WORK PLAN
FOCUSED REMEDIAL INVESTIGATION PHASE II
OPERABLE UNIT 1 (SITE 110)
TONAWANDA COKE SITE
3875 RIVER ROAD
TONAWANDA, NEW YORK

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ACRONYMS

Acronym	Definition	Acronym	Definition
bgs	Below ground surface	PCBs	Polychlorinated biphenyls
BTEX	Benzene, toluene, ethylbenzene, xylenes	PFAS	Per- and Polyfluoroalkyl Substances
CAMP	Community Air Monitoring Plan	PID	Photoionization detector
CLP	Contract Laboratory Program	PPE	Personal protective equipment
DOT	Department of Transportation	PVC	Polyvinyl chloride
FSP	Field Sampling Plan	QAPP	Quality Assurance Project Plan
HASP	Health and Safety Plan	RI	Remedial Investigation
HDPE	High-density polyethylene	RIWP	Remedial Investigation Work Plan
IDW	Investigation Derived Waste	SCG	Standards, Criteria, and Guidance
NAPL	Non-aqueous phase liquid	SCO	Soil Cleanup Objectives
NTU	Nephelometric turbidity unity	SVOC	Semi-volatile organic compound
NYCRR	New York Codes, Rules, and Regulations	TAL	Target Analyte List
NYSDEC	New York State Department of Environmental Conservation	TCC	Tonawanda Coke Corporation
		TCL	Target Compound List
NYSDOH	New York State Department of Health	TCLP	Toxicity Characteristic Leaching Procedure
OU-1	Operable Unit 1		
PAH	Polycyclic aromatic hydrocarbons	VOC	Volatile organic compound

1.0 INTRODUCTION

On behalf of Honeywell, Parsons has prepared this Focused Remedial Investigation Phase II Work Plan (Work Plan) to complete additional site investigation activities to address data gaps and supplement the Remedial Investigation (RI) for Operable Unit 1 (OU-1) of the Tonawanda Coke Site, also known as Site 110. Site 110 is a portion of the former Tonawanda Coke Corporation (TCC) facility located at 3875 River Road in Tonawanda, Erie County, New York (**Figure 1**).

There have been historical data gathering events at Sites 109 and 110 focused on on-site soils, groundwater, surface water, and drainage ditch soils. The scope of the Focused RI, completed in 2020 and 2021, was designed to address data gaps at Sites 109 and 110 identified through review of existing data. The 2020/2021 Focused RI scope included:

- Surface and subsurface soil investigation
- Groundwater investigation
- Drainage ditch soil investigation
- Surveying of all test pits, monitoring wells, and soil sampling locations

Focused RI activities were performed in accordance with the Remedial Investigation Work Plan (RIWP) and associated attachments, submitted to and approved by the New York State Department of Environmental Conservation (NYSDEC) (Parsons 2020). Results from these investigation activities are provided in the Draft RI Report (Parsons 2022) provided to NYSDEC in January of 2022. This Work Plan addresses Site 110 data gaps identified in the Draft RI Report and subsequent comments from NYSDEC. No data gaps were identified for Site 109.

2.0 SUMMARY OF FINDINGS FROM FOCUSED RI

A summary of the Site 110 nature and extent of impacts, conceptual site model, and data gaps based on the detailed results included in the Draft RI Report is provided below.

2.1 Nature and Extent of Impacts

Historical sample results and analytical data compiled as part of the Focused RI were compared to applicable standards, criteria, and guidance values (SCGs) for soil and groundwater to assess impacts and to develop an understanding of the nature and distribution of environmental impacts.

2.1.1 Surface and Subsurface Soil

Soil analytical results were compared to commercial use soil SCGs, which is consistent with anticipated future site use. Fill material consists of earthen materials mixed with coal, coke, coke manufacturing by-products, construction and demolition debris, and other debris. For convenience, references to soil and comparisons to soil cleanup objectives include fill, underlying native soils, and surface and subsurface materials that are non-soil fill, such as coal, breeze, and ash, as well as mixtures of these materials and soil.

