# Air Monitoring Plan
# Area 1, Phase 1 Development

*Baltimore Works Site*
*Baltimore, Maryland*

November 2013

By:
Environmental Resources Management Inc.
Harbor Point Development LLC

For:
U.S. Environmental Protection Agency – Region III
Maryland Department of the Environment

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List of acronyms

COC – Contaminant of Concern

CSSA – Cover Soil Stockpile Area

CrVI – Hexavalent Chromium

° C – Degrees Celsius

° F – Degrees Fahrenheit

DDP – Detailed Development Plan

EPA – U.S. Environmental Protection Agency

ERS – Environmental Remediation System

HMS – Head Maintenance System

Lpm – Liters per Minute

LSC – Layered Soil Cap

$M^3$ – Cubic Meters

MDE – Maryland Department of the Environment

µg - Microgram

mg – Milligram

MMC – Multimedia Cap

NOAA – National Oceanic and Atmospheric Association

ŋg – Nanogram

NWS – National Weather Service

OAM – Offsite Air Monitor

PAM - Perimeter Air Monitoring

PVC – Polyvinyl Chloride

RAM – Real-time Aerosol Monitor

RH – Relative Humidity

SAP – Sampling and Analysis Plan

QAPP – Quality Assurance Project Plan

TSP – Total Suspended Particulate

µg – Microgram

µm - Micron

UPL – Upper Prediction Limit

WET - Rain

WZ – Work Zone

## *1.0 INTRODUCTION*

This Air Monitoring Plan ('the Plan") has been prepared for inclusion with the Detailed Development Plan (DDP) for the Harbor Point Area 1, Phase 1 Development (the "Site"). The Plan encompasses both a preconstruction air monitoring study to establish baseline air quality concentrations around the site and air monitoring during construction activities. The principal contaminant of concern (COC) is hexavalent chromium (CrVI). The approved Environmental Remediation System (ERS) is operated and maintained by Honeywell International Inc. (Honeywell) pursuant to the Consent Decree dated April 27, 1989, as amended, among Honeywell, U.S. Environmental Protection Agency (EPA) and Maryland Department of the Environment (MDE) to contain chromium contaminated groundwater and eliminate exposure to impacted soil. The ERS consists of the Multimedia Cap (MMC), Hydraulic Barrier, Head Maintenance System and Outboard Embankment.

## *1.1 PURPOSE*

The purpose of this Plan is to determine a real-time Total Particulate Matter (Total PM) action level for use during intrusive activities. To that end baseline Total PM and CrVI airborne concentrations will be established for comparison to air quality during intrusive activities to demonstrate the effectiveness of the dust control measures implemented for the protection of human health and the environment. For the purpose of this Plan, "intrusive activities" occur any time there is disturbance of the surface immediately below the synthetic layers of the existing Multimedia Cap (MMC) in Area 1. This Plan provides a description of the methods to be utilized for real-time Total PM and weather data collection, air sample collection, laboratory analytical methods, data evaluation and reporting.

This Plan will be implemented in two phases. The initial phase is pre-construction baseline air monitoring, which will be performed prior to the start of any intrusive activities on the site to establish baseline air quality conditions. Air monitoring results and data evaluation from the pre-construction baseline air monitoring effort will be used to determine the baseline Total PM and CrVI concentrations and establish a Total Particulate Matter (Total PM) action level.

The second phase is construction air monitoring, which will be conducted in accordance with this approved Plan at the initiation of intrusive activities and will continue through the completion of all intrusive

activities, restoration of the MMC and the removal from the Site of all soil and debris excavated from below the MMC synthetic layers.

The preconstruction baseline and the construction air monitoring Sampling and Analyses Plans (SAPs) and the Quality Assurance Project Plan (QAPP), being prepared for both SAPs, will be submitted for review and EPA/MDE approval under separate cover. Further discussion of the SAPs and QAPP are provided in Sections 2 and 3, respectively.

This plan is applicable specifically to the redevelopment related activities as described in the Detailed Development Plan – Area 1, Phase 1 Development and will be performed by the Developer and the Developer's representatives. This Plan is not applicable to routine operations, monitoring and maintenance work undertaken by Honeywell pursuant to the existing Consent Decree Work Plans.

