
NAME OF CONTRACTOR: Craig Drilling
BORING NO.: PAMW-6DB
SURFACE ELEV.:
LOCATION: West of Wood Dump Ramp, ±10' North of PAMW-6 Block 1400 Lot 1
CONTRACT NO.: 426-99-006
DATE: 11/8/00
SPOON "O.D. "I.D.
CASING SIZE:
HOLE TYPE: 2
HAMMER # FALL "
HAMMER # FALL "
DRILLER: S Burns
INSPECTOR: D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/8		Dry	

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
					Asphalt	0.2
					DGABC	1.5
					Misc Fill – Cinders, Ashes, Gravel, ETC	
						4.6
	5				Bottom of Boring obstruction, concrete, Possible Slab	
	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 5

PROJECT Port Ivory PdG Site

NAME OF CONTRACTOR Craig Drilling

BORING NO. PA-MW-6D

SURFACE ELEV.

LOCATION West of Wood Dumping Ramp ± 15' South of PA MW-6 Block 140C Lot 1

CONTRACT NO. 426-99-006

DATE 11/8/00

SPOON 2 "O.D. 1 3/8 "I.D.

CASING SIZE HW

HOLE TYPE "A" Monitor

HAMMER 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
Hand	0	Hand Augr			
Auger					No Samples Taken for Strata 0-20
					See Log for PA MW-6
				—	
	5				
Casing					
	19				
Drill	20				20.0
Dhead		WOH-1			
with		1-2	24"	1	Brown Peat
Revert		WOH-1			
		1-1	20"	2	Same 24.0
	25	8-8			
		8-8	14"	3	F Grey Sand, Tr Silt
		6-6			
		7-9	16"	4	F Grey Sand, Little Silt
		7-11		5 A	F Gray & Dk Grey Sand, Tr Silt 29.0
	30	9-6	14"	B	F Reddish Brown Sand, Little Silt 30.0
		6-7			
		8-9	14"	6	F Red Brown Sand, Some Silt
		9-10			
		11-11	17"	7	Same
	35	10-13	18"	8	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: PorT Ivory P&G SiTe
NAME OF CONTRACTOR: Craig Drilling
BORING NO.: PA-MW-6D
SURFACE ELEV.:
LOCATION: West of wood Pump Ramp #15' South of PA MW-6 Block 1400 LoT 1
CONTRACT NO.: 426-99-006
DATE: 11/8/00
SPOON: 2 "O.D. 1 3/8 "I.D.
CASING SIZE: Rowrt
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
Drill	35	15-16	18"	8	F Red Brown Sand, Some SilT
Ahead		15-20		9	NoTe! After S#9 Casing advanced from 19' to 34'
with		18-18	17"		Same
Rowrt		16-20		10	NoTe after S#10 casing advanced from 34'-39'
↓		21-21	18'		Same
	40	13-13		11	
		17-19	18"		Same
		16-15		12	
		13-13	17"		Same
		9-9		13	
	45	9-12	19"		F Red Brown Sand, Tr clayey SilT 46.0'
		6-6		14	
		8-8	15"		Gray Clayey SilT, LiTTle F Sand, Tr Gravel 48.0
		5-13		15	
	50	16-25	13"		M-F Red Brown Sand, LiTTle Gravel, Tr clayey SilT
		11-15		16	
		16-21	13'		F Red Brown Sand, LiTTle SilT, Tr Gravel 52.0
		10-14		17	Red Brown clayey SilT, LiTTle F Sand, Tr Gravel
		13-29	16"		Lens of F Brown Sand in middle of Sample
	55	17-17		18	Sand
		12-12	7"		Red Brown clayey SilT, LiTTle M-F Sand, LiTTle Gravel, Tr F Brown
		7-10		19	
		16-32	15"		Red Brown clayey SilT, LiTTle F Sand, LiTTle Gravel
		20-26		20	Red Brown clayey SilT, LiTTle F Sand, LiTTle Gravel,
↓	60	26-34	2"		Tr Decomposed Red Shale

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 4

PROJECT Port Ivory P&G Site	**NAME OF CONTRACTOR** Craig Drilling	**BORING NO.** PAMW 6D	**SURFACE ELEV.**
LOCATION West of wood Dumping Ramp, ±15' South of PAMW-6 Block 1400 Lot 1		**CONTRACT NO.** 426-99-006	**DATE** 11/9/00

SPOON 2 "O.D. 1 3/8 "I.D.	**CASING SIZE** Revert	**HOLE TYPE** 4" Mud Rot
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-[1] COV'D	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE
	60				
Drill		18-14		21	
ahead		15-21	15"		Red Brown Clayey SilT, LiTTle F Sand, LiTTle Gravel
w/Revert		16-14		22	
↓		24-19	6"		Same
	65	10-12		23	Red Brown clayey SilT, LiTTle F Sand,
		12-100 50/0" *	18"		LiTTle Decomposed Red Shale Tr Gravel 66.0
					Refusal, See Drilling Report ↗
	70				
					71.0
					Bottom of Boring ↗
	75				
	80				
	85				

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.

* 300 lb Hammer used

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DRILLING REPORT

PROJECT Port Ivory P&G Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. PA-MW-6D	SHEET 4 OF 5
LOCATION West of Wood Dumping Ramp, ± 15' South of PA-MW-6 Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 11 / 9 / 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 39.0	DEPTH START CORING 66.0	DRILLER S Burns	INSPECTOR D Howe

TIME [1] Start	TIME [1] End	DEPTH	DRILL BEHAVIOR [2]	WASH WATER [3]	[4] ROCK—DESCRIPTION AND REMARKS LINE LOCATED END OF RUN
		66			66.0
7	Mins/FT		Steady	Full Rod	
9	↓		↓	↓	Run # 1 Red shale, Seamy, Fractured
10					
6					
6					
		71			71.0
					Bottom of Boring
		76			
		81			
		86			

NOTES ON DRILL RUNS

RUN NO.	FROM	TO	LENGTH DRILLED	LENGTH RECOVERED	% RECOVERED	NO. PIECES
1	66.0'	71.0'	5.0'	5.0'	100%	14 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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[illegible]ll Installation Report

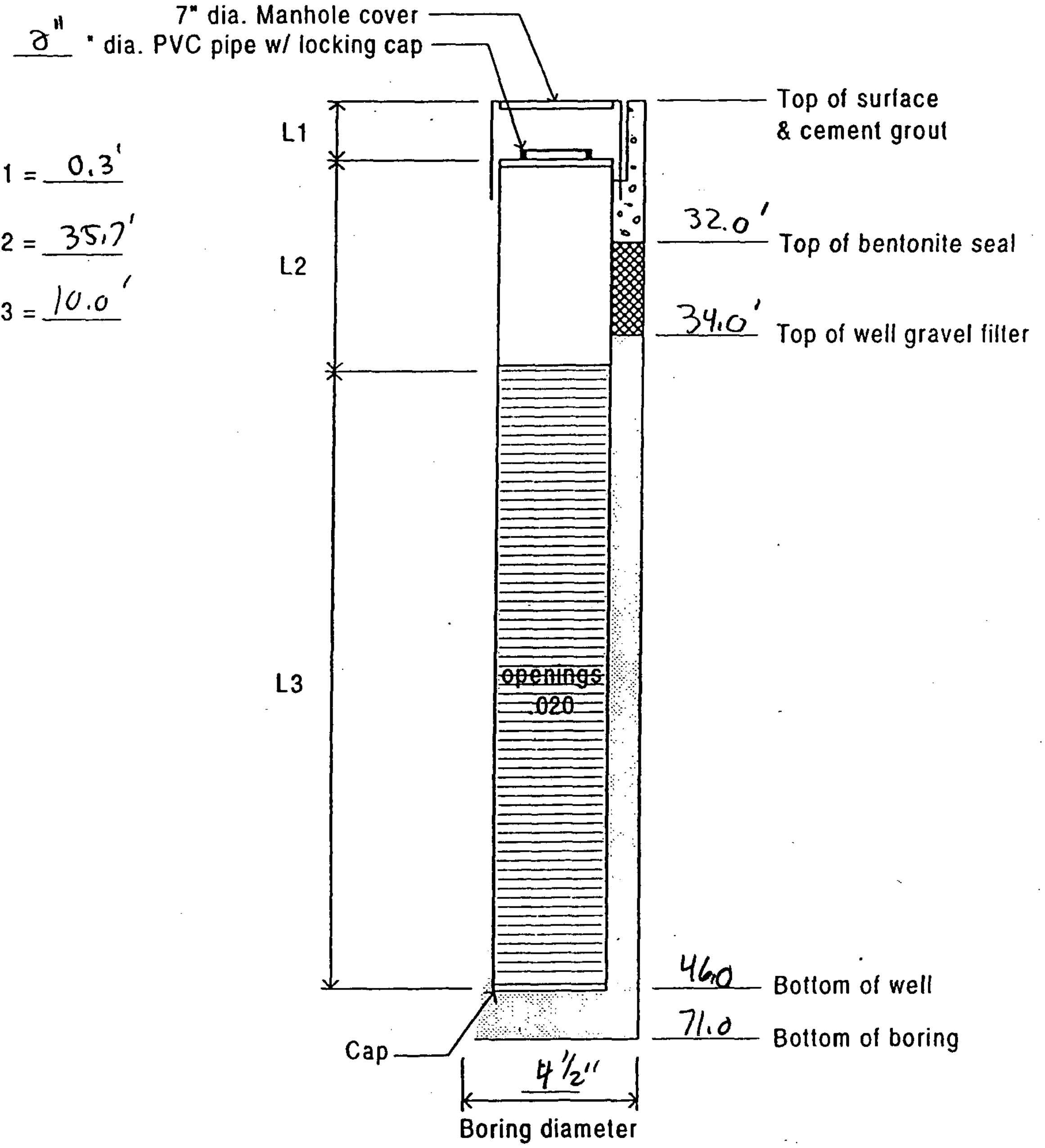
Sheet 5 of 5

PR[illegible]CT Port Ivory P&G Site				CONTRACT NO. 42699-006
LOCATION West of wood Dumping Ramp ±15' South of PAMW-6 Block 1400 Lot 1				CONTRACTOR Craig
WELL NO. PAMW 6D	WELL TYPE "A" Monitor	INSPECTOR D Howe	DRILLER S Burns	DATE 11/9/00

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 = 35.7'

L3 = 10.0'

32.0' Top of bentonite seal

34.0' Top of well gravel filter

46.0 Bottom of well

71.0 Bottom of boring

4 1/2" Boring diameter

[illegible]RKS:
Hole Back filled 50'–71' with Hole plug
" 46'–50 with Well Gravel

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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P & G
NAME OF CONTRACTOR Craig drilling
BORING NO. PD 8 (FS)
SURFACE ELEV.
LOCATION 22' E of NE Corner of Bldg 17 Block 1400 Lot 1
CONTRACT NO. 426-99-006
DATE 11-29-00
SPOON 3 " O.D. 2 3/8 " I.D.
CASING SIZE Auger
HOLE TYPE 1
HAMMER Safety 140 # FALL 30 "
HAMMER # FALL "
DRILLER A. Kides
INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-28-00	11.00 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'
Handaugu	0	Cutter Head HAND AUGER	Full Rec		CONCRETE 0.6'
					DGABC 1.3'
				1	Fill greyish black c-f SAND & Gravel, tr. Silt, cinders, coal, brick
				*	
				2	SAME Cinders to 6.8
	5				SAME 6.8 - [illegible]
				3	Greyish - brown c-f SAND, tr. Gravel, tr. Silt
W EM		5 - 5			
AUGERS		3 - 2	20"	4	SAME 98.3
		2 - 3		*	
	10	5 - 5	20"	5	SAME 239.6
		3 - 2			
		2 - 2	12"	6	SAME 150.2
		3 - 2			
		8 - 6	24"	7	SAME 132.6
	15	3 - 3			
		4 - 3	20"	8	SAME 111.4
		3 - 1		* 9 A	SAME 102.6 17.0'
		3 - 4	24"	9 B	Brown PEAT 18.0'

NOTE: 3 samples saved for testing.
All samples checked with PID meter
the other 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	NAME OF CONTRACTOR Craig drilling	BORING NO. PD 9	SURFACE ELEV.
LOCATION 50' E of Bldg 17 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 D. Cooke		
INSPECTOR J. Zarks		

GROUND WATER LEVEL

Date	Time	Depth	Remarks
12-4-00	12:35 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 0.0'
Cutter Head Handauger	0	Cutter Head HANDAUGER	Full Rec		CONCRETE 1.0'
				1	Fill grey c-f SAND, some Gravel, Cobbles tr. Silt
				2	Fill greyish black c-f SAND, little Gravel, tr. Silt
	5			3*	Fill greyish-black c-f SAND, tr. Gravel, tr Silt
[illegible]w [illegible]M AUGERS		2-2 2-2	10"	4	Misc Fill greyish-black & Orange c-f SAND, tr Gravel tr Silt cinders, coa
	10	1-1 1-2	12"	5*	SAME
		2-5 6-4	26"	6	SAME
		1-1 1-1	4"	7	SAME
	15	2-2 2-2	18"	8	SAME 15.0' Brown PEAT 16.0'
					Note: 2 Samples saved for testing 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
NAME OF CONTRACTOR: Craig
BORING NO.: PD-10
SURFACE ELEV.:
LOCATION: ± 35 North of Bldg 16 Block 1400 Lot 1
CONTRACT NO.: 426-99-006
DATE: 11/28/00
SPOON: 3 "O.D. 2 3/8 "I.D.
CASING SIZE: Auger
HOLE TYPE: 1
HAMMER: 140 # FALL Safty 30 "
HAMMER: # FALL "
DRILLER: D. Cooke
INSPECTOR: T. Ryan

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/28/00	2:15 PM	5.0'	In S-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				Concrete 0.5'
		Hand Auger	Full Rec	1	Fill - Br M-F Sand, tr Conc, little Gr, tr Cobble.
		↓	↓	2*	Fill - Br M-F Sand, little Gravel
	5			3	Same 6.0'
Augers		1-1 1-1	20"	4*	Fill - White Diatemaceus Soil w/ Green layers.
		1-1 1/12"	18"	5	Fill - White Diatemaceus Soil
	10	1-1 WOH/12"	18"	6	Same
		1 - WOH/12" - 1	19"	7	Same
	15	WOH/24"	20"	8	Same
		WOH/18" 1	16"	9 A B	Same 17.5 Fill - Bl Ash w/ org odor
					saned 19.0
	20	1, 1 1, 1	18"		Dark Brown Organic Silt w/ Pieces of decomposed [illegible]
					Note: Samples #2 & 4 were saved for testing. 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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BORING REPORT

