

Honeywell  
301 Plainfield Road  
Suite 330  
Syracuse, NY 13212  
315-552-9700  
315-552-9780 Fax

July 13, 2015

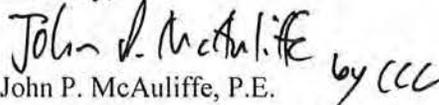
To: Diane Carlton, NYSDEC, Region 7 (1 PDF)  
Holly Sammon, Onondaga County Public Library (1 bound)  
Samuel Sage, Atlantic States Legal Foundation (1 bound)  
Joseph J. Heath, Esq., (cover letter only)

Re: Letter of Transmittal – Upper Harbor Brook IRM Repository Addition

The documents below have been approved by the New York State Department of Environmental Conservation (NYSDEC) and are enclosed for your document holdings:

- Upper Harbor Brook IRM – Operation & Maintenance (O&M) Plan dated May 2015

Sincerely,

  
John P. McAuliffe, P.E. *by CCC*  
Program Director, Syracuse

Enc.

cc: Tracy Smith – ec  
Chris Fitch - ec

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau D  
625 Broadway, 12th Floor, Albany, NY 12233-7013  
P: (518) 402-9676 | F: (518) 402-9773  
www.dec.ny.gov

July 7, 2015

Mr. John P. McAuliffe, P.E.  
Honeywell International, Inc.  
301 Plainfield Road  
Suite 330  
Syracuse, NY 13212

**Re:** Upper Harbor Brook IRM O&M Plan

Dear Mr. McAuliffe:

The New York State Department of Environmental Conservation (NYSDEC) has completed its review of the "Upper Harbor Brook IRM - Operation & Maintenance (O&M) Plan" (O&M Plan) dated May 2015 and submitted with your letter dated May 14, 2015. Based on our review, the O&M Plan is approved. If you have any questions, please contact me at 518-402-9796.

Sincerely,



Tracy A. Smith  
Project Manager

ecc: C. King, NYSDEC  
D. Hesler, NYSDEC  
J. Heath, Esq.  
C. Waterman  
C. Calkins, OBG  
M. Dent, OBG

R. Nunes, USEPA  
H. Warner, NYSDEC  
T. Joyal, Esq.  
M. Broschart, OBG  
M. Savage, Honeywell

M. Sergott, NYSDOH  
J. Shenandoah  
A. Lowry  
R. Quail, NYSDEC  
T. Glazier, O.C.



NEW YORK  
STATE OF  
OPPORTUNITY  
Department of  
Environmental  
Conservation

Honeywell  
 301 Plainfield Road  
 Suite 330  
 Syracuse, NY 13212  
 315-552-9700  
 315-552-9780 Fax

May 14, 2015

Mr. Tracy A. Smith  
 Project Manager  
 NYSDEC – Div of Environmental Remediation  
 Remedial Bureau D, 12<sup>th</sup> Floor  
 625 Broadway  
 Albany, NY 12233-7013

**Re: Honeywell Upper Harbor Brook IRM -  
 Operations and Maintenance Plan  
 Town of Geddes, Onondaga County, New York  
 Order on Consent: Index #D-7-008-01-09**

Dear Mr. Smith:

Enclosed for your review and approval is the Upper Harbor Brook Operations and Maintenance Plan dated May 2015 and prepared by O'Brien & Gere on behalf of Honeywell.

Please contact Marc Dent at O'Brien & Gere (315-956-6258; [marc.dent@obg.com](mailto:marc.dent@obg.com)) or me if you have any questions.

Sincerely yours,

  
 John P. McAuliffe, P.E. *by UCL*  
 Program Director, Syracuse

(1 copy, 1 CD)

cc:	Mark Sergott	NYSDOH (1 CD)
	Harry Warner	NYSDEC (1 copy, 1 CD)
	Robert Nunes	USEPA (1 copy, 2 CDs)
	Margaret A. Sheen, Esq.	NYSDEC, Region 7 (ltr only)
	Argie Cirillo, Esq.	USEPA (ltr only)
	Travis Glazier	O.C. Office of the Environment (1 copy, 1 CD)
	Brian D. Israel, Esq.	Arnold & Porter (ec or CD)
	Joseph Heath, Esq.	(ec ltr only)
	Thane Joyal, Esq.	(1 CD)
	Jeanne Shenandoah	Onondaga Nation (1 copy and ec ltr only)
	Curtis Waterman	HETF (ec or CD)
	Alma Lowry	(ec ltr only)
	Michael Spera	AECOM (1 CD)
	William Hague	Honeywell (ec or CD)
	Michael Savage	Honeywell (ec or CD)
	Christopher Calkins	O'Brien & Gere (ec or ec ltr only)
	Marc J. Dent	O'Brien & Gere (ec or ec ltr only)

O&M PLAN

# HONEYWELL UPPER HARBOR BROOK IRM OPERATION & MAINTENANCE (O&M) PLAN

**Honeywell**

May 2015

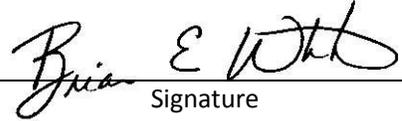


**CERTIFICATIONS**

I, **Brian E. White**, am currently a registered professional engineer licensed by the State of New York. I certify that this Operations & Maintenance Plan is prepared in general accordance with applicable statutes and regulations and in substantial conformance with the New York State Department of Environmental Conservation's Division of Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10).

