



August 5, 2010

James Candiloro, P.E.
Project Manager
NYS Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C, 11th Floor
625 Broadway
Albany, New York 12233-7014

RE: *Supplementary Investigation Work Plan
Island Dock Site
City of Kingston, Ulster County, New York
BCP Site No. C356036*

C.T. Male Associates, P.C. (C.T. Male) on behalf of Historic Kingston Waterfront, Island Dock, LLC has prepared this addendum to the work plan to address concerns raised by the New York State Department of Environmental Conservation (Department) regarding the lack of data beneath the existing concrete plant building and attached concrete pad. The proposed scope of work presented herein is intended to further supplement investigations conducted as part of the Remedial Investigation (RI) of the site. Results of RI were presented in the January 2010 Remedial Investigation Report prepared by C.T. Male, which is currently under review by the Department.

The supplementary investigation includes the advancement of six (6) test borings via direct-push methods around the former block plant on the mainland portion of the site. Two borings are proposed inside of the building and four on the concrete pad area to the south of the building where no borings or test pits have been installed. Three of the wells will be converted to monitoring wells to aid in the analysis of groundwater quality.

Proposed supplemental investigation will also include a round of water levels from all of the on-site wells after the new wells are installed. A letter report will be prepared discussing the methods and findings of the supplementary investigation and will be appended to the January 2010 Remedial Investigation Report.

Two (2) borings will be advanced within the confines of the concrete block factory building and four (4) borings will be installed through the concrete pad located east and



northeast of the building. Based on anticipated subsurface conditions, the soil borings will be advanced to approximately 15 feet below existing grades; however, actual boring depth will depend on depth to groundwater.

The following sections discuss the methodologies which will be employed during the supplementary investigation.

Test Borings

The test borings will be advanced through the overburden using direct-push drilling methods. Soil samples will be obtained by driving a 4-foot long by 2-inch diameter stainless steel macro-core sampler with acetate liner into the subsurface at four foot intervals. The pre-cleaned acetate liner is placed within the macro-core sampler to facilitate soil sampling. It is replaced for each four foot sampling interval. Soil samples will be subjectively analyzed in the field for evidence of impacts.

The recovered soils will be visually classified in the field in general accordance with the Unified Soil Classification System in general accordance with ASTM D-2488, Standard Practice for Description and Identification of Soils. The soil description may include matrix and clast descriptions, mineralogy, moisture content, color, appearance, odor, behavior of the material and any other pertinent observations. This information will be recorded on a test boring log form along with the boring identification, date started and completed, sampling intervals, length of recovered sample, and depth of first groundwater encountered.

In the event a borehole is not converted into a monitoring well, it will be abandoned by filling it with the cuttings from that borehole. Additional soil cuttings from borings converted to monitoring wells will remain on-site.

Soil Sampling and Laboratory Analysis

The soil samples will be subjectively assessed for evidence of contamination using sight and smell. A portion of the soil sample will be placed in plastic bag and analyzed for Volatile Organic Compounds (VOCs) using a photo-ionization detector (PID). The sample will be transferred from the macro-core sampler into a zip lock bag, sealed, shaken and then allowed to sit for several minutes. Once the sample has had a chance to sit or "volatilize," the vapor space inside the bag will be analyzed by inserting the tip of the PID through the bag.

The soil sample exhibiting the highest impacts based on PID screening will be submitted for laboratory analysis. If no evidence of impacts is encountered, the soil sample collected immediately above the water table shall be submitted for laboratory analysis, or, if the boring has been converted to a well, a groundwater sample may be obtained. The soil samples will be analyzed for the Target Compound List (TCL) for volatile organic compounds (VOCs) and the Target Analyte List (TAL) metals. One Quality Assurance/Quality Control (QA/QC) sample will be collected. The data will be analyzed using ASP Category B Deliverables requirements. More detail regarding QA/QC is discussed in the section of this work plan entitled *Quality Control During Sampling in the Field*.

TABLE 1
Analytical Requirements for Containers and Preservatives for Soil Sampling

PARAMETER	CONTAINER	TOP	PRESERVATION	COMMENTS
VOCs (Soil)	4 oz Glass	Teflon	Cool	NA
Metals per EPA 6010/7000 (Soil)	8 oz Glass	Poly	None	NA

Monitoring Well Installation

Up to three temporary overburden monitoring wells will be installed within the bore holes exhibiting the greatest evidence of contamination employing the previously described subjective analysis of collected soil samples.

Once the macro-core sampler is advanced to the desired depth, 1-inch diameter monitoring wells with slotted screens will be installed in accordance with standard practices. All wells will be constructed of 1-inch, flush-threaded joint, Schedule 40 PVC riser pipe, machine slotted screen, bottom plug, and cap. The screens will be 0.010-inch slotted and generally five to ten feet in length.

Each well will be assembled as it is lowered into the borehole. The annulus around the well screen will be packed with clean silica sand to a maximum of two feet above the screen, if feasible. Additionally, one-half foot of fine-grained sand will be placed on top of the sand pack to reduce the potential for surface migration into the well screen interval. Above the fine sand layer, a minimum one-foot thick bentonite seal will be installed in the annulus. The remainder of the annulus will be filled with cement/bentonite grout (ratio of 20 to 1).

