Atlantic Richfield Company

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December 7, 2012

Mr. Maurice Moore
NYSDEC
Region 9
270 Michigan Avenue
Buffalo, NY 14203

Subject: Submittal of the Site Management Plan (SMP)
NYSDEC 902003
USEPA ID NY-D9805215
Former Sinclair Refinery Site: Operable Unit 2
Wellsville, New York

Dear Mr. Moore:

Atlantic Richfield Company (ARC) is submitting two (2) copies of the Site Management Plan (SMP) for Operable Unit 2 for the Former Sinclair Refinery Site located in Wellsville, New York for your review and approval.

Upon your review, should you have questions or comment pertaining to the information provided herein, please don't hesitate to contact me at (443) 807-6233.

Sincerely,

Eric J. Larson
Operations Project Manager

Attachment

cc: Mike Negrelli, USEPA
Martin Schmidt, URS
Bob Murphy, URS
Jerry Palmer, On-Site
Project File

SITE MANAGEMENT PLAN

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, ALLEGANY COUNTY,
NEW YORK

USEPA ID NY-D9805215
NYSDEC SITE NO. 902003

Prepared for
Atlantic Richfield Company
(a BP Affiliated Company)

November 2012

1375 Euclid Avenue
Suite 600
Cleveland, Ohio 44115
216.622.2400

URS Project No. 13814934

X A periodic review report which includes the IC/EC certification as well as all other reporting of the IC/ECs, site monitoring and/or operation and maintenance of the remedy. ***Section 2.4 and Appendix C***

Institutional Control and Engineering Control (IC/EC) Certification: The applicant or site owner must make a periodic certification of the IC/EC to the Department. The requirements of this periodic IC/EC certification will be described in the SMP and the certification must be included in the periodic review report, which is prepared and submitted for the Department-approved certification period. The IC/EC certification will clearly identify the periodic review period and certify that:

X The institutional controls and/or engineering controls employed at such site are:

unchanged from the date the control was put in place, unless otherwise approved by the Department;

in place and effective;
performing as designed;
nothing has occurred that would impair the ability of the controls to protect the public health and environment; and
nothing has occurred that constitutes a violation or failure to comply with any operation and maintenance plan for such controls.
Appendix C

X Use of the site complies with the environmental easement; ***Appendix C***

X Access to the site will be provided to the Department to evaluate the remedy and verify continued maintenance of such controls.

☐ If a financial assurance mechanism is required, the mechanism remains valid and sufficient for the intended purpose. ***Not Applicable***

If the remedy requires only institutional controls, the certification may be made by the property owner. If the remedy includes engineering controls, the certification must be made by a qualified environmental professional or, if engineering evaluations are required, a licensed professional engineer.

☐ For BCP sites: For those sites determined to be non-significant threat sites, but where contaminants in groundwater contravene drinking water standards at the site border, in addition to the items noted above; the remedial party will also have to certify: ***Not Applicable***

☐ That no new information has come to the site owner`s attention, including groundwater monitoring data from wells located at the site boundary, to indicate that the assumptions made in the qualitative exposure assessment of off-site contamination are no longer valid; and ***Not Applicable***

☐ Every five years, that the assumptions made in the qualitative exposure assessment remain valid. ***Appendix C***

X Site Monitoring Plan: Includes, as appropriate for the site remedy, sampling and analysis plans for monitoring groundwater, soil vapor or another media as identified by the decision document for the site, designed to: SMP Checklist ***Appendix C***

☐ If none is required for the remedy which is the subject of this SMP, check here.

X ☐ Assess the remedy's compliance with groundwater standards. . ***Appendix C***

X ☐ Assess the remedy's compliance with the cleanup objectives of any other impacted media. . ***Appendix C***

X ☐ Evaluate site information periodically to confirm that the remedy continues to be effective for the protection of public health and the environment. . ***Appendix C***

X ☐ Prepare the necessary reports of the results of this monitoring for a period determined by the Department. . ***Appendix C***

Operation & Maintenance Plan: Includes, as appropriate for the site remedy, a plan(s) which:

☐ If none is required for the remedy which is the subject of this SMP, check here

X Identify the operation and maintenance activities necessary for the continued operation of the components of the remedy, including provision for evaluation of the systems and recommendations to optimize performance. . ***Section 4 and Appendix C***

X Evaluating site information periodically to confirm that the remedy continues to be effective for the protection of public health and the environment. . ***Section 3 and Appendix C***

X Preparing the necessary reports of the results of this evaluation for a period determined by the Department . ***Section 5 and Appendix C***

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1.1 INTRODUCTION

This document is required as an element of the remedial program at the Former Sinclair Refinery Site (hereinafter referred to as the "Site). The Site was added to the National Priority List in 1983. There are two Operable Units (OUs) at the site. OU1 is a 10-acre landfill area in the southern portion of the site and is also known as the Central Elevated Landfill Area (CELA). OU2 is the former refinery area in the northern portion of the site, and is the subject of this SMP.

This report has been prepared in accordance with the requirements of NYSDEC's guidance document *DER-10, Technical Guidance for Site Investigation and Remediation*, specifically Section 6.2, Site Management Plan.

1.1.1 General

The work was performed in accordance with the requirements of the OU2 Record of Decision (ROD), which was issued by the United States Environmental Protection Agency (USEPA) on September 30, 1991, and the Unilateral Administrative Order (UAO), dated September 8, 1992, between USEPA and Atlantic Richfield Company.

Figure 1 presents the site location. The boundaries of the site are described in the metes and bounds site description presented in Appendix A.

1.1.2 Purpose

The site contains contamination left after completion of the remedial action. Engineering Controls (ECs) have been incorporated into the site remedy to control exposure to remaining contamination during the use of the site to ensure protection of public health and the environment. Also, Institutional Controls (ICs) are in place which place restrictions on site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. Specifically, for each affected property an *Environmental Protective Easement and Declaration of Restrictive Covenants* (Environmental Easement) has been recorded with the Allegany County Clerk. A distribution listing of the owners involved are provided in Appendix B. This SMP specifies the methods necessary for compliance with ECs and ICs required by the Environmental Easement for contamination that remains at the site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the site after completion of the Remedial Action, including:

- Implementation and management of all Engineering and Institutional Controls;
- Media monitoring;
- Operation and maintenance of all treatment, collection, containment, or recovery systems;

- Performance of periodic inspections, certification of results, and submittal of Periodic Review Reports; and
- Definition of criteria for termination of treatment system operations.

To address these needs, this SMP includes an Operating Permits, Inspection, Maintenance and Monitoring (OM&M) Plan (Appendix C) and a Protective System Device Inspecting and Maintenance (PSDIM) Plan (Appendix D).

The O&M Plan includes a description of periodic review reports for the periodic submittal of data, information, recommendations, and certifications to NYSDEC. As discussed in the OM&M Plan, defining criteria for termination of treatment system operation has been deferred until the 2017 five-year review.

The OM&M Plan also includes groundwater monitoring requirements.

The PSDIM Plan describes inspection and maintenance requirements and procedures for Protective System Devices (PSDs) associated with the groundwater collection and treatment system; specifically, pressure relief valves and fire extinguishers.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the environmental easement, which is grounds for revocation of the Certificate of Completion (COC);

- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the UAO, and thereby subject to applicable penalties.

1.1.3 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. In accordance with the Environmental Easements for the site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.2 SITE BACKGROUND

1.2.1 Location and Description of Site

The Former Sinclair Refinery Site is in the Town and Village of Wellsville, Allegany County, New York, and is identified as a portion of Greater Lots 17, 18, 19 and 20, Township No. 2

Range No. 1, of the Morris Reserve. This site is approximately 10 miles north of the border between New York and Pennsylvania. The east side of the site is bounded by the northerly flowing Genesee River. The west side of the site is bounded by South Brooklyn Avenue, which is also known as River Road or County Route 44. The boundaries of the site are fully described in Appendix A: Survey Map, Metes and Bounds.

As shown in detail in Appendix A, the site is currently occupied by a number of commercial or manufacturing businesses and the Wellsville campus of the State University of the New York (SUNY) – Alfred. The SUNY – Alfred Wellsville campus is a vocational-technical school that offers courses in heating, ventilation, cooling and air conditioning, auto mechanics, construction, electrical, culinary arts, and other vocational programs. Most of the former refinery structures were removed before 1964. Many of the remaining refinery buildings have been renovated and are now part of the SUNY campus. The remainder of the original refinery buildings still standing are vacant.

1.2.2 Site History

The refinery was built in the late 1800s to process crude oil from New York and Pennsylvania. The Wellsville Refining Company originally operated the refinery. In 1919, the Sinclair Refining Company purchased the facility. Sinclair owned and operated the facility until 1958. Products that were produced at the refinery include heavy oils and grease for lubrication, light oils for fuel, lighter fluid, gasoline, aniline, naphtha, and paraffin.

The refinery suffered substantial damages from fires in 1939 and 1958. The refinery was rebuilt after the 1939 fire. Refining operations were terminated after the 1958 fire.

Sinclair transferred ownership of parcels at the site to several entities, which included the Town and Village of Wellsville, after the refinery closed. Since that time, various entities have held title to portions of the former refinery.

1.2.3 Geologic and Hydrogeologic Conditions

Remedial Investigation activities were performed before URS's involvement of the project. The following geologic descriptions are taken from the OU2 ROD.

Site geology is dominated by fluvial and glacial sediments, namely highly variable unconsolidated deposits beneath the site composed of sands, clays, and gravel. Fill material is also present in site soils, similarly composed of sands, clays, and gravel. Within the unconsolidated deposits beneath the site are at least three hydrologic units: an upper aquifer comprised of recent fluvial deposits, an aquitard comprised of glaciolacustrine clay, and a poorly defined lower aquifer comprised of glacial depth to bedrock measured between 9 and 27 feet. Depths to the glaciolacustrine clay layer at the refinery range on average between 15 and 30 feet from the surface and the average depth to the water table ranges between 5 and 10 feet from the surface.

Groundwater flow at the site is generally to the north and east, which, prior to remediation, discharged directly into the Genesee River. The Genesee River is a local source of drinking water, and the intake for the village of Wellsville municipal water supply is located approximately one-quarter mile upstream of the site. Water on the site is supplied by the village municipal system.

1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

Remedial Investigation activities were performed before URS's involvement of the project. The following descriptions are taken from the OU2 ROD.

The contamination addressed by the OU2 rod has been identified by the affected site media, namely surface soils, subsurface soils, and groundwater. The cleanup of the Sinclair site was separated into two distinct phases or operable units. EPA selected a cleanup plan for the landfill portion of the site in its OU1 ROD on September 26, 1985. That OU1 work is not the subject of this SMP.

In contaminated areas of the refinery, surface soils were found to contain elevated concentrations of lead and arsenic. The lead was found at levels up to 1190 parts per million (ppm) in a limited area near the location of the former tetraethyl lead sludge pits. Lead at lower concentrations was also found aligned with the former railroad tracks across the eastern border of the site. Elevated levels of arsenic were also found in surface soils along the former railroad bed, with the maximum concentration measured at 43 ppm. No volatile organic compounds (VOCs) were found in surface soils, with the exception of two samples showing low methyl chloride measurements. Several semi-volatile compounds, including benzo(a)pyrene, were found in isolated surface soil samples at levels comparable to background.

The subsurface soils at the site showed only a few elevated lead concentrations, primarily in the general area of the tetraethyl sludge pits, with a maximum measurement of 791 ppm. Arsenic also occurred at only a few elevated levels in the subsurface soils, tentatively identified as backfill areas, with a maximum concentration measured at 88 ppm. The VOCs detected in subsurface soils include benzene, xylene, and carbon disulfide. Benzene in subsurface soils was measured up to 1,450 ppb, xylene up to 26,000 ppb, and carbon disulfide up to 190 ppb. These were concentrated in the northern and southern areas of the refinery and may be attributable to former refinery operations. Several chlorinated compounds were also detected in subsurface soils. More semi-volatile compounds were found in subsurface soils than in surface soils, including benzo(a)pyrene in concentrations up to 19 ppm and naphthalene in concentrations up to 3.3 ppm.

Contamination is also prevalent in groundwater beneath the refinery. Benzene and xylene were the most commonly detected VOCs, with maximum measured values of 1,200 ppb for benzene and 1,500 ppb for xylene. There are also isolated areas of chlorinated hydrocarbon contamination in the groundwater. Semi-volatile compound contamination includes elevated levels of naphthalene and nitrobenzene, measured in concentrations up to 0.23 ppm and 8.2 ppm, respectively. Elevated levels of metals detected in refinery groundwater include arsenic, measured at a maximum of 0.884 ppm, chromium, measured at a maximum of 0.298 ppm, and

lead, measured at a maximum value of 0.249 ppm. Arsenic, chromium, and lead exceeded federal maximum contaminant levels (MCLs) for drinking water; levels of arsenic, chromium, lead, barium, copper, iron, manganese, sodium, and zinc were found to exceed state drinking water standards.

Soils at the off-site tank farm contained benzene at very low levels (maximum reading of 1 part per billion (ppb)) and metals were measured comparable to background conditions. The drainage swale along the eastern border of the site had single anomalous arsenic reading of 46 ppm in a sediment sample, but was otherwise uncontaminated. The Genesee River was also found to be generally free of contaminants; a single sediment sample out of 15 total sediment samples analyzed for metals had an arsenic reading of 98.3 ppm and two water samples out of 29 water samples analyzed for metals exceeded state drinking water standards for iron. Of the 26 surface water samples analyzed for VOCs, four samples exceeded state guidance values for chlorinated hydrocarbons and one sample exceeded the state guidance value for benzene. Stormwater sewers and the northern oil separator at the site were found to contain elevated levels of certain VOCs, semi-volatiles, and metals. Discharges from the sewers at the outfalls, however, appeared to be at very low concentrations, indicating that the separators may still be functioning.

1.4 SUMMARY OF REMEDIAL ACTION

The RI/FS and initial Remedial Design Investigation activities for OU2 were conducted between 1985 and 1994. The OU2 ROD, which was issued by the USEPA on September 30, 1991, and the Unilateral Administrative Order (UAO), dated September 8, 1992, between USEPA and ARC specified these remedial criteria for the site:

- Cleanup level of 1,000 parts per million for lead in surface soils at the site.
- Cleanup level of 25 parts per million for arsenic in surface soils at the site.
- Cleanup levels for site groundwater are drinking water standards. These standards include the *New York State Ambient Water Quality Standards and Guidance Values* and *Federal Drinking Water Standards*, which are included in the ROD. The ROD acknowledges that although the groundwater cleanup levels may be unattainable, preventing contaminant migration to the Genesee River will protect human health and the environment.

A phased approach has been used for remedial actions in OU2. Phase I groundwater remediation activities in OU2 included construction, operation, and monitoring of a groundwater extraction and treatment system and three AS/SVE systems. These systems began operation in 1995. The groundwater extraction and treatment system remained in operation through the OU2 Phase II-1 remedial construction activities. The AS/SVE systems were expanded in December 1997. Operation of the AS/SVE systems continued until 2003 when they reached asymptotic conditions and were deactivated with the concurrence of USEPA and the New York State Department of Environmental Conservation (NYSDEC).

Although the OU2 Phase I remedial actions reduced the concentrations of residual constituents in the subsurface, USEPA and NYSDEC requested implementation of a second phase of remedial actions for OU2 to further improve surface water and groundwater conditions. Several investigations and design reports related to the OU2 Phase II remedial action were prepared and submitted to USEPA.

A report titled Pre-Final (95%) Design Report Phase II Remediation at Operable Unit 2 was submitted to USEPA in November 2005. Following submission, the OU2 Phase II remediation was separated into two portions so that some elements of the remedial design could be implemented while USEPA, NYSDEC, and ARC continued to evaluate other portions of the proposed remedial action. The proposed elements of each portion of the OU2 Phase II remediation are:

OU2 Phase II-1	**OU2 Phase II-2**
• Groundwater collection system • Conveyance system • Treatment wetlands system	• Removal of impacted materials from main drainage swale, riverbed, and riverbank • Barrier wall between groundwater collection system and river • Placement of impacted material in the CELA re-use area and installing a new cap system. • Implementation of Performance - Based Groundwater Monitoring • Final Site Restoration

Construction, including final site restoration was completed in June 2012. Record Drawings have been submitted under separate cover and are included on an electronic disk as an appendix to the Final Engineering Report.

1.4.1 Removal of Contaminated Materials from the Site

Under the OU2 remediation activities, no contaminated material was removed from the site. Rather, excavated leachate collection trench spoils, river sediments, banks soils and drainage swale soils/sediments were disposed of on-site in a cell constructed over the existing Central CELA. The CELA had been capped and contained under the previous OU1 remedial activities. The new cell constructed for the OU2 remediation is referred to as the CELA re-use area.

1.4.2 Treatment System

OU2 Phase II-I involved the installation of a groundwater collection and conveyance system and a wetland treatment system. The major components are summarized below:

- 3,200-foot infiltration trench constructed to intersect subsurface water flow prior to flowing into the Genesee River. The infiltration trench was constructed to include a series of manholes, A thru H, each designed to house transfer pumps used to control the water level in the trench as well as the flow of subsurface water at the site. Subsurface water removed from the manholes pass into one of three common headers (conveyance lines) that conveys subsurface water from multiple trench manholes to the Treatment Wetland System.

- A Treatment Wetland System designed to degrade a wide variety of organic compounds (principally petroleum hydrocarbons), and to remove metals (principally iron) from the recovered groundwater. Major components of the Treatment Wetland System include a cascade aerator; sedimentation pond; sludge dewatering beds; surface flow wetlands system; and a vertical flow wetlands system.

1.4.3 Remaining Contamination

Portions of the former refinery footprint can be expected to have remaining impacts to subsurface soils from refinery activities. This includes portions of adjacent properties west of the collection trench corridor, including the State University of New York (SUNY) campus.

Also, the CELA contains historic contamination as well as disposed contaminated soils and sediment brought from remediation activities elsewhere on the site.

2.1 INTRODUCTION

2.1.1 General

Since remaining contaminated soil and groundwater exists beneath the site, Engineering Controls and Institutional Controls (EC/ICs) are required to protect human health and the environment. This section describes the procedures for the implementation and management of EC/ICs at the site. The EC/IC plan is one component of the SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

This section provides:

- A description of all EC/ICs on the site;
- The basic implementation and intended role of each EC/IC;
- A description of the key components of the ICs set forth in the Environmental Easements;
- A description of the features to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the site remedy, as determined by the NYSDEC.

2.2 ENGINEERING CONTROLS

2.2.1 Engineering Control Systems

2.2.1.1 CELA Cap

The work that was completed at the CELA during the OU-1 remedial construction included:

- Consolidation and grading of materials in an historic landfill at the southern portion of the site. This work included removal of surface soils from select areas within OU2 and transport of the removed materials to the CELA.

- Construction of a soil-bentonite slurry wall around the perimeter of the CELA. The slurry wall was keyed into an underlying low permeability clay layer.

- Construction of a RCRA Cap over the consolidated materials placed in the approximate 10 acre CELA. The cap included settlement markers, gas vents, rock-lined drainage channels, a grass cover, piezometers, and pipe sleeves for future piezometers or monitoring wells.

The work that was completed at the CELA in 2010 included:

- Construction of a new cell, which is known as the CELA Reuse Area, on the northern portion of the CELA. This cell was located on top of the existing RCRA Cap. The Reuse Area encompasses approximately 3 acres of the CELA. This cell was used for disposal of materials generated during the OU2 Phase II remedial construction activities (Main Drainage Swale, Genesee River Sediment; Bank Soils, groundwater collection trench spoils, and site-wide spoils.

- Removal of settlement markers in accordance with plans approved by USEPA.

- Replacement of the rock-lined finger drains on the CELA with vegetated channels.

The work completed at the CELA in 2011-2012 includes:

- Construction of a new RCRA cap over the 3 acre CELA Reuse Area.

- Replacing the rock-lined perimeter drainage channel with a vegetated channel.

- Replacing vegetative cover with a wildflower and natural grass mix that will not require frequent mowing.

- Establishing recreational trail system on the top of the CELA that will connect to the existing WAG trail.

- Gas vents abandonment and / or reconfigured.

- Abandonment of other liner penetrations not in use.

2.2.1.2 Groundwater Collection Trench

The current groundwater collection system consists of:

- Groundwater Collection Trench (GWCT);

- Eight manholes (MH) equipped with pumps; and

- Conveyance lines that transfer groundwater to the treatment system.

The 3,200 foot long GWCT extends from the northwest side of the CELA to the northern portion of the Site along the east side of the Site parallel to the Genesee River. The gravel-filled GWCT intercepts subsurface water before it can discharge into the adjacent Genesee River or Main Drainage Swale. There are piezometers (TPZ-1 through TPZ-9) and monitoring wells along and near the GWCT to monitor groundwater elevations in order to evaluate the performance of the GWCT.

There are eight manholes located in the GWCT. The manholes are located at 400-foot intervals. The manholes are designated MH-A, which is the northern most manhole, through MH-H, which is the southernmost manhole. The manholes house pumping systems that remove subsurface water from the GWCT and transfer the water to the wetland treatment system via the conveyance lines.

Operation of the pumps in the manholes is controlled by float switches that are set to maintain the water level in the GWCT at an elevation below the adjacent Genesee River and main drainage swale. Each manhole, except MH-H, is equipped with a flowmeter to monitor volume of water pumped.

There are three conveyance lines that carry water from the manholes to the wetland treatment system. The conveyance lines are constructed of 6-inch diameter HDPE pipe. There are cleanouts for the conveyance lines at five locations.

2.2.1.3 Wetland Treatment System

The wetland treatment system constructed during the OU2 Phase II work includes the following components:

- Cascade Aerator;
- Biofilter;
- Sedimentation Pond;
- Surface Flow Wetlands (3 Ponds);
- Vertical Flow Wetlands (5 Ponds);
- Outlet Structure; and
- Drying Beds.

The cascade aerator is the first component of the wetland treatment system. The cascade aerator consists of:

- A hydraulic splitter structure with weir gates;
- Four manholes;

- HDPE piping between the splitter structure and the manholes; and
- Four corrugated metal pipes (CMPs) to aerate and direct water to the sedimentation pond.

The purpose of the cascade aerator is to oxidize metals (iron, manganese and arsenic) that are present in the subsurface water and facilitate precipitation.

The purpose of the biofilter is to control and abate a portion of the odors generated by the cascade aerator.

The sedimentation pond (Sed Pond) allows settling of insoluble metal oxides precipitates formed by the cascade aerators. The Sed Pond has an HDPE liner and the base of the pond is covered by a 3-inch layer of concrete-filled geoweb. The water level in the Sed Pond is controlled by the weir gates in the hydraulic control splitter structure that is west of the surface flow wetlands.

There are three surface flow wetlands (SFWs) north of the Sed pond. The purposes of the SFWs are to promote biodegradation of organic compounds and provide additional removal (polishing) of iron and manganese. The flow from the Sed Pond is divided between the three SFWs by the weir gates in the hydraulic control splitter structure. The water levels in the SFWs are controlled by weir gates in the hydraulic control structures on the east end of each SFW. Each SFW is equipped with a blower that is connected to aeration lines in the base of each open water area. The blowers can be used, if needed, to aerate the water to enhance biodegradation or metals removal.

There are five vertical flow wetlands (VFWs) north of the SFWs. The purpose of the VFWs, which have HDPE liners, is to raise the pH of the treated water to meet the discharge criteria. Flow to each of the VFWs is controlled by setting the weir gates in the eight-way hydraulic splitter structure, which is at the southwest corner of the VFWs. There are three spare chambers in this splitter structure. Discharge from each VFW is controlled by a dosing siphon. Each dosing siphon allows the water level in the associated VFW to rise to a set point, at which the siphon flushes water from the VFW, which scours the limestone bed to prevent fouling.

The outlet structure, which receives flows from the VFWs, connects to a line that discharges the effluent from the wetland treatment system to the main drainage swale. The discharge is subject to the SPDES Limitations issued by the NYSDEC.

There are drying beds east of the Sed Pond. The purpose of the drying beds is to dewater and dry accumulated precipitates after they are removed from the Sed pond. The dried precipitates will be properly disposed in an off-site facility periodically.

2.2.1.4 Barrier Layer

Exposure to remaining contamination in soil/fill at the CELA is prevented by a landfill cap system that includes a geocomposite clay layer, a geomembrane, a geocomposite drainage layer, fill, topsoil and a vegetative cover. Across the rest of the site, exposure to remaining fill is prevented by either clean soil, asphalt pavement, concrete-covered sidewalks, and concrete

building slabs. In the areas of river bottom excavation, AquaBlok®, provides a low permeability hydraulic barrier between the remaining river sediments and the overlying granular backfill.

The Excavation Work Plan that appears in Appendix E outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed.

2.2.1.5 Control Berm

ARC constructed a water level control berm (WLCB) in the southern portion of the Main Drainage Swale in 2010. This work was conducted under the terms of modification to *FCLU Permit 09-08 (FCLU Permit 09-08, Mod 2)*. The objective of the WLCB, which is adjacent to the upper drop structure in the Genesee River, is to create a hydraulic barrier, which helps to control groundwater seepage from the site into the south end of the main drainage swale.

2.2.1.6 Permanent Sheet Pile

Permanent sheetpile was installed at three locations:

- Mid-slope of river bank;
- Parallel and downstream of lower drop structure; and
- North end of mid-slope sheetpile.

Approximately 523 LF of 35-feet long AZ 14-770 pile was driven to create the mid-slope sheetpile wall. Select sheets of the mid-slope wall were cut off during reconstruction of the river bank to keep the final elevation of the wall 18 inches below the face of the restored bank.

Approximately 78 LF of 30-foot long AZ 14-770 pile was installed downstream and parallel to the lower drop structure. The final elevation of the top of the wall in the river was below 1478.5, which is approximately 1.5-feet below the elevation of the restored riverbed.

Approximately 26.5 LF of 20-foot long AZ 14-770 pile was installed at the north end of the mid-slope sheetpile wall.

2.2.2 Criteria for Completion / Termination of Remedial System

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. It is not anticipated that groundwater will achieve *New York State Ambient Water Quality Standards and Guidance Values and Federal Drinking Water Standards* within the foreseeable future. Therefore, groundwater collection and treatment to prevent migration of contaminants to the Genesee River is expected to continue as a long-term remedy.

The composite CELA cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity

Should site monitoring activities identify a significant change in conditions that warrant termination of the groundwater collection and treatment system and/or cap OM&M, an appropriate request for a change in site status will be made at that time.

2.3 INSTITUTIONAL CONTROLS

A series of Institutional Controls is required by the ROD, and UAO: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site. Institutional Controls are spelled out in the individual Environmental Easements that have been filed for each affected property. Copies are included in (Appendix C). The requirements of the Environmental Easements are summarized below:

1. Grant
2. Purpose
3. Restrictions on use, which are summarized below:
    - No interference with monitoring, operations or maintenance of remedial actions
    - No use of groundwater
    - No disturbance of soils, except as provided for by this SMP
    - No residential, or related, no-restrictive use
    - Restrictions on new construction regarding foundations and need for a vapor barrier
4. Requirement for 60 day notice to EPA regarding intent to perform site activities
5. Limitations to modifications or termination of restrictions
6. Right of access
7. Reserved right of grantor
8. Federal authority
9. No public access and use
10. Public notice regarding conveying interest in the property
11. Enforcement
12. Damages

13. Waiver of certain defenses

14. Covenants

15. Notices

2.3.1 Excavation Work Plan

The site has been remediated for restricted use. Any future intrusive work that will penetrate the soil cover or cap, or encounter or disturb the remaining contamination, including any modifications or repairs to the existing cover system will be performed in compliance with the Excavation Work Plan (EWP) that is attached as Appendix E to this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) prepared for the site. The minimum requirements for a sample HASP is attached as Appendix F to this SMP. Those requirements are in current compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations. The HASP must be compliant with future changes to State and federal health and safety requirements, and specific methods employed by future contractors. They of must be submitted with the notification provided in the EWP. Any intrusive construction work will be performed in compliance with the EWP, and HASP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan.

The site owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations and bridge footings). The site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this SMP.

2.4 INSPECTIONS AND NOTIFICATIONS

2.4.1 Inspections

Inspections of remedial components installed at the site will be conducted at the frequency specified in the following documents:

Operation, Maintenance and Monitoring Plan for Operable Units 1 and 2 (OM&M Plan) – The OM&M Plan, presented in Appendix C, replaces, and combines the requirements of, three prior O&M Plans in affect for the site. Those plans had individually addressed 1) River channelization, 2) The CELA, and 3) Groundwater Monitoring.

Protective System Device Inspection and Maintenance Plan (PSDI&M Plan) – The PSDI&M Plan presented, in Appendix D, is a document specifically required by ARC as

part of their corporate site management procedures. It describes inspection and maintenance requirements and procedures for Protective System Devices (PSDs) associated with the groundwater collection and treatment system, which for this site includes pressure relief valves and portable fire extinguishers.

A comprehensive site-wide inspection will be conducted annually, regardless of the frequency of the Periodic Review Reports. The inspections will determine and document the following:

- Whether Engineering Controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system.

Inspections and reporting will be conducted in accordance with the procedures set forth in the two referenced plans.

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

2.4.2 Notifications

Notifications will be submitted by the property owner to the NYSDEC as needed for the following reasons:

- 10-day advance notice of any proposed ground-intrusive activities pursuant to the Excavation Work Plan.

- Notice within 48-hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other Engineering Controls and likewise any action to be taken to mitigate the damage or defect.

- Verbal notice by noon of the following day of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the site, with written confirmation within 10 days that includes a

summary of actions taken, or to be taken, and the potential impact to the environment and the public.

- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of the UAO.

- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing.

2.5 EMERGENCY CONTACT INFORMATION

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

2.5.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance, the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to a qualified environmental professional. These emergency contact lists must be maintained in an easily accessible location at the site.

Emergency Contact Numbers Medical, Fire, and Police:	911 Wellsville EMS 585-593-5600
One Call Center:	(800) 272-4480 (3 day notice required for utility mark-out)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362

Note: Contact numbers subject to change and should be updated as necessary

2.5.2 Map and Directions to Nearest Health Facility

Site Location: 2446 County Road 44, Village of Wellsville, New York 14895

Nearest Hospital Name: Jones Memorial Hospital

Hospital Location: 191 North Main Street, Wellsville, NY 14895

Hospital Telephone: (585) 593-1100 (main) and (585) 596-4064 (ER)

Directions to the Hospital:

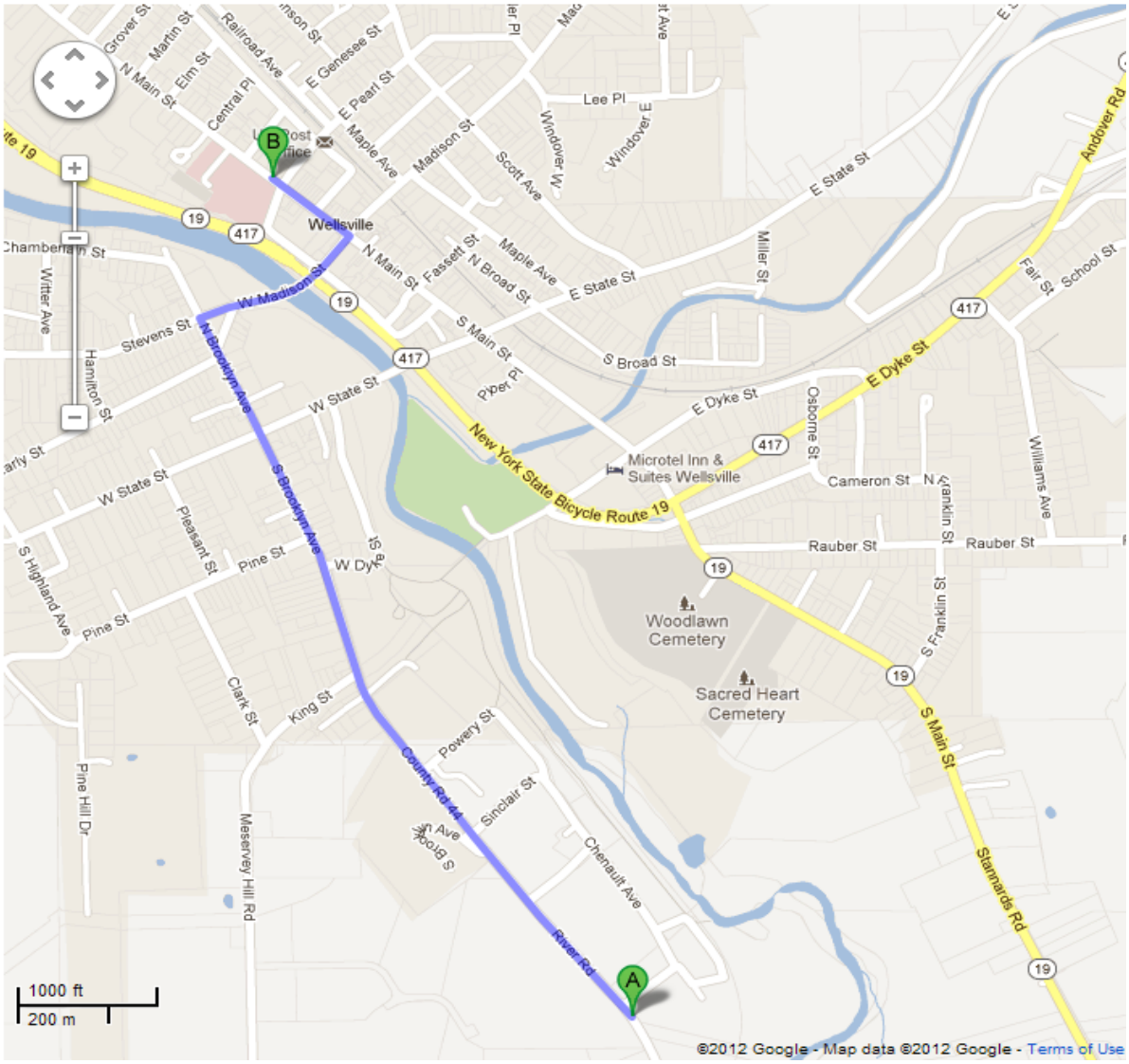
1. Head northwest on County Road 44/River Road towards Chenault Avenue
2. Continue to follow River Road (0.5 miles)
3. Continue onto South Brooklyn Avenue (0.7 miles)
4. Turn Right onto West Madison Street (0.2 miles)
5. Take 3rd Left onto North Main Street (0.1 miles)

Destination will be on the Left

Total Distance: 1.6 miles

Total Estimated Time: 6 minutes

Map Showing Route from the site to the Hospital:



2.5.3 Response Procedures

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this section. The list will also be posted prominently at the site and made readily available to all personnel at all times.

3.1 INTRODUCTION

3.1.1 General

The OM&M Plan (Appendix C) describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site, the soil cover system, and all affected site media identified below. OM&M Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This OM&M Plan describes the methods to be used for:

- Sampling and analysis of groundwater
- Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly ambient groundwater standards and Part 375 SCOs;
- Assessing achievement of the remedial performance criteria.
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment;
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Sampling locations, protocol, and frequency;
- Analytical sampling program requirements;
- Reporting requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

The OM&M Plan also serves as the Operation and Maintenance Plan, by describing the measures necessary to operate, monitor and maintain the site remedy.

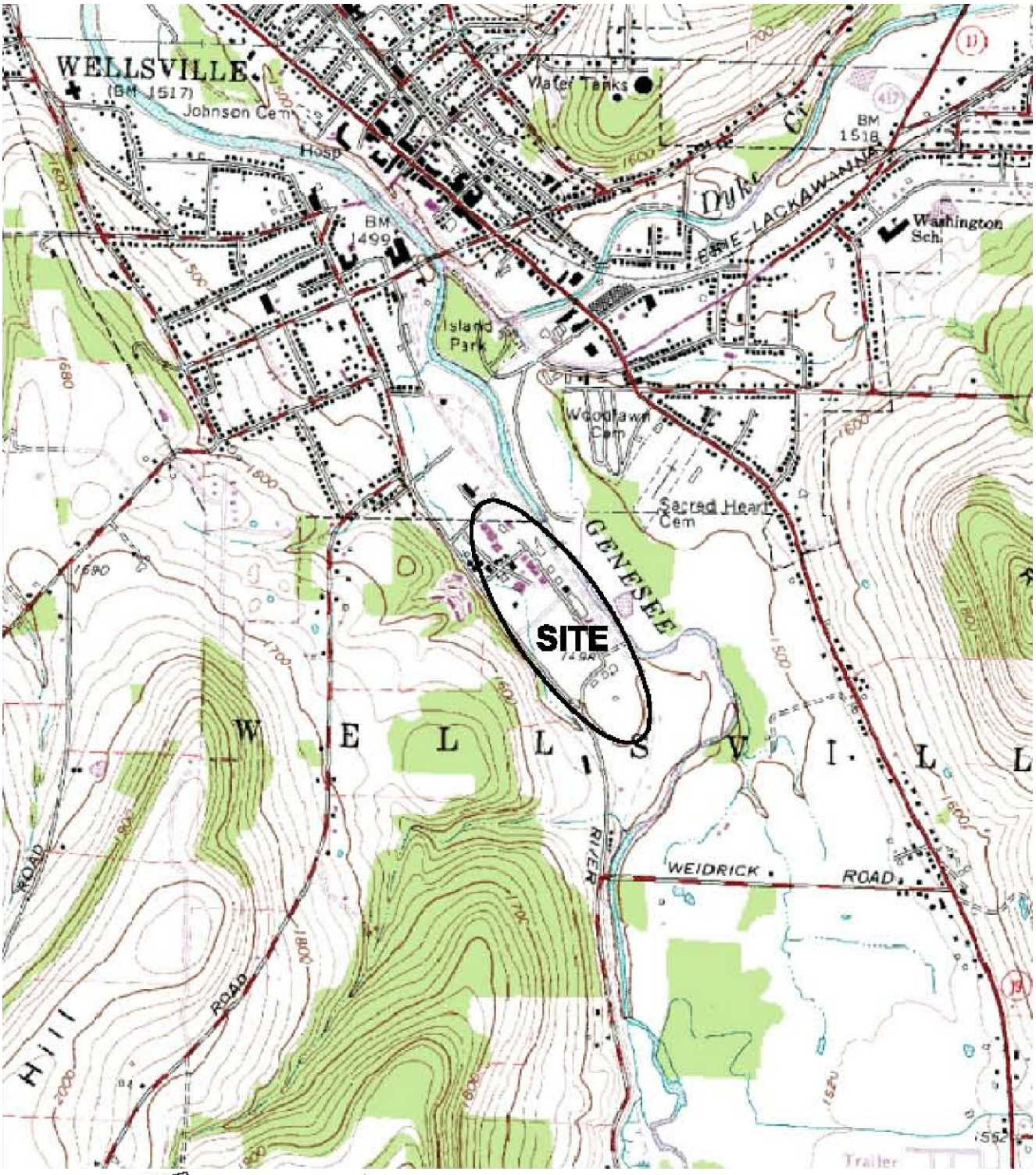
All inspections will be conducted at the frequency specified in the schedules provided in the OM&M Plan, the OPIM&M Plan and the PSDI&M Plan, all three of which are appended to this SMP. The respective plans present required data documentation, reporting, and certification requirements. At a minimum, a site-wide inspection will be conducted annually. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition has taken place, such as an erosion or flooding event that may affect the ECs.

TABLE

Medical	
Emergency Contact Numbers Medical, Fire, and Police	911 Wellsville EMS 585-593-5600
Summon Medical Assistance	(585) 593-0912 or 911
Hospital General Switchboard: Jones Memorial Hospital	(585) 593-1100
Occupational Health Clinic- Olean Wellness Center, NY	(716) 373-2600
Ambulance	(585) 593-4330
Hospital Emergency Room	(585) 596-4064
Local Emergency Services	
Wellsville Village Police (North Area)	(585) 593-5600
SUNY – Public Safety	(585) 593-6270
Fire Department	(585) 593-4980 (585) 593-5600
NYSDEC Spills Hotline	(800) 424-8802
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
Poison Control Center	(800) 222-1222
NY State Police (South and Central Areas)	(585) 268-9030
Services / Utilities	
National Fuel (natural gas)	(800) 444-3130
Village Electric Department	(585) 593-4000
Niagara Mohawk	(800) 867-2345
Verizon	(800) 890-6611
Wellsville Water Department	(585) 593-4000
Wellsville Sewer Department	(585) 593-3333
Village of Wellsville Public Works (Bill Whitfield)	(585) 593-1850
One Call Center:	(800) 272-4480 (3 day notice required for utility mark-out)

Note: Contact numbers subject to change and should be updated as necessary

FIGURE



QUADRANGLE LOCATION

N

0 1/4 1/2

MILES

REFERENCE: USGS 7.5 MINUTE QUADRANGLE; WELLSVILLE SOUTH, N.Y. QUADRANGLE; 1976

URS	FORMER SINCLAIR REFINERY SITE WELLSVILLE, NEW YORK	FIGURE 1 SITE LOCATION MAP

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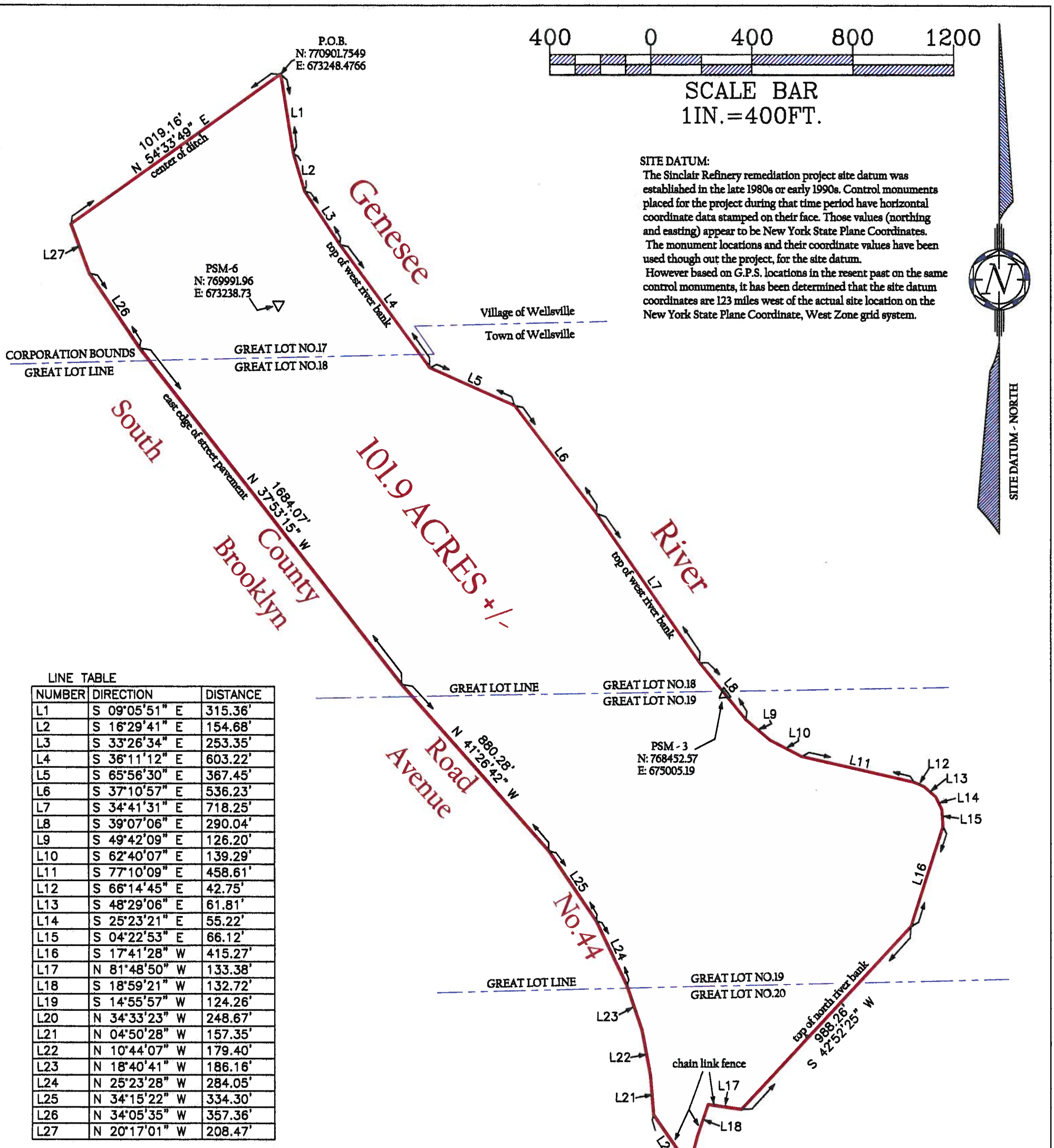
APPENDIX A
SURVEY DRAWING, METES AND BOUNDS



LINE TABLE

NUMBER	DIRECTION	DISTANCE
L1	S 09°05'51" E	315.36'
L2	S 16°29'41" E	154.68'
L3	S 33°26'34" E	253.35'
L4	S 36°11'12" E	603.22'
L5	S 65°56'30" E	367.45'
L6	S 37°10'57" E	536.23'
L7	S 34°41'31" E	718.25'
L8	S 39°07'06" E	290.04'
L9	S 49°42'09" E	126.20'
L10	S 62°40'07" E	139.29'
L11	S 77°10'09" E	458.61'
L12	S 66°14'45" E	42.75'
L13	S 48°29'06" E	61.81'
L14	S 25°23'21" E	55.22'
L15	S 04°22'53" E	66.12'
L16	S 17°41'28" W	415.27'
L17	N 81°48'50" W	133.38'
L18	S 18°59'21" W	132.72'
L19	S 14°55'57" W	124.26'
L20	N 34°33'23" W	248.67'
L21	N 04°50'28" W	157.35'
L22	N 10°44'07" W	179.40'
L23	N 18°40'41" W	186.16'
L24	N 25°23'28" W	284.05'
L25	N 34°15'22" W	334.30'
L26	N 34°05'35" W	357.36'
L27	N 20°17'01" W	208.47'

▽- DENOTES A PERMANENT SITE MONUMENT (PSM)

DEFINED LIMIT OF SITE
FORMER SINCLAIR REFINERY SITE
SITE DATUM

GREAT LOT No.	TOWNSHIP No.	RANGE No.
17,18,19,20	2	1

LAND TRACT Robt. Morris Reserve
TOWN & VILLAGE OF Wellsville
TAX MAP NO. N/A
COUNTY OF Allegany
STATE OF NEW YORK
DATE OF SURVEY: 07/27/2012
DATE OF PLAN: 08/02/2012
JOB NO. site_surv_site

STATE OF NEW YORK * JAMES B. BALL * LICENSED LAND SURVEYOR 49540

JAMES BALL LAND SURVEYOR

James Ball (585) 593-4691
Wellsville New York

James B. Ball
License No. 49540
ONLY PRINTS OF THIS SURVEY PLAN THAT BEAR AN ORIGINAL OF MY EMBOSSED SEAL SHALL BE CONSIDERED A VALID COPY.

c:\jobs\y12\site_surv_site

REVISIONS DATE

APPENDIX B
ENVIRONMENTAL PROTECTIVE EASEMENTS AND DECLARATIONS OF RESTRICTIVE COVENANTS

Environmental Protective Easements and Declarations of Restrictive Covenants were presented to the Property Owners in November 2012. The following is a distribution list of the Property Owners:

- Current Controls;
- Allegany Trails;
- Township of Wellsville;
- Village of Wellsville;
- National Fuel; and
- National Grid

APPENDIX C
O&M PLAN FOR OPERABLE UNITS 1 AND 2
(ELECTRONIC FILE ONLY – INCLUDED ON CD)

Atlantic Richfield Company

Eric J. Larson
Operations Project Manager

1 West Pennsylvania Avenue
Suite 440
Towson, MD 21204
Phone: (410) 825-2880
mobile: (443) 807-6233
E-mail: eric.larson@bp.com

November 19, 2012

Mr. Michael J. Negrelli
Remedial Project Manager
US Environmental Protection Agency
Region 2
290 Broadway Avenue
NYC SB2 – 20th Floor
New York, New York 10007-1866

Subject: Submittal of Final Operations and Maintenance (O&M) Plan
Former Sinclair Refinery Site: Operable Unit 2
Wellsville, New York
USEPA ID NY-D9805215

Dear Mr. Negrelli:

Atlantic Richfield Company (ARC) is submitting to U.S. EPA two (2) copies of the *Final Operations and Maintenance (O&M) Plan* for Operable Units 1 and 2 at the Former Sinclair Refinery site located in the Town of Wellsville, New York. As a result of the agreed upon comments received, attached is the revised final plan incorporating all agreed comments.