072730

May 14, 2015



NYS Professional Engineer #

Date

Signature

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**LIST OF ACRONYMS**

CCR	Construction Completion Report
CO	Cleanout
COC	Contaminants of Concern
CV	Control Variable
DCS	Distributed Control System
DER	Division of Environmental Remediation
FRP	Fiberglass Reinforced Plastic
GWPS	Groundwater Pump Station
GWTP	Groundwater Treatment Plant
HOA	Hand Off Auto
IRM	Interim Remedial Measure
JSA	Job Safety Analysis
NAPL	Non-Aqueous Phase Liquid
NYSDEC	New York State Department of Environmental Conservation
O&M	Operation and Maintenance
OIT	Operator Interface Terminal
OP	Observation Port
OW	Open Water
PID	Proportional, Integral, and Derivative
PLC	Programmable Logic Controller
PM	Preventive Maintenance
PS	Pump Station
PV	Process Value
PV&M	Performance Verification and Monitoring
RGS	Rigid Galvanized Steel
SCADA	Supervisory Control and Data Acquisition
SP	Set point
SOP	Standard Operating Procedure
USGS	United States Geological Survey
VFD	Variable Frequency Drives
VV	Valve Vault
WL	Wetland
WPC	Wetland Penn-Can
WRR	Wetland Railroad

## 1. INTRODUCTION

This Operation and Maintenance (O&M) Plan has been prepared for the Upper Harbor Brook portion of the Wastebed B/Harbor Brook Interim Remedial Measure (IRM). For the purposes of this document, the Upper Harbor Brook activities will be referred to as “the IRM.” This Plan has been prepared in accordance with the requirements of the DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC, 2010) and as set forth in the Order on Consent (Index #D7-0008-01-09, dated December 16, 2003 [NYSDEC, 2003]) between Honeywell International Inc. (Honeywell) and the New York State Department of Environmental Conservation (NYSDEC). It has been prepared by O’Brien & Gere on behalf of Honeywell.

This Plan discusses the anticipated tasks to inspect, operate and maintain the IRM facilities and focuses on Inspection, operation and maintenance of the following:

- Groundwater collection systems
- Groundwater pump stations
- Groundwater conveyance system

This document is organized into eight sections, with accompanying figures, appendices, and exhibits.

In addition to this Plan, a detailed Performance Verification and Monitoring (PV&M) Plan covering the performance verification of the wetlands and liner system and annual reporting, along with a Construction Completion Report (CCR) summarizing the construction activities, are provided under separate cover.

Revisions and additions to the O&M Plan and the PV&M Plan will be issued as addendums to the documents and copies will be provided to the O&M contractors and Honeywell.

### 1.1 PURPOSE

The purpose of the O&M Plan is to describe the inspection, operation, and maintenance activities required to achieve and maintain the established objectives of the facilities associated with the site.

This Plan provides an overview of the equipment, controls, and overall operating system. The following are objectives of this O&M Plan:

- Describe process inputs and outputs and overall purpose of the system
- Describe each system component
- Summarize routine maintenance of the facilities

Because of the similarities in Standard Operating Procedures (SOPs) between lakeshore area related projects (*e.g.*, Lakeshore Hydraulic Containment System, Willis Avenue Groundwater Treatment Plant, Wastebeds 1-8), these SOPs are being combined into a separate, comprehensive document. The SOP documents shall be finalized and maintained by the O&M contractor, and updated as necessary, so that they can be utilized by anyone working at the site.

This Plan cannot replace experience; it is meant as a general guide for skilled personnel and should be used in conjunction with the site-specific O&M Manual that includes, but is not limited to: O&M manuals supplied by the various equipment and controls manufacturers, site-specific SOPs, and site specific Job Safety Analyses (JSAs). The draft table of contents for the site-specific O&M Manual is included in **Appendix A**.

