FOURTH FIVE-YEAR REVIEW REPORT
GCL TIE AND TREATING SUPERFUND SITE
VILLAGE OF SIDNEY, DELAWARE COUNTY, NEW YORK

Prepared by

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LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
CVOC	Chlorinated Volatile Organic Compound
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
EPA	United States Environmental Protection Agency
EW	Extraction Well
FS	Feasibility Study
FFS	Focused Feasibility Study
FYR	Five-Year Review
HHRA	Human Health Risk Assessment
ICs	Institutional Controls
µg/L	Microgram per Liter
MW	Monitoring Well
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NAPL	Non-Aqueous Phase Liquid
OU	Operable Unit
O&M	Operation and Maintenance
P&T	Pump and Treat
PAH	Polycyclic Aromatic Hydrocarbon
RAO	Remedial Action Objectives
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
TCE	Trichloroethene
UU/UE	Unlimited Use/Unrestricted Exposure
SVOC	Semi-Volatile Organic Compound
VI	Vapor Intrusion
VOC	Volatile Organic Compound

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings and conclusions of FYRs are documented in FYR reports, such as this one. In addition, FYR reports identify issues found during this review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR review, pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP) (40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the fourth FYR for the GCL Tie and Treating Superfund Site (Site), located in the Village of Sidney, Delaware County, New York. The triggering action for this statutory review is the signing of the previous FYR on September 30, 2013. The FYR has been prepared because hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE). The site consists of three operable units (OUs). OU1, completed in 2000, includes actions to address soils and sediments. OU2, completed in 2004 and currently under operation, includes actions to address groundwater. EPA recently established OU3 to address source area contamination. OU1 and OU2 will be addressed in this FYR.

The EPA FYR team was led by Damian Duda, remedial project manager (RPM), and includes Rachel Griffiths, hydrogeologist, Abbey States, risk assessor, Mindy Pensak, ecological risk assessor, Marla Wieder, site attorney and Wanda Ayala, community involvement coordinator (CIC).

Site Background

The GCL Tie and Treating site (see **Figure 1**) includes approximately 60 acres in an industrial/commercial area of Delaware County, New York and is divided into two major areas, generally referred to as the "GCL property" and "non-GCL property." The GCL property is approximately a 26-acre parcel located in the Village of Sidney, Delaware County, New York. The non-GCL property is the remaining part of the 60 acres. The Site is bordered on the north by a railroad line (formerly Delaware & Hudson, now CSX). ACCO Brands (formerly Mead-Westvaco), which manufactures time management products, and a municipal airport are located to the north of the railroad line. Route 8 and Delaware Avenue generally delineate the eastern and southern borders of the Site, respectively. A drainage ditch (known as Unalam Tributary) runs west to east across the Site and woodland areas exits in the southern portion of the Site. The western portion of the GCL property also includes a wetlands area. The Site eventually drains via overland flow to the Susquehanna River, which is located within one mile of the Site. In general, groundwater in the area flows in the north-northwesterly direction, towards the river.

The GCL property was originally developed in 1940 by the Delaware & Hudson Railroad Corp. as a railroad tie and treating (creosote) facility. Railcon Wood Products/Railcon Materials, Inc. acquired the property in 1979 and, in 1983, sold it to GCL Tie and Treating, Inc., a wood-treating company with four on-site structures. The primary building housed the wood pressure treatment operations including two treatment vessels, an office and a small laboratory. Wood (mostly railroad ties) and creosote were introduced into the vessels which were subsequently pressurized which treated the wood with the creosote. The other three structures housed a sawmill and storage space. The non-GCL property included two light manufacturing companies (which did not conduct wood treatment operations) located on a parcel of land adjacent to and east of the GCL property.

In February 1994, EPA proposed that the Site be added to the National Priorities List (NPL). The listing became final in May 1994.

FIVE-YEAR REVIEW SUMMARY FORM

<table>
<tr><th colspan="3">SITE IDENTIFICATION</th></tr>
<tr><td colspan="3">Site Name: GCL Tie and Treating Site</td></tr>
<tr><td colspan="3">EPA ID: NYD981566417</td></tr>
<tr><td>Region: 2</td><td>State: NY</td><td>City/County: Sidney/Delaware</td></tr>
<tr><th colspan="3">SITE STATUS</th></tr>
<tr><td colspan="3">NPL Status: Final</td></tr>
<tr><td>Multiple OUs?
Yes</td><td colspan="2">Has the site achieved construction completion?
Yes</td></tr>
<tr><th colspan="3">REVIEW STATUS</th></tr>
<tr><td colspan="3">Lead agency: EPA
If “Other Federal Agency” was selected above, enter Agency name: Click here to enter text.</td></tr>
<tr><td colspan="3">Author name (Federal or State Project Manager): Damian Duda</td></tr>
<tr><td colspan="3">Author affiliation: EPA</td></tr>
<tr><td colspan="3">Review period: 10/01/2013 – 09/05/2018</td></tr>
<tr><td colspan="3">Date of site inspection: 06/16/2018</td></tr>
<tr><td colspan="3">Type of review: Statutory</td></tr>
<tr><td colspan="3">Review number: 4</td></tr>
<tr><td colspan="3">Triggering action date: 9/30/2013</td></tr>
<tr><td colspan="3">Due date (five years after triggering action date): 09/30/2018</td></tr>
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II. RESPONSE ACTION SUMMARY

<u>Basis for Taking Action</u>

Site investigations indicated that soils, groundwater and surface water sediments were contaminated with creosote and creosote by-products. Polycyclic aromatic hydrocarbons or PAHs (semi-volatile organic compounds (SVOCs)), including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-c,d)pyrene are identified as the primary contaminants of concern (COCs) at the Site.

The baseline human health risk assessment (HHRA) identified unacceptable risks from exposure to soils and groundwater, necessitating remediation of the Site. The estimated total risks were primarily due to the PAHs, which contributed over 95% to the carcinogenic risk calculations. An ecological risk assessment indicated the potential for ecological impacts because of the presence of PAH contamination in the surface water and sediments of the Unalam Tributary, drainage ditches, wetlands and pond.

<u>Response Actions</u>

Creosote contaminants are known to have been released to the environment through direct contact with the surface soils as a result of open drip-drying of treated products and one documented spill. The practice of drip-drying creosote-soaked lumber with no containment safeguards contaminated the soils in numerous areas on the Site. In 1986, one of the two treatment vessels inside the GCL process building malfunctioned causing a release of an estimated 30,000 gallons of creosote. GCL representatives excavated the contaminated surface soil and placed it in a mound; no further action was taken at the time.

One of the structures also had asbestos insulation. Mounds of contaminated soils (4,800 cubic yards (cy)) and wood debris (3,000 cy) were also stockpiled on the Site. Several aboveground tanks and drums, holding approximately 20,000 gallons of creosote wastes and sludges were also on the Site.

In March 1991, EPA, responding to a request from the NYSDEC, initiated a removal action at the Site. The immediate action resulted in Site stabilization, installation of fencing, identification and disposal of hazardous wastes (both containerized and non-containerized from drums, tanks and sumps), staging of contaminated soils and wood debris, removal of 14,159 gallons of creosote from tanks and associated piping and removal of 500 gallons of creosote from floors, sumps, and other equipment, as well as a pilot study to determine the effectiveness of using bio-remediation composting of the soils.

The Record of Decision (ROD) for OU1 was issued on September 30, 1994. The OU1 ROD had the following remedial action objectives (RAOs):

- Prevent public exposure to contaminant sources that present a significant health threat (contaminated dust and soils), and

- Reduce the concentrations of contaminants in the soils to levels which are protective of human health and the environment to allow for continued industrial/commercial use of the property. These cleanup levels were developed, based on the risk assessment, to be protective of human health for future industrial/commercial uses of the property. If these levels are achieved, individuals would have less than a one-in-a-hundred-thousand chance of developing cancer as a result of exposure to the contaminated soils over a 25-year period under specific exposure conditions at the site.

