FINAL FEASIBILITY STUDY REPORT, REV. 1

Staubs Textile Services
935-951 East Main Street
Rochester, Monroe County, New York
Site Number 828160
Contract Work Authorization Number: D006132-24

Shaw Project No.: 134685.24

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Acronyms and Abbreviations

ACM	Asbestos Containing Material
ARs	Applicable Requirements
ARARs	Applicable or Relevant and Appropriate Requirements
AST	aboveground storage tank
BASE	Building Assessment and Survey
bgs	below ground surface
CAMP	Community Air Monitoring Plan
City	City of Rochester
cVOCs	chlorinated Volatile Organic Compounds
DCE	Dichloroethene
DER	Department of Environmental Remediation
ESA	Environmental Site Assessment
FS	Feasibility Study
GPR	Ground Penetrating Radar
HASP	Health & Safety Plan
IRM	Intermediate Remedial Measure
iSCO	in situ chemical oxidation
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSGWQS	New York State Groundwater Quality Standards
O&M	Operation & Maintenance
PCE	perchloroethylene
PPE	Personal Protective Equipment
ppm	parts per million
PVC	polyvinyl chloride
RAOs	Remedial Action Objectives
RI	Remedial Investigation
Sanborn®	Sanborn® Fire Insurance Maps
SCGs	Standards, Criteria and Guidelines
SCO	Soil Cleanup Objectives
Shaw	Shaw Environmental & Infrastructure Engineering of New York, P.C.
Site	935-951 East Main Street, Rochester, New York
SMP	Site Management Plan
SSDS	Sub-slab Depressurization System

Staubs	Staubs Textile Services
SVE	Soil Vapor Extraction
TBCs	To Be Considered Criteria
TCE	trichloroethylene
TOGS	Technical and Operational Guidance Series
UST	Underground Storage Tank
VOCs	volatile organic compounds
WA	Work Assignment

Feasibility Study

Staubs Textile Services
935-951 East Main Street
Rochester, Monroe County, New York

Site # 828160
WA# D006132-24

CERTIFICATION

I, Matthew Sausville, certify that I am currently a NYS Registered Professional Engineer as defined at 6 Part NYCRR Part 375 and that this report, Feasibility Study, was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER -10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

Signature (Seal)

Matthew J. Sausville, P.E.
Printed Name

Shaw Environmental and Infrastructure Engineering of New York, P.C.
Company

09/04/15
Date

1.0 INTRODUCTION

Shaw Environmental & Infrastructure Engineering of New York, P.C. (Shaw) has prepared this Feasibility Study (FS) Report for the Staubs Textile Services property located at 935-951 East Main Street, Rochester, New York (Site) (Site Number 828160) located at 935-951 East Main Street, Rochester, Monroe County, New York (Site) (**Figure 1**). The primary purpose of the FS is to provide a comparative study of remedial alternatives that may be employed to address on-site soil and soil vapor impacts (OU-1). Groundwater impacts will be addressed under OU-2. The immediate source is being remediated under IRM#2 (Source Area Removal). The proposed scope of work discussed herein has been developed in accordance with Work Assignment (WA) D006132-24 provided to Shaw on June 27, 2011.

1.1 Purpose and Organization

This FS was prepared using information from the sources described in **Section 4.0**. A Remedial Investigation (RI) was completed by Shaw in December 2013 to characterize and delineate the extent of contamination on and surrounding the Site. The details and conclusions of the RI are described in the Remedial Investigation Report for the Site (Shaw 2013).

The FS describes a selection of remedial alternatives that may be employed to address soil vapor impacts that have been identified during the RI. The report has been separated into five (5) sections which include:

- Section 1 – Purpose and Site background for preparation of the FS.
- Section 2 – The identification of applicable Standards, Criteria and Guidelines (SCGs) that are used to assist in the selection process for potential remedial alternatives.
- Section 3 – Identifies the selected remedial alternatives for the contaminated area and their respective applicability to the Site.
- Section 4 – Provides a detailed comparative analysis of each proposed remedial alternative including supporting methodology information, and preliminary cost estimates for each alternative.
- Section 5 – Provides all references used for preparation of the report.

1.2 Facility Description and Location

Site Description

The Site, located in a largely commercial neighborhood, is bordered by residential houses to the south. The Site is comprised of two contiguous parcels totaling approximately 1.2 acres on the south side of East Main Street and west side of Circle Street in the City of Rochester (City), New York. There is an approximate 58,451-square-foot 2.5 story masonry building with a partial basement on the Site. The original part of the building was constructed circa 1910 and "William Staub of Staub & Son" purchased the building in 1922. In September 1927, Staub & Son completed a permit to add the present cleaning plant. In 1995, a permit was completed to build a third floor of the dry cleaning plant. Since then other additions/renovations have been made to the building. The Site is owned by 951 East Main Street, LLC; it was historically operated as a uniform leasing business, a laundry, and a dry cleaning facility referred to as Staub Textile Services, Inc. The Site is serviced by the City public water and sewer system. East Main Street borders the site to the north. Commercial and residential property borders the Site to the south and east.

1.3 Geology and Hydrogeology

1.3.1 Regional Geology

The investigative area is located in the Central Lowlands Physiographic Province. The overburden soils of the surrounding area have been characterized as lacustrine silt and clay, which are composed of generally laminated silt and clay, deposited in proglacial lakes, generally calcareous, with varying thickness. (Cadwell et al., 1987). Previous reports provided to Shaw identified the bedrock geology as Lockport Group Late Silurian shale, dolostone, salt and gypsum.

1.3.2 Local Geology

The topography of the site is predominantly flat. During the RI, 55 soil borings were advanced to a maximum depth of 33.8 feet or until reaching a till/shale layer. The till/shale layer is underlain by weathered shale bedrock. Soil borings completed inside the building and around the site indicate that the overburden soils consist of gray and brown silty sand to sandy silt with little clay and gravel. Refusal was encountered between 4-feet and 33.8-feet below ground surface (bgs). Geological cross-sections illustrating sub-surface soil conditions are provided in the RI Report.

1.3.3 Local Hydrogeology

Based on results from the July 2013 groundwater sampling event, groundwater elevation changes were approximately 6-feet between PZ-1 (9.70-feet bgs) and PZ-5 (14.40 feet bgs). Depth to water was encountered between at 15.69 feet bgs in MW-1 during the July sampling event. MW-1 is the only monitoring well onsite. Groundwater appears to be flow in a north-northeasterly direction.

1.4 Remedial History

Historic Operations/Investigations

According to a Phase I Environmental Site Assessment (ESA) Report written by Passero Associates (March 18, 2009), the Site was historically utilized as a dry cleaning operation. An interview with the site owner indicated that the Site was a uniform supplier and laundry. A Dry Cleaning Compliance Inspection was performed on April 25, 2002. The presence of two dry cleaning machines that used perchloroethylene (PCE) as the dry cleaning solvent was identified. The compliance report also stated that the PCE usage log indicated 160 gallons of PCE in the previous 12 months (April 2001-2002). The Phase I ESA also noted the New York State Department of Environmental Conservation (NYSDEC) October 2005 "Hazardous Waste Compliance Inspection" declared that the facility was closed and no longer regulated at that time.

A review of historic Sanborn® Fire Insurance Maps (Sanborn®) indicated that the Site was occupied by Faber in the early 1900s; Faber was noted as a manufacturer and repairer of sulkies (i.e. carriages). The Sanborn® Maps dated 1938, 1950, and 1971 indicate that the subject building was referred to as Staub & Son, Inc. "laundry and dry cleaning;" six solvent tanks, a chemical storage area, a clarifier tank, and a gas tank were present on Site throughout this period. Two of the solvent tanks were located inside the subject building (south side). The remaining solvent tanks, clarifier tank, and the gas tank were located along the south of the building; this area was subsequently covered by an addition to the building. Shaw reviewed the Sanborn® maps and identified the nine possible tanks (with unknown contents) at the Site.

Records reviewed during the Phase I (either provided by NYSDEC or Monroe County Department of Health) indicated the following:

- In November 1998, a 350-gallon steel/carbon steel aboveground storage tank (AST) that contained PCE was removed from the Site.

- A September 29, 1989 letter from NYSDEC to Staubs raised questions pertaining to "disposal of your pit sludge" and how it was determined to be "nonhazardous." (During

the Phase I, the site owner was interviewed and "stated that only hot rinse waters from their laundry operation, and no PCE was ever discharged to this pit").

- Staubs was listed as a small quantity generator of hazardous waste (October 13, 2000 letter from NYSDEC to Staubs). No violations were observed at the time of the inspection.

- NYSDEC reports one 10,000 gallon underground storage tank (UST) closed/removed (June 28, 2003).

- As of December 14, 2005 NYSDEC believed that Staubs facility as closed and as no longer regulated.

- A spill from an abandoned drum was reported at 951 East Main Street on October 2, 2007.

Records also showed that the City issued the following permits for the Site:

- March 23, 1976 – install a 10,000-gallon diesel fuel UST on the west side of the subject building north of the loading docks.

- March 23, 1981 – to "remove the existing 10,000 gallon fuel tank and install same."

- August 9, 1984 – install one diesel pump.

- August 20, 1985 – Fire Marshal issued a notice of violation for a leak in the diesel fuel dispenser.

- September 2, 1987 – Fire Department inspector reports that the Site building (935 East Main Street) is "vacant and boarded up".

- August 15, 1994 – Fire inspection report use of PCE and several violations.

- April 3, 1998 – 10,000 gallon diesel UST failure

- October 26, 1998 – remove one 10,000 gallon fuel oil tank.

According to the Phase I ESA Report, Passero Associates inspected the Site on March 4, and again on March 11, 2009. At the time of the inspections the Site building was vacant. Two dry cleaning machines labeled "perchloroethylene" were presented and located in the southern portion of the building.

1.4.1 Staubs Remedial Investigation

Shaw was retained by the NYSDEC to complete an RI at the Staubs Site in June 2011 in an effort to further delineate and characterize the extent of horizontal and vertical soil, groundwater and vapor phase impacts. Investigative activities occurred at the site between November 2011 and August 2013. The results of these investigations are summarized below.

The RI analytical results confirmed that chlorinated Volatile Organic Compounds (cVOC), primarily PCE, are present in soil on-site Site. Analytical results from the RI detected cVOC concentrations above the Restricted Commercial Soil Cleanup Objective (SCO) as well as New York State Groundwater Quality (NYSGWQ) standards for PCE, trichloroethene (TCE) and 1,24-trimethylbenzene. PCE, the primary contaminant of concern and known source contaminant, exhibited the highest concentrations among samples collected at locations near the former "solvent tank" and "tank farm", inside the building. The tanks were removed as part of Intermediate Remedial Measure (IRM) No. 1. A report, IRM No. 1 Construction Completion Report (April 2013), was provided to the NYSDEC, and details the tank removal and closures.

Based upon the July 2013 data, groundwater flow across the site appears to be in a north-northeasterly direction. A total of 21 volatile organic compounds (VOC) analytes were detected above NYSGWQ standards in groundwater. The primary dissolved impacts were observed in monitoring well MW-1 (located near the northeast corner of the building) and in piezometer PZ-5 near the former "solvent" tank.

1.5 Contamination Fate and Transport

Based on information provided in the RI, surface water contaminant infiltration or migration does not appear to contribute a significant transport mechanism due to the large amount of impervious surface area. There are no surface water bodies such as lakes, rivers, streams or ditches present at the Site. The closest water body is the Genesee River which is located approximately 1.2 miles west/southwest of the Site.

Infiltration from the storage of historic dry cleaner waste through the soil pore space into soil below ground surface appears to have been a transport mechanism. Currently cVOCs are no longer used at the Site and contaminant infiltration is no longer anticipated as an "active" transport mechanism (i.e. no additional mass is being released or accumulating at the site based upon existing data).

Although no indoor, outdoor, sub-slab or soil vapor sampling was completed at the Site during the RI, it was determined that the soils inside the building near the former USTs were heavily

impacted. These impacted soils are being addressed as part of IRM No. 2 – Source Area Removal, via a soil vapor extraction (SVE) system pilot test.

1.6 Qualitative Human Health Risk Evaluation

Currently the on-site building is vacant. In order for a contaminant to pose risk to human health, a complete exposure pathway must be present with contaminant concentrations high enough to potentially cause an adverse health effect. Human exposure pathways can occur through ingestion, inhalation, absorption and injection. These pathways are not currently a human health risk because the building is vacant and not being used.

Ingestion and absorption of contaminated groundwater and soil are pathways for human exposure. The Site groundwater table is located approximately 10 to 16 feet below ground surface; therefore absorption of groundwater is highly unlikely. A municipal water source is used as the water supply for the Site and surrounding area which would indicate that groundwater ingestion is most likely not a human exposure pathway under existing site conditions. RI analytical results indicate elevated cVOC concentrations in the soil therefore it is possible that a pathway for human exposure exists. Future Site construction excavation work can provide a complete human exposure pathway for ingestion and absorption.

Inhalation of contaminated soil vapor from the subsurface soil is a method for human exposure. RI analytical results indicate elevated cVOC concentrations in the soil; therefore, it is possible that a pathway for human exposure exists. This information is indicative of a complete exposure pathway for Site workers and Site visitors. Settlement of the building may result in foundation cracks and create preferential pathways which may subsequently facilitate an increase in indoor air cVOC concentrations. Existing conditions may potentially pose a human health risk at the Site; however, the building is currently vacant so this pathway remains incomplete under the anticipated short-term usage/occupancy.

2.0 IDENTIFICATION OF STANDARDS, CRITERIA, GUIDELINES AND REMEDIAL ACTION OBJECTIVES

2.1 Introduction

As identified in the RI, cVOCs were detected across the Site at various concentrations in soil and groundwater matrices. No soil vapor samples were taken inside the building during the RI; however, Shaw began a pilot test in September 2013 to address impacted soil remaining from the removal of the historic solvent tanks (IRM No. 1). A total of seven USTs were removed from inside the building and one additional UST was "closed-in-place". Results from the pilot test will be addressed under separate cover in the Construction Completion Report #2: Source Area Removal.

This FS addresses the soil impacts at the Site; groundwater contamination will be addressed under Operable Unit (OU)-2. However, as previously discussed in **Section 1.6**, cVOC soil and soil vapor are the only apparent complete human exposure pathways based upon existing analytical data. For purposes of this report only a human health exposure assessment has been provided. An ecological assessment was not conducted because the Site is zoned as a commercial property and the closest proximity to a down gradient surface water body greater than 0.3 miles.

2.2 Potentially Applicable SCGs and Remedial Action Objectives (RAOs)

SCGs are defined as follows:

"Standards and criteria are cleanup standards, standards of control, and other substantive environmental requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location or other circumstance."

"Guidelines are non-promulgated criteria, advisories and/or guidance that are not legal requirements and do not have the same status as standards and criteria; however, remedial alternatives should consider guidance documents that, based on professional judgment, may be applicable to the project."

SCGs may include Applicable Requirements (ARs), Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered Criteria (TBCs) where:

1) ARs are legally enforceable standards or regulations, such as groundwater standards for drinking water that have been promulgated under state law.

2) ARARs include those requirements that have been promulgated under state law that may not be "applicable" to the specific contaminant released or the remedial actions contemplated but are sufficiently similar to site conditions to be considered relevant and appropriate. If a relevant or appropriate requirement is well suited to a site, it carries the same weight as an applicable requirement during the evaluation of remedial alternatives.

3) TBCs are non-promulgated advisories or guidance issued by state agencies that may be used to evaluate whether a remedial alternative is protective of human health and the environment in cases where there are no standards or regulations for a particular contaminant or site condition. These criteria may be considered along with SCGs when establishing cleanup goals for protection of human health and the environment.

2.2.1 Chemical Specific SCGs

Chemical Specific SCGs define health or risk based numerical limits on the concentration of contaminants in the environment. These concentration limits may be established by Government Agencies and are used to provide protective cleanup levels or may be used to consider the extents of contamination and the need for remediation at a site. As discussed previously, soil impacts are the primary focus of this FS.

As stated in Part 375-6, SCOs will be required to achieve the lowest of the three (3) potentially applicable contaminant specific SCOs for all soils above bedrock. NYSDEC has developed SCOs for protection of public health, for protection of groundwater, and for protection of ecological resources. The Site is zoned in a commercial area and is located greater than 0.3 miles from the nearest surface water body; therefore, the SCOs for the protection of ecological resources are not applicable to this Site. Applicable SCOs for the Site include clean up for the protection of groundwater which is more stringent than SCOs for the protection of public health. Chemical specific SCGs considered at the Staubs Site are provided in **Table 1**.

2.2.2 Location Specific SCGs

Potential location-specific SCGs are requirements that set restrictions on activities depending on the physical and environmental characteristics of the Site or its immediate surroundings. These

are typically building, construction and zoning codes. Location-specific SCGs also generally include floodplain and wetland regulations, restrictions promulgated under federal acts. Potential location-specific SCGs that may be applicable to potential Site remedial technologies are the City zoning ordinances and building codes. Location specific SCGs considered at the Site are provided in **Table 2**.