Surface and subsurface soil concentrations of constituents exceeding Commercial SCGs are present throughout Site 110. The primary constituents exceeding SCGs are semi-volatile organic compounds (SVOCs), particularly polyaromatic hydrocarbons (PAHs). Localized volatile organic compound (VOC) exceedances of SCGs, primarily benzene, toluene, ethylbenzene, and xylene (BTEX) compounds, were also noted in samples from one monitoring well boring. Exceedances of SCGs for SVOCs occur primarily within fill from the surface to as deep as seven feet below ground surface (bgs). The deeper exceedances are associated with the elevated piles of fill on Site 110. Surface and subsurface tar is present in multiple locations on Site 110 but does the presence of these materials does not appear to impact soil quality in adjacent intervals.

2.1.2 Groundwater

Groundwater samples exceeded one or more SCGs in samples from all wells at Site 110. Exceedances of SCGs occur primarily for SVOCs (primarily PAHs), metals, and cyanide. Localized VOC exceedances of SCGs (primarily BTEX compounds) were also noted at one monitoring well. Metals exceedances of SCGs at Site 110 are likely primarily due to naturally occurring conditions.

Groundwater gradients across Site 110 are flat and slightly eastward. Groundwater occurs in a perched fill unit that is likely a series of pocketed saturated areas, some of which are connected, while others are isolated. A thick, low permeability clay layer is present beneath the fill, which prevents significant downward migration of shallow groundwater.

2.2 Conceptual Site Model

Results of both the prior investigations and the 2020/2021 Focused RI indicate that the primary sources of impacts to Site 110 are historical material disposal practices. A layer of fill is present across the entirety of Site 110, ranging in thickness from 3.0 feet to 16.5 feet. The fill consists of coke breeze and is often mixed with earthen materials including silt and sand, debris including brick, glass, wood, plastic, rubber, and coke

manufacturing by-products including coke, coal, slag, and ash. The fill may contribute to impacts to groundwater through leaching.

Localized areas at Site 110 contain subsurface tar in various forms. Results indicate that tar-impacted materials may be contributing to groundwater impacts. Localized groundwater impacts may also be due to fuel releases from abandoned vehicles at the Site, however there is insufficient data in this area. Results indicate that groundwater impacts are not migrating significantly eastward onto the adjacent National Grid property.

2.3 Remaining Data Gaps

While Site 110 environmental conditions were investigated during the 2020/2021 Focused RI, additional data gaps pertaining to the nature and extent of impacts associated with Site 110 remain. The supplemental investigation activities specified in this Work Plan are intended to address outstanding data needs as identified in the Draft RI Report (Parsons 2022) and subsequent NYSDEC comments, as summarized below:

- Install two test pits and collect subsurface soil samples in the vicinity of monitoring well MW-05-2020 to evaluate for potential sources of cyanide measured in this well previously
- Install and sample a groundwater monitoring well in the area proximate to abandoned vehicles to evaluate whether they may have been a potential source of VOCs in groundwater

The proposed detailed scope of work to address these data gaps is provided in Section 3.

3.0 PHASE II INVESTIGATION SCOPE OF WORK

The scope of work for supplemental investigation activities to address outstanding data gaps will include:

- Installation of two additional test pits and collection of subsurface soil samples in the vicinity of monitoring well MW-05-2020 to evaluate for potential sources of cyanide measured in this well previously
- Installation and sampling of a new groundwater monitoring well in the area proximate to abandoned vehicles to evaluate whether they may have been a potential source of VOCs in groundwater

Field activities and sampling will be conducted in accordance with NYSDEC's "DER-10 - Technical Guidance for Site Investigation and Remediation" (NYSDEC 2010) and the previously approved project investigation supporting plans included in the Focused RI Work Plan (Parsons 2020) including the project Field Sampling Plan (FSP), Quality Assurance Project Plan (QAPP), Health and Safety Plan (HASP), and Community Air Monitoring Plan (CAMP).

