

APPENDIX I

CONSTRUCTION QUALITY ASSURANCE PROJECT PLAN

NINEMILE CREEK 100% DESIGN CONSTRUCTION QUALITY ASSURANCE PLAN

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ACRONYMS

ASTM	American Society for Testing and Materials
CCR	Construction Completion Report
CM	Construction Manager
CQAP	Construction Quality Assurance Plan
CQC	Construction Quality Control
FEP	Final Engineering Report
HASP	Health and Safety Plan
MQA	Manufacturing Quality Assurance
MQC	Manufacturing Quality Control
NYSDEC	New York State Department of Environmental Conservation
PM	Program Manager
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
SHSO	Site Health and Safety Officer
SWPPP	Stormwater Pollution Prevention Plan
USEPA	United States Environmental Protection Agency
WQMP	Water Quality Management Plan

SECTION 1

INTRODUCTION

1.1 PURPOSE

This Construction Quality Assurance Plan (CQAP) presents procedures and protocols to determine that the construction of the Ninemile Creek Remedial Action (RA) is executed in accordance with the approved design documents.

1.2 BACKGROUND

The Ninemile Creek 100% Design Report, completed pursuant to Consent Decree (Index # 89-CV-815), to which this CQAP is an appendix, presents a description of:

- The site and its location
- Remedial objectives and selected response action
- Remedial design elements

1.3 REPORT ORGANIZATION

This CQAP is organized into five sections and three attachments. The purpose, site background, and report organization are presented in Section 1. The definitions relative to the Quality Management System are presented in Section 2. Project management, including roles and responsibilities of the project team, chain of command, communication, and meetings is presented in Section 3. Construction oversight tasks such as inspections, Quality Assurance/Quality Control (QA/QC) testing and documentation are presented in Section 4. References are included in Section 5.

Attachment A contains Construction Quality Assurance (CQA) testing and monitoring procedures. The post-excavation CQA testing program is described in Attachment B. Example copies of construction documentation forms are provided in Attachment C.

SECTION 2

DEFINITIONS AND USE OF TERMS

2.1 DEFINITIONS RELATING TO CONSTRUCTION QUALITY ASSURANCE

Generally, construction quality assurance and construction quality control are defined as follows:

- Construction Quality Assurance (CQA) - The planned and systematic means and actions that provide the permitting agency and Honeywell International, Inc. (Honeywell) confidence that materials and/or services meet contractual and regulatory requirements and will perform satisfactorily in service.
- Construction Quality Control (CQC) – The planned system of inspections and testing taken by the Contractor to monitor and control the characteristics of an item or service in relation to contractual and regulatory requirements.

In the context of this document:

- CQA refers to means and actions employed by the Certifying Engineer to assess conformity of the remedy with the requirements of the drawings, specifications, and work plans.
- CQC refers to those actions taken by the Contractor to determine compliance of the materials and workmanship of the remedy with the requirements of the drawings, specifications, and work plans.

Generally, manufacturing quality assurance and manufacturing quality control are defined as follows:

- Manufacturing Quality Assurance (MQA) - A planned system of activities that provides assurance that materials to be used were constructed as specified in the certification documents and contract specifications. MQA includes manufacturing facility inspections, verifications, audits, and evaluation of raw materials to assess the quality of the manufactured materials. MQA refers to measures taken by the MQA organization to determine if the manufacturer is in compliance with the product certification and contract specifications for the project.
- Manufacturing Quality Control (MQC) - A planned system of inspections that is used to directly monitor and control the manufacture of a material which is factory originated. MQC is normally performed by the manufacturer of materials and is necessary to ensure minimum (or maximum) specified values in the manufactured product. MQC refers to measures taken by the manufacturer to determine compliance with the requirements for materials and workmanship as stated in certification documents and contract specifications.

2.2 REFERENCES TO STANDARDS

The CQAP references to test procedures pertain to the latest editions of the American Society for Testing and Materials (ASTM) or EPA SW-846.

2.3 UNITS

The CQAP expresses all parameters, properties and dimensions in English Units, unless specified otherwise.

SECTION 3

PROJECT MANAGEMENT

3.1 ROLES AND RESPONSIBILITIES OF THE CONSTRUCTION TEAM

Several organizations will be directly involved in the performance and review of the remedial design. Each entity plays a key role and has responsibilities necessary to execute the project. An established chain of command is essential for communication and decision making. Preliminary roles and responsibilities of the team members and agencies are described below. Key contact information is presented in Table 3.1.

3.1.1 NYSDEC

The New York State Department of Environmental Conservation (NYSDEC) is the lead agency for the site. This state agency will review and approve plans, drawings, reports, and schedules submitted for the pre-design, remedial design, and remedial action as documented in the Consent Decree. The NYSDEC will designate a Project Manager (PM) for the Ninemile Creek RA. The NYSDEC's PM shall participate in progress meetings, conduct site inspections and provide regulatory approval for components of the remedy. The NYSDEC's PM shall both conduct and participate in public meetings as necessary, and shall be the point of contact for public questions and concerns. Other agencies or government entities shall provide comments to the project team through NYSDEC.

