



**Department of
Environmental
Conservation**

FINAL STATEMENT OF BASIS CORRECTIVE MEASURES SELECTION

Operable Unit 02

Solid Waste Management Units S-18b/c, P-9, P-18

Tecumseh Redevelopment, Inc.
Former Bethlehem Steel Corporation
DEC Site No. 915009
EPA ID No. NYD002134880
City of Lackawanna, Erie County

June 2015

**PREPARED BY
DIVISION OF ENVIRONMENTAL REMEDIATION**

DECLARATION STATEMENT – STATEMENT OF BASIS FINAL CORRECTIVE MEASURES SELECTION

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Statement of Purpose and Basis

This document presents the remedy for Operable Unit 02 Solid Waste Management Units S-18b/c, P-9, and P-18 of the Tecumseh Redevelopment Inc. Site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 373.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for Operable Unit Number: 02 of the Tecumseh Redevelopment Inc. Site and the public's input to the proposed remedy presented by the Department. Comments from the public are addressed in the Responsiveness Summary provided in Appendix A of the Statement of Basis. A listing of the documents included as a part of the Administrative Record is provided in Appendix B of the Statement of Basis.

Description of Selected Remedy

The proposed remedy addresses historic disposal of waste at the site. The releases are associated with historic iron and steel-making operations that occurred during Bethlehem Steel Corporation's ownership of the site.

The elements of the selected remedy are as follows:

- Soil and fill in the OU02 SWMUs containing contaminants at levels exceeding industrial use cleanup objectives (as per 6NYCRR Part 375-6.8) will be

stabilized, removed, and consolidated in another part of the site (within Operable Unit 03). The OU03 containment system includes a slurry wall; leachate/groundwater extraction and treatment; an engineered cap/cover; and, continuing operation, monitoring and maintenance.

- SWMU OU02 removal areas will be backfilled with material that will meet the requirements for the identified site use as set forth in 6NYCRR Part 375-6.7(d).
- In conjunction with a future site-wide remedy decision, a Site Management Plan will be required that will include institutional and engineering controls as may be necessary for contaminated media that may remain at the OU02 SWMU locations (S-18b/c, P-9 and P-18).

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

June 23, 2015

Date



Robert W. Schick, P.E., Director
Division of Environmental Remediation

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SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for Operable Unit 02 Solid Waste Management Units (SWMUs) S-18b/c, P-9, and P-18 at the above referenced site. The disposal or release of hazardous substances at these SWMUs, as more fully described in this document, has contaminated various environmental media. The remedy is intended to attain the remedial action objectives identified for the protection of public health and the environment. This Statement of Basis (SB) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the remedy.

The New York State Hazardous Waste Management Program (also known as the RCRA Program) requires corrective action for releases of hazardous substances to the environment. This facility is subject to this regulatory program. The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Parts 373 (RCRA). This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repositories:

NYSDEC Region 9 Office
270 Michigan Avenue
Buffalo, NY 14203
Call 716-851-7220 for Appointment
Mr. Stanley Radon

Lackawanna Public Library
560 Ridge Road
Lackawanna, NY 14218
Call 716-823-0630

A public meeting was also conducted. At the meeting, findings from the site investigation and the corrective measures study were presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period was held, during which verbal or written comments were accepted on the proposed remedy.

Information about the comment period and citizen participation actions for this site is summarized in the Responsiveness Summary of the Statement of Basis (see Appendix A).

Receive Site Citizen Participation Information by Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at <http://www.dec.ny.gov/chemical/61092.html>.

SECTION 3: SITE DESCRIPTION AND HISTORY

Location - The Tecumseh Redevelopment Inc. (Tecumseh) site is located at the east end of Lake Erie, just south of the City of Buffalo. The site is located between NYS Route 5 and the lake, in Lackawanna. The SWMUs addressed by this Statement of Basis are located in the northern part of the site.

Site Features - The Tecumseh site is an irregular parcel which extends from south of Smokes Creek and to the Buffalo Outer Harbor on the north, and from the east end of Lake Erie to the Lackawanna Ship Canal. The site consists of approximately 468 acres, and has approximately 2 miles of shoreline along Lake Erie. Smokes Creek passes westward across the site where it discharges to Lake Erie. The Lackawanna Ship Canal, located towards the northern end of the

site, extends approximately 3,000 feet southward into the site from the Buffalo Harbor. The western portion of the site was created by the placement of slag-fill materials from iron and steel-making within an area that was formerly within the boundaries of Lake Erie. The site is mostly undeveloped, especially the western slag fill portion.

Current Zoning and Land Use - This area of the site is currently zoned for industrial use and is currently used for slag reclamation, coal handling facilities, wood recycling facilities, and groundwater treatment facilities. Renewable energy, e.g., wind turbines, are located along the shoreline. The majority of the land is vacant/undeveloped.

Past Use of the Site - The former Bethlehem Steel Corporation (BSC) property was used for iron and steel production since the beginning of the 20th century. Iron and steel-making operations were discontinued by the end of 1983, and by the mid-1990s, most of the steel-making facilities on the west side of Hamburg Turnpike (NYS Route 5) had been demolished. In September 2001, BSC's coke oven operation was terminated. While some buildings remain, most structures have been razed. The western portion, that includes approximately two miles of Lake Erie waterfront, consists of a considerable area of manmade land (~440 acres) where iron and steel making slag and plant wastes were disposed.

Operable Units/Solid Waste Management Unit (SWMU) Groups:

The site has been divided into operable units/SWMU groups. These groupings represent a portion of a remedial program for a site that for technical or administrative reasons can be addressed separately to investigate, eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. At this facility, 43 SWMUs and 5 watercourses were carried forward into the Corrective Measures Study/Feasibility Study phase wherein remedial alternatives were identified and evaluated. The proposed remedy under consideration in this document is specific to Operable Unit 02 (OU02), described below.

Many of the operable units described below consist of groupings of Solid Waste Management Units (SWMUs). To date, the following operable units have been designated:

OU01 (Site-wide) – This operable unit is being used to track site-wide issues. It is also being used to track the interim remedial measures noted below. A final remedy decision for this operable unit has not been made yet. The final remedy for OU01 will address groundwater and all remaining SWMUs that have not been specifically addressed in the OUs listed below.