No protective casing is proposed because the wells are temporary. A permanent mark will be made at the top of the PVC riser to serve as a datum for all subsequent static water level measurements. Upon completion, a PVC well cap will be fitted over the well pipe. Monitoring well depths, and screen lengths and depths will be calculated by the environmental scientist/geologist by maintaining measurements of screen and casing placed in the borehole. A Monitoring Well Construction Log form will be completed that documents the well materials and depths.

Monitoring Well Development

The monitoring wells will be developed as necessary to remove sediments (silt, clay, and fine sand) from the well screen, well bottom, sand pack, and formation and improve the hydraulic conductivity and connection to the aquifer in the vicinity of the well. The wells will be developed at least 24 hours after installation to allow the grout or bentonite seal will be set. The monitoring wells will be developed utilizing surge and purge methods. The back and forth flow created within the screened interval dislodges fine sediments in the formation, sand pack, and screen, suspending fines so they can be removed. Reasonable means will be taken to develop the wells to a turbidity of 50 NTU's or less, however, if the site soils are composed of a high percentage of silt and/or clay, a turbidity value of 50 NTU or less will not likely be achieved.

The bailing rope and polyethylene bailer will be dedicated to each well to prevent cross-contamination during development. The dedicated bailer can be utilized in the future when the wells are purged for groundwater sampling.

All of the development water from the monitoring wells will be discharged to the ground surface unless it is observed to be significantly impacted.

Groundwater Sampling Procedures

Prior to sampling, the water level in the well will be measured, and the well will be purged three to five well volumes or until dry, and allowed to recover to near static conditions. Groundwater samples will be taken for field and laboratory analyses. The field parameters to be determined are pH, temperature, turbidity and specific conductance. All pertinent groundwater sampling information will be recorded on a C.T. Male Groundwater Services Field Log. A separate log will be completed for each monitoring well sampled.

Prior to groundwater sampling, the equipment and containers needed for sampling will be collected and prepared. New factory sealed disposable polyethylene bailers or low-flow sampling equipment (i.e., peristaltic pump with dedicated Tygon tubing) will be utilized to facilitate the groundwater sampling. New disposable gloves will be worn during equipment handling, and handling of the media being sampled. Only new pre-cleaned laboratory provided sample containers and caps will be used for sample collection/analyses. All sample containers required to be fixed with a preservative, will be prepared by the laboratory before each sampling event. The container type, cap type and preservative requirements for the analytical parameters (groundwater) to be analyzed are summarized in Table 2 on the following page.

TABLE 2

Analytical Requirements for Containers and Preservatives for Water Sampling

PARAMETER	CONTAINER	TOP	PRESERVATION	COMMENTS
VOCs per EPA 8260 (Water)	3-40 ml vials (preserved)	Septum	HCl to pH<2 Cool, 4°C	NA
Metals per EPA 6010/7000 (Water)	500 ml Plastic	Poly	HNO ₃ to pH <2	NA

Sample labels will be prepared prior to sampling and affixed to the sample containers. The client, project name, site location, matrix, sample type (grab/composite), preservative and laboratory analyses to be performed will be recorded on the sample labels by the laboratory. The sample location (i.e., monitoring well ID), date, sampler's initials and time will be filled out on the sample label at the time of sampling.

Upon arrival at the sampling location, the well will be observed for any damage. Clean polyethylene sheeting will be placed adjacent to the well to protect purging and sampling equipment from contamination. The cap and top of the well casing will be wiped with a clean cloth and then the cap removed. A PID reading will be collected when the well cap is removed. The water level in the well will then be measured. The

static water heights will be measured using a water level indicator to determine the standing water column height. A full set of water levels will be collected from all wells prior to initiating the water sampling. The water column height and depth of the well are used to calculate the well water volume. Non-vented well caps will be removed for a period of ten minutes to allow the water column to reach static conditions prior to taking the water level measurements.

Groundwater Sampling Laboratory Analysis

The groundwater samples will be analyzed for the TCL VOCs.

Static Water Levels

Static water levels will be collected on two separate occasions from the existing and newly installed monitoring wells. The first round of water levels will be collected when the new monitoring wells are developed. The second round of water levels will be collected when the new monitoring wells are sampled. The collection of water levels will be used to update groundwater contour and groundwater flow direction mapping, which will be incorporated in the letter report of findings.

Monitoring Well/Test Boring Locations and Groundwater Elevations

The locations of the newly installed test borings and monitoring wells will be tied-in to existing site features to update the site's sampling locations mapping. The elevations (top of PVC and ground surface) of the newly installed monitoring wells will be obtained by conducting a level run.

Report of Findings

A letter report of findings will be completed summarizing the field methods and discussing the findings of the supplementary investigation. The letter report will be appended to the January 2010 RI Report.

Schedule

Attached is a proposed schedule for completion of the supplementary investigation. The schedule will be refined upon review and acceptance of this work plan by NYSDEC.

C.T. MALE ASSOCIATES, P.C.

*August 5, 2010
James Candiloro
Page - 7*

Should you have any question and/or require further information regarding this Supplementary Investigation Work Plan, please do not hesitate to contact the undersigned.

Respectfully,
C.T. MALE ASSOCIATES, P.C.

A handwritten signature in black ink, appearing to read "James D. McIver". The signature is fluid and cursive, with a long horizontal stroke at the end.

Jim McIver
Managing Geologist

c: Michael Ryan, NYSDEC
Kirk Moline, C.T. Male
Rob Iannucci, Clocktower Properties
Lauren Forman, Esq., Clocktower Properties
Dean Sommer, Esq.