SHEET 1 OF 3

PROJECT: Port Ivory, P&G Site
NAME OF CONTRACTOR: Craig drilling
BORING NO.: PD-11
SURFACE ELEV.:
LOCATION: North of Building S-16
CONTRACT NO.: 426-99-000
DATE: 11/27/2000
SPOON: 3 " O.D. 2 3/8 " I.D.
CASING SIZE: Augers
HOLE TYPE: 1
HAMMER: 140 # FALL 30 " Safty
HAMMER: # FALL "
DRILLER: David Cooks
INSPECTOR: Madhu Patel

GROUND WATER LEVEL			
Date	Time	Depth	Remarks
11/27/00	1000	5.5	

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE 0.0
					Concrate 0.7
Hand Auger		Hand Auger	Full	1	fill light Gray & Black cmf SAND, some cmf Gravel
					C same
				2	
					same
	5			3	Wet
					6.0
Auger		W O	24	4	Wet White Diatamacacaus earth
		H			SAME
		W OH	24	5	SAME
		1, 1			
	10	2, 2	24	6	SAME
		2, 2			SAME 12.0
		3, 3	18	7	Wet Black Pieces of Rock, gravel, silt etc 13.0
		4, 4			White & Green Diatamacacaus earth material
	15	2, 2	16	8	same
		2, 2			Wet. white Diatamacaceous earth material
		W O	10	9	same.
		H			18.0
		2, 2	12	10	Wet Dark Brown Organic Silt, trace of sand
		3, 4			with pieces of decomposed wood (Peat.) 20
	20				Bottom of the Hole at 20.0'
					All soil samples collected and
					check with PID. No. 3 saved for
					Environmental testing. Remaining soils
					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 1

PROJECT: Port Ivory PDGSite
NAME OF CONTRACTOR: Craig Drilling
BORING NO.: PD-11A
SURFACE ELEV.:
LOCATION: North of Building S-16
CONTRACT NO.: 476-99-006
DATE: 11/27/2000
SPOON: 3 "O.D. 2 3/8 "I.D.
CASING SIZE: Auger
HOLE TYPE: 1
HAMMER: 140 # FALL Safety 30 "
HAMMER: # FALL "
DRILLER: David Cooke
INSPECTOR: Madhu Patel

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/27/00		Dry	

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 Aug.	0				concrate 0.7
		Hand Auger	Full	1	light gray & Black cmf SAND, some cmf Gravel
					w/ Pieces of Rock etc
				2	same
				3	same 4.5
	5				
					Bottom of Boring Obstruction
					concrete Slab
	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 1

PROJECT HH - Pt. Ivory P&G	NAME OF CONTRACTOR Craig	BORING NO. PD-12-B	SURFACE ELEV.
LOCATION As laid out by Killam ±150' S.W. of S.W. corner Bldg 17		CONTRACT NO. 426-99-006	DATE 11/28/00

SPOON "O.D. "I.D.	CASING SIZE	HOLE TYPE 1
HAMMER # FALL "	HAMMER # FALL "	
DRILLER D Cooke		
INSPECTOR T. Ryan		

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				Concrete 0.6'
					Hit Rebar & Then Conduit Pipe under Conc. This was the 3rd attempt.
	5				Bottom of Boring
	10				Note: Dan from Killam did attempts # PD-12 & PA-12A
	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. RR8	SURFACE ELEV.
LOCATION 25' E of wire Fence betw. 1st & 2nd Railroad tracks Block 1400 lot 1		CONTRACT NO. 426-99-006	DATE 12-01-00

SPOON 3 "O.D. 2 3/8" I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER Automatic 140 # FALL 30 "
HAMMER # FALL "
DRILLER D Cooke
INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
12-1-00	11:45	2.5'	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
Handauger	0	Handauger	Full Rec		
				1	Misc Fill black c-f SAND & Gravel, Coal, Cinders, Brick
				2 *	SAME
	5			3	SAME
ow M Augers		1 - 1			
		1 - 1	12"	4 *	SAME 8.0'
		3 - 2			
	10	2 - 2	14"	5	Brown PEAT 10.0'
	15				

Note: 2 samples saved for testing.
All samples checked with PID meter.
The other 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
NAME OF CONTRACTOR: Craig Driller
BORING NO.: RR-10
SURFACE ELEV.:
LOCATION: N Bld 13
CONTRACT NO.: 426-99-006
DATE: 12/2/00

SPOON: 3 "O.D. 2 3/8 "I.D.
CASING SIZE: auger
HOLE TYPE: 1
HAMMER: 140 # FALL 30 " (safety)
HAMMER: # FALL "
DRILLER: Jim Finch
INSPECTOR: Charlie Springer

GROUND WATER LEVEL

Date	Time	Depth	Remarks
12/2/00	1200	4.5'	

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE
					0.0
HA		HA	Full	1	Gravel w/Sand matrix .4 Asphalt .5 Gravel w/ Sand matrix 1.2
					Cinders/Gravel Black 2 Silty Sand white Some clay white 2.5
				2*	Cinders + Gravel Some Slag
	5			3	Sand SILT matrix mixed with [illegible] Earth
					Same
Hollow Stem [illegible]ger		7-10	1.8'	4	
		12-19			Same
		12-11	1'	5*	
	10	7-6			Same
		8-17	2'	6	
		13-9			Same
		14-10	2'	7	
		6-4			Same
	15	3-3	1.1'	8	
		3-3			Same 16.0
					End of Boring 16'
					- all Samples Screened w/ PID
	20				- Samples 2+5 Saved For Env Test
					- 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. PD - 6
SURFACE ELEV.
LOCATION ±20' W of NW corner of Bldg 17 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 140 # FALL 30 "
HAMMER # FALL "
DRILLER J. Craig
INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-21-00	2:30pm	2.7'	Sample #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
Cutter-Head	0	Cutter Head	Full		
				1	CONCRETE 1.5
				2	Fill grey c-f SAND & Gravel, tr. SilT
	5			3	Fill grey c-f SAND & Gravel, tr dietomaceous 6.0'
w EM Augers		W - 0 Hammer	14"	4*	Fill grey Diatomaceous
	10	W.O Hammer	12"	5	SAME 10.0'
		1 – 1 1 – 1	4"	6	Fill yellowish-grey c-f SAND, tr Gravel, tr. Silt, cinders 12.
		1 – 0 1 – 0	12"	7*	Greenish-grey SilTy ClAY
	15	1 – 1 0 – 1	4"	8	SAME
		W O Hammer	6"	9	SAME 17.5' Brown PEAT w. fibers, some Clay 18.0'
	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 3

PROJECT Port Ivory P&G Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. HR-1	SURFACE ELEV.
LOCATION West Side of Site, Near Fence, North of woodchipper Block Nee 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 Safety 140 # FALL 30 "

HAMMER # FALL "

DRILLER S Burns

INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
12/2/00	1:30	3.5'	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		Crushed Stone 1.0
Auger				1	
					Misc Fill Cinders, Gravel, White Diatomaceous Earth 3.0
				2	Fill Gray & white Diatomaceous Earth
	5			3	
					Same
llow		WOH		4	
Stem		1-1	24"		Same
Augers		WOH-2		5	
	10	1-1	24"		Fill-White & Grey Diatomaceous Earth
		WOH		6	
		1-1	23"		Fill-White Diatomaceous Earth
		2-1		7	
		2-1	23"		Same
	15	WOH-2		8	
		4-2	24"		Fill-White Diatomaceous Earth, Tr Gray Diatomaceous Earth
		WOH		9A	Same 17.5
		2-3	23"	9B	Brown Peat 18.0
					Bottom of Boring
	20				
					All Samples checked with PID Meter
					S# 1 & 2 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 SiTe	NAME OF CONTRACTOR Craig Drilling	BORING NO. H/R-2	SURFACE ELEV.
LOCATION NW corner, Near Fence Line Block 1400 LoT 1		CONTRACT NO. 426-99-006	DATE 11/10/00

SPOON 2 "O.D. 1 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
11/10	3P	5.5	open hole
11/11	9:38 AM	5.2'	Open hole

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	0	Hand Augr	Full	1	Misc Fill ~ Cinders, Sand, Gravel, Brick, ETC
Auger					
				2	Fill ~ DiaTomaceous Earth (white + Gray)
	5				
				3	SAME
Hollow STEM AUGERS		1 - 1			
	10	1 - 1	24"	4	SAME
		1 - 1			
		1 - 1	24"	5	SAME
		1 - WOR			
		1 - 1	24"	6	SAME
	15	W - O			
		H - 1	24"	7	SAME
		1 - 1		8 A	SAME 17.0'
		1 - 2		B	Brown PEAT, little black organic Clayey Silt 18.0'
	20				
					All Samples checked with PID Meter
					S# 1&2 Saved for Testing
					~~Bottom of Boring~~
					sample # 8B 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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BORING REPORT

SHEET 1 OF 3

PROJECT: Port Ivory P&G Site
NAME OF CONTRACTOR: Craig Drilling
BORING NO.: H/R-3
SURFACE ELEV.:
LOCATION: NW Corner LOT, Near Fence Line Block 1400 LoT 1
CONTRACT NO.: 426-99-006
DATE: 11/10/00 / 11-11-00
SPOON: 3 "O.D. 2 3/8 "I.D.
CASING SIZE: Augers
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	11	5.0	While Hand Augering
11/11	8:10 AM	4.6'	Open hole

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		Crushed Stone 0.3
				1	Misc Fill – Cinders, Gravel, Sand, ETC 1.0
Auger					
				2	Fill Diatomaceous Earth, (White)
				3	SAME
	5				
				4	
					Same
Hollow STEM Augers		WoH - 1			
	10	1 - 1	24"	5	SAME
		2 - 2			
		1 - 1	24"	6	Fill Diatomacecus Earth (White & light grey)
		1 - 1			
		1 - 1	24"	7	SAME
	15	2 - 1			
		1 - 3	24"	8	SAME
		1 - WO.R			
		1 - 3	24"	9	SAME 17.7'
					Yellowish brown c-f SAND some Clayey Silt, little Gravel. 18.0'
					All Samples checked with PID Meter
	20				S# 1-3 Saved for Testing, S# 1&2 To be Tested
					Remaining Samples Discarded
					Bottom of Boring
	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** 2

PROJECT Port Ivory P&G Site
NAME OF CONTRACTOR Craig Drilling
BORING NO. F1-3
SURFACE ELEV.

LOCATION West of Bldg 38 Block 1400 Lot 1
CONTRACT NO. 426-99-006
DATE 11/10/00 - 11/11/00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
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	3 AT	5.3'	open hole
11/11	10:15 AM	1.6'	Open hole

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	Fill		Crushed Stone 1.0
Auger				1	5.2 ppm
					Misc Fill - Sand, Gravel, Cobbles, Brick, Cinders, Etc 3.0
					0.5 ppm
				2	Fill Grey Filter Material, Tr Black Filter Material 5.0
	5				
				3	Fill - Diatomaceous Earth, White)
Hollow STEM Augers		1 - 1		4	
	10	1 - 1	24"		SAME (grey & White
		WOH - 1		5	
		1 - 1	24"		SAME
		1 - 1		6	
		1 - 1	24"		SAME
	15	1 - 1		7	
		1 - 1	24"		SAME
		1 - 1		8 A	SAME 17.0'
		1 - 4	24"	B	Brown PEAT, little black organic CLAY 18.0'
	20				
					All Samples checked with PID Meter
					S# 1 & 2 Saved for Testing Bottom of Boring
					Sample #8 Saved for Testing (On hold)
	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

ROJECT: Port Ivory P & G
NAME OF CONTRACTOR: Craig drilling
BORING NO.: UST6-2
SURFACE ELEV.:
OCATION: ±150' W of center of Bldg 17 Block 1400 Lot 1
CONTRACT NO.: 426-99-006
DATE: 11-21-00/11-28-00
POON: 3 "O.D. 2 3/8 "I.D.
CASING SIZE: Augers
HOLE TYPE: 1
IAMMER: 140 # FALL 30 "
HAMMER: # FALL "
RILLER: J. Craig
NSPECTOR: J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-28-00	12:48 PM	1.8'	Open hole.

CASING LOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ____ LINE LOCATES CHANGE OF PROFILE	
andauger.	0	HANDAUGER	Full		DGABC & Crushed Rock	0.0' 0.2'
				1	Fill greyish-brown c-f SAND & Gravel, tr. SiLT.	
					SAME	3.0'
				2	Fill light grey dietomaceous.	
	5			3*	SAME	
Ho St		WoH - 0				
ugers		0 - 1	20"	4	Fill white dietomaceous	
		1 - 0				
	10	1 - 0	24"	5*	Fill white dietomaceous	
		1 - 0				
		1 - 0	20"	6	SAME	
		1 - 0				
		1 - 0	24"	7	SAME	
	15	W 0				
		H - 0	24"	8	SAME	
		W 0				
		H 0	24"	9*	Fill brown & white dietomaceous	
					SAME	18.5'
		2 - 2				
	20	3 - 3	24"	10	Brown PEAT	20.0'

Note: 3 samples saved for testing
All other 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
BORING NO. UST6-3
SURFACE ELEV.
LOCATION ± 110' West of Bldg 17
CONTRACT NO. 426-99-006
DATE 11/28/00
SPOON 3" O.D. 2 3/8" I.D.
CASING SIZE Augers
HOLE TYPE 1
HAMMER (Safety) 140 # FALL 30"
HAMMER # FALL "
DRILLER D. Cooke
INSPECTOR T. Ryan

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/28/00	10:45A	3.2'	In S-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	Hand Auger	Full Rec	1 A	Fill - Br M-F Sand & Gravel, little Brick, tr Steel 1.5'
				B	Fill - Cinders, Sand, Gravel
				2	
	5			3 A	Same 5.5'
				B	Gray & Black Diatomaceous fill
Augers		WOH/24"	24"	4	Same
		WOH/24"	18"	5	Same
	10				
		WOH/18"-1	19"	6	Same
		WOH/18"-1	20"	7	Same
	15	1/12" 1/12"	17"	8	Same w/ Green Silt
		WOH/24"	16"	9 A	Same 17.0'
				B	Br Peat 18.0'
					Bottom of Boring
	20				

Note. Sample # 1B & 8 were saved for testing. 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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BORING REPORT

SHEET 1 OF 3

ROJECT Port Ivory P&G Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. UST 5-2	SURFACE ELEV.
OCATION South of Building 17		CONTRACT NO. 426-95-00C	DATE 11/27/2000

POON 3 "O.D. 2 3/8" I.D.	CASING SIZE Auger	HOLE TYPE 1
AMMER Safty 140 # FALL 30 "	HAMMER # FALL "	
RILLER David Cooks		
ISPECTOR Madhu Patel		

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/27/00	1345	5.0'	

CASING LOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3]SAMPLE DESCRIPTION AND REMARKS ___ LINE LOCATES CHANGE OF PROFILE	
						0.0
					Concrete	0.7
and Auger		Hand Auger	Fill	1		
				2	Fill · Cmf Gravels, Rocks, etc	
	5			3	Wet, White & Gray Diatamacacaus Earth material, trace clay	
		1 2 2 1	24"	4	Wet, White & Gray Diatamacacaus earth material.	
		W O H	16"	5	SAME	
	10	1 1 1 1	18"	6	SAME	
		2 1 1 1	20'	7	SAME	14.0
	15	2 3 1 1	22"	8	Dark Brown Organic SILT, with decompo wood (Peat)	16.0
					Bottom of Hole at 16.0'	
					All samples checked with PID	
					Sample No # 3 saved for Environmental	
					testing. Remaining sample discard	

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 2-1

SURFACE ELEV.