2.2.3 Action Specific SCGs

Action Specific SCGs are requirements determined by particular remedial activities taking place during the remediation process. Action specific SCGs establish controls or restrictions on the design, implementation, and performance of remedial activities. These can include reporting requirements for governments, general health and safety requirements and handling and disposing of waste (including permitting, manifesting, transportation and disposal, and treatment and disposal facility operations). Remedial actions conducted at the Site would be required to comply with applicable requirements established by the Occupational Safety and Health Administration and general industry standards. A complete list of Action Specific SCGs considered for this Site can be found in **Table 3**.

2.3 RAOs

The development of RAOs was completed with the goal of eliminating the potential to expose humans to contaminated media. The RAOs were not based on current groundwater conditions at the Site as those will be addressed under OU-2. As previously discussed in **Section 1.4.2** and as indicated in the RI, this includes the:

- Prevention of ingesting soil at or above Chemical Specific SCGs.
- Prevention of inhalation of soil vapor resulting from volatilizing from soil.
- Eliminating the potential for direct contact with contaminated soil.

2.4 Cleanup Objectives and Volume of Impacted Media

2.4.1 Soil

2.4.1.1 Selection of Soil Cleanup Goals

Specific soil clean up objectives based on the protection of public health based on land use is found in 6 NYCRR Part 375-6.8. This guidance gives numeric guidance values for specific

individual chemical compounds for various uses. These goals are summarized here because existing site conditions indicate that the source of the observed impacts is the impacted soils.

- Unrestricted Use: use without restriction or environmental controls;
- Residential Use: use with limited restrictions, such as not allowing the raising of animals for human consumption;
- Restricted Residential Use: use with restrictions, such as limiting ownership or size or number of units as well as the ability to grow vegetables for consumption. Recreational uses are included in this site;
- Commercial Use: use for the purposes of conducting businesses including buying and selling merchandise and services. This use includes passive recreational use with limited soil contact;
- Industrial Use: use for the processes of manufacturing, producing, or assembling goods. There is no recreational use included in this use.

Based on the City of Rochester Zoning Map, the Site has a zoning designation of C-2, which is classified as a "Community Center District". The Site is adjacent to a residentially zoned district (Medium-Density Residential District or R-2) to the south. The current and projected use of the Staubs Site is expected to continue with Commercial Use operations. Regulation 6 NYCRR Part 375-6.8 describes the most applicable SCO for use as Restricted Commercial Use.

Based on the selection of the Restricted Commercial Use SCO, results of the RI were compared to the applicable SCO and any detections and exceedances were noted. Sample locations and results are provided in the RI under separate cover.

As previously mentioned, SCOs for the protection of ecological resources were not considered as indicated in 6 NYCRR Part 375-6.8 as the closest surface water body is greater than 0.3 miles from the site and ecological receptors are not expected to be impacted by Site contamination.

For comparison purposes, a list of soil cleanup goals is presented in **Table 1**. Based on the RI soil sample analytical results and the commercial use zoning designation of Site, soil contamination near the source area is a concern and is being treated under IRM #2: Source Area Removal. Selection of Contaminants of Concern - Soil

PCE, TCE, cis-dichloroethene (DCE) and vinyl chloride are the contaminants of concern based on the historic operations which took place at the site.

3.0 IDENTIFICATION OF ALTERNATIVES

3.1 Introduction

The following section details the development of several remedial options to achieve the RAOs stated above. As mentioned previously, the remedies discussed focus upon soil and soil vapor; observed groundwater impacts will be addressed as OU-2. The immediate source is being remediated under IRM#2 (Source Area Removal). In consultation with the NYSDEC, Shaw has identified five alternatives to remediate the observed soil and soil vapor impacts. These alternatives were selected based upon previous experience as well as cost and technological constraints. .

3.2 Alternative Number 1: No Action

"The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment."

3.3 Alternative Number 2: Site Management

The Site Management Alternative requires only institutional controls for the Site. This alternative includes institutional controls, in the form of an environmental easement and a Site Management Plan (SMP), necessary to protect public health and the environmental form any contamination identified at the Site.

3.4 Alternative Number 3: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in the RI and all soil meets the unrestricted soil clean objectives listed in Part 375-6.8(a). This alternative would include building demolition. The removal would be performed within an approximately 10,000 square foot area to bedrock (approximately 20 feet (ft) below ground surface). The approximate soil removal volume is 7,425 cubic yards (cy).

Based on previous characterization it is anticipated that the excavated soil will be considered to be a hazardous waste. Since target depth is bedrock, no verification samples are proposed for the bottom of the excavation. The excavated areas would be backfilled with clean, imported fill, compacted and restored to grade.

Under this alternative, soil excavation and disposal would be performed after the building is demolished. Previous investigations performed at the Site confirmed the presence of asbestos containing material (ACM). This material would be removed by a licensed contractor prior to the start of demolition. The cost for demolishing the building (not including soil excavation) is estimated at $522,300.

Without the confines of working within the building, this option allows for free and open access to the excavation. This allows for direct-loading of dump trucks, minimizes need for shoring and structural supports and eliminates size limitations on the equipment. This alternative allows for fast and efficient excavation, stockpiling, and loading of soil for off-site disposal. Anticipated shoring and excavation limits are shown on **Figure 3**.

To the extent possible, excavated soil will be direct-loaded for offsite disposal. Soil that cannot be direct-loaded will be stockpiled on a lined material staging area prior to off-site disposal. Specifics of the soil handling would be determined during remedial design.

Vapor control measures will be used, as needed, to suppress odors and volatile organic vapors originating from the excavation and the excavated soil. A Community Air Monitoring Program (CAMP) will be followed during soil removal activities to document airborne particulate and volatile organic vapor concentrations surrounding the excavation area.

3.5 Alternative Number 4: Soil Excavation within the Existing Building with In-situ Remediation and Institutional Controls

This remedial alternative addresses the potential soil vapor impacts at the Site through soil removal (to 150 ppm for PCE – Restricted Commercial SCO) and a dry application of an in-situ chemical oxidation (ISCO) reagent within the confines of the existing building at the bottom of the excavation. The removal would be performed within an approximate 2,800 square foot area, extending to bedrock (approximately 20 ft below ground surface). The approximate soil removal volume is 2,074 cy. Based on previous characterization it is anticipated that the excavated soil will be considered to be a hazardous waste. Since target depth is bedrock, no verification samples are proposed for the bottom of the excavation. The excavated areas would be backfilled with select fill, compacted and restored to grade.

Under this alternative, soil excavation and disposal would be performed within the existing building. Potential problems associated with this alternative include, but are not limited to, shoring of the excavation, equipment clearance (vertical and horizontal) inside of the building

due to low ceilings and structural columns, and excavating near foundation walls and footers and around structural columns.

This alternative requires that the existing concrete floor slab be removed prior to excavating the impacted soil. Excavating soil within the existing building limits the ability to bench or slope the sidewalls of the excavation. With the proposed depth of excavation being approximately 20 feet, it is assumed that this is well below the foundation and column footers of the building. To prevent the possible collapse of the sidewalls of the excavation and the building foundation and footers, shoring will have to be constructed inside the excavation. Because of low overhead clearance and shallow depth of bedrock, sheeting the excavation is not practicable, making the placement of shoring time consuming and labor intensive. Shoring placed in the excavation will further hamper the removal efforts by limiting the operating space of the equipment, adding time to the project by slowing soil excavation and construction of shoring. In order to maintain the integrity of the structural columns soil excavation near the columns will be limited. The clearance required around the columns will be determined during the remedial design. Providing sufficient clearance to the columns may result in leaving impacted soil behind. Proposed soil excavation and shoring limits are shown on **Figure 4**.

The low overhead clearance inside the building and operating in proximity of structural columns limits the size of the equipment that that can be used, the ability to freely operate that equipment, and eliminates the ability to live-load the excavated soil directly into dump trucks. The excavated soil will have to be transported outside of the building to be loaded for off-site disposal. This increases soil handling and project time. Also, operating equipment within the confines of the building may require ventilation of equipment exhaust.

All water generated at the Site (e.g. excavation dewatering) will be considered hazardous and treated on-site via granulated active carbon prior to discharge.

Excavated soil will be transported outside of the building and direct-loaded for offsite disposal. Soil that is not direct-loaded will be stockpiled on a lined material staging area prior to off-site disposal. Specifics of the soil handling will be determined during remedial design.

3.6 Alternative Number 5: Upgrading Existing Soil Vapor Extraction System

This alternative proposes to upgrade the existing SVE system to remediate impacted soil and mitigate vapor phase intrusion to indoor air. Installation of the upgrades and operation of an SVE system will involve using higher flow rates, induced vacuum or a combination of high flow/induced vacuum to collect and remove vapor phase contamination. The proposed system

upgrade (i.e. specifications) is included as **Figure 5**. Long term indoor air and soil vapor sampling would be proposed to further evaluate contaminant migration and degradation.

4.0 DETAILED ANALYSIS OF ALTERNATIVES

4.1 Introduction

This section provides a detailed analysis of the remedial alternatives outlined in **Section 3** of this document. Each remedy is evaluated to ensure that the alternative can employ a remedy to protect against a threat to public health and/or the environment and is technically suitable at the Site. Each alternative is described in detail and compared on the basis of environmental benefits and costs using criteria established by 6 NYCRR Part 375, NYSDEC and Department of Environmental Remediation (DER)-10. A total of five (5) remedial alternatives, (including a "No Action" alternative) are described in this section and compared to the RAOs for soil impacts on this Site.

4.1.1 Detailed Evaluation of Criteria

This section discusses each remedial alternative compared against nine (9) evaluation criteria that were used to select each alternative. These criteria include:

- Protection of Human Health and the Environment
- Compliance with New York State Standards, Criteria, and Guidance (SCGs)
- Long-term effectiveness and permanence
- Reduction of Toxicity, Mobility or Volume
- Short-term Impacts and Effectiveness
- Implementabilty
- Cost Effectiveness
- Land Use
- Community Acceptance

4.1.2 Protection of Human Health and the Environment

This criterion assesses the effect of each proposed alternative on human health and the environment. The assessment is based on a number of factors included in the short and long

term effectiveness criteria, and compliance with statutory requirements. This site specifically includes the effect of contaminated soil vapor intrusion and groundwater on human health and the environment.

4.1.3 Compliance with the New York Standards, Criteria and Guidance (SCGs)

This criterion is used to evaluate whether the selected alternative achieve the proposed cleanup goals as described in **Section 2** of this report.

4.1.4 Long-Term Impacts Effectiveness and Permanence

This criterion addresses the long-term effectiveness of the selected remedial alternative post completion of the remedial action. It compares and evaluates the effectiveness of the remedial action to remaining contamination on the site as well as the long-term reliability of the alternative to the protection of the environment and human health.

4.1.5 Reduction of Toxicity, Mobility and Volume

This criterion compares the remedial technology selected for the Site to the technologies effectiveness in reducing the overall toxicity, mobility and quantity of contamination of concern in the treated matrix. It evaluates the degree to which the selected alternative can efficiently reduce the concentrations and volume as well as prevent contaminant migration down gradient of the site.

4.1.6 Short-term Impacts and Effectiveness

This criterion compares how the selected alternative will impact the site during the implementation phase of the project. Considerations include the protection of the surrounding community; construction workers involved the remedial process and the protection of the surrounding environment. It compares and evaluates the effectiveness in meeting the RAOs for the remedial action to remaining contamination on the site as well as the short-term reliability of the alternative.

4.1.7 Implementation and Technical Reliability

This criterion evaluates the overall feasibility of the selected remedial alternative which may include a number of factors including the administrative and technical aspects, and availability of services to conduct the work. Administratively, the remedial alternative must be in compliance with all federal, state and local regulatory requirements and proper permits must be established as necessary. Technically, the remedial alternative must include the site-specific capabilities of

being constructed, operated and subsequently maintained. Availability of services includes the means of feasibly establishing and implementing the remedial alternative at the site.

4.1.8 Cost Effectiveness

This criterion provides a cost estimate for the selected alternative which includes design, construction and long-term operation and maintenance at the site. The cost estimates herein reflect remedial alternative costs estimated to an accuracy of +/- 30%.

4.1.9 Land Use

The criterion is based on the assumptions that cleanup to pre-disposal conditions is determined to be infeasible and that the anticipated use of the site is commercial. Any residual contamination would be controllable with a Site Management Plan (SMP).

4.1.10 Community and State Acceptance

This criterion evaluates potential feasibility concerns that the public or the state may have regarding each remedial alternative. Typically these criteria are addressed in the Record of Decision provided by NYSDEC. Therefore, community acceptance will not be discussed further in this report.

4.2 Remedial Alternatives

4.2.1 Alternative Number 1: No Action

4.2.1.1 Description

This alternative involves taking no further action to remedy existing contamination on the site. The NCP at 40 CFR §300.430(e) (6) states that a "No Action" alternative be evaluated during Feasibility Studies to use as a baseline for comparison with other remedial alternatives. This alternative relies on the natural processes occurring in the subsurface to provide all and any remedial action.

4.2.1.2 Detailed Evaluation of Criteria

4.2.1.3 Overall Protection of Human Health and the Environment

This alternative is not protective of human health and the environment. Based on information included in the RI, natural attenuation/dechlorination processes are occurring at a slow rate. PCE daughter products (including TCE and cis-1,2-DCE) have been identified in the soil and soil vapor. However, significant dechlorination has not occurred based upon existing data. cVOC

impacts are anticipated to remain in the soil and soil vapor. The risk to ecological receptors was not evaluated because the site is located in a commercial zoned area and the closest water body is situated greater than 0.3 miles away.

4.2.1.4 Compliance with Statutory Requirements

Applying this alternative as the remedial action for the Site would not significantly reduce contaminant concentrations. The selected chemical specific SCGs for the Site (as discussed in **Section 2)** for soil or soil vapor intrusion would not be achieved.

4.2.1.5 Long-Term Effectiveness and Permanence

Long-term effectiveness of implementing this alternative would involve only the natural attenuation processes to degrade existing cVOC impacts. Based on results from the RI, the dechlorination process of PCE has begun with detections of TCE and cis-1,2-DCE; however, the "bulk" of the impacted material remains as PCE and the anaerobic biodegradation process is occurring at a slow rate. The risks associated with contaminated soil and soil vapor would be expected to remain the same because this alternative does not involve the removal or treatment of the delineated impacted material. This alternative is not considered to be a long-term effective remedy.

4.2.1.6 Reduction of Toxicity, Mobility, and Volume through Treatment

There is no reduction or removal of contaminate volume with this alternative. Therefore, the toxicity, mobility, and volume of contamination would not be reduced.

4.2.1.7 Short-Term Impacts and Effectiveness

Short-term impacts of implementing this alternative would be considered to be negligible because no remedial activities would be performed. PCE impacts and associated daughter products around and under the existing structure would be expected to remain at or near concentrations indicated in the RI. Since there is no treatment involved with this alternative there would be no short term effectiveness to meet any RAOs.

4.2.1.8 Implementability

There is no action to implement by using this alternative.

4.2.1.9 Cost

There are no costs associated with this alternative.

4.2.1.10 Land Use

The anticipated use of the site is commercial; however, there is no action to implement by using this alternative. The current soil impacts are above the acceptable Restricted Commercial SCO.

4.2.2 Alternative Number 2: Site Management

4.2.2.1 Description

The Site Management alternative does not involve an active remedial measure to remove or treat the cVOC-impacted soils or soil vapors that have been observed at the Site. This alternative would include replacing the concrete removed during the tank excavations with a similar material to serve as a cap. Furthermore, this alternative would include a deed restriction (land use restriction) to restrict future use of the Site to commercial or industrial activities, notify future property owners of the presence of cVOC-related compounds in soil and soil vapor at the Site and notify future property owners of the applicability of the SMP. The purpose of the SMP is to address possible future disturbances of Site soil, identify known locations of cVOC-impacted soil at the Site and, provide the inspection and maintenance activities for the concrete cover.

The SMP would address potential future soil excavation in connection with possible future renovation to the Staubs Site. The SMP would include a requirement for developing a remedial plan to identify proposed excavation limits and details of the soil removal, including but not limited to, waste characterization sampling, verification sampling, excavation sidewall support, offsite transportation and disposal, and backfilling. The SMP would require that the remedial plan be provided to the NYSDEC for review and approval prior to implementation. Costs for excavation are not included in this alternative.

4.2.2.2 Detailed Evaluation of Criteria

4.2.2.3 Overall Protection of Human Health and the Environment

Implementation of this alternative would meet the RAOs related to protecting human health but not meet the RAO to protecting the environment. As described above, this alternative would include replacing the concrete removed during the tank excavations with a similar material to serve as a cap. Once the cap was in-place, contact with or ingestion of the most-impacted soil would be minimized because it would be a physical barrier. The SMP would detail maintenance requirements for the cover material and potential exposures to constructions workers performing subsurface excavation/construction activities. The land use restriction would notify future property owners of the constituents of interest in soil and the applicability of the SMP.