## *1.2 SITE DESCRIPTION*

The Site is located on a peninsula on the northeast shore of the Patapsco River of the Inner Harbor, in the Fells Point section of Baltimore City, Maryland. The former chromium chemical manufacturing facility consisted of chromium processing production buildings and numerous support buildings on an area that covered approximately 14 acres. The Site is surrounded by water on the north, west and south, the Living Classrooms facility to the north and condominiums on South Caroline Street to the east. The Thames Street Wharf Office Building is located to the east, beyond which is the Douglas Maritime Museum at South Caroline and Thames Streets.

## *1.3 SITE USE HISTORY*

The Site has been divided into Areas 1, 2, and 3. Area 1 is the principal site of Honeywell's (formerly AlliedSignal) Baltimore Works Facility (Figure 1, Appendix B). Chromium ore was processed in Area 1 from 1845 to 1985. The former manufacturing processes resulted in chromium impacts to soil and groundwater. An Environmental Remediation System (ERS) is maintained and operated by Honeywell International Inc. (Honeywell) to contain CrVI-impacted ground water in Area 1 and control the potential for human exposure to affected soil. The ERS consists of a Multimedia cap (MMC), Hydraulic barrier, Head Maintenance System (HMS), a ground water storage and transfer system, and Outboard Embankment. The HMS maintains an inward ground water gradient to mitigate the migration of chromium-impacted ground water from the Site.

## *1.4 PLAN ORGANIZATION*

The remainder of the Plan is organized as follows:

- Sections 2 provides the core elements of the SAPs to be followed for pre-construction baseline and construction air monitoring;
- Section 3 provides the core elements of the QAPP for both SAPs;
- Sections 4 and 5 provide discussions regarding action levels and response actions;
- Section 6 provides reporting requirements; and
- Section 7 provides the air monitoring schedule.

## *2.0 PRE-CONSTRUCTION BASELINE AND CONSTRUCTION AIR MONITORING*

Prior to initiation of intrusive construction activities, a baseline air quality monitoring study will be performed. The purpose of the baseline monitoring will be to measure concentrations of total suspended particulate (TSP) matter and CrVI during a period of time (a minimum of 15 days) in the vicinity of the site to characterize pre-construction ambient air quality. In addition, real-time monitoring of Total PM concentrations will be performed concurrently using DustTrak Model 8534 monitors to test statistical correlation of real-time monitoring data with the measured TSP concentrations determined from high volume samplers in accordance with EPA Reference Methods.

The DustTrak Model 8534 is reported to monitor total dust including particles up to approximately 15 microns in diameter and uses the terminology of Total PM to describe the measurement. The Reference Method for TSP (IO-2.1) measures particles up to approximately 30 microns in diameter with the standard sampler housing design. Although not an established Reference Method, the Model 8534 has the advantage of providing real-time concentration readings during construction. Therefore, this baseline monitoring program will establish a general correlation to measured Reference Method TSP concentrations based on the real-time total PM monitored readings.

The remainder of this section summarizes the key elements of the baseline and construction air monitoring study. Detailed descriptions of all aspects of the program will be included in the Sampling and Analysis Plan (SAP) for both the baseline and construction air monitoring and Quality Assurance Project Plan (QAPP) that covers both SAPs. The Data Quality Objective (DQO) process is being employed to prepare the SAPs. These plans, including relevant Standard Operating Procedures (SOPs), will be prepared for EPA and MDE approval prior to implementation of the baseline air monitoring.

## *2.1 SAMPLING AND ANALYSIS PLAN (SAP) ELEMENTS*

### *2.1.1 Monitoring Locations*

Three monitoring locations will be established for the baseline air monitoring study. One station, Perimeter Air Monitor (PAM) will be located on the Harbor Point construction site at the eastern property boundary (PAM-1). A second station will be located at the City

Recreation Pier, Off-site Air Monitor (OAM-1) located east of the site. The third station will be located off-site at the Baltimore National Aquarium, OAM-2, located west of the site. The locations of the three monitoring sites are shown in Figure 2.

