

Site Investigation

Site-Specific Sampling, Analysis, and Monitoring Plan for:

Former Sperry Warehouse Site, King Street
Troy, NY

CHA Project Number: 19505.1001.1102

Prepared for:

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1.0 INTRODUCTION

The EPA funded South Troy Brownfields Pilot Program for the City of Troy has progressed to the stage at which site investigation activities are proposed to further characterize the environmental status of the Former Sperry Warehouse located on King Street in Troy, New York.

The location of this site within the City of Troy is illustrated in Figure 1 and a site plan is included as Figure 2.

This Site Investigation Site-Specific Sampling, Analysis, and Monitoring Plan (SAMP) was prepared to provide a basis and guide for the completion of the site investigation activities recommended and proposed relative to the subject site. The site investigation program for this site is designed to identify and characterize the source and extent of the onsite contamination. Limited subsurface investigation activities were previously performed by North American Environmental, Inc. at the site in March 1999 for the purposes of a property transaction. A copy of North American Environmental's *Subsurface Investigation Report, City of Troy: Former Sperry Warehouse Site, King Street; May 1999* is included in Appendix A.

This SAMP has been prepared with the express purpose of obtaining approval from the City of Troy and United States Environmental Protection Agency (USEPA) for the investigation programs proposed at the site. The investigative measures proposed herein will not be initiated without the express written approval of the City of Troy and the USEPA.

The data derived from the subsurface investigations will facilitate an evaluation of the migration or possible future migration of identified contamination, identify potential routes of exposure and populations at risk, and provide a preliminary analysis of hydrogeological conditions associated with the subject site. The subsurface investigation data will also provide the data necessary to develop preliminary remedial plans for the site.

This document is comprised of six numbered sections with this introduction being the first. Section 2.0 provides background information for the subject site. Section 3.0 provides a summary of the proposed site investigation activities. Section 4.0 presents the field methods and procedures which will be utilized to complete the site investigation activities. Reporting requirements are presented in Section 5.0 and the task schedule for the site investigation activities is presented in Section 6.0.

A Quality Assurance Project Plan (QAPP) has also been prepared for the site investigation activities. The QAPP is a stand alone document which addresses quality assurance procedures applicable to programs discussed herein. As a result, the QAPP is referenced repeatedly throughout this document and included in Appendix B. In addition to the QAPP, a Program Specific Health and Safety Plan has also been prepared for the site investigation program and is included in Appendix C.

2.0 SITE BACKGROUND

The subject site consists of an approximately 4.75 acre parcel of property located in the City of Troy and referenced as tax parcels 111.67-1-1 and 111.67-1-2. There are currently three one-story brick warehouses on site which are in fair to poor condition. Historical research including aerial photographs and Sanborn Fire Insurance maps (Appendix D) indicates that the site was previously used for a rivet factory and a horseshoe factory. Figure 3 indicates the known historical uses of each site building. The Sperry Warehouses are first identified in 1955. Since the 1990's the site has been leased for warehouse operations and by recycling industries. Tenants included Platex, Inc, Materials Recovery Inc., and a pallet storage company. Platex used the site for storage and transfer of plastic products and the pallet storage company used the site for storage. Materials Recovery Inc. used the facility to take non-ferrous ashes from incinerators and waste-energy facilities and recover the non-ferrous metals for recycling.

The land around the buildings consists of lawn with some brush and paved surfaces used for parking or access ways. The southern portion of the property is forested and bordered by the Wynantskill Creek. Site utilities include public water supply and public sewer system, which is provided by the City of Troy.

Previous subsurface investigation activities, conducted in March 1999 by North American Environmental, Inc., consisted of the installation of seven soil borings, six groundwater monitoring wells, and one temporary groundwater point. The subsurface investigation was performed to assess soil and groundwater quality at the site as part of a property transaction. The results of the previous environmental site investigation are documented in the May 1999 report entitled *Subsurface Investigation Report, City of Troy: Former Sperry Warehouse Site, King Street* (Appendix A). Subsurface conditions encountered during the boring installation indicated that the site is covered by a black gravel fill with cinders, iron ores, cobbles, slag, wood fragments, foundry sand, bricks, ashes and some silt. Brown or gray clay was encountered at depths of 14 to 17 feet below ground surface (bgs), with the exception of MW-1, in which clay was not encountered. Groundwater was encountered at depths between 5.5 and 12 feet below grade and reportedly flows southwest toward the Hudson River.