3.1 Supplemental Subsurface Investigation

3.1.1 Test Pit Installation

Two test pits will be installed at Site 110, as shown on **Figure 2** and in **Table 1**. The presence and character of any tar present within test pit soils will be identified and described consistent with the categories of tar presented in Section 4.2.2 of the Draft RI Report (Parsons 2022), and summarized below:

- Tar saturated
- Coated material
- Pliable tar and pliable tar/fill mixture
- Hardened tar and hardened tar/fill mixture

The presence of other waste materials will also be noted, including whether there are blue-stained soils or wastes present, potentially indicative of purifier waste which may be a source of cyanide.

A utility location survey and mark-out will be performed for each proposed test pit location prior to commencement of intrusive activities. Test pits will be excavated to the top of the native soil layer, which is anticipated to be between eight and ten feet bgs. Test pits may be excavated deeper if tar, or other indications of impacts, are observed at the interface between fill and native soil. If impacts are observed near the bottom of fill or the top of native material, test pitting will continue until such impacts are no longer observed. As the test pits are installed, excavated soil and fill materials will be visually assessed, photographed, screened with a photoionization detector (PID). Relevant field observations will be documented in a field logbook, or equivalent record.

Upon identifying the native soil layer, recording field observations, and collecting requisite soil samples as described in Section 3.1.2., the test pit will be backfilled. Test pit backfilling will consist of replacing excavated materials in the reverse order from which they were removed. The field crew and geologist will take care to avoid leaving subsurface fill materials on the ground surface. The test pit locations and corresponding ground surface elevations will be surveyed and included with the site geographic database.

The test pit locations on **Figure 2** are general areas where test pits will be excavated. Proposed test pit coordinates are listed in **Table 2**. The actual test pit locations and extents will be determined in the field in consultation with NYSDEC. If necessary, additional test pits may be excavated in an area to identify the extent of

waste materials, adequately characterize subsurface materials, or both. Test pit installation methods will be consistent with the procedures specified in the FSP (Section 2.2 Soil Borings and Test Pits) (Parsons 2020).

3.1.2 Test Pit Soil Sampling

Prior RI results indicate that surface soils in the area of the proposed test pits consistently exceed commercial SGCs, therefore additional characterization of surface soils is not required unless blue-stained soil or waste is noted at the surface. Soil samples will be collected and submitted for laboratory analysis from each test pit in the one-foot interval beneath tar, if present. A sample will also be collected from any blue stained soil or waste, or from other unique waste material that may be serving as a source of cyanide. In the event that tar, or other waste material of interest, is not observed within a test pit, a sample will be collected from a depth interval where the soil exhibits staining, odor, or elevated PID readings. A sample will be collected from the middle depth of the fill material If neither tar nor other indications of impacts are observed. If excavation depth does not allow for collection of the deeper sample, the soil sample may be collected from a location adjacent to the test pit via drilling rig.

Laboratory analysis to be completed on soil samples are shown in **Table 1** and will consist of Target Compound List (TCL) VOCs, TCL SVOCs, Target Analyte List (TAL) metals, and cyanide. Based on the results from the 2020/2021 Focused RI, there were no exceedances of Commercial Soil SCGs for pesticides, polychlorinated biphenyls (PCBs) or Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) compounds in soil samples from Site 110. There was one groundwater sample that slightly exceeded groundwater criteria for pesticides. These results indicate pesticides, PCBs and PFAS compounds are not a significant concern at Site 110, therefore, soil samples will not be analyzed for these parameters. Soil sampling will be performed in accordance with the procedures outlined in the relevant sections of the FSP (Section 2.2 Soil Borings and Test Pits and Section 2.8 Surface Soil Sampling).

3.2 Supplemental Groundwater Investigation

3.2.1 Monitoring Well Installation

One new groundwater monitoring well will be installed, as shown on **Figure 2** and in **Table 1**, to supplement groundwater analytical results collected during the Focused RI. Prior to well installation, the ground surface in the vicinity of the abandoned vehicles will be inspected for field evidence of contamination related to the vehicles. The location of the proposed monitoring well may be revised based on this inspection. Utilities in the vicinity of the proposed monitoring well location will be marked out, and if the well location is in conflict with marked out utilities, it will be relocated prior to commencement of intrusive activities.