Upon your review, should you have questions or comment pertaining to the information provided herein, please don't hesitate to contact me at (443) 807-6233.

Sincerely,

Eric J. Larson
Operations Project Manager

Attachment

cc: Maurice Moore, OEPA
Martin Schmidt, URS
Bob Murphy, URS
Jerry Palmer, On-Site
Project File

OPERATIONS AND MAINTENANCE PLAN FOR OPERABLE UNITS 1 AND 2

Prepared for

Atlantic Richfield Company
(a BP Affiliated Company)

November 2012

1375 Euclid Avenue
Suite 600
Cleveland, Ohio 44115
216.622.2400

URS Project No. 13814934

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This *Operations and Maintenance Plan (O&M) Plan for Operable Units 1 and 2* (*O&M Plan*) has been prepared for the former Sinclair Refinery Site (Site) in the Town of Wellsville, New York (See Figure 1). This O&M Plan has been prepared for Atlantic Richfield Company (ARC) by URS Corporation (URS). USEPA provided comments to the draft O&M Plan on May 2, 2012. This revision includes agreed upon changes discussed with USEPA in meetings in July 2012. Copies of regulatory agency correspondence are included in Appendix K.

This plan replaces and supersedes these three prior plans:

- *Operations and Maintenance Plan for the Partial River Channelization on the Genesee River, Wellsville, New York,* dated April 1992, and prepared by Ebasco Services (*Prior River O&M Plan*).

- *Operations and Maintenance Plan for Central Elevated Landfill Area and Refinery Surface Soils, Wellsville, New York,* dated April 1993, and prepared by GeoSyntec Consultants (*Prior CELA O&M Plan*).

- *Proposed Revisions to Interim OU-2 Groundwater Monitoring Plan, Former Sinclair Refinery, Wellsville, NY,* dated April 23, 2003 (*Prior OU-2 Monitoring Plan*).

The remainder of this section provides: the objectives of this *O&M Plan;* project background information, and the organization for the remainder of this *O&M Plan.*

1.1 OBJECTIVES

The overall objective of this O&M Plan is to provide a single comprehensive site-wide description of the activities that will be performed by ARC to properly operate and maintain the remedial measures that have been constructed at the Site since 2007. The specific performance objectives for the O&M activities for the remedial systems are discussed in Section 4.

1.2 PROJECT BACKGROUND

The former Sinclair Refinery Site is on the west bank of the Genesee River approximately 10 miles north of the New York and Pennsylvania border. The irregularly shaped site covers approximately 110 acres and is bounded to the southwest by South Brooklyn Avenue and to the northeast by the northerly flowing Genesee River.

The former refinery operated from 1901 through 1958 to process New York and Pennsylvania crude oils into heavy oils and grease for lubrication, light oils for fuel, gasoline, lighter fluid, naphtha, and paraffin. Since the refinery ceased operations in 1958, various entities have held title to portions of the former refinery. Current owners of portions of the site include:

- Educational Foundation of Alfred, who owns the majority of the site including the Central Elevated Landfill Area (CELA) where it operates the Wellsville campus of the Alfred State College – State University of New York College of Technology.

- Allegany Trails, who owns a corridor along the east side of the site and the west bank of the Genesee River. Allegany Trails operates a recreational trail (WAG Trail) in this corridor.

The Site was first listed on the National Priority List (NPL) in 1983. The Site was divided into these two Operable Units for purposes of investigation and remediation:

- Operable Unit 1 (OU-1), which consists of a 10-acre landfill area adjacent to the southern boundary of the former refinery that is referred to as the CELA; and

- OU-2, which consists of the 90-acre former refinery area that covers the remainder of the site. This OU deals with collection and treatment of impacted site-wide groundwater.

ARC has undertaken remedial activities, which are described in more detail in Section 2, at the site in accordance with these agreements with the United States Environmental Protection Agency (USEPA):

- A *Consent Decree*, effective May 19, 1989, between ARC and USEPA required ARC to protect the CELA from inundation and erosion. The work required by the *Consent Decree* was completed in 1992. The previous O&M requirements associated with this work are contained in the *Prior River O&M Plan* and are summarized in Section 3. The proposed O&M requirements for this work are described in Section 4.

- An *Administrative Order of Consent* (*AOC*) for OU-1 between ARC and USEPA, dated May 1, 1992, required ARC to remediate the CELA and excavate and backfill certain areas of impacted soils in OU-2. The work required by the *AOC,* which included a bentonite slurry wall around the CELA and RCRA Cap over the consolidated wastes in the CELA was completed in July 1993. The previous O&M requirements associated with this work are contained in the *Prior CELA O&M Plan* and are summarized in Section 3. The proposed O&M requirements for this work are described in Section 4.

- The USEPA issued *Unilateral Administrative Order* (*UAO*) to ARC on September 8, 1992 for OU-2. The *UAO* required ARC to extract and treat subsurface water from the shallow water bearing zone; conduct long-term monitoring of surface water, subsurface water, and soil gas; and implement Institutional Controls to address future site uses. The initial phase of work for OU-2 was completed in 1995. The monitoring requirements associated with the OU-2 Phase I work are contained in the *Prior OU-2 Monitoring Plan* and are summarized in Section 3. In response to a request from USEPA and the New York State Department of Environmental Conservation (NYSDEC) for additional remedial action to terminate subsurface water flow from the site to the river bank, the river bed, and the main drainage swale, ARC undertook the work described in the *Final (100%) Remedial Design Report, Phase II-1 Remediation at Operable Unit 2, Former Sinclair Refinery Site, Wellsville, New York*, dated March 23, 2007, and prepared by SECOR Engineering P.C. (*Phase II-1 Design Report*). ARC also undertook the work described in the *Final (100%) Remedial Design Report – Revision 2, Phase II-2 Remediation at Operable Unit 2, Former Sinclair Refinery Site, Wellsville, New York*,

dated March 2, 2009, and prepared by URS (*Phase II-2 Design Report*). The remedial construction for the OU-2 Phase II work was completed in December of 2011. Restoration at the CELA, which includes final plantings and trail restoration was completed in June of 2012. USEPA and NYSDEC provided comments on September 11, 2012 regarding the Draft Final Remedial Action Report/Final Engineering Report (FRAR/FER) dated August 2012. USEPA and NYSDEC approved FRAR/FER on October 2, 2012 with incorporating NYSDEC's requirements to finalize. The Site Management Plan will be submitted to USEPA and NYSDEC by the end of 2012. The proposed O&M requirements for the OU-2 Phase II work and associated permits are described in Section 4.

1.3 REPORT FORMAT

This O&M Plan is organized as follows:

- Section 2: Describes the Remedial Design for the Site;
- Section 3: Describes the previous O&M requirements for the Site;
- Section 4: Describes the proposed O&M requirements for the Site;
- Section 5: Provides the reporting schedule and requirements; and
- Section 6: Lists the references used to prepare this *O&M Plan*.

Tables and Figures referenced in this plan follow the text. Appendices follow the Figures. An electronic copy of this plan is provided in Appendix A.

This section provides a brief description of the components of the remedial construction completed at the site. The components of the work have been grouped into these three functional areas based on their nature:

- CELA;
- Groundwater Collection and Treatment System; and
- River Channel and Swale.

The descriptions of the activities for each area have been further divided into actions that were completed in the 1990s and activities conducted since 2007. The locations of the components of the work are shown in Figure 2.

2.1 CELA

2.1.1 Previously Completed Work

The work that was completed at the CELA during the OU-1 remedial construction included:

- Consolidation and grading of materials in an historic landfill at the southern portion of the site. This work included removal of surface soils from select areas within OU-2 and transport of the removed materials to the CELA.
- Construction of a soil-bentonite slurry wall around the perimeter of the CELA. The slurry wall was keyed into an underlying low permeability clay layer.
- Construction of a RCRA Cap over the consolidated materials placed in the approximate 10 acre CELA. The cap included settlement markers, gas vents, rock-lined drainage channels, a grass cover, piezometers, and pipe sleeves for future piezometers or monitoring wells.

2.1.2 Recently Completed Work

The work that was completed at the CELA in 2010 included:

- Construction of a new cell, which is known as the CELA Reuse Area, on the northern portion of the CELA. This cell was located on top of the existing RCRA Cap. The Reuse Area encompasses approximately 3 acres of the CELA. This cell was used for disposal of materials generated during the OU-2 Phase II remedial construction activities (Main Drainage Swale, Genesee River Sediment; Bank Soils, groundwater collection trench spoils, and site-wide spoils.
- Removal of settlement markers in accordance with plans approved by USEPA.

- Replacement of the rock-lined finger drains on the CELA with vegetated channels.

The work that was completed at the CELA in 2011-2012 includes:

- Construction of a new RCRA cap over the 3 acre CELA Reuse Area.
- Replacing the rock-lined perimeter drainage channel with a vegetated channel.
- Replacing vegetative cover with a wildflower and natural grass mix that will not require frequent mowing.
- Establishing recreational trail system on the top of the CELA that will connect to the existing WAG trail.
- Gas vents reconfigured.

2.2 GROUNDWATER COLLECTION AND TREAMENT SYSTEM

2.2.1 Previous Groundwater Collection and Treatment System

A phased groundwater remediation approach was used during OU-2 Phase I activities. The system evolved from initial installation in the 1990s (recovery wells) until it ceased operation in late 2008 when the current groundwater collection and treatment system constructed during the OU-2 Phase II work was brought on-line. This system involved extraction of groundwater from a 300 ft. long collection trench. The final itineration of the OU-2 Phase I system is described below.

2.2.1.1 Groundwater Recovery Wells

The former system included three recovery wells in the northern portion of the site. The wells were equipped with submersible pumps. Water from the wells was pumped to the former treatment building at the north end of the site.

2.2.1.2 Treatment System

The treatment system, which was housed in a building at the north end of the Site and had a capacity of 10 to 15 gallons per minute (gpm), consisted of an air stripper, a metals treatment system, sand filters, granular activated carbon units, and an iron removal filter. Effluent from the treatment system was discharged to the Genesee River under State Pollutant Discharge Elimination System (SPDES) limitations issued by the NYSDEC. Residual solids generated by the metals treatment system were managed in a frame filter press prior to off-site disposal.

2.2.2 Current Groundwater Collection System and Wetland Treatment System

The current groundwater collection and wetland treatment system was constructed from 2007 through 2008, during the OU-2 Phase II remedial construction. The major components of the systems were brought on-line in December 2008. Process flow diagrams for the collection and treatment system are presented in Figures 3 and 4, respectively. The remainder of this section describes the components of the current system.

As described in the *Phase II-2 Design Report*, the decision to install a soil-bentonite slurry wall between the groundwater collection system and the Genesee River was deferred until operational data collected by the Performance-Based Groundwater Monitoring (PBGM) Program, which is described in Section 4.2, has been evaluated to assess whether the collection system is adequately capturing groundwater flow.

In correspondence dated March 26, 2012, USEPA and NYSDEC agreed that there is no evidence to support construction of a slurry wall between the groundwater collection trench and Genesee River. Performance data will be reviewed in accordance with schedules in the Site Management Plan and future Five-Year Reviews.

2.2.2.1 Groundwater Collection System

The current groundwater collection system consists of:

- Groundwater Collection Trench (GWCT);
- Eight manholes (MH) equipped with pumps; and
- Conveyance lines that transfer groundwater to the treatment system.

Each of these components is described below.

Groundwater Collection Trench

As shown in Figure 2, the 3,200 foot long GWCT extends from the northwest side of the CELA to the northern portion of the Site along the east side of the Site parallel to the Genesee River. The gravel-filled GWCT intercepts subsurface water before it can discharge into the adjacent Genesee River or Main Drainage Swale. There are piezometers (TPZ-1 through TPZ-9) and monitoring wells along and near the GWCT to monitor groundwater elevations in order to evaluate the performance of the GWCT.

Manholes

As shown in Figure 2, there are eight manholes located in the GWCT. The manholes are located at 400-foot intervals. The manholes are designated MH-A, which is the northern most manhole, through MH-H, which is the southernmost manhole. The manholes house pumping systems that remove subsurface water from the GWCT and transfer the water to the wetland treatment system via the conveyance lines.

Operation of the pumps in the manholes is controlled by float switches that are set to maintain the water level in the GWCT at an elevation below the adjacent Genesee River and main drainage swale. Each manhole, except MH-H, is equipped with a flowmeter to monitor volume of water pumped.

Conveyance Lines

There are three conveyance lines that carry water from the manholes to the wetland treatment system. The conveyance lines, which are constructed of 6-inch diameter HDPE pipe, and the manholes to which they can be connected are:

Conveyance Line	*Manholes Served*
Main Line	MH-A, MH-B, MH-C, MH-D, MH-E, and MH-F
Spare Line	MH-A, MH-B, MH-C, MH-D, MH-E, and MH-F
G-H Line	MH-G and MH-H

There are cleanouts for the conveyance lines at these five locations:

Location	*Conveyance Lines*
North of MH-A	Main Line Spare Line
Between MH-C and MH-D	Main Line Spare Line
Between MH-F and MH-G	Main Line Spare Line G-H Line
South of MH-H	Main Line Spare Line G-H Line
Northeast of Sedimentation Pond	Main Line Spare Line G-H Line

The conveyance system also includes by-pass lines to allow water from the GWCT to by-pass the cascade aerator and sedimentation pond.

2.2.2.2 Wetland Treatment System

The wetland treatment system constructed during the OU-2 Phase II work includes the following components:

- Cascade Aerator;
- Biofilter;
- Sedimentation Pond;
- Surface Flow Wetlands (3 Ponds);
- Vertical Flow Wetlands (5 Ponds);
- Outlet Structure; and
- Drying Beds.

The locations of these components are shown in Figure 2. The remainder of this section provides a description of each of these components.

Cascade Aerator

As shown in Figure 4, the cascade aerator is the first component of the wetland treatment system. The cascade aerator consists of:

- A hydraulic splitter structure with weir gates;
- Four manholes;
- HDPE piping between the splitter structure and the manholes; and
- Four corrugated metal pipes (CMPs) to aerate and direct water to the sedimentation pond.

The purpose of the cascade aerator is to oxidize metals (iron, manganese and arsenic) that are present in the subsurface water and facilitate precipitation.

Biofilter

The purpose of the biofilter is to control and abate a portion of the odors generated by the cascade aerator. The biofilter, which is southeast of the cascade aerator, consists of a blower and a mulch / organic matter media bed. The blower is connected to the cascade aerator splitter structure, which is covered to facilitate collection of vapors, via HDPE piping. The blower, which operates continuously, draws vapors from the splitter structure and discharges the vapors to a network of perforated pipe in the base of the media bed. The media bed consists of wood

mulch, which abates odors. In order to maintain biological activity the media bed is occasionally watered down.

Sedimentation Pond

As shown in Figure 2, the sedimentation pond (Sed Pond) is at the southern end of the Site. The purpose of the Sed Pond is to allow settling of insoluble metal oxides precipitates formed by the cascade aerators. The Sed Pond has an HDPE liner and the base of the pond is covered by a 3-inch layer of concrete-filled geoweb to facilitate access for equipment to periodically remove the accumulated precipitates. The water level in the Sed Pond is controlled by the weir gates in the hydraulic control splitter structure that is west of the surface flow wetlands.

Water enters the south end of the Sed Pond from the cascade aerator and discharges to the surface flow wetlands through a submerged outlet structure at the northwest corner of the sed pond. The configuration of the outlet structure, which is shown on Figure 5, provides the ability to limit the potential for accumulated precipitates from migrating from the Sed Pond to the surface flow wetlands and can be adjusted for winter or summer conditions. Procedures for cleaning the Sed Pond are described in Appendix G.

Surface Flow Wetlands

There are three surface flow wetlands (SFWs) north of the sed pond. The purposes of the SFWs are to promote biodegradation of organic compounds and provide additional removal (polishing) of iron and manganese. Biodegradation is facilitated by microbial communities associated with the plants (cattails) rhizosphere, which is the narrow region of soil influenced by root secretions from the vegetation growing in the SFWs. Additional polishing of metals is facilitated by open water areas which re-aerate the water.

Each SFW has a HDPE liner and consists of three open water areas, which are separated by platforms covered with topsoil that support the growth of wetland plants. The flow from the Sed Pond is divided between the three SFWs by the weir gates in the hydraulic control splitter structure. There is an additional chamber in the hydraulic control splitter to facilitate addition of a fourth SFW, if needed. There is also a recirculation pump in the hydraulic control splitter structure that can be used to pump water back to the cascade aerator if monitoring results suggest that additional treatment is needed.

The water levels in the SFWs are controlled by weir gates in the hydraulic control structures on the east end of each SFW. The water levels in the SFWs are set a few inches above the top soiled platforms in warm weather to encourage emergent growth. The water levels in the SFWs are raised during cold weather to prevent the root zones from freezing (approximately 2 ft.)

Each SFW is equipped with a blower that is connected to aeration lines in the base of each open water area. The blowers can be used, if needed, to aerate the water to enhance biodegradation or metals removal.

Vertical Flow Wetlands

As shown in Figure 2, there are five vertical flow wetlands (VFWs) north of the SFWs. The purpose of the VFWs, which have HDPE liners, is to raise the pH of the treated water to meet the discharge criteria. The pH of the treated water can drop due to precipitation of metals in the sed pond and SFWs. The pH adjustment is accomplished by allowing the water to contact the limestone beds in the VFWs.

Flow to each of the VFWs is controlled by setting the weir gates in the eight-way hydraulic splitter structure, which is at the southwest corner of the VFWs. There are three additional chambers in this splitter to facilitate construction of additional VFWs, if needed. Discharge from each VFW is controlled by a dosing siphon. Each dosing siphon allows the water level in the associated VFW to rise to a set point, at which the siphon flushes water from the VFW, which scours the limestone bed to prevent fouling.

Outlet Structure

The outlet structure, which receives flows from the VFWs, connects to a line that discharges the effluent from the wetland treatment system to the main drainage swale. The discharge is subject to the SPDES Limitations issued by the NYSDEC. A copy of the SPDES Limitations can be found in Appendix B. At this time, these limits are provisional and ARC and NYSDEC plan to meet in May 2012 to determine final discharge limits.

Drying Beds

The drying beds, which have been completed in 2011, are east of the Sed Pond. The purpose of the drying beds is to dewater and dry accumulated precipitates after they are removed from the sed pond. Each of the four drying beds has a sand filter over an HDPE liner. Water that drains from the precipitates in the beds will be collected by an underdrain system in each bed and pumped to the wetland treatment system via a connection to the conveyance lines in the cleanout northeast of the sed pond. The dried precipitates will be properly disposed in an off-site facility periodically.

2.3 GENESEE RIVER CHANNEL AND MAIN DRAINAGE SWALE

2.3.1 Previously Completed Work

In the early 1990s, ARC constructed a dike on the west bank of the Genesee River along the southern portion of the Site and stabilized the east river bank. This work was conducted in accordance with the requirements of a May 19, 1989 *Consent Decree* between ARC and the USEPA. The purpose of the dike on the west river bank, which included a rip-rap revetment, is to protect the CELA and southern portion of the site from erosion and inundation a 100-year flood event. The purpose of the stabilization of the east river bank, which included placing a rip-rap revetment, was to protect the river bank from erosion during floods.

2.3.2 Recently Completed Work

The remedial work completed at the Site during OU-2 Phase II-2 included: removal of sediments and restoration of the Main Drainage Swale; removal of sediments and restoration of the Genesee River bed, removal of bank soils and restoration of the Genesee River bank downstream of the lower drop structure; and construction of a permanent water level control berm in the Main Drainage Swale. These activities are described briefly in the remainder of this section. The locations of these activities are shown in Figure 2.

2.3.2.1 Main Drainage Swale Remediation

ARC removed sediments from the Main Drainage Swale in 2009 in accordance with *Phase II-2 Design Report.* The work was also conducted under the terms of *Flood Control Land Use Permit 09-08 (FCLU Permit 09-08)*, which was issued by the NYSDEC and can be found in Appendix C. The objective of this work was to remove potentially contaminated materials from the swale and then restore the swale. As discussed in Section 2.1.2, the material removed from the swale was disposed in the CELA reuse area.

2.3.2.2 Genesee River Bed and Bank Remediation

ARC removed sediment from the Genesee River bed and river bank soils area downstream of the lower drop structure in 2010 in accordance with *Phase II-2 Design Report.* The work was also conducted under the terms of modification to *FCLU Permit 09-08 (FCLU Permit 09-08, Mod 1)*, which was issued by the NYSDEC and can be found in Appendix C. The objective of this work was to remove potentially contaminated materials from the river bank and river bed, which were believed to be the source of hydrocarbon seeps, previously observed in the river, and restore these areas. As discussed in Section 2.1.2, the material removed during this work was disposed in the CELA reuse area. Restoration of the river bank included a rip-rap revetment downstream of the lower drop structure.

2.3.2.3 Water Level Control Berm in the Main Drainage Swale

ARC constructed a water level control berm (WLCB) in the southern portion of the Main Drainage Swale in 2010. This work was conducted under the terms of modification to *FCLU Permit 09-08 (FCLU Permit 09-08, Mod 2)*, which was issued by the NYSDEC and can be found in Appendix C. The objective of the WLCB, which is adjacent to the upper drop structure in the Genesee River, is to create a hydraulic barrier, which helps to control groundwater seepage from the site into the south end of the main drainage swale.

This section provides brief summaries of the scope of the previous O&M activities for the Site that are included in the prior O&M Plans (*Prior River O&M Plan*, *Prior CELA O&M Plan*, and *Prior OU-2 Monitoring Plan*). Similar to the remedial descriptions provided in Section 2, the summaries of the O&M activities have been grouped in these three functional areas:

- CELA;
- Groundwater Collection and Treatment; and
- River Channel and Swale.

A brief summary of the results of the monitoring results from each of these areas is also presented below along with the rationale for proposed changes in the O&M requirements.

USEPA provided specific comments to the draft O&M Plan on May 2, 2012. ARC met with USEPA and NYSDEC on July 31, 2012 to discuss the comments and provided further clarification on August 13, 2012. The agreed upon changes to monitoring requirements for the CELA, Groundwater Collection and Treatment and Genesee River Channel and Main Drainage Swale are provided in the following sections.

Appendix J contains Standard Operating Procedures (SOPs) that will be used during long-term monitoring of the site. These SOPs include the following: Depth to Water Monitoring; Groundwater Sampling; Recovery System Manhole Sampling; SPDES Sampling and Analysis; and Well Decommissioning.

3.1 CELA

3.1.1 Previous CELA O&M Activities

The previous O&M activities at the CELA included periodic inspections and monitoring along with maintenance activities when needed. These activities, which are described in more detail in the *Prior CELA O&M Plan* and subsequent modifications, are discussed below.

Inspections

Specific components of the CELA were inspected each quarter. The inspections focused on assessing the integrity of the CELA and whether maintenance or repairs were needed. The items that were inspected include:

- Vegetative cover on the CELA Cap;
- Gas vent system;
- Open well piezometers;
- Groundwater monitoring wells;

- Surface water drainage system; and
- Security fence.

These inspections were documented on checklists, which were included in the Annual Report of the CELA O&M activities.

Monitoring

The *Prior CELA O&M Plan* also included monitoring requirements. The most recent monitoring requirements, which evolved over time, include:

Item Monitored	*Frequency*	*Scope*
Subsidence	Temporarily suspended Previously conducted annually	Survey 25 settlement plates on the CELA
Groundwater quality	Annual	Metals and volatile organic compounds (VOCs) analyses of samples from 11 groundwater wells near CELA
Groundwater elevation	Semi-annual	Measure static water levels in 11 groundwater wells and 6 piezometers within and near the CELA
Light Non-Aqueous Phase Liquids (LNAPL)	Semi-annual	Measure LNAPL thickness, if present, in 11 groundwater wells and 6 piezometers within and near CELA
Gas Vents	Semi-annual	Measure VOC concentrations in gas vents, 5-feet upwind of vents, and 5-feet downwind of vents using photo-ionization detector (PID) or flame-ionization detector (FID)
Storm water	Semi-annual	Analysis of grab sample following storm event greater than 0.1 inch of precipitation
Soil pH and agronomic soil conditions	Every three years	Analysis of soil sample from CELA Cap

The results of these monitoring programs were included in the Annual Report of the CELA O&M activities.

Maintenance

The majority of the maintenance activities in the *Prior CELA O&M Plan* relate to repair of defects noted during the inspections and include:

Item	*Maintenance Activity*
CELA vegetative cover	Mow during summer months Remove woody or undesirable vegetation Fertilize and apply lime, as needed
Gas Vents	Repair as needed
Monitoring wells and piezometers	Repair as needed Remove and properly dispose LNAPL if greater than 2 feet thick
Surface drainage features	Repair as needed
Access roads	Repair as needed
Security fence	Repair as needed

The maintenance activities were summarized in the Annual Report of the CELA O&M activities.

3.1.2 CELA O&M Activities

The O&M activities for the CELA are discussed in more detail in Section 4. The majority of the changes, which are discussed below, are related to the monitoring activities at the CELA. The remainder of this section briefly describes the changes and provides the rationale for these modifications.

Subsidence Monitoring

ARC will discontinue the subsidence monitoring program at the CELA. Based on the survey data and visual observations documented in the previous Annual Reports for the O&M activities, the CELA Cap is considered stable because:

- No abnormal settlement has been observed since 1993;
- No areas of ponded water or abnormally soft ground have been observed; and

- The cap continues to have positive drainage.

Although the periodic survey of the settlement plates, which were removed in 2010 in accordance with plans approved by the USEPA, will be discontinued, the periodic inspections of the CELA will include visual assessment of indications of differential settlement.

Groundwater Quality Monitoring

The frequency of the groundwater quality monitoring program near the CELA will be changed from annual to once every two years. This change is warranted because:

- VOCs have not been detected in the monitoring wells during the period of 2003 through 2009; and

- Statistical analyses of the results for metals that have exceeded their respective Maximum Contaminant Levels (MCLs) indicate either stable or decreasing concentration trends.

The analytical parameters will be limited to arsenic, beryllium, chromium, copper, lead, and VOCs. As reported in the 2009 Annual Report, arsenic and chromium are the metals that exhibit the most frequent exceedances of their Maximum Contaminant Levels (MCLs) water since the 1993 baseline sampling. In addition, statistical analysis have shown that antimony, arsenic and chromium exhibit decreasing or stable concentrations at several wells and no observed trend for other metals and locations for which samples were analyzed. VOCs continue to be reported at non-detectable concentrations. Procedures for groundwater sampling are provided in Appendix J.

Groundwater Elevation Monitoring

The existing semi-annual groundwater elevation monitoring program for the CELA will be changed from semi-annual to annual. The data from the existing monitoring program indicates that water levels within the CELA have remained relatively stable and is consistently more than one foot below the top of the slurry wall. Procedures for groundwater sampling are provided in Appendix J.

LNAPL Monitoring and Removal

LNAPL monitoring in wells outside the slurry wall surrounding the CELA will be conducted every two years and that locations be limited to those wells in which LNAPL has been previously detected (MWR-02 and MWR-03). Changing the frequency is not expected to pose a risk because the LNAPL thickness is usually less than 0.5 feet and the maximum thickness of LNAPL measured in wells MWR-02 and MWR-03 (1.02 feet in MWR-02) is approximately half the 2-foot thickness removal threshold in the *Prior CELA O&M Plan.*

In addition, the LNAPL monitoring program inside the slurry wall that surrounds the CELA will be discontinued. ARC believes that this change is justified because historical data has shown that the groundwater level inside the slurry wall is consistently more than one foot below the top

of the slurry wall and the maximum observed LNAPL thickness within the slurry wall was 0.40 feet.

Gas Vent Monitoring

The frequency of the gas vent monitoring program will be temporarily increased to quarterly. The purpose of this proposed change is to collect data to confirm that the vents will not pose a risk to the public that will be using the trails on the CELA. Data from recent Annual O&M Reports for the CELA indicates the VOC concentrations upwind and downwind of the vents is typically non-detect. The data also indicates that the VOC concentrations in the vents is generally less than 10 parts per million (ppm), except for vents V-1, which is in the northwestern portion of the CELA, and V-11, which is on the east side of the CELA. ARC will evaluate the results of the monitoring after three years and make a recommendation regarding continuation or modification of the monitoring program for the gas vents on the CELA. As part of the CELA ReUse Program, the gas vents that are in the vicinity of the CELA ReUse Area and existing surface have been modified to lower the discharge from a position 4-ft above ground to a position within 1 ft. of the surface. The existing vents have been lowered and the diameter have been reduced to facilitate a less accessible discharge point that is closer to the ground surface. Also, several gas vents have been eliminated. Existing gas vents are shown on Figure 6.

Storm Water Monitoring

The storm water monitoring program at the CELA will be continued for one additional year (2013) in order for all grasses and wild vegetation planted in 2012 on the CELA to become fully established. After 2013, the Storm Water Management program will be discontinued. The current NYSDEC SPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity states:

> *Landfills that have been closed in accordance with 6 NYCRR Part 360 are not required to maintain SPDES permit coverage for stormwater discharges provided that the landfill is or has been maintained under a post closure care program.*

Because the CELA will be closed and maintained in general accordance with the NYSDEC regulations, no stormwater monitoring will be required.

CELA Maintenance

The mowing program at the CELA will be discontinued upon full establishment of the final cover of wildflowers and natural grasses. Once the final cover is established, an annual visual inspection of the CELA surface will be conducted to monitor erosion, tree growth, and animal damage that may require mitigation.

3.2 GROUNDWATER COLLECTION AND TREATMENT

3.2.1 Previous Groundwater Collection and Treatment O&M Activities

The O&M activities for the previous groundwater collection and treatment system included inspections, monitoring, and maintenance. These activities, which are described in more detail in the *Prior OU-2 Monitoring Plan* and subsequent modifications, are discussed below. These activities were suspended in December 2008 when the previous system was shutdown and the current groundwater collection and treatment system was put into service.

Inspections

The components of the recovery wells and treatment system were inspected periodically.

Monitoring

The monitoring requirements for the final evolution of the previous groundwater collection and treatment system included:

Item Monitored	*Frequency*	*Scope*
Groundwater Quality	Annual	Benzene, toluene, ethylbenzene, and xylene (BTEX), chlorinated volatile organic compounds (CVOCs), semi- volatile organic compounds (SVOCs), and arsenic analyses of samples from nine groundwater monitoring wells in the downgradient area of the northern portion of the site.
Groundwater Geochemical Parameters	Annual	Measurement of pH, conductivity, dissolved oxygen, temperature, oxidiation-reduction potential, and turbidity in nine groundwater monitoring wells in the downgradient area of the northern portion of the site
Groundwater Elevations	Annual	Measure static water levels in nine groundwater monitoring wells in the downgradient area of the northern portion of the site
Treatment System Performance	Monthly	Volume of water discharged Analysis of three samples (influent, effluent, and intermediate sample between GAC units) for parameters listed in the SPDES discharge limitations issued by the NYSDEC

Item Monitored	*Frequency*	*Scope*
River Seep Monitoring	Whenever at site	Observe river and bank for hydrocarbon sheens Deploy and manage booms to control any observed hydrocarbon sheens

The results of the treatment system performance monitoring were reported to NYSDEC and USEPA monthly and summarized in the Annual Report of the OU-2 O&M activities. The results of the other monitoring activities were also summarized in the Annual Report for the OU-2 O&M activities.

Maintenance

The maintenance activities associated with the previous groundwater collection and treatment system included off-site disposal of residual solids generated by the treatment system and repair and replacement, as needed, of system components. The nature and amount of residual materials that were disposed off-site were summarized in the Annual Report for the OU-2 O&M activities.

3.2.2 Changes to Groundwater Collection and Treatment O&M Activities

All O&M activities for the previous groundwater collection and treatment system will be discontinued. The O&M activities for the new groundwater collection and treatment systems are described in Sections 4.2 and 4.3, respectively.

3.3 GENESEE RIVER CHANNEL AND MAIN DRAINAGE SWALE

3.3.1 Previous Genesee River Channel and Main Drainage Swale O&M Activities

The previous O&M activities for the Genesee River channel included inspections, monitoring, and maintenance. These activities, which are described in more detail in the *Prior River O&M Plan* and subsequent modifications, are discussed below. Note that the previous O&M activities were limited to the portion of the Genesee River near the CELA.

Inspections

The scope and schedule for inspections of the river channel near the CELA included:

Area Inspected	*Frequency*	*Scope*
Rip-rap revetments on east and west river banks near CELA	Annual during low river flow, i.e. less than 180 cubic feet per second (cfs)	Visual inspection for evidence of sloughing, erosion, other damage, or undesirable conditions
River bed adjacent to southeast side of CELA	Annual during low river flow, i.e. less than 180 cfs	Visual inspection, with photographs, to check for shoaling
Rip-rap revetments on east and west river banks near CELA	After each high water period, i.e. river flow greater than 4,500 cfs	Visual inspection for evidence of sloughing, erosion, other damage, or undesirable conditions
Dike between CELA and Genesee River	During high water event, i.e. river flow greater than 4,500 cfs, if safe	Patrol and visual inspection for damage that might jeopardize the integrity of the dike

The results of these inspections were documented on checklists and included in the Annual Report of the river channel O&M activities.

Monitoring

The *Prior River O&M Plan* also included monitoring requirements, which evolved over time. The most recent monitoring requirements include:

Item Monitored	*Frequency*	*Scope*
Soil pH and agronomic soil conditions	Every three years during a low flow period	Analysis of soil sample from dike on west side of river

Item Monitored	*Frequency*	*Scope*
Dike profile and cross section	Every five years during a low flow period	Survey dike profile and cross section between CELA and river at 200-foot intervals to assess settlement and changes in cross sectional area. Survey toe of slope to check for displacement or settlement of rip-rap revetment.

The results of these monitoring activities were included in the Annual Report of the river channel O&M activities.

Maintenance

The majority of the maintenance activities in the *Prior River O&M Plan* relate to repair of defects noted during the inspection and monitoring programs and include:

Item	*Maintenance Activity*
Vegetative cover on dike between CELA and River	Mow during summer months Remove woody or undesirable vegetation Fertilize and apply lime, as needed Maintain road on dike
Rip-rap revetments on east and west river banks near CELA	Remove woody growth annually

The maintenance activities were summarized in the Annual Report of the river channel O&M activities.

3.3.2 Changes to Genesee River Channel and Main Drainage Swale O&M Activities

The O&M activities for the Genesee River channel and Main Drainage Swale are discussed in more detail in Section 4.4. The majority of the changes are related to the work that was recently completed in the Main Drainage Swale and the river north of the lower drop structure. The remainder of this section briefly describes the changes to the existing O&M program for the river channel near the CELA and provides the rationale for these changes.

River Bed Inspection

The specific requirement for inspection of the river bed near station 20+00 near the southeast side of the CELA will be eliminated. This requirement was included to assess conditions after removal of sediments from the river bed in the early 1990s. ARC believes that it is appropriate

to remove this requirement after nearly two decades without identification of a problem in this area.

Maintenance of Rip-Rap Revetments Near CELA

The physical removal of woody vegetation from the rip-rap revetments on the east and west banks of the Genesee River near the CELA will be discontinued. This change is based on safety concerns associated with personnel walking on the irregular rip-rap surface to remove vegetation. As agreed with USEPA and NYSDEC, an environmentally friendly herbicide will be used to control woody growth to allow for visual inspection of rip-rap conditions. ARC will continue to work with USACE and NYSDEC to evaluate options for herbicide application.

Agronomic Testing

The periodic agronomic testing of the soil on the dike between the CELA and the river will be discontinued. Previous testing has not shown the need for application of lime or fertilizer to maintain acceptable vegetative cover.

Scope of Periodic Surveys

The scope of the periodic surveys of the profile and cross-sectional area of the dike between the CELA and the river will be modified. This modification is based on safety concerns associated with personnel walking on the irregular rip-rap surface to collect survey data and previous survey data, which has shown no significant changes.

The scope of the periodic surveys of the dike will include measuring the elevation of the top of the dike and the location of the toe of the rip-rap slope at 200-foot intervals. ARC believes that this data, along with visual observations, will be adequate to monitor the dike for movement or settlement.

This section describes the O&M requirements for the Former Sinclair Refinery Site. The overall objectives of the O&M activities are to:

- Ensure that the remedial systems continue to protect human health and the environment; and
- Document the performance of the remedial systems.

The specific O&M requirements for the CELA, groundwater collection system, wetlands treatment system, and the river channel and swale are presented in Tables 1, 2, 3, and 4, respectively. The remainder of this section provides additional information about the specific objectives of each component of the remedial system.

4.1 CELA

The primary objectives of the O&M requirements for the CELA, which are presented in Table 1, are to maintain and protect the cover system on the CELA. A checklist for the quarterly CELA O&M activities can be found in Appendix D. Figure 6 shows the locations of the gas vents that are to be monitored quarterly for three years and the groundwater monitoring wells that are to be sampled every two years.

4.2 GROUNDWATER COLLECTION SYSTEM

The primary objectives of the O&M requirements for the groundwater collection system, which are presented in Table 2, are to:

- Ensure proper operation and maintenance of the groundwater collection system;
- Collect data that documents that the groundwater collection system is capturing site-wide groundwater from OU-2 before groundwater can enter the Genesee River or Main Drainage Swale;
- Collect groundwater from the eight (8) manholes within the groundwater collection trench to monitor groundwater quality; and
- Collect groundwater analytical data from four (4) wells between the groundwater collection trench and Genesee River to monitor groundwater quality.

The weekly, monthly, and quarterly checklists for the groundwater collection system O&M activities can be found in Appendix E. The locations of the manholes, piezometers, and other features that are included in the checklists are shown in Figure 7.

The data collection requirements in Table 2 are the minimum requirements to demonstrate proper operation of the system in accordance with the Performance Based Groundwater Monitoring (PBGM) Program that was included in the *Phase II-2 Design Report*. ARC may elect to monitor

groundwater elevations at additional points to collect data to assess performance of the GWCT. If additional data is collected, it will be discussed in the Annual Reports, as appropriate. As shown in Table 2, the groundwater elevation data collected from the GWCT vicinity will be compared to the river stage to assess whether the GWCT is capturing groundwater and take corrective measures, if needed.

USEPA provided specific comments to the draft O&M Plan on May 2, 2012 and specific comments to the Performance-Based Groundwater Monitoring Report: Hydrologic Summary July 2011 on March 26, 2012. ARC met with USEPA and NYSDEC on July 31, 2012 to discuss the comments and provided further clarification on August 13, 2012. The agreed upon changes to the long-term Performance-Based Monitoring Program as related to groundwater elevation and groundwater quality sampling are provided in the following sections.

4.2.1 Long-Term PBGM Program

The previous O&M activities for PBGM activities since 2008 included synoptic groundwater elevations, Genesee River flow gauging and groundwater collection trench pumping conditions. The O&M activities for long-term PBGM are discussed below and the data collection requirements are described in Table 2.

Genesee River Flow Conditions

The frequency of monitoring the flow and discharge conditions of the Genesee River will be conducted on daily and weekly intervals. Data will be collected from the USGS gauging station located at Station 04221000.

Groundwater Collection Trench Pumping Conditions

The overall groundwater collection trench pumping conditions will be monitored by collecting actual discharge flow rates from each of the eight manholes located along the collection trench. Total discharge from each manhole will be collected from flow meters on a weekly frequency. Also, groundwater elevations within the groundwater collection trench will be monitored by collecting elevation data from the eight (8) manholes and eight (8) piezometers located with the alignment of the groundwater collection trench. Groundwater elevations from the manholes and piezometers will be collected monthly.

Site-Wide Groundwater Conditions

Site-wide groundwater conditions will be monitored by collecting groundwater elevation data from a select listing of monitoring wells located near the groundwater collection trench. A listing of wells to be monitored is provided in Table 5. Procedures for groundwater elevation measurements are provided in Appendix J. Quarterly synoptic sampling has been performed for the time period 2011-2012. Site-wide groundwater elevation gauging will be performed on a semi-annual basis for a three (3) year period (2013-2015). Upon completion of this program and evaluation of capture, a future program for monitoring will be developed and described in the Annual Report.

4.2.2 Groundwater Quality Monitoring

The frequency of the groundwater quality monitoring program in the area between the groundwater collection trench and Genesee River will be on an annual basis. Four (4) monitoring wells (MW-78, OW-4, MW-71 and MW-55R) will be sampled annually. Procedures for groundwater sampling are provided in Appendix J. The analytical parameter list will include certain parameters on the SPDES permit parameter list. The specific parameters to be included are the following:

- Benzene;
- Chloroethane;
- 1;1-Dichloroethane;
- Ethylbenzene;
- Toluene;
- Vinyl Chloride;
- Xylene (total);
- Acenaphthene;
- Aniline;
- Fluorene;
- 2-Methylnaphthalene;
- Naphthalene;
- Nitrobenzene and
- Phenanthrene

These parameters will be analyzed for the first year (2013) for groundwater monitoring wells. Manholes will be sampled quarterly for five years (2012-2016), semi-annually for two (2) years (2017 and 2018) and annually thereafter (Table 2). Based on concentrations detected in these wells and existing manholes, a revised parameter list will be prepared for future sampling. The revised parameter list will be presented in the Annual Report.