The risk to ecological receptors was not evaluated because the site is located in a commercial zoned area and the closest water body is situated greater than 0.3 miles away.

4.2.2.4 Compliance with Statutory Requirements

Applying this alternative as the remedial action for the Site would not reduce contaminant concentrations in soil. The selected chemical specific SCGs for the Site (as discussed in **Section 2)** for soil would not be achieved.

4.2.2.5 Long-Term Effectiveness and Permanence

Long-term effectiveness of implementing this alternative would include natural degradation processes to reduce concentrations of cVOCs in soil. The reduction of concentrations of cVOC-related constituents via natural degradation is permanent, although it cannot currently be predicted and would not be documented or monitored. This alternative would effectively meet the RAOs related to potential direct contact, ingestion, or inhalation human health exposure pathways through land restrictions and actions outlined in the SMP. However, this alternative may not meet the RAO related to preventing the migration of chemical constituents from subsurface soil.

The SMP and land use restrictions would be kept in place, unchanged, unless site conditions or soil cleanup objectives for commercial site use were to change. The SMP would detail the actions to be taken to protect the health and safety of site workers and the community and properly handle impacted soils under a variety of site maintenance/future construction scenarios. If changes were to occur that would require modification to the SMP and/or land use restriction, such modifications would be presented to the NYSDEC for review and approval, as appropriate. Both the SMP and land use restrictions would be apparent to possible future site owners during comprehensive due diligence activities preformed in connection with property transfer. Together, these institutional controls could be expected to adequately and reliably provide for the management of impacted soils that remain in place.

4.2.2.6 Reduction of Toxicity, Mobility, and Volume through Treatment

All cVOC impacted soil would be left in place and not actively treated (other than by natural degradation), recycled or destroyed. Based on information in the RI, reduction of toxicity, mobility and mass of the impacted soil is not anticipated to occur over an extended period of time as a result of natural attenuation processes.

4.2.2.7 Short-Term Impacts and Effectiveness

There would be no short-term environmental impacts or risks to on-site workers or the community because no active remediation would be performed under this alternative.

4.2.2.8 Implementability

This alternative would be both technically and administratively implementable. No permit approval would be necessary. Minimal coordination with agencies may be required.

4.2.2.9 Cost

The costs associated with this alternative include preparing the SMP and any required documentation for land use restrictions. Costs also include the restoration of a 1,000-sf area of concrete at an 8-inch thickness. Annual operation & maintenance (O&M) costs would include inspection and maintenance of ground cover materials and preparation of an annual certification report. The total estimated 30-year present worth cost for implementation of this alternative is approximately $83,900. A detailed breakdown of the estimated costs for this alternative is presented in **Table 4.**

4.2.2.10 Land Use

No changes to land use would be made; the land use is anticipated to remain zoned commercial. Current soil impacts are above Restricted Commercial SCOs; however, residual contamination would be controllable with implementation of a SMP.

4.2.3 Alternative Number 3: Restoration to Pre-Disposal or Unrestricted Conditions

4.2.3.1 Description

This alternative would include demolishing the existing building and a removal of impacted soil at the Site. Impacted soil that exhibit constituents at concentrations exceeding the restricted-commercial use SCOs for individual constituents as presented in 6 NYCRR Part 375-6.8(b) would be removed to the extent practicable. An ISCO reagent, likely PersulfOx® (sodium persulfate), would be added to the bottom 5-feet of the excavation during backfilling to enhance the oxidative destruction of any remaining chlorinated contaminants in the soil or bedrock interface. The excavation would be filled with clean backfill and then capped with an impervious (e.g. concrete) layer. Removal would be performed within an approximately 10,000 sf area to a depth of approximately 20 feet bgs. The approximate soil removal volume is 7,425 cy. The removal limits under this alternative are shown on **Figure 3**.

To implement this remedy, this alternative would involve the installation of shoring systems near the property lines, excavation, ISCO treatment, air monitoring/vapor control, offsite transportation and disposal, backfilling, restoration, as well as building demolition and asbestos abatement.

Prior to excavation, a temporary shoring or "cell block" would be installed around portions of the excavation where benching would not be possible (e.g. near the property boundary to the south) to stabilize excavation sidewalls and permit soil removal to the target depths.

The excavation of impacted soils would generally be completed using conventional construction equipment, such as excavators, front-end loaders, dump trucks, etc. Given the large size of the excavation area and limited available space onsite for staging, the excavated soil would be pre-characterized as hazardous for offsite transportation and disposal.

A vapor control measure would be used to suppress odors and volatile organic vapors originated from the excavation and the excavated soil, as needed. A CAMP would be followed throughout the completion of these activities to document airborne particulate and volatile organic vapor concentrations surrounding the excavation area.

4.2.3.2 Detailed Evaluation of Criteria

4.2.3.3 Overall Protection of Human Health and the Environment

Implementation of this alternative would meet the soil RAOs related to protecting human health and the environment. Contact with or ingestion of the most-impacted soil would be minimized because it would be physically removed from the site and treated/disposed at permitted facilities. The ISCO treatment would further reduce any residual cVOC contaminant mass by oxidizing PCE and associated daughter products to carbon dioxide, water and inorganic salts.

The risk to ecological receptors was not evaluated because the site is located in a commercial zoned area and the closest water body is situated greater than 0.3 miles away.

4.2.3.4 Compliance with Statutory Requirements

Applying this alternative as the remedial action for the Site would significantly reduce contaminant concentrations in both soil and soil vapor by eliminating the mass of the impacts (e.g. the suspected source). The selected chemical specific SCGs for the Site (as discussed in **Section 2)** for both soil and soil vapor intrusion would be achieved.

4.2.3.5 Long-Term Effectiveness and Permanence

Long-term effectiveness of implementing this alternative would include removing the impacted soil and treating any adsorbed contaminants remaining at the site. This remedy would likely meet the RAOs related to protecting human health and the environment. The risks associated with contaminated soil vapor, dermal contact or ingestion of impacted soil would be expected to diminish because the excavation and ISCO treatment would result in permanent removal of most of the impacted soil from the site and treatment of any residual impacts as well as an impervious barrier (e.g. concrete) would be placed on top of imported clean backfill.

A land use restriction and SMP would not be necessary for this alternative because no residual-impacted soils and soil vapor impacts are anticipated. This alternative is considered to be an effective remedy long-term.

4.2.3.6 Reduction of Toxicity, Mobility, and Volume through Treatment

Implementation of this alternative would reduce the toxicity, mobility and volume of impacted soil and soil vapor at the site because the impacted soils would be removed and replaced with clean backfill. Additionally the ISCO treatment is expected to further decrease any remaining cVOC concentrations remaining in the soil outside the excavation limits.

4.2.3.7 Short-Term Impacts and Effectiveness

Short-term impacts anticipated during the implementation of this alternative could be exposure to chemical constituents for onsite remedial workers through ingestion, dermal contact, and/or inhalation. Potential exposure could be minimized by the use of PPE, as specified in a site-specific HASP. Air monitoring would be conducted during implementation as specified in a site-specific CAMP. Following the excavation and implementation of ISCO treatment cVOCs concentration area expected to immediately decrease to meet the RAOs.

4.2.3.8 Implementability

Impacted soil removal and treatment is technically feasible. The implementation difficulties would include the potential for ACM removal inside the building prior to demolition, controlling odors and dust that would be generated during excavation, as well as securing a sufficient number of waste haulers to transport the excavated soil for off-site disposal in a timely manner.

Proper advanced planning and coordination would be necessary to minimize technical problems which could lead to delays (e.g. equipment failure or limited number of waste haulers).

4.2.3.9 Cost

The costs associated with this alternative consist of site preparation, building demolition (including potential ACM), soil excavation and treatment, soil stabilization, transportation and treatment/disposal. Annual O&M costs would include preparation of an annual certification report. The total estimated 30-year present worth cost for implementation of this alternative is approximately $5,927,000. A detailed breakdown of the estimated costs for this alternative is presented in **Table 5**.

4.2.3.10 Land Use

This alternative proposes to remediate the site to pre-disposal activities. The site would meet the unrestricted use SCOs.

4.2.4 Alternative Number 4: Soil Excavation within the Existing Building, In-situ Remediation and Institutional Controls

4.2.4.1 Description

This alternative would address soil vapor within the existing building through the removal of impacted soils and in-situ remediation. Impacted soil above the restricted-commercial SCOs would be removed from the former "tank farm" and "solvent tank" areas to the extent practicable. An ISCO reagent, likely PersulfOx® (sodium persulfate), would be added to the bottom 5-feet of the excavation during backfilling to enhance the oxidative destruction of remaining chlorinated contaminants the soil. The excavation would be filled with clean backfill and then capped with an impervious layer. The removal would be performed within an approximate 2,800 sf area to a depth of approximately 20-22 feet bgs, depending upon depth to bedrock. The approximate soil removal volume is anticipated to be 2,074 cy. The removal limits under this alternative are shown on **Figure 4**.

Prior to excavation, a temporary shoring or "cell block" would be installed around portions of the excavation where benching would not be possible (e.g. near foundation walls or footings) to stabilize excavation sidewalls and permit soil removal to the targeted depths. The excavation of impacted soils would generally be completed using conventional construction equipment such as excavators, front-end loaders, dump trucks, etc. Given the large size of the excavation area and limited available space onsite for staging, the excavated soil would be pre-characterized as hazardous waste for offsite transportation and disposal. For purposes of the FS it is assumed that the samples would be collected at a frequency of 1 per 500 cy of soil excavation.

A vapor control measure would be used to suppress odors and volatile organic vapors originated from the excavation and the excavated soil, as needed. A CAMP would be followed throughout the completion of these activities to document airborne particulate and volatile organic vapor concentrations surrounding the excavation area.

4.2.4.2 Detailed Evaluation of Criteria

4.2.4.3 Overall Protection of Human Health and the Environment

Implementation of this alternative would meet the soil RAOs related to the protection of human health and the environment. Contact with or ingestion of the most-impacted soil would be minimized because it would be physically removed from the Site and treated/disposed at permitted facilities. The ISCO treatment would further reduce the residual cVOC contaminant mass by oxidizing PCE and associated daughter products to carbon dioxide, water and inorganic salts. Remaining soil that exhibits cVOC-related impacts would be encapsulated beneath cover materials and generally inaccessible for human exposure. The land use restriction would further mitigate potential exposure by notifying future Site owners of the constituents of interest remaining in soil and the applicability of the SMP. The SMP would mitigate potential exposure to soil at the Site by identifying known locations of constituents at concentrations exceeding SCOs and setting forth actions to address possible future disturbances of subsurface soil.

The risk to ecological receptors was not evaluated because the site is located in a commercial zoned area and the closest water body is situated greater than 0.3 miles away.

4.2.4.4 Compliance with Statutory Requirements

Applying this alternative as the remedial action for the Site would significantly reduce contaminant concentrations in both soil and soil vapor by eliminating the mass of the impacts. The selected chemical specific SCGs for the Site (as discussed in **Section 2)** for both soil and soil vapor intrusion would be achieved.

4.2.4.5 Long-Term Effectiveness and Permanence

Long-term effectiveness of implementing this alternative would include removing most of the impacted soil remaining at the Site and would most likely meet the RAOs related to protecting human health and the environment. The risks associated with contaminated soil and soil vapor, dermal contact or ingestion of impacted soil would be expected to decrease because the excavation program would result in the permanent removal of most of the impacted soil from the Site and an impervious barrier (e.g. concrete) would be placed on top of imported clean backfill.

However, it would be impossible to remove all of the impacted soil without compromising the buildings' foundation.

A land use restriction and SMP would be necessary for this alternative to address remaining residual-impacted soils and potential soil vapor impacts. The SMP would specify the future actions necessary to protect the health and safety of site workings and community as well as properly handle impacted materials under a wide barite of site maintenance/development scenarios.

With the combination of excavation, land use restrictions and the SMP this alternative is considered to be a long-term effective remedy.

4.2.4.6 Reduction of Toxicity, Mobility, and Volume through Treatment

Implementation of this alternative would reduce the toxicity, mobility and volume of impacted soil and soil vapor beneath the site building because the impacted soils would be removed and replaced with clean backfill. Additionally the ISCO treatment is expected to further decrease any remaining cVOC concentrations remaining in the soil outside the excavation limits.

4.2.4.7 Short-Term Impacts and Effectiveness

Short-term impacts anticipated during the implementing this alternative could be exposure to chemical constituents for onsite remedial workers through ingestion, dermal contact, and/or inhalation. Potential exposure could be minimized by the use of personal protective equipment (PPE) as specified in a site-specific Health & Safety Plan (HASP). Air monitoring would be conducted during implementation as specified in a site-specific CAMP. CVOC concentrations are expected to decrease to meet the RAOs following the excavation and implementation of ISCO treatment.

4.2.4.8 Implementability

Impacted soil removal and treatment is technically feasible. Implementation difficulties would include the potential need to remove subsurface obstructions to drive excavation shoring reinforcements (e.g. cell blocks) to required depths, controlling odors that would be generated during excavation, equipment limitations due to ceilings and doorways as well as securing a sufficient number of waste haulers to transport the excavated soil for off-site disposal in a timely manner.

Proper advanced planning and coordination would be necessary to minimize technical problems which could lead to delays (e.g. equipment failure or limited number of waste haulers).

4.2.4.9 Cost

The costs associated with this alternative include site preparation, soil excavation, soil stabilization, ISCO treatment transportation and treatment/disposal. Annual operation & maintenance (O&M) costs would include annual indoor air sampling and preparation of an annual certification report. Air monitoring includes indoor air (5 samples), outdoor ambient (2 samples), sub-slab (3 samples) and soil vapor sampling (3 samples) annually for the first five (5) years. From years 6 – 30 the same samples will be collected at a frequency of one (1) sampling event every five (5) years. The total estimated 30-year present worth cost for implementation of this alternative is approximately 1,811,200. A detailed breakdown of the estimated costs for this alternative is presented in **Table 6**.

4.2.4.10 Land Use

No changes to land use would be made; the land use is anticipated to remain zoned commercial. The residual contamination could be controllable with implementation of a SMP.

4.2.5 Alternative Number 5: Upgrading the Existing Soil Vapor Extraction

4.2.5.1 Description

The remedial action associated with this alternative involves mechanical upgrades and continued operation and maintenance of the SVE system. The SVE system would remove soil vapors from the subsurface directly or by transferring the contaminants to a vapor phase from an adsorbed phase on soil particles. The existing skid mounted SVE system includes a demister (knock out) tank, purge water pump, blower unit with filter, lead and lag carbon vessels (55-gallons each) and full process control system with high level alarms and temperature shut off sensors. Electricity used to run the SVE system is currently paid by the NYSDEC. Seven SVE wells and two vapor observation wells (that could be used as additional SVE wells if necessary), are associated with the current SVE system.

The proposed upgrades to the existing SVE system would include replacing the two 55-gallon granulated active carbon drums with a catalytic oxidizer and updating the effluent system with a 20-foot stall stack of schedule 5 stainless steel 4.5-inch outside diameter to accommodate the catalytic oxidizer. Finally, additional upgrades to the existing electrical panel will be necessary. At this time additional SVE wells are not anticipated.

The system has been priced for initial startup costs to make the system operational. Costs have also been included to run the system for two (2) years with bi-weekly operation and maintenance costs. Influent, effluent and equipment blank Tedlar® bag air samples are proposed for

collection to monitor the effectiveness of the system. Post operation of the SVE system, blower units will be installed (as needed) to continue mitigation of the remaining soil vapor beneath the building. The blower units will be installed to discharge directly to the atmosphere. Air samples will be collected annually to determine if the system is adequately mitigating the sub-slab/subsurface and is preventing soil vapor intrusion into the structure. Air monitoring includes indoor air (5 samples), outdoor ambient (2 samples), sub-slab (3 samples) and soil vapor sampling (3 samples) annually for the first five (5) years. From years 6 – 30 the same samples will be collected at a frequency of one (1) sampling event every five (5) years. The existing and proposed SVE upgrade specifications are provided as **Figure 5.**

4.2.5.2 Detailed Evaluation of Criteria

4.2.5.3 Overall Protection of Human Health and the Environment

This alternative is protective of human health and the environment for the remediation of soil and soil vapor the primary RAO or focus of this FS. The SVE system will remove the majority of soil vapor contamination (typical SVE system is capable of up to 90% mass reduction). Installation of blower/fan units (post catalytic scavenger) will provide a "polishing" effect to further reduce contaminant mass and provide protection to human health and the environment. The risk to ecological receptors was not evaluated because the site is located in a commercial zoned area and the closest water body is greater than 0.3 miles away.