Four (4) perimeter air monitoring (PAM-1 through 4) and two (2) off-site air monitoring (OAM-1 and OAM-2) stations will be maintained for construction air monitoring (Figure 3). PAM-1, OAM-1 and OAM-2 station locations, established for the pre-construction baseline monitoring, will be operated during construction air monitoring.

Monitoring locations and equipment will be sited, to the extent possible, away from trees, buildings, roadways, or other obstacles that may cause undue influence on the measured concentrations according to 40 CFR Part 58, Appendix E. It is noted that all monitoring locations will require power, safe access, and security.

The construction site location on the site perimeter boundary (PAM-1) will serve as a collocated monitoring site with two sets of sampling equipment and real-time monitors to provide duplicate sampling/monitoring. The collocated sampling equipment will be installed between 2 and 4 meters apart. All sampler inlets will be placed approximately 1 to 2 meters above ground level to approximate the breathing zone and will have unrestricted airflow for at least 270 degrees around each sampler.

In addition to perimeter and off-site monitoring during construction, Work Zone (WZ) monitoring will be performed utilizing two (2) DustTrak™ DRX 8534 monitors; one positioned upwind and the other positioned downwind of the intrusive activity work area. These WZ stations will provide early warning should the Total PM concentration become elevated adjacent to the active work area. The WZ station monitoring data may also be used to support, but not replace, worker personnel monitoring per applicable OSHA methods.

When cover soil removed during construction is stockpiled in the Cover Soil Storage Area (CSSA) as shown on DDP Drawing EN1.01, an additional DustTrak™ DRX 8534 monitoring station will be established downwind of the CSSA. The CSSA station will continuously monitor and record the Total PM concentration at 1-minute averages operating at 2 Lpm, 24 hours per day, seven days per week until the cover soil stockpile is removed from the CSSA.

The monitoring instruments and sampling equipment will be protected from weather inside a waterproof case ("pelican" or equivalent) with an omni-directional air intake port and will be mounted on a tripod set at a

height of 1-2 meters above the ground surface (breathing zone). The data loggers will be downloaded to a personal computer via telemetry provided at each air monitoring station.

### *2.1.2 Baseline Monitoring Duration*

The baseline air monitoring study will be conducted for a period of 15 consecutive days. Should prolonged or excessive rainfall occur during the scheduled 15-day period, monitoring may be extended to establish baseline concentrations during dry weather conditions. It is anticipated that any day with 0.1 inch of precipitation or greater will be considered a "wet" day and dry conditions would not be established until at least one day after cessation of any precipitation.

### *2.1.3 Construction Monitoring Duration*

Construction air monitoring will be implemented during intrusive activities. Again, for the purpose of this Plan, "intrusive activities" occur any time there is disturbance of the surface immediately below the synthetic layers of the existing Multimedia Cap (MMC) in Area 1. Sample collection is not required on non-work days and/or rain days if soil/debris below the MMC synthetic layers is not exposed and there is no cover soil stockpile. During days that sample collection is required, perimeter and offsite air monitoring will be 24 hours in duration. Work Zone air monitoring will be for the duration of the work day and will involve only real-time monitoring using the DustTrak 8534 monitors, unless the Total PM action level is exceeded (See Section 5). CSSA sampling events will be 24 hours in duration, when required.

### *2.1.4 Monitoring Equipment and Methods*

Each monitoring location will contain TSP and CrVI sampling equipment. In addition, real-time dust monitoring for total PM will be performed at each location using the DustTrak 8534 instrument. As noted previously, one monitoring location (PAM-1) will have all equipment for collocated, duplicate sampling.