4.2.3 Plan for Cessation of Groundwater Treatment System

As described in the UAO, the efficiency of the groundwater treatment system as related to aquifer restoration and performance criteria established in the ROD must be measured against MCLs. If monitoring data obtained from manhole sampling and groundwater monitoring sampling indicate asymptotic trends are being attained, and then a Contingency Measure Plan will be submitted as an amendment to the O&M Plan. This Contingency Measures Plan will describe procedures for cessation of groundwater extraction from the existing groundwater collection system.

4.3 WETLAND TREATMENT SYSTEM

The primary objectives of the O&M requirements for the wetland treatment system, which are presented in Table 3, are to:

- Ensure proper operation and maintenance of the wetland treatment system; and
- Collect data that documents that the discharge from the wetland treatment system meets the SPDES Limitations issued by the NYSDEC, which are presented in Appendix B. The current SPDES sampling program as described in Appendix B will continue until May 2013. At that time ARC will meet with NYSDEC to obtain a final permit for operations.

Monthly, quarterly, and annual checklists for the wetland treatment system O&M activities can be found in Appendix F. Procedures for SPDES sampling are provided in Appendix J. The locations of features on these checklists are shown in Figure 8.

4.4 GENESEE RIVER CHANNEL AND MAIN DRAINAGE SWALE

The primary objectives of the O&M requirements for the Genesee River channel and Main Drainage Swale, which are presented in Table 4, are to:

- Maintain and protect the improvements along the river channel and within the Main Drainage Swale; and
- Comply with requirements of Flood Control Land Use Permits for the Site, which are in Appendix C.

Quarterly and annual checklists for the river channel and swale O&M activities can be found in Appendix I. The locations of the features on these checklists are shown in Figure 2. The annual checklist will be used for inspections after high water events.

ARC will report the results of the O&M activities to USEPA and NYSDEC. The results of analyses of the influent and effluent for the wetland treatment system will be reported to USEPA and NYSDEC monthly in accordance with the terms of the SDPES limitations issued by NYSDEC (see Appendix B). In accordance with the conditions of FCLU Permit 09-08 Mod. 2, ARC will notify NYSDEC if significant seepage is observed at the toe of the levee between the WLCB and the Genesee River. The majority of the results of the O&M activities will be reported to USEPA and NYSDEC in quarterly reports and in the Annual Report. The annual O&M report will be submitted by December 31st of following year. The contents of each Annual Report will include:

- *Summary of Requirements* – A brief summary of the O&M requirements for each component of the remedial systems will be included in the Annual Report.

- *Summary of Activities* – The report will include a narrative of the O&M activities that were completed during the reporting year for each component of the remedial systems. These summaries will include discussions of the monitoring and inspection activities. Copies of completed checklists will be appended to the report to document the activities. Tables that summarize analytical results for the wetland treatment influent and effluent samples and groundwater samples, when collected, will be included in the report. Laboratory reports for the samples will be appended to the report.

- *Groundwater Elevations along Collection Trench* – Tabular and graphic summaries of the groundwater elevations along and near the collection trench will be included in each report.

- *Problems and Corrective Actions* – Any problems that were encountered during the year will be summarized along with the completed or proposed resolution of the problems.

- *Conclusions and Recommendations* – Each report will include conclusions regarding the effectiveness of the remedial systems (e.g., groundwater capture by the collection system and performance of the wetland treatment system). If appropriate, each report will also include recommendations for changes to the O&M procedures.

A *Consent Decree*, effective May 19, 1989, between ARC and USEPA.

An *Administrative Order of Consent* (*AOC*) for OU-1 between ARC and USEPA, dated May 1, 1992.

The USEPA issued *Unilateral Administrative Order* (*UAO*) to ARC on September 8, 1992 for OU-2. .

Operations and Maintenance Plan for the Partial River Channelization on the Genesee River, Wellsville, New York, dated April 1992, and prepared by Ebasco Services (*Prior River O&M Plan*).

Operations and Maintenance Plan for Central Elevated Landfill Area and Refinery Surface Soils, Wellsville, New York, dated April 1993, and prepared by GeoSyntec Consultants (*Prior CELA O&M Plan*).

Proposed Revisions to Interim OU-2 Groundwater Monitoring Plan, Former Sinclair Refinery, Wellsville, NY, dated April 23, 2003 (*Prior OU-2 Monitoring Plan*).

URS Corporation, *Final 100% Remedial Design Report – Revision 2*, March 2, 2009.

USEPA issued *EPA Approval of "Final Remedial Action Report/Final Engineering Report", September 2012,* dated October 2, 2012.

TABLES

TABLE 1 *CELA O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*				
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*
Vegetative Cover	Visual inspection of CELA grade	Annual	Erosion Sediment buildup Local subsidence Loss of grade Water ponding Slope instability Sloughing.	Repair as needed to restore original grades. Replant disturbed areas in accordance with seed mix in Appendix C
	Visual inspection of vegetation on CELA.	Annual	Stressed vegetation Trees Undesirable vegetation	Replant areas of stressed vegetation in accordance with seed mix in Appendix C. Remove trees, weeds, or undesirable vegetation.
	Visual inspection of CELA surface	Annual	Burrows	Trap or evict burrowing animals. Fill burrows with topsoil and replant surrounding area.
	Visual inspection of CELA surface	Annual	Evidence of fires Vandalism Litter	Replant and repair damaged areas. Remove litter.
Trail System on CELA	Visual inspection of trails and signage	Annual	Erosion of trail surface. Damage or vandalized signs.	Fill eroded areas with NYSDOT 401 aggregate. Repair damage and vandalism.
Gas Vents	Visual inspection of gas vents	Quarterly for 3 years	Erosion around gas vent. Evidence of vandalism or damage.	Fill eroded areas with topsoil and reseed. Repair damage. Evaluate data after 3 years.
	Measure VOC concentrations in vents and in breathing zone downwind of gas vents.	Quarterly for 3 years	VOC concentration in excess of 1 ppm of benzene or vinyl chloride in breathing zone downwind of gas vents.	Establish barricade around gas vents to prevent access. Evaluate data after 3 years.

TABLE 1 CELA O&M REQUIREMENTS FORMER SINCLAIR REFINERY WELLSVILLE, NEW YORK				
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*
Storm Water	Collect surface water runoff sample	Once 2013		
Piezometers Within CELA (P-01 through P-06) and Monitoring Wells Near CELA (MWR-1 through MWR-11)	Visual inspection of above grade portion of piezometers and monitoring wells.	Quarterly	Sediment or vegetative growth over protective cover. Erosion around surface casing. Missing or damaged lock or cover cap. Water collecting between casing and riser. Evidence of vandalism or damage.	Remove sediment or vegetation. Fill eroded areas with topsoil and seed. Replace or repair lock or cover cap. Remove water. Repair damage.
Surface Water Drainage System	Visual inspection of perimeter ditch.	Quarterly	Obstructions which could impede flow. Damaged or eroded areas.	Remove obstructions. Repair damage. Fill eroded areas with topsoil and seed.
	Visual inspection of culverts under trail.	Quarterly	Obstructions which could impede flow. Damaged or eroded areas.	Remove obstructions. Repair damage. Fill eroded areas with topsoil and seed.
	Visual inspection of drainage culvert that penetrates the flood protection dike at the north end of the CELA.	Quarterly	Obstructions which could impede flow. Damaged or eroded areas.	Remove obstructions. Repair damage. Fill eroded areas with topsoil and seed.

TABLE 1 CELA O&M REQUIREMENTS FORMER SINCLAIR REFINERY WELLSVILLE, NEW YORK				
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*
Security Fence	Visual inspection of fence on west side of CELA.	Quarterly	Gates dragging on ground. "Frozen" locks or hinges at gates. Holes in fence fabric. Loose or missing connections of fence fabric to posts. Loose fence posts. Cracks in post foundations. Woody vegetation grounding onto or through fence. General deterioration.	Adjust gates to keep from dragging. Repair, lubricate, replace locks or hinges, as needed. Repair holes in fence fabric. Re-attach fabric to posts. Repair or replace posts. Repair or replace fence post foundations. Remove vegetation. Assess need to repair or replace deteriorated sections of fence.
Groundwater Quality	Collect samples from 11 groundwater monitoring wells (MWR-1 through MWR-11) near the CELA. Analyze samples for arsenic, beryllium, chromium, copper, lead and VOCs. Sampling plan in Appendix E.	Every two years		
Groundwater Elevations	Collect water levels from 11 groundwater wells near CELA	Annual		
LNAPL Monitoring and Removal	Assess monitoring wells MWR-02 and MWR-03 for presence of LNAPL.	Every two years	Measurement LNAPL thickness.	Remove accumulated LNAPL prior to collection of groundwater samples. Properly dispose removed LNAPL

TABLE 2 *GROUNDWATER RECOVERY SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*				
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*
Manholes MH-A through MH-H	Visual inspection of covers at manholes.	Weekly	Vegetation covering manhole. Evidence of vandalism or damage.	Remove vegetation. Repair damage.
	Confirm operation, including locks, of doors into manholes.	Quarterly	Any defect	Repair as needed
	Perform datalogger maintenance (calibrate recorder instruments, change out desiccant caps, clean probes, etc.)	Semi-annual		
	Visual inspection of interior of manholes. Follow confined space entry procedures if personnel need to enter manholes for inspections or repairs.	Quarterly	Plumbing leaks. Evidence of vandalism or damage.	Repair as needed.
Control Panel Cabinets	Visual inspection of cabinets housing control panels.	Weekly	Vegetation that obstructs operation of doors. Evidence of vandalism or damage.	Remove vegetation. Repair damage.
	Confirm operation, including locks, of doors on cabinets.	Quarterly	Any defect	Repair as needed

TABLE 2
GROUNDWATER RECOVERY SYSTEM O&M REQUIREMENTS
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*
Piezometers TPZ-01 through TPZ-09	Visual inspection of piezometers.	Quarterly	Sediment or vegetative growth over protective cover. Erosion around surface casing. Missing or damaged lock or cover cap. Water collecting between casing and riser. Evidence of vandalism or damage.	Remove sediment or vegetation. Fill eroded areas with topsoil and seed. Replace or repair lock or cover cap. Remove water. Repair damage.
	Perform datalogger maintenance (calibrate recorder instruments, change out desiccant caps, clean probes, etc.)	Semi-annual		
Access paths and turnouts at manholes	Visual inspection of surface.	Monthly	Erosion	Fill eroded areas with NYSDOT 401 aggregate
Pumping Systems	Confirm manhole pump operation.	Weekly	Pump not operating	Troubleshoot and repair as needed
	Record instantaneous flow measurements and totalized flow measurements for each manhole.	Weekly	Flow meter or totalizer not working. Average flow outside desired operating range.	Troubleshoot and repair as needed. Adjust gate valves on lines that connect manholes to conveyance lines to adjust flow rates.
	Maintain and calibrate flowmeters	Annual		

TABLE 2 *GROUNDWATER RECOVERY SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*				
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*
Conveyance lines	Exercise all valves on lines that connect manholes to the conveyance lines.	Annual	Valves do not operate properly	Repair as needed
	Exercise valves for by-pass lines.	Annual	Valves do not operate properly	Repair as needed
	Conduct camera survey of interior of conveyance lines within 100 feet of cleanout boxes for accumulation of scale.	Every five years	Blockage greater than 30%	Clean conveyance lines
Cleanout boxes	Inspect exterior and interior of cleanout boxes.	Annual	Vegetation covering structure. Evidence of damage or vandalism. Leaking cleanouts on conveyance lines.	Remove vegetation. Repair damage. Repair leaks.
Groundwater Elevations	Monitor groundwater elevations at 17 locations (MH-A through MH-H and piezometers TPZ-01 through TPZ-09) in GWCT using electronic recorders (In-situ LevelTROLL datalogger or equivalent). Set dataloggers to collect groundwater elevations at 30-minute intervals (17520 points per year), which will provide enough points to conduct forensic analysis on pumping history or other problems.	Continuous	Dataloggers not operating properly.	Troubleshoot and repair as needed.
	Manually measure groundwater elevations at 17 locations (MH-A through MH-H and piezometers TPZ-01 through TPZ-09) in GWCT and compare to information from dataloggers	Monthly	Variance between manual measurements and dataloggers greater than 0.1 foot.	Recalibrate dataloggers, as needed.

TABLE 2 *GROUNDWATER RECOVERY SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*				
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*
Groundwater Elevations (con't)	Download dataloggers	Monthly		
	Obtain stage information from the USGS National Water Information System for the Genesee River at USGS gauging station 04221000, which is approximately 1.8 miles downstream of site. Convert river stage information to river elevations adjacent to site using conversion chart in Appendix G.	Monthly		
	Compare groundwater elevations in GWCT to river elevations adjacent to site.	Monthly		Adjust elevations of float switches in manholes.
	Monitor groundwater at list of partial synoptic wells	Semi-Annual		
Groundwater Quality	Collect samples from four wells (MW-78, OW-4, MW-71, and MW-55R)	Annual	Asymptotic	Prepare Contingency Measures Plan
	Collect samples from Manholes A through H	Quarterly (2012-2016); Semi-Annual (2017-2018); Annual (2019)	Asymptotic	Prepare Contingency Measures Plan

TABLE 3 *WETLAND TREATMENT SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*				
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*
Treatment System Performance	Calculate monthly discharge from treatment system based on volumes pumped from collection system and other sources.	Monthly		
	Calculate annual discharge from treatment system based on monthly discharges.	Annually in June		
	Analyze samples of influent for parameters in List A in the SPDES limitations issued by NYSDEC. Analysis plan is in Appendix I.	Monthly		
	Analyze samples of effluent for parameters List A the SPDES limitations issued by NYSDEC. Analysis plan is in Appendix I.	Monthly		
	Analyze samples of influent for parameters List B in the SPDES limitations issued by NYSDEC. Analysis plan is in Appendix I.	Annually in June		
	Analyze samples of effluent for parameters List B in the SPDES limitations issued by NYSDEC. Analysis plan is in Appendix I.	Annually in June		
Cascade Splitter Structure and Cascade Aerator	Exercise weir gates to confirm operation. Reseal cover over splitter structure if it needs to disturbed to exercise gates.	Annual	Gate doesn't operate for full range	Repair as needed
	Check that flow from each corrugated pipe is approximately equal	Monthly	Unequal flows	Adjust weir gates to equalize flows.
	Inspect outlet pipes from splitter structure to manholes for obstructions for sediment buildup.	Quarterly	Blockage greater than 25%	Clean pipes.
	Inspect corrugated pipes for sediment buildup.	Quarterly	Blockage greater than 25% or more than 4-inches of buildup	Clean pipes.

TABLE 3 *PROPOSED WETLAND TREATMENT SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*				
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*
Biofilter	Check for evidence of burrowing animals.	Quarterly	Burrows present	Fill burrows with mulch.
	Check moisture content of media at approximately 6-inches below surface of media.	Monthly in summer	Media is dry.	Add water to media
	Check depth of media in biofilter.	Annual	Freeboard greater than four-inches.	Add pine bark mulch to replenish media.
Biofilter Blower	Check blower vacuum and record value.	Monthly	On-Site to provide operating data	Check lines to blower and cover on cascade aerator for leaks and repair leaks, if present.
	Check oil level in blower.	Monthly	Low oil level.	Replenish oil.
	Check blower for oil leaks	Monthly	Oil leaks below blower	Repair as needed
	Open valve on inlet line to drain condensate.	Monthly	Valve doesn't operate	Repair as needed
	Check condition of enclosure and lines.	Monthly	Damage	Repair as needed
Sedimentation Pond	Visual inspection for vegetation in or around pond.	Quarterly	Vegetation	Remove vegetation.
	Check for animals burrowing around pond.	Quarterly	Burrows	Fill burrows with topsoil
	Check position and condition of turbidity curtains.	Monthly	Curtains are not secured to anchor blocks. Curtains are damaged.	Re-attach curtains to anchor blocks. Repair or replace curtains.
	Assess need to clean pond based on iron concentrations in influent since last cleaning and prior cleaning results.	Semi-annual	Operator judgment.	Clean pond
Sedimentation Pond Outlet	Set outlet for summer operation.	Annual in spring	After potential for freezing is past.	
	Set outlet for winter operation.	Annual in late fall	Before potential for formation of more than 1-inch of ice.	

TABLE 3 *PROPOSED WETLAND TREATMENT SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*				
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*
Hydraulic Control / Splitter Structure	Exercise weir gates to confirm operation.	Annual	Gate doesn't operate for full range	Repair as needed
	Check that water level in sedimentation pond is approximately 1,508 feet-msl.	Monthly	Water level in sedimentation pond is below 1,507.5 feet-msl.	Adjust weir gates to raise water level in sedimentation pond.
	Check that flow to each of surface flow wetlands is approximately equal.	Monthly	Unequal flows	Adjust weir gates to equalize flows.
	Confirm that there is no debris in structure and no blockages of the pipes to the SFWs.	Bi-Weekly	Debris or blockage	Clean as needed.
Recycle Pump in Hydraulic Control Splitter	Assess need to operate recycle pump by reviewing previous effluent analytical results.	Quarterly	Consistent or frequent exceedances of the SPDES discharge limits while the aerator blowers for the SFWs are operating.	Operate recycle pump.
	Check pump operation	Quarterly	Pump does not operate.	Troubleshoot and repair.
Surface Flow Wetlands	Check for geese establishing residence within or near wetlands	Whenever present at site	Waterfowl in and near wetlands. Nesting geese or other waterfowl.	Harass geese and other waterfowl to prevent nesting (see Appendix zz for methods). If geese are nesting assess whether damage warrants obtaining permit from USDA and NYSDEC to disturb nests.
	Check for presence of muskrats within wetlands.	Monthly	Muskrats observed in or near wetlands. Muskrat dens on platforms in wetlands.	Trap muskrats in accordance with current NYSDEC Permit to Take Destructive Wildlife (see Appendix K).

TABLE 3 *PROPOSED WETLAND TREATMENT SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*				
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*
Surface Flow Wetlands (continued)	Visual inspection of condition of vegetation on platforms in basins.	Monthly	Areas of impacted or missing vegetation	Implement geese and muskrat control measures, if needed (see above). Transplant cattails from an off-site source to fill areas of sparse vegetation.
	Measure thickness of topsoil on vegetated platforms.	Annual	Topsoil thickness less than 3-inches.	Add topsoil to bring thickness to 6-inches.
	Visually inspect condition of base of deep basins in surface flow wetlands.	Once every three years	More than 0.5-inch of iron precipitates.	Develop and implement plan to remove precipitate.
	Survey dikes around and between wetlands to assess settlement.	Every two years for 10 years, then every five years.	Settlement greater than 0.1 foot from design elevation of 1,508.5 ft-msl or previous survey.	Develop and implement plan to address settlement.
	Topsoil on walls of basin berms.	Quarterly	Areas of sloughing. Exposed liner or erosion	Backfill eroded areas and restore as needed. Cover exposed liner with topsoil and seed.
Surface Flow Wetland Blowers	Evaluate whether blower is to be operated by reviewing previous effluent analytical results, expected weather conditions, and expected influent.	Monthly	Consistent or frequent exceedances of the SPDES discharge limits in conjunction with cold weather (average temperature less than 30°F) and high VOC loading in influent.	Operate blowers
	Check blower pressure and record value, if operating	Weekly	On-Site to provide operating data	(Need input form On-Site)
	Check oil level in blowers, if operating	Weekly	Low oil level	Replenish oil.
	Check blowers for oil leaks, if operating	Weekly	Oil leaks below blower	Repair as needed
	Check condition of enclosures	Weekly	Damage	Repair as needed

TABLE 3 *PROPOSED WETLAND TREATMENT SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*				
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*
Surface Flow Wetland Blowers (continued)	Check aeration lines in surface wetlands for leaks, if operating	Weekly	Leaks Floating lines	Repair as needed
Surface Flow Wetland Hydraulic Control Structures	Exercise weir gates to confirm operation.	Annual	Gate doesn't operate for full range	Repair as needed
	Confirm that there is no debris in structure and no blockages on the outlet pipes.	Weekly	Debris or blockage	Clean as needed.
	Set water level to approximately 4 to 6 inches above vegetated benches.	Annual in spring	After potential for freezing is past.	
	Set water level to at least 18 inches above vegetated benches.	Annual in late fall	Before potential for formation of more than 1-inch of ice.	
Vertical Flow Wetland Splitter Structure	Exercise weir gates to confirm operation	Annual	Gate doesn't operate for full range	Repair as needed
	Confirm that there is no debris in structure and no blockages on the outlet pipes.	Weekly	Debris or blockage	Clean as needed.
	Confirm that flow is approximately equal to each of the five vertical flow wetlands.	Monthly	Unequal flows	Adjust weir gates to equalize flows.
Vertical Flow Wetlands	Check for animals burrowing around cell.	Quarterly	Burrows present	Cover burrows with topsoil and reseed.
	Survey dikes around and between wetlands to assess settlement.	Every two years for 10 years, then every five years.	Settlement greater than 0.1 foot from design elevation of 1,505.5 ft-msl or previous survey.	Develop and implement plan to address settlement.
	Topsoil on walls of basin berms.	Quarterly	Exposed liner or erosion	Cover exposed liner with topsoil and seed. Backfill eroded areas and restore as needed.
	Visual inspection of limestone	Annual	More than 0.5-inch of iron precipitate on surface of limestone	Remove and replace upper 1-foot of limestone

TABLE 3 *PROPOSED WETLAND TREATMENT SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*				
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*
Vertical Flow Wetlands (continued)	Evaluate effectiveness of limestone by reviewing pH in effluent for past 12 months.	Annual	pH level consistently trending downward toward discharge limit.	Remove and replace limestone
Dosing Siphon Structures	Visual inspection of interior of structures.	Quarterly	Debris or blockage	Clean as needed.
	Confirm that dosing siphons are cycling.	Monthly	Water level does not change in wetland	Troubleshoot and repair as needed
Effluent Manhole and Outfall	Visual observation of flow in effluent manhole	Monthly	Discolored or no flow.	Troubleshoot and repair as needed.
	Visual observation of flow at outfall	Monthly	Discolored or no flow.	Troubleshoot and repair as needed.
	Visual inspection of effluent manhole	Monthly	Debris or blockages	Clean, as needed
	Visual inspection of outfall pipe in swale	Monthly	Debris or blockages	Clean, as needed
Drying Beds	Check condition of doors when residuals are stored in drying beds	Weekly	Leakage	Repair doors and cleanup leakage
	Confirm that sand layer in base of bed is adequate.	Prior to transferring residuals to beds	Sand layer less than 12-inches thick	Add sand
	Check for standing liquids in beds	Weekly	Free liquids in beds	Open valves on drainage lines.
	Check for debris or blockages in catch basin on pad west of beds	Monthly	Blockage or excessive debris	Clean catch basin

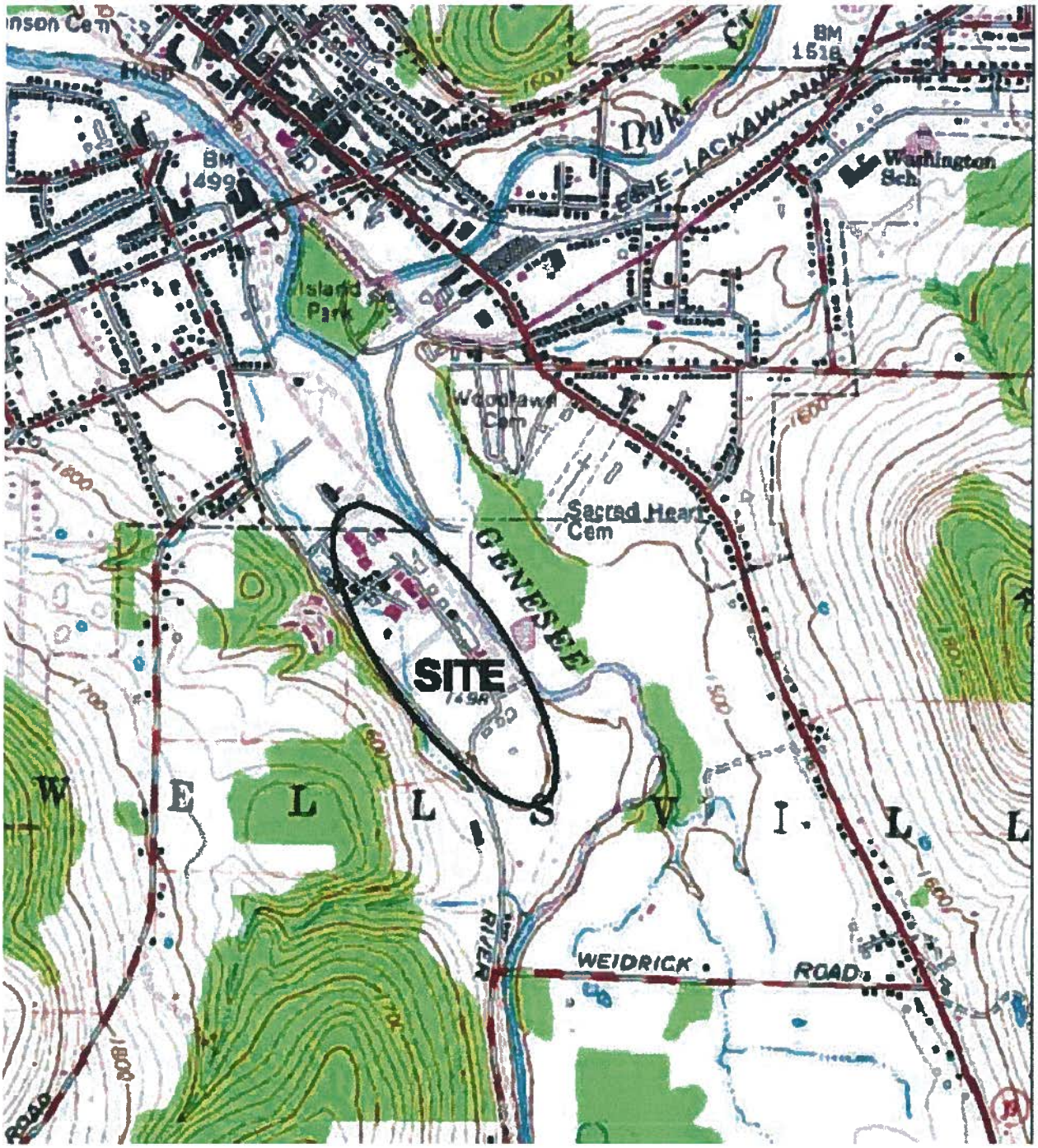
TABLE 3 *PROPOSED WETLAND TREATMENT SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*				
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*
Drying Bed Sump Pump	Exercise valves on drainage lines from drying beds to drainage sump.	Annual and prior to transferring sludge to drying beds	Valves do not operate properly	Repair as needed
	Confirm pump operation	Monthly and prior to transferring sludge to drying beds.	Pump does not operation	Troubleshoot and repair as needed
	Confirm function of check valve in meter box.	Monthly	Improper operation.	Troubleshoot and repair as needed
	Float switch elevations	Quarterly	Elevations deviate from plan by more than 0.25-feet.	Adjust elevations of float switches.
	Float switch operation	Monthly	Switches do not operate	Troubleshoot and repair as needed
	High high level alarm	Whenever at the site	High high level alarm is on	Troubleshoot and repair as needed

TABLE 4 *RIVER CHANNEL AND SWALE O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*				
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*
Rip-rap revetment on east river bank near CELA	Visual inspection	Annual during low river flow (<180 cfs)*	Damage. such sloughing or erosion.	Repair damage by replacing rip-rap to design grades.
	Visual inspection	After each high water period (>4,500 cfs)*	Damage, such as sloughing or erosion	Repair damage by replacing rip-rap to design grades.
Dike between CELA and Genesee River	Visual inspection of rip-rap revetment	Annual during low river flow (<180 cfs)*	Damage. such sloughing or erosion.	Repair damage by replacing rip-rap to design grades.
	Visual inspection of rip-rap revetment	After each high water period (>4,500 cfs)*	Damage, such as sloughing or erosion	Repair damage by replacing rip-rap to design grades.
	Visual inspection, if safe.	During high water event (>4,500 cfs)*, if safe	Damage that might jeopardize the integrity of the dike.	Repair damage, as needed, after water level recedes
	Visual inspection of trail on top of dike.	Annual	Water ponding or ruts	Fill low areas with NYSDOT 401 aggregate
	Survey elevation of top of dike CELA and river at 200-foot intervals to assess settlement. Survey toe of slope to check for displacement or settlement of rip-rap revetment.	Every five years during a low river flow (<180 cfs)*	Excessive settlement or movement.	Review information with NYSDEC to evaluate whether correction action is needed.
Rip-rap revetment and dike on west river bank downstream of lower drop structure	Visual inspection	Annual during low river flow (<180 cfs)*	Damage. such sloughing or erosion.	Repair damage by replacing rip-rap to design grades.
	Visual inspection	After each high water period (>4,500 cfs)*	Damage, such as sloughing or erosion	Repair damage by replacing rip-rap to design grades.

TABLE 4 *RIVER CHANNEL AND SWALE O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*				
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*
	Survey toe of slope to check for displacement or settlement of rip-rap revetment.	Every five years during a low river flow (<180 cfs)*	Excessive settlement or movement.	Review information with NYSDEC to evaluate whether correction action is needed.
Water Level Control Berm at South End of Swale	Visual inspection	Quarterly	Damage. such sloughing or erosion. Vegetation.	Repair damage by replacing rip-rap to design grades. Remove vegetation.
	Visual inspection of vegetation on side slope of levee between the WLCB and the Genesee River.	Monthly Bi-Weekly during summer months.	Vegetation taller than 12-inches within 10 feet of the interface of the WLCB and levee.	Cut to height no shorter than 3-inches.
	Monitor toe of levee between the WLCB and the Genesee River for seepage.	Quarterly	Observation of significant seepage	Review information with NYSDEC to evaluate whether correction action is needed.
	Dewater pool behind WLCB.	When requested by NYSDEC		

Notes:
* - River flow data is available from the USGS National Water Information System for the Genesee River at USGS gauging station 04221000, which is approximately 1.8 miles downstream of site.

FIGURES



REFERENCE: USGS 7.5 MINUTE QUADRANGLE; WELLSVILLE SOUTH, N.Y. QUADRANGLE; 1976

0 1/8 1/4

SCALE 1" = 1/4 MILE

URS	FORMER SINCLAIR REFINERY SITE WELLSVILLE, NEW YORK	FIGURE 1 SITE LOCATION MAP

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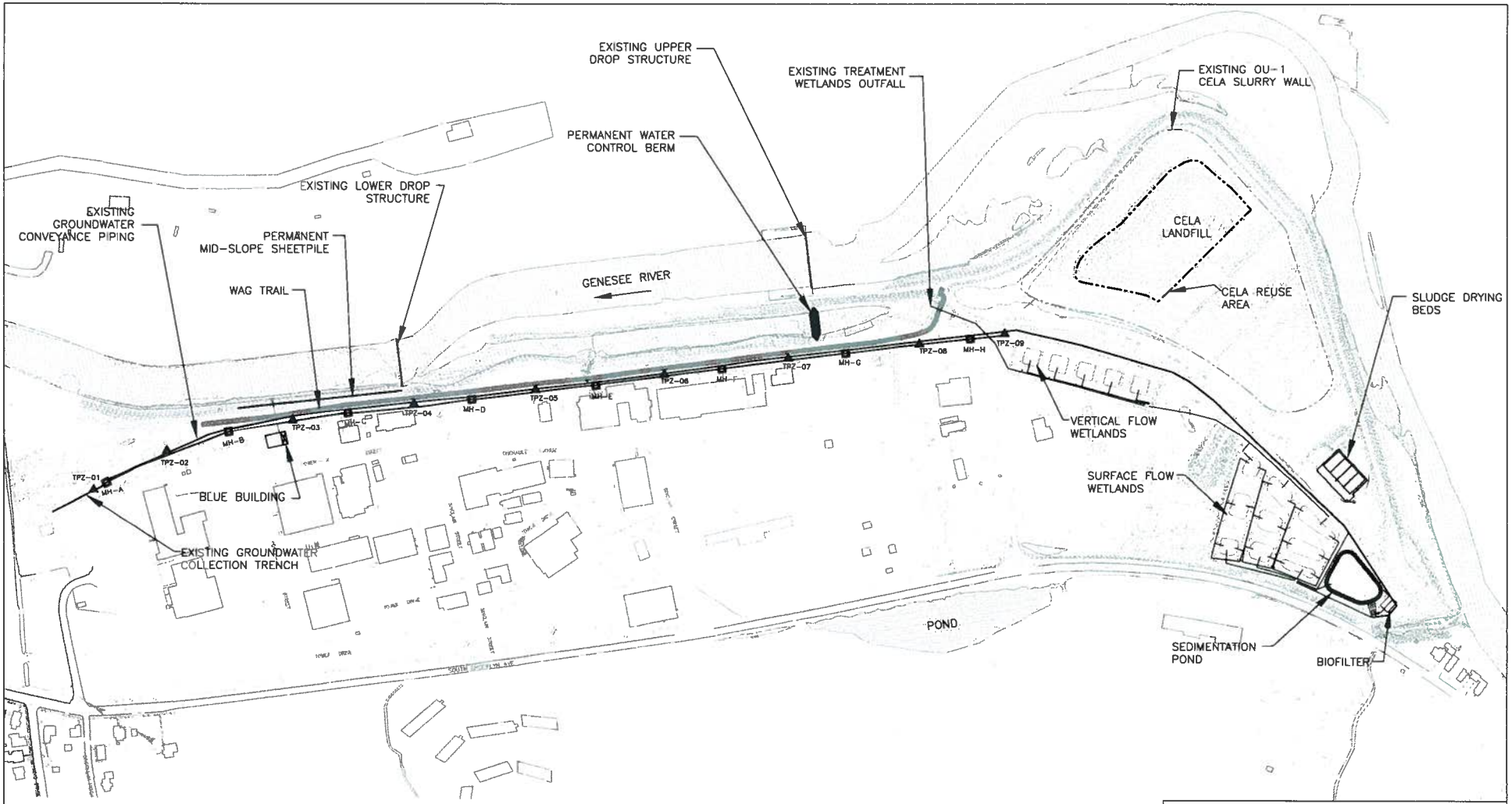


LEGEND

- PIPING FOR WATER TREATMENT SYSTEM
- CELA REUSE AREA
- WAG TRAIL
- ▲ PEIZOMETER LOCATIONS

0 150 300

SCALE: 1"=300'

NOTE: GROUNDWATER COLLECTION AND CONVEYANCE PIPING ALIGNMENT OBTAINED FROM 2009 ASBUILT SURVEY PERFORMED BY JIM BALL SURVEYORS

K:\Projects\B\BP-Wellsville\13812259\DWGs\Figures\O&M Manual\Figure 2 - site features.dwg User:girl_samavedam Jul 21, 2011 - 12:11pm

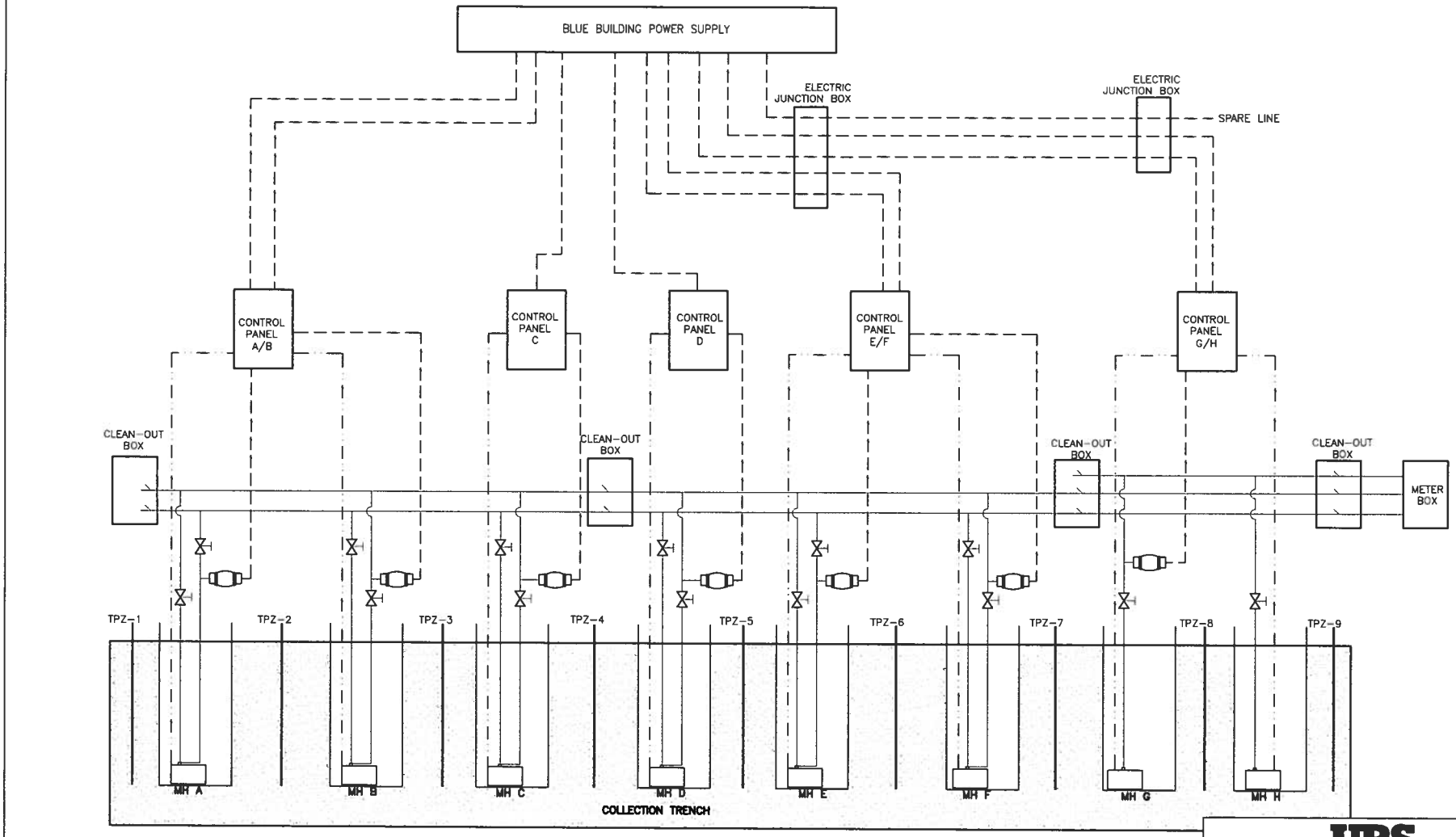
URS

FORMER SINCLAIR REFINERY SITE

WELLSVILLE, NEW YORK

SITE FEATURES

DRAWN BY:	CHECKED BY:	PROJECT No:	DATE:	FIGURE No:
ACY	GS	13812259	07/12/11	2



LEGEND

- SIGNAL LINES
- ELECTRIC LINES
- TOTALIZER
- VALVE

NOT TO SCALE

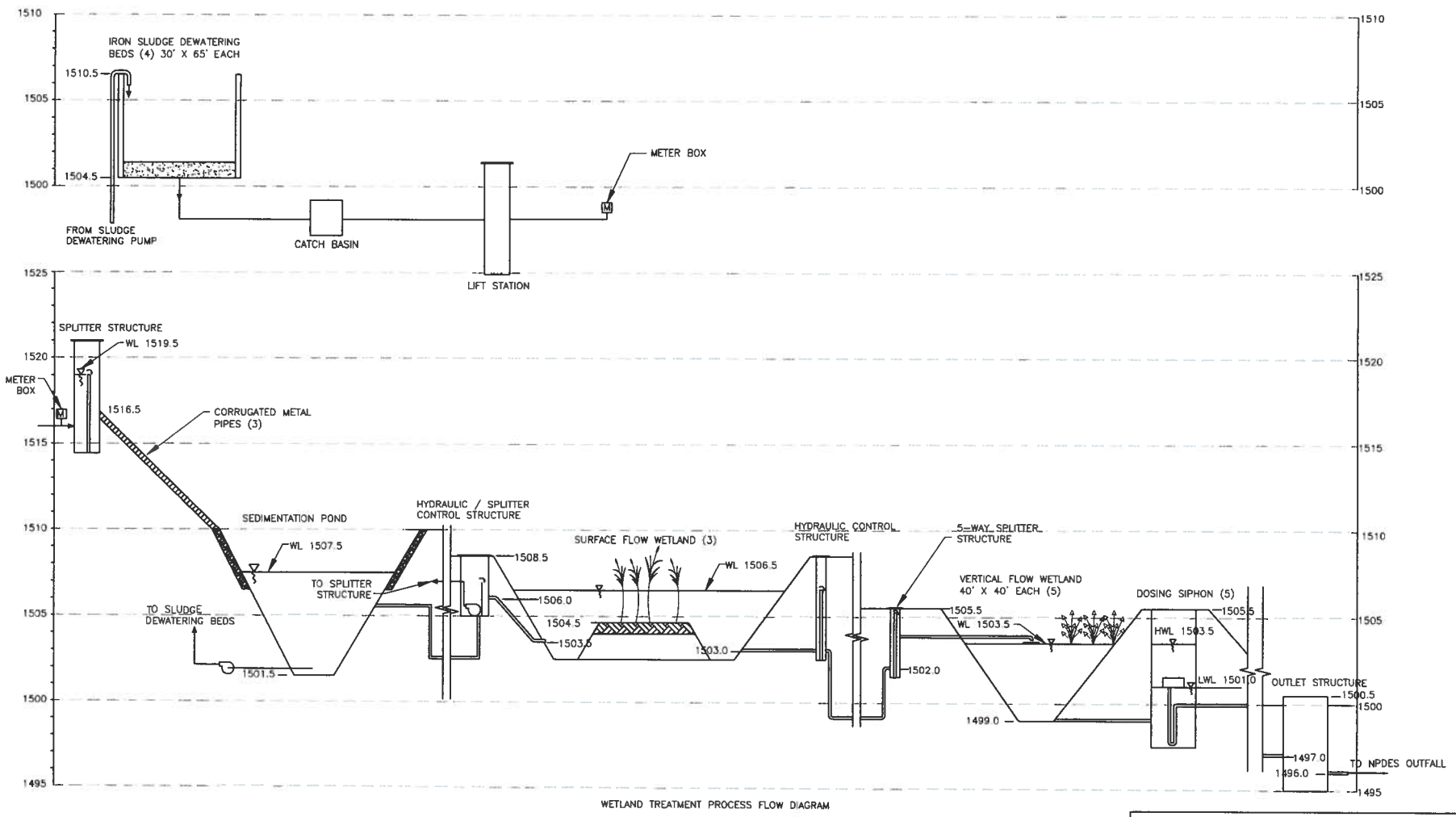
URS

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

PROCESS FLOW DIAGRAM FOR COLLECTION SYSTEM

DRAWN BY:	CHECKED BY:	PROJECT No:	DATE:	FIGURE No:
GS	MLS	13812259	07/11/11	3

K:\Projects\B\BP-Wellsville\13812259\DWGs\Figures\O&M Manual\Figures 3 and 4\Figure 3 - Process Flow Diagram.dwg User: girl_somavedam Jul 21, 2011 - 12:10pm



WETLAND TREATMENT PROCESS FLOW DIAGRAM

NOT TO SCALE

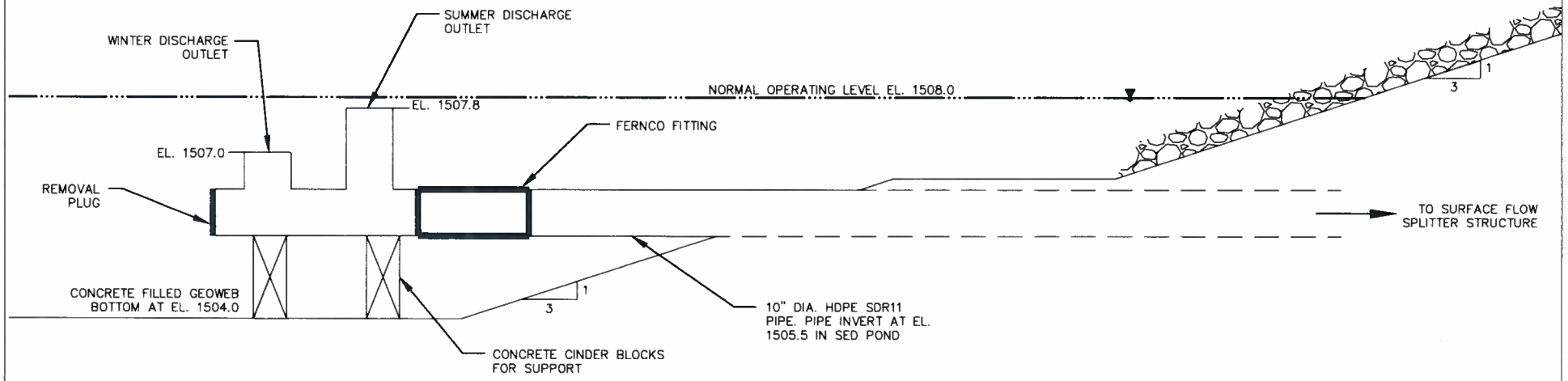
URS

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

PROCESS FLOW DIAGRAM FOR TREATMENT SYSTEM

DRAWN BY:	CHECKED BY:	PROJECT No:	DATE:	FIGURE No:
ACY	GS	13812259	07/12/11	4

K:\Projects\B\BP-Wellsville\13812259\DWGs\Figures\O&M Manual\Figures 3 and 4\Figure 4 - Process Flow Diagram.dwg User:girl_samovedam Oct 17, 2011 - 9:19am