OU01A (Smokes Creek Interim Remedial Measure) – This interim measure (sediment removal action) was undertaken to partly address severe contamination attributable to historical discharges from Bethlehem Steel operations. The lower 2,600 feet of Smokes Creek sediment was dredged in 2009, removing approximately 40,000 cubic yards of material. In addition to removing severely contaminated material this action also improved the hydraulic capacity of the stream, reducing flooding potential and need for

flood insurance in a nearby, upstream residential neighborhood. Some sediment contamination outside of the dredge area remains.

OU02 SWMUs S-18 (Subareas B/C), P-9, and P-18) – This operable unit is the subject of this Statement of Basis. These SWMUs are located in the slag fill area of the site. These SWMUs contain materials from historic coke-making and blast furnace operations.

OU03 (Acid Tar Pit SWMUs S-11, S-22 and S-24) - This is an area on the south side of Smokes Creek, near the mouth on Lake Erie, where coking tar wastes were disposed. Releases have impacted groundwater and the adjacent creek. In 2010 DEC selected a final remedy for this operable unit. Tecumseh is implementing the remedy. As a consequence of the remedy proposed for OU02 (the subject of this decision document) the remedy for OU03/Acid Tar Pit SWMUs is also being modified as described in Exhibit D (Explanation of Significant Differences).

OU04 (Coke Oven Area Groundwater) – This operable unit is specific to the groundwater in the former coke oven and coke oven byproduct processing area along the west side and near the southern end of the Ship Canal. A final remedy decision for this operable unit has not been made yet.

OU04A (Benzol Yard Interim Remedial Measure) – This is an interim measure (groundwater pump and treat system) for groundwater in an area located near the south end of the Ship Canal, where historic coke oven by-product operations (SWMU P-11) caused impacts to the groundwater, including releases of non-aqueous phase liquid (benzol oil). This measure has been operating since 2005.

The following SWMU groupings are also present at the site. Operable units will be formally designated when processing remedy decisions for these areas.

Zone 2 Slag Fill Area (south of Smokes Creek) - This area consists of SWMUs S-1 through S-8, S-20, S-21, S-27 and the area in between known as Zone 2. This area includes wastes such as: ammonia still lime sludge, oily mill scale, slag, spent pickle liquor, lime dust, and hydrogen sulfide stripper solution.

Zone 4 Slag Fill Area (north of Smokes Creek) - This area consists of SWMUs S-12 through S-19, S-23, S-25, S-28 and the area in between known as Zone 4. This area includes waste disposal such as: asbestos, tar decanter sludge, slag, spent pickle liquor, acid tar waste, and drums.

Coke Oven Area – The involves the other media (non-groundwater, as this is covered by OU04 above) in the former coke oven and coke oven byproduct processing area along the west side and near the southern end of the Ship Canal.

Support Operations (Tank Storage) Area - This area consists of SWMUs P-8, P-74, P-75, S-10 and S-24 and the area in between. This area includes wastes such as: waste oil, coal tar and tank bottoms, coke breeze, slag, and ammonia liquor.

Site Geology and Hydrogeology – The predominant feature of this Site is the wedge-shaped slag fill area that extends into Lake Erie. This area extends from the former lake shore an average of 1,300 feet westward, and now forms the eastern shoreline of Lake Erie. The site geology beneath the slag-fill layer consists lake and glacial sediments overlying shale or limestone bedrock. In order beneath the slag-fill, there is a sand layer with occasional peat deposits, lake clay/silt deposits, and glacial till overlying shale or limestone bedrock.

The depth to groundwater is variable and depends upon the topography, and can vary in depths ranging from about 10 to over 60 feet below ground surface. Groundwater generally flows toward Lake Erie, Smokes Creek, or the Lackawanna Ship Canal. Groundwater occurs within the fill and sand layers in the overburden and in the bedrock beneath the site.

A site location map is attached as Figure 1 and a facility map is attached as Figure 2.

SECTION 4: LAND USE

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, an alternative which allows for industrial use of the site was selected.

SECTION 5: ENFORCEMENT STATUS

The Tecumseh site is subject to hazardous waste treatment, storage, and disposal facility (TSDF) permitting requirements under New York State (NYS) hazardous waste regulations (6 NYCRR Part 373) and has RCRA EPA ID No. NYD053585667. Under this regulatory program, Tecumseh is responsible for implementing Corrective Action to address releases to the environment from solid waste management units and areas of concern (e.g., watercourses). On June 30, 2009 the Department and Tecumseh signed an Order on Consent (the “Order”) to complete a Corrective Measures Study (CMS) for the facility. The Order also required that Tecumseh provide financial assurance for completing RCRA closure, post-closure and corrective action requirements for the site. The remedy for OU02 will be implemented through a legally binding enforcement mechanism (DEC Order on Consent or DEC permit).

The property that includes OU02 is also listed on the DEC Registry of Inactive Hazardous Waste Disposal Sites (Site No. 915009-Bethlehem Steel) and is currently classified as a Class 2 site as defined in the associated 6NYCRR Part 375 regulations. This draft Statement of Basis will serve as the Proposed Remedial Action Plan for OU02.

SECTION 6: SITE CONTAMINATION

6.1 Summary of the Site Investigation

The corrective action process began with evaluations and investigations to identify potential areas of the site that may have been impacted by hazardous wastes and/or hazardous constituents. Based on the results of numerous phases of investigations, the Department has determined that hazardous substances are present in the material disposed in the OU02 SWMUs. The nature of these materials was characterized and evaluated to identify contaminants of concern, migration potential, engineering properties and stabilization options.

Environmental assessments and investigations for OU02 have focused on the SWMU material itself. As noted earlier, evaluation of surrounding areas and environmental media will be addressed through a separate remedy selection action that will be made at a later date. A brief summary of these assessments and investigations of the OU02 SWMUs is included in Exhibit A.