TSP sampling for laboratory analyses will be performed using Tisch Environmental Model TE5170V or equivalent volumetric flow-controlled high volume samplers in accordance with EPA Method IO-2.1 – *Sampling of Ambient Air for Total Suspended Particulate Matter (SPM) and $PM_{10}$ Using High Volume (HV) Sampler* (Compendium of Methods for the Determination of Inorganic Compounds in Ambient Air, EPA 1999). The high volume sampler pulls ambient air through an 8-inch by 10-inch glass fiber filter at a nominal rate of 40 cubic feet per minute (cfm). The

volumetric flow controller maintains a constant flow rate throughout the sampling period, accounting for increased loading on the filter. Each sample will be collected over a 24-hour period. Pre-weighed numbered filters will be placed in the samplers and the sampling flow rate verified at the initiation of sampling. At the conclusion of each sample collection period, the final sampler flow rate indicator will be recorded along with the net sampling time. TSP samples will be sent to ERM's laboratory in Ontario, California for desiccation and final weighing. Further discussion regarding equipment calibration is described below in Section 3.0.

Real-time Total PM monitoring will also be performed continuously at each monitoring location concurrent with the manual TSP Reference Method sampling. The DustTrak Model 8534, or equivalent, will monitor dust concentrations and store 1-minute averages on the internal data logger. The average DustTrak Total PM concentration determined for each 24-hour sampling period will be compared with the Reference Method (IO-2.1) TSP concentration for the same monitoring location. Linear regression analysis will be performed on the paired sets of data from all stations during the 15 day monitoring period Assuming a correlation coefficient of 95 percent or greater is achieved, a site-specific photometric calibration factor (PCF) will be developed for the DustTrak monitors, as requested by EPA, and applied to the construction monitoring as well, if different than the factory-applied PCF of 1.

A meteorological monitoring station will be sited following EPA siting guidance in EPA-454/B-08-002 *Quality Assurance Handbook for Air Pollution Measurement Systems Volume IV: Meteorological Measurements Version 2.0 (Final),* March 2008. The wind speed and direction sensors for the meteorological monitoring system will be situated approximately 10 meters above ground, on the Transfer Station Mechanical Room rooftop during the preconstruction baseline and construction air monitoring. The meteorological sensors will be calibrated on-site during installation following the guidance of EPA-454/B-08-002 and requirements specified in the QAPP. The meteorological data collected will document the daily weather conditions during air monitoring and provide empirical support to sampling decisions during construction. Meteorological data collected will be compared to National Weather Station meteorological station data reported in the Baltimore region to evaluate possible onsite and offsite differences. Short-term weather conditions will be summarized weekly including wind rose and precipitation figures and tables

CrVI concentrations will be determined in accordance with the modified California Air Resources Board (CARB) Method 039 for the Determination of Hexavalent Chromium in Ambient Air Analyzed by Ion Chromatography (IC). The details of the modification and QC will be

explained in the SAP and QAPP as applicable. Concurrently with TSP sampling following Method IO-2.1 and real-time monitoring for Total PM using the DustTrak 8534 at each location, 24-hour air samples will be collected using BGI Model PQ-100 or equivalent samplers. Sampling will be performed at approximately 10-12 Lpm for 24 hours. The samples are collected on 47 mm ashless cellulose filters (Whatman 541) that have been acid washed and screened by the laboratory and impregnated with sodium bicarbonate solution prior to deployment in the field. At the conclusion of each day's sampling, the filters will be recovered, sealed, and packed in coolers with dry ice to maintain a nominal temperature of $0^{o}$ C or less. For the baseline monitoring, it is planned that samples will be shipped under chain-of-custody twice per week back to CHESTER LabNet analytical laboratory in Tigard, Oregon. Samples will be analyzed by IC with a post-column derivatization (PCV) module and UV-Vis detection.

Since the CrVI samples are stable for over 3 weeks prior to extraction providing they are kept frozen, it is planned that samples will be shipped on Mondays and Thursdays via overnight, next day shipment to the laboratory. Sample coolers will be refreshed with dry ice as necessary to ensure a temperature of less than $0^{o}$C is maintained until receipt by the laboratory. Samples will be stored in the laboratory freezer until extraction and sample analysis immediately thereafter. Samples will be analyzed twice per week corresponding to the two batch shipments per week.

he Harbor Point construction site perimeter monitoring location PAM-1 will have collocated samplers for each method (i.e., the high volume samplers for TSP , the PQ-100 samplers for CrVI, and the DustTrak 8534 monitors for real-time monitoring of Total PM) to determine precision estimates of each method and instrumentation. In addition, CrVI results will be analyzed in comparison to both TSP measured concentrations and real-time monitoring 24-hour average Total PM concentrations to establish appropriate correlations, to the extent possible, to develop action levels for use during subsequent construction activities.