3.1.2 USEPA

The United States Environmental Protection Agency (USEPA) is the federal regulatory agency involved with the remedial action for the site. NYSDEC will coordinate with USEPA for review of submittals of plans, drawings, and reports.

3.1.3 Honeywell

Honeywell is ultimately responsible for the design and implementation of the Ninemile Creek remedy in accordance with the Consent Decree. Honeywell's PM shall attend public meetings and specific construction meetings and review documents prior to submission to the NYSDEC.

3.1.4 Parsons Project Manager

The Parsons PM serves as Honeywell's representative. The PM is responsible for constructing the remedy in accordance with the Contract Documents and the approved Final Design. The PM will perform the functions listed below:

- Provide overall direction and management for remedial design activities
- Perform administrative and decision-making activities, as well as provide necessary authorizations within Parsons related to the project

- Facilitate remedial design coordination between Parsons and external organizations
- Communicate directly with the Construction Manager (CM), CQA Engineer and Certifying Engineer for project needs
- Review all reports in the draft version prior to their final edition
- Communicate with NYSDEC and other agencies on an ongoing basis regarding technical issues and project status

3.1.5 Construction Manager

The CM is responsible for completion of the construction work. The CM's project team will consist of, at a minimum, construction personnel and/or subcontractors, a Site Health and Safety Officer (SHSO) and a CQC Inspector.

The CM has the following specific duties:

- Communicate directly with the PM for project needs
- Implement on-site construction activities and direct the construction personnel on daily operations
- Prepare for and attend meetings as required
- Procure, contract, and monitor subcontractors and suppliers as needed
- Establish work budgets and schedules with milestones
- Submit documentation to the Certifying Engineer as required in the Contract Documents
- Monitor the financial status of the project, negotiate change orders, and submit pay applications
- Maintain construction quality and safety standards

The full-time onsite SHSO is responsible for implementation of the HASP. The SHSO has the following specific duties:

- Verify that site personnel possess the necessary training and medical surveillance
- Conduct daily safety meetings with the workers
- Establish work zones and relocating zones as necessary
- Determine personnel protective equipment requirements for specific work tasks and order any changes based on work area monitoring data
- Monitor the work for compliance with the HASP and applicable regulations, and take corrective measures as appropriate
- Implement air monitoring program and report data
- Perform routine safety inspections
- Report and investigate accidents, incidents, and near misses

The full-time on-site CQC Inspector is responsible for:

- Preparing technical submittals
- Conducting CQC testing (or working with independent testing subcontractor)
- Documenting the work (i.e., daily reports, etc.)

3.1.6 Certifying Engineer

The Certifying Engineer is responsible for providing engineering support to the PM and final certification of the remedy completion. The Certifying Engineer will be a New York State licensed Professional Engineer. The Certifying Engineer or his/her representatives will perform the functions listed below:

- Managing remedial design coordination between the technical discipline leads
- Coordinating the sealing of individual design components by the discipline leads
- Sealing cover sheets for the Final Design Report, drawings, and specifications
- Reviewing, approving, and sealing design modifications

The Certifying Engineer, or his/her representative, shall be on-site full-time during construction and be responsible for completing QA activities including the following:

- Reviewing Contractor submittals
- Conducting routine inspections and documenting the work
- Monitoring the compliance of materials
- Confirming that workmanship is in accordance with the requirements of the drawings and specifications
- Completion of on-site and off-site QA testing and documentation of materials as required
- Preparing and sealing the final Construction Certification Report for submission to NYSDEC.

The Certifying Engineer will review the CQC procedures and documentation as provided by the CM. In addition to the QA testing described in the design documents, additional QA testing may be required by the Certifying Engineer and/or Honeywell. Daily reporting by the Certifying Engineer will include a daily summary report, field logs, photographic documentation and if necessary, reports of problem identification and corrective measures taken.

3.1.6.1 Soils CQA Laboratory

The soils CQA laboratory is the party retained by the Certifying Engineer and is responsible for conducting geotechnical laboratory tests in accordance with standards referenced in the Design Specifications. The Certifying Engineer will verify that CQA laboratory test results comply with the requirements of the Design Specifications and previously approved submittals. The Soils CQA laboratory shall not be the same independent testing lab used by the CQC

Inspector for QC testing, as defined in the Design Specifications, or otherwise required by the Contractor.