The boring associated with the proposed monitoring well will be installed via a hollow stem auger, and soils will be continuously recovered via split spoon sampler. Recovered soil and fill materials will be visually assessed, photographed, screened with a PID, and documented in a field log.

The well screen will be installed above the clay layer and the well design will be based on the conditions present, including the depth to the water table and depth to the clay layer. The wells will be constructed using 2-inch diameter Schedule 40 polyvinyl chloride (PVC) riser threaded with 2-inch diameter Schedule 40 PVC 0.010-slot screen. Well screen length with be determined in the field based on observed thickness of the saturated zone. A 5-foot or 10-foot long well screens will be selected in the field to maximize coverage within the saturated zone, while also isolating the top of the saturated zone in shallow wells, and the bottom of the saturated zone in deep

wells. Final well design will be based on the site conditions, including the depth to the water table and thickness of fill.

The monitoring well will be installed consistent with the procedures specified in Section 2.3 Monitoring Well Installation and Construction of the FSP. Proposed coordinates for the new monitoring well are shown in **Table 2**. The new monitoring well will be surveyed to determine the horizontal location and vertical elevations.

3.2.2 Monitoring Well Soil Samples

Prior RI results indicate that surface soils in the area of the proposed monitoring wells consistently exceed commercial SGCs, therefore additional characterization of surface soils is not required. Soil samples will be collected and submitted for laboratory analysis from the monitoring well location in the one-foot interval beneath tar, if present. In the event that tar is not observed with the monitoring well soil boring, a sample will be collected from a depth interval where the soil exhibits staining, odor, or elevated PID readings. If neither tar nor other indications of impacts are observed, a soil sample will be collected from the middle of the depth interval where the monitoring well is to be screened. The selected soil samples will be submitted to a laboratory and analyzed for TCL VOCs, TCL SVOCs, TAL metals, and cyanide, as shown in **Table 1**.

3.2.3 Monitoring Well Development

The new monitoring well will be developed to remove drilling fluid used during boring advancement, as well as any fine-grained material that may have settled in and around the well screen during well construction. Well development will be performed a minimum of 24 hours after grout has been installed to provide sufficient time for the grout to cure.

Well development activities will consist of purging water until water quality parameters have stabilized for three successive measurements and purge water turbidity drops below 50 nephelometric turbidity units (NTUs). If parameters do not stabilize or turbidity remains above 50 NTUs, the well will be considered developed once a minimum of three well volumes or a maximum of 10 well volumes have been removed.

Well development may be performed using a stainless steel or PVC bailer or a water pump paired with high-density polyethylene (HDPE) tubing and surge block. If the well goes dry during development, bailing or pumping will pause until 80 percent of the initial water level has recharged, at which point pumping or bailing will resume. The well will be considered developed once this process has been repeated, and the well has been pumped dry three times.

3.2.4 Monitoring Well Groundwater Sampling

Groundwater samples will be collected from the new monitoring well, as shown on **Figure 2** and listed in **Table 1**. A groundwater sample will be collected using low-flow sampling techniques. Prior to sampling, the water level in the new well and all existing wells will be measured and recorded to the nearest 0.01-foot. Well sampling will commence once water quality parameters are stable for three consecutive readings. The stabilization guidelines are as follows:

Temperature	± 10% of measurement
pH	± 0.1 pH units
Specific conductance	± 3% of measurement
Redox	± 10 mV

Dissolved oxygen	± 10% of measurement
Turbidity	± 10% of measurement, or under 10 NTUs

Dedicated and disposable groundwater sampling equipment (e.g., tubing) will be used for sample collection to the extent practical. Any non-dedicated or non-disposable equipment (e.g., water level meter) will be decontaminated between samples.

