FILE NAME

"Letter/Correspondance.VCP.v00615.2005-03-29.SI_Workplan.pdf"

NOTE

- Contains folded images. Images must be copied in their entirety.
- Images may contain color.
- Documents must be returned in the same arrangement in which they were received.

Please return electronic copies to Sally Dewes

Hatch Mott MacDonald

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

March 24, 2005

Received 3/29/05

Thomas Gibbons
Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233

RE: Site Investigation Workplan Addendum – Sites 1 and 2A/2B
Howland Hook Marine Terminal – Port Ivory Facility (40 Western Avenue)
Staten Island, New York 10303
C32952

Dear Mr. Gibbons:

In 2004, the Port Authority of New York and New Jersey (Port Authority) executed three Voluntary Cleanup Program (VCP) Agreements with the New York State Department of Environmental Conservation (NYSDEC) for individual parcels comprising the site known as the Howland Hook Marine Terminal (HHMT) – Port Ivory Facility; the individual VCP Agreements correspond with specific site parcels and are referenced as Site 1 (VCP Index Number W2-0957-02-04), Site 2A/2B (VCP Index Number W2-0986-02-04), and Site 3 (VCP Index Number W2-0987-02-04). The purpose of this correspondence is to provide the NYSDEC with information regarding proposed supplemental remedial efforts at certain areas of concern (AOCs) at Site 1 and Site 2A/2B. The AOCs, which will be further addressed, are as follows: UST2 (Site 1) STAIN-3 (Site 2A), UST7 (Site 2A), Former UST Areas adjacent to Buildings 20, 32 and 32A (Site 2A), and the Southern LNAPL Areas (Site 2B). No additional areas of concern have been identified at Site 1 or Site 2A/2B. The additional actions proposed herein are consistent with prior procedures as set forth in the September 2004 reports entitled *Revised Site Investigation and Conceptual Remedial Action Workplan Site 1* and *Revised Site Investigation and Conceptual Remedial Action Workplan Site 2A/2B*, as modified by the NYSDEC conditional approval letters. This document serves as an addendum to the previously submitted reports for Sites 1 and 2A/2B and, except for the remedial investigation activities proposed at the Southern LNAPL Areas, presents tasks that will be undertaken to complete previously proposed remedial actions or to provide confirmation of the success of previously performed remedial actions. The locations of the AOCs addressed in this document are provided in Figure 1 and a summary of sampling is provided in Table 1. The specific actions proposed at each AOC are described in the following subsections.

Hatch Mott MacDonald

UST2/Site 1

As stated in the September 2004 *Revised Site Investigation and Conceptual Remedial Action Workplan Site 1*, initial assessment activities performed by Hatch Mott MacDonald (HMM) revealed the potential presence of an underground storage tank (UST) at the southern portion of Site 1. The location of area UST2 is presented on Figure 1. As such, the Port Authority implemented investigative efforts including the performance of a geophysical survey (consisting of both ground penetrating radar (GPR)/electromagnetic (EM) tasks) and the installation and sampling of soil borings to evaluate this area. The GPR/EM survey detected anomalies in the UST2 area but did not conclusively identify the presence of a UST. Based on the results of the survey, the anomalies appeared to be related to interference and/or subsurface utilities. However, additional investigative efforts consisting of the installation and sampling of soil borings was implemented to further evaluate the UST2 area. These efforts (two rounds of soil sampling) did not identify the presence of an UST, however, visual observations and analytical results revealed the presence of potential petroleum-impacted soil. As detailed in the September 2004 *Revised Site Investigation and Conceptual Remedial Action Workplan Site 1,* hot-spot removal was determined to be the most appropriate remedial alternative to address petroleum-impacted areas (including the UST2 Area) given the redevelopment plan (i.e., the contemplated use) for Site 1.

The Port Authority has completed the proposed hot-spot removal at all Site 1 AOCs with the exception of UST2, which has been inaccessible due to concurrent site redevelopment efforts. At this time, the Port Authority proposes to perform the hot-spot removal at the UST2 Area as set forth in the September 2004 Report. Specifically, the Port Authority proposes to excavate an area measuring approximately 50 feet by 10 feet. Based on analytical results and field screening, petroleum-impacted soil is limited to the 7 to 10 foot depth interval within the delineated hot spot area. As such, the overlying non-impacted layer will be removed, field screened and, returned to the excavation provided that field screening does not reveal the presence of petroleum impacts. Excavation and sampling will be performed in accordance with NYSDEC requirements and guidance documents. Continuous field screening, utilizing a photoionization detector (PID) will be performed during excavation and confirmation sampling efforts.