4.2.5.4 Compliance with Statutory Requirements

Applying this alternative as the remedial action for the Site includes treatment for both soil vapor and soil. Upgrades to the existing SVE system would significantly reduce soil vapor contaminant concentrations and potentially meet the guidance suggested in Matrix 2 of the *NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (October 2006).

4.2.5.5 Long-Term Effectiveness and Permanence

Alternative 5 can be considered an effective remedy for the treatment of delineated soil vapor below the footprint of the existing structure. The upgrade and operation of the existing SVE system will significantly reduce soil vapor concentrations and mitigate soil vapor intrusion into the structure (upwards of 90% mass reduction). Therefore, this alternative is anticipated to be effective in the long-term.

4.2.5.6 Reduction of Toxicity, Mobility, and Volume through Treatment

This alternative involves the mass removal and/or treatment of contaminated soil and soil vapor therefore, for these matrices, the toxicity, mobility, and volume of contamination will be significantly reduced.

4.2.5.7 Short-Term Impacts and Effectiveness

Short-term impacts anticipated during the implementation of this alternative include a potential dust and noise concern to the workers and residents along the adjacent properties during the system upgrades. Additional impacts include the short-term impact to traffic with equipment occupying parking lot space, inhalation of soil vapor by workers during the upgrade process. Post installation and startup of the upgraded SVE system, cVOC concentrations are expected to decrease more rapidly than what has been observed during the pilot test.

4.2.5.8 Implementability

Implementation of this alternative could begin immediately following technical design of the SVE system upgrade. Structurally, the existing piping network of the SVE system is not complex and therefore design costs would largely be incurred sizing the powered and treatment components of the system as long as the piping network can remain above grade.

4.2.5.9 Cost

The 2014 cost to design, implement, operate and maintain this alternative based on a 30-year period is $647,000. Quantities, assumptions and unit price information are provided on **Table 7**. Unit price information was provided by contractor quotes and best engineering judgment.

4.2.5.10 Land Use

No changes to land use would be made; the land use is anticipated to remain zoned commercial. This alternative is less desirable than Alternative 3 which would meet Unrestricted SCOs but could eventually meet the Restricted Commercial SCOs which would meet current land use zoning.

4.3 Comparative Evaluation of Alternatives

4.3.1 Overall Protection of Human Health and the Environment

Alternative 1 describes no action which means that the risk for soil vapor intrusion into the existing Staubs building will remain and will provide no additional protection of human health and the environment. Alternative 2 provides protection of human health by means of capping contaminated

soil existing at the site, therefore likely reducing the soil vapor exposures to humans residing within the structure. Alternative 3 involves the removal/excavation of contaminated soil and demolition of the existing on-site structure. This would allow for all contaminated soil over unrestricted SCOs to be removed thereby the highest level of protection of human health. Also, the absence of a building precludes an indoor air impact. Alternative 4 provides protection of human health by means of removing the majority of elevated soil impacts existing at the Site and performing ISCO treatment on remaining soil. Alternative 5 provides protection of human health using a SVE system by means of keeping contaminated soil vapor away from humans. Proper maintenance is necessary to ensure that the SVE system is properly designed and continuously functioning to avoid the potential for health risks. Contaminated vapor will be extracted from soil and treated by the system to eliminate human contract and exposure to the environment. Alternative 3 provides the highest level of protection to human health and the environment.

4.3.2 Compliance with SCGs

Alternatives 1 and 2 do not comply with SCGs because contaminated soil and high levels of soil vapor would likely remain at levels above NYSDEC guidance criteria. Alternatives 3 and 5 comply with SCGs since they remove and or mitigate the contaminated soil; therefore reducing the soil vapor levels or provide treatment of both soils and soil vapor.

4.3.3 Long-Term Effectiveness and Permanence

Alternatives 1 and 2 employ no remedial action; therefore contaminated soil and soil vapor would remain on site, providing no long-term effectiveness or permanence. Alternatives 3 and 4 provide soil "mass" and soil vapor "mass" removal. Both methods are anticipated to be effective long-term and permanent remedial alternatives for the Site. Alternative 3 would provide a higher level of effectiveness and permanence than alternative 4 because more mass would be removed; there would not be the constraints of working around footings, ceiling heights and foundations and removal of the building would remove the indoor air exposure. Alternative 5 will provide soil vapor "mass" removal but it is unlikely to achieve 100% removal. Alternative 3 is anticipated to have the greatest long-term effectiveness and permanence.

4.3.4 Reduction in Toxicity, Mobility or Volume through Treatment

Alternative 1 and 2 would not treat contaminated soil vapor therefore; toxicity, mobility, and volume would not be reduced. Alternative 5 would significantly reduce the toxicity, mobility, and volume of contaminated soil vapor at the Site through treatment using a SVE system. Alternatives 3 and 4 provide the highest level of reduction in toxicity, mobility and volume by physical removal of the source area.

4.3.5 Short Term Impacts and Effectiveness

There are no short-term impacts associated with Alternative 1. Alternatives 2, 3, 4 and 5 would incur several short-term impacts that may affect workers (such as dust and noise) during the installation of concrete in Alternative 2 and 4, building demolitions of the existing building in alternative 3 and installation and operation of the SVE system in alternative 5. Additionally, alternative 3 will have the potential to cause minimal community disturbance with mobilization and operation of equipment during the remedy implementation phase and building demolition. Alternatives 3 and 4 would incur the greatest short-term impact(s) as they involve construction work using hydraulic equipment for the longest period of time, generate soils and related truck traffic and disturb the most area both on and off the Site.

In terms of effectiveness, Alternative 1 describes no action and therefore provides no additional effective treatment mechanism other than what is naturally biodegrading on the Site. Alternative 2 provides no short term effectiveness as no there is no remedy proposed for implementation. Alternatives 3 and 4 provide the highest means of short term effectiveness by completing source removal of impacted soil media at the Site to an approved to disposal facility. Alternative 5 provides a high level of short-term effectiveness by mitigating human exposure from soil vapor.

4.3.6 Implementability

There are no actions to implement for Alternative 1. Alternatives 2 through 5 can be readily implemented using standard construction means and methods.

4.3.7 Cost

The cost breakdown for all 5 alternatives is provided in **Table 8**.

4.3.8 Land Use

Alternatives 3 and 5 remove or treat the contaminated soil permanently. Remaining soil could meet the Restricted Commercial SCOs. Alternative 1 could never meet the applicable land use SCOs. Since the anticipated use of the site is commercial, Alternatives 2 and 4 would be less desirable because at least some contaminated soil would remain on the property. However, the residual contamination associated with Alternative 2 and 4 could be controllable with implementation of a Site Management Plan. With Alternative 3, all of the impacted soil from the Site above Unrestricted SCOs would be removed; restrictions on the Site would not be necessary.

4.4 Recommendation

Based on a site wide evaluation of soil and soil vapor contamination during the remedial investigation, a remedial action has been determined to be necessary to address chemical specific SGCs for the protection of human health and the environment. Alternatives 3 through 5 fully address the required chemical specific SCGs. Based on the preliminary cost estimates included in **Tables 4, 7** and **8**, Alternative 5 is approximately $5,280,000 less than Alternative 3. The recommended alternative for the Site is Alternative 5.

5.0 REFERENCES

New York State Department of Environmental Conservation (NYSDEC). 2006. Remedial Program Soil Cleanup Objectives, 6 NYCRR Subpart 375-6.8, December 14, 2006.

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Passero Associates. Re: *Phase I Environmental Site Assessment, Historic Staub Textile Services, Inc., 935-951 East Main Street, Rochester, New York 14605*, March 18, 2009.

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United State Environmental Protection Agency (USEPA).1988b. *CERCLA Compliance with Other Laws Manual*, Interim Final, EPA-540-G-89-006, Office of Emergency and Remedial Response, Washington, D.C.

Tables

TABLE 1
Chemical Specific Standards, Criteria, and Guidelines

Staubs Textile Services
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Regulation	Reference	Potential Standard (S) or Guidance (G)	Requirement Summary	Applicability to the Staubs Textile Services Site
Chemical-Specific SCGs				
Federal				
Clean Water Act (CWA) -Ambient Water Quality Criteria	40 CFR Part 131; EPA 440/5-86/001 "Quality Criteria for Water -1986", superseded by EPA-822-R-02-047 "National Recommended Water Quality Criteria: 2002"	S	Criteria for protection of aquatic life and/or human health depending on designated water use	Not applicable. Any groundwater contamination will be addressed under OU-2.
CWA Section 136	40 CFR 136	G	Identifies guidelines for test procedures for the analysis of pollutants.	
CWA Section 404	33 USC 1344	S	Regulates discharges to surface water or ocean, indirect discharges to POTWs, and discharge of dredged or fill material into waters of the U.S. (including wetlands).	
RCRA-Regulated Levels for Toxic Characteristics Leaching Procedure (TCLP) Constituents	40 CFR Part 261	S	These regulations specify the TCLP constituent levels for identification of hazardous wastes that exhibit the characteristic of toxicity.	Applicable to all remedial alternatives involving off-site land disposal.
Universal Treatment Standards/Land Disposal Restrictions (UTS/LDRs)	40 CFR Part 268	S	Identifies hazardous wastes for which land disposal is restricted and provides a set of numerical constituent concentration criteria at which hazardous waste is restricted from land disposal (without treatment).	Applicable if waste is determined to be hazardous and for remedial alternatives involving off-site land disposal.
New York State				
Environmental Remediation Programs	6 NYCRR Part 375	S	Provides an outline for the development and execution of the groundwater remedial programs. Includes cleanup objective tables.	Applicable for site remediation.
NYSDEC Ambient Water Quality Standards and Guidance Values	Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 (6/98)	S	Provides ambient water quality standards and guidance values for toxic and non-conventional pollutants for use in the NYSDEC programs.	Not applicable. Any groundwater contamination will be addressed under OU-2.
Identification and Listing of Hazardous Wastes	6 NYCRR Part 371	S	Criteria for determining if a solid waste is a hazardous waste and is subject to regulation under 6 NYCRR Parts 371-376.	Regulation applicable to all remediatal alternatives that include soil or waste generated during implementation since previous investigations has determined it to be a hazardous waste. These regulations do not set cleanup standards, but are considered when developing remedial alternatives.
New York State Surface Water and Groundwater Quality Standards	6 NYCRR Part 703	S	Provided standards for both surface water and groundwater.	Not applicable. Any groundwater contamination will be addressed under OU-2.

TABLE 2
Location-Specific Standards, Criteria, and Guidelines

Staubs Textile Services
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Regulation	Reference	Potential Standard (S) or Guidance (G)	Requirement Summary	Applicability to the Staubs Textile Services Site
Location-Specific SCGs				
Local				
Local Building Permits	N/A	S	Local authorities may require a building permit for any permanent or semi-permanent structure, such as an on-site water treatment system building or a retaining wall.	Substantive provisions are potentially applicable to remedial activities that require construction of permanent or semi-permanent structures.
Local Right-of-Way Permits	N/A	S	Local authorities may require permits for remedial work on city owned property, such as sidewalks and roads.	Applicable to remedial work on or near city owned property.
Local Noise Ordinances	City of Rocheser NY Code, §75-4A(1)	S	Loud noises which disturb the public shall not occur between 10 pm and 8 am, and shall be kept to a minimum between 8 am and 10 pm.	All unnessesary noises shall be kept to a minimum to ensure the welfare of the public is kept to a high standard.

TABLE 3
Action Specific Standards, Criteria, and Guidelines

Staubs Textiles Services
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Regulation	Reference	Potential Standard (S) or Guidance (G)	Requirement Summary	Applicability to the Staubs Textiles, Inc. Site
Action-Specific SCGs				
Federal				
Occupational Safety and Health Act (OSHA) - General Industry Standards	29 CFR Part 1910	S	Specifies the 8-hour time-weighted average concentration for worker exposure to various compounds. Training requirements for workers at hazardous waste operations are specified in 29 CFR 1910.120.	Appropriate training requirements will be met for remedial workers. Air monitoring will be required.
OSHA - Safety and Health Standards	29 CFR Part 1926	S	Specifies types of safety equipment and procedures to be followed during site remediation.	Appropriate safety equipment will be utilized on-site and appropriate procedures will be followed during remedial activities.
OSHA - Record-keeping, Reporting and Related Regulations	29 CFR Part 1904	S	Outlines record-keeping and reporting requirements for an employer under OSHA.	These regulations apply to the company(s) contracted to install, operate, and maintain remedial actions at hazardous waste sites.
RCRA - Preparedness and Prevention	40 CFR Part 264.30 - 264.31	S	Outlines requirements for safety equipment and spill control when treating, handling and/or storing hazardous wastes.	Safety and communication equipment will be utilized at the site as necessary. Local authorities will be familiarized with the site.
RCRA - Contingency Plan and Emergency Procedures	40 CFR Part 264.50 - 264.56	S	Provides requirements for outlining emergency procedures to be used following explosions, fires, etc. when storing hazardous wastes.	Emergency and contingency plans will be developed and implemented during remedial design. Copies of the plan will be kept onsite.
CWA - Discharge to Waters of the U.S., and Section 404	40 CFR Parts 403, and 230 Section 404 (b) (1); 33 USC 1344	S	Establishes site-specific pollutant limitations and performance standards which are designed to protect surface water quality. Types of discharges regulated under CWA include: Indirect discharge to a POTW, and discharge of dredged or fill material into U.S. waters.	No dewatering anticipated. Regulation would apply for potential discharge of water generated by excavation dewatering and treated in a temporary onsite water treatment system.
CWA Section 401	33 U.S.C. 1341	S	Requires that 401 Water Quality Certification permit be provided to federal permitting agency (USACE) for any activity including, but not limited to, the construction or operation of facilities which may result in any discharge into jurisdictional waters of the U.S. and/or state.	Regulation applies for potential discharge of water generated by excavation dewatering and treated in a temporary onsite water treatment system.
90 Day Accumulation Rule for Hazardous Waste	40 CFR Part 262.34	S	Allows generators of hazardous waste to store and treat hazardous waste at the generation site for up to 90 days in tanks, containers and containment buildings without having to obtain a RCRA hazardous waste permit.	Potentially applicable to remedial alternatives that involve the storing or treating of hazardous materials onsite.
RCRA - General Standards	40 CFR Part 264.111	S	General performance standards requiring minimization of need for further maintenance and control; minimization or elimination of post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products. Also requires decontamination or disposal of contaminated equipment, structures and soils.	Decontamination actions and facilities will be constructed for remedial activities and disassembled after completion.
Standards Applicable to Transporters of Applicable Hazardous Waste - RCRA Section 3003	40 CFR Parts 170-179, 262, and 263	S	Establishes the responsibility of off-site transporters of hazardous waste in the handling, transportation and management of the waste. Requires manifesting, recordkeeping and immediate action in the event of a discharge.	These requirements will be applicable to any company(s) contracted to transport hazardous material from the site.
United States Department of Transportation (USDOT) Rules for Transportation of Hazardous Materials	49 CFR Parts 107 and 171.1 - 172.558	S	Outlines procedures for the packaging, labeling, manifesting and transporting of hazardous materials.	These requirements will be applicable to any company(s) contracted to transport hazardous material from the site.
Clean Air Act-National Ambient Air Quality Standards	40 CFR Part 50	S	Establishes ambient air quality standards for protection of public health.	Remedial operations will require the use of air monitoring equipment.
USEPA-Administered Permit Program: The Hazardous Waste Permit Program	RCRA Section 3005; 40 CFR Part 270.124	S	Covers the basic permitting, application, monitoring and reporting requirements for off-site hazardous waste management facilities.	Any offsite facility accepting hazardous waste from the site must be properly permitted. Implementation of the site remedy will include consideration of these requirements.