NOT TO SCALE

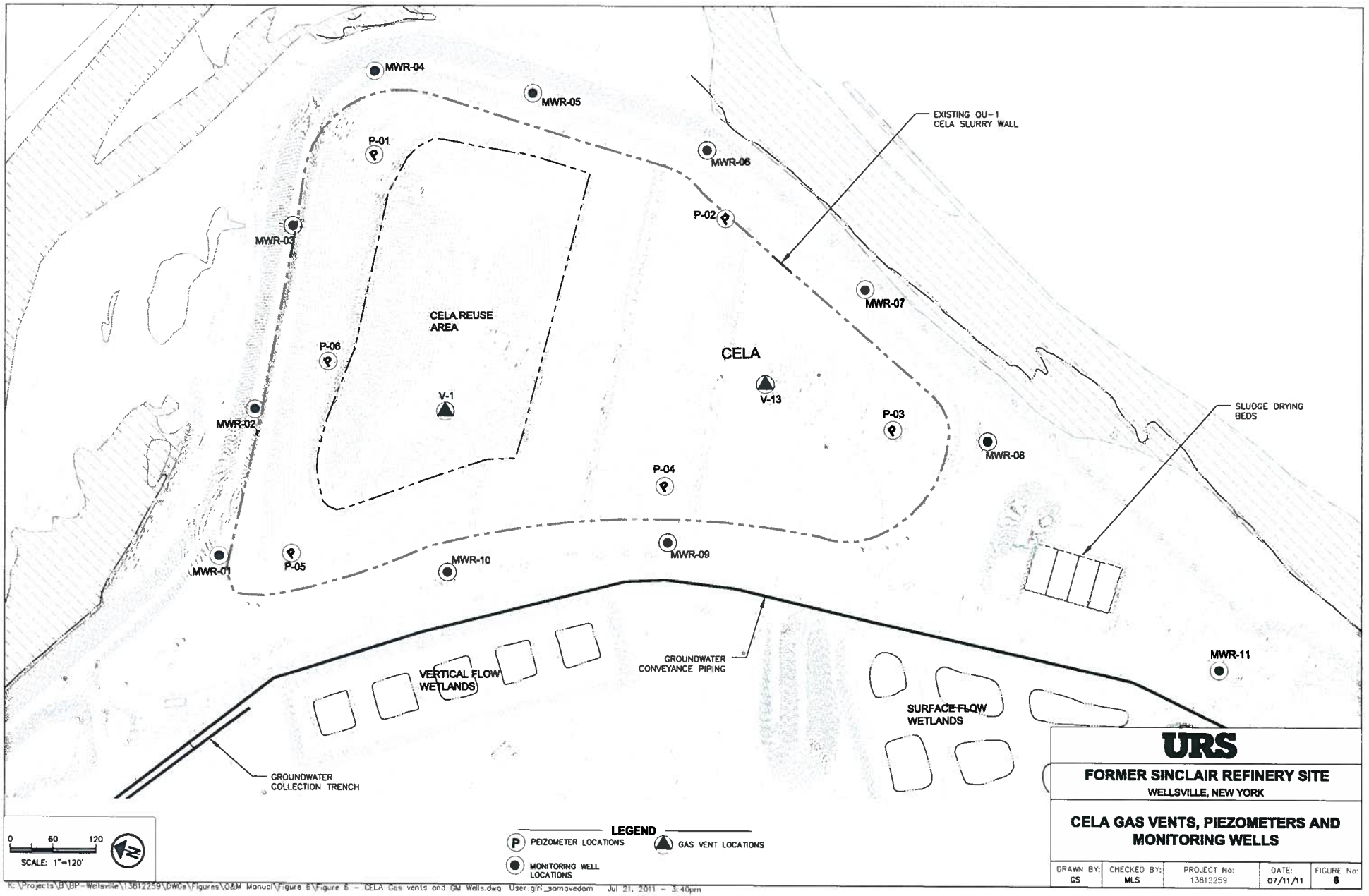
URS

FORMER SINCLAIR REFINERY SITE

WELLSVILLE, NEW YORK

SED POND OUTLET MODIFICATIONS

DRAWN BY:	CHECKED BY:	PROJECT No:	DATE:	FIGURE No:
GS	MLS	13812259	07/12/11	5



K:\Projects\B\BP-Wellsville\13812259\DWGs\Figures\O&M Manual\Figure 8\Figure 8 - CELA Gas vents and GM Wells.dwg User:giri_samavedam Jul 21, 2011 - 3:40pm

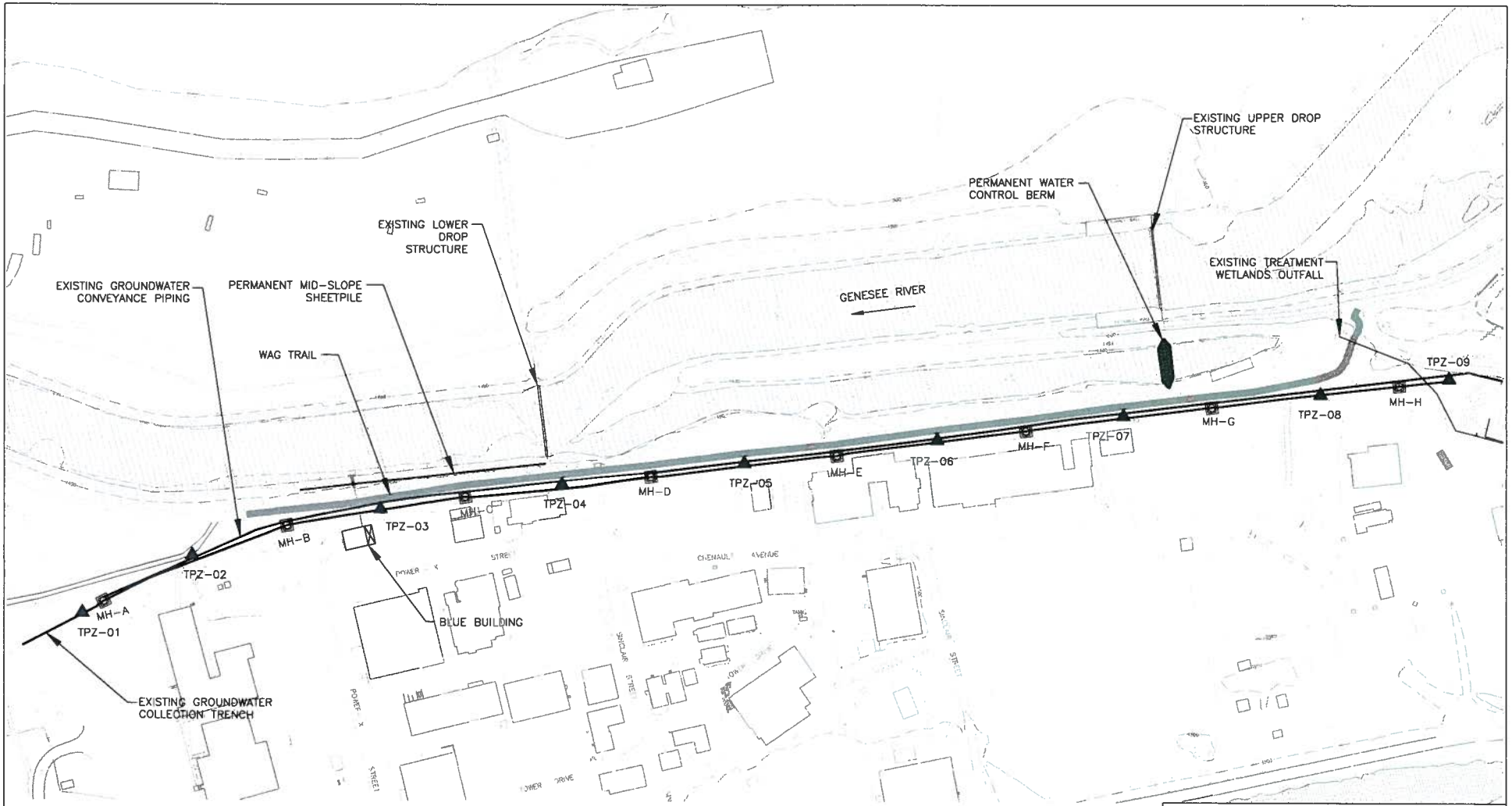
URS

FORMER SINCLAIR REFINERY SITE

WELLSVILLE, NEW YORK

CELA GAS VENTS, PIEZOMETERS AND MONITORING WELLS

DRAWN BY:	CHECKED BY:	PROJECT No:	DATE:	FIGURE No:
GS	MLS	13812259	07/11/11	8



LEGEND

- ▲ PEIZOMETER LOCATIONS
- WAG TRAIL
- PIPING FOR WATER TREATMENT SYSTEM

0 100 200

SCALE: 1"=200'

NOTE: GROUNDWATER COLLECTION AND CONVEYANCE PIPING ALIGNMENT OBTAINED FROM 2009 ASBUILT SURVEY PERFORMED BY JIM BALL SURVEYORS

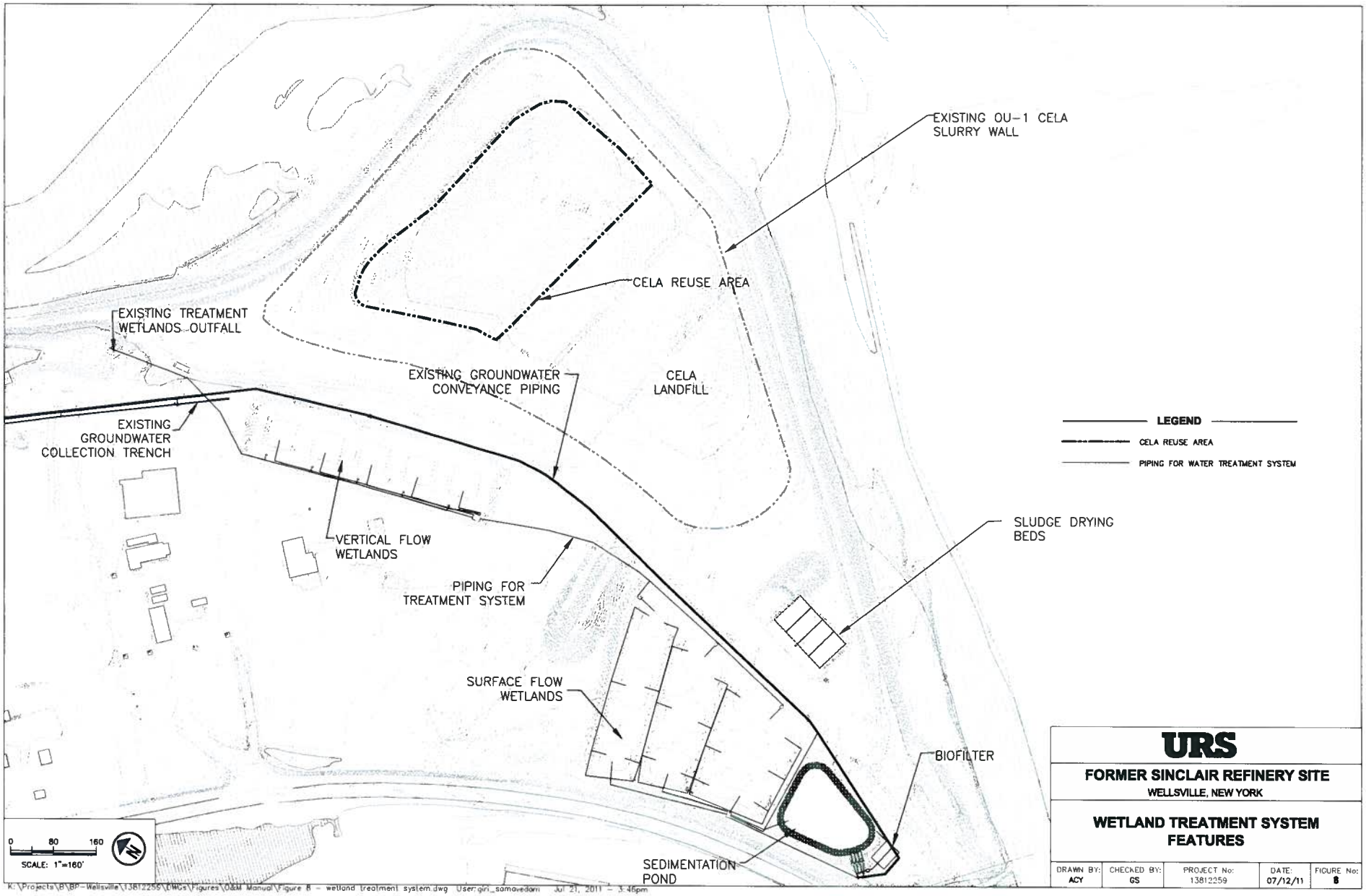
URS

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

GROUNDWATER COLLECTION SYSTEM FEATURES

DRAWN BY:	CHECKED BY:	PROJECT No:	DATE:	FIGURE No:
ACY	GS	13812259	07/12/11	7

K:\Projects\B\BP-Wellsville\13812259\DWGs\Figures\O&M Manual\Figure 7 - groundwater collection system.dwg User:girl_samavedam Jul 21, 2011 - 2:20pm



URS

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

WETLAND TREATMENT SYSTEM FEATURES

DRAWN BY:	CHECKED BY:	PROJECT No:	DATE:	FIGURE No:
ACY	GS	13812259	07/12/11	8

APPENDIX A
ELECTRONIC O&M PLAN

APPENDIX B
SPDES LIMITATIONS FOR WETLAND TREATMENT SYSTEM

Former Sinclair Refinery Site Site Number USEPA ID # NY-D98-0535215

New York State Department of Environmental Conservation

Division of Water
Bureau of Water Permits, 4th Floor
625 Broadway, Albany, New York 12233-3505
Phone: (518) 402-8111 • **FAX:** (518) 402-9029
Website: www.dec.state.ny.us

August 3, 2009

Mr. Eric J. Larson, Environmental Business Manager
Atlantic Richfield Company
Suite 440, 1 West Pennsylvania Avenue
Towson, MD 21204

Re: **Former Sinclair Refinery Site: Operable Unit 2 Wellsville, New York**
SPDES # 902003, USEPA CERCLA Facility ID NYD980535215

Dear Mr. Larson:

In response to your request of May 21, 2008, the Department has approved a twelve (12) month extension of the startup time, from June 2009 to June 2010. The new startup date will be June 03, 2010.

With this request the Department is also providing a modified list of effluent limitations and monitoring requirements, for the above remediation site discharge, which will apply during this period.

Sampling and analysis of monitoring parameters are to proceed according to the following schedule: (a) weekly sampling during the period July and August of 2009, and (b) monthly sampling from for the period September 01, 2009 through June 30, 2010. Sampling and analysis of the weekly and subsequent monthly sampling will follow the Effluent and Discharge Limitations (A). The Department is also requiring that an annual sampling be completed the twelfth month of the extension period, and annually for subsequent 12-month cycles, and the results of data analysis from the 12th month sampling be submitted with the treatment facility's report to the Region for annual certification. The annual sampling will follow Effluent Limitations and Monitoring Requirements (B). The Department further reserves the right to review performance data in order to establish compliance or to reconsider any effluent limitation.

The DOW does not have regulatory authority over a discharge from a State, PRP, or Federal Superfund Site. DER will be responsible for ensuring compliance with the attached effluent limitations and monitoring requirements, and approval of engineering submissions. Footnote 1 identifies the appropriate DER Section Chief to whom all effluent results, engineering submissions, and modification requests, should be forwarded. The Regional Water Engineer should be kept appraised of the status of this discharge and, in accordance with the attached criteria, should receive a copy of effluent results for informational purposes.

If you have any questions, please call me at (518) 402-8120.

for P.M.

Perceval Miller
NYSDEC Division of Water, Bureau of Water Permits
Attachment (Effluent Limitations and Monitoring Requirements)

cc: Regional Water Engineer (w/attach)
BWP Section Chief, DOW (w/attach)
Ron Entringer, DOW (w/attach)

Former Sinclair Refinery Site Site Number USEPA ID # NY-D98-0535215

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (A)

During the period beginning June 04, 2010

and lasting until (30 years)

the discharges from the treatment facility via Outfall SP-219, Latitude 42°6'27"and Longitude 77°56'18", to the Genessee River, Water Index Number Ont.117, Class A(T) , RECEIVING WATER, shall be limited and monitored by the operator as specified below:

Outfall Number and Parameter	Discharge Limitations		Units	Minimum Monitoring Requirements	
	Monthly Avg.	Daily Max		Measurement Frequency	Sample Type
Outfall 001 - Treated Groundwater Remediation Discharge:					
Flow	Monitor	216,000	GPD	Continuous	Meter
pH (range)	6.5 to 8.5		SU	Monthly	Grab
TSS		10.0	mg/l	1/Month	Grab
Benzene		5.0	µg/l	1/Month	Grab
Chloroethane		5.0	µg/l	1/Month	Grab
Ethylbenzene		5.0	µg/l	1/Month	Grab
Acenaphthene		10.0	µg/l	1/Month	Grab
Fluorene		10.0	µg/l	1/Month	Grab
Naphthalene		10.0	µg/l	1/Month	Grab
Phenanthrene		10.0	µg/l	1/Month	Grab
Nitrobenzene		5.0	µg/l	1/Month	Grab
Toluene		5.0	µg/l	1/Month	Grab
2-Methylnapthalene		42	µg/l	1/Month	Grab
Xylenes, Total (*o*, *m*, and *p*)		15	µg/l	1/Month	Grab
Aniline		10.0	µg/l	1/Month	Grab
Vinyl Chloride		0.7	µg/l	1/Month	Grab
1,1-Dichloroethane		5.0	µg/l	1/Month	Grab
Iron, Total		0.3	mgl	1/Month	Grab
Arsenic, Total		0.036	mg/l	1/Month	Grab
Manganese, Total		0.3	mg/l	1/Month	Grab

(A) The above sampling and monitoring requirements are to apply for the full (12) months of each annual cycle beginning in June 2009, and thereafter. The Effluent Limitations (B) shall also apply to the final month of each annual cycle, until further notice from the Department.

Former Sinclair Refinery Site Site Number USEPA ID # NY-D98-0535215

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (B)

During the period beginning June 04, 2009 and ending June 04, 2010; and thereafter, the following requirements under list (B) shall apply to the final month of each 12 month cycle, until further notice:

the discharges from the treatment facility via Outfall SP-219, Latitude 42°6'27"and Longitude 77°56'18", to the Genessee River, Water Index Number Ont.117, Class A(T) , RECEIVING WATER, shall be limited and monitored by the operator as specified below:

Outfall Number and Parameter	Discharge Limitations		Units	Minimum Monitoring Requirements	
	Monthly Avg.	Daily Max		Measurement Frequency	Sample Type
Outfall 001 - Treated Groundwater Remediation Discharge:					

Outfall Number and Parameter	Discharge Limitations		Units	Minimum Monitoring Requirements	
	Monthly Avg.	Daily Max		Measurement Frequency	Sample Type
Flow	Monitor	216,000	GPD	Continuous	Meter
pH (range)	6.5 to 8.5		SU	Monthly	Grab
BOD5		5.0	mg/l	1/week	Grab
TSS		10.0	mg/l	1/week	Grab
TDS		200	mg/l	1/week	Grab
TKN		Monitor	mg/l	1/week	Grab
Ammonia		0.66	mg/l	1/week	Grab
Benzene		5.0	mg/l	1/week	Grab
Chloroethane		5.0	mg/l	1/week	Grab
Ethylbenzene		5.0	mg/l	1/week	Grab
Acenaphthene		10.0	mg/l	1/week	Grab
Fluorene		10.0	mg/l	1/week	Grab
Naphthalene		10.0	mg/l	1/week	Grab
Phenanthrene		10.0	mg/l	1/week	Grab
Nitrobenzene		5.0	mg/l	1/week	Grab
Toluene		5.0	mg/l	1/week	Grab
2-Methylnapthalene		42	mg/l	1/week	Grab
Xylenes, Total (*o*, *m*, and *p*)		15	mg/l	1/week	Grab
2-Butanone		50	mg/l	1/week	Grab

Aniline		10.0	mg/l	1/week	Grab
Vinyl Chloride		0.7	mg/l	1/week	Grab
1,1-Dichloroethane		5.0	mg/l	1/week	Grab
Barium		1.0	mg/l	1/week	Grab
Iron		0.3	mg/l	1/week	Grab
Aluminum		0.1	mg/l	1/week	Grab
Arsenic**		0.036	mg/l	1/week	Grab
Manganese		0.3	mg/l	1/week	Grab
Magnesium		35.0	mg/l	1/week	Grab
Chloride		250	mg/l	1/week	Grab
Phosphorous		0.02	mg/l	1/week	Grab
Nitrite		0.02	mg/l	1/week	Grab

Additional Conditions:

(1) Discharge is not authorized until such time as an engineering submission showing the method of treatment is approved by the Department. The discharge rate may not exceed the effective or design treatment system capacity. All monitoring data, engineering submissions and modification requests must be submitted to:

Martin L. Doster, P.E., Regional Hazardous Waste Engineer
Division of Environmental Remediation (DER)
NYSDEC, 270 Michigan Avenue, Buffalo, NY 14203, (716) 851-7220

With a copy sent to:

Regional Water Engineer, Region 9
270 Michigan Avenue
Buffalo, NY 14203

(2) Only site generated wastewater is authorized for treatment and discharge.

(3) Authorization to discharge is valid only for the period noted above but may be renewed if appropriate. A request for renewal must be received 6 months prior to the expiration date to allow for a review of monitoring data and reassessment of monitoring requirements.

(4) Both concentration (mg/l or µg/l) and mass loadings (lbs/day) must be reported to the Department for all parameters except flow and pH.

(5) Any use of corrosion/scale inhibitors, biocidal-type compounds, or other water treatment chemicals used in the treatment process must be approved by the department prior to use.

(6) This discharge and administration of this discharge must comply with the substantive requirements of 6NYCRR Part 750.

New York State Department of Environmental Conservation
Division of Water,
Bureau of Water Permits, 4th Floor
625 Broadway, Albany, New York 12233-3505
Phone: (518) 402-8111 • **Fax:** (518) 402-9029
Website: www.dec.ny.gov

Joe Martens
Commissioner

August 7, 2012

Eric J. Larson, Operations Project Manager
Atlantic Richfield Company
1 West Pennsylvania Avenue, Suite 440
Towson, MD 21204

Re: **Request: One-Year Extension of Monitoring Requirements & Revised Iron and Manganese Limits Permit Equivalent #902003: Wetlands Treatment System, Sinclair Refinery Site, Wellsville, NY**

Dear Mr. Larson:

The Department has reviewed the groundwater treatment wetlands system report for the Sinclair Refinery site in Wellsville, NY; plans to improve all-year treatment; and request to revise Iron and Manganese limits from 0.3 mg/l to 5 mg/l, with use for reporting rather than for compliance.

This letter approves the continuation of monthly monitoring for an additional year, with no change in reporting or compliance requirements. The data provided should confirm treatment performance under the indicated surface flow wetlands plant maturity, and under near-term system changes. For iron and manganese, the added sedimentation pond sample; and results from effluent sampling, before and after change of the monitoring location from the vertical flow wetlands to berm pond outfall; maturity of existing plants; and other scheduled system changes; could provide an information baseline useful to reconsideration of these limits; after the one-year extension period. Therefore no change to current effluent limitations for Iron and Manganese is made.

The report describes how plants growth at the surface flow wetlands influences removal of semivolatile organic compounds (SVOCs); states that winter conditions can cause partial freezing at the sedimentation pond and surface flow wetlands; and that full plant maturity was expected by June 2012. The plans include for extension of monthly monitoring for another year; and for another sample at the sedimentation pond outflow, above the surface flow wetlands. Treatment and control efficiencies are expected from: raising wetlands water levels in winter, continuation of blower operation for December through March; relocation of effluent sampling from the vertical flow wetlands outfall, to that of the water level control berm (pond) controlling unmanaged site groundwater seepage along the Genessee River. Within the large berm pond, the growing of plants selected for relative pond zone depth and/or performance under icy condition; is expected to improve treatment capacity.

Please contact us at (518) 402-8120 if you have additional questions or recommendations related to this request.

Sincerely,

Percival Miller, Environmental Engineer
NYSDEC Division of Water/Bureau of Water Permits-West

Cc; Brian Baker, Section Chief
Teresa Diehsner, Environmental Permits

APPENDIX C
FLOOD CONTROL LAND USE PERMITS

(6)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DEC PERMIT NUMBER	EFFECTIVE DATE
09-08	
FACILITY NAME	EXPIRATION DATE
Wellsville FcP	

APPLICATION FOR PERMIT

Under the Environmental Conservation Law
Article 16 Flood Control Land Use

TYPE OF PERMIT (Check All That Apply)
☒ New ☐ Renewal ☐ Modification ☐ Major ☐ Minor ☐ Temporary

Please Type or Print Clearly in Ink

1. NAME OF APPLICANT: Atlantic Richfield Company
2. MAILING ADDRESS: 1 West Pennsylvania Ave. Suite 440
3. TELEPHONE NUMBER: (410) 825-2880
4. CITY (POST OFFICE): Towson
5. STATE: MD
6. ZIP CODE: 21204
7. LOCATION OF STATE MAINTAINED FLOOD CONTROL LAND
City, Town or Village: Wellsville, New York
County: Allegany
Locality:
8. PROJECT DESCRIPTION/REASON FOR USE OF FLOOD CONTROL LAND (ATTACH SUPPORTING DOCUMENTATION)

The reason for use of flood control land along the Genesee River in Wellsville, New York is to implement the planned strategy for the Phase II Remediation at Operable Unit 2 (OU-2) for the former Sinclair Refinery in Wellsville, New York. The Final 100% Design Revisions were submitted to USEPA in June 2008. Formal approval of the 100% Design work was received on August 27, 2008.

The Phase II Remediation work involves the following components: 1) downgradient barrier (soil-bentonite slurry wall) along the Genesee River Bank; 2) excavation of 5,000 cubic yards of sediment from the Genesee River using sheet pile to contain the excavation area; 3) excavation of 2,800 cubic yards of sediment from the main drainage swale; and 4) excavation of 3,600 cubic yards of bank soils along the Genesee River. Excavated material will be placed in the existing onsite CELA (Central Elevated Landfill Area) that was constructed for Operable Unit 1. Details of the 100% Design and copies of drawings and specifications are attached.

9. ENGINEER: Name of Agency or Individual: URS Corporation – Vik Gaulam
P.E. LICENSE NO. OF INDIVIDUAL: 70374 Ohio PE
TITLE: Project Engineer
ADDRESS: 1375 Euclid Avenue, Cleveland, Ohio 44115
TELEPHONE NUMBER: 216 622-2447

10. CONSTRUCTION ENGINEER: Name of Agency or Individual: Donald Porterfield
P.E. LICENSE NO. OF INDIVIDUAL: 071402 NY PE
TITLE: Senior Engineer
ADDRESS: 28 Corporate Drive, Suite 200, Clifton Park, New York 12065
TELEPHONE NUMBER: (518) 688-0015

11 The above named applicant hereby applies to use State maintained flood control lands as indicated above in accordance with the map and plan attached, and pursuant to the conditions and regulations, whether general or special, which are hereinafter set forth; all forming a part hereof, and will obtain any other consents or permits that may be necessary to accomplish the purposes set forth herein.

August 29, 2008 — Eric Larson
DATE — SIGNATURE

Eric Larson, Environmental Business Manager, Atlantic Richfield Company
NAME, TITLE AND COMPANY (Please type or print)

FLOOD CONTROL REGIONAL OFFICE ☒ Approved ☐ Disapproved
October 1, 2008 DATE — Theodore A. Myers SIGNATURE
See Special Conditions

CORPS OF ENGINEERS - REVIEWED
23 Oct 08 DATE — Mark A. Doyle SIGNATURE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Permit Number 09-08

PERMIT GRANTED

PERMITTEE NAME Atlantic Richfield Company			Permission to proceed as set forth and represented in the foregoing application pursuant to Part 608, Title 6 NYCRR, and at the particular location described therein, in accordance with the map and plan hereto attached and pursuant to the conditions and regulations, whether general or special, which are hereinafter set forth, all forming a part hereof, to wit:
ADDRESS 1 West Pennsylvania Ave. Suite 440			
CITY/POST OFFICE Towson	STATE MD	ZIP CODE 21204	

Conditions and Regulations

1. The "Department" shall mean the New York State Department of Environmental Conservation.

2. This permit shall not be assigned or transferred without the written consent of the Department.

3. The work authorized by this permit shall be performed under the supervision and to the satisfaction of representatives of the Department.

4. The Department shall be given 7 days notice by said Permittee of the DATE when he intends to begin work authorized by this permit, and shall be given prompt notice of its completion.

5. The Permittee shall be responsible for all damages resulting in bodily injury, including death and/or property damage liability due to activities of the Permittee, its contractors, sub-contractors of either or both, agents or employers in connection with any act or omission hereunder, and does hereby expressly agree to indemnify and save harmless the United States of America, the Department of the Army Corps of Engineers, the People of the State of New York and /or the Department, its Commissioner, and their representatives and employees from claims, suits, actions, damages and costs of every name and description, arising out of or resulting from any act or omission hereunder.

6. The Permittee shall post a certified check or bond in the amount of $25,000.00 VH to secure the fulfillment of the terms of this permit.

7. Unless expressly waived by the Department, the Permittee shall furnish with the foregoing application a policy of protective liability insurance issued to and covering liability of the People of the State of New York and/or the Department, with respect to all operation under this permit by the Permittee or by anyone acting by through or for the Permittee, including omissions and supervisory acts of the State. The limits of liability in such policy shall not be less than $1,000,000 per person/per accident for all damages arising out of bodily injury, including death at any time resulting therefrom, sustained by one person in any one accident and, subject to that limit for each person, not less than $2,000,000 aggregate for all damages arising out of injury to or destruction of property in any one accident, and subject to that limit per accident.

The Permittee insurance policy shall also provide protective property damage liability coverage of $1,000,000 for all damages to property in any one accident or occurrence.

Such policy(s) shall state that it(they) will not be changed or canceled until thirty days' written notice has been given to said Department.

8. The enumeration in this permit of the kind and amount of insurance shall not abridge, diminish or affect the Permittee's legal responsibilities for the consequences of accidents arising out of or resulting from the operation of the Permittee under this permit.

9. An undertaking or a certified check in the sum of $50,000.00 VH deposited with the Department by the Permittee before or at the time of issuance of this permit by the Department shall be deemed to include and be used as security that the Flood Control Works or any part thereof will be restored to its original condition where disturbed, at the expense of the Permittee, as soon as the work has been completed, and the said Department is hereby authorized to expend all or as much of such deposit as may be necessary for that purpose, should the said Permittee neglect or refuse to perform the work.

10. The said Department reserves the right to at any time revoke or annul this permit should the Permittee fail to comply with the terms and conditions upon which it is granted.

11. The Permittee agrees to pay all necessary expenses incident to supervision and inspection by reason of the granting of such permit as certified by the Field Engineer of the Department, Flood Control Section, such payment to be made within ten days from the rendering of the certified account.

12. Work under this permit shall be commenced within thirty days from date of permit and continued in an expeditious manner.

13. The Permittee shall submit to said Department a detailed plan of structure to be built, if any, with a description of proposed method of construction, before any work hereunder is started, which plans shall require the prior approval by the Department and any other agency having jurisdiction thereof.

14. Work permitted under this permit shall be progressed in such a manner as to avoid interference with the operation and maintenance of the Flood Control Works.

15. The above named permittee hereby certifies that it has secured compensation for the benefit of, and will keep insured during the performance of the above described work, such employees as are required to be insured, by the provisions of Workers' Compensation Law.

16. The use of State lands shall be subject at all times to the interests of the State and/or the United States of America in making improvements and repairs to the Flood Control Works. The Department, its agent, employees and representatives shall at all times, having a right of entry thereto, if in the judgement of the Department, the interests of the State or the United States of America shall require.

17. Monuments marking the boundary of Flood Control Lands shall be undisturbed and fully protected. A recompense for damages of not less than $25.00 will be imposed for each monument disturbed.

18. The Permittee shall pay the State of New York through the Department a fee of $25.00 for the issuance of this except as otherwise provided.

19. The Permittee shall be responsible for obtaining all necessary permits, rights of entry and other items required by other State agencies, landlords, etc., before commencing work on this permit.

20. A copy of this permit shall be in the possession of the Permittee or his representative at the site of the permitted activity and shall be promptly displayed upon request of a representative of the Department or any other person empowered to enforce the conditions of the permit.

New York State Department of Environmental Conservation
Special Conditions

1. See Attached pp. 1-5

Permit Number 09-08

IN WITNESS WHEREOF, I have hereunto set my hand on this 1 day of July, 20 09.

Department of Environmental Conservation

By _____

In consideration of the granting of the within permit, the undersigned affirming, under penalty of perjury that he/she is acting under authority hereby accepts the same, subject to the restrictions and regulations therein described.

Dated this 2 day of July, 2009.

ERIC J. LARSON
Permittee

By Eric J. Larson ENVIRONMENTAL Business Mgr
Signature and Title

By Constance Hurs
Notary Public

CONSTANCE HURS NOTARY PUBLIC BALTIMORE CO., MD.

My Commission Expires 4/17/13

Special Conditions

1. This Permit application, submitted by the Atlantic Richfield Company, is for implementation of the planned strategy for the Phase II Remediation of the Operable Unit 2 (OU-2) for the former Sinclair Refinery in Wellsville, New York. The approval for the 100% Design work was received from the United States Environmental Protection Agency (USEPA) on April 23, 2009.

   The Phase II Remediation work involves the following components: 1) downgradient barrier (soil-bentonite slurry wall) along the Genesee river Bank; 2) excavation of 5,000 cubic yards of sediment from the Genesee River using sheet pile to contain the excavation area; 3) excavation of 2,800 cubic yards of sediment from the main drainage swale; and 4) excavation of 3,600 cubic yards of bank soils along the Genesee River. Excavated material will be placed in the existing on-site Central Elevated Landfill area (CELA) that was constructed for Operable Unit 1.

   Supporting Documents and Specifications contained in the report titled, "Final (100%) Remedial Design Report - Revision 2. Phase II-2 Remediation at Operable Unit 2, Former Sinclair Refinery Site, Wellsville, New York, dated March 2, 2009" prepared for Atlantic Richfield Company by URS Corporation include:

   Supporting Documents

   "Title" of the "Final (100%) Remedial Design Report - Revision 2. Phase II-2 Remediation at Operable Unit 2, Former Sinclair Refinery Site, Wellsville, New York, dated March 2, 2009." - 1 page

   "Table of Contents" of the *"Report..."* – 2 pages

   Paragraphs 2.2.2, 2.2.2.3, and 2.2.2.4 – pp. 2-12 – 2-15

   Paragraphs 2.6, 2.6.1, 2.6.1.1, and 2.6.1.2; 2.6.2 and 2.6.2.1; 2.6.3; 2.7, 2.7.1 and 2.7.2; 2.8; 2.9; 2.10, 2.10.1, 2.10.2, 2.10.3 and 2.10.4 – pp. 2-20 – 2-30

   Paragraphs 2.12.2 and 2.12.3 – pp. 2-34 – 2-35

   Specifications

   Specifications are labeled "Not for Construction." The Section Number and Title are listed below:

Section 02055	Decontamination	- pp. 02055-1 – 02055-5
Section 02110	Site Preparation and Clearing	- pp. 02110-1 – 02110-9
Section 02115	Erosion and Sediment Control Measures	- pp. 02115-1 – 02115-11
Section 02209	Soil and Sediment Removal/Handling	- pp. 02209-1 – 02209-8

Section 02210	Earthworks	- pp. 02210-1 – 02210-19
Section 02226	Sheet Pile Wall	- pp. 02226-1 – 02226-11
Section 02715	Water Management	- pp. 02715-1 – 02715-5
Section 02939	Swale and Wetland Restoration	- pp. 02939-1 – 02939-12

The Drawings titled, "Final (100%) Phase II-2 Remedial Design, Former Sinclair Refinery Site, Wellsville, New York, prepared by URS Corporation are labeled "For Review Only Not for Construction." The Drawings include:

C-02 Remedial Design Overview and Sequence Plan, Dated 03-02-2009; no Revisions.

C-02A Soil Management Plan (North), Dated 03-02-2009; no Revisions.

C-02B Soil Management Plan (South), Dated 03-02-2000; no Revisions.

C-02C Soil and Erosion Control Details, Dated 03-02-2009; no Revisions.

C-10 Genesee River Remediation Plan, Dated 03-02-2009; no Revisions.

C-11 Genesee River Remediation Cross Sections and Details, Dated 03-02-2009; no Revisions.

C-12 Genesee River Remediation Sheet Pile Plan and Details, Dated 03-02-2009; no Revisions.

C-13 Main Drainage Swale Excavation Plan, Dated 03-02-2009; Revised 06-18-09.

C-14A Landscaping Plan and Details (Main Drainage Swale), Dated 03-02-2009; no Revisions.

C-14B Main Drainage Swale Excavation Sections and Details, Dated 03-02-2009; no Revisions.

APPROVAL NOTE: This Permit Approval is granted only for the portion of the work involving the Main Drainage Swale Excavation and appurtenant construction. Further approvals will be required for work in and along the Genesee River.

2. The Permittee agrees that all work shall be performed in accordance with the Drawings, Supporting Documents and Specifications noted in Special Condition No. 1 above.

3. The Permittee agrees to notify the Regional Flood Control Engineer of any changes to the proposed work which deviate from the attached Drawings, Supporting Documents and Specifications noted in Special Condition No. 1 above. No work which deviates from these items shall take place without the prior written approval of the Department.

4. The Permittee agrees that the proposed work shall be performed under the supervision of a New York State registered Professional Engineer (Construction Engineer). The Permittee agrees to notify the Regional Flood Control Engineer of the name address and telephone number of the Construction Engineer. The Regional Flood Control shall be notified upon any change to the designated Construction Engineer

5. The Permittee agrees to provide to the Regional Flood Control Engineer within 90 days of filing the completion notice for this approved work, three sets of "As-Built" Record Drawings and documentation of construction inspection. The Record Drawings shall be signed and sealed by the Construction Engineer and shall include identification of all deviations from the Drawings noted in Special Condition No. 1 above.

6. The Permittee agrees to establish an on-site bench mark, and to perform an instrument topographic survey of the Main Drainage Swale and Genesee River Dike from this bench mark prior to construction. This survey shall be performed at the completion of the work so that "As-Built" elevations can be compared with pre-construction elevations. A conversion factor shall be provided to allow the ready conversion of these elevations to National Geodetic Vertical Datum 1929 (NGVD 1929) elevations.

7. The Permittee agrees that excavations into the Flood Control Dike on the east side of the Main Drainage Swale shall not be permitted.

8. The Permittee agrees that prior to the construction of the temporary haul road on the Flood Control Dike on the east side of the Main Drainage Swale, geotextile will be placed on the ground surface and granular road fill material will be placed over the geotextile to a depth of at least six inches. (Reference: NYSDOT Metric Standard Sheet No. M209-7 Soil Erosion and Sediment Control- Construction Entrances)

9. The Permittee agrees to remove excess materials, debris and pollution control measures from flood control project lands upon completion of the work.

10. The Permittee agrees that any damage to existing flood control project facilities or features which occurs while undertaking the permitted work shall be repaired to the satisfaction of the Regional Flood Control Engineer.

11. The Permittee agrees that no vehicular traffic of any kind shall be allowed on flood control project land except that portion of the project which is directly involved with the authorized work.

12. The Permittee agrees that vehicles, equipment, materials and supplies shall not be stored on the flood control dike between the Genesee River and the Main Drainage Swale.

13. The Permittee agrees that precautions shall be taken to preclude the entry of pollutants and/or waste materials directly into the Genesee River or in areas where such materials would eventually be carried to the river by storm runoff.

14. The Permittee agrees that earth materials (soil, gravel, new riprap, etc.) to be used in the permitted work shall not be taken from flood control project lands.

15. The Permittee agrees that the "Main Drainage Swale Excavation" portion of the permitted work shall be maintained entirely by the Permittee or the Permittee's duly authorized agent. Further, the Permittee agrees that the Main Drainage Swale Excavation project shall not be allowed to deteriorate to such an extent such that it becomes a hazard to the Wellsville Flood Protection Project.

16. The Permittee agrees to monitor river stages, weather reports and flood forecasts on at least a daily basis and take prudent action, as necessary, to prevent loss of life and property due to flooding.

17. The Permittee agrees to provide the Regional Flood Control Engineer with a contact person roster for use during normal working hours and emergencies. This list shall include names, positions and telephone numbers for use during working hours and after working hours.

18. The Permittee agrees to seed any areas on the flood control dike where earth is exposed as a result of performing this work using the following minimum requirements:

    Topsoil: Place four inches of good quality topsoil on the areas to be seeded.

    Seed: Kentucky Bluegrass @ 1 ½ pounds per 1000 square feet.
    Creeping Red Fescue@ 1 ½ pounds per 1000 square feet.
    Annual Rye Grass @ 1 ½ pounds per 1000 square feet.

    Fertilizer: 10-10-10 @ 15 pounds per 1000 square feet.

    Mulch: Adequate straw or timothy hay @ 100 pounds per 1000 square feet.

    Further, the Permittee agrees to provide a good stand of grass for one year after the completion of this work before being relieved of his seeding responsibility.

    Note: Hydroseeding may be substituted for this seeding requirement with prior approval from the Regional Flood Control Engineer.

19. The Permittee agrees that it will be responsible for construction site security and safety measures while performing the permitted work.

20. The Permittee agrees that photographs (at least 4 inches by 6 inches) showing the project work areas from at least four directions, shall be taken immediately prior to construction and immediately upon completion of the permitted work. Three copies of each print shall be

submitted to the Regional Flood Control Engineer at the beginning of construction for the prior condition photos and at completion for the completion condition photos.

21. The Permittee agrees that this authorization shall not take effect until the certificate of insurance, as required by Condition No.7 of the "Conditions and Regulations" has been received and acknowledged by the Regional Flood Control Engineer at the address shown below:

    Regional Flood Control Engineer
    New York State Department of Environmental Conservation
    270 Michigan Avenue
    Buffalo, New York 14203

    Telephone: 716-851-7070
    Facsimile: 716-851-7009

22. The Permittee agrees that all bonds and deposits, as required by Condition No. 6 and Condition No. 9 of the "Conditions and Regulations", will be provided to the Regional Flood Control Engineer within two (2) weeks after the start of construction.

23. The Permittee agrees that vegetation management within the limits of the Wellsville Flood Protection Project shall be subject at all times to flood control project operations and maintenance requirements and activities including removal. Further, in this regard, the Permittee agrees to remove and/or replace with designated plant species any of the authorized plantings herein at the request of the Department or United States Army Corps of Engineers.

24. The Permittee agrees that the dike between the Main Drainage Swale (Auxiliary Channel on U.S. Army Corps of Engineers Drawings) and the Genesee River shall be planted only in grass.

25. The Permittee agrees that the work shall be performed in a continuous workmanlike manner until it is completed.

26. The Permittee agrees that the levee near the north end perimeter fencing shall not be disturbed.

27. The Permittee agrees that maintenance and replacement of the permitted works shall be its responsibility.

28. The duration of the permit will terminate twenty five (25) years from the issuance date, as determined by the signature date of the representative of the Department of Environmental Conservation. To extend the duration, the permittee must submit a written request to the Department at least three months in advance of the termination. After review, the Department will inform the permittee in writing of its determination to extend, or not extend the permit.

(1)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

APPLICATION FOR PERMIT

Under the Environmental Conservation Law
Article 16 Flood Control Land Use

DEC PERMIT NUMBER	EFFECTIVE DATE
09-08 Mod. 1	
FACILITY NAME	EXPIRATION DATE
Wellsville FCP	07.06.34

TYPE OF PERMIT (Check All That Apply) ☐ New ☐ Renewal XXXX Modification #09-08 ☐ Major ☐ Minor ☐ Temporary

Please Type or Print Clearly in Ink

1. NAME OF APPLICANT: Atlantic Richfield Company

2. MAILING ADDRESS: 1 West Pennsylvania Ave., Suite 440

3. TELEPHONE NUMBER: ( )

4. CITY/POST OFFICE: Towson 5. STATE: MD 6. ZIP CODE: 21204

7. LOCATION OF STATE MAINTAINED FLOOD CONTROL LAND
City, Town or Village: Wellsville, New York County: Allegany

Location:

8. PROJECT DESCRIPTION/REASON FOR USE OF FLOOD CONTROL LAND (ATTACH SUPPORTING DOCUMENTATION)

This modification to the Application for Permit (original submitted to NYSDEC on 9/2/2008) is to implement portions of the planned strategy for the Phase II Remediation at Operable Unit 2 (OU-2) for the Former Sinclair Refinery in Wellsville, New York. USEPA has approved the 100% Design Report on April 23, 2009.