3.2 CHAIN OF COMMAND AND COMMUNICATION

A Storm Water Pollution Prevention Plan (SWPPP) and Water Quality Management Plan (WQMP) will be prepared by the Contractor. Construction cannot commence until these Plans are approved by the NYSDEC. Once approved and the work starts, Honeywell ultimately controls the work in terms of the Contractor, the project schedule, sequencing and means and methods on the condition that the work is conducted in accordance with the approved design.

The chain of command onsite starts with the PM. Issues or concerns from NYSDEC regarding the construction will be channeled through the PM. During construction, the PM will be in direct communication with the NYSDEC and Honeywell's PM. In order to minimize confusion and miscommunication, NYSDEC, other agencies and the media will not communicate directly with the CM or subcontractors. The PM may delegate communication with NYSDEC for issues regarding the design to the Certifying Engineer.

NYSDEC, Honeywell, the PM, or any other project personnel may immediately stop work if a condition is observed that threatens the safety of the public and/or personnel. However, if the work is being conducted safely and in accordance with the approved final design and contract documents, only the PM and Honeywell have the authority to stop work. NYSDEC or other agencies can communicate directly with the PM regarding a specific issue. If it is agreed by the agencies and the PM that work must be stopped to rectify the issue, the PM is to communicate directly with the CM.

Modifications to the Final Design, if required, must not be made without written approval of the Certifying Engineer. The Certifying Engineer will document the design modification correspondence.

3.3 MEETINGS

3.3.1 Construction Kick-off Meeting

Following approval of the Final Design, the PM is to conduct a construction kickoff meeting scheduled for the Project Team. Meeting attendees shall include representatives from NYSDEC, Honeywell, the Certifying Engineer, and the CM. At a minimum, the meeting agenda shall include the planned construction activities, construction means and methods, site safety, roles and responsibilities, and a site walk.

3.3.2 Progress Meeting

The PM is to conduct progress meetings on a weekly basis to discuss the prior week's completed work and the next week's anticipated work. The NYSDEC representative, the PM, the CM, and the Certifying Engineer will participate, at a minimum. The agency's issues will be raised and addressed during the meeting. One weekly meeting will be substituted by a monthly meeting for which a larger audience of Honeywell and agency personnel will be invited to participate. A brief project summary will be provided at the monthly meeting.

3.3.3 Construction Wrap-up Meeting

Following substantial completion of the remedy, the project team shall conduct a wrap-up meeting to discuss the final punch list, site operation, maintenance, monitoring and project completion issues. The Construction Certification Report punch list also will be addressed at this meeting.

TABLE 3.1**KEY CONTACT INFORMATION****NEW YORK STATE DEC**State Project Manager

Mr. Timothy Larson
NYS Dept. of Environmental Conservation
625 Broadway
Albany, NY 12233-7015
Phone: (518) 402-9789
Fax: (518) 402-9773

U.S. ENVIRONMENTAL PROTECTION AGENCYRemedial Project Manager

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HONEYWELL, INC.Honeywell Project Manager

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SECTION 4

CONSTRUCTION OVERSIGHT

4.1 INSPECTIONS

Members of the project team will regularly inspect the site for compliance with the Remedial Design. The Project Engineer or representative will conduct inspections of work areas on a daily basis. NYSDEC and the other agencies may conduct inspections during any work hour period. Inspections by the Certifying Engineer and regulatory agencies are intended to augment and not replace the Contractor's inspections required by the Contract Documents and good practice.

4.1.1 Routine Work Inspections

The Certifying Engineer will conduct routine inspections of specific work elements and the overall site condition, including:

- Construction water drainage system
- Stormwater drainage system
- Soil erosion and sediment control measures
- Excavations
- Structural soil layer construction
- Finished grading and topsoil layer construction
- Stream bank stabilization measures
- Wetland restoration
- Geotextile installation
- Survey markings
- LCP OU-1 Containment Area

4.1.2 Pre-Final and Final Inspections

Following notification by the CM of substantial completion, the PM, the Certifying Engineer, and the NYSDEC will conduct a pre-final inspection of the site. A final written work punchlist will be prepared by the PM and the NYSDEC for submittal to the CM. The final punch list will enable the CM to understand the project completion expectations and schedule work activities, including demobilization. Once punch list items have been addressed by the CM and approved by the PM in writing, the NYSDEC will conduct a final inspection. Upon written NYSDEC approval, the remedy will be considered completed and the Contractor will demobilize from the site.

4.2 CONSTRUCTION QUALITY CONTROL AND ASSURANCE TESTING

CQA/QC testing is part of assessing whether construction is completed in accordance with the Final Design. CQC testing will be performed by the Contractor's Inspector. Requirements of CQC testing are detailed in the Technical Specifications. CQA testing will be performed by the Certifying Engineer. Details of CQA testing and monitoring are presented in Attachment A.

4.3 TECHNICAL SUBMITTAL REVIEW

The CM is required to prepare a schedule of submittals and meet the submittal requirements as stated in the Design Specifications. Construction submittals will be reviewed by the Certifying Engineer. Submittals required by the Consent Decree will be reviewed by the agencies.