## *3.0 QUALITY ASSURANCE AND QUALITY CONTROL.*

A Quality Assurance Project Plan (QAPP) will be developed for review and approval by EPA and MDE prior to implementation of the baseline air monitoring study. The QAPP will address all aspects of the pre-construction baseline and construction monitoring programs ranging from siting the sampling equipment to sampling and analytical procedures. It is imperative that the approved QAPP and related documents be used for pre-construction baseline monitoring and for construction air monitoring. No modifications to the QAPP may be implemented without written approval from EPA/MDE.

Each air monitoring location will be sited in accordance with EPA monitor siting guidelines established in 40 CFR Part 58 to provide representative data for the area. The meteorological monitoring station will be sited and calibrated in accordance with EPA-454/B-08-002 *Quality Assurance Handbook for Air Pollution Measurement Systems Volume IV: Meteorological Measurements Version 2.0 (Final),* March 2008.

High volume samplers for TSP will be calibrated using a National Institute of Standards and Technology (NIST) certified flow orifice. Sampler flow rates will be checked daily during the monitoring program and full calibrations performed before and after the baseline monitoring study or if a daily flow check indicates that the sampler flow rate has varied by more than 5 percent from the flow rate setting. Sampler flow rates for the PQ-100 samplers will also be calibrated using an NIST-traceable BGI DeltaCal flow calibrator. Similar to the high volume samplers, sampler flow rates will be verified and recorded at the beginning and end of each sampling period, and full calibrations performed prior to and at the conclusion of the baseline monitoring study or if the daily flow rate checks indicate a greater than 5 percent discrepancy from the flow rate setting.

Field blanks will be included every 3 days for the TSP and CrVI filters yielding one blank for every 12 samples or set of samples (whichever is more frequent), including the collocated samplers. Blank CrVI filters will be sent to the field, but not exposed, and returned to the laboratories in dry ice along with the samples. As noted previously, collocated samples will be obtained from the PAM-1 location to assess the overall precision of each sampling method. Laboratory SOPs will be submitted as part of the QAPP and will include procedures and criteria for lab method blanks, spiked samples, and duplicate analyses.

## *3.1 DATA REDUCTION, VALIDATION, AND REPORTING*

Sample results will be compiled for each method by monitoring location. Statistical tests for distribution and outliers will be performed on each data set. Comparisons between monitoring locations will be evaluated based on meteorological conditions during each day, particularly wind speed and direction. Statistical correlations will be tested between the laboratory analytical method TSP results and real-time Total PM monitored concentrations, as discussed previously. Comparison between CrVI and TSP concentrations will be tested for statistically significant correlations, if possible. Statistical correlations will be performed using EPA's ProUCL v.5.0 (2013). Further discussion regarding testing for statistical correlation and the determination of baseline values is presented in Section 4.0.

## *4.0 SITE-SPECIFIC BASELINE DATA AND ACTION LEVELS FOR CONSTRUCTION*

Based upon the pre-construction baseline monitoring data, Site-specific background threshold values (BTV) and action levels for construction air monitoring will be established. Baseline data will be initially analyzed as follows:

- Each of the three individual data sets will be statistically tested for distribution and the presence of outliers. Distribution and outlier tests (including Q-Q plots) will be conducted using ProUCL v.5.0.
- Statistical correlations between data sets will be performed using ProUCL v.5.0 as follows:
    - Between the DRX 8534 real-time total PM and analytical TSP data sets to determine the Total PM action/alarm level;
    - Between the CrVI and the DRX 8534 real-time Total PM data sets;
    - Between the CrVI and the analytical TSP data sets.

A statistical comparison will also be performed for the DRX 8534 Total PM data collected as part of the baseline study, and the real-time Total PM data collected using the DRX 8534 instrumentation from the previous air monitoring study. The two DRX 8534 data sets will be combined if statistical analysis indicates there is no statistical difference between the two data sets (per ANOVA test results performed within ProUCL v. 5.0).