On May 26, 2009, NYSDEC personnel indicated that the Main Drainage Swale Restoration work described in Section 2.7 of the September 2, 2008 permit application would be approved for completion in June 2009 and a permit granted. The portions of the work covered by this modification for application include the following components: 1) construction of downgradient barrier; 2) excavation of sediment from Genesee River; and 3) excavation of bank soil along Genesee River.

9. DESIGN ENGINEER: Name of Agency or Individual: URS Corporation - Vik Gautam
P.E. LICENSE NO. OF INDIVIDUAL: 70374 Ohio PE
TITLE: Project Engineer
ADDRESS: 1375 Euclid Ave., Suite 600, Cleveland, OH 44115
TELEPHONE NUMBER: (216) 622-2447

10. CONSTRUCTION ENGINEER: Name of Agency or Individual: Donald Porterfield
P.E. LICENSE NO. OF INDIVIDUAL: 071402 NY PE
TITLE: Senior Engineer
ADDRESS: 28 Corporate Drive, Suite 200, Clifton Park, New York 12065
TELEPHONE NUMBER: (518) 688-0015

11. The above named applicant hereby applies to use State maintained flood control lands as indicated above in accordance with the map and plan attached, and pursuant to the conditions and regulations, whether general or special, which are hereinafter set forth; all forming a part hereof, and will obtain any other consents or permits that may be necessary to accomplish the purposes set forth herein.

May 28, 2009 — DATE
Eric J. Larson — SIGNATURE

Eric J. Larson, Environmental Business Manager, Atlantic Richfield Company
NAME, TITLE AND COMPANY (Please type or print)

FLOOD CONTROL REGIONAL OFFICE ☒ Approved ☐ Disapproved
7/20/09 — DATE
SIGNATURE: Charles A. Nye

CORPS OF ENGINEERS - REVIEWED
9/2/09 — DATE
SIGNATURE: Robert W. [illegible]
for Tom Lewitch, LSO

Application for Permit
Article 16 Flood Control Land Use
Modification
May 27, 2009

Project Description/Reason for Use of Flood Control Land - continued

Excavated material will be placed in the existing onsite Central Elevated Landfill Area (CELA). Details of the 100% Design were included in the original application submitted on September 2, 2008.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Permit Number 09-08, Mod. 1

PERMIT GRANTED

PERMITTEE NAME Atlantic Richfield Company			Permission to proceed as set forth and represented in the foregoing application pursuant to Part 501, Title 6 NYCRR, and at the particular location described therein, in accordance with the map and plan hereto attached and pursuant to the conditions and regulations, whether general or special, which are hereinafter set forth; all forming a part hereof; to wit:
ADDRESS 1 West Pennsylvania Avenue, Suite 440			
CITY/POST OFFICE Towson	STATE MD	ZIP CODE 21204	

Conditions and Regulations

1. The "Department" shall mean the New York State Department of Environmental Conservation.

2. This permit shall not be assigned or transferred without the written consent of the Department.

3. The work authorized by this permit shall be performed under the supervision and to the satisfaction of representatives of the Department.

4. The Department shall be given 7 days notice by said Permittee of the DATE when he intends to begin work authorized by this permit, and shall be given prompt notice of its completion.

5. The Permittee shall be responsible for all damages resulting in bodily injury, including death and/or property damage liability due to activities of the Permittee, its contractors, sub-contractors of either or both, agents or employers in connection with any act or omission hereunder; and does hereby expressly agree to indemnify and save harmless the United States of America, the Department of the Army Corps of Engineers, the People of the State of New York and /or the Department, its Commissioner, and their representatives and employees from claims, suits, actions, damages and costs of every name and description, arising out of or resulting from any act or omission hereunder.

6. The Permittee shall post a certified check or bond in the amount of $ 25,000.00 VH to secure the fulfillment of the terms of this permit.

7. Unless expressly waived by the Department, the Permittee shall furnish with the foregoing application a policy of protective liability insurance issued to and covering liability of the People of the State of New York and/or the Department, with respect to all operation under this permit by the Permittee or by anyone acting by, through or for the Permittee, including omissions and supervisory acts of the State. The limits of liability in such policy shall not be less than $1,000,000 per person/per accident for all damages arising out of bodily injury, including death at any time resulting therefrom, sustained by one person in any one accident and, subject to that limit for each person, not less than $2,000,000 aggregate for all damages arising out of injury to or destruction of property in any one accident, and subject to that limit per accident.

The Permittee insurance policy shall also provide protective property damage liability coverage of $1,000.000 for all damages to property in any one accident or occurrence.

Such policy(s) shall state that it(they) will not be changed or canceled until thirty days' written notice has been given to said Department.

8. The enumeration in this permit of the kind and amount of insurance shall not abridge, diminish or affect the Permittee's legal responsibilities for the consequences of accidents arising out of or resulting from the operation of the Permittee under this permit.

9. An undertaking or a certified check in the sum of $100,000.00 deposited with the Department by the Permittee before or at the time of issuance of this permit by the Department shall be deemed to include and be used as security that the Flood Control Works or any part thereof will be restored to its original condition where disturbed, at the expense of the Permittee, as soon as the work has been completed, and the said Department is hereby authorized to expend all or as much of such deposit as may be necessary for that purpose, should the said Permittee neglect or refuse to perform the work.

10. The said Department reserves the right to at any time revoke or annul this permit should the Permittee fail to comply with the terms and conditions upon which it is granted.

11. The Permittee agrees to pay all necessary expenses incident to supervision and inspection by reason of the granting of such permit as certified by the Field Engineer of the Department, Flood Control Section, such payment to be made within ten days from the rendering of the certified account.

12. Work under this permit shall be commenced within thirty days from date of permit and continued in an expeditious manner.

13. The Permittee shall submit to said Department a detailed plan of structure to be built, if any, with a description of proposed method of construction, before any work hereunder is started, which plans shall require the prior approval by the Department and any other agency having jurisdiction thereof.

14. Work permitted under this permit shall be progressed in such a manner as to avoid interference with the operation and maintenance of the Flood Control Works.

15. The above named permittee hereby certifies that it has secured compensation for the benefit of, and will keep insured during the performance of the above described work, such employees as are required to be insured, by the provisions of Workers' Compensation Law.

16. The use of State lands shall be subject at all times to the interests of the State and/or the United States of America in making improvements and repairs to the Flood Control Works. The Department, its agent, employees and representatives shall at all times, having a right of entry thereto, if in the judgement of the Department, the interests of the State or the United States of America shall require.

17. Monuments marking the boundary of Flood Control Lands shall be undisturbed and fully protected. A recompense for damages of not less than $25.00 will be imposed for each monument disturbed.

18. The Permittee shall pay the State of New York through the Department a fee of $25.00 for the issuance of this except as otherwise provided.

19. The Permittee shall be responsible for obtaining all necessary permits, rights of entry and other items required by other State agencies, landlords, etc., before commencing work on this permit.

20. A copy of this permit shall be in the possession of the Permittee or his representative at the site of the permitted activity and shall be promptly displayed upon request of a representative of the Department or any other person empowered to enforce the conditions of the permit.

New York State Department of Environmental Conservation
Special Conditions

1.

Permit Number 09-08 Md. L.

IN WITNESS WHEREOF, I have hereunto set my hand on this 1 day of MARCH, 2010.

Department of Environmental Conservation

By _____

In consideration of the granting of the within permit, the undersigned affirming, under penalty of perjury that he/she is acting under authority hereby accepts the same, subject to the restrictions and regulations therein described.

Dated this 8 day of March, 2010.

_____
Permittee

By Eric J. Larson Project Mgr.
Signature and Title

By _____
Notary Public

CONSTANCE NOTARY PUBLIC BALTIMORE COUNTY

My Commission Expires 4/17/13

(2)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DEC PERMIT NUMBER: 09-08 Mod.2

FACILITY NAME: Wellsville FCP

EFFECTIVE DATE: 10.20.10

EXPIRATION DATE: 07.06.34

APPLICATION FOR PERMIT

Under the Environmental Conservation Law
Article 16 Flood Control Land Use

TYPE OF PERMIT (Check All That Apply): ☐ New ☐ Renewal ☒ Modification ☐ Major ☐ Minor ☐ Temporary

Please Type or Print Clearly in Ink

1. NAME OF APPLICANT: Atlantic Richfield Company
2. MAILING ADDRESS: 1 West Pennsylvania Avenue, Suite 440
3. TELEPHONE NUMBER: (410) 825-2880
4. CITY/POST OFFICE: Towson
5. STATE: MD
6. ZIP CODE: 21204
7. LOCATION OF STATE MAINTAINED FLOOD CONTROL LAND City, Town or Village: Wellsville, New York
County: Allegany

Location

8. PROJECT DESCRIPTION/REASON FOR USE OF FLOOD CONTROL LAND (ATTACH SUPPORTING DOCUMENTATION)

This request is a modification to Permit Number 09-08 for the Main Drainage Swale Excavation (MDS) signed on July 2, 2009. This modification includes installation of one permanent water level control berm in the MDS. This berm is designed to provide a hydraulic barrier by raising the water level in the MDS to control groundwater seepage into the southern end. The berm will also reduce iron precipitation from groundwater that discharges into the MDS. Details of this modification are attached.

9. DESIGN ENGINEER: Name of Agency or Individual: URS Corporation – Vik Gautam
P.E. LICENSE NO. OF INDIVIDUAL: 70374 Ohio PE
TITLE: Project Engineer
ADDRESS: 1375 Euclid Avenue, Cleveland, Ohio 44115
TELEPHONE NUMBER: (216) 622-2447

10. CONSTRUCTION ENGINEER: Name of Agency or Individual: Donald Porterfield
P.E. LICENSE NO. OF INDIVIDUAL: 071402 NY PE
TITLE: Senior Engineer
ADDRESS: 28 Corporate Drive, Suite 200, Clifton Park, New York 12065
TELEPHONE NUMBER: (518) 688-0015

11. The above named applicant hereby applies to use State maintained flood control lands as indicated above in accordance with the map and plan attached, and pursuant to the conditions and regulations, whether general or special, which are hereinafter set forth or forming a part hereof, and will obtain any other consents or permits that may be necessary to accomplish the purposes set forth herein.

29 July 2010
DATE

Eric J. Larson
SIGNATURE

Eric J. Larson, Operations Project Manager, Atlantic Richfield Company
NAME, TITLE AND COMPANY (Please type or print)

FLOOD CONTROL REGIONAL OFFICE ☒ Approved ☐ Disapproved

August 25, 2010
DATE

Theodore A. Myers
SIGNATURE

CORPS OF ENGINEERS - REVIEWED

9/9/10
DATE

Thomas Smith
SIGNATURE

Permit Number 09-08 Mod. 2

PERMIT GRANTED

PERMITTEE NAME: Atlantic Richfield Company			Permission to proceed as set forth and represented in the foregoing application pursuant to Part 501, Title 6 NYCRR, and at the particular location described therein, in accordance with the map and plan hereto attached and pursuant to the conditions and regulations, whether general or special, which are hereinafter set forth; all forming a part hereof; to writ:
ADDRESS: 1 West Pennsylvania Avenue, Suite 440			
CITY/POST OFFICE: Towson	STATE: MD	ZIP CODE: 21204	

Conditions and Regulations

1. The "Department" shall mean the New York State Department of Environmental Conservation.

2. This permit shall not be assigned or transferred without the written consent of the Department.

3. The work authorized by this permit shall be performed under the supervision and to the satisfaction of representatives of the Department.

4. The Department shall be given 7 days notice by said Permittee of the DATE when he intends to begin work authorized by this permit, and shall be given prompt notice of its completion.

5. The Permittee shall be responsible for all damages resulting in bodily injury, including death and/or property damage liability due to activities of the Permittee, its contractors, sub-contractors of either or both, agents or employers in connection with any act or omission hereunder; and does hereby expressly agree to indemnify and save harmless the United States of America, the Department of the Army Corps of Engineers, the People of the State of New York and /or the Department, its Commissioner, and their representatives and employees from claims, suits, actions, damages and costs of every name and description, arising out of or resulting from any act or omission hereunder.

6. The Permittee shall post a certified check or bond in the amount of $ 25,000 to secure the fulfillment of the terms of this permit.

7. Unless expressly waived by the Department, the Permittee shall furnish with the foregoing application a policy of protective liability insurance issued to and covering liability of the People of the State of New York and/or the Department, with respect to all operation under this permit by the Permittee or by anyone acting by, through or for the Permittee, including omissions and supervisory acts of the State. The limits of liability in such policy shall not be less than $1,000,000 per person/per accident for all damages arising out of bodily injury, including death at any time resulting therefrom, sustained by one person in any one accident and, subject to that limit for each person, not less than $2,000,000 aggregate for all damages arising out of injury to or destruction of property in any one accident, and subject to that limit per accident.

The Permittee insurance policy shall also provide protective property damage liability coverage of $1,000.000 for all damages to property in any one accident or occurrence.

Such policy(s) shall state that it(they) will not be changed or canceled until thirty days' written notice has been given to said Department.

8. The enumeration in this permit of the kind and amount of insurance shall not abridge, diminish or affect the Permittee's legal responsibilities for the consequences of accidents arising out of or resulting from the operation of the Permittee under this permit.

9. An undertaking or a certified check in the sum of $ 50,000 deposited with the Department by the Permittee before or at the time of issuance of this permit by the Department shall be deemed to include and be used as security that the Flood Control Works or any part thereof will be restored to its original condition where disturbed, at the expense of the Permittee, as soon as the work has been completed, and the said Department is hereby authorized to expend all or as much of such deposit as may be necessary for that purpose, should the said Permittee neglect or refuse to perform the work.

10. The said Department reserves the right to at any time revoke or annul this permit should the Permittee fail to comply with the terms and conditions upon which it is granted.

11. The Permittee agrees to pay all necessary expenses incident to supervision and inspection by reason of the granting of such permit as certified by the Field Engineer of the Department, Flood Control Section, such payment to be made within ten days from the rendering of the certified account.

12. Work under this permit shall be commenced within thirty days from date of permit and continued in an expeditious manner.

13. The Permittee shall submit to said Department a detailed plan of structure to be built, if any, with a description of proposed method of construction, before any work hereunder is started, which plans shall require the prior approval by the Department and any other agency having jurisdiction thereof.

14. Work permitted under this permit shall be progressed in such a manner as to avoid interference with the operation and maintenance of the Flood Control Works.

15. The above named permittee hereby certifies that it has secured compensation for the benefit of, and will keep insured during the performance of the above described work, such employees as are required to be insured, by the provisions of Workers' Compensation Law.

16. The use of State lands shall be subject at all times to the interests of the State and/or the United States of America in making improvements and repairs to the Flood Control Works. The Department, its agent, employees and representatives shall at all times, having a right of entry thereto, if in the judgement of the Department, the interests of the State or the United States of America shall require.

17. Monuments marking the boundary of Flood Control Lands shall be undisturbed and fully protected. A recompense for damages of not less than $25.00 will be imposed for each monument disturbed.

18. The Permittee shall pay the State of New York through the Department a fee of $25.00 for the issuance of this except as otherwise provided.

19. The Permittee shall be responsible for obtaining all necessary permits, rights of entry and other items required by other State agencies, landlords, etc., before commencing work on this permit.

20. A copy of this permit shall be in the possession of the Permittee or his representative at the site of the permitted activity and shall be promptly displayed upon request of a representative of the Department or any other person empowered to enforce the conditions of the permit.

New York State Department of Environmental Conservation
Special Conditions

1. See attached.

Permit Number 09-08 Mod.

IN WITNESS WHEREOF, I have hereunto set my hand on this 19 day of OCTOBER, 2010.

Department of Environmental Conservation

By Alan A Steinhardt

In consideration of the granting of the within permit, the undersigned affirming, under penalty of perjury that he/she is acting under authority hereby accepts the same, subject to the restrictions and regulations therein described.

Dated this 20 day of October, 2010.

Permittee

By Ops Project Mgr
Signature and Title

By
Notary Public

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2014

Special Permit Conditions
Article 16 Flood Control Land Use Permit No. 09-08
Modification No. 2

1. This permit is for the installation of one permanent water level control berm in the Main Drainage Swale (Auxiliary Channel- U.S. Army Corps of Engineers Wellsville Local Flood Protection Project Drawings). The berm is designed to provide a hydraulic barrier by raising the water level in the Main Drainage Swale to control groundwater seepage into the southern end of the Main Drainage Swale.

   Correspondence, Attachments and Supporting Documents

   Permit Application Transmittal Letter Dated July 29, 2010 to Mr. Theodore A. Myers, P.E., New York State Department of Environmental Conservation, Division of Water, Region 9, 270 Michigan Avenue, Buffalo, New York 14203-2915 from Eric J. Larson, Operations Project Manager, Atlantic Richfield Company; Re: Revised Application to Modify Permit 09-08, Article 16 Flood Control Land Use Permit, Former Sinclair Refinery, Wellsville, New York.

   Attachment A - Application for Permit – Modification to Existing Permit No. 09-08.

   Attachment B - Plans and Specifications for Water Level Control Berms.

   Drawings included, therein, are titled, Phase II-2 Remedial Design, Former Sinclair Refinery Site, Wellsville, New York; prepared by URS Corporation and are labeled, "Permit Drawing." The drawings are:

   C-01 Site Plan and Proposed Main Drainage Swale Water Level Control Berm Locations, Dated 07-26-2010, Revision 07/14/2010.

   C-02 Main Drainage Swale Plan & Profile, Dated 07/26/2010, No Revisions.

   C-03 Main Drainage Swale Water Level Control Berm Details, dated 07/26/2010, No Revisions.

   Attachment C - No Rise Certification

   Attachment D - HEC-RAS Technical Memorandum.

   Attachment E - Groundwater Numerical Model

   Attachment F - Copies of Existing Original Permit.

   The Permittee herein is the Atlantic Richfield Company.

2. The Permittee agrees that all work shall be performed in accordance with the Drawings, Supporting Documents and Specifications noted in Special Permit Condition No. 1 above.

3. The Permittee agrees to notify the Regional Flood Control engineer of any changes to the proposed work which deviate from the attached Drawings, Supporting Documents and Specifications noted in Special Permit Condition No. 1 above. No work which deviates from these items shall take place without the written approval of the Department.

4. The Permittee agrees that the proposed work shall be performed under the supervision of a New York State registered Professional Engineer (Construction Engineer). The Permittee agrees to notify the Regional Flood Control Engineer of the name, address and telephone number(s) of the Construction Engineer. The Regional Flood Control Engineer shall be notified upon any change to the designated Construction Engineer.

5. The Permittee agrees to provide within 90 days of filing the completion notice for this approved work, three sets of "As-Built" Record Drawings and documentation of construction inspection. The Record Drawings shall be signed and sealed by the Construction Engineer and shall include identification of all deviations from the Drawings noted in Special Permit Condition No. 1 above.

6. The Permittee agrees to remove excess materials, debris and pollution control; measures from flood control lands upon completion of the work.

7. The Permittee agrees that any damage to existing flood control project facilities or features which occurs while undertaking the permitted work shall be repaired to the satisfaction of the Regional Flood Control Engineer.

8. The Permittee agrees that no vehicular traffic of any kind shall be allowed on flood control project lands except that portion which is directly involved with the authorized work.

9. The Permittee agrees that precautions shall be taken to preclude the entry of pollutants and/or waste materials directly into the Main Drainage Swale (Auxiliary Channel) or in areas where such materials would eventually be carried to it by storm runoff without treatment.

10. The Permittee agrees that earth construction materials (soil, gravel, new riprap, etc.) to be used in the permitted work shall not be taken from flood control project lands.

11. The Permittee agrees to monitor river stages, weather reports, and flood forecasts on at least a daily basis, and take prudent action, as necessary, to prevent loss of life and property due to flooding.

12. The Permittee agrees to provide the Regional Flood Control Engineer with a contact person(s) roster for use during normal working hours and emergencies/after hours. This list shall include names, positions, and telephone numbers for use during working hours and after working hours.

13. The Permittee agrees to seed any areas on flood control project lands where earth is exposed as a result of performing this work (permanent cover) using the following minimum requirements:

Topsoil:	Place four inches of good quality topsoil on the bare areas to be seeded.		
Seed:	Kentucky Bluegrass	@	1 ½ pounds per 1000 square feet.
	Creeping Red Fescue:	@	1 ½ pounds per 1000 square feet.
	Annual Rye Grass	@	1 ½ pounds per 1000 square feet.
Fertilizer:	10-10-10	@	15 pounds per 1000 square feet.
Mulch:	Adequate straw or timothy hay @ 100 pounds per 1000 square feet. Further, the Permitttee agrees to provide a good stand of grass for one year after completion of the permitted work before being relieved of its seeding responsibility.		
Note:	Hydroseeding may be substituted for this seeding requirement with prior written approval from the Department.		

14. The Permittee agrees that it will be responsible for construction site security and safety measures while performing the permitted work.

15. The Permittee agrees that photographs (at least 4 inches by 6 inches), showing the project area from at least four directions, shall be taken immediately prior to construction and immediately upon completion of the permitted work. Three copies of each print shall be submitted to the Regional Flood Control Engineer at the beginning of construction (for the prior condition photos) at completion (for the completion condition photos).

16. The Permittee agrees that sureties (bonds, deposits, etc.) as required by Condition No. 6 and Condition No. 9 of the "Conditions and Regulations" under this modification, will be provided to the Regional Flood Control Engineer within two (2) weeks after the start of construction.

17. The Permittee agrees that the permitted work will be performed in a continuous, workmanlike manor until it is completed.

18. The Permittee agrees that flood control is the primary purpose for land use within the existing New York State Flood Control Land. In this light, maintenance, rehabilitation, replacement or other changes to the permitted works shall be performed under this guiding principle. Further, the Department's easement rights remain in effect.

19. The Permittee agrees that maintenance of Water Level Control Berm No. 1 shall be the responsibility of the Permittee.

20. The Permittee agrees to obtain the Department's approval prior to making any changes to the completed permitted works beyond routine maintenance, including rehabilitation and/or replacement, thereof.

21. The Permittee agrees that replacement and/or rehabilitation of the completed permitted works shall be its responsibility.

22. The Permittee agrees that should changes to the flood control project be required within the existing New York State Flood Control Lands in the future, the Permittee shall perform any necessary required changes in the permitted works at the request of the Department and at no cost to the Department.
23. The Permittee agrees that the construction of the permitted works and activities shall be performed in a manner consistent with the hydraulic modeling which was performed to determine water surface profiles for various Genesee River discharges.

24. The Permittee agrees that in restoring flood control project facilities and while performing the permitted work, these facilities and/or features shall be returned to their pre-permit condition or better. (For example: Tie-in of the Water Level Control Berm No. 1 with the levee on the east side of the Main Drainage Swale (Auxiliary Channel.))

25. The Permittee agrees that the ground surfaces on which the Water Level Control Berm No. 1 will be constructed upon shall be properly prepared prior to construction. This preparation shall include, but not be limited to: dewatering, removal of organic material, compacting, scarifying and other conditioning required to ensure a suitable bond between the existing ground and materials used in the construction of the Water Level Control Berm No. 1.

26. The expiration date of this permit modification shall be that of Permit No. 09-08.

27. The Permittee agrees to monitor seepage beneath the flood control levee which may flow toward the Main Drainage Swale (Auxiliary Channel) and toward the Genesee River. If significant seepage is observed, the Permittee agrees to notify the Regional Flood Control Engineer and further agrees to perform any necessary actions to evaluate seepage conditions. The Permittee agrees to perform any remedial measures needed to prevent damages due to seepage or correct damage which occurs as a result of seepage.

28. The Permittee agrees to dewater the pool behind Water Level Control Berm No. 1 at the request of the Department. This may be accomplished by pumping, siphoning or by other appropriate means such as not to damage the flood control levee. Materials, manpower and equipment for draining the pool shall be readily available through the Permittee. A drain may be incorporated into the berm with approval for its design being obtained prior to its construction.

29. The Permittee agrees to maintain Water Level Control Berm No. 1 in a vegetation-free condition. Further, the Permittee agrees to mow the grass on the levee sideslope for a distance of 10 feet above flood control levee/water level control berm interface adjacent to Water Level Control Berm No. 1, such that it is at least 3 inches in length and no longer than 12 inches in length.

30. The Permittee agrees to construct and shape the northern face of Water Level Control Berm No. 1 such that water flowing over the berm shall be directed away from the flood control levee.

APPENDIX D
CELA O&M CHECKLIST

APPENDIX D
CELA O&M REQUIREMENTS
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	*Completed (✓)*		*Completion Date*
					Yes	*No*	
Vegetative Cover	Visual inspection of CELA grade	Annual	Erosion Sediment buildup Local subsidence Loss of grade Water ponding Slope instability Sloughing.	Repair as needed to restore original grades. Replant disturbed areas in accordance with seed mix in Appendix C			
	Visual inspection of vegetation on CELA.	Annual	Stressed vegetation Trees Undesirable vegetation	Replant areas of stressed vegetation in accordance with seed mix in Appendix C. Remove trees, weeds, or undesirable vegetation.			
	Visual inspection of CELA surface	Annual	Burrows	Trap or evict burrowing animals. Fill burrows with topsoil and replant surrounding area.			
	Visual inspection of CELA surface	Annual	Evidence of fires Vandalism Litter	Replant and repair damaged areas. Remove litter.			
Trail System on CELA	Visual inspection of trails and signage	Annual	Erosion of trail surface. Damage or vandalized signs.	Fill eroded areas with NYSDOT 401 aggregate. Repair damage and vandalism.			
Gas Vents	Visual inspection of gas vents	Quarterly for 3 years	Erosion around gas vent. Evidence of vandalism or damage.	Fill eroded areas with topsoil and reseed. Repair damage. Evaluate data after 3 years			
	Measure VOC concentrations in vents and in breathing zone downwind of gas vents.	Quarterly for 3 years	VOC concentration in excess of 1 ppm of benzene or vinyl chloride in breathing zone downwind of gas vents.	Establish barricade around gas vents to prevent access. Evaluate data after 3 years			

APPENDIX D CELA O&M REQUIREMENTS FORMER SINCLAIR REFINERY WELLSVILLE, NEW YORK							
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	*Completed (✓)*		*Completion Date*
					Yes	*No*	
Storm Water	Collect surface water runoff sample	Once 2013					
Piezometers Within CELA (P-01 through P-06) and Monitoring Wells Near CELA (MWR-1 through MWR-11)	Visual inspection of above grade portion of piezometers and monitoring wells.	Quarterly	Sediment or vegetative growth over protective cover. Erosion around surface casing. Missing or damaged lock or cover cap. Water collecting between casing and riser. Evidence of vandalism or damage.	Remove sediment or vegetation. Fill eroded areas with topsoil and seed. Replace or repair lock or cover cap. Remove water. Repair damage.			
Surface Water Drainage System	Visual inspection of perimeter ditch.	Quarterly	Obstructions which could impede flow. Damaged or eroded areas.	Remove obstructions. Repair damage. Fill eroded areas with topsoil and seed.			
	Visual inspection of culverts under trail.	Quarterly	Obstructions which could impede flow. Damaged or eroded areas.	Remove obstructions. Repair damage. Fill eroded areas with topsoil and seed.			
	Visual inspection of drainage culvert that penetrates the flood protection dike at the north end of the CELA.	Quarterly	Obstructions which could impede flow. Damaged or eroded areas.	Remove obstructions. Repair damage. Fill eroded areas with topsoil and seed.			

APPENDIX D
CELA O&M REQUIREMENTS
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	*Completed (✓)*		*Completion Date*
					Yes	*No*	
Security Fence	Visual inspection of fence on west side of CELA.	Quarterly	Gates dragging on ground. "Frozen" locks or hinges at gates. Holes in fence fabric. Loose or missing connections of fence fabric to posts. Loose fence posts. Cracks in post foundations. Woody vegetation grounding onto or through fence. General deterioration.	Adjust gates to keep from dragging. Repair, lubricate, replace locks or hinges, as needed. Repair holes in fence fabric. Re-attach fabric to posts. Repair or replace posts. Repair or replace fence post foundations. Remove vegetation. Assess need to repair or replace deteriorated sections of fence.			
Groundwater Quality	Collect samples from 11 groundwater monitoring wells (MWR-1 through MWR-11) near the CELA. Analyze samples for arsenic, beryllium, chromium, copper, lead and VOCs. Sampling plan in Appendix E.	Every two years					
Groundwater Elevation	Collect water levels from 11 groundwater wells near CELA	Annual					
LNAPL Monitoring and Removal	Assess monitoring wells MWR-02 and MWR-03 for presence of LNAPL.	Every two years	Measurement LNAPL thickness.	Remove accumulated LNAPL prior to collection of groundwater samples. Properly dispose removed LNAPL			

APPENDIX E
GROUNDWATER COLLECTION SYSTEM CHECKLIST

APPENDIX E *GROUNDWATER RECOVERY SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*							
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	*Completed (✓)*		*Completion Date*
					Yes	*No*	
Manholes MH-A through MH-H	Visual inspection of covers at manholes.	Weekly	Vegetation covering manhole. Evidence of vandalism or damage.	Remove vegetation. Repair damage.			
	Confirm operation, including locks, of doors into manholes.	Quarterly	Any defect	Repair as needed			
	Perform datalogger maintenance (calibrate recorder instruments, change out desiccant caps, clean probes, etc.)	Semi-annual					
	Visual inspection of interior of manholes. Follow confined space entry procedures if personnel need to enter manholes for inspections or repairs.	Quarterly	Plumbing leaks. Evidence of vandalism or damage.	Repair as needed.			
Control Panel Cabinets	Visual inspection of cabinets housing control panels.	Weekly	Vegetation that obstructs operation of doors. Evidence of vandalism or damage.	Remove vegetation. Repair damage.			
	Confirm operation, including locks, of doors on cabinets.	Quarterly	Any defect	Repair as needed			

APPENDIX E *GROUNDWATER RECOVERY SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*							
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	*Completed (✓)*		*Completion Date*
					Yes	*No*	
Piezometers TPZ-01 through TPZ-09	Visual inspection of piezometers.	Quarterly	Sediment or vegetative growth over protective cover. Erosion around surface casing. Missing or damaged lock or cover cap. Water collecting between casing and riser. Evidence of vandalism or damage.	Remove sediment or vegetation. Fill eroded areas with topsoil and seed. Replace or repair lock or cover cap. Remove water. Repair damage.			
	Perform datalogger maintenance (calibrate recorder instruments, change out desiccant caps, clean probes, etc.)	Semi-annual					
Access paths and turnouts at manholes	Visual inspection of surface.	Monthly	Erosion	Fill eroded areas with NYSDOT 401 aggregate			
Pumping Systems	Confirm manhole pump operation.	Weekly	Pump not operating	Troubleshoot and repair as needed			
	Record instantaneous flow measurements and totalized flow measurements for each manhole.	Weekly	Flow meter or totalizer not working. Average flow outside desired operating range.	Troubleshoot and repair as needed. Adjust gate valves on lines that connect manholes to conveyance lines to adjust flow rates.			
	Maintain and calibrate flowmeters	Annual					

APPENDIX E *GROUNDWATER RECOVERY SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*							
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	*Completed (✓)*		*Completion Date*
					Yes	*No*	
Conveyance lines	Exercise all valves on lines that connect manholes to the conveyance lines.	Annual	Valves do not operate properly	Repair as needed			
	Exercise valves for by-pass lines.	Annual	Valves do not operate properly	Repair as needed			
	Conduct camera survey of interior of conveyance lines within 100 feet of cleanout boxes for accumulation of scale.	Every five years	Blockage greater than 30%	Clean conveyance lines			
Cleanout boxes	Inspect exterior and interior of cleanout boxes.	Annual	Vegetation covering structure. Evidence of damage or vandalism. Leaking cleanouts on conveyance lines.	Remove vegetation. Repair damage. Repair leaks.			

APPENDIX E *GROUNDWATER RECOVERY SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*							
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	*Completed (✓)*		*Completion Date*
					Yes	*No*	
Groundwater Elevations	Monitor groundwater elevations at 17 locations (MH-A through MH-H and piezometers TPZ-01 through TPZ-09) in GWCT using electronic recorders (In-situ LevelTROLL datalogger or equivalent). Set dataloggers to collect groundwater elevations at 30-minute intervals (17520 points per year), which will provide enough points to conduct forensic analysis on pumping history or other problems.	Continuous	Dataloggers not operating properly.	Troubleshoot and repair as needed.			
	Manually measure groundwater elevations at 17 locations (MH-A through MH-H and piezometers TPZ-01 through TPZ-09) in GWCT and compare to information from dataloggers	Monthly	Variance between manual measurements and dataloggers greater than 0.1 foot.	Recalibrate dataloggers, as needed.			

APPENDIX E *PROPOSED GROUNDWATER RECOVERY SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*							
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	*Completed (✓)*		*Completion*
Groundwater Elevations (continued)	Download dataloggers	Monthly					
	Obtain stage information from the USGS National Water Information System for the Genesee River at USGS gauging station 04221000, which is approximately 1.8 miles downstream of site. Convert river stage information to river elevations adjacent to site using conversion chart in Appendix G.	Monthly					
	Compare groundwater elevations in GWCT to river elevations adjacent to site.	Monthly		Adjust elevations of float switches in manholes.			
Groundwater Elevations	Monitor groundwater of list of partial synoptic wells	Semi-Annual					
Groundwater Quality	Collect samples from four (4) wells (MW-78, OW-4, MW-71, and MW-55R)	Annual	Asymptotic	Prepare Contingency Measures Plan			
	Collect samples from Manholes A through H	Quarterly (2012-2016); Semi-Annual (2017-2018); Annual (2019)	Asymptotic	Prepare Contingency Measures Plan			

APPENDIX F
WETLAND TREATMENT SYSTEM CHECKLIST

APPENDIX F
WETLAND TREATMENT SYSTEM O&M REQUIREMENTS
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	Completed (✓)		Completion
					Yes	*No*	*Date*
Treatment System Performance	Calculate monthly discharge from treatment system based on volumes pumped from collection system and other sources.	Monthly					
	Calculate annual discharge from treatment system based on monthly discharges.	Annually in June					
	Analyze samples of influent for parameters in List A in the SPDES limitations issued by NYSDEC. Analysis plan is in Appendix I.	Monthly					
	Analyze samples of effluent for parameters List A the SPDES limitations issued by NYSDEC. Analysis plan is in Appendix I.	Monthly					

APPENDIX F *WETLAND TREATMENT SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*							
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	Completed (✓)		Completion
					Yes	*No*	*Date*
Treatment System Performance (continued)	Analyze samples of influent for parameters List B in the SPDES limitations issued by NYSDEC. Analysis plan is in Appendix I.	Annually in June					
	Analyze samples of effluent for parameters List B in the SPDES limitations issued by NYSDEC. Analysis plan is in Appendix I.	Annually in June					
Cascade Splitter Structure and Cascade Aerator	Exercise weir gates to confirm operation. Reseal cover over splitter structure if it needs to disturbed to exercise gates.	Annual	Gate doesn't operate for full range	Repair as needed			
	Check that flow from each corrugated pipe is approximately equal	Monthly	Unequal flows	Adjust weir gates to equalize flows.			
	Inspect outlet pipes from splitter structure to manholes for obstructions for sediment buildup.	Quarterly	Blockage greater than 25%	Clean pipes.			

APPENDIX F *WETLAND TREATMENT SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*							
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	Completed (✓)		Completion
					Yes	*No*	*Date*
Cascade Splitter Structure and Cascade Aerator (continued)	Inspect corrugated pipes for sediment buildup.	Quarterly	Blockage greater than 25% or more than 4-inches of buildup	Clean pipes.			
Biofilter	Check for evidence of burrowing animals.	Quarterly	Burrows present	Fill burrows with mulch.			
	Check moisture content of media at approximately 6-inches below surface of media.	Monthly in summer	Media is dry.	Add water to media			
	Check depth of media in biofilter.	Annual	Freeboard greater than four-inches.	Add pine bark mulch to replenish media.			
Biofilter Blower	Check blower vacuum and record value.	Monthly	On-Site to provide operating data	Check lines to blower and cover on cascade aerator for leaks and repair leaks, if present.			
	Check oil level in blower.	Monthly	Low oil level.	Replenish oil.			
	Check blower for oil leaks	Monthly	Oil leaks below blower	Repair as needed			
	Open valve on inlet line to drain condensate.	Monthly	Valve doesn't operate	Repair as needed			

APPENDIX F *WETLAND TREATMENT SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*							
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	Completed (✓)		Completion
					Yes	*No*	*Date*
Biofilter Blower (continued)	Check condition of enclosure and lines.	Monthly	Damage	Repair as needed			
Sedimentation Pond	Visual inspection for vegetation in or around pond.	Quarterly	Vegetation	Remove vegetation.			
	Check for animals burrowing around pond.	Quarterly	Burrows	Fill burrows with topsoil			
	Check position and condition of turbidity curtains.	Monthly	Curtains are not secured to anchor blocks. Curtains are damaged.	Re-attach curtains to anchor blocks. Repair or replace curtains.			
	Assess need to clean pond based on iron concentrations in influent since last cleaning and prior cleaning results.	Semi-annual	Operator judgment.	Clean pond			
Sedimentation Pond Outlet	Set outlet for summer operation.	Annual in spring	After potential for freezing is past.				
	Set outlet for winter operation.	Annual in late fall	Before potential for formation of more than 1-inch of ice.				

APPENDIX F *PROPOSED WETLAND TREATMENT SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*							
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	Completed (✓)		Completion
Hydraulic Control / Splitter Structure	Exercise weir gates to confirm operation.	Annual	Gate doesn't operate for full range	Repair as needed			
	Check that water level in sedimentation pond is approximately 1,508 feet-msl.	Monthly	Water level in sedimentation pond is below 1,507.5 feet-msl.	Adjust weir gates to raise water level in sedimentation pond.			
	Check that flow to each of surface flow wetlands is approximately equal.	Monthly	Unequal flows	Adjust weir gates to equalize flows.			
	Confirm that there is no debris in structure and no blockages of the pipes to the SFWs.	Bi-Weekly	Debris or blockage	Clean as needed.			
Recycle Pump in Hydraulic Control Splitter	Assess need to operate recycle pump by reviewing previous effluent analytical results.	Quarterly	Consistent or frequent exceedances of the SPDES discharge limits while the aerator blowers for the SFWs are operating.	Operate recycle pump.			
	Check pump operation	Quarterly	Pump does not operate.	Troubleshoot and repair.			

APPENDIX F
PROPOSED WETLAND TREATMENT SYSTEM O&M REQUIREMENTS
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	Completed (✓)		Completion
Surface Flow Wetlands	Check for geese establishing residence within or near wetlands	Whenever present at site	Waterfowl in and near wetlands. Nesting geese or other waterfowl.	Harass geese and other waterfowl to prevent nesting (see Appendix zz for methods). If geese are nesting, assess whether damage warrants obtaining permit from USDA and NYSDEC to disturb nests.			
	Check for presence of muskrats within wetlands.	Monthly	Muskrats observed in or near wetlands. Muskrat dens on platforms in wetlands.	Trap muskrats in accordance with current NYSDEC Permit to Take Destructive Wildlife (see Appendix K).			
	Visual inspection of condition of vegetation on platforms in basins.	Monthly	Areas of impacted or missing vegetation	Implement geese and muskrat control measures, if needed (see above). Transplant cattails from an off-site source to fill areas of sparse vegetation.			
	Measure thickness of topsoil on vegetated platforms.	Annual	Topsoil thickness less than 3-inches.	Add topsoil to bring thickness to 6-inches.			
	Visually inspect condition of base of deep basins in surface flow wetlands.	Once every three years	More than 0.5-inch of iron precipitates.	Develop and implement plan to remove precipitate.			
	Survey dikes around and between wetlands to assess settlement.	Every two years for 10 years, then every five years.	Settlement greater than 0.1 foot from design elevation of 1,508.5 ft-msl or previous survey.	Develop and implement plan to address settlement.			

APPENDIX F
PROPOSED WETLAND TREATMENT SYSTEM O&M REQUIREMENTS
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	Completed (✓)		Completion
Surface Flow Wetlands (continued)	Topsoil on walls of basin berms.	Quarterly	Areas of sloughing. Exposed liner or erosion	Backfill eroded areas and restore as needed. Cover exposed liner with topsoil and seed.			
Surface Flow Wetland Blowers	Evaluate whether blower is to be operated by reviewing previous effluent analytical results, expected weather conditions, and expected influent.	Monthly	Consistent or frequent exceedances of the SPDES discharge limits in conjunction with cold weather (average temperature less than 30°F) and high VOC loading in influent.	Operate blowers			
	Check blower pressure and record value, if operating	Weekly	On-Site to provide operating data	(Need input form On-Site)			
	Check oil level in blowers, if operating	Weekly	Low oil level	Replenish oil.			
	Check blowers for oil leaks, if operating	Weekly	Oil leaks below blower	Repair as needed			
	Check condition of enclosures	Weekly	Damage	Repair as needed			
	Check aeration lines in surface wetlands for leaks, if operating	Weekly	Leaks Floating lines	Repair as needed			

APPENDIX F
PROPOSED WETLAND TREATMENT SYSTEM O&M REQUIREMENTS
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	Completed (✓)		Completion
Surface Flow Wetland Hydraulic Control Structures	Exercise weir gates to confirm operation.	Annual	Gate doesn't operate for full range	Repair as needed			
	Confirm that there is no debris in structure and no blockages on the outlet pipes.	Weekly	Debris or blockage	Clean as needed.			
	Set water level to approximately 4 to 6 inches above vegetated benches.	Annual in spring	After potential for freezing is past.				
	Set water level to at least 18 inches above vegetated benches.	Annual in late fall	Before potential for formation of more than 1-inch of ice.				
Vertical Flow Wetland Splitter Structure	Exercise weir gates to confirm operation	Annual	Gate doesn't operate for full range	Repair as needed			
	Confirm that there is no debris in structure and no blockages on the outlet pipes.	Weekly	Debris or blockage	Clean as needed.			
	Confirm that flow is approximately equal to each of the five vertical flow wetlands.	Monthly	Unequal flows	Adjust weir gates to equalize flows.			

APPENDIX F
PROPOSED WETLAND TREATMENT SYSTEM O&M REQUIREMENTS
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	Completed (✓)		Completion
Vertical Flow Wetlands	Check for animals burrowing around cell.	Quarterly	Burrows present	Cover burrows with topsoil and reseed.			
	Survey dikes around and between wetlands to assess settlement.	Every two years for 10 years, then every five years.	Settlement greater than 0.1 foot from design elevation of 1,505.5 ft-msl or previous survey.	Develop and implement plan to address settlement.			
	Topsoil on walls of basin berms.	Quarterly	Exposed liner or erosion	Cover exposed liner with topsoil and seed. Backfill eroded areas and restore as needed.			
	Visual inspection of limestone	Annual	More than 0.5-inch of iron precipitate on surface of limestone	Remove and replace upper 1-foot of limestone			
	Evaluate effectiveness of limestone by reviewing pH in effluent for past 12 months.	Annual	pH level consistently trending downward toward discharge limit.	Remove and replace limestone			
Dosing Siphon Structures	Visual inspection of interior of structures.	Quarterly	Debris or blockage	Clean as needed.			
	Confirm that dosing siphons are cycling.	Monthly	Water level does not change in wetland	Troubleshoot and repair as needed			
Effluent Manhole and	Visual observation of flow in effluent manhole	Monthly	Discolored or no flow.	Troubleshoot and repair as needed.			

APPENDIX F *PROPOSED WETLAND TREATMENT SYSTEM O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*							
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	Completed (✓)		Completion
Outfall	Visual observation of flow at outfall	Monthly	Discolored or no flow.	Troubleshoot and repair as needed.			
	Visual inspection of effluent manhole	Monthly	Debris or blockages	Clean, as needed			
	Visual inspection of outfall pipe in swale	Monthly	Debris or blockages	Clean, as needed			
Drying Beds	Check condition of doors when residuals are stored in drying beds	Weekly	Leakage	Repair doors and cleanup leakage			
	Confirm that sand layer in base of bed is adequate.	Prior to transferring residuals to beds	Sand layer less than 12-inches thick	Add sand			
	Check for standing liquids in beds	Weekly	Free liquids in beds	Open valves on drainage lines.			
	Check for debris or blockages in catch basin on pad west of beds	Monthly	Blockage or excessive debris	Clean catch basin			

APPENDIX F
PROPOSED WETLAND TREATMENT SYSTEM O&M REQUIREMENTS
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	Completed (✓)		Completion
Drying Bed Sump Pump	Exercise valves on drainage lines from drying beds to drainage sump.	Annual and prior to transferring sludge to drying beds	Valves do not operate properly	Repair as needed			
	Confirm pump operation	Monthly and prior to transferring sludge to drying beds.	Pump does not operation	Troubleshoot and repair as needed			
	Confirm function of check valve in meter box.	Monthly	Improper operation.	Troubleshoot and repair as needed			
	Float switch elevations	Quarterly	Elevations deviate from plan by more than 0.25-feet.	Adjust elevations of float switches.			
	Float switch operation	Monthly	Switches do not operate	Troubleshoot and repair as needed			
	High high level alarm	Whenever at the site	High high level alarm is on	Troubleshoot and repair as needed			

APPENDIX G
PROCEDURE FOR CLEANING SEDIMENTATION POND

SEDIMENTATION POND CLEANING PROCEDURE
FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

SUMMARY

The sedimentation pond (sed pond) requires cleaning to remove iron precipitant on a periodic basis. Currently cleaning is conducted on an approximately annual frequency during late spring or early summer. However, the cleaning frequency maybe adjusted in the future as site conditions warrant. The treatment system will be shut down for an anticipated two week period to facilitate the cleaning work. Cleaning work will include draining water from the sed pond, removal of iron precipitant to the onsite drying beds and cleaning of wetland system components as appropriate. A generalized work task breakdown is provided below. Work tasks may be modified as necessary.