Based on the size of the proposed excavation area, five confirmation samples will be collected from the resultant excavation to confirm the success of the proposed remedial action. Final sample selection will be based upon field screening and actual excavation size, however, it is anticipated that one sample will be obtained from the excavation base and one sample will be obtained from each excavation sidewall. All samples will be collected from a discrete 6-inch interval, to the extent technically feasible. The sample depth for the sidewalls will correspond with the impacted layer, generally 7 to 10 feet below surface grade (bsg) to ensure adequate horizontal removal. Thus, sidewall samples

will be collected from the most impacted 6-inch interval within the 7 to 10 foot zone, as identified through field screening efforts. The base sample will be collected from the 0 to 6 inch interval below the resultant excavation base. The location of the base sample within the excavation footprint will be based upon the results of field screening and will be biased toward signs/indications of contamination. Soil samples will be submitted to a New York State (NYS) certified laboratory and analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and total petroleum hydrocarbons (TPHC).

STAIN-3/Site 2A

As stated in the September 2004 *Revised Site Investigation and Conceptual Remedial Action Workplan Site 2A/2B*, initial assessment activities performed by HMM identified surface staining at several site locations including an area within Building 20. Soil boring STAIN-3 was installed in the center of the stained area situated within Building 20 and soil boring STAIN-3B was installed at the fringe of the same stained area. Due to close proximity of these two soil borings to one another, the locations were combined and identified as soil boring location STAIN-3 on figures presented in the above referenced report. For consistency, this reference is retained in Figure 1 included with this correspondence. Soil samples were collected from two depths at both the STAIN-3 and STAIN-3B locations.

Analytical results from one of the samples, the shallower sample, collected at location STAIN-3 (sample designation "STAIN-3 (1-1.5)") revealed a concentration of total SVOCS in excess of the NYSDEC guidance criteria of 500 mg/kg for total SVOCs. The sample collected from the deeper interval at location STAIN-3 and samples collected form the surficial and subsurface intervals of an adjacent location (STAIN-3B) at the fringe of the stained area revealed significantly lower concentrations of SVOCs. As described in the September 2004 *Revised Site Investigation and Conceptual Remedial Action Workplan Site 2A/2B,* the Port Authority addressed the "stained area" during building (Building 20) demolition activities. Thus, for completeness, the Port Authority proposes to collect soil samples from the area surrounding sample location STAIN-3 to confirm the success of the soil removal, which was performed as part of building demolition activities.

Based on previous sampling results and the limited size of the stained area (approximately 5 feet by 10 feet), three samples will be collected from the STAIN-3 Area; one sample will be collected from immediately below the STAIN-3 location and two additional samples will be collected from representative locations immediately beyond the previously observed limits of staining. Both of the perimeter samples will be collected from the depth of sample STAIN-3 (1-1.5 feet bsg) and the "base" sample will be collected from a depth of 1.5 to 2.0 feet bsg, below the former STAIN-3 location. Samples will be obtained utilizing a hand auger. The three soil samples will be submitted to a NYSDEC certified laboratory for TCL SVOC and (target analyte list) TAL Metals analysis; metals analysis has been included to obtain further information on metals

concentrations at this portion of Site 2A. Continuous field screening, utilizing a PID will be performed during sampling efforts. All sampling and field screening will be performed in accordance with NYSDEC requirements and guidance documents.

UST7/Site 2A

As stated under the discussion for UST2, HMM's initial assessment efforts revealed the potential for additional USTs to be present at the HHMT-Port Ivory Site including an area at the northeastern portion of Site 2A, which was designated as UST7. The location of the UST7 area is presented on Figure 1. A GPR/EM survey performed at UST7 identified several anomalies and subsequent soil borings installed to further evaluate the area revealed potential petroleum impacts at several locations. Based on the findings the investigation, the Port Authority reviewed subsurface conditions as part of ongoing building demolition activities. These subsurface efforts identified two USTs. The tanks were located within concrete vaults and were filled with inert material (bricks, stone and sand). Subsequently, the Port Authority removed the tanks and the surrounding concrete vaults. Indications of petroleum impacts to the surrounding soil were observed during excavation activities. As a result, the Port Authority excavated visually impacted soil immediately adjacent to the vaults. Excavated soil was stockpiled on-site pending off-site disposal at an appropriate recycling/disposal facility. The excavation measured approximately 25 feet in length, 20 feet in width, and approximately 11 feet in depth; groundwater was encountered at approximately 8 feet bgs. The USTs and all connected piping were removed and set aside for off-site recycling with the other recycled materials from the demolition activities. The excavation area was backfilled with existing site soil/crushed concrete.