### 1.2 SITE LOCATION, DESCRIPTION, AND HISTORY

Harbor Brook originates southwest of Syracuse, New York, in the Town of Onondaga and flows through the western side of Syracuse prior to discharging to the southwest corner of Onondaga Lake (**Figure 1**). The IRM project area is located in the City of Syracuse and the Town of Geddes, and is bordered by the following property owners (**Figure 2**):

- Honeywell International Inc.
- CSX Transportation
- New York, Susquehanna & Western Railway
- City of Syracuse
- New York State Department of Transportation
- Onondaga County Industrial Development Agency
- Onondaga County
- Duke Malavenda Realty LLC
- Hiawatha Associates LLC (Romano)
- Powder Mill Corporation (Lamar Advertising)

The IRM project includes the following areas (**Figure 3**):

- Harbor Brook from Culvert-1 upstream to Open Water (OW)-5
- I-690, Penn-Can, and Wastedbed D/E Drainage Ditches
- Railroad Ditches-1 and -2
- Six wetland areas
- Sections of the I-690 storm sewer system

A watershed of approximately 13.2 square miles drains into Harbor Brook (Blasland & Bouck, 1989). According to United States Geological Survey (USGS) data, the 10-year and 20-year average flow rate is approximately 11.5 cubic feet per second. The NYSDEC classifies Harbor Brook as a Class C stream, designating it as a water body that supports fisheries and is suitable for non-contact activities.

As stated in the Order on Consent, the remedial objectives of the IRM are to eliminate to the extent practicable:

- the discharge of contaminated groundwater and non-aqueous phase liquid (NAPL) into Harbor Brook and Onondaga Lake,
- the potential human health and ecological impacts associated with site constituents of concern (COC),
- potential impacts to fish and wildlife resources associated with on-going discharges of COCs from the site.

The following activities were performed as part of the IRM:

- Installed three groundwater collection trenches with slotted piping, two pump stations, and force mains adjacent to Harbor Brook for hydraulic control of impacted groundwater. Discharge from the pump stations enters the East Wall force main at valve vault 6A (VV-6A) and is treated at the Willis Avenue Groundwater Treatment Plant (GWTP)
- Sediment removal, installation of a liner (*e.g.*, geomembrane or concrete), and restoration of the substrate in OW areas -1, -2, -3, and -4 in Harbor Brook
- Cleaned Culvert-2 through -5, installed a reinforced concrete floor in Culvert-2 and 4, applied an epoxy coating in Culvert-3 (west), and sealed holes and cracks in Culvert-5 and two culverts in Railroad Ditch-1 and -2, as required
- Sediment removal from the I-690 Drainage Ditch, the Penn-Can Drainage Ditch, Wastedbed D/E Drainage Ditch, Railroad Ditches -1 and -2, and restoration of the ditch substrate
- Installed a geomembrane liner and groundwater collection trench beneath the I-690 Drainage Ditch

- Installed 150 feet of geomembrane liner under the downstream section of the Wastebed D/E Drainage Ditch (starting at OW-3)
- Sediment removal and restoration of substrate in wetland areas WRR1, WRR2, WRR3, WRR4, WRR5, and WL6 to provide storm water detention, improved water quality, and improved habitat. As approved by NYSDEC, areas WPC1, WPC2, and WPC3 were not restored as wetlands but sediment removal and the restoration of substrate were conducted. To provide compensatory acreage, wetlands WRR1, WRR2, WRR3, and WRR4 were expanded.
- Cleaned and video inspected sections of the I-690 storm sewer conveyance system that discharge to the I-690 Drainage Ditch
- Installed three passive NAPL collection systems in OW-1, -3, and -4

A map showing the location of the IRM facilities is included in **Figure 3** and **Figure 4**.

Details regarding construction activities associated with the project (groundwater collection systems and the pump stations, sediment removal, liner installation, restoration, wetlands) can be found in the Upper Harbor Brook IRM CCR (O'Brien & Gere, 2014).

## 2. HEALTH AND SAFETY

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The O&M Contractor is responsible for preparing and submitting a Site-specific Health and Safety Plan (HASP). The Honeywell Syracuse Portfolio Health and Safety Plan (HSP2) (Honeywell 2007) may be used for guidance. JSA forms that outline safety and health requirements, and guidelines developed for specific tasks shall be created and maintained on-site and updated, as necessary. Relevant tasks beyond the scope of previous field efforts shall have a new JSA completed prior to performing the task.

If a subcontractor is performing activities that require specialized training (*e.g.*, confined space entry, arc flash, excavation or trenching, scaffold use, hazardous waste operations and emergency response, etc.), copies of training certificates shall be provided to site personnel for applicable employees and supervisors.

## 3. REPORTING

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An annual report, summarizing the O&M activities conducted each calendar year at the site, will be prepared and submitted to NYSDEC. The annual report will focus on data trends in terms of the system operation and summarize the inspection and maintenance program (*e.g.*, troubleshooting, repairs) success.