LOCATION ±10W of BH:UST 2-1 A 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 D. Cooke

INSPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11-30-00	11:15AM	7.0'	Sample # 4A

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		
				1	Fill brown decomposed wood
				2	Fill brown decomp. wood & tr. grey dietomaceous 4.0'
	5			3	Orange-brown c-f SAND, tr. Gravel, tr. SILT
		4 - 4		4 A*	greyish-black c-f SAND, tr Gravel, tr SILT some Coal.
		5 - 2	24"	4 B	brown c-f SAND, tr. Gravel, tr. SILT
		4 - 4			14.9ppm
	10	8 - 10	24"	5*	Greyish-black c-f SAND, tr. Gravel, tr. SILT Fuel odor.
		4 - 5			
		5 - 7	20"	6	SAME 14ppm
		4 - 4			
		2 - 2	20"	7	SAME 12.8ppm 14.0'
	15				Note: 2 SAMples saved for testing. All samples checked w. PID meter. The other 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	NAME OF CONTRACTOR Craig drilling	BORING NO. UST 2-1 A	SURFACE ELEV.	
LOCATION ± 100' SW of Bldg 12	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 D. Cooke
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
Handauger	0	Handauger	Full	*	
				1	Fill brown decomposed wood.
				2	Fill grey & yellow dietomacous & brown dec. wood 2'
					CONCRETE OBSTRUCTION.
	5				NOTE:
					1 sample saved for testing. Bottom of Boring
					Obstruction during handauger.
	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

OJECT ort Ivory P & G
NAME OF CONTRACTOR Craig drilling
BORING NO. UST 2-1 B
SURFACE ELEV.
CATION 2' W. of BH UST2-1 A Block 1400 lot 1
CONTRACT NO. 426-99-006
DATE 11-30-00
OON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers
HOLE TYPE 1
MMER Safety
40 # FALL 30 "
HAMMER
FALL "
RILLER D. Cooke
SPECTOR J. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks

CASING .OWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D [1]	SAMP. NO. [2]	[3]SAMPLE DESCRIPTION AND REMARKS ________ LINE LOCATES CHANGE OF PROFILE
ANDAUGER	0	Hand AUGER	Full		
				1	Fill brown decomposed wood.
				*	
				2	Fill brown decomposed wood & greyish white dietomaceous .
	5			3 *	Brown c-f SAND, tr. Gravel tr. SilT.
					Greyish black c-f SAND, tr Gravel tr SilT. Fuel odor. 5.5'
					CONCRETE OBSTRUCTION
					Note: 2 samples saved for testing
					STOP Handauger because of obstruction.
					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. UST 2-2	SURFACE ELEV.
LOCATION 25'S of UST 2-1 Block 1400 Lot 1		CONTRACT NO. 426-99-006	DATE 11-30-00

SPOON 2 "O.D. 1 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
11-30-00	2:15 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	
						0.0'
Handauger	0	Handauger	Full		Fill brown decomposed Wood some grey c-f SAND	0.6'
				1	Fill brown c-f SAND, tr. Gravel, tr. Silt, some Cobbles & bricks	
				2	Misc. Fil greyish-brown c-f SAND & Gravel, tr. Silt, cinders, Coal, bricks	
	5					
				3*	Misc. Fill greyish-black c-f SAND & Gravel, tr. Silt, cinders, coal, bricks	
No Casing used		7-11				
		7-5	12"	4	Fill yellowish-grey c-f SAND, tr. Gravel, tr Silt, cinders.	
		7-9				
	10	8-4	10"	5	SAME	
		2-2		6*		
		2-2	10"		Misc. Fill grey c-f SAND & Gravel, tr. Silt, wood, cinders, Coal.	12.0'
					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 2

PROJECT: Port Ivory P & G

NAME OF CONTRACTOR: Craig drilling

BORING NO.: UST 2-2 A

SURFACE ELEV.:

LOCATION: 4' W of UST 2-2 Block 1400 Lot 1

CONTRACT NO.: 426-99-006

DATE: 11-30-00

SPOON "O.D. "I.D.

CASING SIZE: Handauger

HOLE TYPE: 1

HAMMER: Handauger # FALL "

HAMMER # FALL "

DRILLER: D Cooke

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		Handauger	Full	1	Fill br. decomposed Wood .6'
↓		↓	↓		Fill brown c-f SAND, tr. Gravel, tr SILT, cobbles, bricks, cinders
					SAME 2.5
					CONCRETE 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 2

PROJECT Port Ivory P & G
NAME OF CONTRACTOR Craig drilling
BORING NO. UST 2-2B
SURFACE ELEV.
LOCATION 5'S of UST 2-2 Block 1400 Lot 1
CONTRACT NO. 426-99-006
DATE 11-30-00
SPOON "O.D. "I.D.
CASING SIZE Handauger
HOLE TYPE 1
HAMMER Handauger # FALL "
HAMMER # FALL "
DRILLER D. Cooke
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
Handauger	0	Handauger	Full		Fill brown decomposed wood same c-f SAND 0.0' 0.5'
				1	Fill grey c-f SAND & Gravel tr. Silt, cinders, coal, brick.
				2	SAME
					Concrete Obstruction
	5				
					Bottom of Boring
	10				

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 2-3	SURFACE ELEV.
LOCATION ±150' W of Bldg 12 Center concrete Roadway - Block 1400 lot 1		CONTRACT NO. 426-99-006	DATE 12-01-00

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. Zarks

GROUND WATER LEVEL

Date	Time	Depth	Remarks
12-1-00	9:45 AM	6.0'	SAmple #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				0.0
Cutter Head Handauger		Cutter Head. Handauger	Full R.		Concrete 1.0'
				1	Misc Fill dark greyish-black c-f SAND some Gravel, t. Silt, Cinders, Coal, Brick
				2*	SAME
	5				
				3	SAME
Hollow STEM A[illegible]s		5-13			SAME - Fuel. 7.6'
		10-3	18"	4	Fill greyish white deetomaceous
		1-2		*A	SAME & wood. 9.0'
	10	3-3	20"	5 B	Misc Fill greyish-brown Clayey Silt c-f SAND, cinders (Fuel)
		2-1			
		1-1	8"	6	Fill greyish-white dietomaceous' (Fuel), some Gravel
		12-14			
		Wo-H	24"	7*	Brown PEAT. (Fuel oder) 14.0'
	15				NOTE: 3 samples saved for testing
					All samples checked w. PID meter
					~~&~~ the other 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 2

PROJECT HH - P & G	NAME OF CONTRACTOR Craig	BORING NO. Wood - 1	SURFACE ELEV.
LOCATION As laid out, ±16' East of Conveyor at Wood Site (Block 1400)		CONTRACT NO. 426-99-006	DATE 11/7/00

SPOON "O.D. "I.D.
CASING SIZE
HOLE TYPE 1
HAMMER # FALL "
HAMMER # FALL "
DRILLER D. Osuch
INSPECTOR T Ryan

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/7/00	10:35 Am		No water encountered.

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	Hand Auger	Full	1 A	Fill - Gravel, some Sand & Cinders 1.0'
			Rec	B	Fill - Br F Sand, little Silt
				2	Fill - Br M-F Sand & Cinders, little Gravel 3.5'
					Concrete 4.0'
	5				Hit Concrete - Bottom of Boring
					See Boring - Wood - 1A
	10				
	15				
					Note: No samples were saved. Moved Boring. See BH - Wood 1A

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 HH - P&G

NAME OF CONTRACTOR Craig

BORING NO. Wood - 1A

SURFACE ELEV.

LOCATION As laid out ± 3' S.E. of Wood-1 (± 18' east of Conveyor at Wood Site) BLOCK 1400

CONTRACT NO. 426-99-006

DATE 11/7/00

SPOON "O.D. "I.D.

CASING SIZE

HOLE TYPE 1

HAMMER # FALL "

HAMMER # FALL "

DRILLER D. Osach

INSPECTOR T. Rya

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/7/00			No Water encountered

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	Hand	Full	1	A	Fill - Gravel, some Sand, Cinders, little Clay 1.0'
		auger	Rec		B	Fill - Br F Sand, little Silt 2.0'
		↓	↓	2	A	Fill - Br M-F Sand, & Cinders, little Gravel 2.5'
					B	Fill - Gravel, some Cinders, little Sand (R.R. Ballast) 3.5'
	5					
						Hit Core - Bottom of Boring
	10					
	15					
						Note: No samples taken. Moved Boring. See BH - Wood 1-B

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 HH - P&G
NAME OF CONTRACTOR Craig
BORING NO. Wood 1·B
SURFACE ELEV.
LOCATION ±10' north of BH·Wood·1 (±16' east of Conveyor at Wood Site) West of Bldg 12 Block 1400
CONTRACT NO. 426-99-006
DATE 11/7/00
SPOON "O.D. "I.D.
CASING SIZE
HOLE TYPE 1
HAMMER # FALL "
HAMMER # FALL "
DRILLER D. Osuch
INSPECTOR T. Ryan

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/7/00			No water encountered

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	Hand	Full		Fill - Gravel, some Sand Cinders
		Auger	Rec	1	Fill - Br M-F Sand, little Silt.
		↓		2	Same w/ little Conc Boulders.
					3.5'
	5				Hit Concrete - Bottom of Boring
	10				
	15				

Note: Samples were taken & then discarded as per Kellam Rep. C. Springer. Will return to this area at another time.

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	BORING NO. Wood - 1C	SURFACE ELEV.
LOCATION South end of wood pile ±161' S.W. of Bldg 12 (Block 1400)		CONTRACT NO. 426-95-006	DATE 11/9/00

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Augers HS
HOLE TYPE 1
HAMMER 140 # FALL 30 "
HAMMER # FALL "
DRILLER D. Osuch
INSPECTOR T. Ryan

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/9/00	1:10 pm	7.5'	In 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				WOOD 0.3'
		Hand Auger	Full Rec.	1	Fill - Gray Clay 1.5' Cinders
		↓	↓	2	Same
	5	↓	↓	3	Same
ers ↓		4-3 4-4	12"	4	Same
		6-5 2-3	12"	5	Same
	10	15-6 4-4	14"	6	Same w/ sheen & odor 12.0'
↓		7-3 2-2	14"	7	Peat 3.5ppm
	15	3-3	12"	8	Peat 0.9ppm 15.0'
					Bottom of Boring

Note: Samples #4 & 6 were saved for testing. Sample #4 on HOLD! 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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BORING REPORT

SHEET 1 OF 3

PROJECT Port Ivory P+G site
NAME OF CONTRACTOR Craig Drilling
BORING NO. Wood-3
SURFACE ELEV.
LOCATION South of Bowilding 1A (25)
CONTRACT NO. YZ(-99.00(
DATE 11/29/2000
SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE Auger
HOLE TYPE 1
HAMMER 140 # FALL 30 " safty
HAMMER # FALL "
DRILLER David Cooks
INSPECTOR M. Patel

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/29/2000	1600	6.5'	

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE
			(Full)		Asphalt
Hand		Hand			
Auger		Auger		1	Fill- light Brown cmf SAND, silt, Rock, wood etc
				2	(X) light Brown and Dark Gray cmf SAND, little mf Gravel, w/ stone, concrete, Rock etc
	5			3	Same w/ white Diatamaceous earth material
[illegible]ger		1, 1	24"	(X) 4	Same
		1, 1			
		6, 6	12"	5	Same 9.0'
		5, 4			Dark cmf GRAVEL, little cmf Sand, trace silt w/ cinder. Rock.
	10	4, 4	18"	6	SAME
		6, 5			
		2, 2	16"	7	SAME 13.0'
		2, 3			Brown organic silt w/ decomposed wood (P&T)
					Bottom of the Hole at 140'
	15				

All soil samples checked with PID meters. Sample No. 2 and 4 are saved for Environmental testing Remaining sample are discard

(X) Sample collected for Analysis

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.: Wood-3A

SURFACE ELEV.: -

LOCATION: South of Building 1A

CONTRACT NO.: 426-99.506

DATE: 11/29/2000

SPOON: 3 "O.D. 2 3/8 "I.D.

CASING SIZE: Auger

HOLE TYPE: 1

HAMMER: 140 # FALL Safety 30 "

HAMMER: # FALL "

DRILLER: David Cooks

INSPECTOR: M. Patel

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/29/00	1100	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
			Full		Asphalt
Hand Aug		Hand Aug			Fill- light Brown & Dark Gray cmf SAND, Rock, silt cinder stone
					Bottom of Hole due to obstruction.