As ambient air concentrations vary naturally over time, depending on differences in daily sources and meteorological conditions, a BTV will be estimated that represents an upper background concentration limit of TSP and CrVI without any contribution by the project's activities. The Total PM threshold value, based on real-time monitoring, will represent the action level at which, if exceeded, response actions will be implemented as described in Section 5.0.

BTV levels will be estimated by calculating an upper prediction limit (UPL) from the baseline data set. EPA's latest technical guidance document for their ProUCL software, *ProUCL Version 5.0.00, Technical Guide* (USEPA 2013), does not recommend the use of a UPL95 when multiple samples are to be compared to a UPL95 value as multiple comparisons to a UPL95 will result in a high number of false positives

(i.e., values will exceed the UPL95, by chance alone, not due to project activities). USEPA 2013, pp. 87 states:

> *It is noted that the use of a UPL95 to compare many observations may result in a higher number of false positives; that is the use of a UPL95 to compare many observations just by chance tends to incorrectly classify observations coming from the background or comparable to background population as coming from the impacted site locations. For example, if many (e.g., 30) independent onsite comparisons (e.g., Ra-226 activity from 10 onsite locations) are made with the same UPL95, each onsite value may exceed that UPL95 with a probability of 0.05 just by chance. The overall probability, $a_{actual}$ of at least one of those 30 comparisons being significant (exceeding BTV) just by chance is given by:*
>
> > *$a_{actual} = 1-(1-a)_k = 1 - 0.95_{30} \sim 1-0.21 = 0.79$ (false positive rate).*
>
> *This means that the probability (overall false positive rate) is 0.79 (and is not equal to 0.05) that at least one of the 30 onsite locations will be considered contaminated even when they are comparable to background. The use of a UPL95 is not recommended when multiple comparisons are to be made.*

As multiple daily measurements for Total PM will be compared to the UPL during construction activities, consistent with EPA's recent guidance a UPL99 is proposed as the BTV. UPL99's will be calculated with and without outliers and the results evaluated by the entire project stakeholder team, along with the distribution and correlation data analysis described above, to select the BTV and the actual action level that will be used on site. Data analyses will be performed with and without "non-detects" as applicable per ProUCL v.5.0 software guidance. Specifically, a UPL 99 will be estimated such that there is 99% confidence that a single sample result of the background population will be less than the UPL99.

Consideration will be given as to how well the DRX 8534 data correlates with the laboratory TSP data, the distribution and variability of the data sets, and the baseline CrVI concentrations. The CrVI and TSP concentration data and real-time Total PM concentration data collected during construction will provide on-going information that may be utilized to adjust the CrVI and TSP BTVs and/or Total PM action level.

## *5.0 RESPONSE ACTIONS FOR CONSTRUCTION*

### *5.1 RESPONSE ACTIONS*

Best management practices shall be vigilantly employed to eliminate potential dust emissions associated with work activities during construction. In the event that the Work Zone or Perimeter Air Monitor real-time Total PM time-weighted average concentration utilizing the DustTrak™ DRX 8534 exceeds the established action level (audible alarm level), the following response actions shall be taken:

1. Work activities will be immediately scrutinized by the Developer's field representative to determine if an obvious work activity on the Site exists that requires corrective action to mitigate particulate emissions, and if so, corrective action will be taken;

2. If no potential dust causing work activity on the Site is observed, the DustTrak™ DRX 8534 unit display that sounded the alarm will be continuously observed for Total PM time-weighted average concentrations for 15 continuous minutes.

    a. If during these 15 minutes the real-time data suggests that the condition has improved or is improving, and the Total PM concentration remains below the alarm level, then no further action is required. The Developer's field representative will complete an "event log" entry describing the condition(s), including off-site activities, if observed, and the appropriate response(s) taken; or

    b. If after 15 minutes the real-time data suggests that the condition has not improved or is not improving, the Developer's field representative will immediately direct implementation of additional dust controls, and initiate air sampling for TSP and CrVI at work zone stations located upwind and downwind adjacent to intrusive activities.