In order to achieve the RAOs for the Site soils, EPA selected the following remedy components in the OU1 ROD:

- Excavation and treatment of approximately 36,100 cubic yards of contaminated soils and debris on-site through a thermal desorption process, the expected depth of excavation ranges from two to eight feet below grade, and will include excavation of non-native soils and debris located below the water table which exceed health-based cleanup levels;
- Replacement of the treated soils (mixed with clean fill as necessary) to the excavated areas, followed by grading and revegetating; and
- Demolition and off-site disposal of existing structures on the GCL property which are either contaminated or would interfere with the remediation of the GCL-property soils.

The OU1 ROD also called for the implementation of institutional controls (ICs) on the property to ensure land use continued to be commercial/industrial.

The ROD for OU2 was issued in March 1995. The OU2 ROD had the following RAOs:

- Prevent public and biotic exposure to contaminant sources that present a significant threat (contaminated groundwater and surface-water sediments); and,
- Reduce the concentrations of contaminants in the groundwater to levels which are protective of human health and the environment (e.g., wildlife).
- Prevent further migration of groundwater contamination.

In order to achieve the RAO for the Site groundwater, EPA selected the following remedy components in the OU2 ROD:

- Extraction, collection and on-site treatment of groundwater contaminated with organic compounds; discharge of treated groundwater to the surface water; and
- Excavating and treating contaminated sediments on-site through a thermal desorption process along with the GCL-property soils. The selected remedy will also provide for the mitigation of damages to the aquatic environment which may occur during implementation, *i.e.*, revegetation.
- EPA will recommend to local agencies that IC measures be undertaken to ensure that future land use of the property continues to be industrial/commercial and precludes the use of Site groundwater for human consumption until drinking water quality is restored in the aquifer.

Status of Implementation

Soils

The remedial design (RD) for OU1 was completed in September 1997. Construction activities for the OU1 remedial action began in September 1998 and were completed in August 2000. These activities included removal of all Site buildings and soil piles from the surface of the Site. Soils were excavated to depths of up to 20 feet below the surface and thermally treated on-site in a low temperature thermal desorption unit. In addition, several underground structures were located and removed from the Site. At the completion of remedial activities, approximately 109,000 tons of soil, sediment, and debris had been excavated and treated on-site. Excavated areas were backfilled with treated soils and clean soils brought from off-site sources, graded and compacted.

Groundwater

The OU2 RD for the Site groundwater treatment system was initiated in November 1997 and was completed in October 2001. The primary objective of the treatment system was to treat the groundwater contaminated with PAHs, benzene, toluene, ethylbenzene and xylenes (BTEX) and dense non-aqueous phase liquid (NAPL) to levels acceptable for discharge to surface water, pursuant to New York State (NYS) standards. Remedial construction was performed in two phases.

Site activities for Phase I, which began in October 2002, consisted of the drilling, installation and development of six extraction wells and were completed in March 2003.

Site activities for Phase II began in October 2003 and consisted of the construction of the groundwater extraction and treatment (P&T) plant and the installation of additional monitoring wells and extraction wells off-site on the ACCO Brands property, located north of the railroad line.

By September 2004, Phase II was complete with start-up and performance testing for a brief period to ensure proper operation. EPA's long-term response action began in October 2005.

ICs Summary

Table A - IC Summary Table

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater	Yes	Yes	Site and off-property	To prevent installation of potable groundwater production wells and withdrawal of groundwater	Village of Sidney Code Section 210.5 – Private Wells [Updated 5/1/2012]
Soil	Yes	Yes	Site	To ensure future land use continues as commercial/industrial	Placement of easements on Site property anticipated in 2020
Extraction and Monitoring Wells	Yes	No	Off-property	To restrict activities which could affect the Site remedy	Placement of easements on CMX and ACCO Brands property anticipated in 2020
Soil Vapor	Yes	No	Site	To evaluate any new construction over the groundwater plume for potential soil vapor intrusion	Informational IC - letter sent to local government agency or agencies that issue building permits

In addition to the ICs mentioned above, a notice to the Successors-in-Title was put on the property deed and filed with the Delaware County Clerk on March 31, 2015 to indicate the Site property is a Superfund site.

Operations, Maintenance and Monitoring

The P&T system operation and maintenance (O&M) activities continued through the majority of this reporting period. Routine activities included backwashing the green sand media vessels and related backwash sludge handling, replacing the particulate filter bags at several locations within the treatment system, periodic waste shipments, and infrequent corrective maintenance for worn out well transducers, groundwater extraction well pumps, process flow meters, etc. A treatment plant operator was available to perform frequent maintenance to ensure the plant continued to operate as designed. As discussed below, the treatment plant operations were suspended at the end of Summer 2016 but are anticipated to resume in late 2018 or early 2019.

Two complete groundwater sampling events were performed at the Site during the current review period (August/September 2013 and October 2014). A total of 28 groundwater monitoring wells were sampled. Twenty groundwater monitoring wells, three extraction wells with sample taps and five non-pumping extraction wells were sampled to evaluate groundwater conditions as part of the long-term monitoring at the Site. Each sample collected was analyzed for the same set of parameters including volatile organic compounds (VOCs), SVOCs, total and dissolved metals.

Two landfills, the Route 8 Landfill and the Hill Site, are adjacent to the non-GCL property, have remedial actions in place and are being addressed by NYSDEC. Contaminants from the two nearby landfills are also present in the groundwater underlying the GCL Site. The contaminants include volatile organic compounds (VOCs), namely toluene, ethylbenzene and several chlorinated VOCS (CVOCs), including 1,1-dichloroethane (1,1-DCA), cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), trichloroethene (TCE), vinyl chloride (VC), and 1,1,1-trichloroethane (1,1,1-TCA). These compounds are not considered Site COCs.

From October 2013 until January 2014, a pilot study was conducted to determine the necessity of the air stripper as part of the P&T treatment train. The study's results showed that the air stripper was not necessary to affect adequate treatment, and, as a result, was taken out of the treatment rain on October 28, 2013 and has remained offline from the treatment train and is no longer a part of the P&T system.

In 2014, after the P&T system had been in operation for almost 10 years and with more than 100 million gallons of groundwater extracted, treated and discharged, concentrations of the COCs in several wells continued to persist above applicable action levels. Furthermore, as recent as 2013, dense NAPL was documented to have been encountered in well MW-3B, which likely acts as a continuing source of COCs to groundwater.

At the request of EPA Region 2, under a contract agreement with EPA's Office of Research and Development, Battelle was contracted to perform a detailed review and evaluation of relevant Site information, including past optimization efforts, evaluating the existing groundwater P&T capture zone, assessing the treatment capture zone analysis and recommending a path forward for additional characterization at the Site. The primary objective of this effort was to provide supplemental characterization at the Site, including subsurface and residual source material characterization that will be considered OU3.

In 2016, Battelle performed a field investigation to investigate the presence of NAPL (both dense and light) at the Site. The final Site Characterization report included data collected during this limited field investigation of soils and groundwater within the source area. Creosote-related contaminants currently exist in the unconsolidated and bedrock aquifers beneath the GCL property and the ACCO Brands property to the north. The remaining groundwater impacts at the Site are primarily from PAHs associated with the presence of creosote NAPL, and, to a lesser extent, BTEX (primarily benzene).

At the time, since the ten-year period of EPA's long-term response action (LTRA) was expiring, EPA and NYSDEC were preparing to transfer the Site operations to NYSDEC. When the LTRA period expired, the P&T system was shut down on August 30, 2016. At the time, however, EPA and NYSDEC became aware that the Site was named as part of a large Superfund site settlement fund (Tronox and the Greenfield Environmental Multistate Trust, LLC) that could provide additional funds for the continued operation of the P&T. The Region thought that these funds might be available in a reasonably short period of time. When coupled with the facts 1) that EPA and NYSDEC were discussing how to address the NAPL source contamination and 2) that monitoring indicated that groundwater contamination was now relatively localized to the Site, the Site transfer was put on hold. However, since access to these settlement funds has not been guaranteed nor has a timeframe been established for securing funds should they become available, EPA and NYSDEC is proceeding with the Site transfer so that the P&T system can be put back online as soon as feasible.

Potential Site impacts from climate change have been assessed, and the performance of the remedy is currently not at risk from the expected effects of climate change in the region and near the Site.