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. Wood #3	SURFACE ELEV.
LOCATION As laid out ± 88' South of Bldg 1-A (Block 1400)		CONTRACT NO. 426-99-006	DATE 11/10/00

SPOON "O.D. "I.D.
CASING SIZE
HOLE TYPE 1
HAMMER # FALL "
HAMMER # FALL "
DRILLER D. Drach
INSPECTOR T. Ryan

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/10		Dry	

CASING BLOWS/FT.	DEPTH	SPOON BLOWS/6"	RE-COV'D[1]	SAMP. NO.[2]	[3]SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE
Rigger Ran	0				ASPHALT 0.2'
					DGABC 0.5'
		Hand auger	Full Rec	1	Fill br m-f Sand, little Gravel 1.5'
					Gray clay 2.0'
		↓	↓	2	Misc. Fill black c-f SAND, little Clayey Silt, coal, cinders. 4.0
	5				
					Bottom of Boring
					Obstruction Concrete Slab
	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 HH - P&G	NAME OF CONTRACTOR Craig	BORING NO. Wood 5	SURFACE ELEV.
LOCATION As laid out ± 80' South of Bldg 1-B (Wood Site) (Block 1400)		CONTRACT NO. 426-99-006	DATE 11/7/00

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 T. Ryan

GROUND WATER LEVEL

Date	Time	Depth	Remarks
11/7/00	2:30 PM	5.8'	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		Top Soil 0.3'
		Auger	Rec	1+	Fill - Br M-F Sand, little Silt 2.0'
		↓	↓	2+	Fill - Cinders, tr Sand
	5			3+	Same
gers		4-3		4	Same
↓		3-3	19"		
		4-3		5	Same w/ little wood.
		8-10	15"		10.0'
	10	6-15		6	Wood w/ tr cinders
		12-13	8"		
		13-8		7	Same
		12-12	7"		14.0'
	15	3-3		8+	Peat, little org silty Clay
		3-4	18"		2.5 ppm 16.0'
					Bottom of Boring

Note: Samples #1-5 and #8 were saved. Other samples (6 & 7) 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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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
CutterHead	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-COV'D[1]	SAMP. NO.[2]	[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	
		5-8				
AUGERS		12-17	12"	4	Misc Fill greyish black c-f SAND, Gravel, tr. Silt, cinders, wood, coal.	
		7-8				
	10	7-9	20"	5	SAME	
		12-6				
		6-7	24"	6	SAME	
		10-11				
		11-14	12"	7	SAME	
					SAME	14.8'
	15	4-3				
		3-4	24"	8	Brown PEAT, little Silty ClAY	16.0'
					Note: sample #2 saved for testing.	
					All samples were 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. 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 MiscFill 0.1ppm
Auger				1	
					Misc Fill Cinders Gravel Sand Brick, ETC
				2	
	5				Same
				3	Same
ow		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. O			
		H. 1	24"	8	Brown PEAT, some grey Silty ClAY 16.0'
					Bottom of Boring
	20				
					All Samples checked with PID Meter
					ST 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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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

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					0.1'
					Asphalt	0.2'
HANDAUGER		HANDAUGER	Full Rec	A	Fill black & dark brown c-f SAND some Gravel, tr. Silt, coal, cinders, bric	1'
				1 B	Fill reddish. brown Silty ClAY with c-f SAND & Gravel.	
				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-1A	**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				0.0
Handauger		Handauger	Full Rec		ASPHALT 0.2'
					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-FS1 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.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS LINE LOCATES CHANGE OF PROFILE	
						0.0'
Handauger	0	Handauger	Full Rec		ASPHAIT	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'
H[illegible] AUGERS		4-7		* 4 A	Misc Fill yellowish-white diatomaceous, grey c-f SAND, Gravel, cinders, wood	6.5'
		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	
					Note: 3 samples saved for testing	
					All samples screened with PID meter,	
					the other 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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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'
ow EM Augers		3 - 3				
		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		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 Borin

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~~ 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
					0.0'
Handauger	0	Handauger	Full Rec		DGABC 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
					6.5'
w.		4 - 4		4*	
M 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 G
		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
HANDAUGER	0	HAND AUGER	Full Rec	*	0.0' 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 and 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 Site	NAME OF CONTRACTOR Craig Drilling	BORING NO. FS-7	SURFACE ELEV.
LOCATION West of Bld 55		CONTRACT NO. 426-99.006	DATE 12/1/00

SPOON 3 " O.D. 2 3/8 " I.D.
CASING SIZE Auger
HOLE TYPE 1
HAMMER 140 # FALL 30 " S+F407
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.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE
Hand auger		Hand auger	Full	1	Concrete .55' ~~Gravel Fill w/Sand matrix 1.2'~~
				2*	Fine to med Sand Trace SILT/Some Gravel Dark Brown 4.0
	5			3	Fine Sand Trace SILT LT Brown
Auger		8-14 11-10	2'	4	Same
		12-14 16-18	2'	5*	Same
	10	4-6 10-7	2'	6	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 P&G Site
NAME OF CONTRACTOR: Craig Drilling
BORING NO.: FIl-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 7/8 "I.D.
CASING SIZE: Augers
HOLE TYPE: 1
HAMMER: 140 # FALL 30 "
HAMMER: # FALL "
DRILLER: S Burns
INSPECTOR: D Howe

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.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE	0.0
Hand	0	Hand Augr	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	
[illegible]llow		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 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	4.1'	found 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
H.S.	0				Asphalt Pavement 0.4'
					Crushed Rock 0.7'
Augers		HAND AUGER	Full	1	Fill- dark brown c-f SAND, some Gravel, trace Silt, trace Crushed Rock
				2	Fill- brown c-f SAND, trace Gravel, trace Silt
	5				
		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 foundation*)
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				CRUSHED STONE 0.5'
		Hand	Full	1	Misc Fill - Sand, Cinders, Brick, Conc
		auger	Rec.		
				2	Same w/ tr metal
					~~[illegible]~~ 5.0'
	5			3	[illegible], tr Gravel.
ers		7-15			Same
		11-27	17"	4	
		13-31			Same
	10	54-45	22"	5	
		7-11			Same
		18-31	20"	6	
		11-17			Same
		22-28	14"	7	
	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 Kellom 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 Auger	Full Rec	1	Fill-Cinders, Sand, little Br, little Glass'
				2	Same
	5			3	Same 5.0'
					Fill-Br M-F Sand little silt, tr Gravel
[illegible]gers		2-3		4	Same
		3-6	19"		Br F Sand some Silt, some Plant fibers (org. odor)
		1-1		5	Br M-F Sand, tr Silt, tr Gravel
	10	2-2	17"		
		1-2		6	Same
		2-2	13"		
		10-15		7	Same
		11-15	24"		
	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 [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'
	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 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	9:05	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					00
					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	
Hollow		16-11		4		
Stem		16-18	19"		Same	
Augers		17-9		5		
		4-3	20'		Same	10.0
	10	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 PDC 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/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 00
Hand	0	Hand Auger	Full	1	
Auger					Misc Fill - Sand, Silt, Brick, Gravel, Metal, Etc
				2	
					4.0
				3	
	5				Fill - Grey Diatomaceous Earth, Little Misc Fill
Hollow		1-1		4	
Stem		1-1	19"		Fill - Grey Diatomaceous Earth
Augers		WOH		5	
		WOH	23"		Fill - White & Grey Diatomaceous Earth
	10	WOH		6	
		WOH	22"		Same
		WOH		7	
		WOH	22"		Same
		WOH		8	
	15	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. F1140	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~~
H.A.		H.A.	Full	1	0.2
					Fine Sand some SILT Red Brn
				2 A	3
				* 2 D	Fine Sand some SILT w/ Gravel Red Brn
	5			3	
					6.4
Hollow		5-8	1.3'	4 ~~*~~	Sand w/ Gravel, cinders, concrete, wood Black
		5-23			Slight odor
					8.2
		4-4	2'	5	Peat
	10	4-4			10.0
					End of Boring 10'
	15				- All Samples Screened w/ PID
					- Samples 2b + 4 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: 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
↓		↓	↓		
	5			3 A	SAME 4.5
				B	REDDISH BROWN CLAYEY SILT, LITTLE GRAVEL
[illegible]		3 4	16"	4*	SAME
↓		5 6			
		3 5	15"	5 A	SAME 9.0
	10	7 8		B*	BLACK FINE SAND, TRACE SILT
		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 37		CONTRACT NO. 426-99-006	DATE 11/16/00 - 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'D [1]	SAMP. NO. [2]	[3] SAMPLE 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, brd
	5			3	SAME
[illegible] AUGERS		5 - 5			225.8 ppm
		6 - 6	24'	4 *	SAME w/oil
		8 - 12			123.9 ppm
		13 - 15	18"	5	SAME w / wood
	10				Same 10.3'
		100/3"	3"	6	
					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]N		—	-		
A[illegible]ger		—	-	4	
		4 - 5		*	66.8ppm
	10	7 - 8	20"	5	Misc Fill black c-f SAND some Gravel tr. Silt, Cinders, Coal, wood 10.3'
		100/3"		6	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. Zorks

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. NO. [2]	[3] SAMPLE DESCRIPTION AND REMARKS ——— LINE LOCATES CHANGE OF PROFILE
Handauger	0	Handauger	Full Rec		Gravel 0.0' 0.2'
					CONCRETE 0.9
				1	Fill dark grey c-f SAND, tr. Gravel, tr Silt, cinders, coal.
				2*	SAME
	5				
				3	SAME
Hollow M ERS		2-3 3-3	20"	4*	Fill c-f SAND, tr Gravel, tr Silt, cinders, coal
	10	12-18 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 4-4	20"	9	SAME 17.5'
					Brown Peat 18.0'
					Note: 2 samples saved for testing All samples checked w. PID meter remaining samples 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 Pt 6 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	4 to 5	DURING 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 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 30 " SAFTY
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. [2] NO.	[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 12 9	15"	4	SAME
	10	9 7 3 3	13"	5	SAME
		7 6 5 3	20"	6	SAME, WITH 4" LAYER DIATOMACEOUS EARTH TOP OF SPOON
		3 1 2 3	3"	7	SAME 14'
↓	15	2 1 2 2	14"	8	BROWN PEAT 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. 42(99.006	DATE 11/29/2000

SPOON 3 "O.D. 2 3/8 "I.D.
CASING SIZE
HOLE TYPE
HAMMER 140 # FALL Safety 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. NO. [2]	[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			
		9, 15	18"	8	SAME 15.0'
	15	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 in decomposed wood (PEAT)
	20				Bottom of Hole at 20.0'
					All soil samples checked for PID meters
					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. NO. [2]	[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	
					SAME	2.4'
				2*	Fill greyish-green Silt, tr. m-f SAND	4.0
	5					
				3	Fill greyish-black Silt & ClAY	
W M		6 - 6				
AUGERS		8 - 10	24"	4*	Fill black - SilT & ClAY	8.0'
		7 - 8				
	10	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	
		1 - 2				19.0'
	20	2 - 2	24"	10	Brown PEAT	

Note: 3 samples saved for Testing
All other samples screened with
PID meter & discarded

Bottom of Borin

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.

PA 547
6-90

THE PORT AUTHORITY OF NY & NJ

Engineering Department
Construction Division
Materials Engineering Section

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
CutterHead	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		4*		
STEM Augers		3-3	18"		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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Construction Division
Materials Engineering Section

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-COV'D[1]	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	
W M		5-8				
AUGERS		12-17	12"	4	Misc Fill greyish black c-f SAND, Gravel, tr. Silt, cinders, wood, coal.	
		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'
					Note: sample #2 saved for testing.	
					All samples were 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.: 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.[2] NO.	[3]SAMPLE DESCRIPTION AND REMARKS ______ LINE LOCATES CHANGE OF PROFILE
Hand	0	Hand Auger	Full		Crushed STone, LiTTle MiscFil 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
					ST 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

WELL MONITORING DATA SHEET

PROJECT: HH - PORT IVORY P&G SITE	**JOB NO:** 501-233-295
WELL DESIGNATION: TW-1	**DATE:** 11/29/00
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:	11:35	6.10	
POST PURGE:			

DEPTH OF WELL	13.90	**FEET**
DEPTH TO WATER	6.10	**FEET**
DEPTH OF WATER COLUMN	7.80	**FEET**
WELL PURGE FACTOR * 2"	X 0.618	
VOLUME TO BE REMOVED	4.8	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY (~~umohs/cm~~) mS	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
11:45	7.62	13.9	1.4	0.7	Error (to high) 2	
11:55	7.05	14.5	1.7	0.9	E 2	
11:05	7.12	15.3	1.8	0.9	E 2	

SAMPLED BY:

COMMENTS: ~~B~~ Sampl for Metals filtered in the field

* FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING

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[illegible] WELL MONITORING DATA SHEET

PROJECT: HH - PORT IVORY P&G SITE	**JOB NO:** S01-233-295
WELL DESIGNATION: RS-1	**DATE:** 11/24/00
CHECK BOX FOR LOWFLOW: ☐ RATE (ML):	**CASING DIAMETER:** 4" 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:	14:50	4.64	–
POST PURGE:	16:20	12.75	–

	DEPTH OF WELL	16.84	FEET
	DEPTH TO WATER	4.64	FEET
	DEPTH OF WATER COLUMN	12.20	FEET
WELL PURGE	FACTOR *	X 2.471	
	VOLUME TO BE REMOVED	30.14	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY (umohs/cm)	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
15:23	9.02	13.2	655	0.3	955	–
15:30	10.60	15.0	710	0.3	310	–
15:41	11.22	15.0	448	0.2	200	–
15:52	11.24	15.1	434	0.2	188	–

SAMPLED BY: AZ & DP

COMMENTS: Filtered Metals

* FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING

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MATERIALS ENGINEERING DIVISION

~~[illegible]~~ WELL MONITORING DATA SHEET

PROJECT: HH - PORT IVORY P&G SITE	**JOB NO:** 501-233-295
WELL DESIGNATION: PAMW-6D	**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:	11:29	8.26	—
POST PURGE:	12:58	13.63	—

	DEPTH OF WELL	45.85	FEET
	DEPTH TO WATER	8.26	FEET
	DEPTH OF WATER COLUMN	37.59	FEET
	FACTOR *	X 0.618	
WELL PURGE	VOLUME TO BE REMOVED	23.23	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY (umohs/cm)	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
11:46	7.04	16.2	~~11800~~ 19810	11.8	16	—
11:58	7.10	16.6	22100	13.2	140	—
12:16	7.09	16.8	22200	13.4	39	—
12:29	7.08	16.8	22300	13.5	36	—
~~12~~						

SAMPLED BY: A2 & E.M.

COMMENTS: Slow recovery

* FACTOR = 0.618 FOR 2INCH DIAMETER WELL CASING

* F

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~~[illegible]~~ WELL MONITORING DATA SHEET

PROJECT: HH - PORT IVORY P&G SITE	**JOB NO:** 501-233-295
WELL DESIGNATION: PAHW-6	**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:	10:30	7.68	
POST PURGE:	11:55	16.05	

	DEPTH OF WELL	17.80	FEET
	DEPTH TO WATER	7.68	FEET
	DEPTH OF WATER COLUMN	10.12	FEET
WELL PURGE	FACTOR * 2	X 0.618	
	VOLUME TO BE REMOVED	6.25	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY ~~(umohs/cm)~~ MS	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
10:30	10.59	19.0	4.54	2.5	ER.3	
11:20	10.95	19.7	4.65	2.5	ER.3	
11:35	11.36	19.7	4.78	2.6	ER.3	

SAMPLED BY: DP + EM

COMMENTS: Sample for metals is filtered, turbidity.