Based on the above described tank removal actions, no further action was proposed with regard to UST7 in the September 2004 *Revised Site Investigation and Conceptual Remedial Action Workplan Site 2A/2B*. However, at this time, the Port Authority proposes to confirm the success of the soil removal effort through the collection and analysis of post-remedial soil samples. The post-remedial sampling effort will include the collection of six samples; two samples will be collected from the base of the previous excavation area and one sample will be collected from each former sidewall. As the excavation has been backfilled, the samples will be collecting via soil borings installed to a depth of approximately 11 feet bsg. The samples will be collected from the 6-inch interval above groundwater, assumed to be approximately 7.5 to 8.0 feet bsg. However, actual sampling selection will be based upon the results of field screening. As with all remedial efforts set forth in this correspondence, sampling will be performed in accordance with NYSDEC requirements and guidance documents and field screening will be performed utilizing a PID during sampling efforts. Soil samples will be submitted to a NYS certified laboratory for TCL VOCs, TCL SVOCs and TPHC analyses.

Former UST Areas – Buildings 20, 32 and 32A/Site 2A

As described in the September 2004 *Revised Site Investigation and Conceptual Remedial Action Workplan Site 2A/2B*, Procter & Gamble (P&G), the former site owner/operator,

utilized USTs in conjunction with process/site operations. P&G removed several USTs during the 1990s; all removal efforts are reported to have been in accordance with NYSDEC protocols and with NYSDEC oversight. However, due to the presence of structures and/or utilities limited quantities of residual impacted soil is reported to remain at the following three locations at Site 2A: East of Building 20, East of Building 32 and East of Building 32A. The general locations of the former UST areas are presented on Figure 1. A brief discussion of each prior removal effort is provided below; a full discussion of the UST removal efforts is provided in the September 2004 report.

- Building 20: P&G removed one concrete vaulted 8,000-gallon UST containing #6 oil from the area east of Building 20. The presence of stained soil was observed during the tank removal and was addressed through the removal of approximately 200 tons of impacted soil from the tank area. NYSDEC assigned case number 920-3451 to the closure/removal effort. Due to the proximity of the tank to the foundation of Building 20, some impacted soil and a portion of the containment vault were left in place.

- Building 32: P&G removed one 3,000-gallon concrete vaulted UST containing diesel fuel from the area east of Building 32. Approximately 50 tons of soil was removed from the area surrounding the UST based upon visual signs of staining. The closure was assigned case number #920-3697. The excavation was extended to the groundwater table to address impacted soil. However, remedial efforts were limited due to the proximity of underground utilities and building foundations.

- Building 32A: P&G removed two 12,500-gallon USTs east of Building 32A. One UST was utilized for the storage of #6 oil and the other was utilized to store #2 oil. P&G removed approximately 75 tons of soil from the area surrounding the USTs to address visually impacted soil. The closure was assigned case number #920-4269. The excavation was extended to the groundwater table to address visually impacted soil. However, remedial efforts were limited due to the presence of building foundations and underground utilities. All accessible impacted soil was reported to have been removed

The Port Authority has demolished Buildings 20, 32 and 32A and has re-routed or removed many of the utilities in these areas. As such, the Port Authority proposes to confirm soil quality at the formerly inaccessible locations adjacent to the USTs that were removed by P&G. Specifically, the Port Authority proposes to install and sample seven soil borings to confirm that residual impacted soil was addressed during building demolition at the areas east of Buildings 20, 32 and 32A. Two soil borings will be installed at the Building 20 and 32 areas and three soil borings will be installed at the Building 32A area. The soil borings wills be installed to depth of approximately 8 feet bsg and a representative sample will be collected from each boring. Sample selection (depth interval) will be based upon the results of field screening and, in the absence of any indications of petroleum contamination, one sample will be collected from the 6-inch interval above groundwater. Samples will be submitted to a NYS certified laboratory for TCL VOCs, TCL SVOCs and TPHC analyses. As with all remedial efforts set forth in this correspondence, sampling will be performed in accordance with NYSDEC requirements and guidance documents and field screening will be performed utilizing a PID during sampling efforts.