TASK LIST

1. Preparation Activities
    - Order and receive required equipment and supplies.
    - Verify all necessary hose/pipe connections and fittings.
    - Complete Work Risk Analysis and Task Safety Environmental Analysis.

2. Clean Sedimentation Pond
    - Shutdown groundwater collection and treatment system and remove sed pond discharge riser pipe to allow approximately 1.5 feet of water to drain from the sed pond to surface flow ponds. Allow approximately one day for water to gravity drain from sed pond.
    - Pump water/precipitant from sed pond to drying beds utilizing appropriate pump(s) and temporary above ground piping.
    - Remove turbidity curtains from sed pond as appropriate.
    - Push precipitant to suction hose as necessary utilizing appropriate equipment such as skid steer equipped with manure squeegee attachment.
    - A vacuum truck or trailer may also be used as necessary.
    - Rinse sed pond perimeter rocks and turbidity curtains as appropriate.
    - Once sed pond pumping is complete, flush and clean pumps, piping and store for future sed pond cleanings as appropriate.

3. Reinstall Sed Pond Turbidity Curtains
    - Once sed pond cleaning is complete, reinstall turbidity curtains utilizing appropriate equipment.

4. Other System Component Cleaning

    Other system components may be cleaned during the shutdown as deemed necessary. Some of these components may include the i) sedimentation pond hydraulic splitter structure; ii) pipes from splitter structure to cascade manholes; iii) cascade manholes; iv) cascade aeration pipes; and v) various structures downstream of the sed pond.

APPENDIX H
PERMIT TO TAKE DESTRUCTIVE WILDLIFE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF FISH, WILDLIFE AND MARINE RESOURCES

COMPLAINT RECORD AND PERMIT FORM

Permit to take destructive wildlife pursuant to Environmental Conservation Law 11-0521

9	10	1031	MK
REG	YEAR	REC NO.	

☐ CHECK IF DATA ENTERED

REGIONAL WILDLIFE OFFICE Region 9
182 East Union, Suite 3, Allegany, NY 14706 716-372-0645

NAME: Eric Larson
TELEPHONE NUMBER (Home): 443-807-6233
TELEPHONE NUMBER (business):
STREET ADDRESS: 2446 County Rt 44
ORGANIZATION (if applicable): Sinclair Refinery
CITY/STATE/ZIP CODE: Wellsville, NY 14895
SITE LOCATION IF DIFFERENT:

Location of Problem:
WMU 9X UTM NAD 83 2 5 7 0 5 2 . 8 9 , 4 6 6 5 6 5 0 . 3 8
County Allegany Town Wellsville Quad

DATE RECEIVED 12 Mo 20 Day 10 Year
DATE HANDLED/ISSUED 1 Mo 1 Day 11 Year
DATE EXPIRES 12 Mo 31 Day 11 Year

Permit to take DEER ☐ Repeat Complaint Previous Permit # _____

☐ **General Permit** You and your agent must comply with all standard conditions of this permit listed on this or additional pages.

☐ **Permit with Special Conditions** You and your agents must comply with all special conditions listed on this or additional pages.

Killing of deer may only be accomplished by use of those weapons checked:

☐ Bow with legal hunting broadhead ☐ Shotgun with single projectile ☐ Rifle with centerfire cartridge

Type of problem, check all that apply

☐ Corn ☐ Grain ☐ Orchard ☐ Vineyard ☐ Nursery ☐ Natural Communities ☐ Community Garden ☐ Ornamental
☐ Beans ☐ Forage ☐ Airport ☐ Truck Farm ☐ Christmas Trees ☐ Forest Regeneration ☐ Home Garden
☐ Other _____

Number of Tags Issued _____ Carcass Tag Number(s) _____ Number killed on permit _____

Special Conditions for Deer _____

Permit to take OTHER SPECIES ☒ Repeat Complaint Previous Permit # 9-09-0678

☐ Beaver ☒ Muskrat ☐ Bear ☐ Turkey ☐ Other (Specify)

For beaver, type of problem:

☐ Public Road ☐ Private Road ☐ RR ☐ Agriculture ☐ Timber ☒ Impoundments ☐ Residential
Other _____

You or your agents must comply with all standard or special conditions of this permit listed on this or additional pages. This permit does not authorize trespassing.

You or your agent MAY:
☒ take and/or ☒ harass the species checked above, at the problem location, by:
☒ trapping ☒ shooting ☐ other method (list) _____
☒ Bury carcasses ☐ Sell/keep beaver pelts – through May 15 (after May 15 - beaver must be buried)

Pursuant to ECL 11-0505 or ECL 11-1101, you may:
☐ disturb beaver dams (see standard condition 4) ☐ disturb beaver lodges ☐ set traps within 15 feet of beaver lodge
other _____ ☐ set traps within 15 feet of beaver dam
☐ Agents certified by DEC may use cable restraints to take beaver

WATER LEVEL CONTROL DEVICE: ☐ Recommended ☐ Installed

Other Permits Issued:
☒ ARTICLE 11 ☐ ARTICLE 15 Stream _____ ☐ ARTICLE 24 Wetland Number _____

Actions Taken:
☐ Technical advice only ☐ Field visit ☐ Hunter/Trapper referral Total time spent _____ Handled by M. Koch

Other Actions: _____

STANDARD CONDITIONS FOR GENERAL DEER DAMAGE PERMIT

PERMIT CONDITIONS

1. Only the Permittee and Agents may use this permit.
2. Permit is valid for antlerless deer only.
3. Agents must possess a valid NYS hunting license, hunter education certificate, or certificate of safe firearms training.
4. Agents must be at least 18 years of age.
5. Persons who have had their NYS hunting privileges revoked or suspended may not act as an Agent on this permit.
6. Permittee and Agents must abide by local firearms discharge ordinances or obtain a written waiver from local authorities.
7. If a waiver is required, it must be attached to the permit.
8. Permittee and Agents must possess a copy of the permit and carcass tag when using this permit.
9. Permittee must first obtain permission from the landowner before using this permit on leased or rented lands.
10. Shooting hours are from ½ hour before sunrise to 11 p.m.
11. This permit is not valid unless or until the AGREEMENT TO CONDITIONS is signed by the Permittee.
12. This permit is valid only on lands owned, rented or leased by the Permittee, where damage is occurring, as specified in the permit.
13. The Permittee must maintain a log of Agents using the permit. The log must be available for inspection at any time.
14. Agents must sign the log prior to using this permit.
15. The Permittee is responsible for any property damage caused by the Agents while using the permit.
16. The use of artificial lights is permitted when shooting after sunset.
17. Permit is not valid during any open deer hunting season in the area issued, except as specified as a permit condition by the Regional Wildlife Manager.
18. The DEC has the right to inspect any building, structure or property used for any activity pursuant to this permit.
19. Shooting within 500 feet of a dwelling, farm building or occupied structure is prohibited unless the shooter owns or leases the building or has the owner's written consent.
20. No one may sell: a nuisance deer permit, a carcass tag, the ability to be an agent on a permit or the opportunity to shoot a deer on a permit, or a deer shot on a deer damage permit.

ENVIRONMENTAL CONSERVATION LAW:

- Possession of a loaded firearm in or on a motor vehicle is prohibited.
- Shooting from a motor vehicle or across any part of a public highway is prohibited.
- Shooting within 500 feet of a school, playground, or an occupied factory or church is prohibited.

TAGGING, PROCESSING AND REPORTING THE DEER:

- All deer taken must be tagged with a completed carcass tag and reported. Deer must be tagged before being transported.
- An effort should be made to use the deer for human consumption. Venison donation programs may exist in your area.
- You must return the completed Summary Report WITHIN 10 DAYS of expiration date of your permit to the DEC office listed on your permit. Failure to report can be grounds for denial of future permits. Unused carcass tags must be destroyed.
- If you expect to need another deer damage permit next year, sign the statement on the completed Summary Report when you return it to DEC.

STANDARD CONDITIONS FOR NUISANCE BEAVER, MUSKRAT, BEAR or TURKEY PERMIT

1. In executing this permit you and your agent must obey all State and local laws and ordinances governing such actions (e.g., firearms discharge) and obtain any additional permits as required.
2. This permit does not authorize you or your agent to trespass. You must first obtain permission from the landowner for you and/or your agent to go on land you do not own to execute this permit.
3. Your and/or your agent must carry a copy of this permit while executing this permit.
4. When removing a beaver dam, water levels above and below must be equalized by slow and partial breaching before the entire dam is removed.

AGREEMENT TO CONDITIONS

Failure to comply with the conditions, outlined above and elsewhere in this permit may result in denial of future permits and may be considered violations of state laws. This permit may be revoked at any time.

I have read and fully understand the above permit conditions and agree to abide by them.

Permittee: Eric [illegible] Date: January 1, 2011

APPENDIX I
RIVER CHANNEL AND SWALE CHECKLIST

APPENDIX I *RIVER CHANNEL AND SWALE O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*							
					Completed (✓)		*Completion*
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	*Yes*	*No*	*Date*
Rip-rap revetment on east river bank near CELA	Visual inspection	Annual during low river flow (<180 cfs)*	Damage. such sloughing or erosion.	Repair damage by replacing rip-rap to design grades.			
	Visual inspection	After each high water period (>4,500 cfs)*	Damage, such as sloughing or erosion	Repair damage by replacing rip-rap to design grades.			
Dike between CELA and Genesee River	Visual inspection of rip-rap revetment	Annual during low river flow (<180 cfs)*	Damage. such sloughing or erosion.	Repair damage by replacing rip-rap to design grades.			
	Visual inspection of rip-rap revetment	After each high water period (>4,500 cfs)*	Damage, such as sloughing or erosion	Repair damage by replacing rip-rap to design grades.			
	Visual inspection, if safe.	During high water event (>4,500 cfs)*, if safe	Damage that might jeopardize the integrity of the dike.	Repair damage, as needed, after water level recedes			
	Visual inspection of trail on top of dike.	Annual	Water ponding or ruts	Fill low areas with NYSDOT 401 aggregate			
	Survey elevation of top of dike CELA and river at 200-foot intervals to assess settlement. Survey toe of slope to check for displacement or settlement of rip-rap revetment.	Every five years during a low river flow (<180 cfs)*	Excessive settlement or movement.	Review information with NYSDEC to evaluate whether correction action is needed.			
Rip-rap revetment and dike on west river bank downstream of lower drop structure	Visual inspection	Annual during low river flow (<180 cfs)*	Damage. such sloughing or erosion.	Repair damage by replacing rip-rap to design grades.			
	Visual inspection	After each high water period (>4,500 cfs)*	Damage, such as sloughing or erosion	Repair damage by replacing rip-rap to design grades.			

APPENDIX I *RIVER CHANNEL AND SWALE O&M REQUIREMENTS* *FORMER SINCLAIR REFINERY* *WELLSVILLE, NEW YORK*							
					Completed (✓)		*Completion*
COMPONENT	*INSPECTION or MONITORING ACTION*	*FREQUENCY*	*TRIGGER FOR CORRECTIVE ACTION*	*CORRECTIVE ACTION*	*Yes*	*No*	*Date*
	Survey toe of slope to check for displacement or settlement of rip-rap revetment.	Every five years during a low river flow (<180 cfs)*	Excessive settlement or movement.	Review information with NYSDEC to evaluate whether correction action is needed.			
Water Level Control Berm at South End of Swale	Visual inspection	Quarterly	Damage. such sloughing or erosion. Vegetation.	Repair damage by replacing rip-rap to design grades. Remove vegetation.			
Water Level Control Berm at South End of Swale (continued)	Visual inspection of vegetation on side slope of levee between the WLCB and the Genesee River.	Monthly Bi-Weekly during summer months.	Vegetation taller than 12-inches within 10 feet of the interface of the WLCB and levee.	Cut to height no shorter than 3-inches.			
	Monitor toe of levee between the WLCB and the Genesee River for seepage.	Quarterly	Observation of significant seepage	Review information with NYSDEC to evaluate whether correction action is needed.			
	Dewater pool behind WLCB.	When requested by NYSDEC					

Notes:
RP – Include in Work Plan to Agencies
IM – Include in Integrity Management Plan
GO – Good Operating Practice included in Integrity Management Plan
* - River flow data is available from the USGS National Water Information System for the Genesee River at USGS gauging station 04221000, which is approximately 1.8 miles downstream of site.

APPENDIX J
STANDARD OPERATING PROCEDURES

STANDARD OPERATING PROCEDURE
DEPTH TO WATER MONITORING
FORMER SINCLAIR REFINERY SITE

BACKGROUND

This monitoring is being conducted to evaluate the performance of the OU-2 groundwater collection trench recovery system at the site and it is critical for measurements to be accurate to ± 0.01 ft. Site water level monitoring events at monitoring wells, piezometers and staff gauges should be completed within an approximately six hour time frame and not coincide with a rain event. For this reason, the site wells have been divided into groups so that multiple people can collectively perform this monitoring.

Historically LNAPL has been detected in certain wells. These wells are noted on the field forms. Also, iron bacteria are present in many wells. Iron bacteria can cause false positive oil detection with an oil/water interface probe and also hinder accurate readings with an electronic water level indicator.

.

EQUIPMENT & SUPPLIES

A combination of electronic water level meters and electronic oil/water interface probes will be utilized. Certain wells have historically contained LNAPL and require an interface probe to achieve an accurate measurement.

Supplies needed include water spray bottle, liquid-nox/water spray bottle, paper towels, well key, flush mount well opener and site map.

PROCEDURE

At the start of a water level monitoring event, all meters should be used to measure one well to confirm that each meter is producing the same reading. If the water level meter has a slope dial, the slope shall be set at the appropriate level, noted on field form and maintained at that setting for the entire monitoring event.

Prior to measuring a well, confirm well is properly labeled and is shown at correct location on site map.

Each water level measurement shall be made by carefully raising and lowering the cable approximately one inch so the probe contacts and breaks contact with the water surface. This will be repeated until three consecutive reading are achieved. Depth readings are measured from the black mark on the top of the inner well casing. Once a repeatable reading is measured, immediately record the reading along with the date and time of reading on field form. If a reading can not be repeated three times, remove and clean the meter probe and retry measurement. Maintain the probe in clean condition between each well.

Three wells have been chosen for each person/meter combination to measure at the start and also end of each site wide monitoring event. These wells are identified as QC wells on field forms.

Staff gauge readings will be measured using the three repeatable reading procedure with an electronic water level meter measured from the top of the steel gauge. A stilling well shall be slid over the gauge for each measurement.

STANDARD OPERATING PROCEDURE
GROUNDWATER SAMPLING
FORMER SINCLAIR REFINERY SITE

BACKGROUND

Groundwater sampling and field parameter measurements will be performed following the procedure described in USEPA Region 2 Groundwater Sampling Procedure for Low Stress (Low Flow) Purging and Sampling (Attachment 1). This sampling method allows collection of ground water samples from monitoring wells that are representative of ground water conditions in the geological formation by withdrawing groundwater slowly from the well. Low flow purging limits entrainment of particles that are normally immobile within the aquifer, allowing collection of samples that are more representative of mobile organic and inorganic concentrations at ambient groundwater flow conditions. This method also allows more representative measurement of groundwater field parameters by conducting measurements within a closed flow-through cell, which prevents agitation and aeration of the sampled groundwater. Aeration of the sample typically leads to artificially high measurements of dissolved oxygen (DO) oxidation-reduction potential (ORP), with the added effect of causing chemical changes that are not representative of subsurface conditions. During low flow purging, groundwater will be screened in the field for pH, DO, ORP, turbidity, temperature, and specific conductance.

PROCEDURE

Groundwater samples are generally collected using a submersible pump and FEP (Teflon) tubing. If non-dedicated pumps and tubing are utilized then the pumps and tubing will be decontaminated prior to use and between each well using a three step washing procedure: (i) Liqui-Nox® soap and tap water wash; (ii) tap water rinse; followed by (iii) distilled water rinse. Additionally, a field blank sample will be collected from non-dedicated sampling equipment.

QA/QC samples will be collected as described below.

- Trip Blanks – One per shipping container that contains VOC samples. (VOCs only).
- Field Blanks – Field blanks are collected from equipment rinsate for each target parameter once per day per type of non-dedicated equipment used.
- Field Duplicates – One per 20 samples for each target parameter.
- MS/MSD Samples – One set per 20 samples for each target parameter.

Immediately prior to sampling, laboratory provided sample bottles will be labeled with sample identification, date and time of sampling. The required analysis and preservative are generally pre-labeled on the bottles. Immediately after sample collection, samples will be placed in a cooler with bagged ice. Chain-of-custody records are completed and coolers delivered to the laboratory by a overnight delivery service.

STANDARD OPERATING PROCEDURE
RECOVERY SYSTEM MANHOLE SAMPLING
FORMER SINCLAIR REFINERY SITE

BACKGROUND

Groundwater sampling may be conducted at recovery system manholes MH-A through MH-H. If a manhole to be sampled is part of the active recovery system at the time of sampling, then no purge is required prior to sampling. If a manhole recovery pump is idle then the associated recovery pump shall be operated for approximately three hours prior to collecting a groundwater sample. Currently manholes MH-A through MH-G are pumping as part of the normal operations and manhole MH-H idle.

PROCEDURE

Immediately prior to sampling, laboratory provided sample bottles are labeled with sample identification, date and time of sampling. Required analysis and preservative are pre-labeled on the bottles. Also the Genesee river stage is documented for the sampling event utilizing the USGS gage station.

Grab water samples are generally collected utilizing clean disposable bailers. Sample bottles are filled starting with Volatile Organic Compounds (VOCs) followed by Semivolatile Organic Compounds (SVOCs), metals and required wet chemistry bottles. Field pH is measured from a non-preserved sample using a properly maintained and calibrated pH meter. Field pH readings are recorded on the chain-of-custody record.

Immediately after sample collection, samples are placed in a cooler with bagged ice. One trip blank sample, provided by laboratory, shall be placed in each cooler containing VOC samples. Chain-of-custody records are completed; coolers are sealed with tape and custody seals and delivered to the laboratory by an overnight delivery service.

Samples are analyzed by an Atlantic Richfield contract laboratory, which is currently Lancaster Laboratories, located in Lancaster, Pennsylvania. A standard quality assurance level laboratory analytical report is produced and third party data validation is not required.

STANDARD OPERATING PROCEDURE
SPDES SAMPLING AND ANALYSIS
FORMER SINCLAIR REFINERY SITE

BACKGROUND

Water sampling and laboratory analysis associated with the Site SPDES Permit Equivalent is required on a monthly basis. The current analysis requirements are provided in a letter from Mr. Percival Miller, New York State Department of Environmental Conservation to Mr. Eric Larson, Atlantic Richfield Company, dated August 3, 2009. Analytical requirements, which include both monthly and annual schedules. The annual sampling is intended to be completed each June.

Grab water samples are collected from: i) combined system influent, representing untreated water; ii) surface flow wetlands combined influent (intermediate treatment); and iii) system effluent representative of treated discharge. The system influent water sample is collected from the center chamber of the cascade aerator splitter structure. The influent to the surface flow wetland ponds is sampled at the center chamber of the surface flow wetland hydraulic control structure. Treated effluent samples are collected from the effluent pipe discharge at the head of the main drainage swale.

Sampling is generally conducted during the first week of each month. Immediately prior to sampling, laboratory provided sample bottles are labeled with sample identification, date and time of sampling. Required analysis and preservative are pre-labeled on the bottles. Water samples are obtained using a polyethylene dipper. The dipper is cleaned prior to each use using the following three step procedure: i) Liqui-Nox® soap and tap water wash; ii) tap water rinse; followed by iii) distilled water rinse.

PROCEDURE

Sample bottles are filled starting with Volatile Organic Compounds (VOCs) followed by Semivolatile Organic Compounds (SVOCs), metals and required wet chemistry bottles. Field pH is measured from a non-preserved sample using a properly maintained and calibrated pH meter. Field pH readings are recorded on the chain-of-custody record. Immediately after sample collection, samples are placed in a cooler with bagged ice. Chain-of-custody records are completed; coolers are sealed with tape and custody seals and delivered to the laboratory by an overnight delivery service.

Samples are analyzed by an Atlantic Richfield contract laboratory, which is currently Lancaster Laboratories, located in Lancaster, Pennsylvania. A standard quality assurance level laboratory analytical report is produced and third party data validation is not required.

TABLE 1

SPDES ANALYTICAL REQUIREMENTS
OU2 PHASE II WETLAND TREATMENT SYSTEM
FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

MONTHLY ANALYTICAL SCHEDULE

Field Parameters
Field pH

Volatile Organic Compounds
Benzene
Chlorethane
Ethylbenzene
Toluene
Vinyl Chloride
Xylenes, Total
1,1-Dichloroethane

Semivolatile Organic Compounds
Acenaphthene
Aniline
Fluorene
Naphthalene
Nitrobenzene
Phenanthrene
2-Methylnapthalene

Inorganic Compounds
Arsenic, Total
Iron, Total
Manganese, Total

Wet Chemistry
Total Suspended Solids (TSS)

SOURCE: Letter from Mr. Percival Miller, New York State Department of Environmental Conservation to Mr. Eric Larson, Atlantic Richfield Company, dated August 3, 2009

ANNUAL ANALYTICAL SCHEDULE

Field Parameters
Field pH

Volatile Organic Compounds
Benzene
Chlorethane
Ethylbenzene
Toluene
Vinyl Chloride
Xylenes, Total
1,1-Dichloroethane
2-Butanone

Semivolatile Organic Compounds
Acenaphthene
Aniline
Fluorene
Naphthalene
Nitrobenzene
Phenanthrene
2-Methylnapthalene

Inorganic Compounds
Aluminum, Total
Arsenic, Total
Barium, Total
Iron, Total
Magnesium, Total
Manganese, Total

Wet Chemistry
Ammonia
Biological Oxygen Demand (BOD5)
Chloride
Nitrite
Phosphorus
Total Dissolved Solids (TDS)
Total Kjeldahl Nitrogen (TKN)
Total Suspended Solids (TSS)

STANDARD OPERATING PROCEDURE
WELL DECOMMISSIONING
FORMER SINCLAIR REFINERY SITE

BACKGROUND

During the past twenty (20) years, several phases of investigation, remediation and monitoring have occurred at the site. As a result, there are more than 120 monitoring wells and piezometers located at the site. As groundwater remediation progresses, the need for and use of the monitoring wells will change. Therefore, a program for well decommissioning will be needed in the future.

PROCEDURE

The plan for well decommissioning will be described in annual reports that are developed for the site. The procedures to be used will general follow DEC Policy CP-43.

[Insert text from policy]

APPENDIX K
REGULATORY AGENCY CORRESPONDENCE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

March 26, 2012

Eric J. Larson
Atlantic Richfield Company (ARCO)
1 West Pennsylvania Avenue, Suite 440
Towson, MD 21204

Re: Reply to ARCO's Response to EPA Comments On "Performance-Based Groundwater Monitoring Report: Hydrologic Summary" July 2011; Sinclair Refinery Site, Wellsville, New York.

Dear Mr. Larson:

This letter is in response to ARCO's letter to the U.S. Environmental Protection Agency (EPA) dated January 17, 2012, which responds to EPA comments, originally submitted on September 27, 2011, on the July 2011 report "Performance-Based Groundwater Monitoring Report: Hydrologic Summary." In addition, this letter also addresses issues discussed between EPA, the New York State Department of Environmental Conservation (NYSDEC), and ARCO in a meeting held on November 30, 2011 and subsequent telephone conversations. EPA's reply to ARCO's responses to the comments submitted on September 27, 2011 are provided as an attachment to this letter.

The Performance Based Groundwater Monitoring (PBGM) program implemented for the Sinclair Refinery Superfund site in Wellsville, New York was established upon start-up of the groundwater collection trench and wetland treatment system, constructed under the Phase 2 remedial action and the August 2009 Explanation of Significant Differences to treat contaminated groundwater at the site and prevent its migration to the Genesee River. As such, the PBGM program has appropriately served as the Initial Testing Program called for in paragraph F.4 of the Statement of Work ("SOW") attached to the Administrative Order for Remedial Design and Remedial Action Index No. II CERCLA 20216 issued by EPA on September 8, 1992.

Based on its review of the data collected under the PBGM program, EPA and NYSDEC agree that at this time there is no evidence to support the construction of a slurry wall between the groundwater collection trench and Genesee River. The construction of a slurry wall between the trench and river was a contingency measure included in the remedial design report for Phase 2 to ensure the protection of the Genesee River in the event that the collection trench was unable

to capture the contaminated groundwater migrating downgradient from the site. Data provided to date indicate that the collection trench is adequately collecting and conveying groundwater to the wetland treatment system where it is treated to meet discharge standards established by permit. EPA and NYSDEC will continue to review performance data in accordance with the schedules established in a forthcoming Site Management Plan (which will incorporate the Operation, Maintenance, and Monitoring Plan currently under development) and Five-Year Reviews of the site to ensure that the groundwater collection trench continues to prevent the migration of contaminated groundwater to the Genesee River and that no further action, beyond the scope of operation, maintenance, and monitoring, is required.

Accordingly, the attached reply to comments should be incorporated into the Operation, Maintenance, & Monitoring (O,M&M) Plan for the site called for as the O&M Plan in paragraph F. 5 of the SOW and continuation of the PBGM program performed as part of O,M&M. EPA and NYSDEC are in receipt of ARCO's draft O,M&M Plan and are in the process of performing a review of the document. Once EPA and NYSDEC have provided comments on the OM&M Plan, ARCO should incorporate those comments along with those attached to this letter into a final O,M&M Plan which will in turn become incorporated into the Site Management Plan. The Site Management Plan, which will address all aspects of post-remediation site activity, including but not limited to, O,M&M of the constructed remedy, site soils management, and land use restrictions, is a New York State requirement and EPA requires its submittal under Section XIII of the Administrative Order. Further, EPA's approval, and ARCO's implementation, of the OM&M Plan will conclude the Initial Testing Program.

If you have any questions or comments about this letter, please do not hesitate to contact me either by email, negrelli.mike@epa.gov, or by phone at (212) 637-4278.

Sincerely yours,

Michael Negrelli
Remedial Project Manager
New York Remediation Branch

Attachment

Cc: Maurice Moore, NYSDEC
Carol Berns, EPA-ORC
Mike Popper, CDM

USEPA Reply to ARCO's Response to Comments on Performance-Based Groundwater Monitoring Report: Hydrologic Summary, July 2011

1. For the purposes of continuing the evaluation of the performance of the groundwater collection trench in preventing the migration of contaminated groundwater to the Genesee River, EPA reiterates a comment (see italicized text below) provided to ARCO in correspondence dated December 10, 2010 regarding the need for an analytical data collection component as well as water level measurements to adequately evaluate system performance. Water quality sampling should be included to some degree in the Operation, Maintenance, and Monitoring Plan.

The monitoring plan should also include water quality sampling of wells between the GWCT [ground water collection trench] and the Genesee River, as this would be the most tangible way to demonstrate remedial effectiveness, establish baseline conditions, and ensure that contaminants are not flowing underneath the GWCT. It is understood, however, that gradients between the GWCT and the river may be small and therefore cleanup of wells there may be slow. Slow cleanup would therefore not necessarily indicate that the GWCT is not effective. Refined model simulations could be used to bracket expectations of well cleanup rates to help guide the performance assessment. Water quality sampling upgradient of the GWCT could also be used to anticipate potential treatment problems resulting from unexpected constituents/concentrations in water entering the GWCT.

2. As described in the PBGM Work Plan (URS, 2008), the performance criteria for evaluating the overall performance of the GWCT is as follows:

   At a minimum, a groundwater divide between the GWCT and river must be maintained. Achieving this criterion demonstrates that the groundwater gradient between the GWCT and the Genesee River has been reversed (gradient sloping towards the GWCT) and that groundwater flow is not occurring across the GWCT.

To date, this performance criterion has not been fully met. EPA maintains that the claim of full capture (as made for 8 of the reported monitoring periods in the July 19, 2011 report titled *Performance-Based Groundwater Monitoring Report: Hydrologic Summary*) is predicated on the assumption that surface water levels measured in the Main Drainage Swale are precisely representative of groundwater. This assumption is not supported by the data and has not been sufficiently justified in *ARC General Comment Response No. 1.*

Regardless of the geological depositional history, whether or not the Main Drainage Swale is hydraulically connected to the groundwater system, or the inferred anisotropic nature of the groundwater system discussed in the ARC General Comment Response No. 1, the following statements remain true:

- Observed differences between surface water elevation data taken from a swale gage and groundwater level elevation data taken from an adjacent well screened in the shallow aquifer indicate that only groundwater level data should be used to generate groundwater head

contours and to subsequently determine whether or not a groundwater divide was present at that point in time.

- While the surface water in the Main Drainage Swale likely contributes some groundwater recharge to the shallow aquifer, knowledge of the surface water elevation provides no insight into the direction of groundwater flow between the GWCT and the river.

- If a shallow aquifer well located adjacent to and on the river side of a well located in the GWCT has a lower head than what is observed in the GWCT well, some groundwater will flow from the trench, to the river side of the trench.

Furthermore, on pages 4-2 and 4-3 of the report titled *Evaluation of the Groundwater Collection Trench Hydraulics and Groundwater Capture Efficiency Report* submitted by URS in January 2010, the following is stated:

> *Figure 4-4 presents hydrographs of the MDS (Main Drainage Swale) water elevation to groundwater elevations from October 2008 to July 2009 prior to the abandonment of the measurement points when the MDS was excavated. The hydrographs provide insight to potential groundwater interaction with surface water in the MDS reach approximately from the mouth of the MDS near Manhole D to midway between Manholes E and G.*
>
> *For the most part, all sets of hydrographs indicate that groundwater reacts independently from MDS stage. For instance, when surface water rises, groundwater elevations decrease and vice versa. These trends infer that either the two water entities are cut off from each other or in some areas MDS water may be leaking into the aquifer, although it is also likely that MDS water may be perched above the water table.*

The water level data collected in 2010 and 2011, indicating significant differences in water levels at staff gages and adjacent piezometers, are compatible with these statements.

EPA maintains that ARCO should take the necessary steps to maintain a groundwater divide between the GWCT and the Genesee River, as stated in the PBGM Work Plan (URS, 2008). Based on *ARC Comment Response No. 2a*, the wetlands treatment system capacity should be sufficient to handle an increase in flowrates, which could be part of future GWCT operational adjustments.

May 2, 2012

Eric J. Larson
Atlantic Richfield Company (ARCO)
1 West Pennsylvania Avenue, Suite 440
Towson, MD 21204

Re: EPA Comments On "Operations and Maintenance Plan for Operable Units 1 and 2" November 2011; Sinclair Refinery Site, Wellsville, New York.

Dear Mr. Larson:

The purpose of this letter is to provide you with comments generated by the U.S. Environmental Protection Agency (EPA) and New York State Department of Environmental Conservation (NYSDEC) on the November 2011 document titled "Operations and Maintenance Plan for Operable Units 1 and 2" (O&M Plan), submitted by ARCO for agency review. Most of these comments have previously been discussed with you, most recently in a meeting held on April 11, 2012, and some of these comments have been provided previously in EPA's letter to ARCO dated March 26, 2012 regarding the continuation of the Performance Based Groundwater Monitoring (PBGM) program in the context of operation, maintenance, and monitoring of site systems. As stipulated in the March 26, 2012 letter, the comments provided in that letter should be incorporated into the Operation, Maintenance, & Monitoring (O,M&M) Plan for the site called for as the O&M Plan in paragraph F. 5 of the Statement of Work (SOW) attached to the Administrative Order (Index No. II CERCLA-20216) (Administrative Order) issued by EPA on September 8, 1992, and continuation of the PBGM program performed as part of O,M&M. Similarly, the comments attached to this letter should be addressed in the final O,M&M Plan which will in turn become incorporated into the Site Management Plan. The Site Management Plan, which will address all aspects of post-remediation site activity, including but not limited to, O,M&M of the constructed remedy, site soils management, and land use restrictions, is a New York State requirement and EPA requires its submittal pursuant to Section XIII of the Administrative Order.

Please incorporate the attached comments into a final O,M&M Plan for the site and resubmit the plan for final agency review. As stated in previous correspondence, EPA's approval, and ARCO's implementation, of the OM&M Plan will conclude the Initial Testing Program as described in the SOW. If you

have any questions or comments about this letter, please do not hesitate to contact me either by email, negrelli.mike@epa.gov, or by phone at (212) 637-4278.

Sincerely yours,

Michael Negrelli
Remedial Project Manager
New York Remediation Branch

Attachment

Cc: Maurice Moore, NYSDEC
Carol Berns, EPA-ORC
Mike Popper, CDM

USEPA Comments on Operations and Maintenance Plan for Operable Units 1 and 2, Sinclair Refinery Site, November 2011

General Comments

1. The O&M Plan adequately describes the operation and maintenance aspects of the constructed site remedies, but is lacking in the collection of performance criteria to ensure that the remedies continue to operate as designed and continue to protect human health and the environment. This is particularly crucial to enable EPA to conduct its five year review evaluations of the site remedies. As the report is currently written, data collection to evaluate the performance of the groundwater collection and treatment system is limited to the analysis of influent and effluent to meet the requirements of the SPDES discharge permit (Table 3 of O&M Plan). Table 2 of the O&M Plan, covering the groundwater recovery system (i.e., the collection trench) needs to include the performance criteria aspects of the PBGM program – water level measurements at monitoring points established on either side of the trench to confirm an inward gradient and analytical data collection of groundwater from the manholes – as well as the need for groundwater analytical data collection downgradient of the collection trench to evaluate the water quality in the area between the trench and Genesee River over time. This comment has been provided previously, most recently in EPA's March 26, 2012 comment letter. Acknowledging that the sheet pile barrier installed on the bank of the Genesee River will provide a measure of long-term protection of contaminant migration to the river, it is recommended that the groundwater quality evaluation include data collection from the following wells deemed to be outside the influence of the sheet pile wall: MW-78, MW-26, OW-1, OW-4, MW-71, and MW-55. Analysis of the groundwater collected from these wells should at a minimum be performed annually and include BTEX, nitrobenzene, and aniline on the parameter list. Additionally, to facilitate EPA's five year review, the data collection and analysis of the groundwater in the manholes should be conducted quarterly for the initial five year period, to be followed by two years of semi-annual analysis, followed by annual data collection.

2. With respect to groundwater quality analysis upgradient of the collection trench, EPA agrees that collecting groundwater quality data from the manholes in the trench provides representative sampling of site-wide groundwater and is appropriate for a groundwater collection and treatment system that is essentially just starting up. However, upgradient groundwater collection and analysis would be appropriate at some point in the future to corroborate results from the manholes if data indicate that contingency or long-term management measures are appropriate as outlined in the SOW. As such, it would be appropriate for the O&M Plan to include upgradient groundwater quality analysis in general terms as a future potential activity.

3. Analysis of PBGM program data provided in the two reports dated January 2010 and July 2011 indicate that high river stage events, i.e., 50 or 100 year flood events, can potentially compromise the effectiveness of the groundwater collection and treatment

system on a short term basis. It would be appropriate for the O&M Plan to make mention of any special measures that may be necessary during these anomalous high river stage events.

Specific Comments

1. Section 3.1.2 Proposed Changes to CELA O&M Activities: On page 3-4, under Groundwater Quality Monitoring, the proposal is made to reduce the frequency of monitoring from annually to once every five years and to reduce the analytical parameters to arsenic, chromium, and VOCs. Because EPA performs five-year reviews of the site remedy, a five year data collection event would not provide ample data for EPA's review and therefore a two year collection interval would be more appropriate at this juncture. Additionally, lead, copper, and beryllium are metals of concern that should be retained on the list of analytical parameters.

2. Section 3.1.2 Proposed Changes to CELA O&M Activities: On page 3-4, under Groundwater Elevation Monitoring, it is proposed to discontinue the CELA groundwater elevation monitoring. EPA believes the groundwater elevation monitoring to be a crucial performance criterion in evaluating the effectiveness of the CELA. Measurements can be reduced to an annual rather than semi-annual event as long as the measurement is made during a season when water levels are typically at their highest (i.e., spring).

3. Section 3.1.2 Proposed Changes to CELA O&M Activities: On page 3-4, under LNAPL Monitoring and Removal, the proposal is made to reduce LNAPL monitoring in wells outside the CELA from semi-annually to once every five years. Because EPA performs five-year reviews of the site remedy, a five year data collection event would not provide ample data for EPA's review and therefore a two year collection interval would be more appropriate at this juncture.

4. Section 3.1.2 Proposed Changes to CELA O&M Activities: On page 3-5, under Storm Water Monitoring, EPA agrees with the proposal to discontinue the storm water monitoring program at the CELA, as allowed for by the SPDES permit regulations, but requests that one additional year of storm water monitoring be conducted to allow for all grasses and wild vegetation being planted under the 2012 restoration work on the CELA to become established.

5. Section 3.1.2 Proposed Changes to CELA O&M Activities: On page 3-5, under CELA Maintenance, EPA agrees with the proposal to discontinue the mowing program in light of the introduction of wild vegetation under the 2012 CELA restoration work, but requires that an annual visual inspection of the CELA surface be conducted to monitor for factors such as extreme erosion, tree growth, or animal damage that may require mitigation measures.

6. Section 3.3.2 Proposed Changes to Genesee River Channel and Main Drainage Swale O&M Activities: On page 3-10, under Maintenance of Rip-Rap Revetments Near CELA, the proposal is made to discontinue the removal of woody vegetation from the rip-rap on the east and west banks of the Genesee River near the CELA due to safety concerns for the personnel walking on the rip-rap surface. EPA agrees with this proposal provided that ARCO check with the U.S. Army Corps of Engineers to ensure that this activity is not required for flood control maintenance (in which case it would have to be continued).

7. Section 4.2 Groundwater Collection System: Refer to the General Comments provided above for the requirements of groundwater quality monitoring and the continuation of the PBGM program for performance criteria data collection associated with this system.

8. Tables: The comments provided above, both General and Specific, need to be carried through to the Tables, especially Table 1 regarding the changes to the CELA system, and Table 2 regarding the groundwater recovery system.

9. Table 3, Wetland Treatment System O&M Requirements: Page 7-7 of Table 3 includes the proposal for quarterly assessments of the moisture content of residuals in drying beds. The proposal is acceptable provided that if the material is deemed hazardous for disposal purposes, that 90 days of storage (i.e., the quarterly assessment) does not exceed any waste disposal requirements.

OM&M Plan for OU-1 and OU-2 Review Meeting

USEPA / NYSDEC / ARC / URS

Former Sinclair Refinery
Wellsville, New York

July 2012

Agenda

- Introductions
- Overview of March 26, 2012 Agency Comments on PBGM
- Overview of May 12, 2012 Agency Comments on OMM Plan
- Discussion regarding Groundwater Quality Monitoring
- Proposed Groundwater Monitoring Plan
- Proposed Cessation Endpoints
- Path Forward

March 26, 2012 PBGM Comment Letter

- PBGM program has served as Initial Testing Program
- EPA and NYSDEC agree there is no evidence to support construction of slurry wall between trench and river
- EPA and NYSDEC will continue to review performance data in accordance with schedules to be developed in Site Mgmt Plan
- Incorporate EPA and NYSDEC comments in the OMM Plan to be included in SMP
- SMP will address post remediation site activity including OMM of constructed remedy, site soils management and land use restrictions

March 26, 2012 PBGM Comment Letter

- USEPA reply to responses to comments on PBGM Report July 2011
  - Groundwater quality sampling should be included to some degree to evaluate system performance
  - PBGM Performance Criteria : A groundwater divide between the GWCT and river must be maintained (ie gradient sloping towards the GWCT)
    - Groundwater level data should be used to generate head contours, surface water no insight to flow between GWCT and river, water will flow from trench to river side of trench, if lower

March 26, 2012 PBGM Comment Letter

- USEPA reply to responses to comments on PBGM Report July 2011 (con't)
  - ARC should take necessary steps to maintain a groundwater divide between GWCT and river
  - Wetlands treatment system capacity should be sufficient to handle increase in flow rates

May 2, 2012 OMM Comment Letter

- Incorporate comments in the OMM Plan to be included in the SMP
- General Comments:
  - Groundwater quality evaluation from wells outside influence of sheet pile (MW-78, MW-26, OW-1 (actually behind sheet pile),OW-4, MW-71, and MW-55 / 55R)
    - ARC generally agrees with this comment
  - Manholes sampled quarterly for 5 years, semi-annual for 2 years, annual
    - ARC agrees with this comment
  - Upgradient groundwater quality sampling requested
    - ARC generally agrees with this comment, defer sampling later in project
  - Special measures necessary during high river stage
    - ARC agrees with this comment

May 2, 2012 OMM Comment Letter

- Specific Comments:
  - CELA O&M: 2 year collection interval, retain lead, copper, beryllium along with arsenic, chromium and VOCs
    - ARC agrees with this comment
  - CELA O&M: annual groundwater elevation monitoring
    - ARC agrees with this comment
  - CELA O&M: two year collection interval for LNAPL
    - ARC agrees with this comment
  - CELA O&M: one additional year of storm water for grasses etc after 2012 restoration established
    - ARC agrees with this comment
  - CELA O&M: annual visual inspection of cover to monitor extreme erosion, tree growth or animal damage
    - ARC agrees with this comment

May 2, 2012 OMM Comment Letter

- Specific Comments (continued):
  - Genesee River Channel O&M: Discontinue removal of woody vegetation due to safety. ARC to check with USACE regarding flood control maintenance
    - USACE / NYSDEC requires rip rap to be clear of woody vegetation for visual observation, ARC will evaluate options for control
  - Groundwater Collection System: Groundwater quality monitoring and continue PBGM program data collection
    - ARC agrees with this comment
  - Tables: Comments in General and Specific need to be included in Tables 1 and 2
    - ARC agrees with this comment
  - Wetland Treatment System O&M: Quarterly assessment of moisture content of residuals in drying beds (90 day storage)
    - ARC requests that moisture content monitoring be removed from Table 3.