* 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: PAMW-5	**DATE:** 11-24-00
CHECK BOX FOR LOWFLOW: ☐ RATE(ML):	**CASING DIAMETER:** 2 Inch
WEATHER CONDITIONS: SUNNY 30°F	STICK-UP DISTANCE: 2.60
STATIC WATER LEVEL GPS COORD'S: LONG:	LAT.:

	TIME	DISTANCE FROM TOP OF PIPE TO: WATER (FEET)	PRODUCT (FEET)
PRE-PURGE:	1:18PM	7.03	—
POST PURGE:	1:59PM	7.16	—

	DEPTH OF WELL	13.20	**FEET**
	DEPTH TO WATER	7.03	**FEET**
	DEPTH OF WATER COLUMN	6.17	**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)
*1:30PM	6.47	13.6°	869	0.6	Er 3	–
*1:37PM	6.87	14.7°	1045	0.5	320	–
1:48PM	6.76	14.8°	1048	0.5	45	–
1:54PM	–	–	–	–	18 – AFTER another volume (4th)	

SAMPLED BY: Rb / E.M.

COMMENTS: Well evacuated during 2nd volume → slowed flow from ~400ml/min to 200ml/min
Recovered & 3rd Volume Removed (Flow @ ~200mL/min)
Good Recovery
Well sampled @ 1:58PM

* FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING

* FA

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[redacted] WELL MONITORING DATA SHEET

PROJECT: HH - PORT IVORY P&G SITE	JOB NO: 501-233-295
WELL DESIGNATION: PAMW-1	DATE: 11/28/00
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:	10:54	5.64	—
POST PURGE:	12:34	13.32	—

	DEPTH OF WELL	15.93	FEET
	DEPTH TO WATER	5.64	FEET
	DEPTH OF WATER COLUMN	10.29	FEET
	FACTOR *	X 0.618	
WELL PURGE	VOLUME TO BE REMOVED	6.36	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY (umohs/cm)	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
11:04	11.85	15.1	1351	0.7	Er3	—
11:28	12.25	16.5	2270	1.2	Er3	—
11:45	12.35	16.4	2700	1.4	Er3	—
11:55	12.35	16.4	2729	1.4	Er3	—
					Er3 = Over Range	

SAMPLED BY: A2 & EM

COMMENTS: Well goes dry between volume - slow recovery

Filtered metals

Grey silty water

* FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING

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MATERIALS ENGINEERING DIVISION

[illegible] WELL MONITORING DATA SHEET

PROJECT: HH - PORT IVORY P&G SITE

JOB NO: 501-233-295

WELL DESIGNATION: PAMW - 1D

DATE: 11/29/00

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)	DISTANCE FROM TOP OF PIPE TO: PRODUCT (FEET)
PRE-PURGE:	1245	12.62	
POST PURGE:	1355	12.67	

	DEPTH OF WELL	56.75	FEET
	DEPTH TO WATER	12.62	FEET
	DEPTH OF WATER COLUMN	44.13	FEET
WELL PURGE	FACTOR * 2"	X 0.618	
	VOLUME TO BE REMOVED	27.3	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY (~~umohs/cm~~) mS	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
13:20	7.06	15.4	4.2	2.2	11.3	
13:32	7.05	15.6	4.8	2.6	9.09	
13:45	7.07	15.6	4.9	2.6	5.6	

12.65

SAMPLED BY:

COMMENTS:

* FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING

* FA

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[redacted]/WELL MONITORING DATA SHEET

PROJECT: HH - PORT IVORY P&G SITE	JOB NO: 501-233-295
WELL DESIGNATION: ~~MW~~ EW-6	DATE: 11/24/00
CHECK BOX FOR LOWFLOW: ☐ RATE(ML):	CASING DIAMETER: 4 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:	9:20	10.20	–
POST PURGE:	10:55AM	11.96	–

	DEPTH OF WELL	19.96	FEET
	DEPTH TO WATER	10.20	FEET
	DEPTH OF WATER COLUMN	9.76	FEET
	FACTOR *	X 2.471	
WELL PURGE	VOLUME TO BE REMOVED	24.12	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY (umohs/cm)	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
9:55	12.75	15.3	3596	2.4	19	–
10:10	12.83	15.9	7910	5.4	8.1	–
10:20	12.80	17.4	7290	4.8	6.9	–
10:25	12.78	17.3	7530	4.9	7.0	–
10:34	12.81	17.1	7600	5.4	5.4	–
10:45	12.82	17.0	7700	5.4	5.5	–

SAMPLED BY: AZ & BP

COMMENTS:

* 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: MW-EW-3
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.:

		DISTANCE FROM TOP OF PIPE TO:	
	TIME	WATER (FEET)	PRODUCT (FEET)
PRE-PURGE:	13:15	13.41	
POST PURGE:	14:30	15.93	

	DEPTH OF WELL	17.90	FEET
	DEPTH TO WATER	13.41	FEET
	DEPTH OF WATER COLUMN	4.49	FEET
WELL PURGE	FACTOR *	X 0.618	
	VOLUME TO BE REMOVED	2.77	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY (umohs/cm)	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
13:31	8.27	14.9	1461	0.7	330	-
13:45	8.20	15.0	1749	0.8	65	-
13:58	8.23	15.2	1702	0.8	27	-

SAMPLED BY: AZ & DP

COMMENTS: Well went dry after one volume - Very slow recovery

* 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: 501-233-295
WELL DESIGNATION: MW CS 7	DATE: 11-24-00
CHECK BOX FOR LOWFLOW: ☐ RATE (ML):	CASING DIAMETER: 2 Inch
WEATHER CONDITIONS: SUNNY 28°F	STICK-UP DISTANCE: 1.3
STATIC WATER LEVEL GPS COORD'S: LONG:	LAT:

		DISTANCE FROM TOP OF PIPE TO:	
	TIME	WATER (FEET)	PRODUCT (FEET)
PRE-PURGE:	9:18AM	10.96	—
POST PURGE:	10:57AM	13.43	

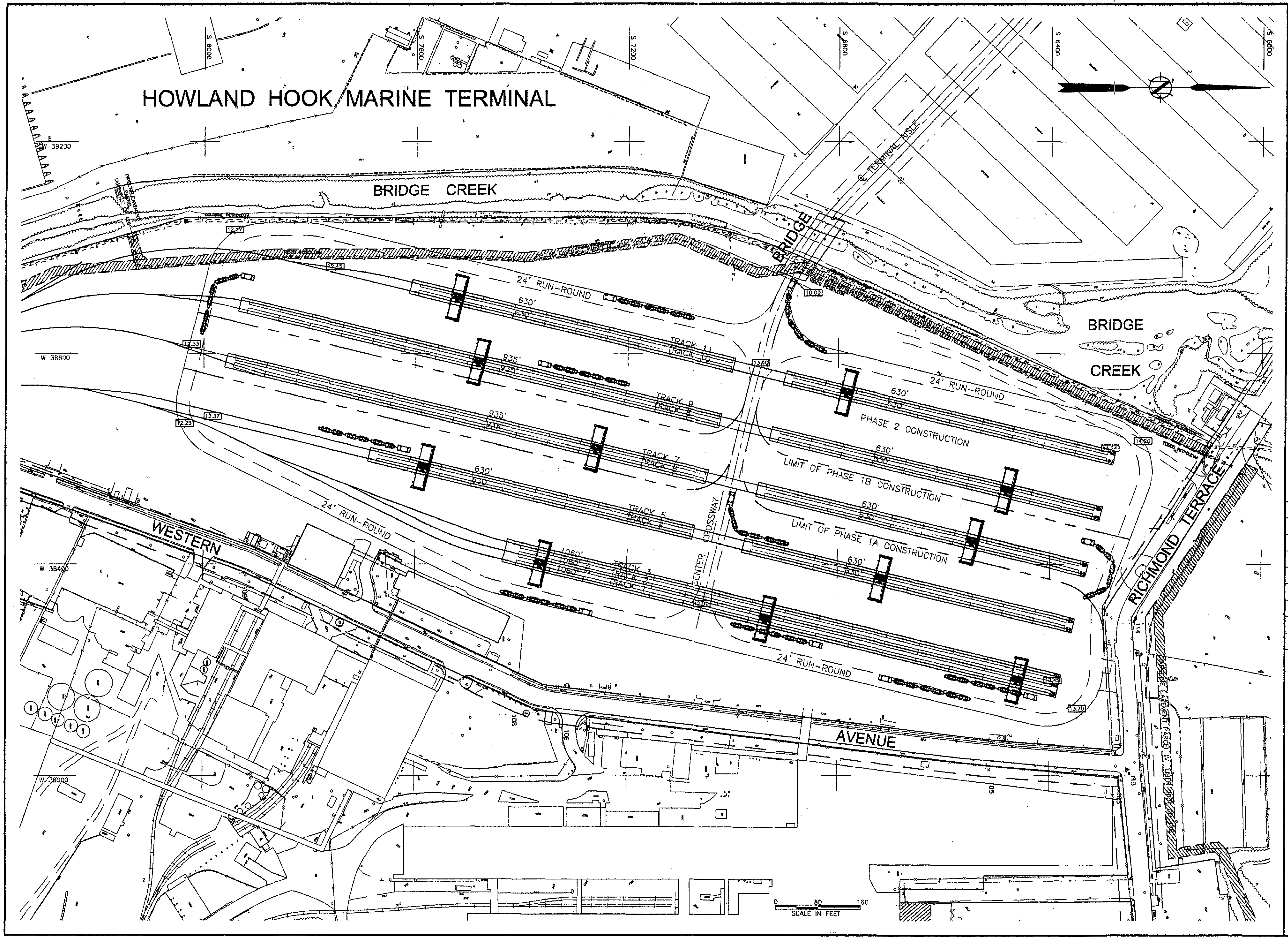
	DEPTH OF WELL	14.32	FEET
	DEPTH TO WATER	10.96	FEET
	DEPTH OF WATER COLUMN	3.36	FEET
	FACTOR *	X 0.618	
WELL PURGE	VOLUME TO BE REMOVED	2.08	

TIME	pH (SU)	TEMP (C)	CONDUCTIVITY (umohs/cm)	SALINITY (0/00)	TURBIDITY	DISS. O2 (mg/l)
9:22AM	9.45	13.8°	1540	0.8	30	—
9:33AM	9.41	13.6°	1487	0.8	25	—
9:38AM	9.16	14.1°	1413	0.7	23	—
Well	evacuated	during	3rd Volume.			

SAMPLED BY: RG & E.M.

COMMENTS: Well sampled at 9:55AM

* FACTOR = 0.618 FOR 2 INCH DIAMETER WELL CASING



Sheet 1 of 2

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No.	Date	Revision	Approved

ENGINEERING DEPARTMENT

HOWLAND HOOK
MARINE TERMINAL
PORT IVORY

CIVIL
Title

PORT IVORY
INTERMODAL FACILITY

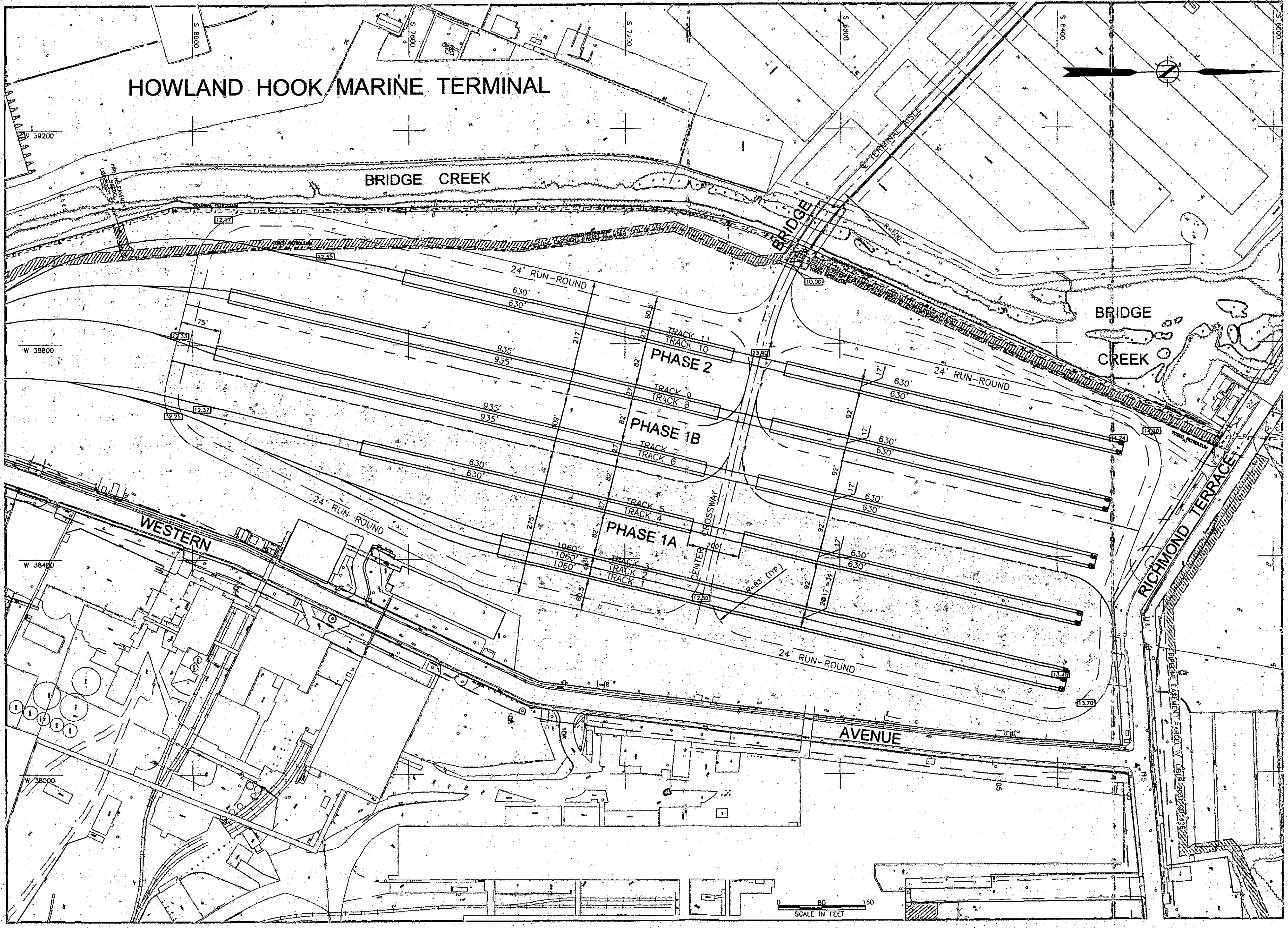
PRELIMINARY
SITE
PLAN

MJG	ALH	MJG
Designed by	Drawn by	Checked by

Date JANUARY 30, 2003

Contract Number HH-233.827

Drawing Number SK1



Sheet 3 of 3

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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.