III. PROGRESS SINCE LAST FIVE-YEAR REVIEW

Table B: Protectiveness Determinations/Statements from the 2013 FYR.

OU #	Protectiveness Determination	Protectiveness Statement
1	Short-term Protective	The remedy at OU1 currently protects human health and the environment because on-site soils have been excavated and thermally treated. However, in order for the remedy to be protective in the long term, remaining ICs need to be implemented.
2	Short-term Protective	The remedy at OU2 currently protects human health and the environment because groundwater is being addressed through the operation of the groundwater extraction and treatment system. However, in order for the remedy to be protective in the long term, remaining ICs need to be implemented.
Sitewide	Short-term Protective	The remedies at OU1 and OU2 currently protect human health and the environment. However, in order to be protective in the long term, remaining ICs need to be implemented.

Table C: Status of Recommendations from the 2013 FYR

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
1 and 2	ICs need to be implemented	EPA should work to secure environmental easements/restrictive covenants for the GCL, ACCO Brands (Mead Westvaco), and CMX (D&H) properties to prevent the installation of drinking water wells at the site and to restrict activities which could affect the integrity of the site remedy, as well as allow for EPA's access to wells and piping and address potential soil VI concerns. The easements will also limit the future use of the property to industrial/commercial.	Addressed in Next FYR	Ongoing	2/1/2020

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement and Site Interviews

On October 2, 2017, EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies at 31 Superfund sites in New York and New Jersey, including the GCL Tie and Treating site. The announcement can be found at the following web address: https://www.epa.gov/sites/production/files/2017-10/documents/five_year_reviews_fy2018_final.pdf

In addition to this notification, a public notice was made available on EPA's GCL Tie and Treating website: https://www.epa.gov/superfund/gcl-tie. On August 10, 2018, the public notice was also sent to Delaware County Clerk's office. The purpose of the public notice is to inform the community about the FYR and to list where the final report will be posted. The notice also included the RPM and the CIC address and telephone numbers for questions or comments related to the FYR process or the Site. Once the FYR is completed, the results will be made available on EPA's GCL Tie and Treating webpage and at the Site repositories located at EPA, 290 Broadway, 18th Floor, New York, New York and at the Sidney Memorial Public Library, 8 River Street, Sidney, New York.

Community interest in the Site has been historically low. No interviews were conducted during the Site inspection.

Data Review

The Army Corps and its contractor KOMAN Government Solutions, LLC (previously H&S Environmental, Inc.) performed the O&M of the P&T plant and the ongoing groundwater monitoring at the Site through 2016 when the system was shut down. In addition, Battelle conduced a comprehensive investigation effort to determine the cause for persistent, elevated contaminant concentrations in the former source area. These efforts are summarized below.

Pump and Treat System

With respect to the P&T plant, influent and effluent sampling was conducted during 2013-16 sampling period. In December 2013, 2014, 2015, 2016, for the influent sampling, elevated concentrations of several VOCs and several PAHs were observed. As noted in the O&M section, some VOCs may be attributed to the nearby NYS sites. No PAHs and VOCs were detected in the P&T system effluent.

1,4-dioxane is not considered a COC at the Site but was regularly sampled for during the monthly pump and treat reporting periods. The following concentrations were found: in December 2013, the influent and effluent: 14J µg/L and 15J µg/L; in December 2014, the influent and effluent were 14 J µg/L and 0.8 µg/L; in December 2015, the influent and effluent were 14J µg/L and 13J; and, in August 2016, the influent and effluent were 7 µg/L and 7.4 µg/L.

Groundwater Sampling

Two complete groundwater sampling events were performed at the Site during the current review period (August/September 2013 and October 2014).

The sampling events concluded that the highest concentrations of both PAH and BTEX mass are found in the MW-3 well cluster near the original soil source area (**Figure 1**). Groundwater concentrations are shown in a series of trend graphs. COC concentrations at MW-3S remain above action levels but show overall decreasing trends in PAHs (**Figure 2**) and BTEX since 2000. Concentrations in MW-3I are the highest within the cluster and have shown an overall increase since remedy implementation, including an order-of-magnitude increase during the review period for PAHs (**Figures 3a & 3b**). Concentrations of PAHs and BTEX (**Figure 4**) in MW-3B fluctuate with no clear trend and are the lowest within the cluster despite exceeding action levels. Upgradient wells MW-1S and MW-1D have fluctuating concentrations of CVOCs from the two upgradient sources; however, no COCs were detected above action levels.

Most downgradient wells beyond the property boundary are below action levels or non-detect, including MW-07I (since 2004), MW-8I (since 2005), MW-10B (since 2004), MW-11I (since 2004), MW-11B (since 2008), MW-12B (since 2014), MW-13I (since 2008), MW-14I (since 2005), MW-14B (since 2005), MW-16D (since 2008), and MW-16I (since 2008). The remaining locations exhibit relatively stable or decreasing concentrations with limited exceedances of action levels for Site COCs, and several occurrences of CVOCs persist in downgradient wells. MW-07D exhibits overall decreasing trends with low level exceedances during the review period of PAHs (**Figure 5**) and CVOCs. MW-8DI results include only a low detection of benzene above action levels in 2014. PAH concentrations at MW-13B have decreased to below action levels since 2004 and only CVOCs detections remain. Detections of CVOCs were observed in MW-15B, though concentrations are low and, as discussed above, are not attributable to Site sources.

Contaminant mass in extraction wells has also been substantially lower than the mass found in the MW-3 cluster. EW-1B shows the highest PAH and BTEX contaminant mass of the extraction wells, though concentrations of both contaminant groups have been decreasing since 2006. EW-4B shows evidence of decreasing PAH contaminant mass particularly over the last 2 sampling events. The remaining extraction wells (EW-1I, EW-2I, EW-2B, EW-3I, EW-4I, and EW-5I) have exhibited decreasing trends since remedy implementation, with most concentrations below project action limits during the review period.

Source Area Investigation

During the 2016 Battelle investigation, four boreholes, which became monitoring wells, were installed into bedrock at the source area. Multiple soil and groundwater samples were collected from each location (designated MW-17, MW-18, MW-19, and MW-20) at various depths. Soil sampling results indicated COC impacts up to 67 feet below ground surface (bgs), though the highest concentrations were detected at 15 feet bgs. PAHs were the most prominent contaminant detected in soil samples, with few BTEX detections. Groundwater sampling results from the boreholes indicate both PAH and BTEX impacts within the source area, primarily at MW-17 and MW-19 (northeast and southwest of existing MW-3 well cluster, respectively). The groundwater and soil data from Battelle investigation are shown in **Tables 3, 4 and 5**.

Summary

Groundwater sampling events in 2013 and 2014 demonstrated concentrations in off-site wells and extraction wells are generally below action levels and have displayed decreasing or stable trends. However, samples have not been collected since 2014 and the groundwater extraction and treatment system has been shut down since 2016, making it unclear if downgradient wells remain below action levels. It is recommended that groundwater sampling be re-instituted to confirm that the plume has not migrated.

Dissolved phase PAHs and BTEX persist in the groundwater near source area MW-3 wells and are highest in the intermediate overburden zone, an indication that source material, including NAPL, remains in the soils and shallow aquifer and continues to affect groundwater in the adjacent area. Long-term water-quality monitoring, in addition to a future focused feasibility study (FFS) for OU3, will be utilized to assess whether groundwater restoration will be achievable within the core area of the plume and/or whether additional remedial actions should be taken to address the source (NAPL) to assist in restoring the aquifer in the source area.

In addition, it is recommended that 1,4 dioxane be included the sampling events to determine if concentrations found in influent and effluent samples are site related or from upgradient sites subject to NYSDEC remediation efforts.

<u>Site Inspection</u>

A FYR Site visit and inspection was conducted on June 16, 2018 to observe the current physical status and use of the Site and vicinity and to assess conditions of the treatment plant, the monitoring wells and other Site features.

The inspection team included Damian Duda, EPA RPM, Rachel Griffiths, EPA hydrogeologist, Abbey States, EPA risk assessor and Matthew Dunham, NYSDEC project manager. Kavitha Subramaniam and John Dougherty from CDM Smith were also at the Site inspection to evaluate the Site under the OU3 FFS.