4.4 DOCUMENTATION

4.4.1 Field Log Book

The Certifying Engineer, CQC Inspector, and CM will maintain daily field log books for the project. Construction activities will be documented with the following details at a minimum: dates, times, weather conditions, personnel on-site, equipment used, materials used, visitors, health and safety issues, work activities completed, delays, and other construction related issues.

4.4.2 Daily and Weekly Reports

The CM will prepare a Daily Activity Report that summarizes construction activities from the field book. Required information for the Daily Activity Report is detailed in the specifications. The report will also include site photos and sketches of work completed as necessary. The Daily Activity Reports will be prepared and submitted to the Certifying Engineer on a regular basis. Refer to Attachment B for an example of the Daily Activity Report.

The CM will also prepare a weekly report which will document the various aspects of the work. This will include, but not be limited to: construction activities, safety issues, CQC requirements, deviations, schedule, budget, and other topics related to the weekly construction activities.

The CQC Inspector will prepare a daily CQC report summarizing the CQC activities. The report will be submitted to the Certifying Engineer on a daily basis.

The Certifying Engineer will also prepare a daily CQA report. CQA/QC issues will be addressed at the weekly site meeting between the CM, the Certifying Engineer, and the PM.

4.4.3 Photographic Documentation

The Certifying Engineer will be responsible for obtaining photographic documentation of the construction activities, materials installation methods, and testing procedures. Photographs will serve as a pictorial record of work progress, problems, and corrective measures. Photographic reporting data sheets should be used to organize and document photographs taken during construction. Such data sheets shall be cross-referenced or appended to summary reports,

CQA monitoring logs, test data sheets, and/or problem identification and corrective measures reports.

4.4.4 Monthly Progress Report

The CM will prepare a monthly status report and submit it to the Certifying Engineer. Information to be included in the monthly status report is detailed in the specifications of the design.

Per the Consent Decree, Honeywell will prepare and submit a monthly progress report to the NYSDEC. The Monthly Progress Report will summarize work activities and other issues pertinent to the construction completion. The PM will assist Honeywell to fulfill this requirement.

4.4.5 Field Change Form

Changes to the approved Final Design require approval by the Certifying Engineer, and if deemed significant, by Honeywell and the NYSDEC. Material substitutions (i.e., “or equals”) are not considered a field change and will be approved, if appropriate, by the Certifying Engineer as part of the technical submittal review process.

4.4.6 Survey

The Certifying Engineer will monitor the post-excavation and post-backfilling topographic and bathymetric surveys during their performance in a manner so that they can be certified by a Professional Engineer or Licensed Land Surveyor. The purpose of the surveys is to document that the excavation and backfilled surfaces are within the tolerances of the design elevations as shown in the Drawings and Specifications.

To the extent practicable, following removals and prior to backfilling an area, approval of the excavation by the Engineer and NYSDEC will be documented. In areas where post-excavation sampling is performed (See CQAP Attachment B), the data will be attached. There may be times when backfilling prior to documenting NYSDEC approval has merit (e.g., placing base layer material to minimize the potential for migration of residuals; placing habitat erosion protection material or completing a portion of work prior to a storm event or other unfavorable condition). If an area is backfilled prior to documenting NYSDEC approval, and the excavation does not substantially meet project requirements, NYSDEC may require corrective actions as appropriate.

4.4.7 Construction Completion Report

Per the Consent Decree, and as described in the Remedial Design Work Plan (Parsons, 2011), a Construction Completion Report (CCR) will be prepared and submitted to NYSDEC 90 days after NYSDEC determines in writing that the remedial construction for the site, or any approved module thereof, is complete. The CCR(s) shall be prepared pursuant to DER-10 Section 5.8(b), and to the extent that it does not conflict with DER-10, the Recommended Remedial Action Report Contents in Exhibit 2-5 in the Close-out Procedures for National Priorities List sites (OSWER 9320.2-22). As described in the Remedial Design Work Plan

(Parsons, 2011), it is anticipated that the CCR(s) will be incorporated into a Final Engineering Report (FER) prepared pursuant to DER-10 Section 5.8(b) when the entire Geddes Brook/Ninemile Creek remedy is complete.

SECTION 5

REFERENCES

Parsons, 2011. *Geddes Brook / Ninemile Creek OU-1 and OU-2 Remedial Design Work Plan*
Prepared for Honeywell Inc. by Parsons, August 2011

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ATTACHMENT A

**CONSTRUCTION QUALITY ASSURANCE (CQA) TESTING
AND MONITORING PROCEDURES**

ATTACHMENT A

CONSTRUCTION QUALITY ASSURANCE (CQA) TESTING AND MONITORING PROCEDURES

1.0 INTRODUCTION

Construction Quality Assurance (CQA) testing and monitoring will be performed during construction of the Ninemile Creek remedy. Criteria to be used for determination of acceptability of the various work components are identified in the specifications and this CQAP. CQA testing will consist of conformance testing and performance testing. Testing may also be performed as duplicates of Construction Quality Control (CQC) tests, or at independently selected locations, or as additional samples at the Certifying Engineer's discretion.