Groundwater samples will be submitted to a NYSDEC approved Contract Laboratory Program (CLP) laboratory and analyzed for TCL VOCs, TCL SVOCs, TAL metals, and cyanide, as shown in **Table 1**. Groundwater sampling will be performed in accordance with the procedures specified in Section 2.6 Groundwater Monitoring and Sampling of the FSP.

4.0 INVESTIGATION DERIVED WASTE MANAGEMENT PLAN

The following Investigation Derived Waste (IDW) management procedures will be followed during the supplemental investigation.

4.1 Soils

Soils excavated from test pits that do not exhibit any gross contamination will be placed back into the cavity after completion of the test pit. Fill will be segregated from clay excavated from a test pit and the clay will be replaced in the bottom of the cavity. Gross contamination is defined for these purposes as soils exhibiting the presence of mobile tar and/or free oils.

Soils from test pits that exhibit gross contamination will be stockpiled in an IDW Storage Area that will be established at the start of field work. The location of the storage area will be established based on discussions with NYSDEC prior to generating IDW. Grossly contaminated soils will be stockpiled and staged on plastic sheeting (10 mil minimum) and covered with a 12-mil (minimum) UV-resistant plastic sheeting, secured with sandbags around the perimeter. Alternatively, grossly contaminated soils may be containerized in a double-lined (10 mil minimum) roll-off container. Stockpile volumes on plastic sheeting shall not exceed 100 cubic yards. Stockpiles may be used to segregate clearly grossly contaminated material of different characteristics. One waste characterization sample will be collected for every 100 cubic yards of stockpiled material. Waste characterization sample analysis shall include the full suite of toxicity characteristics:

- Toxicity Characteristic Leaching Procedure (TCLP), VOCs, SVOCs, and Metals
- PCBs
- Flash Point and Paint Filter Test
- pH
- Reactivity, Cyanide
- Reactivity, Sulfide

A record of which test pit soil is in each stockpile, where they are stockpiled, and which waste characterization results represent that material will be kept in the field notebook.

Soils from borings conducted for monitoring well installation will be stockpiled, staged, and sampled as described above. Soil that is characterized as non-hazardous based on analytical results and that is free of signs of gross contamination, waste, non-aqueous phase liquid (NAPL), etc. shall be evenly spread and graded on non-paved areas of the Site near the source boring, provided that prior approval has been received from NYSDEC. Alternatively, these non-hazardous soils may be containerized in Department of Transportation (DOT)-compliant 55-gallon open-topped steel drums or containerized in a double-lined (10-mil minimum) roll-off container, stored in the IDW Storage Location, and disposed of in accordance with 6 NYCRR Parts 360, 364 and the 370 series.

Soil from borings conducted for monitoring well installation that is characterized as hazardous and/or contains signs of gross contamination, NAPL, etc. will be containerized in DOT-compliant 55-gallon open-topped steel drums or containerized in a double-lined (10-mil min) roll-off container, stored in the IDW Storage Location, and disposed of in accordance with 6 NYCRR Parts 360, 364 and the 370 series.

4.2 Water

Monitoring well purge water and equipment decontamination water will be containerized in DOT-complaint 55-gallon open-topped steel drums. A waste characterization sample will be collected and analyzed for the full suite of disposal characteristics:

- TCL VOCs
- TCL SVOCs
- TCL Pesticides
- TCL Herbicides
- TAL Metals plus Mercury
- Total Cyanide
- Total PCBs
- pH
- Flashpoint
- Reactivity, Cyanide
- Reactivity, Sulfide

4.3 Personal Protective and Disposable Sampling Equipment

Personal Protective Equipment (PPE), disposable sampling equipment (ex., bailers and rope), and general trash that may come in contact with potentially impact soils/water generated during completion of the RI will be containerized in DOT-compliant 55-gallon open top steel drums and stored in the IDW Storage Area. These materials will be secured and labeled as non-hazardous waste and disposed of accordingly.

PPE and disposable sampling equipment that comes in contact with grossly contaminated material (containing mobile tar and/or free oils) will be containerized separately. The disposal requirements for these wastes will be determined based on the results of waste characterization sampling of the corresponding grossly contaminated material.