The first item of business was to enter the plant and assess its condition after two years of shut down. Upon entry, it was evident that the building was flooded by a broken water pipe which continued to pour out water onto the plant's floor. This event likely occurred during periods of extremely cold weather experienced in the area during January 2018. EPA estimated that roughly nine inches of water was on the plant floor. The plant's electricity had been shut off, but the water main was still open.

Mr. Michael Mercurio, Superintendent of Public Works for the Village of Sidney, was contacted about the situation. He arrived at the Site with some of his staff and proceeded to shut off the water main. The water leakage from the broken pipe ceased shortly thereafter. The Village of Sidney also provided a submersible pump to remove the large volume of water from the floor of the plant. This pumping took roughly four hours to complete. Once the floor was fairly clear, the plant was inspected as best possible. Much of the drywall in the facility was covered in mold. Much of the equipment on the floor was covered in grease and mud. However, it did appear that much of the plant's operational parts were well above the water level. The programmable logic control and electrical panels appeared extant.

Currently, EPA and the Army Corps are working out the logistics on cleaning up the P&T building. It is anticipated that any cleanup and/or replacement issues will be completed over the next few months so that the P&T system can become operational. EPA expects that the Site O&M and groundwater monitoring will be transferred to NYSDEC within a reasonable time frame.

The Site area was quite overgrown. Any grass cutting equipment was not operable as a result of the flooding. Members of the team proceeded to inspect the Site area and some of the monitoring and extraction wells, including those located on the ACCO Brands property. No issues with the wells were evident.

V. TECHNICAL ASSESSMENT

Question A: Is the remedy functioning as intended by the decision documents?

The soil and sediment remedies (both OU1 and OU2) addressed contaminated soils and sediments through excavation and treatment. Activities are completed and ICs are in the process of being implemented, in the interim, site use is consistent with industrial/commercial. The OU2 groundwater extraction and treatment is currently not operating and groundwater samples have been limited to an ongoing OU3 investigation effort. Additional groundwater data needs to be collected to determine if the plume remains on-site and downgradient wells remain below action levels.

The remedy selected in the 1994 OU1 ROD addressed contaminated soils in the area where GCL operated its facility and called for the excavation and ex-situ treatment of contaminated soils and sediments. At the completion of remedial activities in August 2000, 109,000 tons of soil, sediment, and debris were excavated and thermally treated. Excavations were replaced with treated soils and clean soils brought from off-site sources. Contaminants in soils were reduced to levels which are protective of human health and environment and to allow continued commercial/industrial use of the property.

The remedy selected in the 1995 OU2 ROD addressed groundwater, surface water and soils/sediments on the remainder of the Site. The remedy called for groundwater extraction, on-site treatment of groundwater contaminated with organic compounds, discharge of treated groundwater to a local creek and excavation and treatment of contaminated sediments by means of thermal desorption. The construction of the pump and treat system was completed in July of 2004 and was in continuous operation from January 2006 until August 2016. The P&T plant operations were suspended at the end of the 10-year LTRA period. Until August 2016, contaminated groundwater had been contained by the on-site P&T system. Since the plant shutdown, there has been no groundwater sampling; therefore, the current state of the plume containment is unknown.

Groundwater sampling events in 2013 and 2014 demonstrated concentrations in off-site wells and extraction wells are generally below action levels and have displayed decreasing or stable trends. However, samples have not been collected since 2014 and the groundwater extraction and treatment system has been shut down since 2016, making it unclear if downgradient wells remain below action levels. It is recommended that groundwater sampling be re-instituted to confirm that the plume has not migrated.

Dissolved phase PAHs and BTEX persist in the groundwater near source area MW-3 wells and are highest in the intermediate overburden zone, an indication that source material, including NAPL, remains in the soils and shallow aquifer and continues to affect groundwater in the adjacent area. Long-term water-quality monitoring, in addition to a future FFS for OU3, will be utilized to assess whether groundwater restoration will be achievable within the core area of the plume and/or whether additional remedial actions should be taken to address the source (NAPL) to assist in restoring the aquifer in the source area.

The groundwater P&T system will be restarted after the system is rehabilitated. In addition, it is recommended that 1,4 dioxane be included the sampling events to determine if concentrations found in influent and effluent samples are site related or from upgradient NYSDEC lead remediation efforts.

All the ICs are not in place but efforts are underway to implement them both on the GCL property, as well as downgradient on the ACCO Brands and CMX properties. In the interim, for the GCL property, EPA has been relying on the current industrial/commercial zoning and the

Village of Sidney Code which restricts the installation of private drinking water wells. Efforts are currently underway to secure environmental easements and/or restrictive covenants, memorializing the ICs. The ACCO Brands and CMX properties are not themselves contaminated; however, the groundwater plume that underlies them is. Extraction wells and associated piping and monitoring wells associated with the Site activities are located on these properties. EPA is seeking to establish easements on these properties would 1) restrict activities which could affect the integrity of the Site remedy, 2) ensure continued access to the associated parts of the ongoing P&T system, 3) address any potential vapor intrusion (VI) concerns and 4) limit the future use of the property to industrial/commercial uses.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy selection still valid?

The exposure assumptions, toxicity data, cleanup levels and remedial action objectives for OU1 and OU2 are still valid. Additional source materials are present and will be addressed as in OU3.

The baseline HHRA evaluated the health effects which could potentially result from direct contact with soils, surface water and sediments by site trespassers, direct contact with groundwater and soils by off-site residents and direct contact with soils by on-site workers. The exposure assumptions and toxicity values that were used to estimate potential cancer risks and noncancer hazards for these pathways in the 1994 and 1995 RODs followed the Superfund risk assessment process at the time and remain valid. Toxicity data for several of the COCs have been updated since the time of remedy selection, however the new data and associated screening values do not impact the remedy selection or cleanup levels.

The OU1 ROD established cleanup goals for the individual PAHs that were considered COCs for the site and included benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h) anthracene, and indeno(12,3-c,d)pyrene, as well as a general cleanup goal of 500 mg/kg for total PAHs. Post-ex soil data and new confirmatory soil samples were reviewed in a 2013 supplemental risk evaluation which concluded that risks were within the acceptable range for future site and construction workers. Any current site user (*e.g.*, treatment plant worker or trespasser) would have more infrequent exposures, and, thereby, lower risks than these future receptors. Although the risks were in the acceptable range, the presence of contamination at depth necessitates that care be taken should construction occur at the site in the future.

Currently, the property is zoned as industrial/commercial and is expected to remain as such. Since there are no private drinking water wells near the Site and the community is on a public water supply, there is no direct exposure to contaminated groundwater.

One exposure pathway not considered in the original risk assessments for the Site is VI, which is evaluated when soils and/or groundwater are known or suspected to contain VOCs. Since groundwater remains contaminated in proximity to the downgradient ACCO building, a VI investigation was performed in the building in March 2009 and determined that no further VI evaluation was necessary for the building. It is unclear if and how the shallow plume has migrated since the P&T system was shut down; therefore, this pathway may need to be reevaluated. It is recommended that the next round of shallow groundwater data be evaluated to determine if additional VI sampling is warranted.

Concentrations of PAHs and benzene in soils and groundwater on-site continue to be present at levels that could cause VI with respect to any future development on the GCL property. Although there is currently no development expected on the Site property, any new construction should be evaluated for VI.