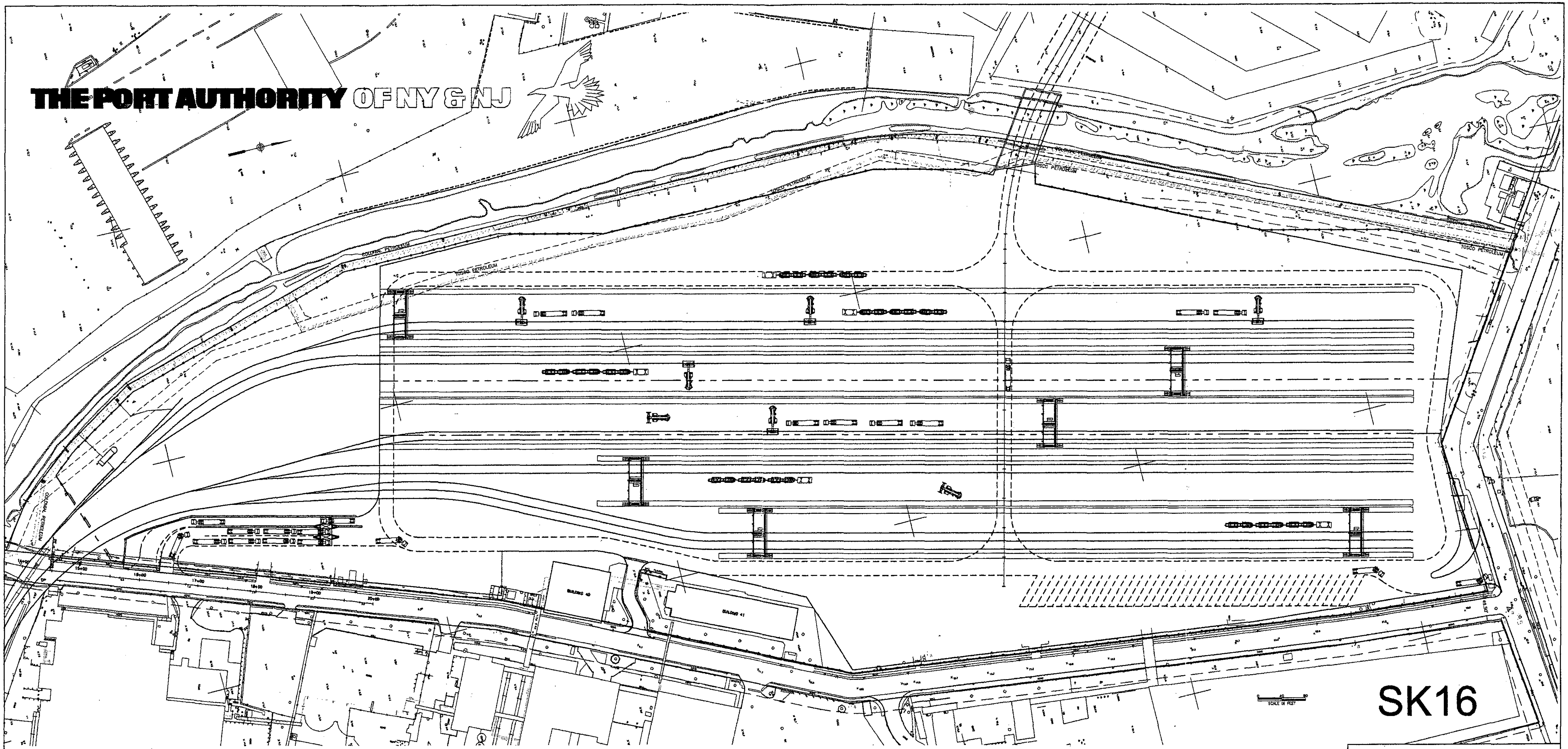
MJG	ALH	MJG
Designed by	Drawn by	Checked by

Date JANUARY 30, 2003

Contract Number HH-233.827

Drawing Number SK3

THE PORT AUTHORITY OF NY & NJ



SK16

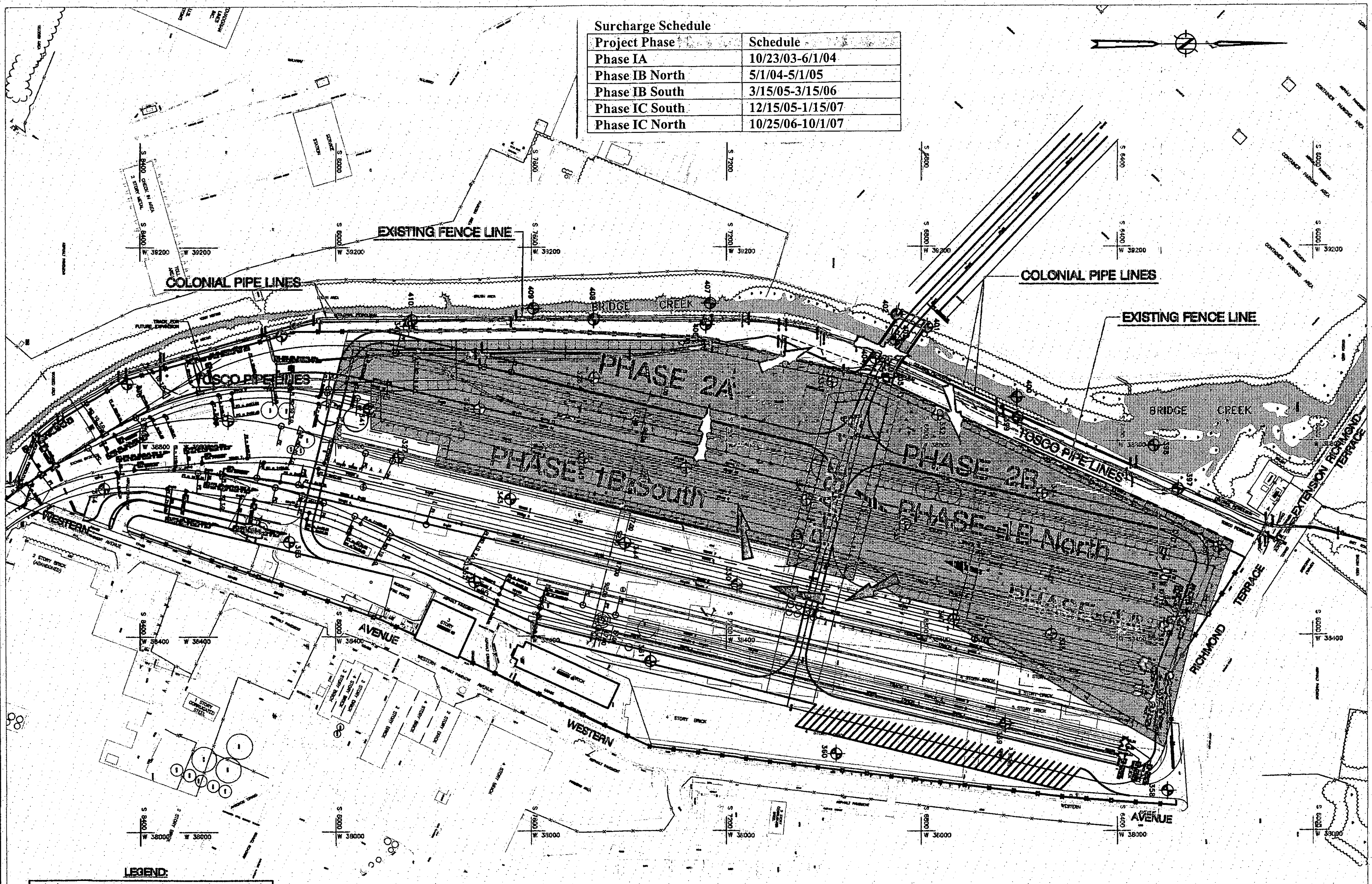
REVISED LAYOUT – OCTOBER 13, 2003

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

GRAPHIC SCALE

(IN FEET)
1 inch = 100 ft.

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

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.

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 HHMT - Port Ivory Surcharge Test	NAME OF CONTRACTOR Craig Drilling	BORING NO. PG-ST-1S	SURFACE ELEV.
LOCATION As Laid out in field as per Drawings 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 'B' Monitor
HAMMER Auto 140 # FALL 30 "
HAMMER # FALL "
DRILLER D Cooke
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
10/23/02	12 45 P	3.7	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 - RCA - Recycled Concrete Agg	
				2 A	Same	3.0
				B	Fill - Crushed Stone	
	5			3	Same	6.0
Hollow Stem Augers		1 - WOH WOH	19"	4	Fill White & Gray Limestone Slurry	
		W O H	23"	5	Same	
	10	W O H	24"	6	Same	
		W O H	24"	7	Same	
	15	W O H	24"	8	Same	
		W O H	20"	9	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.

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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 Koss	DRILLER D Cooke	DATE 10/24/02

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

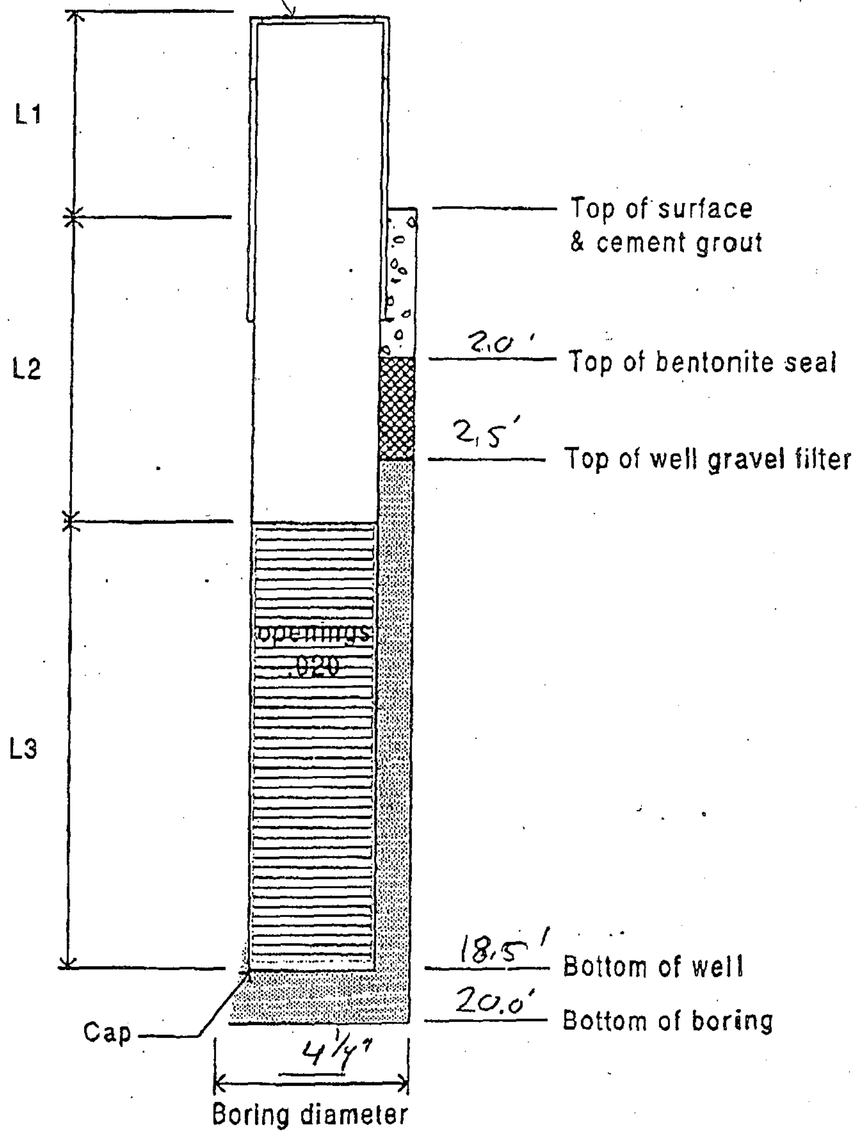
DATE 10/28/02	WATER LEVEL BEFORE 6.0	WATER LEVEL AFTER 6.0	TAKEN 20 MINUTES AFTER

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: NYMT- Port Ivory Surcharge Test

BORING No. PG ST 1S **DATE:** 10/23/02

FIELD READINGS BY: D Hour **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		Peat

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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 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' Monitor
HAMMER 140 # FALL 30 "	HAMMER # FALL "	
DRILLER D Cooke		
INSPECTOR D Howe		

GROUND WATER LEVEL

Date	Time	Depth	Remarks
10/24	10 30	5.0	while Hand Auguring

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	0	Hand Auger	Full	1	0.0
					Fill - RCA Recycled Concrete Agg
				2	Same 4.0
	5			3	Fill - Crushed, Stone, Silt, Sand, ETC
HW Casing	6				For Strata 6-20' See Log for PG-ST-1S
	20	1-0 1-1	8"	4	Black & Brown Peat
		WOH-1 2-2	23"	5	Same
	25	WOH-1 2-2	11"	6	Same 26.0
		3-3 4-5	12"	7	F Grey Sand, Tr Silt
	30	3-5 6-7	10"	8	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 HM MT- 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. 426-99-00C	DATE 10/24/02

SPOON 2 "O.D. 1 3/8 "I.D.
CASING SIZE HW
HOLE TYPE 4" Monitor
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
					35.0
HW	35	4-4		9	
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)