The analytical data collected for OU02 includes data for:

- Soil/SWMU Material
- Groundwater (S-18)

Other environmental media have been tested in the vicinity of the OU02 SWMUs, however, those media will be addressed through a separate remedy selection action that will be made at a later date.

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the site investigations were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: <http://www.dec.ny.gov/regulations/61794.html>

6.1.2 OU02 SWMU Investigation Results

The data have identified contaminants of concern. A “contaminant of concern” is a contaminant that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action (corrective measures). Based on the results, the Department determined that corrective measures were required to address the OU02 SWMU material. The

nature and extent of contamination and impacted environmental media are summarized in **Exhibit A**.

The contaminants of concern identified for the OU02 SWMUs are related to coking and steel-making operations and include:

- Lead
- Benzene
- Semi Volatile Organic Compounds (SVOCs)
- Arsenic
- Ammonia

As illustrated in **Exhibit A**, the contaminant(s) of concern exceed the cleanup objectives/guidance criteria for:

- Soil
- Groundwater

6.2 Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the OU02 SWMUs. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water. The reports listed in Appendix A present a more detailed discussion of existing and potential impacts from the site. A brief description of each SWMU is provided below.

6.2.1 SWMU S-18 Lime Dust and Kish Landfill (S-18 Sub-areas B and C)

SWMU S-18 Sub-areas B and C are the Lime Dust and Kish Landfill areas, respectively (note that this SB does not address SWMUS-18 Sub-area A). Material in Sub-areas B and C are basic oxygen furnace process-lime dust (calcium oxide) and kish (consisting principally of carbon fines associated with the site's historic steel-making operations) that were disposed in an unlined area. The two sub-areas are estimated to contain approximately 400 CY of material. The primary contaminant of concern for S-18 Sub-areas B and C is lead. Testing has shown the potential for lead to leach from this material. The SWMU material is exposed on the ground surface and currently has no controls or cover system to contain the material or reduce the leaching potential. Sub-areas B and C are the subject of this SB.

The contents of the remainder of the SWMU (i.e., Sub-area A) as well as the groundwater in the vicinity of SWMU S-18 will be addressed through a separate remedy selection action that will be made at a later date.

6.2.2 SWMU P-9 Tar Decanter Sludge Pit

SWMU P-9 is an abandoned Tar Decanter Sludge Pit near the former Ball Mill (P-10), and is located west of the Ship Canal near the northern end of the site. The SWMU P-9 consists of a

below grade reinforced rectangular concrete pit that was decommissioned and backfilled in 1960. The tar was associated with coke-making byproduct recovery operations. Borings showed that the bottom of the pit is approximately 15 feet below grade. P-9 contains an estimated 1,000 CY of material. Most of the fill is slag, but near the bottom the material includes residual tar from historic site operations.

The primary contaminant of concern for P-9 is benzene. Semi-volatile organic compounds (SVOCs) are also present in this material at elevated concentrations. Testing has shown the potential for benzene to leach from this material. The SWMU material is exposed on the ground surface and currently has no controls or cover system to contain the material or reduce the leaching potential.

Other environmental media have been tested in the vicinity of SWMU P-9 however, those media will be addressed through a separate remedy selection action that will be made at a later date.

6.2.3 SWMU P-18 Hot and Cold Wells

SWMU P-18 consists of two water filled, steel lined basins (Hot and Cold Wells) related to the former Blast Furnace (steel-making) Cooling Towers. These cooling towers served as the wastewater treatment system for the blast furnace operations' exhaust gas cleaning system. SWMU P-18 is located adjacent to the Gateway Metroport Ship Canal. The Cold Well (SWMU P-18A) is located at the southwest corner of the Canal. The Hot Well area (P-18B) is located south of the Canal. The Hot and Cold Wells consist of below grade water-filled sheet pile lined containments that were nominally 39 feet deep according to Bethlehem Steel design drawings. The Hot Well is an irregular shape measuring approximately 130 feet across the longest section and 16 feet across the narrowest section. The Cold Well is rectangular in shape measuring approximately 173 feet long by 23 feet wide. The Hot and Cold Wells have not received any wastewater since 1983 when the blast furnaces were shut down; water now contained within the wells is a combination of blast furnace wastewater, accumulated precipitation and possibly groundwater seepage. SWMU P-18 is underlain by low-permeability soils (over 30 feet of lacustrine clays and dense glacial till) and surrounded by steel sheet piling walls keyed into the bedrock. Based on coring within these wells, the estimated volume of solid residuals in the Cold Well is approximately 3,360 CY and approximately 3,850 CY in the Hot Well, for a total residual volume of approximately 7,200 CY for SWMU P-18 (A and B).

The primary contaminant of concern for SWMU P-18 is lead. Testing has shown the potential for lead to leach from the residual solids. These solids material is covered by overlying water that has accumulated in the well (likely from surface run-off, groundwater discharge and possible leakage from the abutting ship canal). The overlying water was tested and shown to meet NYS groundwater standards. SWMU P-18 currently has no controls or cover system to contain the material or reduce the leaching potential.

Other environmental media have been tested in the vicinity of the OU02 SWMUs, however, those media will be addressed through a separate remedy selection action that will be made at a later date.

6.3 Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to OU02 site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure*.

The site is not completely fenced, and persons who enter the site could contact contaminants in the soil by walking on the site, digging or otherwise disturbing the soil. People are not expected to come into direct contact with contaminated groundwater unless they dig below the ground surface. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because there are no occupied on-site buildings, inhalation of site contaminants in indoor air due to soil vapor intrusion does not represent a concern for the site in its current condition. However, the potential exists for the inhalation of site contaminants due to soil vapor intrusion for any future on-site development.

6.4 Summary of the Remediation Objectives

The objectives for the corrective measures have been established through the remedy selection process. The goal of the corrective measures is to protect public health and the environment. The remedial action objectives for OU02 are:

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or Surface water contamination.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

To be selected, the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies, or resource recovery technologies to the maximum extent practicable. The remedy must address potential routes of exposure to humans and the environment and attain the cleanup objectives identified above. Potential remedial alternatives for the OU02 were

identified, screened, and evaluated in the Corrective Measures Study Report. A summary of the identification and evaluation of the alternatives that were considered for OU02 is provided in Exhibit C.