This information will be included in the annual report for PV&M activities and submitted as a single annual report. The PV&M Plan is provided under separate cover.

## 4. ENGINEERING CONTROLS

This section provides an overview of the items that require routine O&M activities. The O&M activities include the inspection, monitoring, and maintenance of the pump stations, force mains, and groundwater collection systems, and the collection of groundwater elevations from the collection system data loggers.

PV&M of the wetlands, open water areas of Harbor Brook, ditches, culverts, and the passive NAPL collection systems are not directly related to the O&M of the groundwater collection and conveyance systems and are included in the PV&M Plan, provided under separate cover.

The Harbor Brook IRM included the following:

- Groundwater collection trenches and passive NAPL collection systems
- Groundwater pumping stations
- Force mains
- Electrical instrumentation and control systems

Equipment details, descriptions of specific O&M activities, and manufacturer O&M manuals can be found in the site-specific O&M Manual. A brief summary of these facilities follows.

### 4.1 GROUNDWATER COLLECTION SYSTEM

The groundwater collection system mitigates the potential for migration of groundwater to Upper Harbor Brook by lowering the groundwater level. As shown on **Figure 4**, the groundwater collection system consists of three separate collection trenches:

- Harbor Brook-1 collection trench (south side of I-690)
- Harbor Brook-2 collection trench (north side of I-690)
- I-690 Drainage Ditch collection trench

The Harbor Brook-1 and -2 collection trenches align approximately parallel to Harbor Brook. The I-690 Drainage Ditch collection trench aligns with the centerline of the I-690 Drainage Ditch. The approximate total length of each groundwater collection trench is as follows:

- Harbor Brook-1 collection trench = 235 feet
- Harbor Brook-2 collection trench = 145 feet
- I-690 Drainage Ditch collection trench = 1,560 feet

The groundwater collection system comprises a 4-inch slotted fiberglass reinforced plastic (FRP) collection pipe buried in sand trenches. Excavations were approximately 4 to 5-feet wide to accommodate installation of the collection pipe and sand. Details of the groundwater collection system are shown in the Harbor Brook IRM CCR Record Drawings.

The Harbor Brook-1 collection trench consists of two segments from Observation Port-1 (OP-1) to Pump Station (PS) -1 and OP-2 to PS-1. The segment from OP-1 to PS-1 consists of approximately 165 feet of 4-inch slotted FRP collection pipe installed approximately 12 to 17 feet below grade. The segment from OP-2 to PS-1 consists of approximately 70 feet of 4-inch slotted FRP collection pipe installed approximately 17 to 19 feet below grade. Both segments are installed approximately 1.5 to 2.5 feet below the liner in OW-3 and OW-4. The slotted FRP pipes for both segments are connected to a Teflon flex joint and tied into Wet Well-1. A gate valve with extended riser stem is installed on each 4-inch pipe within the PS.

The Harbor Brook-2 collection trench consists of two segments, from OP-3 to a buried wye fitting and OP-4 to the same buried wye fitting. The segment from OP-3 to the buried wye fitting consists of approximately 60 feet of 4-inch slotted FRP collection pipe installed approximately 19 feet below grade. The segment from OP-4 to the

buried wye fitting consists of approximately 85 feet of 4-inch slotted FRP collection pipe installed approximately 13 to 20 feet below grade. Both segments are installed approximately 0.6 to 1.5 feet below the liner in OW-1 and OW-2. The segments connect to each other at the buried wye fitting and continue approximately 10 feet to PS-2 as one 4-inch solid wall FRP pipe. The 4-inch solid wall FRP is connected to a Teflon flex joint, and tied into PS-2. A gate valve with extended riser stem is installed on the 4-inch pipe within the PS.

The I-690 Drainage Ditch collection trench consists of a 4-inch slotted FRP collection pipe installed approximately 16 to 32 inches below grade west of Sta. 12+00, and approximately 24 to 40 inches below grade east of Sta. 12+00, to accommodate retention of wetland functions around WL6. Approximately 16 inches of substrate material is installed over the geomembrane. The 4-inch slotted FRP collection pipe transitions to a 4-inch solid wall FRP pipe at approximately Sta. 15+00. The 4-inch solid wall FRP pipe runs approximately 60 feet, where it connects to a Teflon flex joint, and ties into PS-2. A gate valve with extended riser stem is installed on the 4-inch pipe within the PS.