TABLE 3
Action Specific Standards, Criteria, and Guidelines

Staubs Textiles Services
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Regulation	Reference	Potential Standard (S) or Guidance (G)	Requirement Summary	Applicability to the Staubs Textiles, Inc. Site
RCRA Subtitle C	40 U.S.C. Section 6901 et seq.; 40 CFR Part 268	S	Restricts land disposal of hazardous wastes that exceed specific criteria. Establishes UTSs to which hazardous wastes must be treated prior to land disposal.	Potentially applicable to remedial activities that include disposal of generated waste material from the site.
New York State				
NYSDEC's Monitoring Well Decommissioning Guidelines	NPL Site Monitoring Well Decommissioning dated May 1995	G	This guidance presents procedure for abandonment of monitoring wells at remediation sites.	This guidance is applicable for soil or groundwater alternatives that require the decommissioning of monitoring wells onsite.
Guidelines for the Control of Toxic Ambient Air Contaminants	DAR-1 (Air Guide 1)	G	Provides guidance for the control of toxic ambient air contaminants in New York State and outlines the procedures for evaluating sources of air pollution .	This guidance may be applicable for soil or groundwater alternatives that result in certain air emissions.
New York Hazardous Waste Management System -General	6 NYCRR Part 370	S	Provides definitions of terms and general instructions for the Part 370 series of hazardous waste management.	Hazardous waste is to be managed according to this regulation.
Identification and Listing of Hazardous Wastes	6 NYCRR Part 371	S	Outlines criteria for determining if a solid waste is a hazardous waste and is subject to regulation under 6 NYCRR Parts 371-376.	Applicable for determining if solid waste generated during implementation of remedial activities are hazardous wastes. These regulations do not set cleanup standards, but are considered when developing remedial alternatives.
Hazardous Waste Manifest System and Related Standards for Generators, Transporters, and Facilities	6 NYCRR Part 372	S	Provides guidelines relating to the use of the manifest system and its recordkeeping requirements. It applies to generators, transporters and facilities in New York State.	This regulation will be applicable to any company(s) contracted to do treatment work at the site or to transport or manage hazardous material generated at the site.
New York Regulations for Transportation of Hazardous Waste	6 NYCRR Part 372.3 a-d	S	Outlines procedures for the packaging, labeling, manifesting and transporting of hazardous waste.	These requirements will be applicable to any company(s) contracted to transport hazardous material from the site.
Waste Transporter Permits	6 NYCRR Part 364	S	Governs the collection, transport and delivery of regulated waste within New York State.	Properly permitted haulers will be used if any waste materials are transported offsite.
NYSDEC Technical and Administrative Guidance Memorandums (TAGMs)	NYSDEC TAGMs	G	TAGMs are NYSDEC guidance that are to be considered during the remedial process.	Appropriate TAGMs will be considered during the remedial process.
New York Regulations for Hazardous Waste Management Facilities	6 NYCRR Part 373.1.1 - 373.1.8	S	Provides requirements and procedures for obtaining a permit to operate a hazardous waste treatment, storage and disposal facility. Also lists contents and conditions of permits.	Any off-site facility accepting waste from the site must be properly permitted.
Land Disposal of a Hazardous Waste	6 NYCRR Part 376	S	Restricts land disposal of hazardous wastes that exceed specific criteria.	New York defers to USEPA for UTS/LDR regulations.
National Pollutant Discharge Elimination System (NPDES) Program Requirements, Administered Under New York State Pollution Discharge Elimination System (SPDES)	40 CFR Parts 122 Subpart B, 125, 301, 303, and 307 (Administered under 6 NYCRR 750-758)	S	Establishes permitting requirements for point source discharges; regulates discharge of water into navigable waters including the quantity and quality of discharge.	Remedial activities may involve treatment/disposal of water. If so, water generated at the site will be managed in accordance with NYSDEC SPDES permit requirements.

TABLE 4
Alternative 2 Cost Estimate: Site Management

Staubs Textile Services
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September 2015

ITEM	Description	Approximate Quantity	Unit of Measurement	Unit Price Dollars & Cents	Lump Sum Price Dollars & Cents
	REMEDIAL ACTION - Site Management				
LS-1	Site Management Plan Preparation	1	Lump Sum	$ 21,000.00	$ 21,000.00
LS-2	Concrete Restoration	1	Lump Sum	$ 12,880.00	$ 12,880.00
UC-1	Annual Inspection and Maintenance	30	Year	$ 734.67	$ 22,040.00

Subtotal	$ 55,920.00
Project Administration (15%)	$ 8,388.00
Design and Legal (15%)	$ 8,388.00
Contingency (20%)	$ 11,184.00
Total Cost for RA Design and Installation	**$ 83,880.00**

Grand Total **$ 83,900.00**

Present Value for LS-1 and LS-2 where n=3, rate=5%, Future Value Req=-Total Cap Cost
3 years is assumed as the time to it will take to begin construction

Total Capital Cost	$ 50,820.00
Present Value Cost	**$43,900.23**

Present Value for UC-1 where n=30, rate=5%, Payment Req=-Total Cap Cost/year or period
30 years Assumed for Inspections

Total Capital Cost	$ 33,060.00
Present Value Cost	**$16,940.44**
Total Present Value Cost	**$60,840.67**

TABLE 4
Alternative 2 Cost Estimate: Site Management

Staubs Textile Services
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Item LS-1, Site Management Plan Preparation

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	40	hr	$ 4,800.00		$ 4,800.00
Scientist	$ 85.00	120	hr	$ 10,200.00		$ 10,200.00
Drafting	$ 75.00	80	hr	$ 6,000.00		$ 6,000.00
				$ 21,000.00		**$ 21,000.00**

TABLE 4
Alternative 2 Cost Estimate: Site Management

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item LS-2, Concrete Restoration

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	4	hr	$ 480.00		$ 480.00
Supervisor	$ 85.00	40	hr	$ 3,400.00		$ 3,400.00
Equipment Operator	$ 75.00	40	hr	$ 3,000.00		$ 3,000.00
Laborer (2)	$ 65.00	80	hr	$ 5,200.00		$ 5,200.00
Truck	$ 20.00	40	hr	$ 800.00	10%	$ 800.00
Misc. Materials/Supplies	$ 1,000.00	1	ls	$ 1,000.00	10%	$ 1,100.00
Concrete Materials and Reinforcement	$ 10,000.00	1	LS	$ 10,000.00	10%	$ 11,000.00
					TOTAL	**$ 12,880.00**

TABLE 4
Alternative 2 Cost Estimate: Site Management

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

UC-1 Annual Inspection

	Cost	Quantity	Units	Costs
Labor				
PM	$ 120.00	22	hr	$ 2,640.00
Scientist/Engineer	$ 100.00	38	hr	$ 3,800.00
Equipment Operator	$ 85.00	104	hr	$ 8,840.00
Laborer	$ 65.00	104	hr	$ 6,760.00
		TOTAL		$ 22,040.00

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
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September 2015

ITEM	Description	Approximate Quantity	Unit of Measurement	Unit Price Dollars & Cents	Lump Sum Price Dollars & Cents
	REMEDIAL ACTION - Soil Excavation After Building Demolition				
LS-1	Mobilization/Demobilization	1	Lump Sum	$ 43,065.99	$ 43,065.99
LS-2	Site Preparation	1	Lump Sum	$ 5,225.00	$ 5,225.00
LS-3	Erosion and Sediment Control	1	Lump Sum	$ 5,990.00	$ 5,990.00
LS-4	Temporary Facilities and Controls	1	Lump Sum	$ 18,770.00	$ 18,770.00
LS-5	As-Built Survey	1	Lump Sum	$ 2,750.00	$ 2,750.00
LS-6	Building Demolition and Disposal	1	Lump Sum	$ 522,294.50	$ 522,294.50
UC-1	Shoring	1	Lump Sum	$ 93,480.00	$ 93,480.00
UC-2	Soil Excavation	7,500	CY	$ 26.57	$ 199,290.00
UC-3	Soil Transportation and Disposal	12,000	ton	$ 255.04	$ 3,060,437.00
UC-4	Dewatering	1	Each	$ 12,932.70	$ 12,932.70
UC-5	Water Treatment System	1	Each	$ 26,502.20	$ 26,502.20
UC-6	Backfill with Approved Off-Site Backfill Material	12,000	ton	$ 17.02	$ 204,220.00
UC-7	Site Electrical Work	1	Each	$ 5,500.00	$ 5,500.00
UC-8	Site Restoration	1	Each	$ 92,717.00	$ 92,717.00
UC-9	In-situ remediation	1	Each	$ 37,010.36	$ 37,010.36
UC-10	Soil Staging Area-Decon Pad	1	Each	$ 18,259.55	$ 18,259.55

Subtotal	$ 3,951,302.49
Project Administration (15%)	$ 592,695.37
Design and Legal (15%)	$ 592,695.37
Contingency (20%)	$ 790,260.50
Total Cost for RA Design and Installation	**$ 5,926,953.74**

Grand Total **$ 5,927,000.00**

Present Value for all line items where n=3, rate=5%, Future Value Req=-Total Cap Cost
3 years is assumed as the time to it will take to begin construction

Total Capital Cost	$ 5,927,000.00
Present Value Cost	**$5,119,965.45**

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item LS-1, Mobilization/Demobilization
(Limit 5% of Total Bid)

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
1% of Capital Cost	$ 43,065.99	1	LS	$ 43,065.99	0%	$ 43,065.99
				$ 43,065.99		**$ 43,065.99**

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
Rochester, New York
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September 2015

Item LS-2, Site Preparation

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
Misc. Materials/Supplies	$ 1,000.00	1	ls	$ 1,000.00	10%	$ 1,100.00
Utility Locator	$ 1,300.00	1	ea.	$ 1,300.00	10%	$ 1,430.00
PM	$ 120.00	6	hr	$ 720.00		$ 720.00
Supervisor	$ 85.00	10	hr	$ 850.00		$ 850.00
Equipment Operator	$ 75.00	0	hr	$ -		$ -
Laborer	$ 65.00	10	hr	$ 650.00		$ 650.00
Truck	$ 20.00	10	hr	$ 200.00	10%	$ 200.00
Decontamination equipment	$ 250.00	1	ls	$ 250.00	10%	$ 275.00
					TOTAL	**$ 5,225.00**

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

LS-3 - Erosion and Sediment Controls

	Cost	Quantity	Units	Costs
Labor				
PM	$ 120.00	0.5	hr	$ 60.00
Supervisor	$ 85.00	2	hr	$ 170.00
Equipment Operator	$ 75.00	4	hr	$ 300.00
Laborer	$ 65.00	4	hr	$ 260.00
Truck	$ 20.00	1	hr	$ 20.00
Skid steer with trencher	$ 230.00	1	day	$ 230.00
SWPPP	$ 1,000.00	1	ea.	$ 1,000.00
silt fence	$ 25.00	10	per roll	$ 250.00
disposal of silt fence	$ 300.00	1	LS	$ 300.00
fuel	$ 100.00	1	LS	$ 100.00
Hay bales delivered	$ 8.00	100	ea.	$ 800.00
Wood stakes	$ 1.00	200	ea.	$ 200.00
disposal of hay	$ 300.00	1	LS	$ 300.00
Dust Control - Water Tanks	$ 2,000.00	1	LS	$ 2,000.00
		TOTAL		$ 5,990.00

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

LS-4 - Temporary Operating Facilities

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	6	hr	$ 720.00		$ 720.00
Supervisor	$ 85.00	16	hr	$ 1,360.00		$ 1,360.00
Equipment Operator	$ 75.00	32	hr	$ 2,400.00		$ 2,400.00
Laborer	$ 65.00	32	hr	$ 2,080.00		$ 2,080.00
Truck	$ 20.00	16	hr	$ 320.00	10%	$ 352.00
Temporary construction fencing	$ 1,000.00	1	LS	$ 1,000.00	10%	$ 1,100.00
Rental Job trailer	$ 1,800.00	2	month	$ 3,600.00	10%	$ 3,960.00
Wash station	$ 100.00	2	month	$ 200.00	10%	$ 220.00
Misc. material - printer/copier,etc.	$ 2,000.00	1	LS	$ 2,000.00	10%	$ 2,200.00
Port-a-john	$ 340.00	2	month	$ 680.00	10%	$ 748.00
Storage pod	$ 175.00	2	month	$ 350.00	10%	$ 385.00
Air monitor	$ 900.00	2	month	$ 1,800.00	10%	$ 1,980.00
Weather station	$ 405.00	2	month	$ 810.00	10%	$ 891.00
PID	$ 725.00	2	month	$ 1,450.00	10%	$ 1,595.00
		TOTAL		$ 18,770.00		$ 19,991.00

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item LS-5, As-Built Survey

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
Survey	$ 2,500.00	1	ls	$ 2,500.00	10%	$ 2,750.00
				$ 2,500.00		**$ 2,750.00**

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item LS-6 Building Demolition

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
ASBESTOS ABATEMENT	$ 3.00	10000	sf	$ 30,000.00	10%	$ 33,000.00
OA VOC Method TO-15	$ 165.00	10	EA	$ 1,650.00	10%	$ 1,815.00
SS/SV VOC Method TO-15	$ 165.00	30	EA	$ 4,950.00	10%	$ 5,445.00
DUP	$ 165.00	5	EA	$ 825.00	10%	$ 907.50
Laborer (x4)	$ 65.00	1600	hr	$ 104,000.00		$ 104,000.00
Operator (x3)	$ 75.00	1200	EA	$ 90,000.00		$ 90,000.00
Supervisor	$ 85.00	400	EA	$ 34,000.00		$ 34,000.00
Project Management and Data Reporting	$ 5,000.00	1	LS	$ 5,000.00		$ 5,000.00
Excavator (x2)	$ 542.00	60	day	$ 32,520.00	10%	$ 35,772.00
Dozer	$ 185.00	30	day	$ 5,550.00	10%	$ 6,105.00
Loader	$ 150.00	30	day	$ 4,500.00	10%	$ 4,950.00
Truck	$ 50.00	60	day	$ 3,000.00	10%	$ 3,300.00
Transportation and Disposal	$ 30.00	6000	tons	$ 180,000.00	10%	$ 198,000.00
				$ 495,995.00		**$ 522,294.50**

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
Rochester, New York
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September 2015

UC-1 - Shoring

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
Labor						
PM	$ 120.00	20	hr	$ 2,400.00		$ 2,400.00
Slide Rail Remediation System	$ 24,200.00	3	mo	$ 72,600.00	10%	$ 79,860.00
Freight	$ 5,100.00	2	trip	$ 10,200.00	10%	$ 11,220.00
Excavator	$ 542.00	0	day	$ -	10%	$ -
Lull	$ 1,200.00	0	week	$ -	10%	$ -
Freight	$ 550.00	0	trips	$ -	10%	$ -
		TOTAL		$ 85,200.00		$ 93,480.00

NOTES:
Labor and Equipment used for shoring is included in excavation item. (Changed these items to zero to reflect this.)
3 Month Rental of shoring based on excavation rate shown in Excavation Line Item
Equipment costs are covered under Soil Excavation Item number

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-2, Soil Excavation

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	60	hr	$ 7,200.00		$ 7,200.00
Supervisor	$ 85.00	600	hr	$ 51,000.00		$ 51,000.00
Equipment Operator	$ 75.00	600	hr	$ 45,000.00		$ 45,000.00
Laborer	$ 65.00	600	hr	$ 39,000.00		$ 39,000.00
Excavator	$ 542.00	75	day	$ 40,650.00	10%	$ 44,715.00
Off-Road Dump Truck	$ 406.00	0	day	$ -	10%	$ -
Loader	$ 150.00	75	day	$ 11,250.00	10%	$ 12,375.00
Freight	$ 550.00	0	trips	$ -	10%	$ -
				$ 194,100.00		**$ 199,290.00**

Notes:
Assumed Excavation Rate of : 100 CY/8-hour day
Excavation size: 7500 CY
Time 75 days
Includes placement into staging area and loadout for T&D
Time (production rate) includes install of shoring during excavation operations
Assuming slide rail shoring system - 3-5 days per cell

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-3, Soil Transportation and Disposal

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	10	hr	$ 1,200.00		$ 1,200.00
Supervisor	$ 85.00	100	hr	$ 8,500.00		$ 8,500.00
Equipment Operator	$ 75.00	100	hr	$ 7,500.00		$ 7,500.00
Laborer	$ 65.00	100	hr	$ 6,500.00		$ 6,500.00
Truck	$ 20.00	100	hr	$ 2,000.00	10%	$ 2,200.00
Excavator	$ 542.00	10	dy	$ 5,420.00	10%	$ 5,962.00
fuel	$ 200.00	10	dy	$ 2,000.00	10%	$ 2,200.00
Transportation for disposal (haz)	$ 14.00	12000	ton	$ 168,000.00	10%	$ 184,800.00
Disposal (haz)	$ 215.00	12000	ton	$ 2,580,000.00	10%	$ 2,838,000.00
Power washer	$ 65.00	50	dy	$ 3,250.00	10%	$ 3,575.00
				$ 2,784,370.00		**$ 3,060,437.00**

Assumed Loadout Rate of : 150 CY/8-hour day
Excavation size: 7500 CY
Time 50 days
Includes placement into staging area and loadout for T&D
Time (production rate) includes install of shoring during excavation operations
Assuming slide rail shoring system - 3-5 days per cell
Will be completed within 10 days following excavation
Labor for Soil Loading during excavation is included in UC-2