2.0 SOIL COMPONENTS

CQA personnel will conduct conformance and performance testing. Material components include those provided to establish excavation extents, subgrades, topsoil, and soil cover. CQA personnel shall test soil materials in accordance with the tests methods shown in Table A-1 (for conformance testing) as directed by the Certifying Engineer to assess conformance with the Specifications and CQAP. The CQA personnel will also monitor excavation, placement, and consolidation of the both soil materials and waste materials to assess compliance with the Specifications.

3.0 CONFORMANCE TESTING

The following conformance testing shall be performed by CQA personnel, to establish construction in accordance with the requirements of the Drawings, Specifications, and CQAP:

- Post-excavation testing (total mercury) to document post-excavation conditions as described in Attachment B
- Testing of either *in situ* material or excavated material for material properties, in order to establish possibility of re-use
- Duplicate analytical or material property testing of CQC tests on imported borrow material at the discretion of Certifying Engineer

The frequency of sampling for material properties (e.g., grain-size) of either *in situ* material or excavated material in order to establish possibility of re-use will be conducted at the following frequency:

- 1 sample per 2,500 yd³ or part thereof, to a total of 10 samples per material
- 1 sample per 5,000 yd³ thereafter for additional material

Conformance tests will be performed in accordance with the current ASTM or other applicable test procedures indicated in Table A-1. The frequency of testing may be increased at the discretion of the Certifying Engineer or if variability of the materials is observed. The test

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reporting will indicate if a test is a duplicate of a CQC test or is performed on an independently selected sample.

4.0 CONSTRUCTION MONITORING

During construction, CQA personnel will visually observe and document the Contractor's earthwork activities for the following:

- Excavations and subsurface installations do not contain unsuitable materials and that surfaces are roughened prior to backfilling
- Fill materials have not undergone excessive particle segregation, prior to backfilling
- Action of compaction and other equipment on the construction surface
- Moisture distribution, clod size, etc.
- Habitat subgrade fills are not over-compacted
- Thickness of lifts as loosely placed and as compacted
- Number of passes used to compact each lift
- Final lift or layer thickness

As part of the CQC program, compliance with the plant, structure, and bank stabilization design and specifications as detailed in the 100% Design will be verified by inspection of vendor certificates, data sheets, and/or visual inspection upon delivery. Installation of plants, structures, and bank stabilization features (e.g., live crib wall, root wads, and soil wraps) as per the design will be verified during oversight and routine on-site inspection by the contractor and Engineer. As part of the CQA program, periodic inspections of the plant delivery and installation will be performed to verify that the appropriate species have been placed within the correct location and properly installed.

5.0 DEFICIENCIES

If a defect is discovered during construction, the Certifying Engineer will determine the extent and nature of the defect. The failing area will be reworked by the Contractor. Retests will be performed by the CQA personnel to verify that the deficiency has been corrected before additional work is performed by the Contractor in the area of the deficiency.

TABLE A-1**Post -Excavation (Total Mercury)**

Test Method	Specification Section 02219
EPA SW-846 7471B	Mercury Testing

Re-Use of Excavated Material (Material Properties)

Test Method	New Alignment clean soil
	Specification Section 02200
ASTM D422	Particle Size Analysis
ASTM D2974	Organic Content

TABLE A-1 (CONTINUED)

Imported Materials (Material Properties and Analytical ⁽¹⁾ as duplicates of CQC testing if required)					
Test Method	Common Fills	Structural	Channel Habitat/Erosion Protection Material	Chemical Isolation Material	Topsoil
	Specification Section 02200	Specification Section 02200	Specification Section 02200	Specification Section 02200	Specification Section 02990
ASTM D422	Particle Size Analysis	Particle Size Analysis	Particle Size Analysis	Particle Size Analysis	Particle Size Analysis
ASTM D2974					Organic Content
ASTM D4972					Soil pH
ASTM C33					

Imported Materials (Material Properties and Analytical ⁽¹⁾ as duplicates of CQC testing if required)					
Test Method	Rip Rap	Habitat Subgrade Material	Base Layer	Mixing Layer	Rounded Stone
	Specification Section 02275	Specification Section 02200	Specification Section 02200	Specification Section 02200	Specification Section 02275
ASTM D422	Particle Size Analysis	Particle Size Analysis	Particle Size Analysis	Particle Size Analysis	Particle Size Analysis
ASTM D2974	-	Organic Content			-
ASTM D4972	-	Soil pH	-	-	-
ASTM C33		-	-	-	Material Specification

Notes: (1) See Specification 02200, Section 1.5 for application of NYSDEC Part 375 Unrestricted Use Soil Clean-up Objectives

ATTACHMENT B

POST-REMOVAL SAMPLING PROGRAM

ATTACHMENT B**POST-REMOVAL SAMPLING PROGRAM****B.1 AREA SPECIFIC REQUIREMENTS**

Area-specific requirements for post-removal sampling in Ninemile Creek Reach CD are described below and are shown on [Figure B-1](#). The post-removal sampling approach for Reaches AB and BC will be addressed in an addendum.