Thirteen cleanouts (COs) are installed along the groundwater collection system using 4-inch solid wall FRP riser pipe. Cleanouts were finished with a flush mounted precast concrete collar and a frame and cover. The cleanout riser pipes were fitted with a locking J-plug. Cleanouts were installed as follows and as shown in the Harbor Brook IRM CCR Record Drawings:

- Harbor Brook-1 collection system
  - » Approximately 5 feet from OP-1 (CO-7) and OP-2 (CO-10)
  - » Approximately 5 feet from PS-1 (CO-8) in the OP-1 to PS-1 segment
  - » Approximately 10 feet from PS-1 (CO-9) in the OP-2 to PS-1 segment
- Harbor Brook-2 collection system
  - » Approximately 5 feet from each OP-3 (CO-11) and OP-4 (CO-13)
  - » Approximately 10 feet from PS-2 (CO-12)
- I-690 Drainage Ditch collection system
  - » Approximately every 250 linear feet along the north side of the ditch (CO-1, -2, -3, -4, and -5)
  - » Approximately 10 feet from PS-2 (CO-6)

OPs are constructed from 24-inch solid wall FRP pipe with ½-inch thick FRP covers and extended approximately 2 feet above grade.

Passive NAPL collection systems are installed in OW-1, OW-3, and OW-4. The passive NAPL collection systems consist of a 4-inch slotted FRP pipe as shown on Sheet G-44 of the Harbor Brook IRM CCR Record Drawings. The 4-inch slotted pipe installed in OW-1, OW-3, and OW-4 transitions to a 4-inch solid wall FRP pipe on the western edge of the open water areas and is surrounded by a 2-foot wide clay plug. The solid wall FRP pipe ties into an 8-inch solid wall FRP OP with a locking cap.

## 4.2 GROUNDWATER PUMP STATIONS

PS-1 and -2 collects groundwater from Harbor Brook-1 and -2 collection trenches and conveys it to the East Wall force main at VV-6A via 2-inch solid wall FRP force main.

The pump station wet well and valve vault consist of pre-cast concrete sections placed on approximately 2 feet of leveling stone overlying jet grout columns. Jet grout columns are installed to bedrock as the foundations beneath the wet wells. The dimensions and details of the pump stations are shown on Sheets G-29, G-30, G-42, and G-43 of the Harbor Brook IRM CCR Record Drawings.

#### 4.2.1 Wet Well

The wet well at PS-1 is approximately 6 feet long, 6 feet wide, and 23 feet deep. The wet well at PS-2 is approximately 6 feet long, 6 feet wide, and 24.5 feet deep. The wet well top has an approximately 5-foot square double-door aluminum access hatch.

The same pump model is installed at PS-1 and -2. The pumps are designed to convey groundwater at an estimated flow rate of approximately 30 gallons per minute (combined total from both pump stations and the I-690 Drainage Ditch collection trench).

PS-1 is located south of I-690 adjacent to OW-3. The pump station receives groundwater from the Harbor Brook-1 collection trench and discharges to the dual 2-inch solid wall FRP groundwater force main piping installed within the western barrel of Culvert-3, as shown on Sheet G-27 of the Harbor Brook IRM CCR Record Drawings.

PS-2 is located north of I-690 adjacent to OW-1. The pump station receives groundwater from the Harbor Brook-2 and I-690 Drainage Ditch collection trenches and discharges to the 2-inch solid wall FRP groundwater force main piping that also carries PS-1 effluent.

**Note: Any entry to the wet well is considered a confined space entry**

#### 4.2.2 Valve Vault

The valve vault at PS-1 and -2 is approximately 6 feet long, 6 feet wide, and 8.5 feet deep. The valve vault top has an approximately 3.5-foot square double-door aluminum access hatch. A 2-inch FRP pipe installed between the valve vault and the wet well allows accumulated water in the valve vault to drain back to the wet well. Valve vault, instrumentation, and electrical/controls details are shown on the Harbor Brook IRM CCR Record Drawings.

**Note: Any entry to the valve vault is considered a confined space entry**

### 4.3 FORCE MAIN

Collected groundwater is conveyed from PS-1 through a 2-inch solid wall FRP force main to the PS-1 valve vault. Two force mains leave the valve vault and are installed along the bottom of the western barrel of the twin 78-inch corrugated pipes that comprise Culvert-3. Three 2-inch rigid galvanized steel (RGS) conduits are installed along with the two force mains in the bottom of the western barrel. One RGS conduit contains power cables, one contains fiber-optic cable, and one is a spare conduit. The two force mains and three 2-inch RGS conduits are encased in approximately 6 inches of concrete as shown on Sheet G-33 of the Harbor Brook IRM CCR Record Drawings.

The two force mains continue into OW-2, where they are encased in concrete, prior to entering the force main valve vault. The PS-1 valve vault and the force main valve vault contain valves that can be adjusted to allow for the use of either force main and also allows access for cleaning/draining the two force mains. The two 2-inch solid wall FRP groundwater force mains are insulated and heat traced from a point just outside of the western barrel of Culvert-3 (near PS-1) to the top of the bank at OW-2. The force main valve vault is located adjacent to Culvert-2 and PS-2, as shown on Sheet G-26 of the Harbor Brook IRM CCR Record Drawings.