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-4, Dewatering

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	10	hr	$ 1,200.00		$ 1,200.00
Supervisor	$ 85.00	20	hr	$ 1,700.00		$ 1,700.00
Laborer	$ 65.00	40	hr	$ 2,600.00		$ 2,600.00
Dewatering Pump	$ 1,000.00	1	LS	$ 1,000.00	10%	$ 1,100.00
Gravel Base	$ 16.00	2	tn	$ 32.00	10%	$ 35.20
12" Dia. Perforated Pipe	$ 850.00	1	ea	$ 850.00	10%	$ 935.00
Float System	$ 100.00	1	ea	$ 100.00	10%	$ 110.00
Valves/Pipe and Fittings	$ 1,500.00	1	LS	$ 1,500.00	10%	$ 1,650.00
Sampling Port	$ 25.00	1	ea	$ 25.00	10%	$ 27.50
Permits	$ 1,000.00	1	ls	$ 1,000.00	10%	$ 1,100.00
VOC Sampling - Method 8260	$ 1,000.00	1	ls	$ 1,000.00	10%	$ 1,100.00
Tedlar Bag Sampling/PID	$ 250.00	5	ea	$ 1,250.00	10%	$ 1,375.00
				$ 12,257.00		**$ 12,932.70**

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-5, Water Treatment System

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	1	hr	$ 120.00		$ 120.00
Supervisor	$ 85.00	8	hr	$ 680.00		$ 680.00
Equipment Operator	$ 75.00	8	hr	$ 600.00		$ 600.00
Laborer - Installation	$ 65.00	8	hr	$ 520.00		$ 520.00
Laborer - Normal hours - Maintenance	$ 65.00	30	ls	$ 1,950.00		$ 1,950.00
Laborer- Off Hours -Maintenance	$ 65.00	30	ls	$ 1,950.00		$ 1,950.00
HOSE-HD TANK TRK CAM 3x10	$ 90.00	8	Each per 28 day cycle	$ 720.00	10%	$ 792.00
Trash Pump	$ 800.00	1	Each per 28 day cycle	$ 800.00	10%	$ 880.00
300 DL Flange/Coupler	$ 9.00	3	Each per 28 day cycle	$ 27.00	10%	$ 29.70
300 AL Flange/Adapter	$ 9.00	3	Each per 28 day cycle	$ 27.00	10%	$ 29.70
Lay Flat hose	$ 90.00	3	Each per 28 day cycle	$ 270.00	10%	$ 297.00
Filter Bag	$ 1,000.00	1	Each per 28 day cycle	$ 1,000.00	10%	$ 1,100.00
Carbon Vessel	$ 365.00	4	Each per 28 day cycle	$ 1,460.00	10%	$ 1,606.00
Bilevel Tank	$ 60.00	60	day	$ 3,600.00	10%	$ 3,960.00
Sample Port	$ 20.00	2	Each per 28 day cycle	$ 40.00	10%	$ 44.00
Ball Valve	$ 15.00	12	Each per 28 day cycle	$ 180.00	10%	$ 198.00
HOSE-HD TANK TRK CAM 3x10	$ 90.00	8	Each per 28 day cycle	$ 720.00	10%	$ 792.00
3" Tees	$ 6.00	6	Each per 28 day cycle	$ 36.00	10%	$ 39.60
Cam Locks	$ 9.00	6	Each per 28 day cycle	$ 54.00	10%	$ 59.40
Miscellaneous Fittings and Float System	$ 1,000.00	1	LS	$ 1,000.00	10%	$ 1,100.00
3" FLG PAK W/ RR FULL FACE GSK	$ 8.00	6	each	$ 48.00	10%	$ 52.80
Filter Bags 1-Micron	$ 8.00	100	each	$ 800.00	10%	$ 880.00
PV1000 Carbon Rental Initiation	$ 1,000.00	4	each	$ 4,000.00	10%	$ 4,400.00
Carbon Freight Deliver	$ 1,000.00	2	each	$ 2,000.00	10%	$ 2,200.00
Carbon Freight Pick up	$ 1,000.00	2	each	$ 2,000.00	10%	$ 2,200.00
Water Treatment Cost	$ 2.00	10	1000 gallons	$ 20.00	10%	$ 22.00
				$ 24,622.00		$ 26,502.20

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-6, Backfill with Approved Off-Site Backfill Material

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	12	hr	$ 1,440.00		$ 1,440.00
Supervisor	$ 85.00	120	hr	$ 10,200.00		$ 10,200.00
Equipment Operator	$ 75.00	120	hr	$ 9,000.00		$ 9,000.00
Laborer	$ 65.00	120	hr	$ 7,800.00		$ 7,800.00
Select Fill	$ 11.50	12000	ton	$ 138,000.00	10%	$ 151,800.00
Pea Stone/ Crusher Run	$ 15.75	0	ton	$ -	10%	$ -
Loader	$ 750.00	3	week	$ 2,250.00	10%	$ 2,475.00
Dozer	$ 1,300.00	3	week	$ 3,900.00	10%	$ 4,290.00
Excavator	$ 3,800.00	3	week	$ 11,400.00	10%	$ 12,540.00
Roller/Compaction Equipment	$ 750.00	3	week	$ 2,250.00	10%	$ 2,475.00
Compaction Testing	$ 1,000.00	1	LS	$ 1,000.00		$ 1,100.00
Backfill Material Testing	$ 1,000.00	1	LS	$ 1,000.00		$ 1,100.00
TOTAL			**TOTAL:**	$ 188,240.00		$ 204,220.00

trucks per day	20
tons per truck	20
tons per day	400
days to backfill	15

Anticipate 15 days of backfilling after excavation operations

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-7, Site Electrical Work

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
Site Electrical work	$ 5,000.00	1	LS	$ 5,000.00	10%	$ 5,500.00
				$ 5,000.00		**$ 5,500.00**

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-8, Site Restoration
Years 1-5

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	6	hr	$ 720.00		$ 720.00
Equipment Operator	$ 75.00	100	hr	$ 7,500.00		$ 7,500.00
Laborer	$ 65.00	5	yr	$ 325.00		$ 325.00
Asphalt	$ 2.00	38000	sft	$ 76,000.00	10%	$ 83,600.00
Grass Reseeding	$ 0.08	0	sft	$ -	10%	$ -
Mulch	$ 8.50	0	bale	$ -	10%	$ -
Fertilizer	$ 21.50	0	50 lb bag	$ -	10%	$ -
Top Soil	$ 19.00	0	CY	$ -	10%	$ -
Truck	$ 20.00	16	hr	$ 320.00	10%	$ 352.00
Fuel	$ 100.00	2	wk	$ 200.00	10%	$ 220.00
			TOTAL	$ 85,065.00		$ 92,717.00

Area of Excavation 9800 sf
Area of Bldg Footprint 38000 sf

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-9, In-situ Remediation

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	25	HR	$ 3,000.00		$ 3,000.00
Equipment Operator	$ 75.00	0	HR	$ -		$ -
Laborer	$ 65.00	0	HR	$ -		$ -
Excavator	$ 542.86	0	day	$ -	10%	$ -
Persulfox	$ 2.85	10849	LB	$ 30,918.51	10%	$ 34,010.36
				$ 33,918.51		**$ 37,010.36**

Notes:

Area to apply	9800	sf
App Rate of Amendment		
Persulfox	1	lb/sf
Qty of Persulfox	9800	lbs
	10849	lbs

Labor and Equipment line items are priced in backfill unit cost

TABLE 5
Alternative 3 Cost Estimate: Restoration to Pre-Disposal or Unrestricted Conditions

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-10, Soil Staging Area snd Decontamination Pad

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	1	hr	$ 120.00		$ 120.00
Equipment Operator	$ 75.00	16	hr	$ 1,200.00		$ 1,200.00
Laborer	$ 65.00	32	hr	$ 2,080.00		$ 2,080.00
40 mil HDPE Liner	$ 1.00	8910	SF	$ 8,910.00	10%	$ 9,801.00
Select Fill	$ 15.00	189	CY	$ 2,831.25	10%	$ 3,114.38
HDPE Sump (HDPE Riser)	$ 5.00	2	EA	$ 10.00	10%	$ 11.00
4" HDPE pipe	$ 5.50	20	10' Section	$ 110.00	10%	$ 121.00
Nonwoven Geotextile Fabric	$ 488.00	2	Roll	$ 976.00	10%	$ 1,073.60
Dozer	$ 185.71	2	day	$ 371.43	10%	$ 408.57
Roller	$ 150.00	2	day	$ 300.00	10%	$ 330.00
			TOTAL:	$ 16,908.68		$ 18,259.55

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

ITEM	Description	Approximate Quantity	Unit of Measurement	Unit Price Dollars & Cents	Lump Sum Price Dollars & Cents
	REMEDIAL ACTION - Soil Excavation with Existing Building				
LS-1	Mobilization/Demobilization	1	Lump Sum	$ 13,642.15	$ 13,642.15
LS-2	Site Preparation	1	Lump Sum	$ 5,245.00	$ 5,245.00
LS-3	Erosion and Sediment Control	1	Lump Sum	$ -	$ -
LS-4	Temporary Facilities and Controls	1	Lump Sum	$ 18,891.00	$ 18,891.00
LS-5	As-Built Survey	1	Lump Sum	$ 2,750.00	$ 2,750.00
UC-1	Shoring, Bracing and Structural Supports	1	Lump Sum	$ 107,880.00	$ 107,880.00
UC-2	Soil Excavation	2,074	CY	$ 65.41	$ 135,654.50
UC-3	Soil Transportation and Disposal	3,318	Ton	$ 262.75	$ 871,903.84
UC-4	Dewatering	1	Each	$ 12,932.70	$ 12,932.70
UC-5	Water Treatment System	1	Each	$ 32,068.20	$ 32,068.20
UC-6	Backfill with Approved Off-Site Backfill Material	3,318	Ton	$ 39.84	$ 132,200.35
UC-7	Site Electrical Work	1	Each	$ 5,500.00	$ 5,500.00
UC-8	Site Restoration	1	Each	$ 26,472.00	$ 26,472.00
UC-9	In-situ remediation	1	Each	$ 12,717.25	$ 12,717.25
UC-10	Soil Staging Area-Decon Pad	1	Each	$ 11,000.00	$ 11,000.00
		Subtotal			$ 1,155,966.48
		Project Administration (15%)			$ 173,394.97
		Design and Legal (15%)			$ 173,394.97
		Contingency (20%)			$ 231,193.30
		Total Cost for RA Design and Installation			**$ 1,733,949.72**
	OPERATION AND MAINTENANCE COST FOR YEARS 1 - 5				
UC-11	Long Term AIR Monitoring (Years 1-5)	5	Each	$ 7,020.50	$ 35,102.50
		Subtotal			$ 35,102.50
		Project Administration (5%)			$ 1,755.13
		Contingency (5%)			$ 1,755.13
		Total Cost for Years 1-5 O&M			**$ 38,612.75**
	OPERATION AND MAINTENANCE COST FOR YEARS 6-30				
UC-12	Long Term AIR Monitoring (Years 6-30)	5	Each	$ 7,020.50	$ 35,102.50
		Subtotal			$ 35,102.50
		Project Administration (5%)			$ 1,755.13
		Contingency (5%)			$ 1,755.13
		Total Cost for Years 5-30 O&M			**$ 38,612.75**
				Grand Total	**$ 1,811,200.00**

Present Value for the Remedial Action cost where n=1, rate=5%, Future Value Req=-Total Cap Cost		
3 years is assumed as the time to it will take to begin construction		
	Total Capital Cost	$ 1,733,949.72
	Present Value Cost	**$1,651,380.69**
Present Value for O+M Cost for Years 1-5 where n=5, rate=5%, Payment Req=-Total Cap Cost/year or period		
	Total Capital Cost	$ 38,612.75
	Present Value Cost	**$33,434.60**
Present Value for O+M Cost for Years 5-30 where n=25, rate=5%, Payment Req=-Total Cap Cost/year or period		
	Total Capital Cost	$ 38,612.75
	Present Value Cost	**$21,768.24**
	Total Present Value Cost	**$1,706,583.53**

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item LS-1, Mobilization/Demobilization
(Limit 5% of Total Bid)

	Cost		Quantity	Units	Costs		Mark-up	Bill Price	
1% of Capital Cost	$	13,642.15	1	LS	$	13,642.15		$	13,642.15
					$	13,642.15		**$**	**13,642.15**

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item LS-2, Site Preparation

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
Misc. Materials/Supplies	$ 1,000.00	1	ls	$ 1,000.00	10%	$ 1,100.00
Utility Locator	$ 1,300.00	1	ea.	$ 1,300.00	10%	$ 1,430.00
PM	$ 120.00	6	hr	$ 720.00		$ 720.00
Supervisor	$ 85.00	10	hr	$ 850.00		$ 850.00
Equipment Operator	$ 75.00	0	hr	$ -		$ -
Laborer	$ 65.00	10	hr	$ 650.00		$ 650.00
Truck	$ 20.00	10	hr	$ 200.00	10%	$ 220.00
Decontamination equipment	$ 250.00	1	ls	$ 250.00	10%	$ 275.00
					TOTAL	**$ 5,245.00**

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

LS-3 - Erosion and Sediment Controls

	Cost	Quantity	Units	Costs
Labor				
PM	$ 120.00	0	hr	$ -
Supervisor	$ 85.00	0	hr	$ -
Equipment Operator	$ 75.00	0	hr	$ -
Laborer	$ 65.00	0	hr	$ -
Truck	$ 20.00	0	hr	$ -
Skid steer with trencher	$ 230.00	0	day	$ -
SWPPP	$ 1,000.00	0	ea.	$ -
silt fence	$ 25.00	0	per roll	$ -
disposal of silt fence	$ 300.00	0	LS	$ -
fuel	$ 100.00	0	LS	$ -
Hay bales delivered	$ 8.00	0	ea.	$ -
Wood stakes	$ 1.00	0	ea.	$ -
disposal of hay	$ 300.00	0	LS	$ -
Dust Control - Water Tanks	$ 2,000.00	0	LS	$ -
		TOTAL		$ -

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

LS-4 - Temporary Operating Facilities

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	6	hr	$ 720.00		$ 720.00
Supervisor	$ 85.00	16	hr	$ 1,360.00		$ 1,360.00
Equipment Operator	$ 75.00	32	hr	$ 2,400.00		$ 2,400.00
Laborer	$ 65.00	32	hr	$ 2,080.00		$ 2,080.00
Truck	$ 20.00	16	hr	$ 320.00	10%	$ 352.00
Temporary construction fencing	$ 1,000.00	0	LS	$ -	10%	$ -
Rental Job trailer	$ 1,800.00	2	month	$ 3,600.00	10%	$ 3,960.00
Wash station	$ 100.00	2	mo	$ 200.00	10%	$ 220.00
Water	$ 500.00	0	LS	$ -	10%	$ -
Misc. material - printer/copier,etc.	$ 2,000.00	1	LS	$ 2,000.00	10%	$ 2,200.00
Port-a-john	$ 340.00	2	month	$ 680.00	10%	$ 748.00
Storage pod	$ 175.00	2	month	$ 350.00	10%	$ 385.00
Misc. hoses, piping, etc.	$ 5,000.00	0	ls	$ -	10%	$ -
Air monitor	$ 900.00	2	mo	$ 1,800.00	10%	$ 1,980.00
Weather station	$ 405.00	2	mo	$ 810.00	10%	$ 891.00
PID	$ 725.00	2	mo	$ 1,450.00	10%	$ 1,595.00
Water Truck	$ 3,200.00	0	mo	$ -	10%	$ -
		TOTAL		$ 17,770.00		$ 18,891.00

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item LS-5, As-Built Survey

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
Survey	$ 2,500.00	1	ls	$ 2,500.00	10%	$ 2,750.00
				$ 2,500.00		**$ 2,750.00**

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

UC-1 - Shoring, Bracing and Structural Supports

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
Labor						
Design of System	$ 150.00	100	hr	$ 15,000.00	10%	$ 16,500.00
PM	$ 120.00	20	hr	$ 2,400.00		$ 2,400.00
Supervisor	$ 85.00	20	hr	$ 1,700.00		$ 1,700.00
Equipment Operator	$ 75.00	20	hr	$ 1,500.00		$ 1,500.00
Laborer	$ 65.00	20	hr	$ 1,300.00		$ 1,300.00
Shoring System	$ 50,000.00	1	mo	$ 50,000.00	10%	$ 55,000.00
Freight	$ 3,400.00	2	trip	$ 6,800.00	10%	$ 7,480.00
Excavator	$ 550.00	0	day	$ -	10%	$ -
Lull	$ 1,200.00	0	week	$ -	10%	$ -
Structural Supports (columns/add brace)	$ 10,000.00	1	ls	$ 10,000.00	10%	$ 11,000.00
Bracing	$ 10,000.00	1	ls	$ 10,000.00	10%	$ 11,000.00
		TOTAL		$ 98,700.00		$ 107,880.00

NOTES:
Labor and Equipment used for shoring is included in excavation item.
Shoring, bracing and Structural support costs are assumed and will be confirmed upon design of system
Equipment costs are covered under Soil Excavation Item number