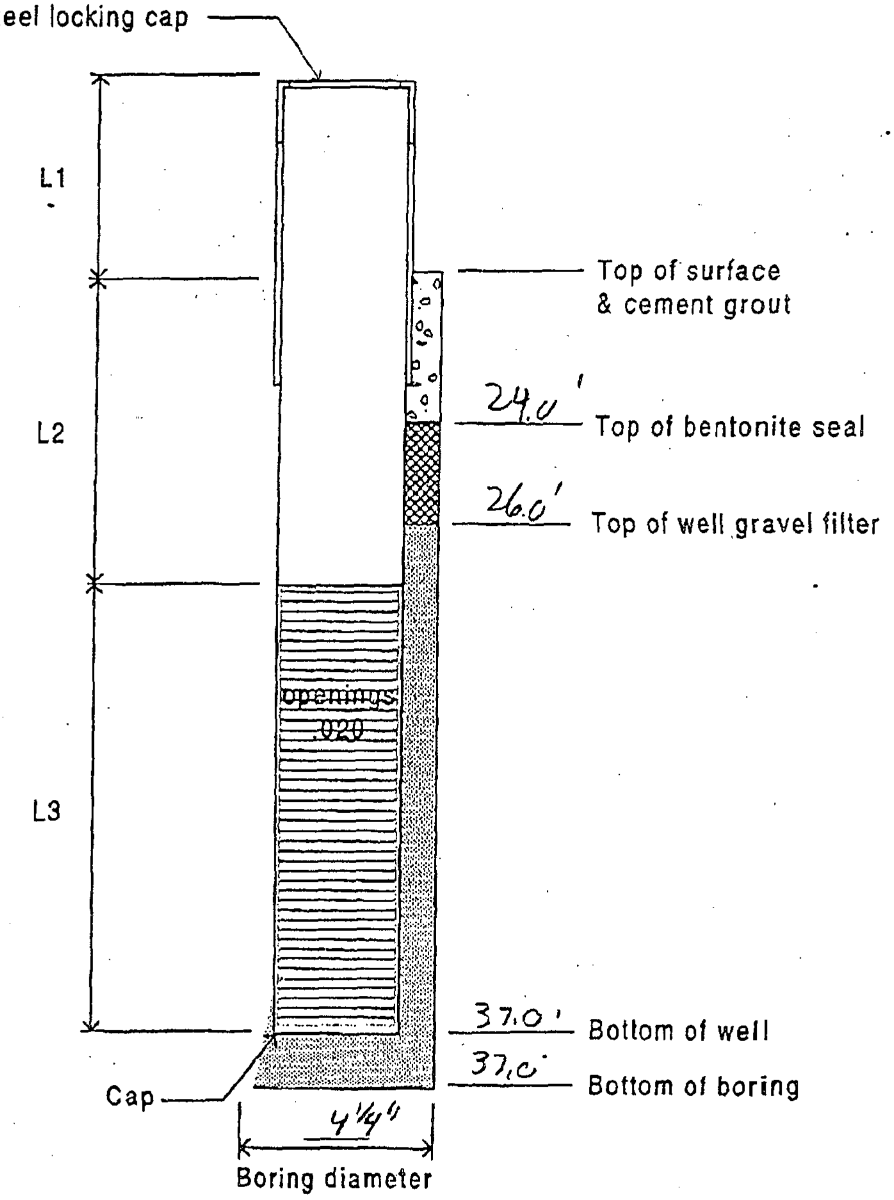
DATE 10/28/02	WATER LEVEL BEFORE 15.1	WATER LEVEL AFTER 15.1	TAKEN 10 MINUTES AFTER

2 " dia. PVC pipe w/steel locking cap

L1 = 3.0'

L2 = 27.0'

L3 = 10.0'



24.0' Top of bentonite seal

26.0' Top of well gravel filter

37.0' Bottom of well

37.0' Bottom of boring

4 1/4" Boring diameter

REMARKS:

THE PORT AUTHORITY OF N.Y & N.J.

ENGINEERING DEPARTMENT

MATERIALS ENGINEERING DIVISION

PID READINGS

Sheet 4 of 4

PROJECT: HH MT- Port Ivory Surcharge Test

BORING No. PG- ST. 10 **DATE:** 10/24/02

FIELD READINGS BY: D Howe **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		00		
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 "B" Mcwater
HAMMER Auto 140 # FALL 30 "
HAMMER # FALL "
DRILLER D Cooke
INSPECTOR D Howe

GROUND WATER LEVEL

Date	Time	Depth	Remarks
10/25/02	8 45	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 - Cinders, Gravel, Crushed Stone, Concrete, ETC	1.0
				B	Fill - White & Grey Limestone Slurry	
				2	Same	
	5			3	Same	
Hollow Stem Augers		W O H	24"	4	Same	
	10	W O H	24"	5	Same	
		2-2 1-1	22"	6	Same Tr wood	
		1-0 1-1	23"	7	Same	
	15	4-2 1-2	5"	8	Same Tr of wood	
		W O H	12"	9	Same	18.0
	20	2-1 1-2	22"	10	Black & Brown 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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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)

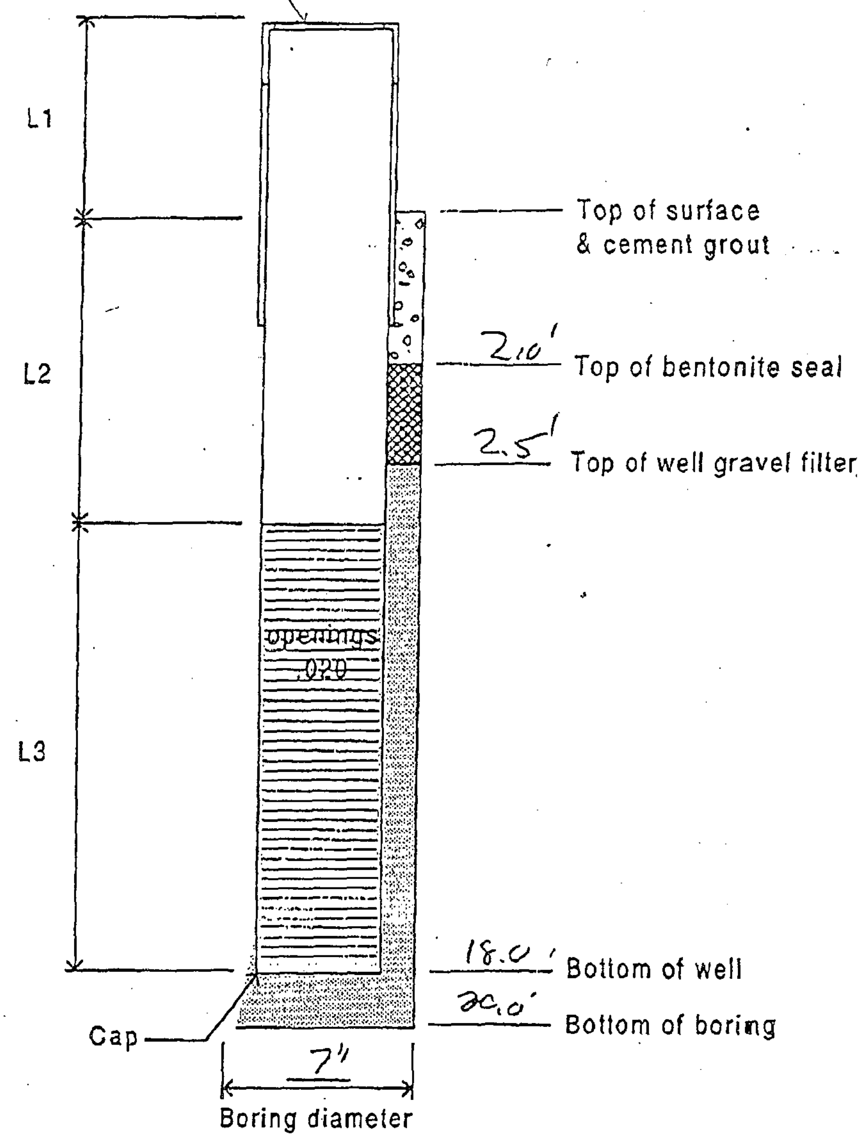
DATE 10/28/02	WATER LEVEL BEFORE 5.0'	WATER LEVEL AFTER 5.0'	TAKEN 15 MINUTES AFTER

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

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ENGINEERING DEPARTMENT

MATERIALS ENGINEERING DIVISION

PID READINGS

Sheet 3 of 3

PROJECT: HM MT · Port Ivory Surcharge Test

BORING No. PG ST 25 **DATE:** 10/25/02

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	1A		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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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 Cooke
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. NO. [2]	[3]SAMPLE DESCRIPTION AND REMARKS LINE LOCATES CHANGE OF PROFILE	
	0					0.0
Hand		Hand Auger	Full	1 A	Fill- Cinders, Gravel, Crushedstone, 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	MF Black Sand, Tr Silt	
						25.0
	25					
		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				
		5-4	9"	7	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.

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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 Cocke	10/28/02

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

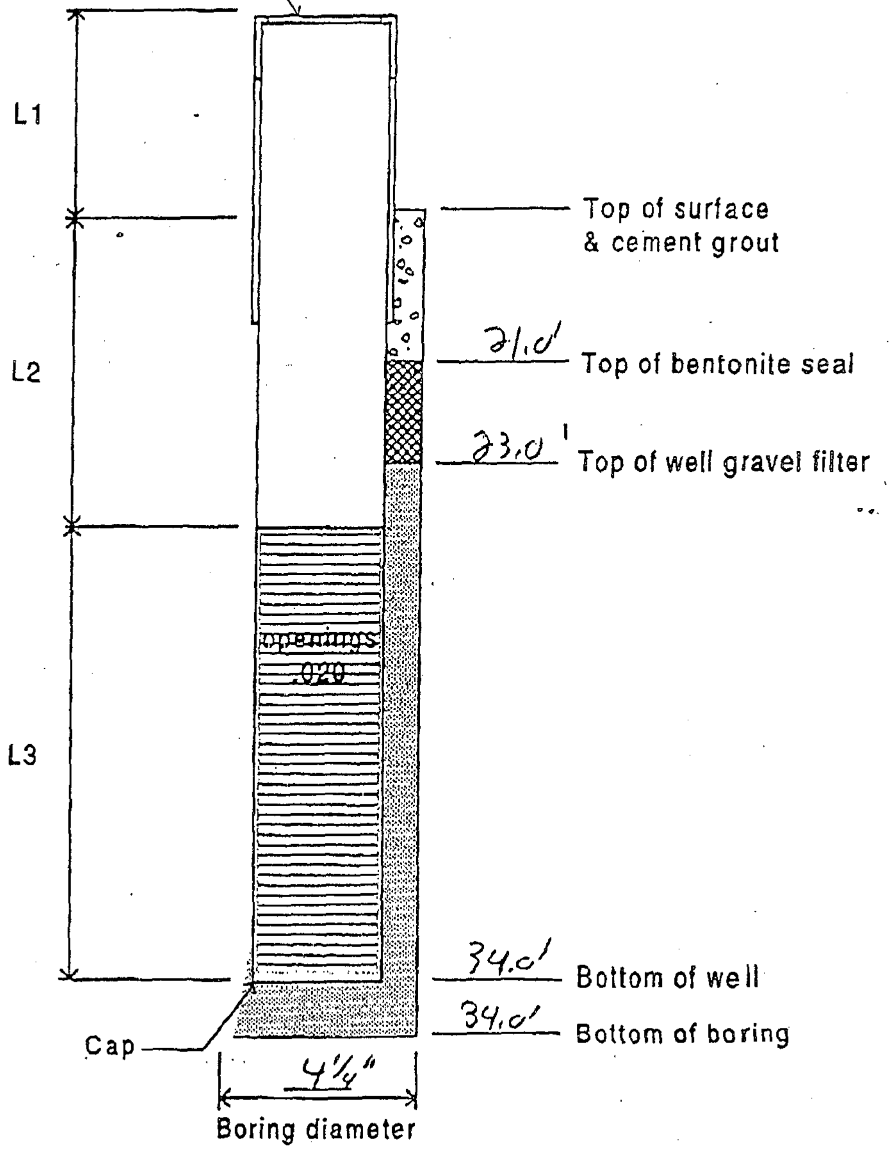
DATE			
10/28/01	WATER LEVEL BEFORE 14.0	WATER LEVEL AFTER 14.0	TAKEN 10 MINUTES AFTER

2" " dia. PVC pipe w/steel locking cap

L1 = 3.0'

L2 = 24.0'

L3 = 10.0



Top of surface & cement grout

21.0' Top of bentonite seal

23.0' Top of well gravel filter

34.0' Bottom of well

34.0' Bottom of boring

4¼" Boring diameter

REMARKS:

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 Tow

BORING No. PG ST 20

DATE: 10/25/02

FIELD READINGS BY: OHoua

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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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-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
Hand	0	Hand Auger	Fill	1		
Auger					Fill - Crushed Stone, Silt, Gravel, Cobbles, ETC	2.0
				2	Fill - Grey & white Limestone Slurry	
	5			3	Same	
Hollow		W O H	24"	4	Same	
Stem						
Augers		W O H	24"	5	Same	
	10	W O H	22"	6	Same	
		WOH 1-1	20"	7	Same	
	15	W O H	12"	8	Same	
		W O H	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.

PORT AUTHORITY OF NY & NJ

Engineering Department - Materials Division

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 House	DRILLER D Cocks	DATE 10/22/02

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

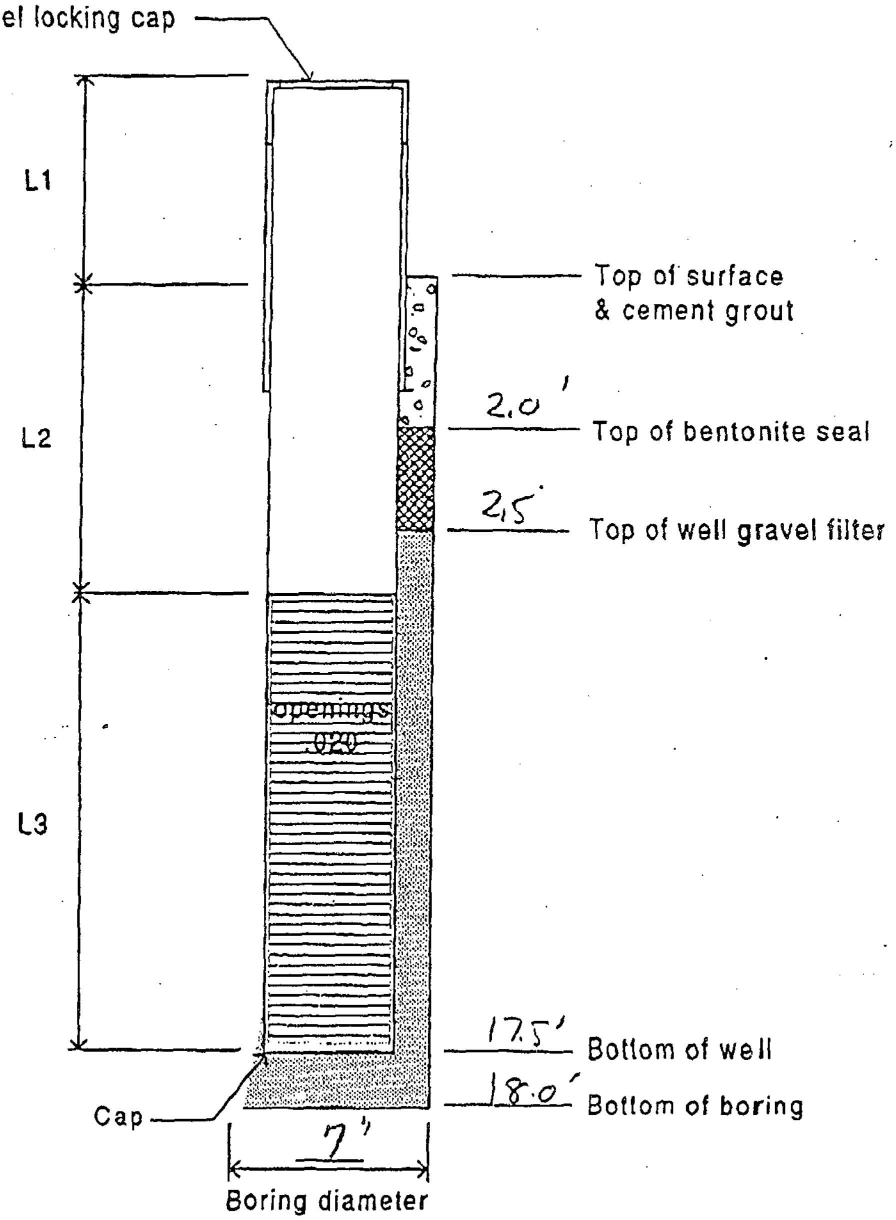
DATE 10/23/02	WATER LEVEL BEFORE 4.0'	WATER LEVEL AFTER 4.7'	TAKEN 15 MINUTES AFTER

2 " dia. PVC pipe w/steel locking cap

L1 = 3.0'

L2 = 3.0'

L3 = 14.5



REMARKS: Hole Backfilled 17.5-18.0' with Bentonite

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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- 35

DATE: 10/22/02

FIELD READINGS BY: D Hour

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		Peat

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Engineering Department
Construction Division
Materials Engineering Section

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 30 " Auto
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.[2] NO.	[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					
		WOH	12"	4	Black & Brown Peat	
	20	WOH	13	5	Same	
		1-1 2-3	23	6	Same Tr of F Black Sand in tip of spoon	24.0
	25	1-1 2-2	7"	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	
	35	2-3 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.