Southern LNAPL Areas/Site 2B

The presence of light, non-aqueous phase liquid (LNAPL) was confirmed at two locations along pipelines that trend approximately east-west through Site 2B. These pipelines, which formerly conveyed petroleum materials, are situated within an easement believed to have been owned at one time by the Tidewater Pipeline Co., Ltd. To date, the investigation conducted at the Southern LNAPL Areas consisted of implementing geophysical surveys and advancing soil borings. The geophysical surveys, including EM-61, ground penetrating radar (GPR), and line tracing methods, were used to identify the locations of the pipelines as precisely as possible. The excavation of a test pit used to expose the northernmost pipeline was the only intrusive work conducted as part of the geophysical surveys. Once the pipelines were located, fourteen soil borings were drilled adjacent to the pipelines.

The presence or absence of LNAPL and/or LNAPL-impacted soil was recorded at each soil boring location and at the test pit where the pipeline was exposed. In addition, soil samples were collected at eleven of the fourteen soil boring locations. Because the test pit was excavated as part of the geophysical survey, no soil sample was collected at this location. LNAPL and/or LNAPL-impacted soil was/were encountered only at soil borings TW-47 and TW-48 and the test pit where the pipeline was exposed.

Based on HMM's preliminary evaluation of the soil analytical data, the only analytes that were detected at concentrations greater than NYSDEC Soil Cleanup Objectives (SCO) are various metals and three polycyclic aromatic hydrocarbon (PAH) compounds: Benzo(a)anthracene, Benzo(a)pyrene, and Dibenz(a,h)anthracene. None of these compounds appear to be attributable to the presence of LNAPL. However, additional evaluation of the analytical results is being performed as part of the overall LNAPL evaluation, which includes locations on Site 3.

The field observations and analytical results from previous effort indicate that additional delineation and sampling activities are necessary to determine the extent of the LNAPL previously encountered at Site 2B and to confirm that the presence of this LNAPL has not impacted soil and/or groundwater quality. The Port Authority proposed to install and sample eleven soil borings to further evaluate/delineate LNAPL at Site 2B. The locations of the proposed soil borings are presented on Figure 1. In addition, three soil borings will be converted to temporary wells to further evaluate groundwater. As with all remedial efforts set forth in this correspondence, all sampling will be performed in accordance with NYSDEC requirements and guidance documents.

Four soil borings (TW-68 through TW-70 and the boring for temporary well TWP-13) will be installed in the vicinity of the test pit, which exposed the pipeline. Temporary well TWP-13 will be installed in the soil boring closest to the test pit. Soil borings TW-68 and TW-70 will be drilled within the pipeline bedding material, if possible. Soil boring TW-69 will be drilled as close to the southernmost pipeline, as possible.

Nine soil borings (TW-71 through TW-77 and the soil borings for temporary wells TWP-14 and TWP-15) will be drilled to delineate the LNAPL previously observed in the vicinity of TW-47 and TW-48. Two of the soil borings will be converted to temporary wells, TWP-14 and TWP-15. It is anticipated that TWP-15 will be installed approximately upgradient of the LNAPL and that TWP-14 will be installed approximately downgradient of the LNAPL. Please note that the location of soil boring TW-73 is not fixed; rather, TW-73 will be drilled to delineate the extent of LNAPL encountered at any one of the other proposed soil boring locations.

The soil sampling program will be similar to the program followed during the previous LNAPL investigation. At each soil boring location, HMM and Port Authority personnel will use field observations and PID measurements of organic vapor concentration to determine whether LNAPL and/or LNAPL-impacted soil are present. If neither LNAPL nor LNAPL-impacted soil is observed, a soil sample will be collected from the 6-inch depth interval immediately above the water table. If LNAPL or LNAPL-impacted soil is observed, two soil samples will be collected. The shallower soil sample will be collected from the most impacted depth interval as determined using PID measurements (primary criterion) or field observations (secondary criteria, to be used only if the PID measurements are suspect). The deeper sample will be collected from a depth interval believed to be clean based on PID measurements and field observations. All soil samples will be submitted to a NYS certified laboratory for TCL VOCs, TCL SVOCs, Target Analyte List (TAL) metals, and TPHC analyses.

Please note that the proposed analytical program differs slightly from that used in the previous LNAPL investigation. Specifically, the proposed analytical program includes analysis of TPHC to distinguish between petroleum-based and non-petroleum LNAPLs.

The groundwater sampling program will consist of the collection of one groundwater sample from each temporary well point using standard (i.e., removal of 3-5 well volumes) purging and sampling methodology. Following the purge and the recovery of the water level within the well, a dedicated bailer will be used to collect the groundwater sample. All groundwater samples will be submitted to a NYS certified laboratory for TCL VOCs and TCL SVOCs analyses.