The elements of the selected remedy are:

1. Stabilization of OU02 SWMU Material, Consolidation and Isolation within the Acid Tar Pit (ATP) Containment System located in OU03

A final remedy was previously selected by DEC in 2010 for the Acid Tar Pit SWMU (OU03). This is an area on the south side of Smokes Creek, near its mouth on Lake Erie, where coking tar wastes were disposed. Releases were impacting groundwater and the adjacent creek. That remedy included installation of a slurry wall, consolidation of contaminated materials, and leachate/groundwater extraction with treatment. The remedy also includes placing an engineering cap over the containment area to minimize infiltration and reduce potential leaching of contaminants. Final capping is scheduled to be completed by the end of 2015.

The remedy for OU02 involves consolidating the solids from SWMUs S-18 (Sub-areas B and C), P-9 and P-18 within the Acid Tar Pit containment system. Since this change involves consolidating an additional approximately 8,600 CY of material into the ATP Containment System, it affects the previously selected Acid Tar Pit remedy. An Explanation of Significant Differences (ESD) has been prepared to document these changes to the Acid Tar Pit OU03 remedy and is included in Exhibit D.

The Acid Tar Pit OU03 remedy already includes a leachate extraction and treatment system. In conjunction with the remedy proposed for the additional SWMUs, the groundwater controls for the ATP will be enhanced to include extraction points between the Acid Tar Pit and Smokes Creek, outside of the slurry wall, to address groundwater contamination that had migrated historically from the acid tar pit area. These changes to the Acid Tar Pit remedy are more fully described in the ESD.

The Acid Tar Pit OU03 remedy already includes site management provisions (long-term operation, maintenance and monitoring requirements) for the consolidation area, and those provisions will continue, to ensure that the engineering controls of that remedy are maintained, operate properly, and are effective.

Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR Part 375-6.7(d).

In conjunction with a site-wide remedy decision that will be made in the future, a Site Management Plan will be required that will include institutional and engineering controls as may be necessary for contaminated media that may remain at the SWMUs S-18, P-9 and P-18 locations.

SWMU S-18 - The remedial approach for SWMU S-18 (specifically SWMU Sub-areas B and C – estimated 400 CY) includes in-place stabilization of the SWMU material using Portland cement, phosphoric acid or tri-sodium phosphate. The additive will be mechanically mixed with the residuals in Sub-areas B and C and water may be added to facilitate the mixing process and to control dust. The stabilized residuals will “cure” for at least 24 hours prior to testing. Confirmatory samples will be collected from the mixture to verify that the stabilization objectives have been achieved. Successfully stabilized residuals will be consolidated into the ATP Containment System. At SWMU S-18, perimeter and bottom slag/fill samples will be collected from the SWMU excavations and tested to ensure that all material SWMU with the potential to leach lead at >5 mg/L have been removed. This sampling will be performed to verify that the objectives have been attained. Other environmental media have been tested in the vicinity of SWMU S-18 however, that data will be addressed through a separate remedy selection action that will be made at a later date.

SWMU P-9 - The remedial approach for SWMU P-9 involves stabilizing the SWMU material (est. 1,000 CY) with a minimum 3% Portland cement and/or fly-ash within the SWMU. The stabilized material will “cure” for 24 hours and then tested. Samples will be tested for leachable benzene. If the stabilization criteria is not met (i.e., benzene leaches >0.5 mg/L), additional cement or fly-ash will be admixed. Once the stabilization criteria has been met, the material will be consolidated into the ATP Containment System. Once the SWMU material has been removed from SWMU P-9, the excavated area will be backfilled to grade with NYSDEC-approved backfill. (i.e., meeting ISCOs).

SWMU P-18 - The remedial approach for SWMU P-18 involves removal of the solid residuals using hydraulic or mechanical dredging, dewatering the residuals, stabilizing and solidifying the residuals so they can be consolidated into the ATP Containment System. The solid residuals would be dewatered and stabilized/solidified upon a temporary containment pad proximate to the SWMU. All water generated from this SWMU shall be treated prior to discharge. Stabilization and solidification tests demonstrated that Portland cement at concentrations equal or greater than 3% by weight can effectively control leaching of lead and also provides sufficient solidification/bearing strength. Verification testing will be performed to ensure that stabilization requirements are met, prior to consolidating the SWMU material into the ATP.

Once the residuals have been removed from one of the P-18 hot/cold wells, and the verification sampling has been completed and approved by the Department, the hot/cold well will be backfilled with NYSDEC-approved backfill. Backfilling will be done in a controlled manner to make sure that the containment structure does not overflow. The structures will be backfilled to existing grade, and the steel sheeting around the perimeter will be cut to existing grade. Any excess water that needs to be removed from the hot/cold wells during backfilling will be pre-treated (if necessary) and discharged under a temporary discharge permit with Erie County Sewer District 6.

Tecumseh is required to submit a design document for Department approval that incorporates all elements of solidification, stabilization, transportation, and consolidation of all material into the ATP.

2. Green Remediation - Green remediation principals and techniques will be implemented to the extent feasible in the site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gas and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste.