PORT AUTHORITY OF NY & NJ

Engineering Department - Materials Division

Well Installation Report

Sheet 2 of 3

PROJECT HAMT- 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 Howe	DRILLER D Cook	DATE 10/23/02

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

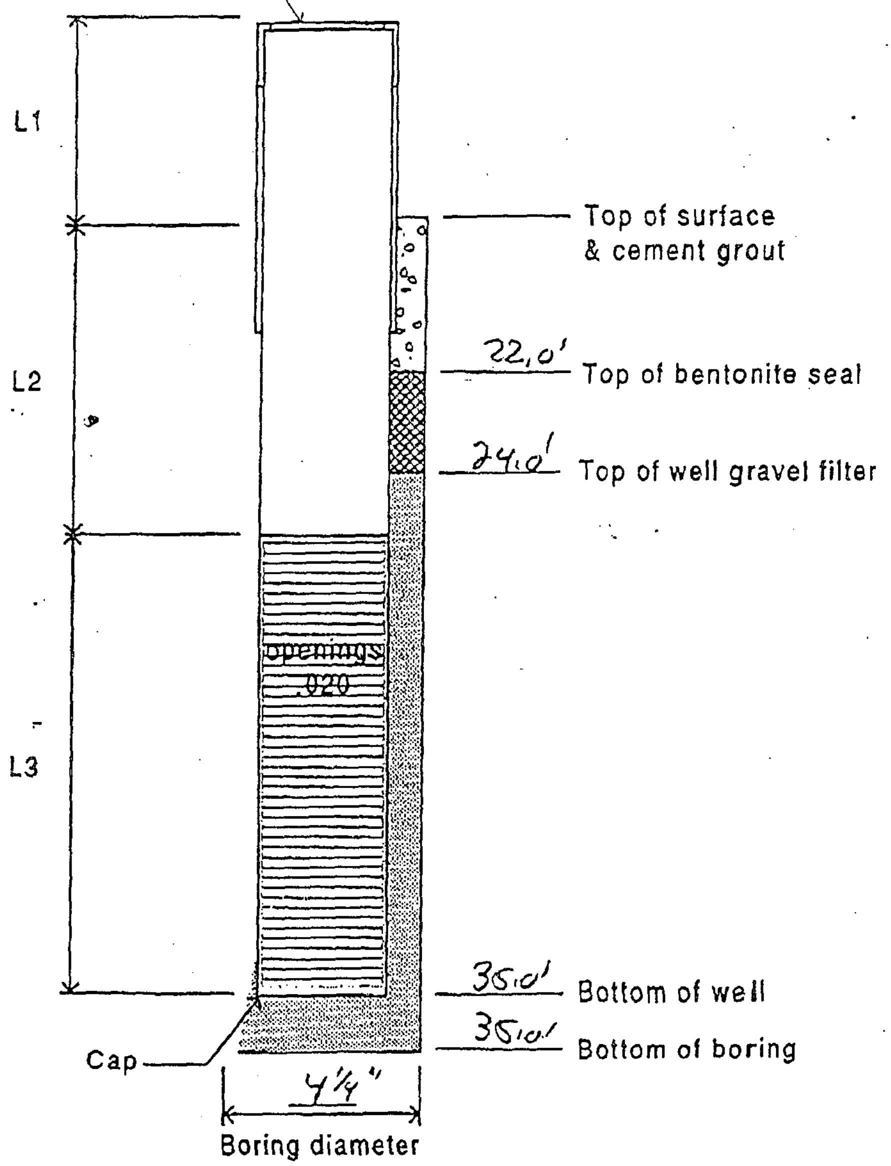
DATE 10/23/02	WATER LEVEL BEFORE 13.5	WATER LEVEL AFTER 13.5	TAKEN 15 MINUTES AFTER

2 " dia. PVC pipe w/steel locking cap

L1 = 3.0'

L2 = 25.0'

L3 = 10.0



REMARKS:

THE PORT AUTHORITY OF N.Y & N.J.

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: D Howe

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		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-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		Hand Auger	Full	1 A	Fill - RCA Recycled concrete Agg	1.0
Auger				B	Fill- Crushed Stone, SILT, Sand, Concrete, ETC	
				2 A	Same	3.0
				B	Fill White & Gray Limestone Slurry	
	5					
				3	Same	
Hollow		1-1		4		
Stem		WOH	21"		Same	
Augers		WOH		5		
	10		24"		Same	
		WOH		6		
		1-1	11"		Same	
		WOH		7		
			8"		Same	
	15	WOH		8		
			17"		Same	
		WOH		9		
			15"		Same	
		WOH		10 A	Same	19.0
	20	1-1	20"	B	Black Root	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.

PORT AUTHORITY OF NY & NJ

Engineering Department - Materials Division

Well Installation Report

Sheet 2 of 3

PROJECT HMMT- 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)

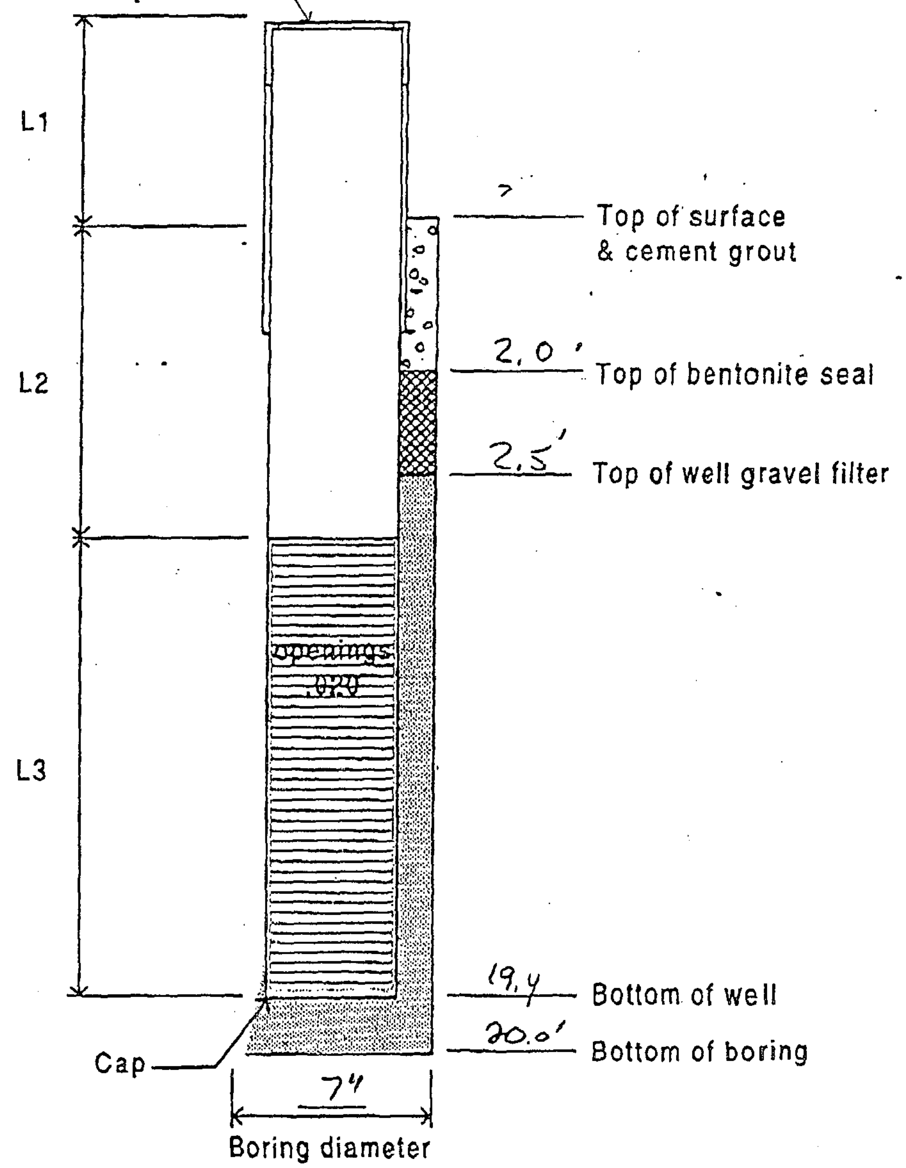
DATE 10/18/02	WATER LEVEL BEFORE 3.7	WATER LEVEL AFTER 3.7	TAKEN 10 MINUTES AFTER

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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ENGINEERING DEPARTMENT

MATERIALS ENGINEERING DIVISION

PID READINGS

Sheet 3 of 3

PROJECT: HHMT— Port Ivory Surcharge Test

BORING No. PG-ST-45 **DATE:** 10/18/02

FIELD READINGS BY: DHouse **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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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-4D
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" Mandor
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				1 B	Fill Crushed Stone	
				2 A	Same	3.0
				2 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	WOH		4		
		1-2	23"		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.

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 East Side				CONTRACTOR Craig Drilling
WELL NO. PG-ST-4D	WELL TYPE "B" Monitor	INSPECTOR D Howe	DRILLER D Cooke	DATE 10/21/02

Well Development Report

(NOTE: WATER LEVEL READINGS FROM TOP OF PVC)

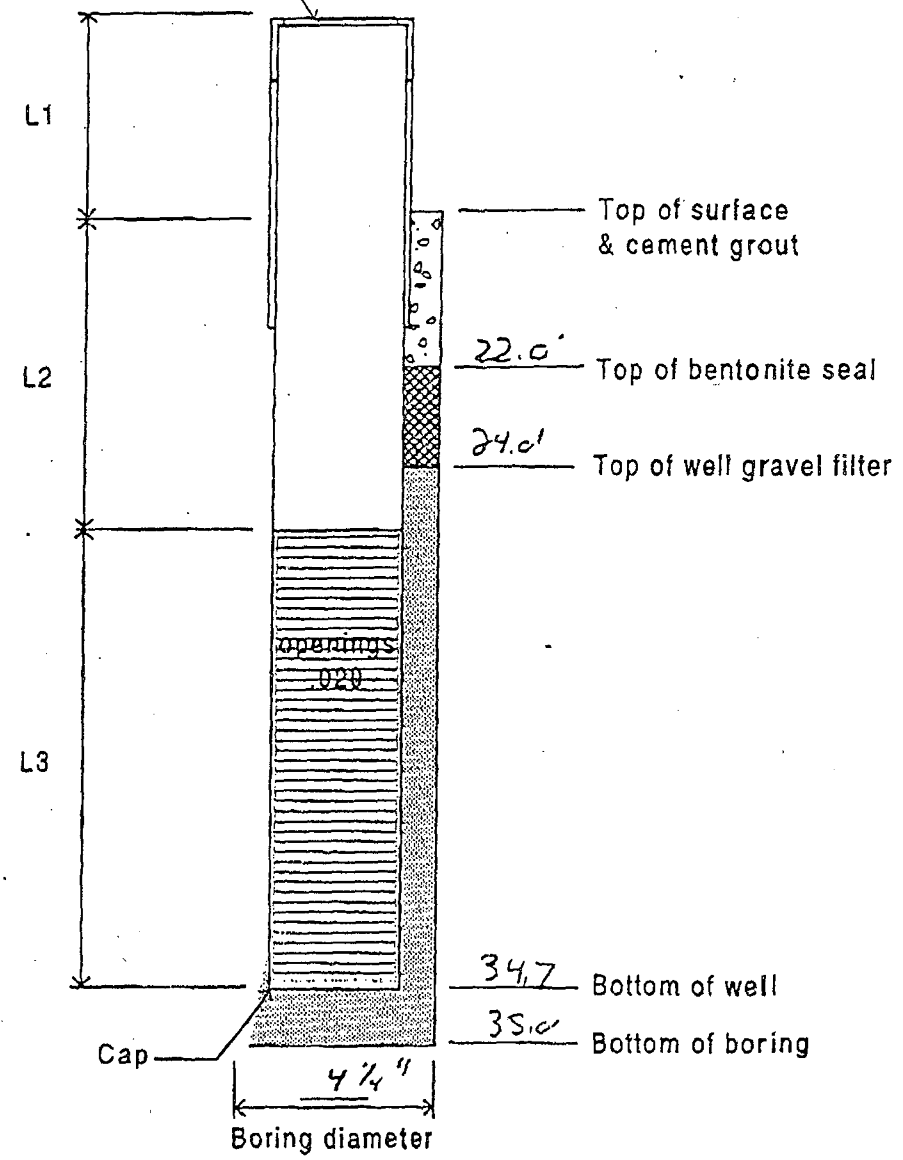
DATE 10/21/02	WATER LEVEL BEFORE 13.5	WATER LEVEL AFTER 13.5	TAKEN 15 MINUTES AFTER

2" " dia. PVC pipe w/steel locking cap

L1 = 3.3'

L2 = 24.7'

L3 = 10.0'



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: DKa	**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		
	2A		0.0		
	2B		0.0		
	3		0.0		
	4		0.2		PaT
	5		0.3		PaT
	6		0.0		
	7		0.0		
	8		0.0		