The two force mains transition to a single 2-inch solid wall FRP force main in the force main valve vault. Collected groundwater from PS-2 ties into the same 2-inch solid wall FRP force main from PS-1. The combined groundwater is conveyed via the 2-inch solid wall FRP force main to VV-6A (installed as part of the East Wall) and ties into the existing East Wall groundwater force main. The East/West Wall groundwater force main conveys collected groundwater to the Lakeshore Groundwater PS (GWPS) where it is pumped to the Willis Avenue GWTP via a separate force main.

Eleven cleanouts (FMCO-1A, -1B, -2A, -2B, -3A, -3B, -4A, -4B, -5, -6, and -7) are installed on the dual and single force mains to provide access points to perform cleaning and maintenance, as shown on Sheet G-27 of the Harbor Brook IRM CCR Record Drawings. Cleanouts are finished with a precast concrete collar with a frame and cover.

#### 4.4 ELECTRICAL ENCLOSURES

The electrical enclosures are installed above grade adjacent to each pump station. The electrical enclosures house the control panels, motor control panels, level controls, circuit breakers, variable frequency drives (VFDs), and other electrical and controls equipment. The pump stations are controlled locally via an operator interface terminal. Details of the electrical systems are shown on Sheets E-1 through E-7 of the Harbor Brook IRM CCR Record Drawings.

#### 4.5 SITE ACCESS AND SECURITY

PS-1, the Harbor Brook-1 collection trench and the associated force mains, cleanouts, and OPs are located on several private properties and access to these areas requires crossing additional private properties. In addition, access to these properties is through a locked gate, owned by New York, Susquehanna & Western Railway, located at the end of State Fair Boulevard. PS-2, the Harbor Brook-2 collection trench and the associated force mains, cleanouts, and OPs are located on Honeywell property and access is through a Honeywell gate. Refer to Section 7 regarding permits and agreements.

A 6 foot high chain link fence is installed around PS-1 and -2 and padlocks are installed on the gates and the electrical enclosures.

## 5. OPERATION

The operation of the IRM facilities consists of the automatic control of the wet well submersible pumps. The control of the submersible pumps is based on the measurement of groundwater elevations within the wet well. As the level in the wet well rises, pump rates are automatically adjusted to meet the increasing influent flow.

A geomembrane liner or concrete liner is installed in the four OW areas of Harbor Brook, a reinforced concrete floor is installed in Culvert-2 and 4, an epoxy coating is applied in Culvert-3 (west), and cracks and holes are sealed in the remaining culverts to create an isolation barrier that mitigates the potential for migration of groundwater to Harbor Brook, and subsequently Onondaga Lake. The groundwater collection systems provide an additional means of mitigating the potential the migration of groundwater to Harbor Brook by creating preferential groundwater flow away from Harbor Brook and to the collection trench. With the liners and the groundwater collection systems in-place, shutdown of the groundwater collection system/pump station for periodic maintenance is not expected to jeopardize the objectives of the IRM.

In the event of an unplanned shutdown lasting more than 48 hours, NYSDEC shall be notified.

### 5.1 OPERATION DESCRIPTION

Groundwater is intercepted by the groundwater collection trenches and is conveyed through slotted FRP collection pipe to the pump station wet wells. Collected groundwater is discharged by a submersible pump through an FRP force main to VV-6A (installed as part of the East Wall) where it ties into the existing East Wall groundwater force main. The East Wall force main discharges to the Lakeshore GWPS prior to entering the Willis Avenue GWTP Equalization Tanks.

### 5.2 PUMP STATION OPERATION

Pumps are operated with the objective of maintaining the groundwater elevations in the Harbor Brook -1 and -2 collection trenches below the surface water elevation in Onondaga Lake. The surface water elevations in Onondaga Lake will be obtained on-line from gages operated by the U.S. Geologic Survey, near Liverpool (04240495 – Onondaga Lake at Liverpool, NY). The on/off logic used for pump operation is based on set points that are manually programmed into the programmable logic controller (PLC). The groundwater elevation in the wet well is measured by a submersible level transducer with back-up high and low level floats.

Groundwater elevations in the collection trenches will be monitored manually approximately every 2 weeks using a hand held water level probe, until automatic data loggers are installed in 2015, at the four OPs (OP-1, 2, 3, and 4) in the Harbor Brook -1 and -2 collection trenches and the three cleanouts (CO-1, 3, and 5) in the I-690 Drainage Ditch collection trench. Refer to **Figures 3 and 4**.