    c. If after 60 minutes from the initial alarm, the real-time data suggests that the condition has not improved or is not improving, and the Total PM concentration remains at or above the alarm level, the Developer's field representative will **STOP** all work activities that may be potentially contributing to the elevated total particulate concentrations. The Developer's field representative will contact the MDE field representative on site. Should a MDE representative not be present, the Developer's

representative will contact the designated MDE representative by telephone and electronic mail. At this juncture the following response actions will occur:

i. Continue work zone and perimeter real-time total particulate monitoring.

ii. Continue collection of TSP and CrVI samples over 24-hour sampling period at the work zone, perimeter and off-site monitoring locations.

iii. Submit air samples for laboratory analyses, requesting a 3 business day turn-around-time for analytical results to be reported. The samples will be submitted to the laboratory by overnight delivery. The Laboratory turnaround time will be from the date of receipt of the samples by the laboratory (i.e., the next day after sample collection).

iv. Once the real-time total particulate concentration readings are below the established Total PM alarm level for 15 minutes or it is determined that the condition is not associated with construction, intrusive work and material management, intrusive activities may resume.

d. Review and compare TSP and CrVI concentration data to BTVs to determine whether the Total PM action level was exceeded and whether the TSP and CrVI baseline values require adjustment, including review and incorporation of the offsite air monitoring dataset.

e. When conditions warrant that no further action is required, the Developer's field representative will complete an "event log" entry describing the condition(s) and the appropriate response(s) taken. Laboratory analytical results will be maintained in a companion binder to the event log.

## *5.2 NOTIFICATIONS*

The results of monitoring will be posted to the project-dedicated website within 24 hours of real-time Total PM data collection or receipt of laboratory results. In this manner the public will have ready access to monitoring results. The website will also post any response actions deemed necessary based on the construction air monitoring results.

The Developer understands that MDE will have an on-site representative during construction. As such, the Developer's representative on site will keep MDE's representative apprised of the air monitoring activities and results on a daily basis. Should a MDE representative not be present, the Developer's representative will contact the designated MDE representative by telephone and electronic mail.

## *6.0 REPORTING*

The Developer's field representative is responsible for immediately reporting to the Developer and Developer's Construction Superintendent, when the established site-specific total PM action levels have been exceeded. The Developer's Construction Superintendent is responsible for implementing the Contract Documents' specified dust control measures or making modifications to those dust control measures in place to mitigate the condition.

Daily data summary tables with hourly airborne total PM concentrations for each PAM and OAM station, hourly wind speed, wind direction and daily rainfall will be prepared by the Developer's field representative. The daily data summary tables and event logs, if any, will be distributed by the Developer's field representative to the Owner, Developer, EPA and MDE and will incorporate the laboratory analytical results as available. The daily data summary tables and event logs, if any, as well as laboratory analytical results will be provided on the Project website for EPA, MDE and public access.

## *7.0 SCHEDULE OF AIR MONITORING ACTIVITIES*

### *7.1 PRE-CONSTRUCTION BASELINE AIR MONITORING*

The anticipated schedule for pre-construction baseline air monitoring activities described in this Plan is as follows. In the event that circumstances require that the schedule be modified, MDE and EPA will be notified as soon as possible:

- Submit Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) as required by the Air Monitoring Plan (Appendix B of the DDP) – November 20, 2013;

- Agency Approval of the SAP and QAPP for the Air Monitoring Plan – November 26, 2013;

- Commence Approved SAP and QAPP for the Pre-Construction Baseline Air Monitoring – December 2, 2013;

- Submit revised Air Monitoring Plan[(a)], incorporating the results of the Pre-Construction Baseline Air Monitoring – December 23, 2013.