5.0 REPORTING AND SCHEDULE

The results from the Focused RI Phase II will be integrated into the Draft RI Report submitted to NYSDEC in January of 2022. In addition to the Phase II data and observations, responses to the NYSDEC and New York State Department of Health (NYSDOH) comments will be addressed in the revised report. A draft schedule for completion of the Focused RI Phase II and submitting the Revised RI Report is provided below. Proposed durations for investigation activities and report preparation are presented. The start date of these activities is dependent upon approval of this work plan by NYSDEC.

Activity	Proposed Schedule
Field Investigation	Mobilization within 90 days of Work Plan approval and duration of approximately five days
Data Analysis and Validation	Within 60 days after completion of all field investigation activities
Revised Draft RI Report	Within 90 days after completion of data validation

6.0 REFERENCES

NYSDEC, 2010. *DER-10/Technical Guidance for Site Investigation and Remediation*. May 3.

Parsons. 2020. *Final Work Plan, Focused Remedial Investigation and Feasibility Study for Operable Units 1 (Site 110) and 2 (Site 109), Tonawanda Coke Site*.

Parsons. 2022. *Draft Remedial Investigation Report*. Operable Units 1 (Site 110) and 2 (Site 109), Tonawanda Coke Site. 3875 River Road, Tonawanda, NY. April 2022.

TABLES

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TABLE 1
SAMPLING PLAN FOR REMEDIAL INVESTIGATION PHASE II AT TONAWANDA COKE SITE 110

Sample ID	Sample Medium	Depth[1]	TCL VOCs	TCL SVOCs (total)[2,4]	TCL SVOCs (dissolved)[3]	TAL Metals (total)[2]	TAL Metals (dissolved)[3]	Cyanide (total)[2]	Cyanide (dissolved)[3]	TOC
TP-39-2022	Soil	1-foot beneath tar, if present[5]	1	1		1		1		
TP-40-2022	Soil	1-foot beneath tar, if present[5]	1	1		1		1		
MW-17-2022	Soil	1-foot beneath tar, if present[5]	1	1		1		1		
MW-17-2022	Groundwater	TBD[5]	1	1	1	1	1	1	1	1

Notes:

1. Depth of soil samples deeper than 1 ft bgs will be dependent upon soil/fill conditions obsered. Groundwater sample depths correspond to screened interval; for wells not installed yet, screened interval will depend upon hydrogeologic conditions observed.

2. "Total" constituents indicate the field sample is unfiltered. Applicable to groundwater samples only.

3. "Dissolved" constituents indicates the field sample is field filtered. Applicable to groundwater samples only.

4. SVOC analysis will include 1,4-dioxane for all soil samples.

5. Soil samples will be collected from the 1-ft interval beneath tar, if present. If tar is not observed, a soil sample will be collected from a depth interval where soil exhibits staining, odor, or elevated PID readings. If no field indications of impacts a sample will be collected from the middle depth of fill material (test pits) or from the middle of the proposed well screen (soil borings/monitoring wells).