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SWMU_s S-18, P-9, P-18

LACKAWANNA, NEW YORK

PREPARED FOR

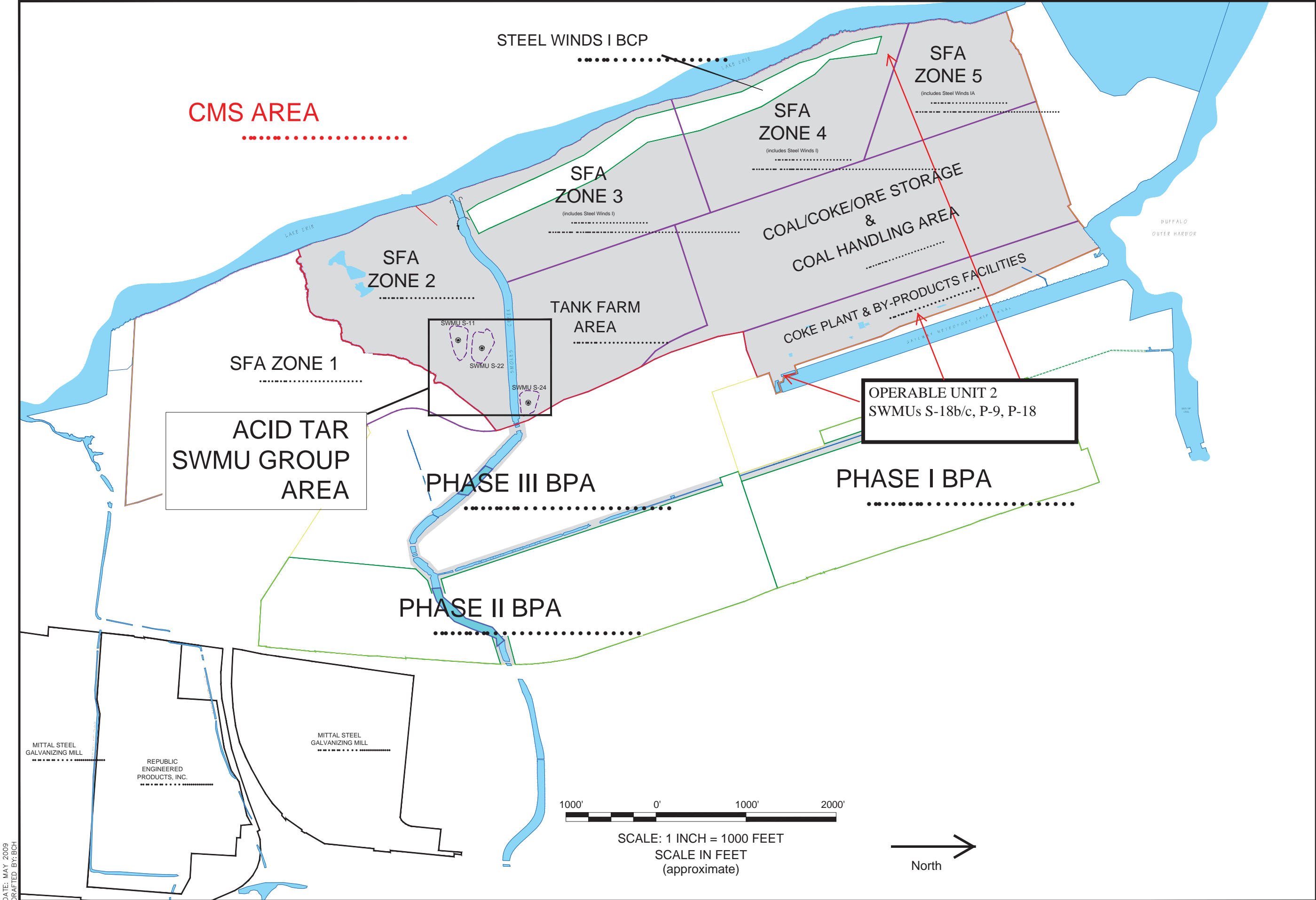
TECUMSEH REDEVELOPMENT INC.

PROJECT NO.: 0071-013-217

DATE: APRIL 2014

DRAFTED BY: BCH

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JOB NO.: 0071-009-213

SITE FEATURES - OPERABLE UNIT 2
CMS SITE WITH ACID TAR PITS SWMU GROUP

ACID TAR PITS SWMU GROUP
TECUMSEH REDEVELOPMENT SITE
LACKAWANNA, NEW YORK

PREPARED FOR
ARCELORMITTAL TECUMSEH REDEVELOPMENT, INC.

FIGURE 3

STATEMENT OF BASIS

Exhibits A through D

Operable Unit 02
Solid Waste Management Units S-18b/c, P-9, P-18

Tecumseh Redevelopment, Inc.
Former Bethlehem Steel Corporation Site
Site No. 915009
EPA ID No. NYD002134880
City of Lackawanna, Erie County
June 2015

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the site investigations for the SWMU material that were evaluated. Samples were collected to characterize the contamination and nature of the SWMU material. For the SWMU material, tables present the range of contamination found and compares the data with the applicable Standard, Criteria, or Guidance (SCGs) for the contaminants of concern for the SWMUs which are primarily benzene and lead.

Groundwater and soil in the areas surrounding the subject SWMUs are not addressed in this Statement of Basis. They will be addressed through a separate remedy selection action that will be made at a later date (note that a groundwater extraction and treatment system for SWMU P-11, located in the coke oven area near P-9 and P-18, has been operating since 2005 as an interim measure – see OU04A described above in the Statement of Basis).

Waste/Source Areas

Material in SWMUs P-9, P-18, and S-18 were evaluated to determine the suitability for consolidation into the ATP containment cell. The following are the results of the sampling, analysis, and bench-scale stabilization testing of the material contained within the three SWMUs.

SWMU P-9:

SWMU P-9 Sampling Results

The RFI data indicates that slag and coal were backfilled over SWMU P-9 over 1-2 feet of residual tar on the bottom of the tank. SWMU P-9 was subject to additional characterization in July 2014 for the Operational Unit OU-2 ATP SWMU Group Engineering Report which included drilling three borings (P-9-1-14, P-9-2-14, and P-9-3-14) into the unit. Residual samples were collected in two foot increments from ground surface to refusal which ranged between 14 and 16 feet below ground surface (fbgs), consistent with the record drawing depth of the decanter pit. In general, the upper 6 to 14 feet (average of 10 feet thick) is filled with slag/coke fines/coal with only small amounts of intermingled tar and the lower 1 to 10 feet (average of 5 feet thick) of the pit is tar with some slag. RFI testing of the tar residuals in the bottom of SWMU P-9 contained showed leachable benzene. Residuals collected in July 2014 of both the upper and lower intervals were analyzed for total benzene and leachable benzene. The upper material contained total benzene at concentrations from non-detect (ND) to 0.046 mg/kg. These upper fill samples did not contain detectable levels of leachable benzene. A sample of the lower material contained total benzene at 79 mg/kg and showed leachable benzene, consistent with the RFI results.