Floodplain North of Channel: The ROD does not require remedial removals in the floodplain north of the Ninemile Creek channel. The line and grade removals that are shown on the drawings are being conducted to prepare the area for restoration (e.g., phragmite removal). As such, post-excavation sampling will not be conducted in the floodplain north of the Ninemile Creek channel.

State Fair Landfill: The floodplain south of the Ninemile Creek channel is bordered by the State Fair Landfill. The ROD does not require remedial removals of State Fair Landfill materials. As such, post-excavation sampling will not be conducted on the banks of the State Fair Landfill.

Islands: The large island and two small islands were not characterized during pre-design investigations; post-excavation sampling is warranted to confirm the adequacy of removals. Post-excavation sampling following a 2-ft. removal will be conducted as described in Section B.2.

Floodplain South of Small Islands: Soils in the floodplain south of the small islands in the area shown on Drawing C-020 will be considered for on-site re-use following an initial 2-ft. removal; post-excavation sampling is warranted to confirm the adequacy of removals and to assess the suitability of material for re-use. Post-excavation sampling following the 2-ft. removal will be conducted as described in Section B.2. (The small portion of the floodplain between the re-use line and the channel boundary is part of the hot spot removal area as presented in the Record of Decision (See Appendix F, Figures F-02A and F-03a) and is shown on Figure B-1 as channel removal, as described below).

Channel: The channel was comprehensively characterized by a series of pre-design investigations that examined the concentration of mercury and other CPOIs in sediment. As a result, the horizontal and vertical extent of contamination is well known. The pre-design investigation further indicated that mercury in sediment is generally not soluble. Based on the pre-design investigation and consistent with the ROD, the remedy for the channel consists of the following:

- Dredging to the lines and grades shown on the Drawings in Appendix C
- Placement of a minimum 1-ft. thick base layer
- Placement of clean fill as required to make subgrade⁽¹⁾. Thickness of clean fill ranges as follows:
 - Upstream of large island: 0-3 ft.
 - Large island area, south channel: 1-11 ft.
 - Small island area, south channel, including immediately adjoining floodplain: 0-9 ft.
- Placement of a minimum 2-ft. thick habitat layer. In areas to be restored as channel, this layer will consist of habitat/erosion protection material from a glacio-fluvial source that will provide improved habitat and stability to resist erosive forces associated with a 100-yr. return period flow. In areas to be restored as wetland, the habitat layer will consist of topsoil overlying suitable substrate.

The application of these materials results in the following range of total clean fill thicknesses:

- Upstream of large island: 3-6 ft., typically 4 to 5 ft.
- Large island area, south channel: 4-14 ft., typically 7 to 9 ft.
- Small island area, south channel: 3-12 ft., typically 4 to 8 ft.

In addition to the above, over-placement allowances averaging 0.5 to 0.75 ft. are also anticipated, as described in Appendix G, providing the potential for additional cover thickness.

Based on the overall mass removal provided by the planned dredging, the insolubility of the mercury associated with Reach CD sediment⁽²⁾, the presence of a base layer, and the overall thickness of cover, the remedy is protective taking into consideration not only the anticipated post-remediation residual mercury concentrations, but also the observed range of pre-remediation mercury concentrations if they were not removed but were physically covered as described above. Moreover, the ROD does not identify specific post-removal target concentrations for mercury and other CPOIs at the face of the excavation. Based on these factors, post-dredging sampling will not be conducted in the channel. Following confirmation that removals have been conducted to the lines and grades shown on the drawings, and consistent with the Water Quality Management Plan (Parsons, 2011), the base layer and other backfill materials will be placed soon after sediment removals to mitigate the potential for current-induced transport of dredge residual materials.