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-2, Soil Excavation

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	20	hr	$ 2,400.00		$ 2,400.00
Supervisor	$ 85.00	415	hr	$ 35,258.00		$ 35,258.00
Equipment Operator	$ 75.00	415	hr	$ 31,110.00		$ 31,110.00
Laborer	$ 65.00	415	hr	$ 26,962.00		$ 26,962.00
Excavator	$ 550.00	52	day	$ 28,517.50	10%	$ 31,369.25
Off-Road Dump Truck	$ 406.00	0	day	$ -	10%	$ -
Loader	$ 150.00	52	day	$ 7,777.50	10%	$ 8,555.25
Freight	$ 550.00	0	trips	$ -	10%	$ -
				$ 132,025.00		**$ 135,654.50**

Notes:
Assumed excavation rate of : 40 CY/8-hour day
Excavation size: 2074 CY
Time 52 days
Includes placement into staging area and loadout for T&D
Time (production rate) includes install of shoring during excavation operations

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-3, Soil Transportation and Disposal

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	10	hr	$ 1,200.00		$ 1,200.00
Supervisor	$ 85.00	83	hr	$ 7,051.60		$ 7,051.60
Equipment Operator	$ 75.00	83	hr	$ 6,222.00		$ 6,222.00
Laborer	$ 65.00	83	hr	$ 5,392.40		$ 5,392.40
Truck	$ 20.00	83	hr	$ 1,659.20	10%	$ 1,825.12
Excavator	$ 550.00	10	dy	$ 5,703.50	10%	$ 6,273.85
Loader	$ 150.00	10	dy	$ 1,555.50	10%	$ 1,711.05
fuel	$ 200.00	10	dy	$ 2,074.00	10%	$ 2,281.40
Transportation for disposal (haz)	$ 14.00	3318	ton	$ 46,457.60	10%	$ 51,103.36
Disposal (haz)	$ 215.00	3318	ton	$ 713,456.00	10%	$ 784,801.60
Power washer	$ 65.00	10	dy	$ 674.05	10%	$ 741.46
TCLP Sampling per 750 ton	$ 600.00	5	ea	$ 3,000.00	10%	$ 3,300.00
				$ 794,445.85		**$ 871,903.84**

Assumed excavation rate of : 200 CY/8-hour day
Excavation size: 2074 CY
Time 10 days
Includes placement into staging area and loadout for T&D
Time (production rate) includes install of shoring during excavation operations

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-4, Dewatering

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	10	hr	$ 1,200.00		$ 1,200.00
Supervisor	$ 85.00	20	hr	$ 1,700.00		$ 1,700.00
Laborer	$ 65.00	40	hr	$ 2,600.00		$ 2,600.00
Dewatering Pump	$ 1,000.00	1	LS	$ 1,000.00	10%	$ 1,100.00
Gravel Base	$ 16.00	2	tn	$ 32.00	10%	$ 35.20
12" Dia. Perforated Pipe	$ 850.00	1	ea	$ 850.00	10%	$ 935.00
Float System	$ 100.00	1	ea	$ 100.00	10%	$ 110.00
Valves/Pipe and Fittings	$ 1,500.00	1	LS	$ 1,500.00	10%	$ 1,650.00
Sampling Port	$ 25.00	1	ea	$ 25.00	10%	$ 27.50
Permits	$ 1,000.00	1	ls	$ 1,000.00	10%	$ 1,100.00
VOC Sampling - Method 8260	$ 1,000.00	1	ls	$ 1,000.00	10%	$ 1,100.00
Tedlar Bag Sampling/PID	$ 250.00	5	ea	$ 1,250.00	10%	$ 1,375.00
				$ 12,257.00		**$ 12,932.70**

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-5, Water Treatment System

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	1	hr	$ 120.00		$ 120.00
Supervisor	$ 85.00	8	hr	$ 680.00		$ 680.00
Equipment Operator	$ 75.00	8	hr	$ 600.00		$ 600.00
Laborer - Installation	$ 65.00	8	hr	$ 520.00		$ 520.00
Laborer - Normal hours - Maintenance	$ 65.00	30	ls	$ 1,950.00		$ 1,950.00
Laborer- Off Hours -Maintenance	$ 65.00	30	ls	$ 1,950.00		$ 1,950.00
HOSE-HD TANK TRK CAM 3x10	$ 90.00	8	Each per 28 day cycle	$ 720.00	10%	$ 792.00
Trash Pump	$ 800.00	1	Each per 28 day cycle	$ 800.00	10%	$ 880.00
300 DL Flange/Coupler	$ 9.00	3	Each per 28 day cycle	$ 27.00	10%	$ 29.70
300 AL Flange/Adapter	$ 9.00	3	Each per 28 day cycle	$ 27.00	10%	$ 29.70
Lay Flat hose	$ 90.00	3	Each per 28 day cycle	$ 270.00	10%	$ 297.00
Filter Bag	$ 1,000.00	1	Each per 28 day cycle	$ 1,000.00	10%	$ 1,100.00
Carbon Vessel	$ 365.00	8	Each per 28 day cycle	$ 2,920.00	10%	$ 3,212.00
Bi-level Tank	$ 60.00	120	day	$ 7,200.00	10%	$ 7,920.00
Sample Port	$ 20.00	2	Each per 28 day cycle	$ 40.00	10%	$ 44.00
Ball Valve	$ 15.00	12	Each per 28 day cycle	$ 180.00	10%	$ 198.00
HOSE-HD TANK TRK CAM 3x10	$ 90.00	8	Each per 28 day cycle	$ 720.00	10%	$ 792.00
3" Tees	$ 6.00	6	Each per 28 day cycle	$ 36.00	10%	$ 39.60
Cam Locks	$ 9.00	6	Each per 28 day cycle	$ 54.00	10%	$ 59.40
Miscellaneous Fittings and Float System	$ 1,000.00	1	LS	$ 1,000.00	10%	$ 1,100.00
3" FLG PAK W/ RR FULL FACE GSK	$ 8.00	6	each	$ 48.00	10%	$ 52.80
Filter Bags 1-Micron	$ 8.00	100	each	$ 800.00	10%	$ 880.00
PV1000 Carbon Rental Initiation	$ 1,000.00	4	each	$ 4,000.00	10%	$ 4,400.00
Carbon Freight Deliver	$ 1,000.00	2	each	$ 2,000.00	10%	$ 2,200.00
Carbon Freight Pick up	$ 1,000.00	2	each	$ 2,000.00	10%	$ 2,200.00
Water Treatment Cost	$ 2.00	10	1000 gallons	$ 20.00	10%	$ 22.00
				$ 29,682.00		$ 32,068.20

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-6, Backfill with Approved Off-Site Backfill Material

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	12	hr	$ 1,440.00		$ 1,440.00
Supervisor	$ 85.00	221	hr	$ 18,804.27		$ 18,804.27
Equipment Operator	$ 75.00	221	hr	$ 16,592.00		$ 16,592.00
Laborer	$ 65.00	221	hr	$ 14,379.73		$ 14,379.73
Select Fill	$ 11.50	3318	ton	$ 38,161.60	10%	$ 41,977.76
Pea Stone/ Crusher Run	$ 15.75	0	ton	$ -	10%	$ -
Loader	$ 750.00	6	week	$ 4,148.00	10%	$ 4,562.80
Dozer	$ 1,300.00	6	week	$ 7,189.87	10%	$ 7,908.85
Excavator	$ 550.00	28	day	$ 15,209.33	10%	$ 16,730.27
Roller/Compaction Equipment	$ 250.00	28	day	$ 6,913.33	10%	$ 7,604.67
Compaction Testing	$ 1,000.00	1	LS	$ 1,000.00	10%	$ 1,100.00
Backfill Material Testing	$ 1,000.00	1	LS	$ 1,000.00	10%	$ 1,100.00
TOTAL						$ 132,200.35

trucks per day	6
tons per truck	20
tons per day	120
days to backfill	28

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-7, Site Electrical Work

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
Site Electrical work	$ 5,000.00	1	EA	$ 5,000.00	10%	$ 5,500.00
				$ 5,000.00		**$ 5,500.00**

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-8, Site Restoration

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	10	hr	$ 1,200.00		$ 1,200.00
Equipment Operator	$ 75.00	40	hr	$ 3,000.00		$ 3,000.00
Laborer (X2)	$ 65.00	80	hr	$ 5,200.00		$ 5,200.00
Truck	$ 20.00	16	hr	$ 320.00	10%	$ 352.00
Concrete Slab Restoration	$ 15,000.00	1	ls	$ 15,000.00	10%	$ 16,500.00
Fuel	$ 100.00	2	wk	$ 200.00	10%	$ 220.00
			TOTAL			$ 26,472.00

Area of Excavation 2800 sf
Area of Bldg Footprint 38000 sf

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-9, In-situ Remediation

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	25	hr	$ 3,000.00		$ 3,000.00
Equipment Operator	$ 75.00	0	hr	$ -		$ -
Laborer	$ 65.00	0	hr	$ -		$ -
Excavator	$ 542.86	0	day	$ -		$ -
Persulfox	$ 2.85	3100	LB	$ 8,833.86	10%	$ 9,717.25
				$ 11,833.86		**$ 12,717.25**

Area to apply	2800	sf
App Rate of Amendment		
Persulfox	1	lb/sf
Qty of Persulfox	2800	lbs
	3100	lbs

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-10, Soil Staging Area snd Decontamination Pad

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
Decontamination of Equipment/Materials	$ 10,000.00	1	ls	$ 10,000.00	10%	$ 11,000.00
Staging of Excavated Soils (L/E/M)	$ 10,000.00	1	ls	$ 10,000.00	10%	$ 11,000.00
						$ 22,000.00

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-11, Long Term AIR Monitoring
Assume Seasonally for 5 years

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
IA VOC Method 8260	$ 165.00	6	EA	$ 990.00	10%	$ 1,089.00
OA VOC Method 8260	$ 165.00	2	EA	$ 330.00	10%	$ 363.00
SS/SV VOC Method 8260	$ 165.00	6	EA	$ 990.00	10%	$ 1,089.00
DUP	$ 165.00	1	EA	$ 165.00	10%	$ 181.50
Laborer	$ 65.00	12	hr	$ 780.00		$ 780.00
Shipping	$ 40.00	2	EA	$ 80.00	10%	$ 88.00
Data Validation	$ 300.00	1	EA	$ 300.00	10%	$ 330.00
Project Management and Data Reporting	$ 2,000.00	1	EA	$ 2,000.00		$ 2,000.00
Equis Reporting	$ 1,000.00	1	EA	$ 1,000.00	10%	$ 1,100.00
				$ 6,635.00		**$ 7,020.50**
					Yearly Cost	$ 7,020.50
					Total	**$ 35,102.50**

TABLE 6
Alternative 4 Cost Estimate: Soil Exacavation within the Existing Building with In-situ Remediation and Institutional Controls

Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

Item UC-12, Long Term AIR Monitoring
Assume 1 round every 5 years for years 6 - 30

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
IA VOC Method TO-15	$ 165.00	1.2	EA	$ 198.00	10%	$ 217.80
OA VOC Method TO-15	$ 165.00	0.4	EA	$ 66.00	10%	$ 72.60
SS/SV VOC Method TO-15	$ 165.00	1.2	EA	$ 198.00	10%	$ 217.80
DUP	$ 165.00	0.2	EA	$ 33.00	10%	$ 36.30
Laborer	$ 65.00	2.4	hr	$ 156.00		$ 156.00
Shipping	$ 40.00	0.4	EA	$ 16.00	10%	$ 17.60
Data Validation	$ 300.00	0.2	EA	$ 60.00	10%	$ 66.00
Project Management and Data Reporting	$ 2,000.00	0.2	EA	$ 400.00		$ 400.00
Equis Reporting	$ 1,000.00	0.2	EA	$ 200.00	10%	$ 220.00
	yearly cost			$ 1,327.00		**$ 1,404.10**
				Total:		**$ 35,102.50**

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

ITEM	Description	Approximate Quantity	Unit of Measurement	Unit Price Dollars & Cents	Lump Sum Price Dollars & Cents
	REMEDIAL ACTION - SVE System Upgrade and Installation				
LS-1	Mobilization/Demobilization (Limit 5% of Total)	1	Lump Sum	$ 7,170.00	$ 7,170.00
LS-2	Site Preparation	1	Lump Sum	$ 5,165.00	$ 5,165.00
LS-3	Monitoring Well As-Built Survey	1	Lump Sum	$ 2,500.00	$ 2,500.00
LS-4	Electrical Work and Connections	1	Lump Sum	$ 4,400.00	$ 4,400.00
UC-1	Soil Vapor Mitigation - Sealing Existing Structure	0	Day	$ -	$ -
UC-2	Health and Safety	1	site	$ 2,200.00	$ 2,200.00
UC-3	Monitoring Well Installation	0	Each	$ -	$ -
UC-4	SVE System Upgrade Installation and Startup	1	Each	$ 89,845.00	$ 89,845.00
UC-5	Monitoring Well Decommissioning	0	Each	$ -	$ -
		Subtotal			$ 111,280.00
		Project Administration (10%)			$ 11,128.00
		Design and Legal (10%)			$ 11,128.00
		Contingency (15%)			$ 16,692.00
		Total Cost for RA Design and Installation			**$ 150,228.00**
	OPERATION AND MAINTENANCE COST FOR YEARS 1 - 5				
UC-6	Long Term Groundwater Sampling for VOCs (35 wells Quarterly for 5 Years)	0	Each		$ -
UC-7	Long Term Air Monitoring and for VOC Analysis (Indoor, Outdoor, Sub-Slab and Soil Vapor Seasonally for 5 years)	5	yr	$ 7,020.50	$ 35,102.50
UC-8	SVE/SSDS Maintenance and Operating Costs	5	yr	$ 57,846.50	$ 289,232.50
		Subtotal			$ 324,335.00
		Project Administration (5%)			$ 16,216.75
		Contingency (5%)			$ 16,216.75
		Total Cost for Years 1-5 O&M			**$ 356,768.50**
	OPERATION AND MAINTENANCE COST FOR YEARS 6-30				
UC-9	Long Term Groundwater Sampling for VOCs (All Wells once every 5 years for 25 years)	0	Each	$ -	$ -
UC-10	Long Term Air Monitoring and for VOC Analysis (Once every 5 years for 25 years)	25	yr	$ 1,404.10	$ 35,102.50
UC-11	SSDS Maintenance and Operating Costs	25	yr	$ 5,090.00	$ 127,250.00
		Subtotal			$ 127,250.00
		Project Administration (5%)			$ 6,362.50
		Contingency (5%)			$ 6,362.50
		Total Cost for Years 5-30 O&M			**$ 139,975.00**
				Grand Total	**$ 647,000.00**

Present Value for the Remedial Action cost where n=1, rate=5%, Future Value Req=-Total Cap Cost			
1 years is assumed as the time to it will take to begin construction			
	Total Capital Cost	$	150,228.00
	Present Value Cost		**$143,074.29**
Present Value for O+M Cost for Years 1-5 where n=5, rate=5%, Payment Req=-Total Cap Cost/year or period			
	Total Capital Cost	$	356,768.50
	Present Value Cost		**$308,924.18**
Present Value for O+M Cost for Years 5-30 where n=25, rate=5%, Payment Req=-Total Cap Cost/year or period			
	Total Capital Cost	$	139,975.00
	Present Value Cost		**$78,912.00**
	Total Present Value Cost		**$530,910.46**

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

Item LS-1, Mobilization/Demobilization
Limit 5% of Total Bid)

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	20	hr	$ 2,400.00		$ 2,400.00
Supervisor	$ 85.00	20	hr	$ 1,700.00		$ 1,700.00
Laborer	$ 75.00	20	hr	$ 1,500.00		$ 1,500.00
Permits	$ 200.00	1	ls	$ 200.00	25%	$ 250.00
Equipment	$ 1,200.00	1	ls	$ 1,200.00	10%	$ 1,320.00
				$ 7,000.00		**$ 7,170.00**

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

Item LS-2, Site Preparation

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
Misc. Materials/Supplies	$ 1,000.00	1	ls	$ 1,000.00	10%	$ 1,100.00
Utility Locator	$ 1,300.00	0	ea.	$ -	10%	$ -
PM	$ 120.00	10	hr	$ 1,200.00		$ 1,200.00
Supervisor	$ 85.00	10	hr	$ 850.00		$ 850.00
Equipment Operator	$ 75.00	0	hr	$ -		$ -
Laborer	$ 65.00	20	hr	$ 1,300.00		$ 1,300.00
Truck	$ 20.00	20	hr	$ 400.00	10%	$ 440.00
Decontamination Equipment	$ 250.00	1	ls	$ 250.00	10%	$ 275.00
Alconox	$ 100.00	0	ls	$ -	10%	$ -
					TOTAL	**$ 5,165.00**

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

Item LS-3, System As-Built Survey

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
System Survey	$ 2,500.00	1	ls	$ 2,500.00		$ 2,500.00
				$ 2,500.00		**$ 2,500.00**

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

Item LS-4, Electrical Work and Connections

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
Electrical Work	$ 4,000.00	1	ls	$ 4,000.00	10%	$ 4,400.00
				$ 4,000.00		**$ 4,400.00**