SWMU P-9 is located in coke byproducts recovery area (see Exhibit A Figure 1), near the Lackawanna Ship canal. Groundwater and soil in this area has been affected by releases from the adjacent Benzol Yard (SWMU P-11). Groundwater and soil in the area surrounding SWMU P-9 area are not addressed in this Statement of Basis. They will be addressed through a separate remedy selection action that will be made at a later date (note that a groundwater extraction and treatment system for P-11 has been operating since 2005 as an interim measure – see OU04A described above in Section 3 of the Statement of Basis).

All material from P-9 will be removed and consolidated into the ATP. SWMU P-9 will be backfilled with NYSDEC-approved backfill that meet ISCOs to grade.

SWMU S-18 (Sub-areas B and C)

SWMU S-18 Sampling Results

SWMU S-18 includes three sub-areas, Sub-area A, Sub-area B and Sub-area C based on analytical test results from the RFI and CMS sampling and testing (note that the contents of Sub-area A are outside the scope of the proposed remedy for Sub-areas B and C, and will be addressed through a subsequent remedy selection action).

Sub-areas B and C, shown on Exhibit A Figure 2, contain approximately 400 cubic yards (CY) of material that exhibits elevated concentrations of total (>industrial SCO) and leachable lead. Two near-surface samples from Sub-area B and three near-surface samples were collected from Sub-area C during the RFI. These samples were consolidated into one composite sample for bench-scale stabilization assessment. An untreated sample from the composite sample showed leachable lead at 21 milligrams per liter (mg/l).

The CMS provided delineation of the material with a total of 35 test pits that were excavated in January/February 2011. The CMS test pits revealed lime and Kish waste/fill extending up to 2 feet below surrounding grade with a distinct boundary from the underlying slag. Based on this vertical assessment, test pit samples were obtained from the 0 to 1 fbgs and 2 fbgs intervals at each test pit location. All 35 samples were analyzed for total lead for the 0 to 1 fbgs interval, six of which were selected for TCLP analysis. Thirteen of the 35 samples collected from the 0 to 2 fbgs interval were selected for total lead analysis based on elevated lead results within the 0 to 1 fbgs interval.

SWMU P-18 Blast Furnace Hot and Cold Wells

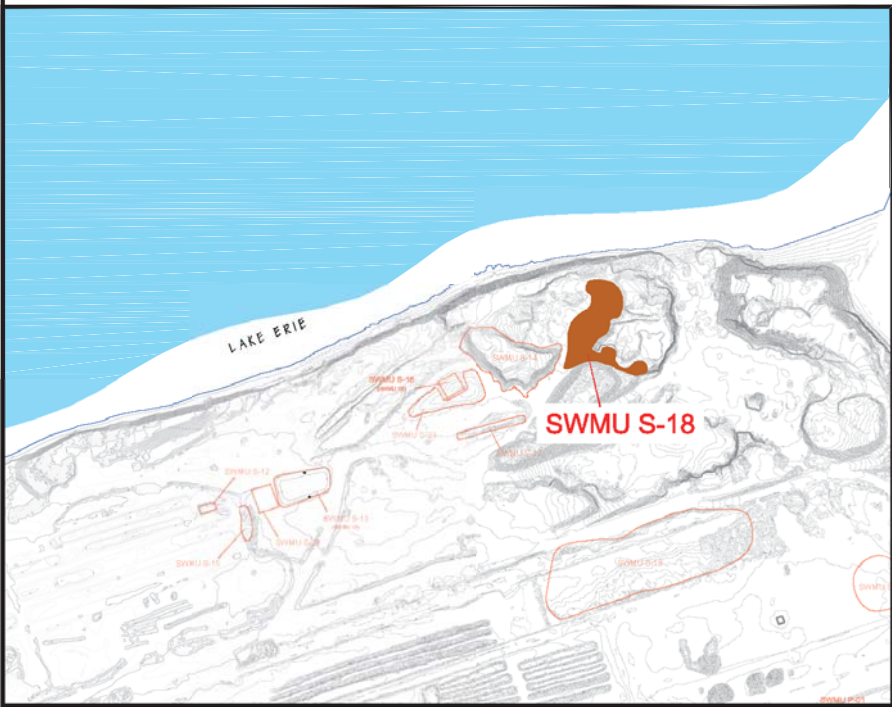
SWMU P-18 Sampling Results

The SWMU P-18 material exhibits elevated concentrations of total and leachable lead. VOCs, SVOCs, and metals were detected in the total constituent analyses of the SWMU material.