Long-Term PBGM Monitoring Program

Genesee River Flow Conditions

Description	Frequency
Genesee River Gauging Station (monitor flow / discharge conditions)	Daily / Weekly

GWCT Pumping Conditions

Description	Frequency
Manhole Pumping Rates (monitor MH pumping conditions)	Weekly
Groundwater Elevations in MH / TPZ (monitor groundwater conditions in GWCT)	Monthly

Site-wide Groundwater Conditions

Description	Frequency
Quarterly Partial Synoptic Groundwater Event	Jan, Apr, Jul, Oct for 2 yrs (2011-2012)
Semi-annual Partial Synoptic Groundwater (monitor groundwater flow to GWCT)	Apr and Oct for 3 yrs (2013-2015)

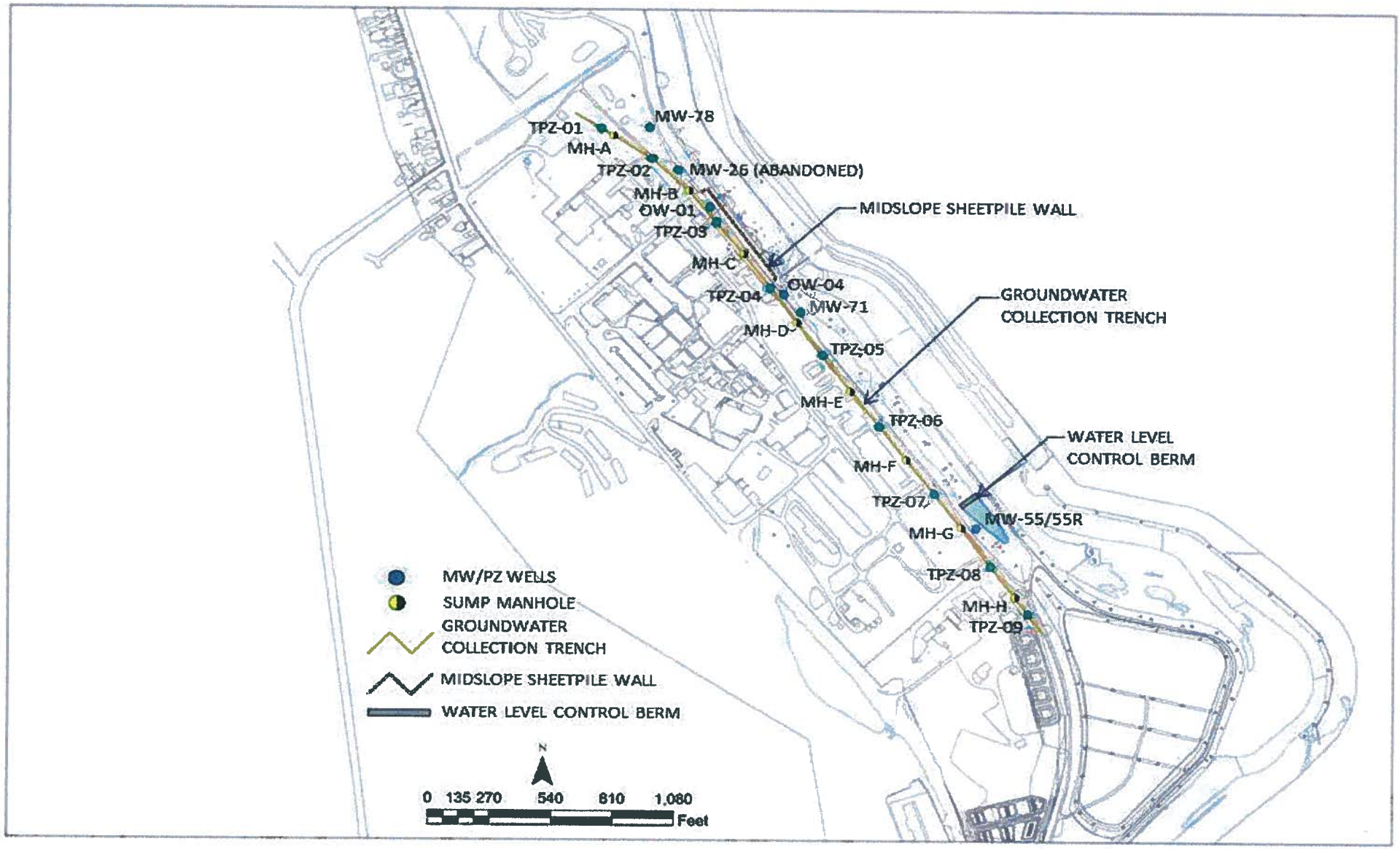
Photos of Sludge Drying Beds Summer 2012

GROUNDWATER QUALITY MONITORING DISCUSSION

Groundwater Quality Monitoring Summary Results

- Existing analytical data from 2004-2009 indicate decreasing concentrations trends and several NDs for BTEX compounds in groundwater between GWCT and Genesee River before startup of Groundwater Collection Trench in 2008

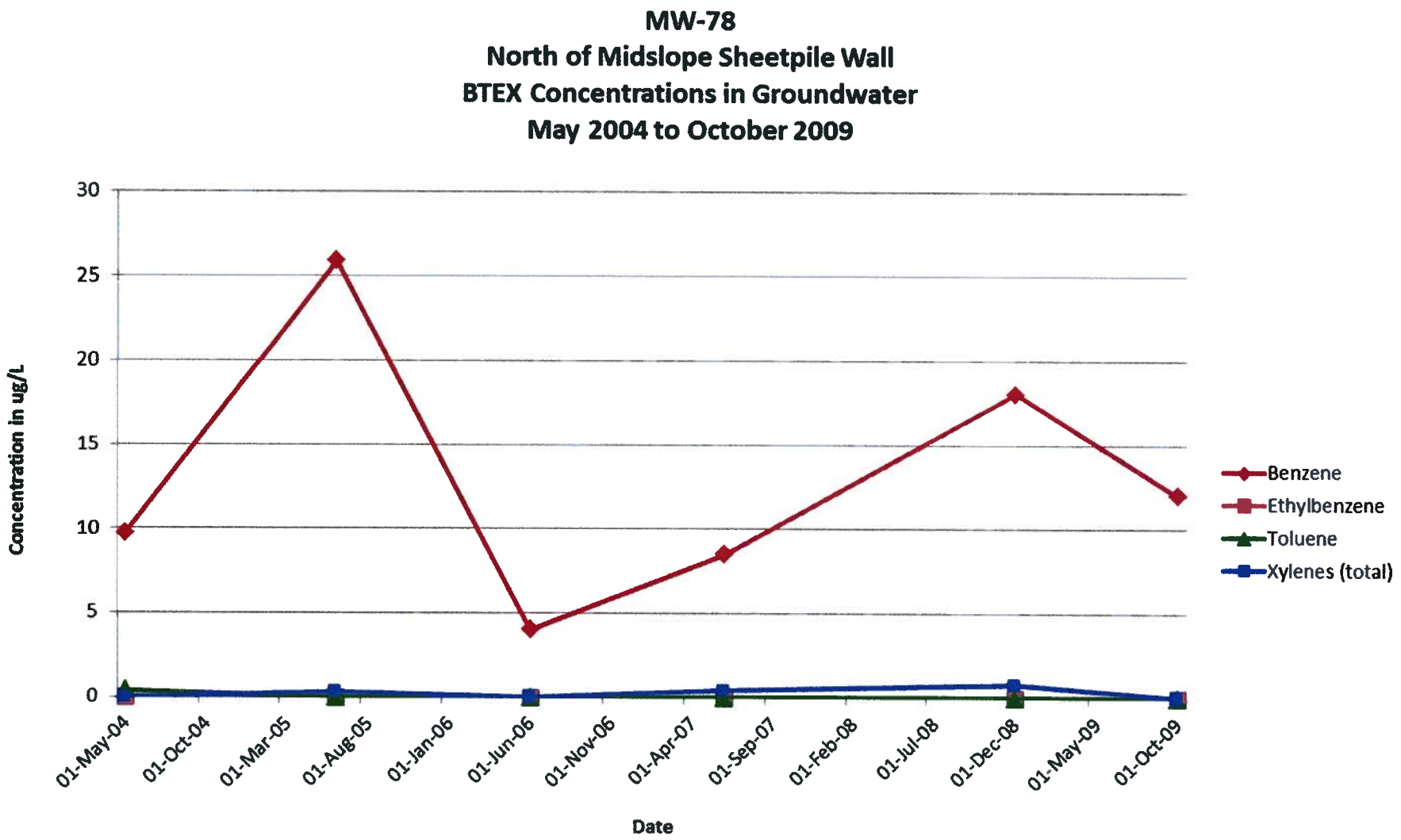
Location of Monitoring Wells



Groundwater Quality Monitoring Discussion: 2004-2009

- Summary of analytical results north of sheet pile wall
  - MW-26 decommissioned in 2001
  - Aniline and Nitrobenzene not analyzed
  - Benzene slightly decreasing in MW 78 (12.0 ppb in 2009)
  - Ethylbenzene ND since 2004
  - Xylene and Toluene very low concentrations in MW 78 from 2004 to 2008 and ND since 2009

Results North of Sheetpile Wall

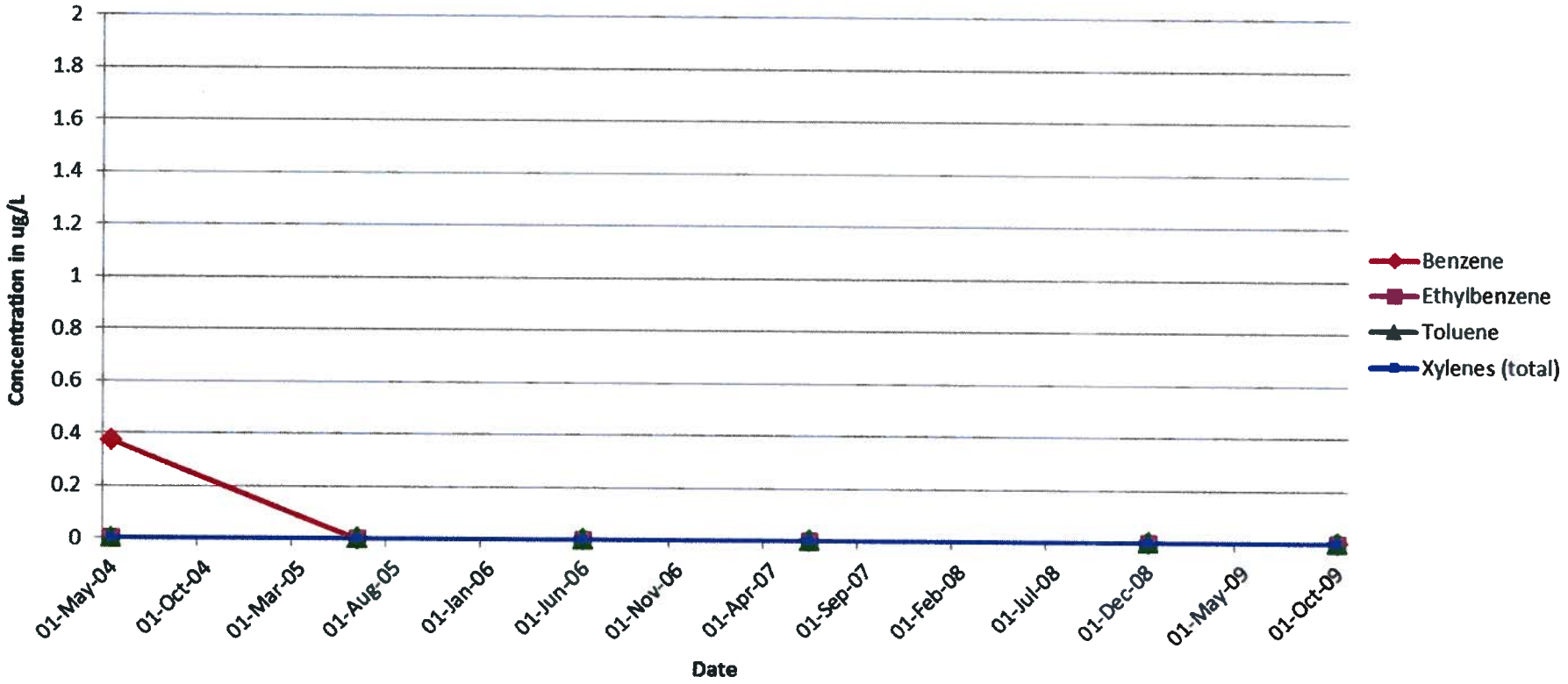


Groundwater Quality Monitoring Discussion : 2004-2009

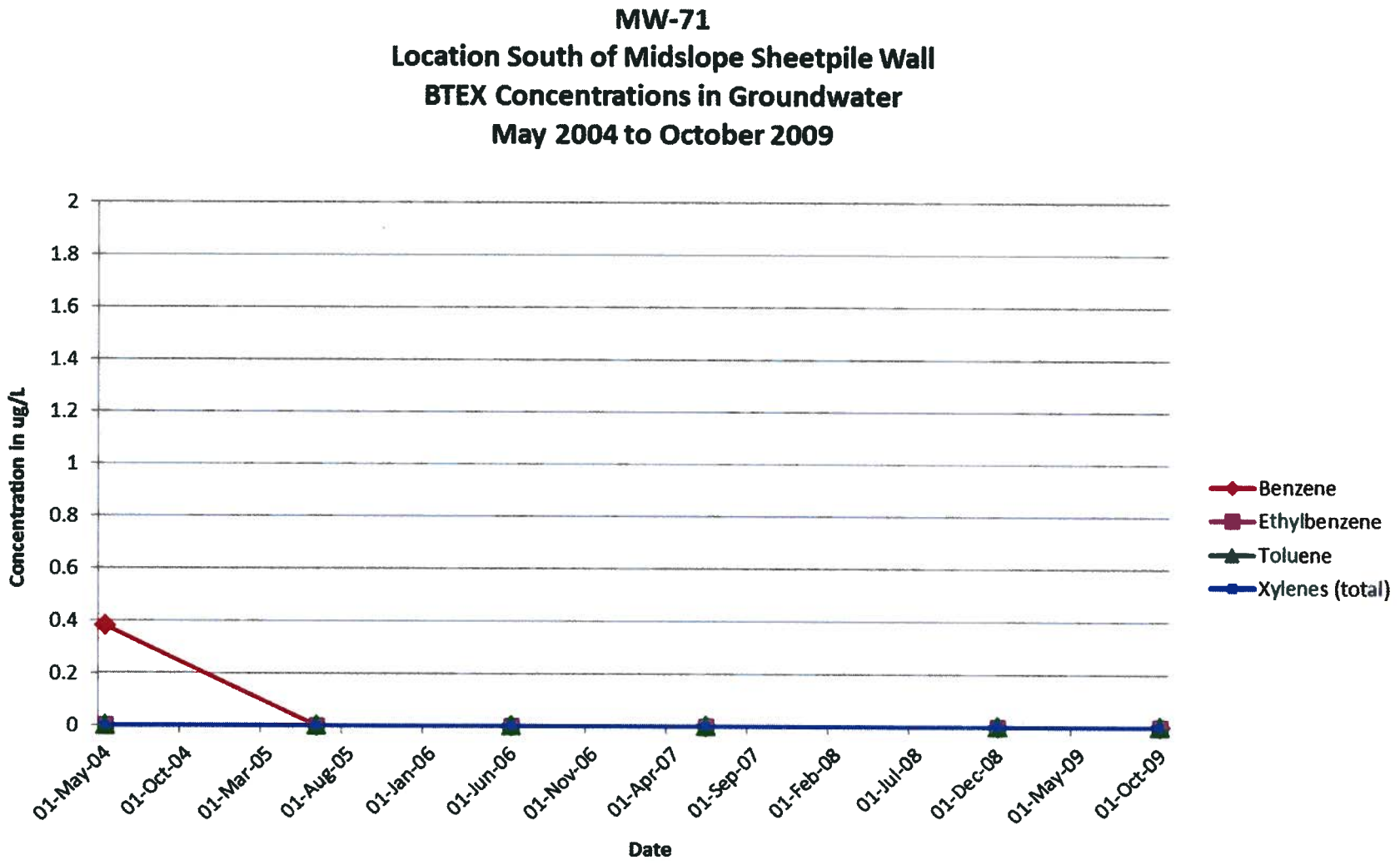
- Summary of analytical results south of sheet pile wall
  - Aniline and Nitrobenzene not analyzed
  - Benzene decreased in OW-4 from May 2004 through June 2005
  - Benzene ND in OW-4 since June 2005
  - Ethylbenzene, Toluene, and Xylene ND in OW-4 since 2004
  - Benzene decreased in MW 71 from May 2004 through June 2005
  - Benzene ND in MW 71 since June 2005
  - Ethylbenzene, Toluene, and Xylene ND in MW 71 since 2004
  - BTEX decreased in MW-55 / 55R since January 2006 (Benzene 28.4 ppb to 4.3 ppb)

Results South of Sheetpile Wall

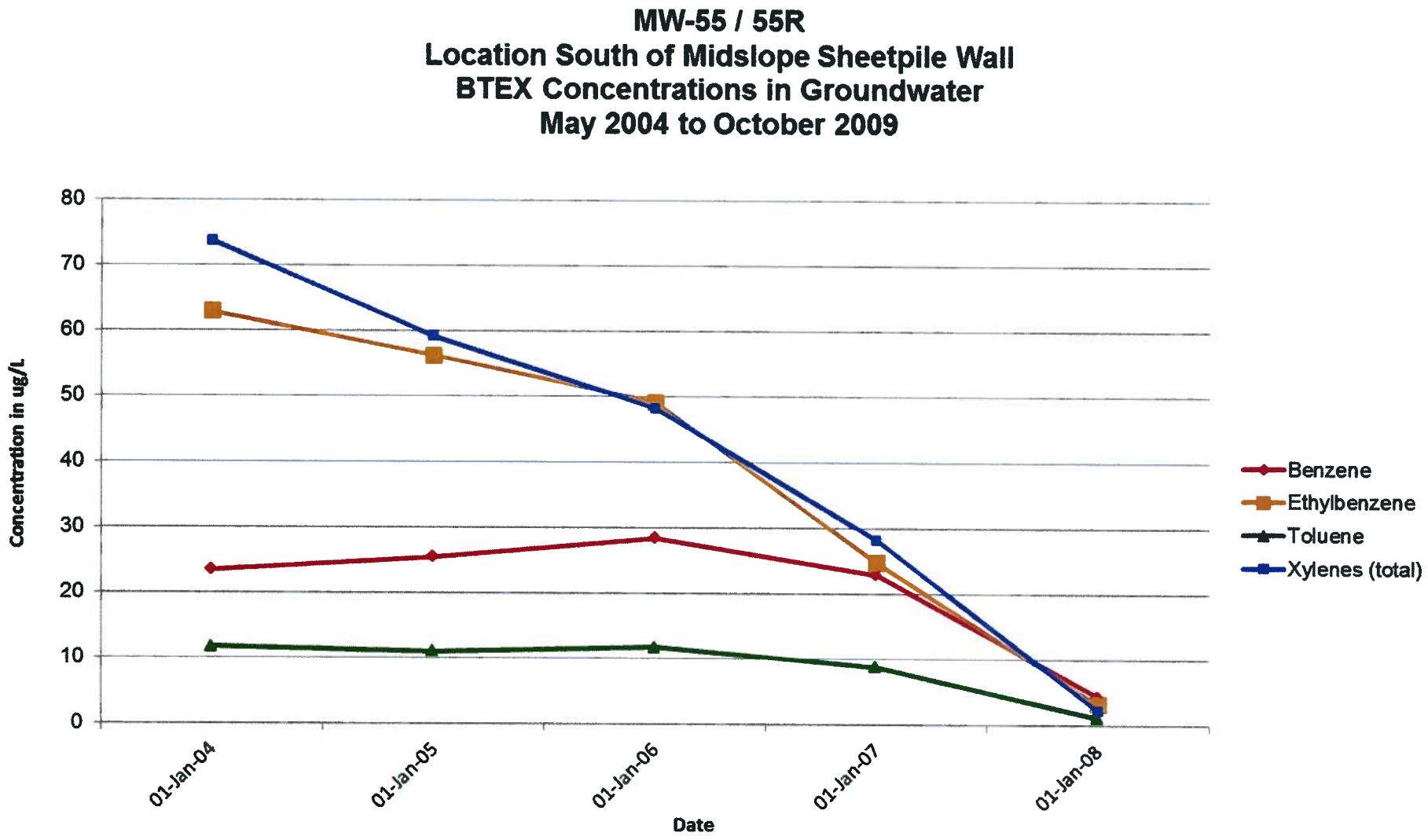
OW-4
Location South of Midslope Sheetpile Wall
BTEX Concentrations in Groundwater
May 2004 to October 2009



Results South of Sheet Pile Wall



Results South of Sheetpile Wall



Proposed Groundwater Monitoring Plan

- Monitor groundwater elevations per PBGM Program and OMM Plan and Maintain Capture by optimizing system pumping
  - If capture is maintained, groundwater reversal occurs between GWCT and river flow is from river to GWCT

- Manhole Analytical Monitoring Plan
  - Quarterly Sampling 2012-2016 (5 years)
  - Semi-Annual Sampling 2017 and 2018
  - Annual Sampling 2019 and beyond

Proposed Groundwater Monitoring Plan

- Groundwater Monitoring Well Plan (Wells MW-78, OW-4, MW-71 and MW-55 / 55R)
  - Annual BTEX Sampling for wells outside sheetpile wall
    - If statistically relevant (Mann-Kendall) increasing trends after 5 years (2012-2016), then annual sampling will continue until statistically relevant stable or decreasing trends are observed
    - However. if statistically relevant stable or decreasing trends after 5 years (2012-2016), then sample in 3 years (2019)
    - If stable or decreasing trends continue through the 2019 sampling event, then sample in 5 years (2024)
    - If stable or decreasing trends after 2024, then sampling from that MW will be terminated

Proposed Cessation Endpoints for Manhole/GWCT Operations

- Manhole GWCT Pumping Cessation
  - If Manhole analytical data indicate that SPDES limits for BTEX compounds are achieved for two consecutive events, then the MH pump achieving these limits will be shut off.
  - The 2 closest up-gradient or side-gradient monitoring wells and/or piezometers to that Manhole will be sampled for BTEX compounds quarterly for 2 years. For Manholes B & C, wells/piezometers will also be sampled for Nitrobenzene and Aniline.

Proposed Cessation Endpoints for Manhole/GWCT Operations

- Manhole GWCT Pumping Cessation
  - If statistically relevant stable, asymptotic or decreasing trends are observed, then pumping will be terminated from that Manhole
  - If statistically (Mann-Kendall) significant increasing trends are observed in the selected MWs or piezometers, then pumping will be resumed from that Manhole for a period of two years.
  - If after pumping for additional two years the MH analytical data indicate that SPDES limits are achieved for two consecutive events, then the MH pump achieving these limits will be shut off and the two MWs/ piezometers resampled. If statistically relevant stable, asymptotic or decreasing trends are observed, then pumping will be terminated from that MH.

Path Forward

Surface Flow Wetlands

CELA Restoration Area

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

October 2, 2012

Eric J. Larson
Atlantic Richfield Company (ARCO)
1 West Pennsylvania Avenue, Suite 440
Towson, MD 21204

Re: EPA Approval of "Final Remedial Action Report/Final Engineering Report" September 2012; Sinclair Refinery Site, Wellsville, New York.

Dear Mr. Larson:

The purpose of this letter is to notify you of the U.S. Environmental Protection Agency's (EPA's) acceptance and approval of the final version of the document titled "Final Remedial Action Report/Final Engineering Report" (Report) for the Sinclair Refinery site, dated September 2012, and resubmitted by ARCO after incorporating EPA comments transmitted in a letter dated September 11, 2012. EPA appreciates the efforts made by ARCO in completing the Report in a timely manner and we look forward to working towards completing the final Operation, Maintenance, and Monitoring Plan and Site Management Plan in the near future.

As expressed in previous correspondence, please note that since the New York State Department of Environmental Conservation's requirements for a final Engineering Report varies slightly from EPA's Remedial Action Report, specifically with respect to the completion of site-related institutional controls, another certification page will need to be issued in the future at NYSDEC's request to meet the requirements of a final Engineering Report.

If you have any questions or comments about this letter, please do not hesitate to contact me either by email, negrelli.mike@epa.gov, or by phone at (212) 637-4278.

Sincerely yours,

Michael Negrelli
Remedial Project Manager
New York Remediation Branch

Cc: Maurice Moore, NYSDEC
Carol Berns, EPA-ORC

Cingel, Karen

From: Schmidt, Martin
Sent: Thursday, November 08, 2012 1:33 PM
To: Cingel, Karen
Subject: FW: FW: Follow-up on issues raised from last week's call - former Sinclair Refinery draft OM&M

Martin L. Schmidt, Ph.D.
Vice President / Director of Environmental Remediation
URS
1375 Euclid Ave, Suite 600
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martin.schmidt@urs.com
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From: Mike Negrelli [mailto:Negrelli.Mike@epamail.epa.gov]
Sent: Thursday, August 16, 2012 4:42 PM
To: Larson, Eric J
Cc: Schmidt, Martin; Maurice Moore
Subject: Re: FW: Follow-up on issues raised from last week's call - former Sinclair Refinery draft OM&M

Eric-
Maurice and I are in agreement with the responses you provided below and will look for a draft Final O&M Plan for our final review. Thanks for being responsive to our comments.

Regarding the draft RA Report, two copies will be fine for me & I assume Maurice will be OK w/ one. Thanks!

-----"Larson, Eric J" <Eric.Larson@bp.com> wrote: -----
To: Mike Negrelli/R2/USEPA/US@EPA
From: "Larson, Eric J" <Eric.Larson@bp.com>
Date: 08/13/2012 05:39PM
Cc: "Maurice Moore" <mfmoore@gw.dec.state.ny.us>, "Schmidt, Martin" <martin.schmidt@urs.com>
Subject: FW: Follow-up on issues raised from last week's call - former Sinclair Refinery draft OM&M

Mike,
Outlined in blue below is Atlantic Richfield's thoughts to the comments the Agency provided last Tuesday. Let me know if this approach seems reasonable; if so, we can finalize the OM&M draft to submit for your and Maurice's review.

On an unrelated note, how many hardcopies of the RA report would you like? I figure one for Maurice and two for you so that you can share one with Mike Popper. Am I missing anyone?

Eric

From: Mike Negrelli [mailto:Negrelli.Mike@epamail.epa.gov]
Sent: Tuesday, August 07, 2012 10:00 AM

To: eric.larson@bp.com
Cc: Schmidt, Martin; mfmoore@gw.dec.state.ny.us; Edward Modica
Subject: Followup on issues raised from last week's call

Eric-
Pursuant to the meeting/webex conference call between ARCO, EPA, and NYSDEC held on Tuesday July 31 regarding finalization of the OM&M Plan for the Sinclair Refinery site, please see EPA & NYSDEC input below on the four issues that required further discussion.

1. Issue: Four wells, MW 78, OW 4, MW 71, and MW 55 will be sampled annually and analyzed for benzene, toluene, ethylbenzene, and xylene (BTEX) to provided groundwater quality data in the area between the collection trench and Genesee River.

Response: It is EPA and NYSDEC's long-held position that groundwater quality samples be taken in the area between the trench and the river as part of the monitoring of the performance of the groundwater collection system. This is an important criterion for establishing the effectiveness of the system over time especially with regard to EPA's continuing evaluation of the protectiveness of the remedy through its 5 year review process. As such, we agree with ARCO's plan to sample the four proposed wells annually. However, the parameter list should be expanded beyond simply BTEX analysis. As the only source of groundwater quality data between the trench and the river, the parameter list should include an appropriate baseline for those contaminants that have been the focus of remediation efforts at the site over time. It is suggested that the annual event be initially sampled for the SPDES permit parameter list and, dependent on results, the list can be modified for future sampling events. This would provide a more comprehensive picture for discussion in future 5 year review reports.

ARC Response No. 1:

As requested by EPA and NYSDEC, ARC will expand the parameter list used for annual groundwater sampling to include certain parameters identified on the SPDES permit parameter list. The parameters that will be included for analysis are the following: Benzene, Chloroethane, 1,1-Dichloroethane, Ethylbenzene, Toluene, Vinyl Chloride, Xylene (total), Acenaphthene, Aniline, Fluorene, 2-Methylnaphthalene, Naphthalene, Nitrobenzene and Phenanthrene. These parameters will be analyzed for the first year of sampling. Based on concentrations detected in monitoring wells and existing manholes, a revised parameter list will be prepared for subsequent sampling events. It should be noted that the SPDES permit has several other parameters such as metals (i.e. iron) and surface water quality parameters (BOD, TDS, TKN) that are analyzed monthly. These parameters are not needed to understand aspects of groundwater quality that has been impacted by the former refinery operations. As a result, ARC is requesting that these parameters not be analyzed. Also, as referenced in your response, monitoring wells MW-78, OW-4, MW-71 and MW-55 will be sampled on an annual basis.

2. Issue: The OM&M Plan will include a plan for shutting down manhole pumps if certain criteria are reached. The first criterion is meeting SPDES permit discharge limits followed by BTEX monitoring in nearby wells (and nitrobenzene and aniline in manholes B & C).

Response: Although EPA and NYSDEC agree that there be a plan for cessation of the groundwater treatment system in its current form, it is not appropriate to establish the specific criteria in the OM&M Plan. The UAO Statement of Work includes a section entitled "Goal for Aquifer Restoration" which establishes the procedures for an exit strategy for groundwater treatment. The UAO establishes that a contingency measure plan be submitted as an amendment to the OM&M Plan only after ample evidence exists that such measures are warranted. The UAO also notes that groundwater treatment system performance be measured against the performance criteria established in the ROD, which are MCLs (not SPDES discharge criteria). Also, if monitoring data over time show asymptotic trends, it may be appropriate to discontinue groundwater treatment, but containment (i.e., protection of the Genesee River) must be maintained unless ambient water quality standards are reached. As such, an exit strategy for groundwater treatment should only be discussed in the OM&M Plan in general terms within the context of the steps established in the UAO with protection of the Genesee River as a goal.

ARC Response No. 2:

ARC acknowledges that the UAO Statement of Work includes a section describing performance standards for aquifer restoration including the use of federal and state MCLs. As requested the exit strategy for groundwater treatment will be discussed in general terms in the OM&M Plan. If results from future groundwater monitoring indicate that performance standards will not be reached, then ARC will prepare an amendment to the O&M& Plan that describes a Contingency Measures Plan for long-term management measures.

3. Issue: Worker safety must be considered in keeping rip rap clear of woody vegetation. Options to be evaluated.

Response: EPA and NYSDEC agree that workers should not be placed at risk on the rip rap on the steep river banks. As the purpose for the removal of woody growth is to allow for continual visual observation of rip rap conditions, we are in agreement that an environmentally friendly herbicide can be used for this purpose if applied from a safe position. ARCO should continue its discussion with the USACE to determine how this can be done.

ARC Response No. 3:

ARC acknowledges that EPA and NYSDEC agree that an environmentally friendly herbicide can be used to control woody growth to allow for visual observation of rip-rap conditions. ARC will also continue to work with USACE and NYSDEC to evaluate options for application of the herbicide that will be used.

4. Issue: Assessment of moisture content of residuals in the drying beds be removed from OM&M activities; analysis shows this material to be iron hydroxide and non-hazardous.

Response: EPA and NYSDEC agree with this proposal. the original comment was intended to account for the possibility that the material might be characterized as hazardous and be subject to moisture and holding times restrictions for disposal. If the material is non-hazardous, this is no longer an issue.

ARC Response No. 4:

ARC acknowledges that EPA and NYSDEC agree with removing the moisture content testing requirement for residuals in the drying beds. The OM&M Plan will be revised to reflect this agreement.

Thanks to you and Marty for taking the time to meet/conference with us to discuss these issues and move forward in the finalization of the OM&M Plan. We are available to further discuss any of the issues covered in this email at your convenience. If you have any questions, please do not hesitate to contact me.

APPENDIX D
PROTECTIVE SYSTEM DEVICE INSPECTION AND MAINTENANCE PLAN

PROTECTIVE SYSTEM DEVICE INSPECTION AND MAINTENANCE PLAN

FORMER SINCLAIR REFINERY

2530 SOUTH BROOKLYN AVE.
VILLAGE OF WELLSVILLE, NY 14895

Prepared for
Atlantic Richfield Company
(a BP Affiliated Company)

December 2011

1375 Euclid Avenue
Suite 600
Cleveland, Ohio 44115
216.622.2400

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LIST OF ACRONYMS

Acronym	*Description*
ARC	Atlantic Richfield Company
CELA	Central Elevated Landfill Area
CMP	Corrugated Metal Pipe
GWCT	Ground Water Collection Trench
MH	Manhole
NPL	National Priority List
OSHA	Occupational Health and Safety Administration
P&ID	Piping and Instrumentation Diagram
PRV	Pressure Relief Valve
PSD	Protective System Device
SFW	Surface Flow Wetland
TSEA	Task Safety Environmental Analysis
USEPA	United States Environmental Protection Agency
VFW	Vertical Flow Wetland
WRAT	Work Risk Assessment Tools

1.1 PURPOSE AND SCOPE

This *PSD Inspection and Maintenance Plan* has been prepared for the former Sinclair Refinery Site in the Town of Wellsville, New York. This plan has been prepared for Atlantic Richfield Company (ARC) by URS Corporation (URS).

This PSD inspection and maintenance plan describes inspection and maintenance requirements and procedures for Protective System Devices (PSDs) associated with the groundwater collection and treatment system that has been constructed and is operated at the site.

1.2 ORGANIZATION OF THE PSD INSPECTION AND MAINTENANCE MANUAL

This manual was prepared to provide specific procedures for the inspection and maintenance of PSDs to personnel responsible for maintaining the system as well as to provide procedures for documenting required PSD inspections and maintenance. The manual consists of the following sections:

- Introduction (Section 1);
- PSD inspection and maintenance requirements and procedures (Section 2);
- PSD Register and Safe Chart (Tables 1 and 2);
- PSD maintenance schedule and log form (Table 3);
- Equipment manufacturer's product data and manuals (Attachment A); and
- Field Forms (Attachment B).

1.3 BACKGROUND

The former Sinclair Refinery Site is on the west bank of the Genesee River approximately 10 miles north of the New York and Pennsylvania border. The irregularly shaped site covers approximately 110 acres and is bounded to the southwest by South Brooklyn Avenue and to the northeast by the northerly flowing Genesee River. A Site Location Map is included as Figure 1.

The former refinery operated from 1901 through 1958 to process New York and Pennsylvania crude oils into heavy oils and grease for lubrication, light oils for fuel, gasoline, lighter fluid, naphtha, and paraffin. Since the refinery ceased operations in 1958, various entities have held title to portions of the former refinery.

The Site was first listed on the National Priority List (NPL) in 1983. The Site was divided into these two Operable Units for purposes of investigation and remediation:

- Operable Unit 1 (OU-1), which consists of a 10-acre landfill area adjacent to the southern boundary of the former refinery that is referred to as the CELA; and

- OU-2, which consists of the 90-acre former refinery area that covers the remainder of the site. This OU deals with collection and treatment of impacted site-wide groundwater.

ARC has undertaken remedial activities at the site, included construction and operation of the groundwater collection and treatment system, in accordance with agreements with the United

States Environmental Protection Agency (USEPA). A Site Plot Plan is included as Figures 2 and 3.

1.4 SYSTEM DESCRIPTION

A piping and instrumentation diagram (P&ID) for the groundwater collection and treatment system is provided as Figures 4 and 5. The system components are described in the following sections.

1.4.1 Groundwater Collection System

The groundwater collection system consists of:

- Groundwater Collection Trench (GWCT);
- Eight manholes (MH) equipped with pumps; and
- Conveyance lines that transfer groundwater to the treatment system.

Each of these components is described below.

Groundwater Collection Trench

As shown in Figure 1, the 3,200 foot long GWCT extends from the northwest side of the CELA to the northern portion of the Site along the east side of the Site parallel to the Genesee River. The GWCT intercepts subsurface water before it can discharge into the adjacent Genesee River or Main Drainage Swale.

Manholes

As shown in Figure 1, there are eight manholes located in the GWCT. The manholes are located at 400-foot intervals. The manholes house pumping systems that remove subsurface water from the GWCT and transfer the water to the wetland treatment system via the conveyance lines. Operation of the pumps in the manholes is controlled by float switches that are set to maintain the water level in the GWCT at an elevation below the adjacent Genesee River and main drainage swale. Each manhole, except MH-H, is equipped with a flow meter to monitor volume of water pumped.

Conveyance Lines

There are three conveyance lines that carry water from the manholes to the wetland treatment system. The conveyance lines, which are constructed of 6-inch diameter HDPE pipe and there are cleanouts for the conveyance lines at five locations. The conveyance system also includes by-pass lines to allow water from the GWCT to by-pass the cascade aerator and sedimentation pond.

1.4.2 Wetland Treatment System

The wetland treatment system work includes the following components:

- Cascade Aerator;
- Biofilter;
- Sedimentation Pond;
- Surface Flow Wetlands (3 Ponds);

- Vertical Flow Wetlands (5 Ponds);
- Outlet Structure; and
- Drying Beds.

The locations of these components are shown in Figure 1. The remainder of this section provides a description of each of these components.

Cascade Aerator

The cascade aerator is the first component of the wetland treatment system. The cascade aerator consists of:

- A hydraulic splitter structure with weir gates;
- Four manholes;
- HDPE piping between the splitter structure and the manholes; and
- Four corrugated metal pipes (CMPs) to aerate and direct water to the sedimentation pond.

The purpose of the cascade aerator is to oxidize metals (iron, manganese and arsenic) that are present in the subsurface water and facilitate precipitation.

Biofilter

The purpose of the biofilter is to control and abate a portion of the odors generated by the cascade aerator. The biofilter, which is southeast of the cascade aerator, consists of a vacuum blower and a mulch / organic matter media bed. The vacuum blower is connected to the cascade aerator splitter structure, which is covered to facilitate collection of vapors, via HDPE piping. The blower, which operates continuously, draws vapors from the splitter structure and discharges the vapors to a network of perforated pipe in the base of the media bed. The media bed consists of wood mulch, which abates odors. In order to maintain biological activity the media bed is occasionally watered down.

Sedimentation Pond

As shown in Figure 1, the sedimentation pond (Sed Pond) is at the southern end of the Site. The purpose of the Sed Pond is to allow settling of insoluble metal oxides precipitates formed by the cascade aerators. The water level in the Sed Pond is controlled by the weir gates in the hydraulic control splitter structure that is west of the surface flow wetlands. Water enters the south end of the Sed Pond from the cascade aerator and discharges to the surface flow wetlands through a submerged outlet structure at the northwest corner of the Sed Pond.

Surface Flow Wetlands

There are three surface flow wetlands (SFWs) north of the Sed Pond. The purposes of the SFWs are to promote biodegradation of organic compounds and provide additional removal (polishing) of iron and manganese. Each SFW and consists of three open water areas, which are separated by platforms covered with topsoil that support the growth of wetland plants. The flow from the Sed Pond is divided between the three SFWs by the weir gates in the hydraulic control splitter structure. There is a recirculation pump in the hydraulic control splitter structure that can be used to pump water back to the cascade aerator if monitoring results suggest that additional treatment is needed. Each SFW is equipped with a blower that is connected to aeration lines in the base of

each open water area. The blowers can be used, if needed, to aerate the water to enhance biodegradation or metals removal.

Vertical Flow Wetlands

As shown in Figure 1, there are five vertical flow wetlands (VFWs) north of the SFWs. The purpose of the VFWs is to raise the pH of the treated water to meet the discharge criteria. The pH of the treated water can drop due to precipitation of metals in the sed pond and SFWs. The pH adjustment is accomplished by allowing the water to contact the limestone beds in the VFWs. Discharge from each VFW is controlled by a dosing siphon. Each dosing siphon allows the water level in the associated VFW to rise to a set point, at which the siphon flushes water from the VFW, which scours the limestone bed to prevent fouling.

Outlet Structure

The outlet structure, which receives flows from the VFWs, connects to a line that discharges the effluent from the wetland treatment system to the main drainage swale.

Drying Beds

The drying beds are east of the Sed Pond. The purpose of the drying beds is to dewater and dry accumulated precipitates after they are removed from the Sed Pond. Each of the four drying beds has a sand filter over an HDPE liner. Water that drains from the precipitates in the beds is collected by an under drain system in each bed and pumped to the wetland treatment system via a connection to the conveyance lines in the cleanout northeast of the Sed Pond. The dried precipitates will be properly disposed in an off-site facility periodically.

1.5 PSD REGISTER AND SAFE CHART

Protective system devices (PSDs) are identified as components critical to system operation such that failure could result in the release of untreated vapor or liquid, personnel injury, permit exceedances or equipment damage. The groundwater collection and treatment system includes the following PSDs:

- Each of the three aeration blowers is equipped with a pressure relief valve (PRV) on the discharge lines. The PRVs utilize weights to hold the valve either closed or partially open as needed to maintain the desired operating pressure. The valve will open (or open further) if the pressure in the discharge line exceeds the weight holding the valve closed (or partially closed). The set point (desired operating pressure) can be adjusted by adding or removing weights. These PRVs are designated on the P&ID (Figure 5) as SFB1-RV, SFB2-RV and SFB3-RV.
- There are four portable fire extinguishers at the site located in the Blue Building. One at each doorway and one in the office.

A PSD register listing all of the identified PSDs is included as Table 1. A PSD safe chart listing cause and effect conditions for each PSD is included as Table 2.

2.1 HEALTH AND SAFETY / CONTROL OF WORK

All operation, inspection and maintenance activities will be completed in accordance with BP policy and expectations, as well as OSHA standards. Potential hazards include chemical exposure, biological hazards, slip, trip and fall, heat and cold stress.

All personnel will have current 40-hour OSHA HAZWOPER training and be under medical monitoring. Personnel are also subject to drug testing, in accordance with BP policy. A Health and Safety Plan, which includes an emergency response plan, has been prepared for the site activities. Field personnel will comply with all Control of Work procedures such as preparation of Work Risk Assessment Tools (WRAT) and Task Safety Environmental Analysis (TSEA). Daily Tool Box Meeting Reports will be prepared and used by all personnel working on site.

2.2 PSD INSPECTION AND MAINTENANCE PROCEDURES

Protective Safety Device inspection and maintenance must be completed at a minimum on a quarterly basis. A PSD inspection and maintenance schedule and log form is included as Table 3. PSD inspection and maintenance field forms are included in Attachment B. PSD inspection and maintenance procedures are described below.

2.2.1 Pressure Relief Valves

The pressure relief valves for the aeration blowers must be visually inspected quarterly. The PRVs are installed on the outlet side of the blowers. The PRVs are weighted relief valves. A weighted cap rides on a machined piston, when the pressure exerted on the cap exceeds the weight of the cap; the cap raises allowing air to vent to the atmosphere.

The PRVs must be visually inspected quarterly. The PRVs should be visually inspected for signs of wear, deformation, and corrosion. The weighted cap of each PRV should be manually rotated on the piston. The results of the visual inspection should be recorded in the PRV inspection field form included as Attachment B.

The PRVs must be function tested annually to verify that they function properly at the correct set point. The set point for each PRV should be 6 pounds per square inch (psi). Eye protection must be worn when testing or inspecting the PRVs. To function test the PRV follow the following procedure:

- Record the system pressure shown on the pressure gauge as the as found operating pressure. Turn off the blower and remove all the weights and the cap from the PRV.
- Inspect the cap and piston for signs of wear, deformation, and corrosion. Lubricate the cap and mating surfaces with 30 weight oil.
- Replace the cap without any weights, open all system valves and turn on the blower.
- Once the system is fully operational and all units are diffusing air, slowly remove/add weights to the cap until there is just enough weight on the cap to maintain an operating pressure of 6 psi. Record the system pressure shown on the pressure gauge as the as left operating pressure.

Results of the function test should be recorded on the PSD inspection form.

Documentation of the dates of inspections and tests of PRVs should be maintained with each PRV. This can be with a tag attached to the PRV or piping or with a form maintained in the blower cabinet. An example of a PRV inspection record form is included in Attachment B.

2.2.2 Portable Fire Extinguishers

Portable fire extinguishers are located at the site in the Blue Building, one at each doorway and one in the office. The fire extinguishers must be inspected monthly for signs of external damage, cracking, deformation, discoloration and corrosion. Results are documented on the monthly site inspection forms and the date and initials of the inspector must be recorder on the inspection tags on each fire extinguisher. If a fire extinguisher shows any signs of deterioration it should be replaced.

Third party inspection/certification of the fire extinguishers must be completed annually by a qualified contractor and documented by tagging of the fire extinguishers by the third party.

TABLES

Table 1

Former Sinclair Refinery

2530 South Brooklyn Avenue
Wellsville, New York 14895

Protective System Device Register

DEVICE NAME	TYPE	DESCRIPTION	MANUFACTURER	MODEL	SERIAL NUMBER	SETPOINT	SERVICE	MATERIAL OF CONSTRUCTION	ELASTOMER MATERIAL	FAIL POSITION
SFB1-RV	Pressure Relief Valve	Weighted relief valve for aeration blower no. 1.	(1)	(1)	(1)	6.0 psi	Compressed Air	(1)	N/A	closed
SFB2-RV	Pressure Relief Valve	Weighted relief valve for aeration blower no. 2.	(1)	(1)	(1)	6.0 psi	Compressed Air	(1)	N/A	closed
SFB3-RV	Pressure Relief Valve	Weighted relief valve for aeration blower no. 3.	(1)	(1)	(1)	6.0 psi	Compressed Air	(1)	N/A	closed
N/A	Portable Fire Extinguisher	Fire extinguisher in office	(1)	(1)	(1)	N/A	N/A	(1)	N/A	N/A
N/A	Portable Fire Extinguisher	Fire extinguisher at west door	(1)	(1)	(1)	N/A	N/A	(1)	N/A	N/A
N/A	Portable Fire Extinguisher	Fire extinguisher at south door	(1)	(1)	(1)	N/A	N/A	(1)	N/A	N/A
N/A	Portable Fire Extinguisher	Fire extinguisher at north door	(1)	(1)	(1)	N/A	N/A	(1)	N/A	N/A

GUIDANCE NOTES

Device Name - The device name corresponds to the identifiation on the Piping and Instrumentation Diagram (P&ID) and/or field label for the PSD.

Type - The type idenfies the PSD general category (e.g., switch, sensor)

Description - The decription further identifies the PSD by associated equipment/location and service use.

Manufacturer - The manufacturer refers to the primary manufacturer of the device and not the system manufacturer. If a PSD includes components from multiple manufacturers, the primary component manufacturer only can be listed.

Model - Each device typically has a model number provided by the manufacturer that further identifies the device by a manufacturer-developed alphanumeric system.

Serial Number - Many devices are marked with a device-specific serial number by the manufacturer that further identifies the device and is useful for troubleshooting, repair, or replacement. The serial number can identify the year of manufacture along with a specific component parts list.