As stated, during the previous subsurface investigation completed in May 1999, seven soil borings were installed by North American Environmental Services, Inc. Soil boring B-7 was advanced in the area of the former gas producer house and results indicated elevated levels of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals above 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives. Benzene (780 µg/kg), toluene (1,100 µg/kg), total xylenes (2,700 µg/kg), naphthalene (85,000 µg/kg), arsenic (120 µg/kg), and chromium (50 µg/kg) were detected at concentrations above the Soil Cleanup Objectives in soil sample B-7 (15-17'). Soil sample B-7 (17-18') exhibited levels of benzene and total xylenes above the Soil Cleanup Objectives at 92 µg/kg and 290 µg/kg, respectively. Arsenic was additionally detected above the Soil Cleanup Objectives in samples B-2 (10-15'), B-3 (16-17'), and B-4 (10-15') at 13.5 µg/kg, 13.4 µg/kg, and 43.4 µg/kg, respectively. Soil sample locations and corresponding compounds detected above the

Soil Cleanup Objectives are shown on Figure 4.

Six groundwater monitoring wells and one temporary groundwater monitoring point were installed during the May 1999 investigation. Groundwater analytical data indicated the compounds analyzed in monitoring wells MW-2, MW-3, MW-4 and MW-6 were detected at levels below the NYSDEC Ambient Water Quality Standards and Guidance Values. MW-7 was installed in the area of the former gas producer house and analytical results indicated numerous VOC and SVOC compounds detected in MW-7 above the NYSDEC Ambient Water Quality Standards and Guidance Values. The detected compounds and corresponding concentrations are shown in Table 3 of the *Subsurface Investigation Report, City of Troy: Former Sperry Warehouse Site, King Street; May 1999* (Appendix A). Additionally, phenanthrene was detected at the Ambient Water Quality Standard of 50 µg/kg in MW-1 and benzene was detected above the Ambient Water Quality Standard at 5 µg/kg in temporary point B-5. Monitoring well locations and corresponding compounds detected above the NYSDEC Ambient Water Quality Standards and Guidance Values are shown on Figure 4.

Historical research, data from the previous subsurface investigation, and a site visit indicated several areas of concern (AOCs) at the site. AOCs at the site include:

- the former gas producer house,
- the former gas holder associated with the adjacent Niagara Mohawk Manufactured Gas Plant (MGP) site, and
- the corridor between the former horseshoe factor and the warehouse.

Although not specific to the subject site, a number of environmental investigations have also been conducted at properties immediately adjacent to the Sperry Warehouse Site that provide additional data relative to the nature of the environmental conditions surrounding the subject site. These investigations included:

- the South Troy Industrial Park, located adjacent to the Site's north and west property boundaries;
- the Troy Water Street Manufactured Gas Plant (MGP) Site, located adjacent to the Site's south and southwest property boundaries; and
- and King Services North "the Alamo," located approximately 0.1 miles northwest of the Site.

South Troy Industrial Park was formerly the property of the Burden Iron Works, which manufactured horseshoes, rivets, nails, and other iron products. The company manufactured coke, gas, and pig iron from 1925 to 1940 and the property was used as a steel manufacturing facility from 1940 to 1972. The property is currently vacant. Chemicals of concern on the property include coal tar, SVOCs, metals and VOCs.

The Troy Water Street MGP Site was used for industrial operations beginning in the mid-1800's with iron and steel manufacturing facilities. A MGP operated at the site from 1925 to the 1950s and the site is currently used as a bulk petroleum storage facility. Chemicals of concern on the property include coal tar, polyaromatic hydrocarbons, benzene, toluene, ethylbenzene, and total xylenes.

The Alamo was formerly a bulk petroleum storage facility and is currently used as a recycling facility. Chemicals of concern on the property include coal tar, VOCs and SVOCs.

Based on the results of the previous subsurface investigation activities, additional investigation is necessary to further characterize the site and determine the extent and sources of contamination, and to identify, evaluate and select a long-term remedial action for the site. The proposed subsurface investigation activities to be conducted consist of the installation of a series of soil borings and groundwater monitoring wells, and the collection and analysis of soil and groundwater samples for parameters of concern. The investigation activities are discussed in detail in the following sections of this SAMP.