The groundwater elevation data collected from the Harbor Brook -1 and -2 collection trenches will be recorded and used to evaluate the system performance and to evaluate when the slotted collection pipes in the trenches require cleaning. The groundwater elevation data from the I-690 Drainage Ditch collection trench will also be recorded and used to evaluate when the slotted collection pipes in the trench requires cleaning.

Once the automatic data loggers are installed, groundwater elevation data will be manually downloaded approximately every 2 weeks from the data loggers for the first year of operation. Subsequent to the first year of operation, a change to monthly data downloading will be evaluated and recommendations provided to NYSDEC.

Based on pumping rates and the groundwater elevations recorded to date, the operational goal will be to maintain groundwater elevations in the collection trenches at approximately the top of the substrate in OW-3 (361.6) for Harbor Brook-1 collection trench and OW-1 (360.9) for Harbor Brook-2 collection trench. During seasonal high groundwater elevation events the set points in the wet wells may be increased, if appropriate, but the groundwater elevations in the Harbor Brook -1 and -2 collection trenches will be maintained below Onondaga Lake surface water elevations.

### 5.3 PUMP CONTROLS

The submersible pumps are locally controlled from the pump station control panels. The control panels house a PLC, VFD, operator interface terminal (OIT), and other peripheral devices. A fiber optic ethernet network is used to communicate system data between the pump stations and the Willis Avenue GWTP distributed control system (DCS). An interlock derived from the Lakeshore GWPS is used to disable the pump.

The pumps are VFD controlled, which allows for management of the water level in the wet wells, and subsequently the groundwater collection trenches, by adjusting the pump speed. The pumps are designed to maintain the water elevation within the wet wells at an operator-adjustable level set point. The submersible pumps operate at a sufficient motor speed to achieve the level set point with the speed controlled by a proportional, integral, and derivative (PID) control loop. The PID control loop parameters consist of the continuous level sensor in the wet wells providing the process value (PV) and the operator input wet well level as the set point and the pump speed output as the control variable (CV).

The pumps are monitored internally for high temperature. If high temperature is reached in the motor, the pump will shut down and alarm. A high temperature shutdown will require a manual reset prior to the pump being operated again.

If either high-high or low-low float is triggered an alarm will be activated. The low-low float will turn off the submersible pump regardless of the level displayed by the pressure transducer or the low set point value entered by the operator.

### 5.4 PUMP STATION OPERATOR INTERFACE TERMINAL SCREENS

PS-1 and -2 are controlled and monitored through screens which are displayed at the OIT at each pump station control panel. Functions are activated by using the OIT keypad. To scroll through the various screens of the OIT, the F4 and F8 function keys are programmed as Page-up and Page-down pushbuttons.

### 5.5 GROUNDWATER COLLECTION SYSTEM

The groundwater collection system consists of the Harbor Brook-1 collection trench, Harbor Brook-2 collection trench, and I-690 Drainage Ditch collection trench. The collection system provides a pathway for groundwater to flow by gravity to the pump stations. The collection system pipe has cleanouts for performing maintenance on the pipe and OPs for checking water levels within the collection pipe. The collection system pipe is constructed of 4-inch slotted FRP along the approximate alignment shown on **Figure 4**. For additional details refer to Section 4.1 and the Harbor Brook IRM CCR Record Drawings.

#### 5.5.1 Observation Ports

The OPs allow for checking the water levels in the collection pipe. The OPs are 2-foot in diameter, extend approximately 2 feet above the ground surface and have lockable covers to prevent unauthorized entry.

The OPs should be inspected on a routine basis and used as access ports for maintenance and cleaning. A detail of the OPs is shown in the Harbor Brook IRM CCR Record Drawings.

### 5.6 FORCE MAIN

The force main is a pressure pipe that is used to convey groundwater from the pump stations to the East Wall force main at VV-6A. The force main from PS-2 discharges into the PS-1 force main adjacent to PS-2. The force main is constructed of 2-inch solid wall FRP along the approximate alignment shown on **Figure 4**.

## 6. GENERAL INSPECTION AND MAINTENANCE

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General inspection, routine maintenance, and preventive maintenance (PM) will be employed during operation of the IRM facilities and general maintenance of the site. Inspection and maintenance activities will focus on the following:

- Groundwater collection trench systems
- Pump stations
- Force mains
- Site access and security

Details of inspection and maintenance activities will be provided in the site-specific O&M Manual.

## 7. PERMITS AND AGREEMENTS

Since this project is located within several properties with multiple owners, there are several permits and/or access agreements that are required to conduct O&M activities. The following is a brief summary of the permits and agreements that are required or that have already been obtained by Honeywell.