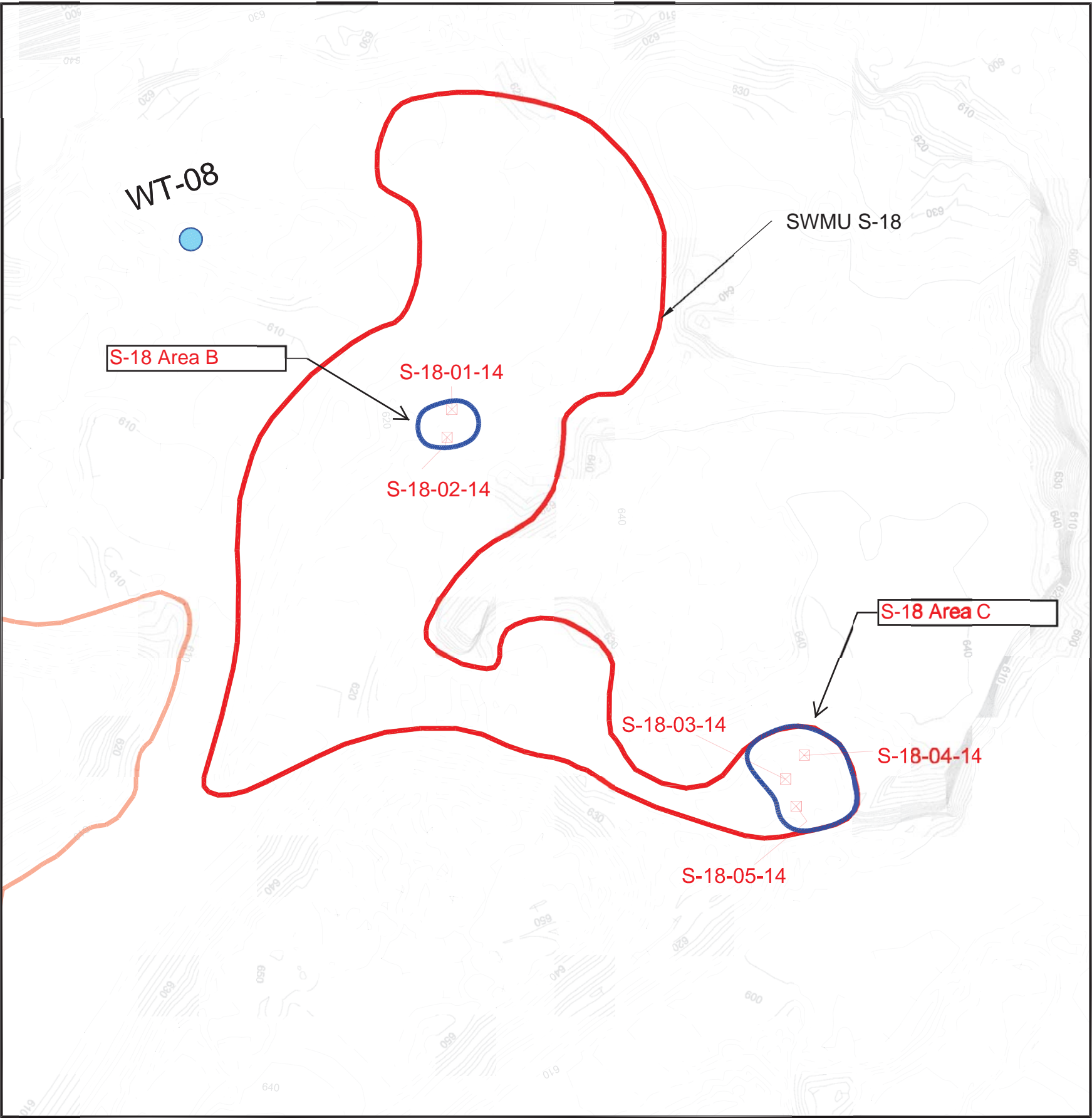
A considerable amount of water overlies the SWMU material. The water was tested to determine how it might need to be handled if dewatering is necessary to access the SWMU material. VOC and SVOC testing of the water did not detect any constituents other than acetone (acetone detections were below ambient water quality criteria). Five metals (antimony, arsenic, chromium, copper, and zinc), cyanide, and ammonia were detected. Antimony (0.0411 mg/l) was the highest reported metal concentration. Ammonia and cyanide were detected at concentrations of 0.159 mg/l and 0.008 mg/l, respectively.

Sediment/fill thickness was assessed by advancing 6 borings, identified as P-18-01-14 to P-18-06-14 (3 in the Cold Well and 3 in the Hot Well), through unconsolidated residuals to the native lacustrine clay deposit with a barge-mounted drill rig. Based on the borings, the estimated volume of solid residuals in the Cold Well is approximately 3,360 CY and approximately 3,850 CY in the Hot Well, for a combined total residual volume of approximately 7,200 CY for SWMU P-18 (A and B).

All material from P-18 will be removed and consolidated into the ATP. SWMU P-18 will be backfilled with NYSDEC-approved slag that meet ISCOs to grade. See Exhibit A Figure 3 for SWMU location.



GENERAL LOCATION MAP 1"= Approx. 1,000 FT



LEGEND:

- AOC BOUNDARY
- S-18-03-14
- OU2 TREATABILITY SAMPLE LOCATION



SCALE: 1 INCH = 50 FEET
SCALE IN FEET
(approximate)

SWMU S-18
AOC B & C SAMPLE LOCATIONS
OPERABLE UNIT 2
ATP WASTE CONSOLIDATION
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT, LLC