The ecological risk assessment (ERA) that was used to support the 2013 FYR remains valid and for this review. Although the ERA screening and toxicity values used to support the 1995 ROD may not necessarily reflect the current values, all sediments within Unalam Tributary, drainage ditches, wetlands and pond were excavated and clean soil was used as backfill. Furthermore, wetlands impacted by remedial activities were restored. As the additional work that has been/is being conducted is specific to groundwater and soils at depth, no additional changes to risk are expected to ecological receptors.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No

V. ISSUES/RECOMMENDATIONS AND FOLLOW-UP ACTIONS

OU(s): 1 and 2	**Issue Category**: Institutional Controls			
	Issue: Easements and/or restrictive covenants need to be implemented at the Site.			
	Recommendation: Implement ICs on GCL property and the downgradient ACCO Brands and CSM properties.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA	09/30/2020

OU(s): 2	**Issue Category:** Monitoring			
	Issue: Groundwater data has not been collected since 2014.			
	Recommendation: Collect groundwater data on-site and downgradient to determine nature and extent of contaminant plume, verify plume containment and determine if additional VI sampling at the ACCO building is needed.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA	December 2018

OU(s): 2	Issue Category: Operations and Maintenance			
	Issue: P&T Plant has not operated since 2016.			
	Recommendation: To restart P&T plant as soon as possible.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	EPA	EPA	March 2019

Other Findings

The process of transferring the Site O&M and groundwater monitoring from EPA to NYSDEC will be completed so that the normal P&T system operations can continue.

The OU3 FFS will address the NAPL contamination that has been found at the Site.

During the comprehensive groundwater sampling event, 1,4-dioxane should be added to the sampling parameters to assess if there an upgradient source, since, as stated above, it is not a COC at the Site.

VI. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)		
Include each individual OU protectiveness determination and statement. If you need to add more protectiveness determinations and statements for additional OUs, copy and paste the table below as many times as necessary to complete for each OU evaluated in the FYR report.		
Operable Unit: 1	*Protectiveness Determination:* Short-term Protective	*Addendum Due Date (if applicable):* Click here to enter date.
Protectiveness Statement: The remedy at OU1 currently protects human health and the environment because on-site soils have been excavated and thermally treated. However, in order for the remedy to be protective in the long-term, ICs need to be implemented.		

Operable Unit: 2	*Protectiveness Determination:* Short-term Protective	*Addendum Due Date (if applicable):* Click here to enter date.
Protectiveness Statement: The remedy for OU2 currently protects human health and the environment since no one is being exposed to groundwater contamination; however, in order for the remedy to be protective in the long-term, 1) ICs need to be implemented, 2) the P&T plant must resume operation and 3) groundwater monitoring must continue to ensure plume configuration has not changed since the P&T system was shut down.		

Sitewide Protectiveness Statement (if applicable)	
For sites that have achieved construction completion, enter a sitewide protectiveness determination and statement.	
Protectiveness Determination: Short-term Protective	*Addendum Due Date (if applicable):* Click here to enter date.
Protectiveness Statement: The remedies at OU1 and OU2 currently protect human health and the environment in the short-term. In order to be protective in the long-term, 1) ICs need to be implemented, 2) the P&T plant must resume operation and 3) groundwater monitoring must continue to ensure plume configuration has not changed since the P&T system was shut down.	

VII. NEXT FIVE-YEAR REVIEW

The next FYR report for the GCL Tie and Treating site is required five years from the completion date of this review.

APPENDIX A – TABLES

<u>Table 1</u> **Chronology of Site Events**	
Event	**Date(s)**
Accidental release of 30,000 gallons of creosote reported to NYSDEC	1986
EPA performed removal action	1991
Site placed on National Priorities List	1994
EPA conducted a remedial investigation/feasibility study (RI/FS) for OU1 and OU2	1993-94
Record of Decision for soil and debris (OU1)	1994
Record of Decision for groundwater (OU2)	1995
Remedial design for OU1 completed	1997
EPA remedial action for OU1 started	1998
EPA remedial action for OU1 completed	2000
EPA remedial design for OU2 completed	2001
EPA remedial action for OU2 started	2002
First five-year review	2003
EPA remedial action for OU2 completed	2004
Long-term response action (LTRA) officially beginning in October 2005*	2005
RSE report completed for the Site	2006
Second five-year review	2008
Vapor intrusion testing	2009
Third Five-Year Review	2013
Battelle performed their Supplemental Site Field Investigation Study	April 2016
Groundwater Extraction and Treatment Plant shut down	August 2016

*This is the official start because funding was not available in 2004 for continued operation of the system for LTRA

Table 2 **Documents, Data, and Information Reviewed in Completing the Five-Year Review**	
Document Title, Author	**Submittal Date**
Record of Decision (Soil Remediation – OU1), EPA	September 1994
Initial remedial investigation/feasibility study report, Ebasco Services	January 1995
Record of Decision (Groundwater remediation – OU2), EPA	March 1995
Remedial design for OU1, CDM	September 1997
Remedial action report for OU1, EPA	September 2000
Post excavation summary and grid	April 2000
Remedial design for OU2, EPA	October 2001
Five-year review report, EPA	September 2003
Remedial Action Report for OU2, EPA	September 2005
GCL groundwater report, CDM	May 2006
Remedial System Evaluation report, EPA	December 2006
GCL groundwater report, CDM	June 2007
Five-year review report, EPA	September 2008
Additional well installation trip report, Lockheed Martin	December 2008
Vapor intrusion report, Lockheed Martin	May 2009
Annual groundwater monitoring reports, HGL	2011 and 2012
Soil sampling trip report, EPA	April 2013
Five-Year Review Report	September 2013
Annual groundwater monitoring reports, KOMAN/Army Corps	September/October 2013; October 2014
GCL Tie and Treating Superfund Site Characterization and Remedial Options Evaluation, Battelle/EPA	July 2014
GCL Tie and Treating Superfund Site Supplemental Site Characterization, Battelle/EPA	December 2016

Table 3. Summary of Groundwater SVOC Detections in Excess of Action Level

Sample ID	Location(1)	Sampling Date	Concentration (µg/L)(2)							
			Acenaphthene (20)	Benzo(a) anthracene (50)	Benzo(a)pyrene (50)	Benzo(b) fluoranthene (50)	Chrysene (50)	Fluoranthene (50)1	Fluorene (50)	Naphthalene (10)
BC7L9	MW-17-16.5	4/13/2016	**160**	**2.5J**	5.0U	**1.4J**	**1.7J**	**24**	**120**	**3,200**
BC7M0	MW-17-30	4/13/2016	**5.4**	4.9U	4.9U	4.9U	4.9U	4.9U	**4.7J**	**440**
BC7M2	MW-17-50	4/14/2016	**34**	4.9U	4.9U	4.9U	4.9U	4.9U	4.9U	**77**
BC7M3	MW-17-60	4/14/2015	**730**	**170**	**66**	**100**	**120**	**780**	**540**	**13,000**
BC7M6	MW-17-91	4/28/2016	**65**	5.0U	5.0U	5.0U	5.0U	**10**	**54**	**1,100**
BC7M7	MW-17-96	4/28/2016	**47**	5.0U	5.0U	5.0U	5.0U	**8.7**	**40**	**680**
BC7N9	MW-18-95	4/21/2016	**17**	5.0U	5.0U	5.0U	5.0U	5.0U	**1.3J**	**57**
BC7P2	MW-18-110.5	4/28/2016	**110**	5.0U	5.0U	5.0U	5.0U	**17**	**62**	**580**
BC7P3	MW-18-129	4/28/2016	**120**	**1.7J**	5.0U	5.0U	5.0U	**22**	**64**	**630**
BC7S7(3)	MW-18-129	4/28/2016	**110**	**1.9J**	5.0U	5.0U	**1.2J**	**23**	**65**	**610**
BC7P9	MW-19-40	4/15/2016	**2.5J**	5.0U	5.0U	5.0U	5.0U	**1.4J**	**2.9J**	**33**
BC7Q0	MW-19-50	4/15/2016	**11**	5.6U	5.6U	5.6U	5.6U	**1.7J**	**8.7**	**340**
BC7Q1	MW-19-60	4/15/2016	**57**	5.0U	5.0U	5.0U	5.0U	**12**	**48**	**4,200**
BC7Q2	MW-19-68.5	4/15/2016	**54**	4.9U	4.9U	4.9U	4.9U	**15**	**51**	**1,300**
BC7R8	MW-20-94	4/27/2016	**33**	5.0U	5.0U	5.0U	5.0U	**2.3J**	**19**	**190**
BC7R9	MW-20-99.5	4/27/2016	**64**	5.0U	5.0U	5.0U	5.0U	**6.8**	**39**	**350**
BC7S8(3)	MW-20-99.5	4/27/2016	**62**	5.0U	5.0U	5.0U	5.0U	**6.8**	**39**	**390**

- Yellow shading indicates exceedance of action level
- Bold numerals indicate detected (and estimated J value) concentration

J – Estimated value

U – Undetected

(1) The Site Action Limit (µg/L) is in parenthesis immediately beneath the name of each COC.