3.0 PROPOSED SITE INVESTIGATION SUMMARY

To further investigate potential impacts from the recognized environmental conditions identified during the previous subsurface investigation conducted at the site, CHA will install 12 borings to first groundwater or 20 feet below ground surface (bgs), whichever is encountered first, using track-mounted Geoprobe hydraulic-push equipment. Five of the 12 borings will be converted to groundwater monitoring wells. Surficial soil samples will also be collected to characterize surficial contamination at the site. The proposed locations of the borings, surficial soil samples, and monitoring wells are presented in Figure 5 and Figure 6 and summarized below.

- Borings B-8, B-15 and B-16 will be installed east of the former horse shoe warehouse as upgradient sampling points relative to on-site conditions. Additionally, B-8 will be converted into monitoring well MW-8 to assist in establishing groundwater flow direction across the site and serve as an upgradient groundwater monitoring point.
- Borings B-9 and B-10 will be installed southwest and west, respectively, of the former rivet factory to evaluate potential impacts to soil from former operations occurring in this building and the former gas holder that is associated with the adjacent Niagara Mohawk MGP site. In addition, the borings will be converted in monitoring wells MW-9 and MW-10. These wells will serve as downgradient monitoring points and assist in establishing groundwater flow direction across the site.
- Borings B-11 and B-12 will be installed to assess potential impacts from the former gas producer house and an area of contamination that was identified at location MW-7 during the 1999 investigation. The borings will be converted into monitoring wells MW-11 and MW-12 to evaluate any impacts to groundwater migrating from the former gas producer house. As noted, these locations are based on contamination previously identified during the 1999 subsurface investigation. Benzene, toluene, total xylenes, and a limited number of SVOCs were detected in soil and groundwater samples collected from this area. Soil samples were additionally sampled for the eight RCRA metals and results indicated elevated levels of arsenic and chromium in

the area.

- Borings B-13 and B-14 will be installed just north and east of the former horseshoe factory, respectively, to assess any potential impact from operations in this building, as well as to characterize the underlying fill material.
- Boring B-17 will be installed in the corridor between the former horseshoe factory and the warehouse. This location was chosen due to an odor and staining that was identified during a site visit at the property.
- Borings B-18 and B-19 will be installed inside the former horseshoe factory and rivet factory. During a site visit to the property, the buildings were investigated for floor drains, floor pits, staining and other indicators of environmental concern. No areas of concern were identified and the B-18 and B-19 locations were chosen as representative locations to investigate the former horseshoe and rivet factories. It should be noted that due to the structural instability of the former warehouse building, no investigation locations are planned within the warehouse building.
- Surficial soil samples S-1 through S-5 will be collected at representative locations across the site. Location S-5 was specifically chosen due to the odor and staining noted in that area during a site visit. The remaining locations were selected to provide a representative sampling distribution across the site.

The borings and monitoring wells will be placed to evaluate the subsurface conditions relative to the historic use of the site, including the horseshoe and rivet factory production activities. Each boring will be advanced to first groundwater or 20 feet bgs, whichever is encountered first, and one soil sample will be collected from each boring for laboratory analysis based on field screening of the soil samples. The sample will be collected from the depth at which the greatest contamination is observed or, if no contamination is observed, at the soil horizon directly above the groundwater table. The subsurface soil samples will be analyzed for the presence of VOCs, SVOCs (base/neutral fraction), the eight RCRA metals (arsenic, barium, cadmium, chromium, mercury, lead, selenium, and silver) and polychlorinated biphenyls (PCBs). The soil samples will be analyzed on a total constituent basis.

Surficial soil samples will be collected to evaluate the surficial soil conditions at the site. The surficial soil samples will be collected from an interval of zero to two inches bgs and analyzed for SVOCs, the eight RCRA metals, and PCBs.

In addition, a single groundwater sample will be collected from each monitoring well approximately one week after the installation of the wells. Groundwater samples will also be collected from two existing onsite wells. Off-site access will also be pursued to gain permission to sample two off-site wells north of the property (Figure 5). The groundwater samples will be analyzed for VOCs, SVOCs, the eight RCRA metals, and PCBs. After collection of the groundwater samples, a topographic survey of the monitoring well network, based on an assumed benchmark, will be performed to facilitate the preparation of a groundwater contour map for the site.

The laboratory analyses will be performed by a laboratory certified in accordance with the New York State Department of Health's (NYSDOH) Environmental Laboratory Approval Program (ELAP) to perform the requested analyses. The laboratory analyses will be performed in accordance with the most recent version of NYSDEC ASP with a Category B deliverable package. The laboratory analyses will be performed based upon a standard deliverable schedule in accordance with ASP requirements.