TABLE 2

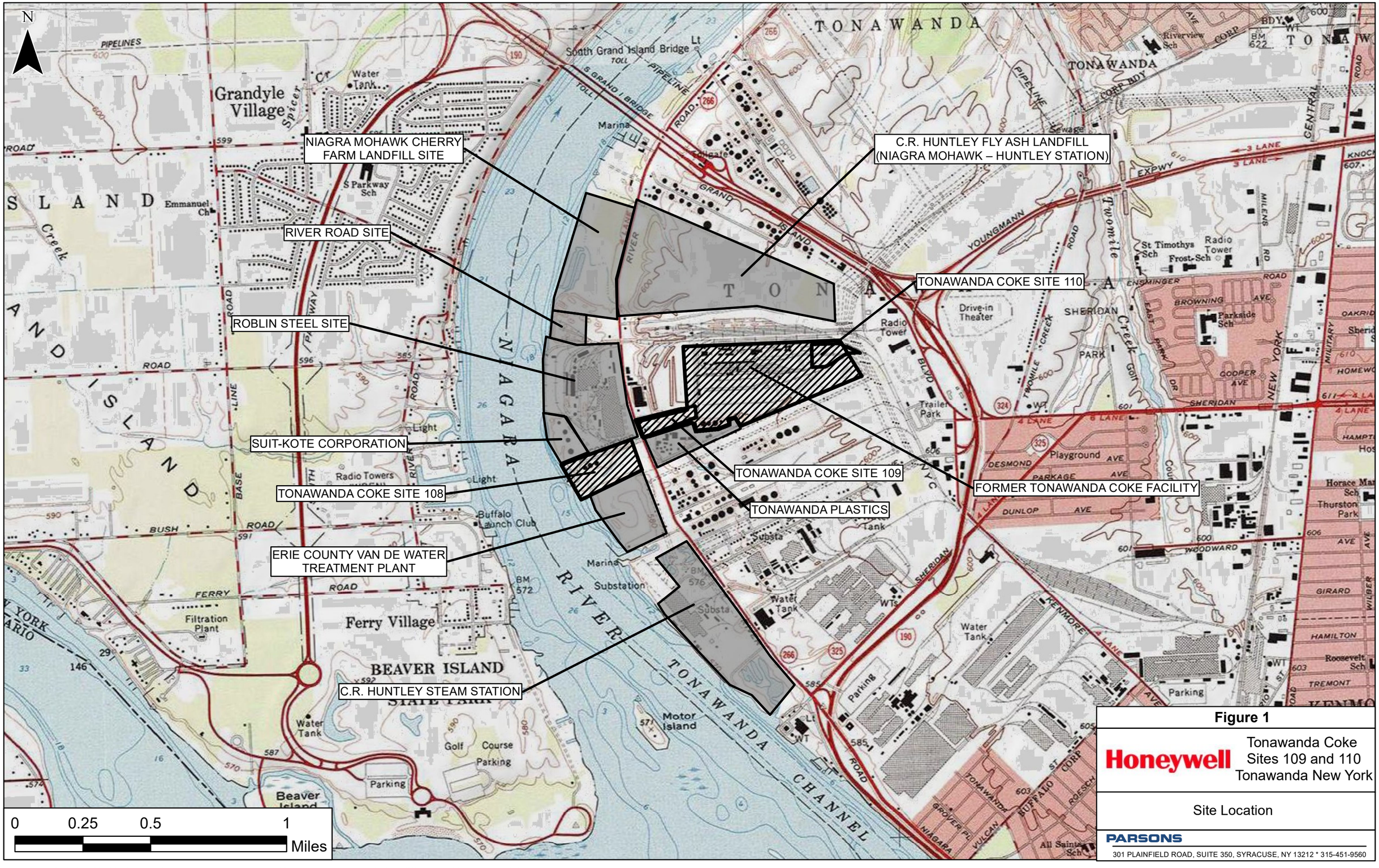
PROPOSED SAMPLE COORDINATES FOR PHASE II RI AT TONAWANDA COKE SITE 110

Location ID	Easting (feet)[1]	Northing (feet)[1]	Location Purpose
TP-39-2022	1,057,989.62	1,087,470.18	NW test pit starting point
TP-40-2022	1,058,023.34	1,087,446.55	SE test pit starting point
MW-17-2022	1,057,913.58	1,087,665.97	Proposed Monitoring Well Location

Notes:

1. Coordinates are provided in US Survey Feet in NY State Plane, North American Datum of 1983 (NAD83)

FIGURES



Plotted By: Sisson, Evan

Plot Date: 3/21/2022

Figure 1

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Tonawanda Coke
Sites 109 and 110
Tonawanda New York

Site Location

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301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 * 315-451-9560