Table 4. Summary of Groundwater Sample VOC Detections in Excess of Action Level

Sample ID	Location[1]	Sample Date	Concentration (µg/L)[2] Benzene (AL = 1)	Ethylbenzene (AL = 5)	m,p-Xylene (AL = 5)	o-Xylene (AL = 5)	Toluene (AL = 5)
BC7L9	MW-17-16.5	4/13/16	**1.3J**	**38**	**89**	**45**	**7.8**
BC7M0	MW-17-30	4/13/16	**4.0J**	**12J**	**15J**	**10J**	**1.7J**
BC7M1	MW-17-40	4/14/16	**28J+**	**16J+**	**30J+**	**18J+**	**13J+**
BC7M2	MW-17-50	4/14/16	**2.1J**	**4.6J**	**3.7J**	**4.5J**	**3.5J**
BC7M3	MW-17-60	4/14/16	**23**	**190**	**420**	**180**	**150**
BC7M6	MW-17-91	4/28/16	5.0U(3)	**1.5J**	**6.5**	**2.9J**	**1.1J**
BC7M7	MW-17-96	4/28/16	5.0U(3)	**1.4J**	**5.9**	**2.7J**	**1.0J**
BC7N4	MW-18-30	4/18/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7N6	MW-18-50	4/19/16	**1.2J-**	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7N7	MW-18-59	4/19/16	5.0R(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7S6(4)	MW-18-59	4/19/16	5.0R(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7N8	MW-18-85	4/21/16	**1.4J**	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7N9	MW-18-95	4/21/16	**1.4J**	5.0U(3)	**1.3J**	**2.2J**	5.0U(3))
BC7P2	MW-18-110.5	4/28/16	**2.7J**	**3.4J**	**17**	**10**	**2.6J**
BC7P3	MW-18-129	4/28/16	**2.4J**	**3.0J**	**14**	**9.2**	**2.3J**
BC7S7(4)	MW-18-129	4/28/16	**2.6J**	**3.1J**	**15**	**9.4**	**2.5J**
BC7P7	MW-19-20	4/15/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7P8	MW-19-30	4/15/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7S9(4)	MW-19-30	4/15/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7P9	MW-19-40	4/15/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7Q0	MW-19-50	4/15/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7Q1	MW-19-60	4/15/16	5.0U(3)	**2.3J**	**7.0**	**4.7J**	**3.2J**
BC7Q2	MW-19-68.5	4/15/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7Q3	MW-19-80	4/19/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7Q4	MW-19-86	4/28/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7S5(4)	MW-19-86	4/28/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7R1	MW-20-20	4/12/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7R2	MW-20-30	4/12/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7R3	MW-20-40	4/12/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7R4	MW-20-50	4/12/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7R5	MW-20-60	4/12/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)
BC7R6	MW-20-70	4/15/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	**23**
BC7R7	MW-20-80	4/15/16	5.0U(3)	5.0U(3)	5.0U(3)	5.0U(3)	**19**
BC7R8	MW-20-94	4/27/16	5.0U(3)	**1.1J**	**3.7J**	**1.9J**	5.0U(3)
BC7R9	MW-20-99.5	4/27/16	5.0U(3)	**1.8J**	**7.0**	**3.4J**	**1.6J**
BC7S8	MW-20-99.5	4/27/16	5.0U(3)	**2.0J**	**8.0**	**3.9J**	**1.6J**

- Yellow shading indicates exceedance of action level (AL)
- Bold numerals indicate detected (and estimated J value) concentration Note:

J – Estimated value
J+ – The result is an estimated quantity, but the result may be biased high J- – The result is an estimated quantity, but the result may be biased low R – Result rejected
U – Undetected
The Site Action Limit (µg/L) is in parenthesis immediately beneath the name of each COC.

Table 5. Summary of PAH Detections in Soil Samples

Sample ID	Location	Sample Date	Concentration (µg/kg)							
			Acenaphthene	Acenaphthylene	Anthracene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene
BC7J1	MW-17-1-15	4/13/16	**2,800**	**560**	**3,000**	**5,800**	**4,600**	**10,000**	**13,000**	**5,000**
BC7J2	MW-17-2-20	4/13/16	**530**	**120J**	**180J**	**1,100**	**650**	**1,600**	**1,700**	**620**
BC7J3	MW-17-3-25	4/13/16	**730**	**150J**	**320**	**1,500**	**880**	**980**	**2,300**	**840**
BC7J4	MW-17-4-35	4/13/16	210U	210U	210U	210U	210U	**68J**	210U	210U
BC7J5	MW-17-5-47	4/13/16	**960**	**180J**	**300**	**2,000**	**1,100**	**1,700**	**3,100**	**1,200**
BC7J6	MW-17-6-57	4/25/16	**140J**	190U	190U	**180J**	**140J**	**600**	**360**	**120J**
BC7J7	MW-18-1-25	4/18/16	220U	220U	220U	220U	220U	220U	220U	220U
BC7J8	MW-18-2-45	4/18/16	200U	200U	200U	200U	200U	200U	200U	200U
BC7J9	MW-18-3-59	4/18/16	210U	210U	210U	210U	210U	210U	210U	210U
BC7K0	MW-18-4-70	4/21/16	190U	190U	190U	190U	190U	190U	190U	190U
BC7K1	MW-18-5-90	4/21/16	190U	190U	190U	190U	190U	190U	190U	190U
BC7K2	MW-17-7-67	4/25/16	**42J**	190U	190U	**69J**	**38J**	**120J**	**130J**	**51J**
BC7K3	MW-19-1-30	4/14/16	**140J**	200U	**96J**	**180J**	**140J**	**2,600**	**310**	**110J**
BC7K4	MW-19-2-50	4/15/16	200U	200U	200U	200U	200U	**48J**	200U	200U
BC7K5	MW-19-3-70	4/18/16	180U	180U	180U	180U	180U	180U	180U	180U
BC7K9	MW-20-1-27	4/12/16	210U	210U	210U	210U	210U	210U	210U	210U
BC7L0	MW-20-2-50	4/14/16	180U	180U	180U	180U	180U	180U	180U	180U