B.2 POST-REMOVAL SAMPLING PLAN

The following post-removal sampling will be conducted on the islands and on the floodplain south of the small islands:

- For areas to be sampled, a 2,500 square foot area grid will be marked with stakes. In areas adjacent to channels, the edge of the sampling grid will extend down to the median water level. One sample will be collected for each area. Each sample will be a composite sample consisting of five grab samples to a depth of 6 inches within the grid area. The composite samples will be collected by placing the five grab samples into a sealable bag and homogenizing before being loaded into containers provided by the analytical laboratory.
- The samples will be stored and shipped on ice following chain-of-custody procedures to the analytical laboratory. Each sample will be analyzed for total mercury at the laboratory using USEPA method SW846 7471A.⁽³⁾ Matrix Spike/Matix Spike Duplicate (MS/MSD) analytical chemistry sampling shall be conducted at a frequency of one per 20 samples.
- Post-removal sampling results will be compared to the range of left-behind concentrations shown on Figure F-3 (See Appendix F of Final Design Report). Concentrations falling within that range (i.e., non-detect to 1.7 mg/kg) will not require further removals and/or will be suitable for re-use, providing the material is placed at least 2 ft. below finished grade. Concentrations above that range may or may not require additional removals, and may or may not be suitable for re-use, to be determined in consultation with NYSDEC, taking into consideration overall depth of cover and other relevant factors.

Notes

1. The clean fill may consist of common fill, additional base layer material, or additional habitat/erosion protection layer material.
2. The pre-design investigation indicated that mercury in sediment is generally not present in porewater (i.e., the mercury is not soluble) and is adsorbed to the sediment particles. Therefore, physical immobilization of the sediment particles is sufficient to immobilize the mercury in sediment and porewater is not a potential migration or recontamination pathway.
3. The ROD indicates that mercury is the best measure of the extent of contamination released from the Honeywell LCP Bridge Street subsite (see page 62). Evaluation of the pre- and post-ROD data on Tables F-4 and F-5 in Appendix F of the Remedial Design Report indicates that mercury is co-located with other CPOIs; post-removal analyses for other CPOIs will not be required.



NOTES:

ISLANDS

FLOODPLAIN NORTH OF CHANNEL

FLOODPLAIN SOUTH OF SMALL ISLANDS

CHANNEL

STATE FAIR LANDELL

PROPERTY OF
HONEYWELL INTERNATIONAL, INC.
NY PROPERTY
PEOPLE OF THE STATE OF NEW YORK

PROPERTY OF
SUCCESSORS OF HEIRS OF
LAURA GEDDES SMITH

LEGEND:

-  EXCAVATION LIMITS
-  EXCAVATION MAJOR CONTOUR
-  EXCAVATION MINOR CONTOUR
-  POST-REMOVAL SAMPLING AREA

PRELIMINARY

NOT FOR
CONSTRUCTION

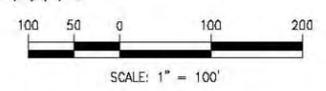


FIGURE B-1

Honeywell NINEMILE CREEK
SOLVAY, NEW YORK

POST-REMEDIATION SAMPLING AREAS
NINEMILE CREEK
REACH CD

PARSONS
301 PLAINFIELD ROAD, SUITE 300, SPRINGHOUSE, NY 12152, PHONE: 518-461-0060

FILE NAME: P:\DATA\PROJECTS\NINEMILE CREEK\CD\CD\Figure B-1.dwg
 PLOT DATE: 7/11/2018 4:08 PM PLOTTED BY: RMB/STL/MBW

ATTACHMENT C

EXAMPLE REPORTING DOCUMENTATION

Property Consultants

1214 JFK Blvd.
Suite 850
Philadelphia, PA 19000

Phone: 215-555-2091

DAILY REPORT

No. 00007

COMPANY: ACME General Contractors

DATE: 8/16/2008

REPORT PERIOD: Daily

DAY: Monday

PROJECT: School Addition-Automotive Center

JOB: JBAA450

WEATHER:

CONDITION DURATION: More than 50% of workday

PERIOD 1:		PERIOD 2:		PERIOD 3:	
DURATION:		DURATION:		DURATION:	
TEMP:	77	TEMP:		TEMP:	
PRECIPITATION:	Drizzle	PRECIPITATION:		PRECIPITATION:	
SKY:	Clear	SKY:		SKY:	
WIND:	None	WIND:		WIND:	
TIME PERIOD:		TIME PERIOD:		TIME PERIOD:	
IMPACT:		IMPACT:		IMPACT:	

ACTIVITY

COMPANY: ACME General Contractors

DATE: 8/16/2008

REPORT PERIOD: Daily

DAY: Monday

PROJECT: School Addition-Automotive Center

JOB: JBAA450

TEMPERATURE:77

PRECIPITATION:Drizzle

SKY:Clear

WIND:None

ACTIVITY

Standard Paving continued mass excavation with 3/4 CY track mounted back-hoe and a smaller track hoe with mounted bucket.