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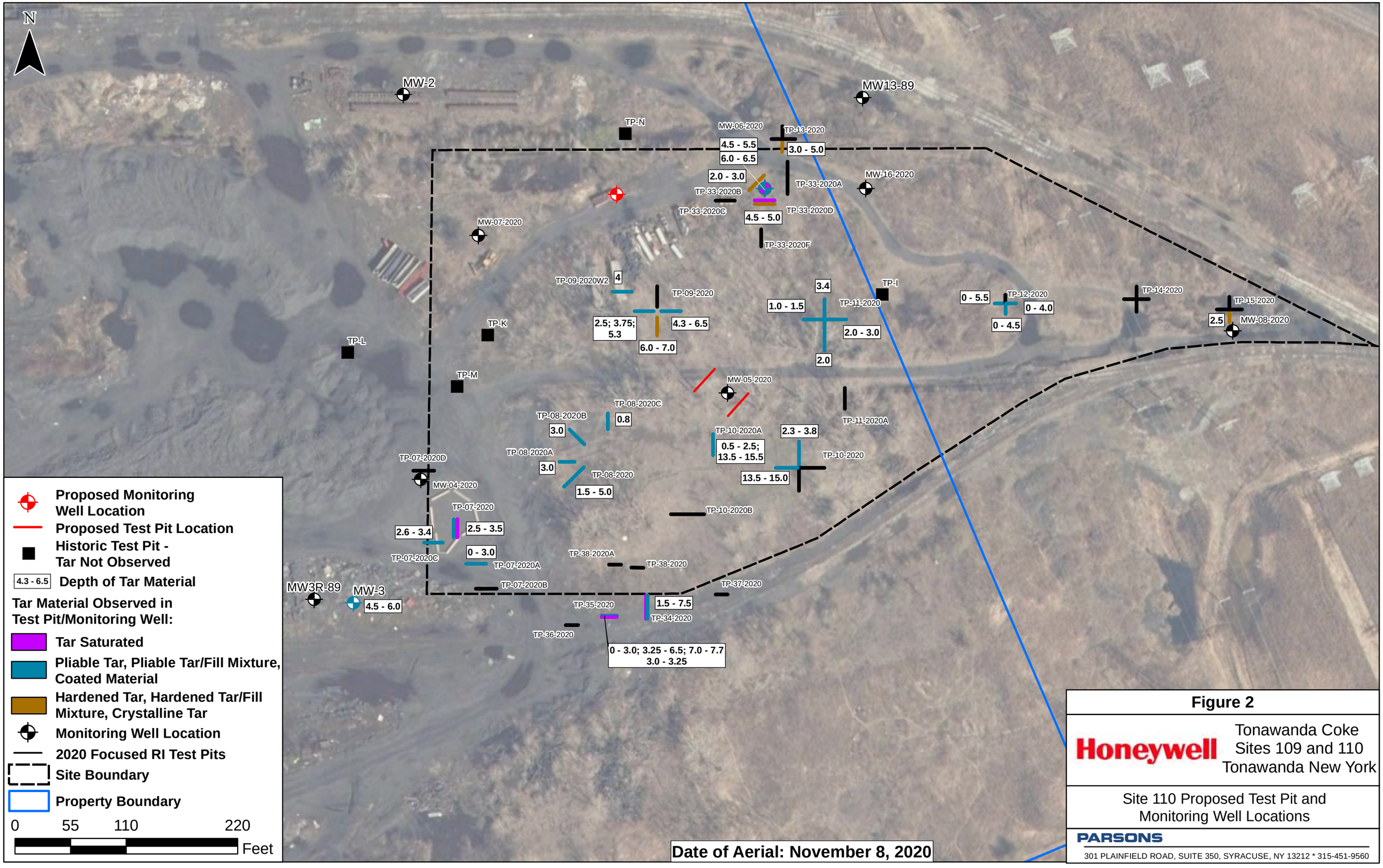

Plotted By: CS

Plot Date: 8/11/2022

Figure 2

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Tonawanda Coke
Sites 109 and 110
Tonawanda New York

Site 110 Proposed Test Pit and Monitoring Well Locations

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301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 * 315-451-9560

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