Bold numerals indicate detected (and estimated J value) concentrations

APPENDIX B – FIGURES

Figure 1: Site Map

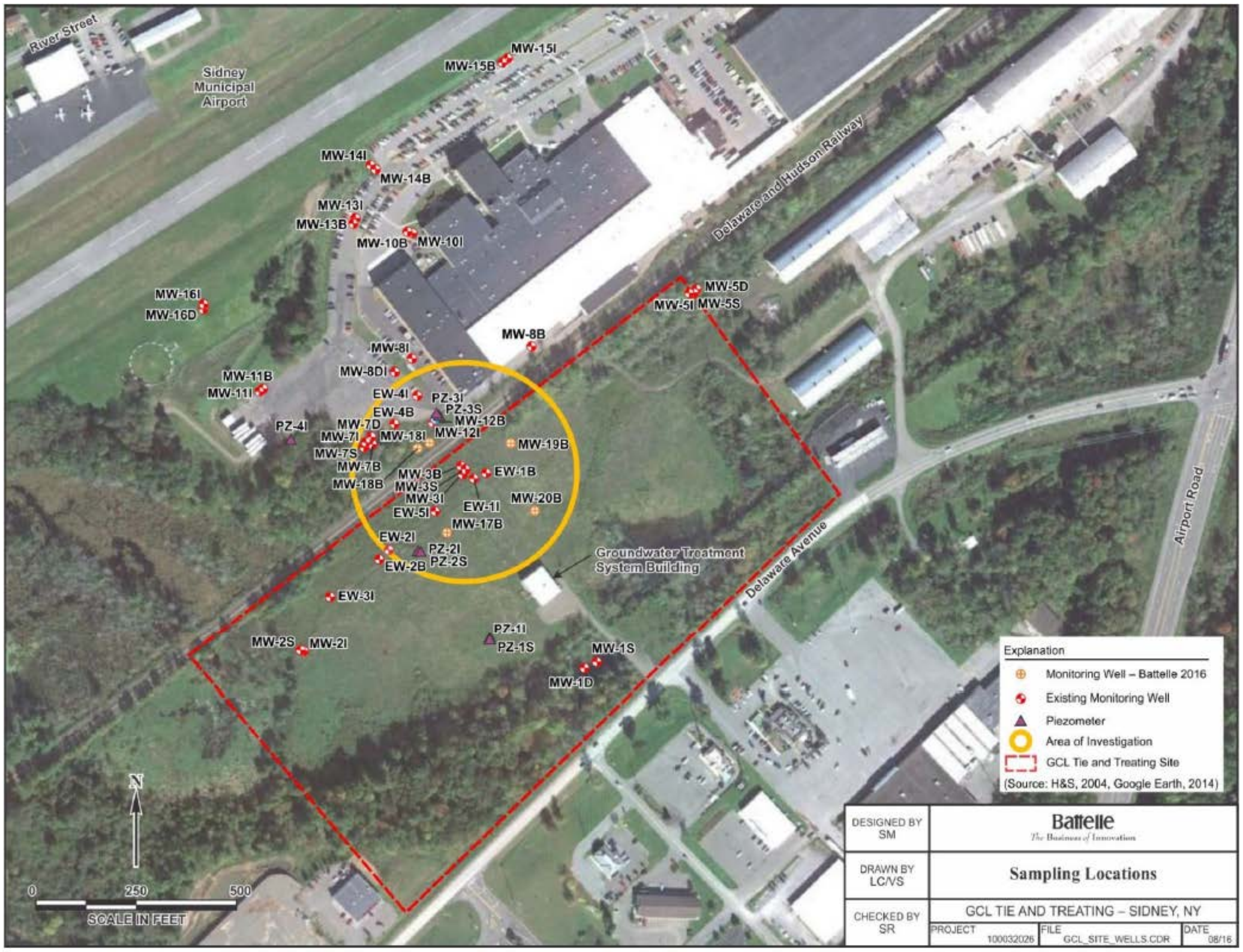

Figure 2: MW-3S PAH Trends to October 2014

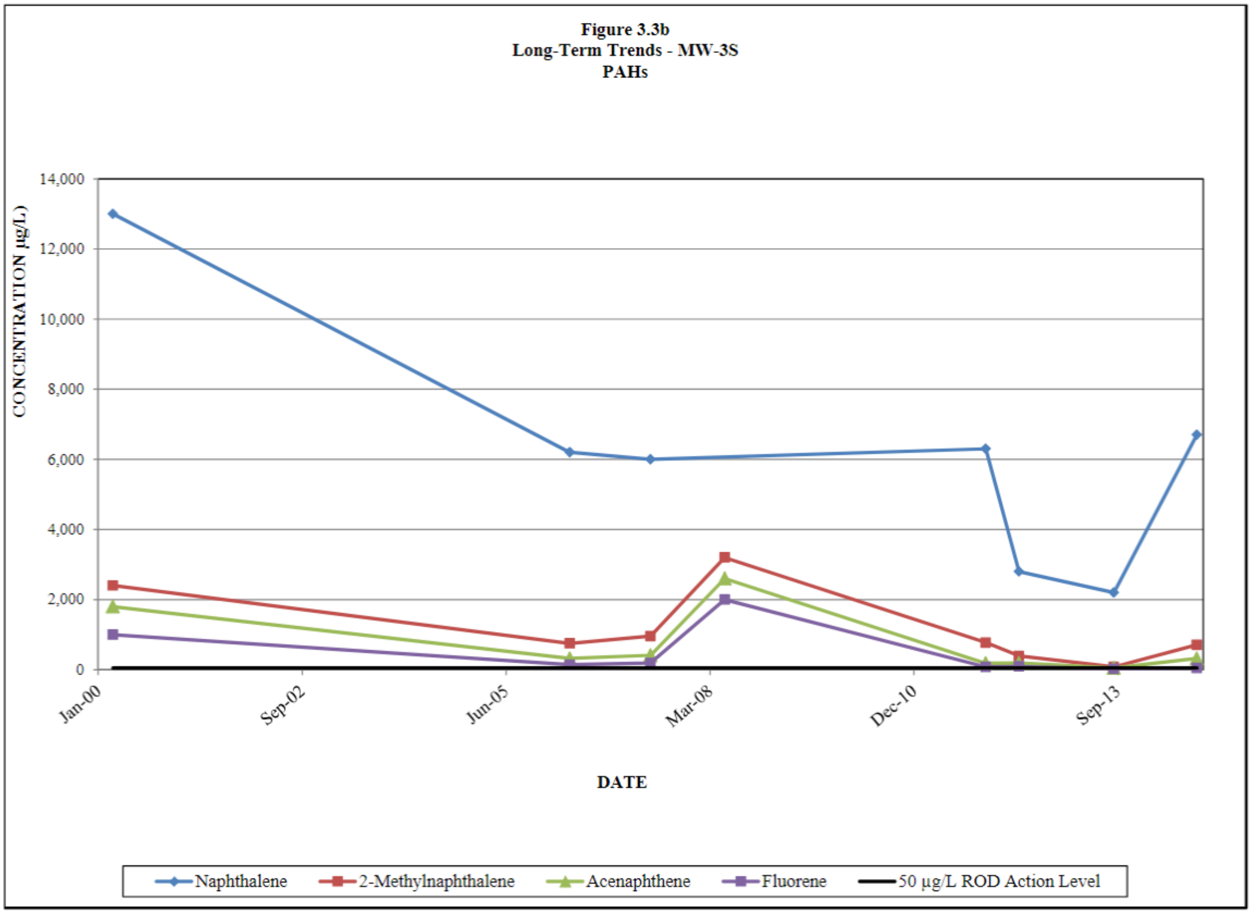

Figure 3A: MW-3I BTEX Trends to October 2014