- The existing CSX Transportation and/or New York, Susquehanna & Western Railway Access Permits will be discussed with the railroads regarding future on-site activities.
- Entry onto NYS Department of Transportation property requires a Highway Work Permit that shall be obtained on an annual basis.
- Entry onto CSX Transportation property shall be in compliance with CSX Agreement No. CSX 672278 between Honeywell and CSX, dated November 10, 2011.
- Entry onto Onondaga County property shall be in compliance with the Access Agreement dated June 16, 2011.
- Entry onto City of Syracuse property shall be in compliance with Special Ordinance No. 86, adopted by the Syracuse Common Council on February 27, 2012.
- Access to Hiawatha Associates' (Romano) property shall be in compliance with the Easement Agreement, dated October 16, 2012.
- PS-1 is located on property belonging to Hiawatha Associates (Romano) and also requires access through New York, Susquehanna & Western Railway property.
- PS-1 OPs for the collection trench are located on NYS Department of Transportation property (north OP) and Hiawatha Associates' (Romano) property (south OP).
- PS-2 and the associated OPs for the collection trench are located on Honeywell property.

The above-referenced Agreements and Ordinance are included in **Exhibit 1**. Permits shall be obtained by the O&M contractor, PV&M contractor or Honeywell, as required.

## 8. CONTACTS

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The following list includes contacts that are associated with the project.

### **Environmental Information**

Tracy A. Smith  
NYSDEC  
625 Broadway  
Albany, NY 12233-7015  
(518) 402-9767  
(800) 342-9262

### **Health-Related Information**

Mark Sergott  
New York State Department of Health (NYSDOH)  
Empire State Plaza  
Corning Tower Rm 1787  
Albany, NY 12237  
(518) 402-7860

### **Citizen Participation**

Stephanie Harrington or Diane Carlton  
NYSDEC  
615 Erie Boulevard West  
Syracuse, NY 13204  
(315) 426-7400

### **Document Repositories for the Upper Harbor Brook Site Project Are As Follows:**

Robert P. Kinchen Central Library, Onondaga County Public Library  
The Galleries of Syracuse  
447 South Salina Street  
Syracuse, NY 13202  
(315) 435-1900

Atlantic States Legal Foundation  
658 West Onondaga Street  
Syracuse, NY 13204  
(315) 475-1170

NYSDEC  
Tracy A. Smith  
625 Broadway  
Albany, NY 12233-7015  
(518) 402-9767  
(800) 342-9262

NYSDEC  
Regional Hazardous Waste Engineer  
615 Erie Boulevard West  
Syracuse, NY 13204  
(315) 426-7400

Solvay Public Library  
Ms. Melissa Lewandowski  
615 Woods Road  
Solvay, NY 13209  
(315) 468-2441

**Property Owners**

Honeywell  
John P. McAuliffe  
Program Director  
301 Plainfield Road  
Suite 350  
Syracuse, NY 13212  
(315) 552-9700

CSX Transportation  
Omar Payne  
CSX Transportation, Inc.  
Property Services  
6737 Southpoint Drive South, J180  
Jacksonville, FL 32216  
(904) 279-3879

New York, Susquehanna & Western Railway  
Mr. Dick Hensel  
NYSW Railway  
1 Railroad Avenue  
Cooperstown, NY 13326  
(607) 547-2555 ext. 264

City of Syracuse  
Ms. Mary E. Robison, P.E.  
Department of Engineering  
City Hall, Room 401  
Syracuse, NY 13202  
(315) 448-8005

NYS Department of Transportation  
Mr. Larry Hasard  
NYSDOT Onondaga West Residency  
5700 Devoe Road  
Camillus, New York 13031  
(315) 672-8151

Onondaga County Industrial Development Agency  
Mr. Anthony Rivizzigno  
Attorney-Onondaga County Industrial Development Agency  
555 East Genesee Street  
Syracuse, New York 13202-2159  
(315) 442-0161  
(315) 435-3770

Onondaga County  
Mr. Travis Glazier  
Onondaga County Office of the Environment  
John H. Mulroy Civic Center  
421 Montgomery Street, 14th Floor  
Syracuse, NY 13202  
(315) 435-2647

Mr. Kevin Duke  
Duke Malavenda Realty LLC  
1020 Hiawatha Boulevard West  
Syracuse, NY 13204  
(315) 472-4781

Hiawatha Associates, LLC (Romano)  
Mr. Michael Romano  
Hiawatha Associates LLC  
960 Hiawatha Boulevard West  
Syracuse, NY 13204  
(315) 475-7933

Powder Mill Corporation (Lamar Advertising)  
Mr. Kevin Bischoff  
Lamar Advertising  
5947 East Molloy Rd.  
Syracuse, NY 13211  
(315) 422-5174

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Honeywell, 2007. *Honeywell Syracuse Portfolio Health and Safety Program (HSP2)*. Honeywell International, Inc. East Syracuse, NY. October 31, 2007.

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