At each temporary well where a significant quantity of LNAPL is encountered (i.e., where the thickness of LNAPL on the water table allows for collection of LNAPL as a phase separate from the groundwater), the LNAPL will be sampled using a dedicated bailer, peristaltic pump, or other equipment. All LNAPL samples will be analyzed for TCL VOC, TCL SVOC, fingerprinting via the PIANO method, and biomarkers such as steranes and titerpanes.

Hatch Mott MacDonald

Please note, this addendum does not identify any new AOCs at Site 1 or Site 2A/2B. Rather, this correspondence documents the implementation of the previously proposed remedial action at UST2 (Site 1) and outlines proposed actions designed to confirm the success of previous remedial actions performed at STAIN-3, UST7 and former tank areas east of Buildings 20, 32 and 32A (all located in Site 2A). The potential presence of LNAPL at Site 2B was identified in the September 2004 Report and the additional actions set forth herein represent an extension/expansion of previously proposed delineation activities. Further, the actions proposed at all areas addressed in the addendum are consistent with the remedial plan developed for the HHMT-Port Ivory Site.

If you have any questions or require further information, please contact me.

Very truly yours,

Hatch Mott MacDonald

Geoffrey K. Clark, P.G.
Project Geologist
T 973.912.2472 F 973.912.2400
geoffrey.clark@hatchmott.com

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

cc: E. Aldrich (PANYNJ)
enc.

P:\232952wmd\REMEDIAL ACTIONS\Outstanding Issues RAW - Sites 1 and 2\0324 SIW (RAW) Addendum - March 2005.Rev for Site 2B.doc

TABLE 1
SUMMARY OF PROPOSED SAMPLING AND ANALYSIS
HOWLAND HOOK MARINE TERMINAL - PORT IVORY FACILITY
SITES 1 AND 2A/2B

AOC Designation	Proposed Action	Purpose Of Proposed Action	Number of Samples					
			VOCs	SVOCs	TAL Metals	TPHC	PIANO	Biomarkers
UST2 (Site 1)	Hot-Spot Excavation/Confirmation Sampling	Remove petroleum impacted soil identified at locations UST2-1 and UST2-3 and collect five confirmation samples.	5	5	0	5	0	0
STAIN-3 (Site 2A)	Confirmation Sampling	Stained area was removed as part of the demolition of Building 20. Collect three soil samples to confirm success of soil removal during building demolition.	0	3	3	0	0	0
UST7 (Site 2A)	Confirmation Sampling	Two USTs and impacted soil were removed from this area. No confirmation sampling was performed at the time of the remedial action. Soil samples to be collected to confirm success of soil removal.	6	6	0	6	0	0
Former UST Areas - Buildings 20, 32 and 32A (Site 2A)	Confirmation Sampling	P&G removed USTs from the areas east of Buildings 20, 32 and 32A. Closure reports stated that residual impacted soil was allowed to remain in place due to the presence of structures and/or utilities. Additional soil was removed during building demolition activities. Soil samples to be collected to confirm success of soil removal during building demolition.	7	7	0	7	0	0
Southern LNAPL Areas (Site 2B)	LNAPL Delineation; Soil, Groundwater, and LNAPL Sampling	LNAPL was encountered at two locations along pipelines that formerly contained petroleum products. Soil borings will be installed to delineate the extent of the LNAPL. Soil and groundwater samples will be collected to document the impacts attributable to the LNAPL. LNAPL samples will be collected to determine the source of the LNAPL.	*Soil - 20; *Groundwater - 3; *LNAPL - 3	*Soil - 20; *Groundwater - 3; *LNAPL - 3	*Soil - 20	*Soil - 20	*LNAPL - 3	*LNAPL - 3

Notes and Abbreviations:
VOCs = Volatile Organic Compounds
SVOCs = Semivolatile Organic Compounds
TAL = Target Analyte List
TPHC = Total Petroleum Hydrocarbons
PIANO = Fingerprinting via the PIANO Method
Biomarkers = Analysis of biomarkers such as steranes and titerpanes
LNAPL = Light, Non-aqueous Phase Liquid
* = These are the maximum number of analyses. Fewer samples may be collected depending upon the presence or absence of LNAPL and/or LNAPL-impacted soil at a soil sampling location, the thickness of LNAPL within a temporary well, etc.

1) Unless otherwise noted, only soil will be sampled.