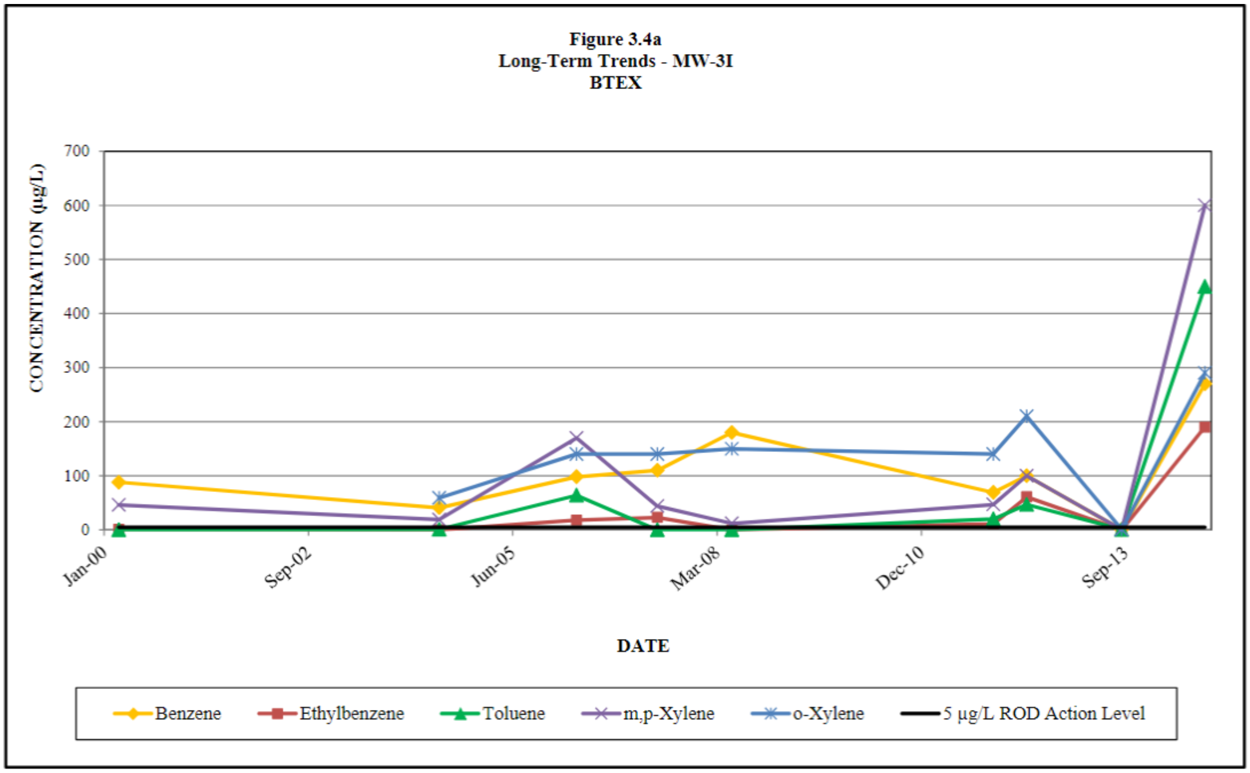

Figure 3B: MW-3I PAH Trends to October 2014

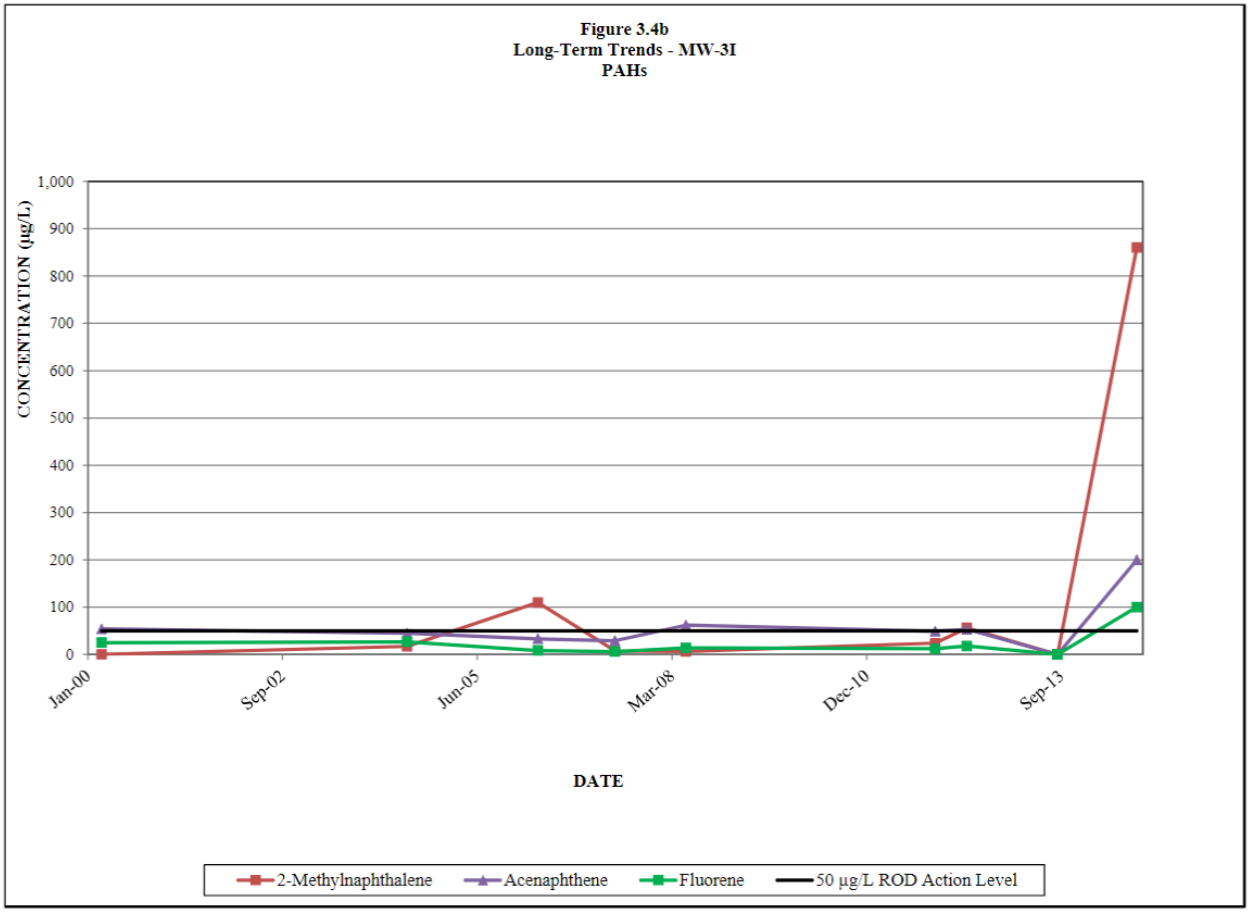

Figure 4: MW-3B BTEX Trends to October 2014

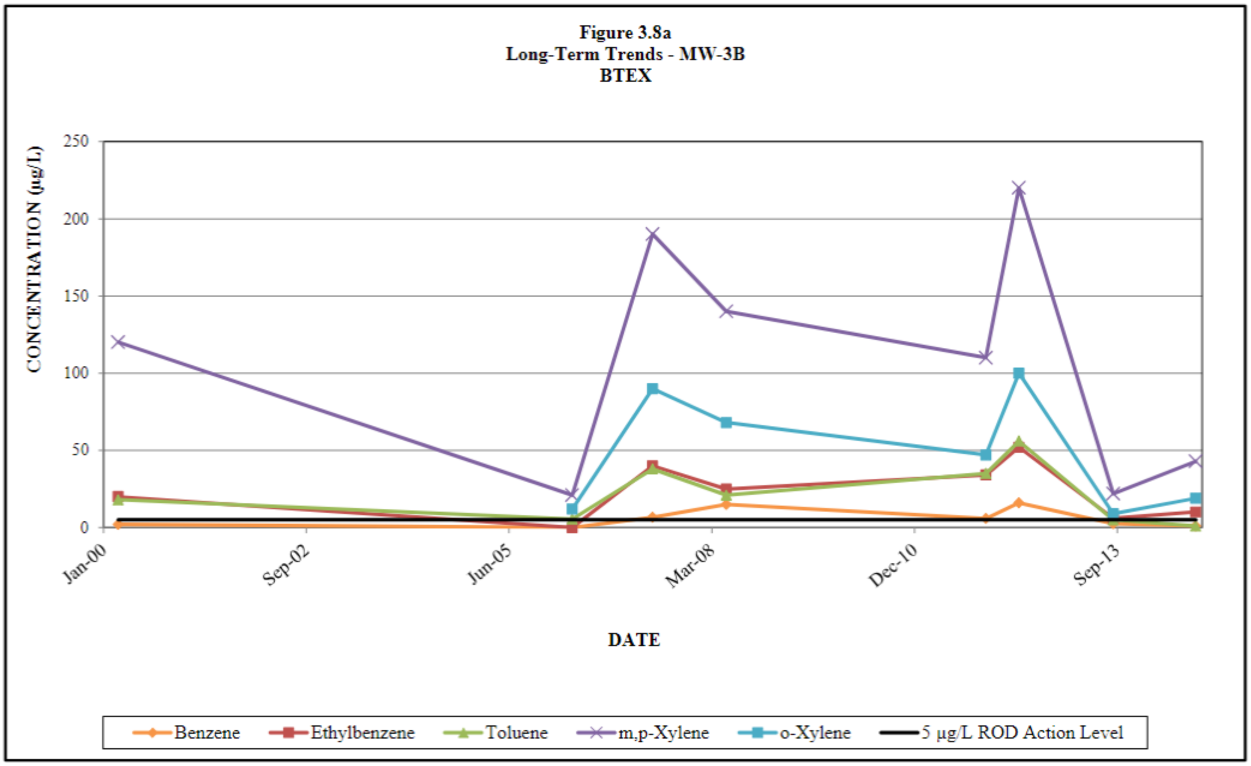

Figure 5: MW-7D PAH Trends to October 2014