SCHEDULE

Activity ID	Title	ES	A	EF	A	PCT	OD	RD	TF	FF
DM00300000	Sitework	8/11/2008	<input checked="" type="checkbox"/>	9/12/2008	<input type="checkbox"/>	15.00	20	17	-9	0
DM00500000	Footing Excavation	8/11/2008	<input checked="" type="checkbox"/>	9/12/2008	<input type="checkbox"/>	15.00	20	17	-9	0

EQUIPMENT

Description	Source	Units	Type	Work Area	Remarks
D6 Bulldozer	STDPAV	1	Caterpillar	ALL	
PC200 Hoe	STDPAV	1	3/4 CY Hoe	B	

FIELD FORCE LABOR

Category	Source	Supv.	Frmn.	Jrny.	Appr.	Work Area	Remarks
Site Prep	STDPAV	1	2	1	4	B	
Totals:		1	2	1	4		

MATERIALS DELIVERED

Time	Material Name	Quantity	Location	Ticket No	Description	Remarks
	24PIPE	15.000		12435		

Property Consultants

1214 JFK Blvd.
Suite 850
Philadelphia, PA 19000

Phone: 215-555-2091

MEETING AGENDA

No. 00007

PROJECT TITLE: School Addition-Automotive Center

MEETING DATE: 8/16/2008

LOCATION: District Building

SUBJECT: Progress Meeting

DID ATTEND	INITIALS	ATTENDEE NAME	COMPANY NAME
N	CJ	Charlie Jones	ACME General Contractors
Y	CA	Chris Atkinson	Design Group
Y	DB	Dave Barron	ACE Mason Contractors
Y	DN	Don Newman	CPM Consultants
Y	ET	Eric Thompson	Electrical Contractors
Y	SJ	Steve Johnson	ACME General Contractors
Y	TM	Terry Mills	Mechanical Contractors

ITEM	DESCRIPTION	STATUS	STARTED	CLOSED	DUE	BIC
00007	Briefly discussed possibility of the need to relocate the underground utilities adjacent to existing building. Actual locations will be determined during excavation and resolved with General Contractor at that time. Excavation began. Working on problem	CLO	7/29/2008		8/24/2008	ACMEGC SJ
A0007	Acme needs submittals for tile before glazed tile can be selected ** Submitted	OPN	8/16/2008		7/25/2008	DESIGN CA
A0010	Acme needs to coordinate construction meeting for 7/7/00	CLO			8/16/2008	ACMEGC SJ
B0001	If you did not receive project schedule, contact Steve Johnson	NEW				ACMEGC SJ
B0002	Masonry work is scheduled to start on 8/11/00	NEW				
B0003	Plumbing drawings need to be forwarded to contractor for approval	NEW			8/23/2008	ACMEGC SJ
B0004	Structural steel drawings must be returned by July 9th.	NEW			8/18/2008	DESIGN CA

PROJECT TITLE: School Addition-Automotive Center

MEETING DATE: 5/25/2008

LOCATION: District Building

SUBJECT: School Addition

DID ATTEND	INITIALS	ATTENDEE NAME	COMPANY NAME
Y	CJ	Charlie Jones	ACME General Contractors
Y	CA	Chris Atkinson	Design Group
Y	MS	Michael Stull	City of Philadelphia
Y	SJ	Steve Johnson	ACME General Contractors

ITEM	STATUS	STARTED	DUE	CLOSED	BALL IN COURT
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00001	CLO	5/3/2008	6/12/2008	5/25/2008	DESIGN CA
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The bays should be 25' wide with a wall and door separating the Body Shop. The Frame Area will be located at the north side of this shop

Drawings will be supplied by 4/15/00

00002	OPN		11/8/2008		DESIGN CA
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4 observation windows approximately 3' wide X 2'6" high are required. 1 in Detail Area, 2 in AutoBay, 1 in Body Shop

00007	CLO		8/24/2008		ACMEGC SJ
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Briefly discussed possibility of the need to relocate the underground utilities adjacent to existing building. Actual locations will be determined during excavation and resolved with General Contractor at that time.

00008	OPN		7/9/2008		PHILASCH MS
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A Construction sign will be furnished by Philadelphia County

00010	CLO				DESIGN CA
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Accoustical tile ceilings in all corridors

00011	CLO				DESIGN CA
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Carpet areas will not have rubber base, it will be glazed facing tile

00014	CLO		7/9/2008	5/11/2008	ACMEGC SJ
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Acme will investigate the oil waste management disposal system

00015	NEW		11/8/2008		ACMEGC SJ
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Fire extinguishers and cabinets will be furnished by contractor

00016	APP		11/8/2008	5/25/2008	ACMEGC SJ
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Telephone is needed in Truck Bay, Auto Bay and Body Shop

REQUEST FOR INFORMATION

Project:	Date: mm/dd/yy
From: Vendor Name Address Phone Contact	RFI No.
To:	Ref:
Subject:	

Est. Work Impacted:	
Est. Schedule Impact:	
Est. Cost Impact:	
Request Response By:	

Drawing Reference:	
Specification Reference:	

REQUEST:

PROPOSED SOLUTION:

ANSWER:

Signed:	Date:
Printed:	