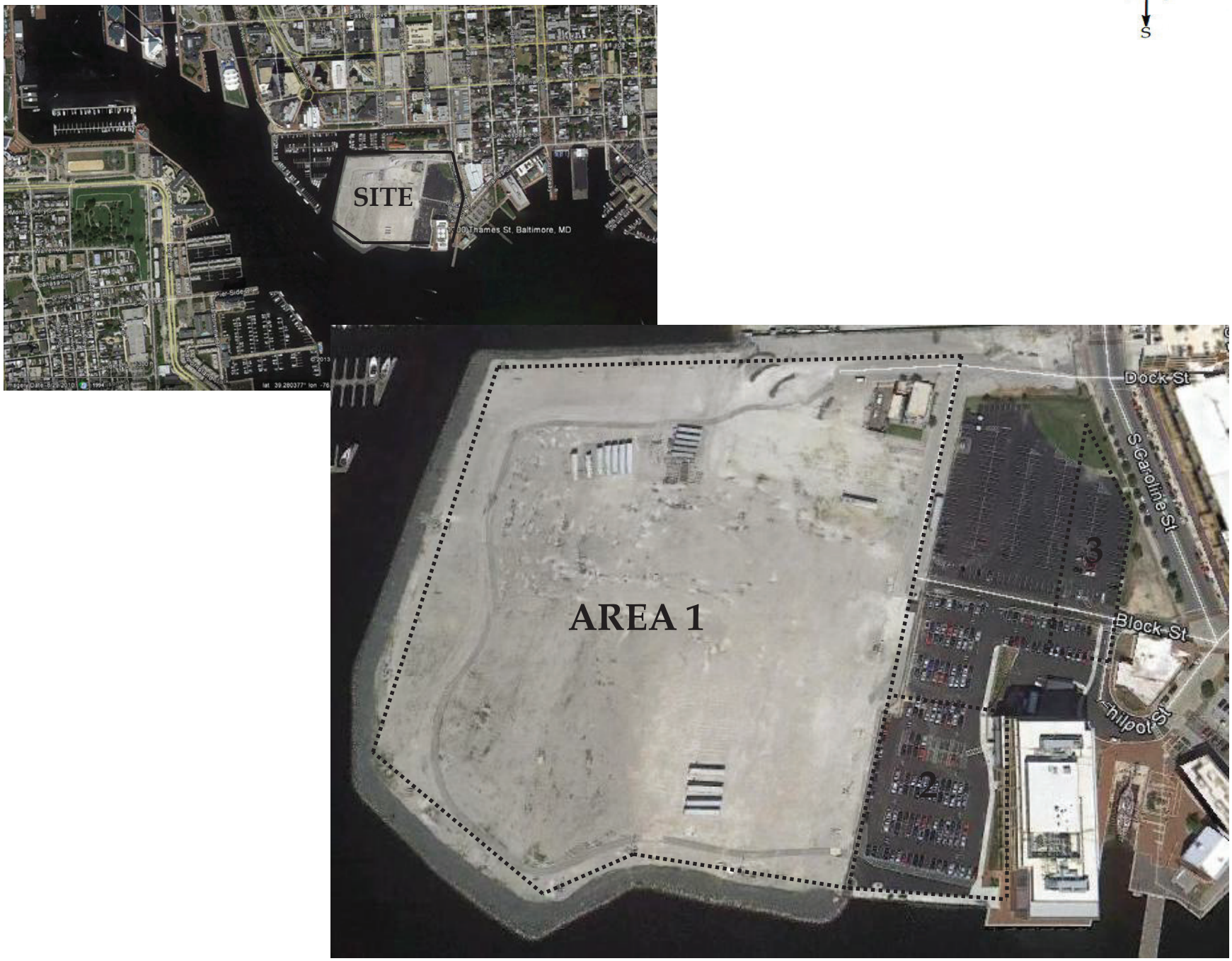
  (a) The completion date may be extended should wet weather conditions warrant continuation beyond the "minimum" 15 field days.

### *7.2 CONSTRUCTION AIR MONITORING*

Construction air monitoring will be implemented following approval of this Plan and the revisions incorporating the baseline air monitoring results. Intrusive construction activities are anticipated to begin in January 2014.

*Figures*

# Figure 1
# Site Location Map



# Figure 2
# Baseline Air Monitoring Locations
## Harbor Point
## Baltimore, Maryland


MET – Meteorological Station
PAM – Perimeter Air Monitor
OAM – Off-site Air Monitor
1 – City Recreation Pier
2 – Baltimore National Aquarium

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# Figure 3
## Construction Air Monitoring Locations
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