4.0 FIELD SAMPLING PLAN

The sampling objectives, procedures, and protocols associated with this project are presented below. Quality Assurance/Quality Control (QA/QC) issues are addressed in the QAPP. Accurate and reliable records will be recorded of all field activities in accordance with Standard Operating Procedure (SOP) #101 for the field logbook. CHA SOPs are included in Appendix E and examples of field documentation forms are included in Appendix F.

4.1 SAMPLING OBJECTIVES

The sampling to be performed on the subject site will entail subsurface soil, surficial soil, and groundwater sampling to characterize the surficial and subsurface conditions at the site relative to the identified areas of concern. The subject site was found to have recognized environmental concerns pertaining to historic on-site uses of the property and characterization of the soil and groundwater of the site will allow for the confirmation of the presence of contamination, the identification of sources(s) of contamination, movement of contamination and possible receptors at risk. The data generated from the site investigation will also aid in evaluating potential remedial alternatives for the site.

4.2 SAMPLING PROCEDURES & PROTOCOLS

4.2.1 Boring Installation

A total of 12 borings will be installed on the subject site to facilitate the collection of subsurface soil samples for laboratory analysis. The samples will be used to characterize subsurface conditions and, if contamination is present, determine the extent to which contamination is present, within the confines of the site and number of borings being installed as part of this investigation.

The borings will be installed using track mounted Geoprobe direct push equipment. Continuous soil sampling will be performed. The borings will be advanced to first groundwater, or 20 feet below grade, whichever is encountered first, and one soil sample will be collected from each boring for laboratory analysis based on field screening of the soil samples.

Each soil sample will be examined for visual and olfactory signs of contamination as well as screened using a MiniRae 2000 PID meter, or equivalent, and logged for geologic stratigraphy by an experienced field geologist, scientist, or engineer utilizing the Unified Soil Classification System. Soil classification activities will be consistent with CHA SOP #301, Field Description of Soils, a

copy of which is included in Appendix E. Field documentation will be made on CHA's standard test boring logs for each boring. It should be noted that no bedrock drilling or coring is proposed. Following completion, each borehole will be backfilled with native clean soils, sand, or cement/bentonite grout which is tremied from the bottom of the bore hole.

Before drilling at the initial location and after drilling at the last location, the drilling equipment and all sampling equipment will be cleaned in accordance with the protocols established in CHA SOP #503, Large Equipment Decontamination, and CHA SOP #501, Small Equipment Decontamination. Copies of which are included in Appendix E.

4.2.2 Subsurface Soil Sample Collection

Subsurface soil samples will be collected for laboratory analysis directly from the Geoprobe macro-core sampler. Samples will be analyzed for VOCs, SVOCs (base neutral fraction), the eight RCRA metals, and PCBs. Sample container requirements, preservation measures, and handling procedures are presented in the QAPP.

Immediately upon opening the macro-core soil sampler, a photoionization detection (PID) meter or equivalent meter will be used to obtain readings along the length of the macro-core. Soil samples for laboratory analysis will be collected from each borehole in accordance with the following protocols:

1. A sample will be collected from the unsaturated interval which indicates the highest potential for the presence of contamination as determined by the highest PID or equivalent meter reading, and/or visual observation, or,
2. From the deepest unsaturated interval which indicates a potential for contamination, or
3. In the instance where elevated PID meter readings, or visible contamination are not present, a sample from the interval immediately above the water table.

The samples for laboratory analysis will be collected directly from the macro-core using a decontaminated stainless steel trowel or spoon or a disposable polyethylene sampling scoop. The samples will be placed directly into the laboratory sample jars, filling the jar for VOC analysis first, allowing no headspace.

During the subsurface soil sampling program, a field duplicate sample will be collected at a frequency of one in every ten investigative samples. Additional sample volume for a matrix spike/matrix spike duplicate (MS/MSD) sample will be collected and submitted at a frequency of one in every 20 investigative samples.

4.2.3 Surficial Soil Sample Collection

After removing any vegetative cover, five surficial soil samples will be collected from an interval of zero to two inches bgs using a decontaminated stainless steel trowel or single use disposable scoop. Each sample will be a composite of five samples collected from a one square meter (one from each corner and one from the center) area. The individual samples from each corner and from the center will then be composited in a stainless steel bowl by thoroughly mixing the soils. The composite sample will be submitted to a qualified laboratory and analyzed for the presence of SVOCs, the eight RCRA metals and PCBs.