Setpoint - The setpoint is established during the design and is documented in the Operation and Maintenance (O&M) Manual. The PSD setpoint may be visible on the PSD, but not all devices are supplied with a local setpoint.

Service - The service generally refers to liquid or gas and can be further described as warranted (e.g., LNAPL service, compressed air service) as needed.

Material of Construction - The material of construction indicated refers to the primary wetted component of the device (e.g., the body of a valve or the level float of a switch that is in contact with the process fluid). PSDs can consist of several materials and can be identified if deemed relevant.

Elastomer Material - PSDs may have elastomeric components (e.g., o-rings, gaskets, floats). The primary wetted elastomer should be identified.

Fail Position - The fail position is established during the design and is documented in the Operation and Maintenance (O&M) Manual. As required by the Engineering Integrity Manual for Site Remediation Technologies, PSDs must be fail safe. The fail safe position can be a closed switch, an open valve, an off condition, or other safe failure mode.

Note (1): Information not available.

Table 2

Former Sinclair Refinery

2530 South Brooklyn Avenue
Wellsville, New York 14895

Protective System Device Safe Chart

LEGEND

(n) = refer to note (n)
X = perform this action
DA = direct acting PID
G = global reset bit
L = allow local acknowledge and reset
R = allow remote acknowledge and reset
A = automatic reset
M = action manually performed
highlight = changed from previous rev
SP setpoint can adjustable from control system

							EFFECT	Pressure Relief Valve			
DEVICE NAME	COMMON NAME	POINT TAG	SETPOINT	TIME DELAY	DEAD BAND	CAUSE	Open				
SFB1-RV	Pressure relief valve	PRV-001	6.0 psi	N/A	N/A	High pressure in blower discharge line.	XA				
SFB2-RV	Pressure relief valve	PRV-002	6.0 psi	N/A	N/A	High pressure in blower discharge line.	XA				
SFB3-RV	Pressure relief valve	PRV-003	6.0 psi	N/A	N/A	High pressure in blower discharge line.	XA				

GUIDANCE NOTES

Device Name - The device name corresponds to the identifiation on the Piping and Instrumentation Diagram (P&ID) and/or field label for the PSD.

Common Name - The common name further identifies the PSD by type of device and service use.

Point Tag - The point tag corresponds to the identifiation on the P&ID and/or field label for the PSD.

Setpoint - The setpoint is established during the design and is documented in the Operation and Maintenance (O&M) Manual. The PSD setpoint may be visible on the PSD, but not all devices are supplied with a local setpoint.

Time Delay - The time delay is established during the design and is documented in the O&M Manual.

Dead Band - The dead band is determined for each PSD during equipment selection and documented in the O&M Manual. The dead band may be field adjustible or fixed for a given PSD. Dead bands are not applicable for all P

Cause - The cause refers to the electromechanical conditions and programmable logic controller (PLC) conditions that cause PSD activation.

Table 3

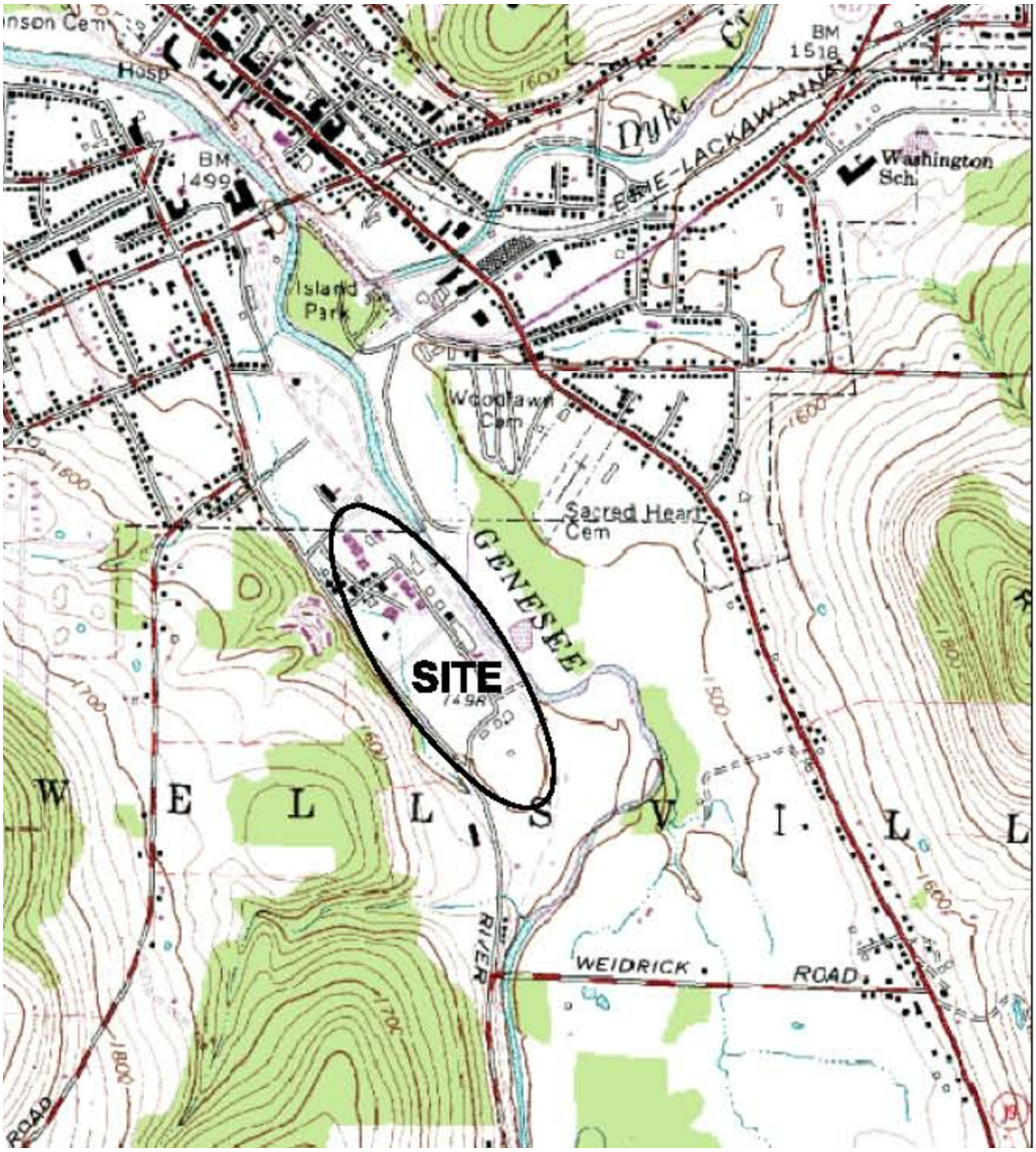
PSD Inspection and Maintenance Schedule / Log Form
Former Sinclair Refinery – Wellsville, NY

Inspection and Maintenance for Year: _____

PSD Description	Required Inspection & Maintenance	Quarterly Inspection Completed				Annual Test Completed
Aeration blower relief valve (SFB1-RV)	Quarterly Visual Inspection Annual Function Test					
Aeration blower relief valve (SFB2-RV)	Quarterly Visual Inspection Annual Function Test					
Aeration blower relief valve (SFB3-RV)	Quarterly Visual Inspection Annual Function Test					

PSD Description	Required Inspection & Maintenance	Monthly Inspection Completed				Annual Certification Completed
Fire extinguisher in Blue Building Office.	Monthly Visual Inspection Annual Third Party Inspection and Certification					
Fire extinguisher at Blue Building north door.	Monthly Visual Inspection Annual Third Party Inspection and Certification					
Fire extinguisher at Blue Building south door.	Monthly Visual Inspection Annual Third Party Inspection and Certification					
Fire extinguisher at Blue Building west door.	Monthly Visual Inspection Annual Third Party Inspection and Certification					

FIGURES



REFERENCE: USGS 7.5 MINUTE QUADRANGLE; WELLSVILLE SOUTH, N.Y. QUADRANGLE; 1976

0 1/8 1/4

SCALE 1" = 1/4 MILE

URS

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

FIGURE 1
SITE LOCATION MAP

K:\Projects\B\BP-Wellsville\13814797\DWGs\Figures\I&M Plan\NEW\Figure 1 - site location map.dwg User: Giri_Samavedam Dec 05, 2011 - 4:30pm

EXISTING TREATMENT WETLANDS OUTFALL

EXISTING UPPER DROP STRUCTURE

EXISTING LOWER DROP STRUCTURE

CLEAN-OUT (TYP.)

PERMANENT MID-SLOPE SHEETPILE

GENESEE RIVER

EXISTING GROUNDWATER CONVEYANCE PIPING AND ELECTRIC CONDUITS

WAG TRAIL

RETAINING WALL

RETAINING WALL

TPZ-08

MH-H

TPZ-

MH-G

TPZ-07

TPZ-06

MH-F

MH-E

TPZ-05

MH-D

TPZ-04

MH-C

TPZ-03

MH-B

TPZ-02

TPZ-01

MH-A

PERMANENT WATER CONTROL BERM

BLUE BUILDING

EXISTING GROUNDWATER COLLECTION TRENCH

POWER - X STREET

CHENAULT AVENUE

SINCLAIR STREET

TOWER DRIVE

SINCLAIR STREET

TANK

DUB

LEGEND

- PIPING FOR WATER TREATMENT SYSTEM
- CELA REUSE AREA
- WAG TRAIL
- PEIZOMETER LOCATIONS

0 25 50 100

SCALE: 1"=100'

NOTE: GROUNDWATER COLLECTION AND CONVEYANCE PIPING ALIGNMENT OBTAINED FROM 2009 ASBUILT SURVEY PERFORMED BY JIM BALL SURVEYORS

URS

FORMER SINCLAIR REFINERY SITE

WELLSVILLE, NEW YORK

SITE PLOT PLAN - 1 OF 2

DRAWN BY:	CHECKED BY:	PROJECT No:	DATE:	FIGURE No:
GS	MLS	13812259	12/01/11	2

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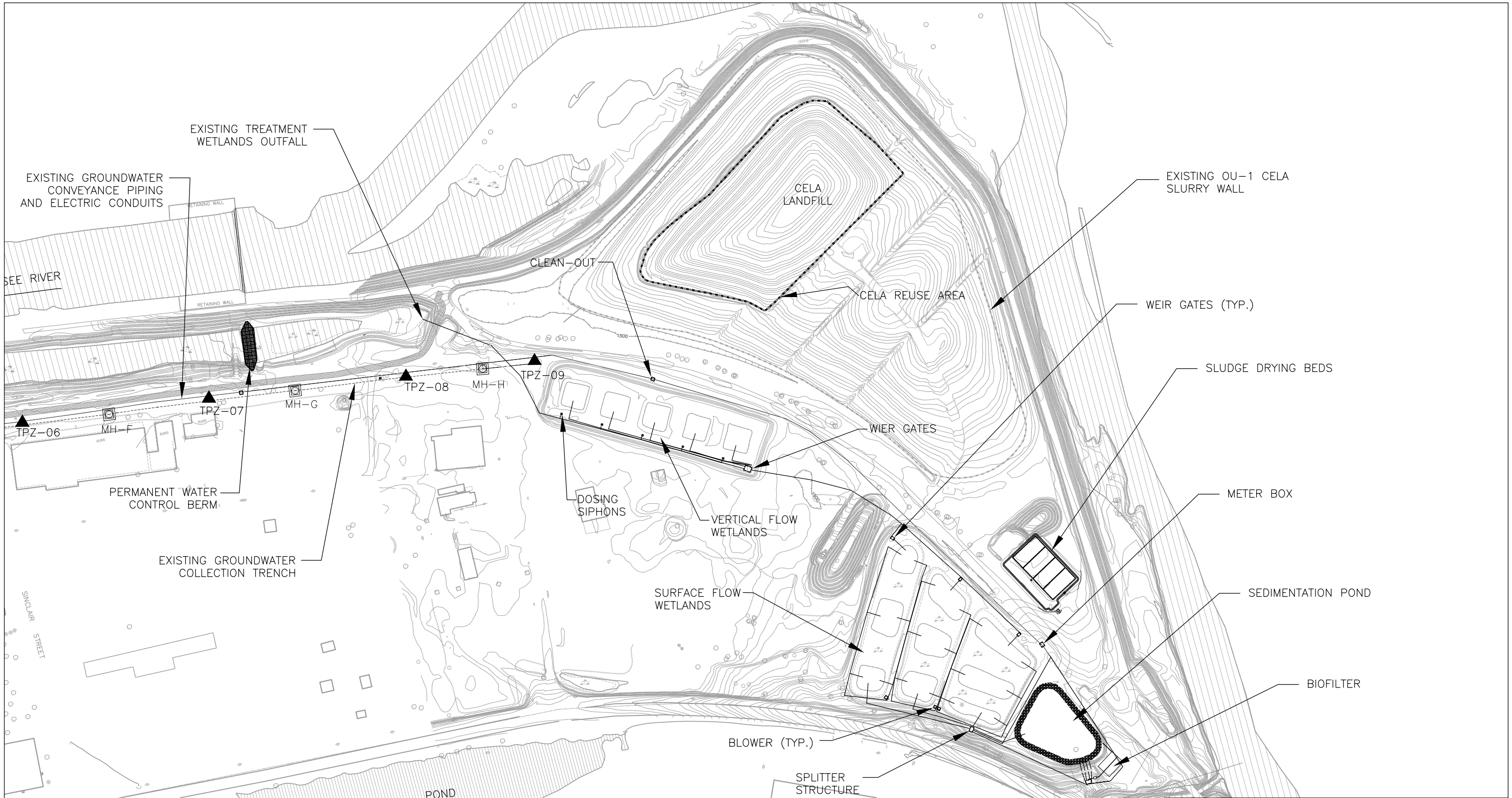

LEGEND

- PIPING FOR WATER TREATMENT SYSTEM
- CELA REUSE AREA
- WAG TRAIL
- ▲ PEIZOMETER LOCATIONS

0 25 50 100

SCALE: 1"=100'

NOTE: GROUNDWATER COLLECTION AND CONVEYANCE PIPING ALIGNMENT OBTAINED FROM 2009 ASBUILT SURVEY PERFORMED BY JIM BALL SURVEYORS

URS

FORMER SINCLAIR REFINERY SITE

WELLSVILLE, NEW YORK

SITE PLOT PLAN - 2 OF 2

DRAWN BY:	CHECKED BY:	PROJECT No:	DATE:	FIGURE No:
GS	MLS	13812259	12/01/11	3

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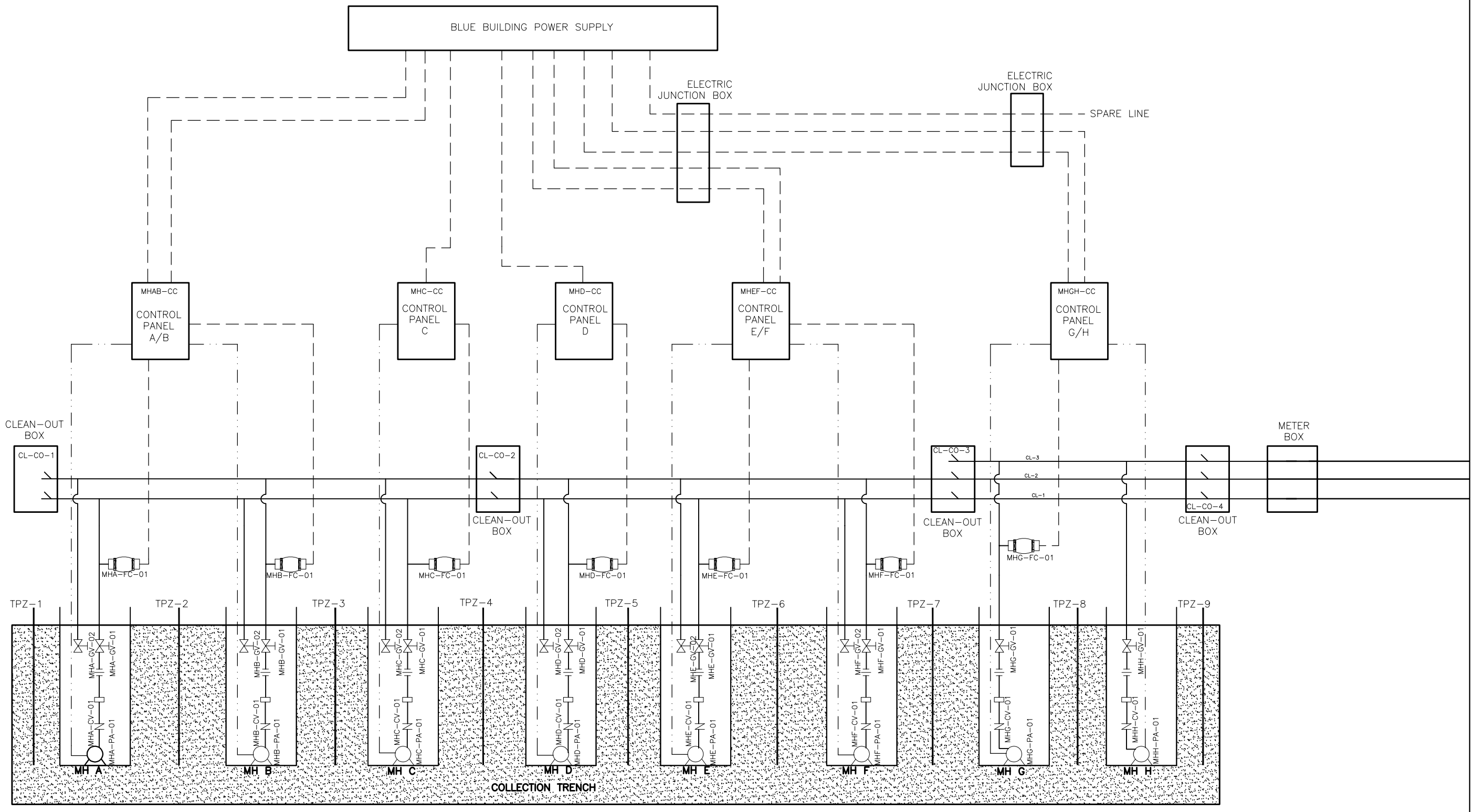

LEGEND

- CONVEYANCE LINES (PIPING)
- SIGNAL LINES
- ELECTRIC LINES
- TOTALIZER/FLOW METER
- GATE VALVE
- 2–INCH GALVANIZED UNION
- QUICK CONNECT ASSEMBLY
- CHECK VALVE
- 2–INCH SUBMERSIBLE PUMP
- CLEANOUT

NOT TO SCALE

URS

FORMER SINCLAIR REFINERY SITE

WELLSVILLE, NEW YORK

PIPING AND INSTRUMENTATION DIAGRAM - 1 OF 2

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SLUDGE DRYING BEDS

DB–1 DB–2 DB–3 DB–4

DB1–BV DB2–BV DB3–BV DB4–BV

CATCH BASIN

DB–MH

DB–CV–01 DB–PA–01

CONTROL PANEL

MANHOLE

MV

MV–BV–01

MV–CV–01

METER BOX

CL–3 CL–2 CL–1

BIOF

BIOFILTER

DRAIN CLEANOUT

BIOF–D–CO

VACUUM BLOWER

BIOF–B

BIOF–CP

CONTROL PANEL

CLBP–BV–5 CLBP–BV–1 CLBP–BV–3

CSS

CASCADE SPLITTER STRUCTURE

CLBP–BV–4 CLBP–BV–2 CLBP–BV–6

MANHOLES

C–MH–1 C–MH–2 C–MH–3 C–MH–4

C–AL–1 C–AL–2 C–AL–3 C–AL–4

VF5 VF4 VF3 VF2 VF1

VF–SS

WEIR GATES

VF5–DS–EL VF4–DS–EL VF3–DS–EL VF2–DS–EL VF1–DS–EL

VF5–DS VF4–DS VF3–DS VF2–DS VF1–DS

DOSING SIPHON

E–MH–EL

WCLB

OUTFALL

E–MH

MANHOLE

SF3–EL SF2–EL SF1–EL

SF3–WG SF2–WG SF1–WG

WEIR GATES

SF3 SF2 SF1

SFB2–RV

SFB3–RV SFB1–RV

SFB3 SFB2 SFB1

SFB3–CP SFB2–CP SFB1–CP

HSS

HSS–PA

HSS–RL

HYDRAULIC SPLITTER STRUCTURE

CONTROL PANEL

HSS–CP

SES–BB

POWER SUPPLY

SED

SEDIMENTATION POND

SED–EL–R

SED–EL

LEGEND

- CONVEYANCE LINES (PIPING)
- SIGNAL LINES
- ELECTRIC LINES
- WEIR
- GATE VALVE
- CHECK VALVE
- 2–INCH PUMP
- PRESSURE RELIEF VALVE

NOT TO SCALE

URS

FORMER SINCLAIR REFINERY SITE

WELLSVILLE, NEW YORK

PIPING AND INSTRUMENTATION DIAGRAM - 2 OF 2

DRAWN BY:	CHECKED BY:	PROJECT No:	DATE:	FIGURE No:
GS	MLS	13812259	12/5/11	5

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ATTACHMENT A
PRV MANUFACTURER'S INSTALLATION AND MAINTENANCE INSTRUCTIONS

PRESSURE RELIEF VALVE
INSTALLATION & MAINTENANCE
AND
FIELD CALIBRATION INSTRUCTIONS

Installing the Relief Valve:

1. Mount vertical and plumb.
2. Teflon tape all threads.
3. Check regularly for operation and cleanliness.
4. Recommend lubricating mating surface with 30wt oil.
5. To protect eyes, do not look into discharging valve.

Determining the Initial Release Point:

Each relief valve should be field checked for initial release pressure and full volume release pressure. To set the initial release point, open all valving to system, remove all weights from relief valve, and operate blower at desired operating speed. Slowly add weights to the relief valve increasing the system pressure. Only add enough weights to seal the relief valve. Once the system is fully operational and all units are diffusing air, add or remove weights from the relief valve such that there is just enough weight on the valve to seal it. Record this initial release point.

Final Adjustment with Overpressure:

Now that the relief valve has been field calibrated, increase the relief valve set point by 0.5 psig. This overpressure is recommended to facilitate rapid start-up of the system. The 1" relief valve requires two additional ¼ lb discs or one additional ½ lb disc. Larger relief valves require only one disc rated at ½ lb to obtain the overpressure.

ATTACHMENT B
FIELD FORMS

PRESSURE RELIEF VALVE INSPECTION/TEST RECORD PRV Designation:				
Date	Item Completed			Inspector
	Visual Inspection	Function Test	Other inspections, tests or maintenance performed.	

PRESSURE RELIEF VALVE
INSPECTION AND MAINTENANCE FIELD FORM
Former Sinclair Refinery – Wellsville, New York

Quarterly Inspection:

Inspect each pressure relief valve (PRV) for signs of wear, deformation, and corrosion. The weighted cap of each PRV should be manually rotated on the piston.

PRV Designation	Visible condition of PSD	Does PRV cap rotate and slide freely on the piston?	Is the blower on?	If blower is operating, is PSD fully closed?	Reading on pressure gauge (psi)
SFB1-RV					
SFB2-RV					
SFB3-RV					

Comments:

Annual Function Test:

1. Record the system pressure shown on the pressure gauge as the as found operating pressure.
2. Turn off the blower and remove all the weights and the cap from the PRV.
3. Inspect the cap and piston for signs of wear, deformation, and corrosion. Lubricate the cap and mating surfaces with 30 weight oil.
4. Replace the cap without any weights, open all system valves and turn on the blower.
5. Once the system is fully operational and all units are diffusing air, slowly remove/add weights to the cap until there is just enough weight on the cap to maintain an operating pressure of 6.0 psi.
6. Record the system pressure shown on the pressure gauge as the as left operating pressure.

PRV Designation	As Found Operating Pressure (psi)	As Left Operating Pressure (psi)
SFB1-RV		
SFB2-RV		
SFB3-RV		

Comments:

Date:	Field Personnel:

APPENDIX E
EXCAVATION WORK PLAN

APPENDIX E

EXCAVATION WORK PLAN

FORMER SINCLAIR REFINERY SITE WELLSVILLE, ALLEGANY COUNTY, NEW YORK

Date: November 2012

Proposal No.: 13814934

URS

1375 Euclid Avenue
Suite 600
Cleveland, OH 44115
Phone: 216.622.2400
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1. Introduction

The site remedy allows for Soil Management Plan (SMP) with restriction use. Any future intrusive work that will penetrate, encounter or disturb the remaining contamination will be performed in compliance with this Excavation Work Plan (EWP). Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a project specific Health and Safety Plan (HASP) prepared for the site. The HASP will be updated and re-submitted with the notification provided in Section 2 below. Appendix F of the SMP describes the general health and safety requirements that are to be followed by contractors performing work at the site. Any intrusive construction work will be performed in compliance with the EWP, and HASP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan.

The site owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all invasive work, the structural integrity of excavations, and for structures that may be affected by excavations (such as building foundations and bridge footings).

The site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise the engineering controls described in this SMP.

2. Notification

At least 15 days prior to the start of any activity that is reasonably anticipated to encounter remaining contamination, the site owner or their representative will notify the Department. Currently, this notification will be made to:

Maurice Moore– Project Manager

NYSDEC

Region 9

270 Michigan Avenue

Buffalo, New York 14302

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for site re-grading, intrusive elements or utilities to be installed below grade, or any work that may impact an engineering control;
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work,
- A summary of the applicable components of this EWP;

- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120, as applicable;
- A copy of the contractor's health and safety plan, in electronic format;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

3. Soil Screening Methods

Visual, olfactory and instrument-based soil screening will be performed by a qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil.

4. Stockpile Methods

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC.

5. Materials Excavation and Load Out

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this EWP.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

A truck wash will be operated on-site, as necessary. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before

leaving the site until the activities performed under this section are complete. Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

6. Materials Transport and Off-Site

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes will be identified that will: (a) limit transport through residential areas and past sensitive sites; (b) use city-mapped truck routes; (c) minimize off-site queuing of trucks entering the facility; (d) limit total distance to major highways; and (e) promote safety in access to highways.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development.

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

7. Materials Disposal Off-Site

All soil/fill/solid waste excavated and removed from areas of the site with remaining contamination will be treated as contaminated and regulated material unless tested and shown to be contaminant free, and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste pursuant to 6NYCRR Part 360-1.2. Material that does not meet 6 NYCRR Part 375 Track 1 unrestricted SCOs is prohibited from being taken to a New York State

recycling facility (6NYCRR Part 360-16 Registration Facility) without a beneficial use determination issued by NYSDEC.

8. Materials Reuse On-Site

For reuse of on-site material, the qualified environmental professional will ensure that procedures defined for materials reuse in 6NYCRR 375-6.7(d) are followed and that unacceptable material does not remain on-site.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

9. Fluids Management

All liquids to be removed from the site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the site, but will be managed off-site.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit.

10. Backfill from Off-Site Sources

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP, applicable regulations (6NYCRR 375-6.7(d)) and guidance (DER-10) prior to receipt at the site.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill objectives for this site, will not be imported onto the site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

Trucks entering the site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

11. Stormwater Pollution Prevention

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters

Silt fencing or hay bales will be installed around the entire perimeter of the remedial construction area.

12. Contingency Plan

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for full a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in daily and periodic electronic media reports.

13. Odor Control Plan

This Odor Control Plan is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used on a routine basis will include the following, listed in order of application: reducing excavation size; covering soil piles and/or portions of the excavation with plastic sheeting; application of Biosolve over the excavation area and onto excavated soils; application of foam (e.g. Rusmar or similar) to soil piles and open portions of the excavation. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to

eliminate odor nuisances will include: (a) direct load-out of soils to trucks for off-site disposal; (b) use of chemical odorants in spray or misting systems; and, (c) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

14. Dust Control Plan

The Dust Control Plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon or hose of sufficient length to be capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, un-vegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.

On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

APPENDIX F
HEALTH AND SAFETY MINIMUM REQUIREMENTS

APPENDIX F

HEALTH AND SAFETY REQUIREMENTS

FORMER SINCLAIR REFINERY SITE WELLSVILLE, ALLEGANY COUNTY, NEW YORK

Date: November 2012

Proposal No.: 13814934

URS

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Cleveland, OH 44115
Phone: 216.622.2400
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1. General Information

If for any reason intrusive work is to be performed at the Former Sinclair Refinery Site that could encounter remaining site contamination, it is required that the Contractor prepare a Site Specific Health and Safety Plan. This document provides an outline for the Contractor as to the minimum requirements that will be expected by The New York State Department of Environmental Conservation (NYSDEC).

1.1 Introduction

The Former Sinclair Refinery Site is regulated by:

- The OU1 Record of Decision (OU1 ROD), 1985
- The OU2 Record of Decision (OU2 ROD), September 30, 1991
- The Unilateral Administrative Order (UAO), September 8, 1992

The overall purpose of the Site-Specific HASP, which is to be developed specifically for operations at the Former Sinclair Refinery Site in Wellsville, NY, is to assign responsibilities, establish personal protection standards and mandatory safety procedures, and provide for contingencies that may arise while operations are being conducted at the site. The HASP must comply with, but does not replace, Federal Health and Safety Regulations, as set forth in 29 CFR 1910 and 1926, and applicable state regulations.

Changing and/or unanticipated site conditions may require a modification of the HASP to maintain a safe and healthful work environment. Any proposed changes to the HASP must be reviewed by appropriate personnel prior to their implementation. Under no circumstances should modifications to the HASP conflict with federal, state, or other governmental health and safety regulations. Copies of the HASP must be provided to each site subcontractor to fulfill obligations under 29 CFR 1910.120(b) to inform subcontractors of site hazards. Alternately, each subcontractor will prepare their own HASP.

1.2 Definitions

The following definitions apply to the work at this Project Site:

A. Project Personnel: Project personnel include the Engineers, Contractors, Subcontractors, and Federal and State Representatives, working or having official business at the Project Site.

B. Authorized Visitor: Authorized visitors who work for the State of New York will receive approval to enter the site from the property owner. The Safety Officer has primary responsibility for determining who is qualified and may enter the site. The Site Safety Officer will only allow authorized visitors with written proof that they have been medically certified and trained in accordance with 29 CFR 1910.120.

C. Health and Safety Coordinator (HSC): The HSC will be a Certified Industrial Hygienist (CIH) or Certified Safety Professional (CSP) retained by the Contractor. The HSC will be responsible for the development and implementation of the HASP.

D. Safety Officer (SO): The SO will be the Contractor's on-site person who will be responsible for the day-to-day implementation and enforcement of the HASP.

E. Health and Safety Technicians (HST): The HST(s) will be the Contractor's on-site personnel who will assist the SO in the implementations of the HASP, in particular, with air monitoring in active work areas and maintenance of safety equipment.

F. Medical Consultant (MC): The MC is a physician retained by the Contractor who will be responsible for conducting physical exams as specified under the Medical Monitoring Programs in this section.

G. Project Site: The area designated by previously approved site drawings.

H. Project Work Area: An area of the project site where intrusive work areas will be completed.

I. Support Zone: An area of the Work Area outside the Exclusion Zone, accessible for deliveries and visitors. No persons, vehicles, or equipment may enter these areas from the Exclusion Zone without having gone through specified decontamination procedures in the adjacent Contamination Reduction Zone.

J. Staging Areas: Areas within the Exclusion Zone for the temporary staging of contaminated soil and debris.

K. Exclusion Zone: The innermost area within the Work Area that encloses the area of contamination. Protective clothing and breathing apparatus as specified in the health and safety requirements and in the approved HASP must be worn.

L. Contamination Reduction Zone: An area at the Exit Point of the Exclusion Zone through which all personnel, vehicles, and equipment must enter and exit. All decontamination of vehicles and equipment and removal of personal protective clothing and breathing apparatus must take place at the boundary between the Exclusion Zone and the Contamination Reduction Zone.

M. Monitoring: The use of direct reading field instrumentation to provide information regarding the levels of gases and/or vapor, which are present during remedial action. Monitoring will be conducted to evaluate employee potential exposures to toxic materials and hazardous conditions.

1.3 Project Description

A description of the specific work to be performed at the Project Site will be described in this section when this scope of work is determined.

1.4 Site Contacts

A sample list of Site Contacts is provided below:

Title	Name	Contact Information
Project Manager		
Client Contact		
NYSDEC Contact		
Site HSO		
HASP Preparer		
Site Manager		
Medical Consultant		
Subcontractor HSO		
List Others as Necessary		

1.5 HASP Preparation

The HASP will be prepared by a qualified person in accordance with the most recently adopted and applicable general industry (29 CFR 1910) and construction (29 CFR 1926) standards of OSHA, the US Department of Labor, and other federal, State, or local applicable standards.

The HASP will so state the name and qualifications of preparer and reviewer.

1.6 Disclaimer

The HASP will state that it was prepared specifically for the activities identified therein at the Former Sinclair Refinery Site, and has been written for specific site conditions, purposes, tasks, dates and personnel specified and will not be amended without the written approval of the plan preparer.

2. Project/Site Information

2.1 Site History

The Former Sinclair Refinery Site is in the Town and Village of Wellsville, Allegany County, New York. The site is currently occupied by a number of commercial or manufacturing businesses and the Wellsville campus of the State University of the New York (SUNY) – Alfred. Most of the former refinery structures were removed before 1964. Many of the remaining refinery buildings have been renovated and are now part of the SUNY campus. The remainder of the original refinery buildings still standing are vacant.

The refinery was built in the late 1800s to process crude oil from New York and Pennsylvania. The Wellsville Refining Company originally operated the refinery. In 1919, the Sinclair Refining Company purchased the facility. Sinclair owned and operated the facility until 1958. Products that were produced at the refinery include heavy oils and grease for lubrication, light oils for fuel, lighter fluid, gasoline, aniline, naphtha, and paraffin.

2.2 Project Description

Specific information regarding the intended project and scope of work will be described in this section. Details concerning intrusive activities, work areas, intended subcontractors will be included.

2.3 Project Organization

A description of the Project Organization will be included in this section. Roles and responsibilities of site personnel will be defined and designated personnel identified.

3. Hazard Evaluation

3.1 Hazard Assessment

A hazard assessment will be performed that will provide information to assist in selection of person protective equipment (PPE), and overall health and safety considerations pursuant to the site specific scope of work. Included in the hazard assessment will be a Job Safety Analysis (JSA) for all intended work tasks, an evaluation of biological hazards, physical hazards, chemical hazards, compliance with OSHA's Hazard Communication Standard, and any other site specific hazardous work (e.g., confined space, lockout/tagout, hot work, etc.).

3.2 Job Safety Analysis

A complete JSA or other work risk assessment tool will be completed for designated work tasks at the site. The JSA will identify tasks, hazards and corrective/preventative measures/controls to help mitigate the hazards associated with the tasks. Administrative, engineering, and PPE options will be identified in the JSA.

3.3 Biological Hazards

Potential biological hazards include illnesses and/or injuries transmitted by plants, insects, animals, and pathogenic agents will be discussed. There are many plants, animals, and insects that are potentially harmful to humans that include: ticks, poison ivy/poison oak, certain spiders, mosquitoes, and poisonous snakes.

Blood-borne pathogens (BPs) include diseases that can be transmitted by contact with blood or other bodily fluids. Universal precautions should be used when administering first aid. Good hygiene practices and proper decontamination of non-disposable PPE will minimize potential for transmission of BPs.

3.4 Physical Hazards

Physical hazards including, but not limited to the following will be discussed:

- Heat stress and/or cold stress, depending on the time of year the work will be performed;
- Noise from the operation of site equipment;
- Slip-trip-fall types of accidents;
- Back injuries resulting from improper lifting (manual material handling);
- Being caught in or struck by moving equipment;
- Excavation hazards (e.g. slips, trips, falls; hazardous atmospheres; engulfment);
- Drilling activities (e.g., pinch points or struck by equipment);
- Electrocution hazards associated with ***drilling or excavation activities,*** such as contact with overhead or underground power lines or pipelines; and
- Confined spaces, hot work, and driving and equipment operation hazards.

3.5 Chemical Hazards

Two categories of chemical hazards are associated with site activities will be identified:

- Site constituents; and
- Chemicals used to conduct the site work.

Site constituents are those that exist at the site and are the cause for conducting site activities. The chemicals that are brought on site to conduct the work may be hazardous and subject to regulation under OSHA's Hazard Communication Standard (29 CFR 1910.1200). The chemical hazards will be identified in the HASP.

4. Personal Protective Equipment

The protective equipment ensembles selected for this project will be able to provide protection against the types and concentrations of hazardous materials that may be encountered during field operations. However, no protective garment, glove, or boot is resistant to all chemicals at any concentration; in fact, chemicals may continue to permeate or degrade a garment even after the source of the contamination is removed. Specific levels of PPE will be discussed dependent on

site conditions. Minimal PPE ensembles will be detailed and incremental upgrades of PPE will be defined pursuant to site conditions.

4.1 Respirator Requirements

Engineering controls and safe work practices (e.g., elimination of the source of contamination, ventilation equipment, working upwind, limiting exposure time, etc.) always must be the primary control for air contaminants. Respirators will be used if engineering or work practice controls are not feasible for controlling airborne exposures below acceptable concentrations and as an interim control measure while engineering or work practice controls are implemented.

Once the need for respirators has been established, the respirators will be selected on the basis of the hazards to which the worker is exposed. Only NIOSH-approved respirators will be issued. Selection criteria established in 29 CFR 1910.134 have been used by the Preparer of this HASP in determining respirator requirements for this project.

Employees will undergo medical surveillance and be medically evaluated in compliance with the requirements of 29 CFR 1910.134(a)(10). Employees not medically cleared to wear respirators will not be assigned to tasks that require respirator use.

A person wearing a respirator must be clean-shaven in the area of the face-piece seal. Long hair, sideburns, and skullcaps that extend under the seal are not allowed. Glasses with temple pieces extending under the seal are not allowed for full-face respirators. Persons with facial conditions that prevent a proper seal are not allowed to wear a respirator until the condition is corrected. Facial conditions that may cause a seal problem include missing dentures, scars, severe acne, etc. Contact lenses may be worn with respiratory protection.

4.2 PPE Training Requirements

Only those employees who have been properly trained and qualified on the specific type of respirator to be worn may use respirators. No individual will enter an area where the use of respiratory protective equipment is required unless the person has been trained.

All site personnel will meet the requirements of 29 CFR 1910.120(e) - HAZWOPER, including:

- Forty hours of initial off-site training or its recognized equivalent;
- Eight hours of annual refresher training (as required);
- Eight hours of supervisor training for personnel serving as SSOs; and
- Three days of work activity under the supervision of a trained and experienced supervisor.

Prior to the start of operations at the site, the SSO will conduct a site safety briefing or Daily Tool Box Meeting, which will include all personnel involved in site operations. At this meeting, the SSO will discuss:

- Contents of this HASP;
- Types of hazards at the site and means for minimizing exposure to them;
- The type of monitoring that will be performed;
- Action levels for upgrade and downgrade of PPE;
- PPE that will be used;
- Site-specific respiratory protection requirements;
- Decontamination protocol;
- Site control measures, including safe operating practices and communication;
- Location and use of emergency equipment; and
- Evacuation signals and procedures.

4.3 Exposure Monitoring

Personal exposure monitoring may or may not be required for the site tasks. Should personal exposure monitoring be required, the field instrumentation described in the prepared HASP will be specifically selected for the contaminants that may be reasonably anticipated to be encountered during the course of this project. Selection factors include anticipated airborne concentrations, potential interference, ionization potentials, instrument sensitivity, and occupational exposure limits. The action levels specified in the HASP will be established with the expectation that specific instruments will be used.

All direct-reading instrument readings will be evaluated relative to background readings, not "meter zero." Prior to the start of work at each shift, and whenever there is a significant shift in wind direction, instrument readings will be obtained upwind of the site work zone to determine the level of "background" readings from such things as local vehicle traffic or emissions from nearby operations unrelated to the site. Site readings will be evaluated against these background readings (i.e., if an action level is listed as 20 parts per million [ppm], it is evaluated as 20 ppm above background). The SSO will consult with the industrial hygienist regarding the potential health hazards associated with background readings above 5 ppm.

5. Medical Surveillance Requirements

Employees will undergo medical surveillance and be medically evaluated in compliance with the requirements of 29 CFR 1910.134(a)(10). Employees required to wear respiratory protection will be medically cleared to wear a respirator. Employees not medically cleared to wear respirators will not be assigned to tasks that require respirator use.

6. Site Control

Site control will be strictly enforced by keeping control of entry and exit ways and a sign-in registry. Barricade tape and/or barricades will be used to delineate a work zone for safety

purposes around the work area. The barriers will be set in a 25-foot radius (as practical) around the work area to provide sufficient maneuvering space for personnel and equipment.

The SSO will provide site hazard and emergency action information to all site visitors before they enter the site. This can be done by providing a copy of the HASP to the visitor.

7. Spill Prevention And Control

Strict spill prevention and control procedures will be implemented at the site. This will include fuels, decontamination fluids, and other means of contamination. Secondary containment will be utilized where appropriate. Proper notification to the NYSDEC will be made for any spills requiring notification.

The following notification may be required:

Project Manager:	
NYSDEC Project Manager:	
NYSDEC Spill Hotline:	**800-457-7362**
USEPA National Response Center:	**800- 424-8802**
(Others as Appropriate):	

8. General Safety Rules

These general site safety rules will apply for all work at the site:

- Eating, drinking, chewing gum or tobacco, and smoking are prohibited in the contaminated or potentially contaminated area or where the possibility for the transfer of contamination exists.
- Alcohol consumption is prohibited during work hours. Use of prescription medications that impair judgment or affect motor skill and all illegal drugs are also prohibited.
- All personnel will enter designated work areas only through the CRZ. All personnel leaving an EZ/work zone must exit through the CRZ and pass through the decontamination station.
- Personnel will wash their hands and faces thoroughly with soap and water prior to eating, drinking, or smoking.
- Personnel will avoid contact with potentially contaminated substances. Do not walk through puddles, pools, mud, etc. Avoid, whenever possible, kneeling, leaning, or sitting on contaminated surfaces. Do not place monitoring equipment on potentially contaminated surfaces (i.e., the ground, etc.)

- All field crew members should remain alert to potentially dangerous situations in which they should not become involved (i.e., note the presence of strong, irritating, or nauseating odors, etc.).
- Only those vehicles and the equipment required to complete work tasks should be permitted within the EZ/work zone (drill rigs, excavators, and similar items). All non-essential vehicles should remain within the support zone.
- Containers, such as drums, will be moved only with the proper equipment and will be secured to prevent dropping or the loss of control during transport.
- Contaminated protective equipment, such as respirators, hoses, boots, and disposable protective clothing, will not be removed from the work area/EZ or decontamination area until it has been cleaned or properly packaged and labeled.
- Splashing of contaminated materials should be prevented.
- Field crew members should be familiar with the physical characteristics of the site operations including:
  - Wind direction in relation to the contaminated area;
  - Accessibility to equipment and vehicles;
  - Areas of known or suspected contamination;
  - Site access; and
  - Nearest water sources.
- The number of personnel and equipment in the EZ should be minimized, but only to the extent consistent with workforce requirements for safe site operations.
- All personal protective equipment will be used as specified and required.
- The buddy system will be used at all times when sampling for hazardous material, when the first action level criteria have been exceeded, or when working in remote areas.
- Personnel are to immediately notify the SSO or Site Manager if any indications of potential explosions or unusual conditions are observed.

9. Emergency Planning

Evacuate procedures must be addressed and discuss evacuation of personnel from areas of hazardous material emergencies and summoning of outside assistance from agencies with personnel trained to respond to the specific emergency. The section will outline the procedures to be followed by personnel in the event of a site emergency. The procedures are to be reviewed during the onsite safety briefings conducted by the SSO.

In the event of a fire or medical emergency, the emergency numbers identified will be called for assistance. A communication network will be set up to alert site personnel of emergencies and to summon outside emergency assistance. Where voice communication is not feasible, an alarm system (i.e., sirens, horns, etc.) will be set up to alert employees of emergencies. Radio communication also may be used to communicate with personnel.

Specific emergency response and action measures will be delineated prior to actual site work. Items to be addressed include evacuation procedures and routes, medical assistance, decontamination, summoning emergency assistance, incident reporting and recordkeeping, etc. A route to the nearest hospital will be prepared and posted on site and placed into this HASP.

10. Decontamination And Waste Management

The HASP will include a section detailing decontamination requirements of tools and equipment used for intrusive work at the project site. The decontamination equipment required (i.e., steam cleaner, soap and water, etc.) will be delineated.

Also procedures for waste management including investigation derived waste (IDW), used PPE, generic waste, etc. will be described.

11. Employee Acknowledgement

All personnel will be required to review the HASP and sign the Safety Plan Compliance Agreement associated with this HASP. Copies of these forms will be maintained at the site.

The acknowledgement will indicate the following concepts:

> *I acknowledge that I have received and read the information in this Site Safety plan and I understand the potential hazards as described in this HASP. I understand the PPE requirements as described and agree to follow the guidelines set forth in the HASP.*