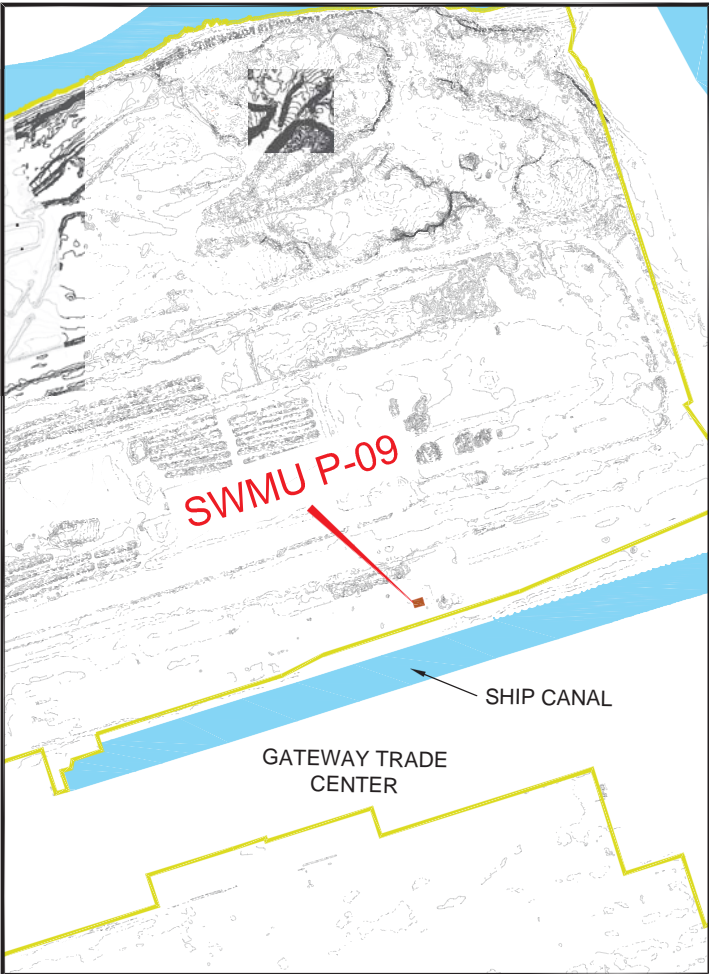
JOB NO.: 0071-013-217

FIGURE 4

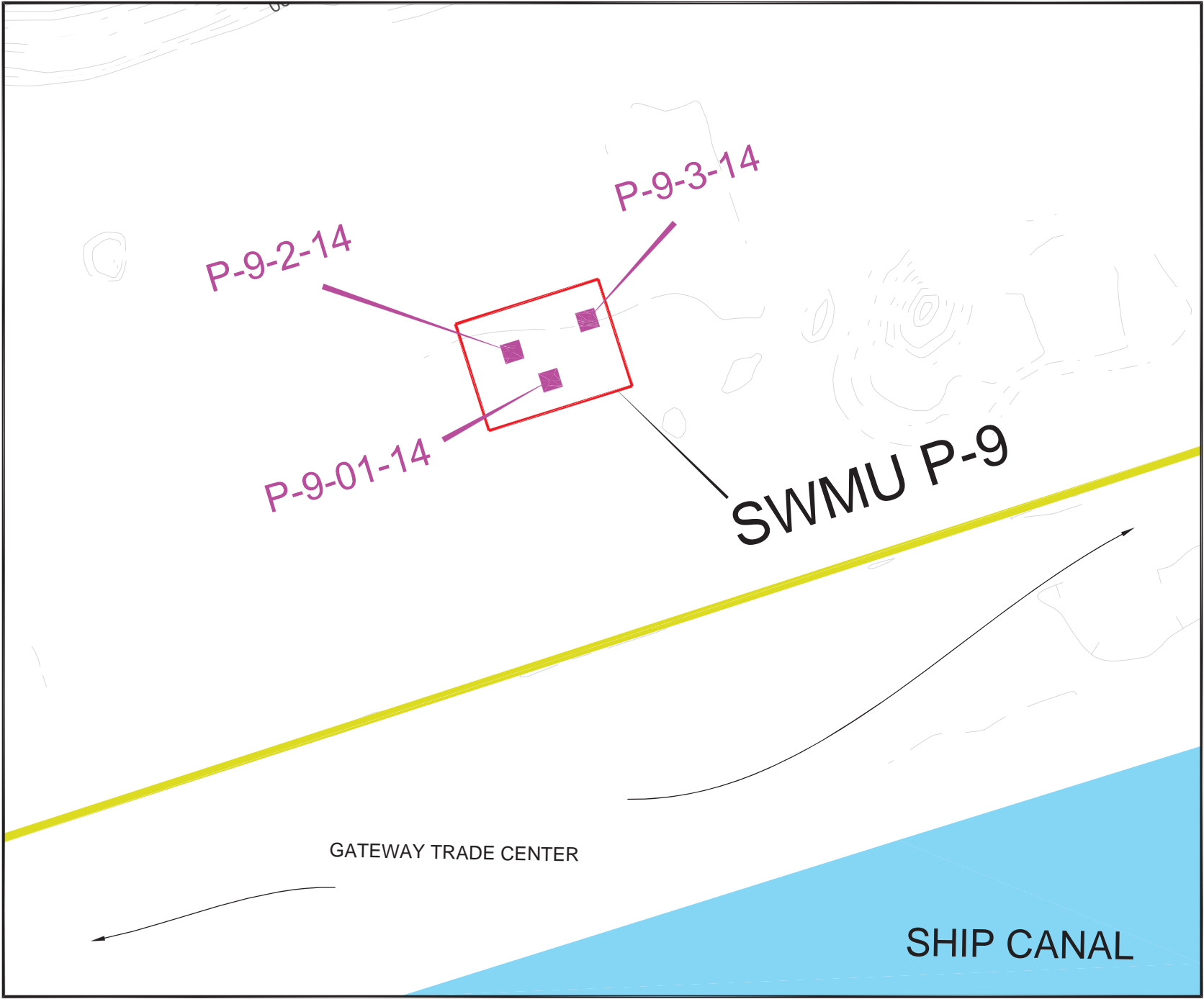
DISCLAIMER: THIS DRAWING PRINT IS LOANED FOR MUTUAL ASSISTANCE AND AS SUCH IS SUBJECT TO RECALL AT ANY TIME. INFORMATION CONTAINED HEREON IS NOT TO BE DISCLOSED OR REPRODUCED IN ANY FORM FOR THE BENEFIT OF PARTIES OTHER THAN NECESSARY SUBCONTRACTORS & SUPPLIERS WITHOUT THE WRITTEN CONSENT OF TURNKEY ENVIRONMENTAL RESTORATION, LLC.

F:\CAD\TurnKey\Tecumseh Redevelopment\Corrective Measures\OU 1 and OU 2\OU2 REPORT FIGURES\Figure 6. Site Sampling Locations P9.dwg

DATE: AUGUST 2014
DRAFTED BY: RFL

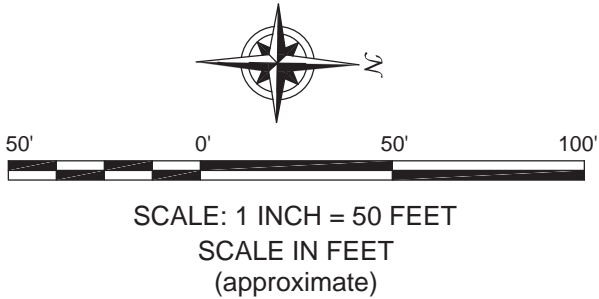


SITE LOCATION SCALE APPROX. 1= 1,000 FT



LEGEND:

- SWMU BOUNDARY
- PROPERTY BOUNDARY
- BORING LOCATION
JULY 2014



SWMU P-9 SAMPLING LOCATIONS
OPERABLE UNIT 2
ATP WASTE CONSOLIDATION
LACKAWANNA, NEW YORK

PREPARED FOR
TECUMSEH REDEVELOPMENT, LLC

2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0635



JOB NO.: 0071-013-217

FIGURE 6

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