Similar to the subsurface soil sampling activities, a blind field duplicate sample will be collected at a frequency of one in every ten investigative samples. An MS/MSD sample will be submitted at a frequency of one in 20 investigative samples. Since only five surficial samples are planned, the subsurface soil samples will be included in the total number of investigative samples.

Sample container requirements, preservation measures, and handling procedures are presented in the QAPP.

4.2.4 Monitoring Well Installation

A total of five monitoring wells are planned for installation at the subject site. The borings within which the wells will be placed are being installed by Geoprobe equipment. The monitoring wells will be constructed of 2-inch diameter PVC casing with 0.010-inch slot well screen and 15 feet of well screen. CHA SOP #309 addresses the procedures which will be followed to facilitate the installation of the monitoring wells using Geoprobe equipment. The wells will be completed with a locking plug and flush-mounted curb box.

4.2.5 Groundwater Sample Collection

Groundwater samples will be collected from each of the proposed monitoring wells. Groundwater samples will also be collected from two existing on-site and two off-site (pending access) monitoring wells. Samples will be analyzed for VOCs, SVOCs, the eight RCRA metals, and PCBs. Bottle requirements and handling procedures are presented in the QAPP. Sampling protocols are discussed below.

Water level measurements will be taken prior to monitoring well purging and sampling. The water levels will be obtained by measuring the distance from the top of the well riser to the top of the water column using an electronic water level meter. Measurements will be obtained to ± 0.01 foot accuracy. Water level measurements for each site location will be measured within a 24-hour period for all wells.

Water level measuring equipment that comes in contact with well water will be cleaned in accordance with SOP #501, found in Appendix E, to ensure that cross-contamination does not occur.

After the water level of each well has been recorded, each monitoring well will be purged of a minimum of three well volumes using a method which produces the lowest flow rates possible to decrease the potential for elevating the turbidity of the well water. Conductivity, pH, Eh, turbidity, and temperature readings will be taken and recorded after the removal of each well volume. Each well will continue to be purged until stabilization of field parameters. Sample aliquots for laboratory analysis will be collected in the order specified in SOP #313.

Field measurements for turbidity will be taken with a Hach 2100P Turbidimeter, temperature, pH, and conductivity will be collected with a YSI 556 MPS water quality meter during well purging. Calibration of field instruments will be in accordance with the manufacturer's instructions.

Reasonable efforts will be made to ensure that turbidity of the samples is less a 50 Nephelometric Turbidity Units (NTUs). However, in the event that turbidity at the time of sample collection remains above 50 NTUs, then additional sample volume will be filtered in the field for dissolved metals analysis. Samples submitted for dissolved metals will be filtered using in-line high capacity 0.45 micron non-metallic water filters (Geogard or equivalent). The filter apparatus will be attached directly to the discharge line on the sampling pump. A new filter will be used for each sample.

For quality assurance purposes, one blind field duplicate sample and one MS/MSD sample be collected from one monitoring well during the sampling program.

CHA SOP #313 further defines the groundwater sampling procedures which will be observed during the course of this project. A copy of CHA SOP #313 is included in Appendix E of this document. Sample preservation details are addressed in the QAPP and summarized in Table 1.

5.0 REPORTING

A Site Investigation Report (SIR) will be prepared for the subject site and submitted to the City of Troy and the USEPA.

The SIR shall contain the following information:

1. A discussion regarding the existence or non-existence of surficial and/or subsurface contamination.
2. A characterization of the soil and groundwater of the site to allow for the confirmation of the source(s) of the contamination, movement of the contamination, and possible receptors at risk.
3. Groundwater contour maps, assuming groundwater is encountered, to show the direction of the local groundwater flow.
4. Figures showing the locations of the borings, surficial soil samples, and monitoring wells at the site.

5. Tables summarizing the analytical data for soil and groundwater samples collected.
6. Conclusions and recommendations regarding the environmental status of the site.

The data presented in this report will be utilized to develop preliminary remedial plans for the site following correspondence with and/or meetings with appropriate City, State and/or Federal regulatory agencies.

6.0 SCHEDULE

An estimated schedule for the subsurface investigation activities is provided below:

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|----------------|---|
| January 2009: | Submit Final Site-Specific SAMP, QAPP, and Health & Safety Plan to the City of Troy and USEPA. |
| February 2009: | Receive City of Troy and USEPA approval of project plans |
| February 2009: | Initiate field work on the subject site |
| May 2009: | Submit Site Investigation Report and Remedial Alternatives Report for the subject site to the City of Troy and USEPA. |