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

Item UC-1, Soil Vapor Mitigation - Sealing Existing Structure

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	0	hr	$ -		$ -
Supervisor	$ 85.00	0	hr	$ -		$ -
Laborer	$ 75.00	0	hr	$ -		$ -
Titebond Radon Sealant	$ 10.00	0	ea	$ -	10%	$ -
Misc Sealant Measures	$ 1,000.00	0	ls	$ -	10%	$ -
				$ -		**$ -**

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

Item UC-2, Health and Safety

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
Health and Safety Plan	$ 2,000.00	1	LS	$ 2,000.00	10%	$ 2,200.00
H&S Onsite officer	$ 80.00	0	HR	$ -		$ -
				$ 2,000.00		**$ 2,200.00**

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

Item UC-3, Monitoring Well Installation

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM	$ 120.00	0	hr	$ -		$ -
Supervisor	$ 85.00	0	hr	$ -		$ -
Laborer	$ 65.00	0	hr	$ -		$ -
Geoprobe	$ 1,200.00	0	day	$ -	10%	$ -
2"Dia prepacked MWs and materials	$ 500.00	0	ea	$ -	10%	$ -
Development	$ 150.00	0	ea	$ -	10%	$ -
Disposal of Purge Water	$ 200.00	0	drum	$ -	10%	$ -
				$ -		**$ -**

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

Item UC-4, Soil Vapor Extraction System Upgrade

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
PM - Design	$ 120.00	50	hr	$ 6,000.00		$ 6,000.00
Gravel Base/Backfill Materials	$ 16.00	0	tn	$ -	10%	$ -
SVE Well Installation including Labor Equipment and materials	$ 50.00	20	lf	$ 1,000.00	10%	$ 1,100.00
Electrical work	$ 5,000.00	0	ls	$ -	10%	$ -
Skid Mounted SVE Blower System with Knockout tank, filter, carbon treatment	$ 10,000.00	1	ea	$ 10,000.00	10%	$ 11,000.00
CAT-Ox Heat Exchanger rental unit	$ 45,000.00	1	ea	$ 45,000.00	10%	$ 49,500.00
SS Stack	$ 2,000.00	1	ea	$ 2,000.00	10%	$ 2,200.00
Knockout Tank	$ 1,600.00	0	ea	$ -	10%	$ -
HCL Scrubber, PH monitor and equipment	$ 40,000.00	0	ea	$ -	10%	$ -
Scrubber Monitor, recirc pump and fan	$ 10,000.00	0	ea	$ -	10%	$ -
Saw Cut	$ 10.00	0	lf	$ -	10%	$ -
Concrete/Asphalt Work	$ 100.00	0	cy	$ -	10%	$ -
Startup - 5 visits	$ 80.00	100	hr	$ 8,000.00		$ 8,000.00
Monitoring Point Installation (use existing monitoring wells)	$ 1,200.00	0	ea	$ -	10%	$ -
Tedlar Bag Sampling/PID	$ 250.00	0	ea	$ -	10%	$ -
HS-5000 fans -Conversion To SSDS after SVE Remediation	$ 1,500.00	5	ea	$ 7,500.00	10%	$ 8,250.00
Installation/materials for SSDS fans, and stack	$ 80.00	20	hr	$ 1,600.00	10%	$ 1,760.00
Average Electricity Cost to Run SVE Heat Exchanger	$ 13,000.00	0	yr	$ -	10%	$ -
Average Electricity Cost to Run SVE Blower Unit	$ 12,000.00	0	yr	$ -	10%	$ -
Average Electricity Cost to Run HS-5000 fans	$ 3,600.00	0	yr	$ -	10%	$ -
Monitoring Point Installation	$ 1,200.00	0	ea	$ -	10%	$ -
Shipping/Frieght	$ 1,850.00	1	ea	$ 1,850.00	10%	$ 2,035.00
Total Cost				$ 82,950.00		**$ 89,845.00**

Assumptions:
1) The existing SVE pilot test pipe network will be utilized for the SVE system upgrade
2) No cutting of pavement or material will be brought in to cover/seal etc.
3) All sampling and O+M excluding start up costs are included in UC-8
4) Electrical work is included under LS-4

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

Cost includes the installation and operation of the Falco 300 SVE skid mounted system for 5 years. The system operates using a heat exchanger and therefore if influent concentrations decrease below a certain level, the heat exchanger will become increasingly expensive to operate and at that point the unit should be switched out with a less expensive carbon unit. For conservative cost estimatiion purposes, this option has assumed that the Falco 300 will remain in place for 5 years with no switch to carbon.

Following SVE remediation the HS-5000 fans will be installed and operated to polish subsurface soils

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

10	ton	20000	lb	54.79452	lb	2.283105	lb
1	year		yr		day		hr

Aztechs rental unit

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

Item UC-5, Monitoring Well Decommissioning
Assume 270 linear feet.

	Cost		Quantity	Units	Costs		Mark-up	Bill Price	
PM	$	120.00	0	hr	$	-		$	-
Supervisor	$	85.00	0	hr	$	-		$	-
Laborer	$	65.00	0	hr	$	-		$	-
Laborer	$	65.00	0	hr	$	-		$	-
Materials	$	-	1	ls	$	-	10%	$	-
Disposal of Piping	$	-	1	ls	$	-	10%	$	-
					$	-		**$**	**-**

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

Item UC-6, Long Term Groundwater Monitoring
Assume Quarterly due to high gw gradient for 5 years

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
VOC Method 8260	$ 88.00	0	EA	$ -	10%	$ -
MS	$ 88.00	0	EA	$ -	10%	$ -
MSD	$ 88.00	0	EA	$ -	10%	$ -
DUP	$ 88.00	0	EA	$ -	10%	$ -
Trip Blanks	$ 88.00	0	EA	$ -	10%	$ -
Laborer	$ 65.00	0	hr	$ -		$ -
Shipping	$ 40.00	0	EA	$ -	10%	$ -
Data Validation	$ 10.00	0	EA	$ -	10%	$ -
Project Management and Data Reporting	$ 1,000.00	0	EA	$ -	10%	$ -
Equis Reporting	$ 250.00	0	EA	$ -	10%	$ -
				$ -		**$ -**

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

Item UC-7, Long Term AIR Monitoring
Assume Seasonally for 5 years

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
IA VOC Method 8260	$ 165.00	6	EA	$ 990.00	10%	$ 1,089.00
OA VOC Method 8260	$ 165.00	2	EA	$ 330.00	10%	$ 363.00
SS/SV VOC Method 8260	$ 165.00	6	EA	$ 990.00	10%	$ 1,089.00
DUP	$ 165.00	1	EA	$ 165.00	10%	$ 181.50
Laborer	$ 65.00	12	hr	$ 780.00		$ 780.00
Shipping	$ 40.00	2	EA	$ 80.00	10%	$ 88.00
Data Validation	$ 300.00	1	EA	$ 300.00	10%	$ 330.00
Project Management and Data Reporting	$ 2,000.00	1	EA	$ 2,000.00		$ 2,000.00
Equis Reporting	$ 1,000.00	1	EA	$ 1,000.00	10%	$ 1,100.00
				$ 6,635.00		**$ 7,020.50**
					Yearly Cost	$ 7,020.50
					Total	**$ 35,102.50**

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

Item UC-8, SVE Operation and Maintenance
5yrs of SVE Operation followed by System use a SSDS System for the remaining

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
Parts/Misc.	$ 1,000.00	1	yr	$ 1,000.00	10%	$ 1,100.00
Site Maintenance visits During SVE Operation (Bi Monthly for 5 yrs)	$ 80.00	192	hr	$ 15,360.00		$ 15,360.00
Operating Costs During SVE Operation	$ 1,000.00	12	mo	$ 12,000.00	10%	$ 13,200.00
Conversion to SSDS System (included in UC-4)	$ -	0	LS	$ -	10%	$ -
Operating Costs for SSDS ($50/mo/fan)	$ 100.00	0	mo	$ -	10%	$ -
Maintenance Costs for SSDS (Quarterly for three years)	$ 80.00	0	hr	$ -	10%	$ -
PM and Reporting (yearly)	$ 1,000.00	1	ea	$ 1,000.00		$ 1,000.00
Average Electricity Cost to Run SVE Heat Exchanger	$ 31.00	365	day	$ 11,315.00	10%	$ 12,446.50
Average Electricity Cost to Run SVE Blower Unit	$ 12,000.00	1	yr	$ 12,000.00	10%	$ 13,200.00
Vapor Control Valve Replacement	$ 2,000.00	0.2	ea	$ 400.00	10%	$ 440.00
Catalyst Replacement for SVE HE	$ 5,000.00	0.2	ea	$ 1,000.00	10%	$ 1,100.00
		yearly cost		**$ 52,675.00**		**$ 57,846.50**
					Total	**$ 289,232.50**

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

replace once per 5 years so unit qty of 1 was devided by 5 (hence qty = .2)

replace once per 5 years so unit qty of 1 was devided by 5 (hence qty = .2)

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

Item UC-9, Long Term Groundwater Monitoring
After 5 years assume 1 round every 5 years

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
VOC Method 8260	$ 88.00		EA	$ -	10%	$ -
MS	$ 88.00	0	EA	$ -	10%	$ -
MSD	$ 88.00	0	EA	$ -	10%	$ -
DUP	$ 88.00	0	EA	$ -	10%	$ -
Trip Blanks	$ 88.00	0	EA	$ -	10%	$ -
Laborer	$ 65.00	0	hr	$ -		$ -
Shipping	$ 40.00	0	EA	$ -	10%	$ -
Data Validation	$ 300.00	0	EA	$ -	10%	$ -
Project Management and Data Reporting	$ 1,000.00	0	EA	$ -		$ -
Equis Reporting	$ 250.00	0	EA	$ -	10%	$ -
				$ -		**$** -

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

Item UC-10, Long Term AIR Monitoring
Assume 1 round every 5 years for years 6 - 30

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
IA VOC Method TO-15	$ 165.00	1.2	EA	$ 198.00	10%	$ 217.80
OA VOC Method TO-15	$ 165.00	0.4	EA	$ 66.00	10%	$ 72.60
SS/SV VOC Method TO-15	$ 165.00	1.2	EA	$ 198.00	10%	$ 217.80
DUP	$ 165.00	0.2	EA	$ 33.00	10%	$ 36.30
Laborer	$ 65.00	2.4	hr	$ 156.00		$ 156.00
Shipping	$ 40.00	0.4	EA	$ 16.00	10%	$ 17.60
Data Validation	$ 300.00	0.2	EA	$ 60.00	10%	$ 66.00
Project Management and Data Reporting	$ 2,000.00	0.2	EA	$ 400.00		$ 400.00
Equis Reporting	$ 1,000.00	0.2	EA	$ 200.00	10%	$ 220.00
	yearly cost			$ 1,327.00		**$ 1,404.10**
				Total:		**$ 35,102.50**

TABLE 7
Alternative 5 Cost Estimate: Upgrading Existing Soil Vapor Extraction System

Staubs Textile Services, Inc.
Rochester, New York
Feasibility Study Report
September 2015

Item UC-11, Sub Slab Depressurization System O&M
Years 6-30

	Cost	Quantity	Units	Costs	Mark-up	Bill Price
HS-5000 Blower/Fan Units (replace every 5 years)	$ 1,500.00	0.2	ea	$ 300.00	10%	$ 330.00
Site Maintenance visits (one visit per year)	$ 80.00	10	hr	$ 800.00		$ 800.00
Operating Costs ($50/mo/fan)	$ 3,600.00	1	yr	$ 3,600.00	10%	$ 3,960.00
	YEARLY COST			$ 4,700.00		**$ 5,090.00**
				Total:		**$ 127,250.00**

TABLE 8
Cost Estimate Comparison of Remedial Alternatives

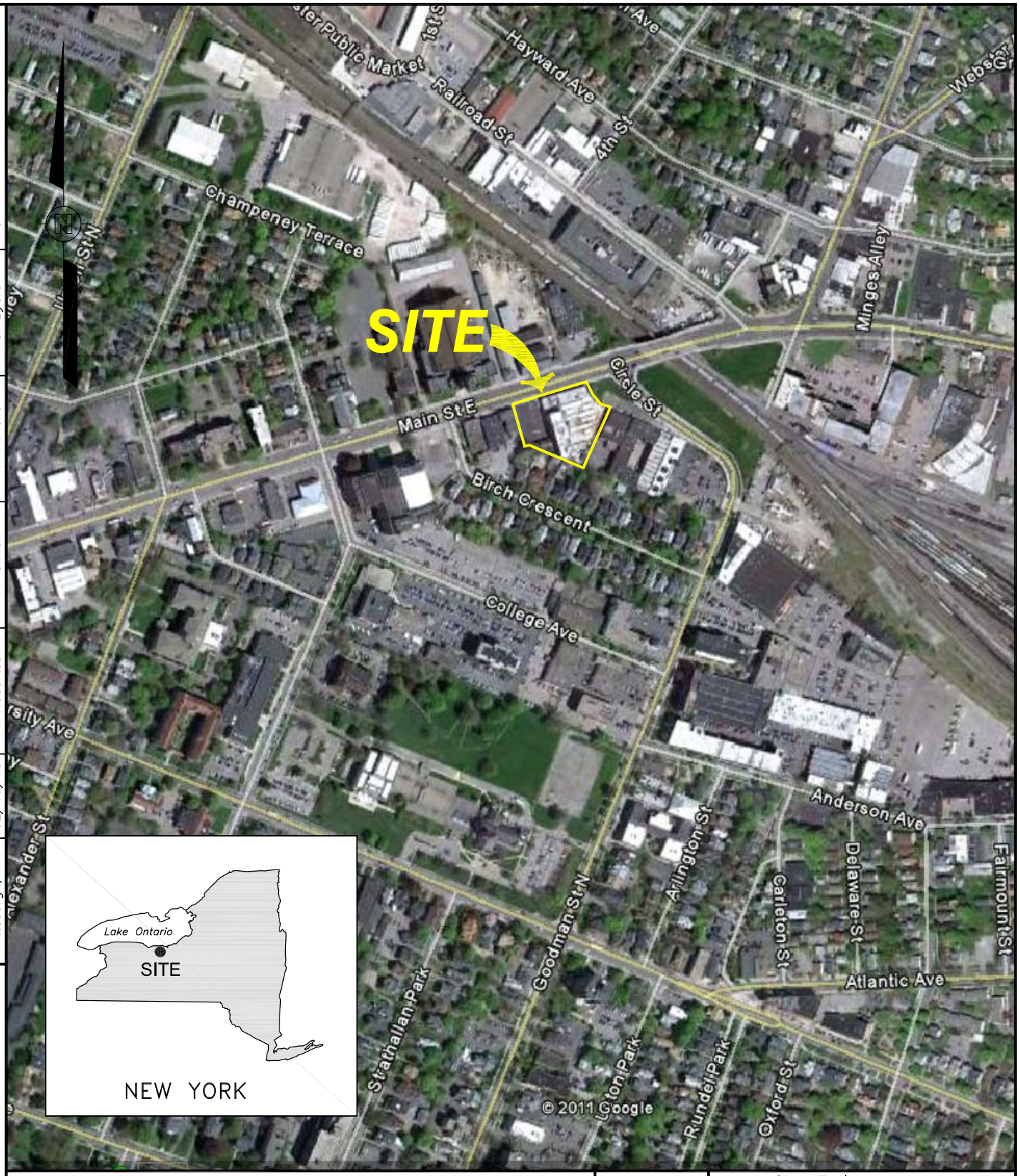
Staubs Textile Services
Rochester, New York
Feasibility Study Report
September 2015

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Description	No Action	Site Management	Restoration to Pre-Disposal or Unrestricted Conditions	Soil Excavation within the Existing Building with In-situ Remediation and Instiutional Controls	Upgrades to Existing Soil Vapor Extraction System
Capital Cost	$ -	$ 83,900	$ 5,926,954	$ 1,733,950	$ 150,228
Annual O&M - Years 1-5	$ -	$ -	$ -	$ 38,613	$ 356,766
Annual O&M - Years 6-30	$ -	$ -	$ -	$ 38,613	$ 139,975
Total Cost	**$ -**	**$ 83,900**	**$ 5,927,000**	**$ 1,811,200**	**$ 647,000**

Notes:
1. Full cost estimates are shown in Tables 4-7.
2. Alternatives 4 and 5 include optional post-remedial actions.

Figures

OFFICE	DATE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
Pittsburgh, PA	02/19/13	N. Robertson	A. Smith	H. Fariello	C. Byers	134685-24A1



REFERENCE:

MAP FROM www.google.com

"DRAWING NOT TO SCALE"

Shaw Environmental, Inc.
(A CB&I Company)
13 British American Boulevard
Latham, New York 12110-1405

NEW YORK STATE DEPARTMENT OF
ENVIROMENTAL CONSERVATION

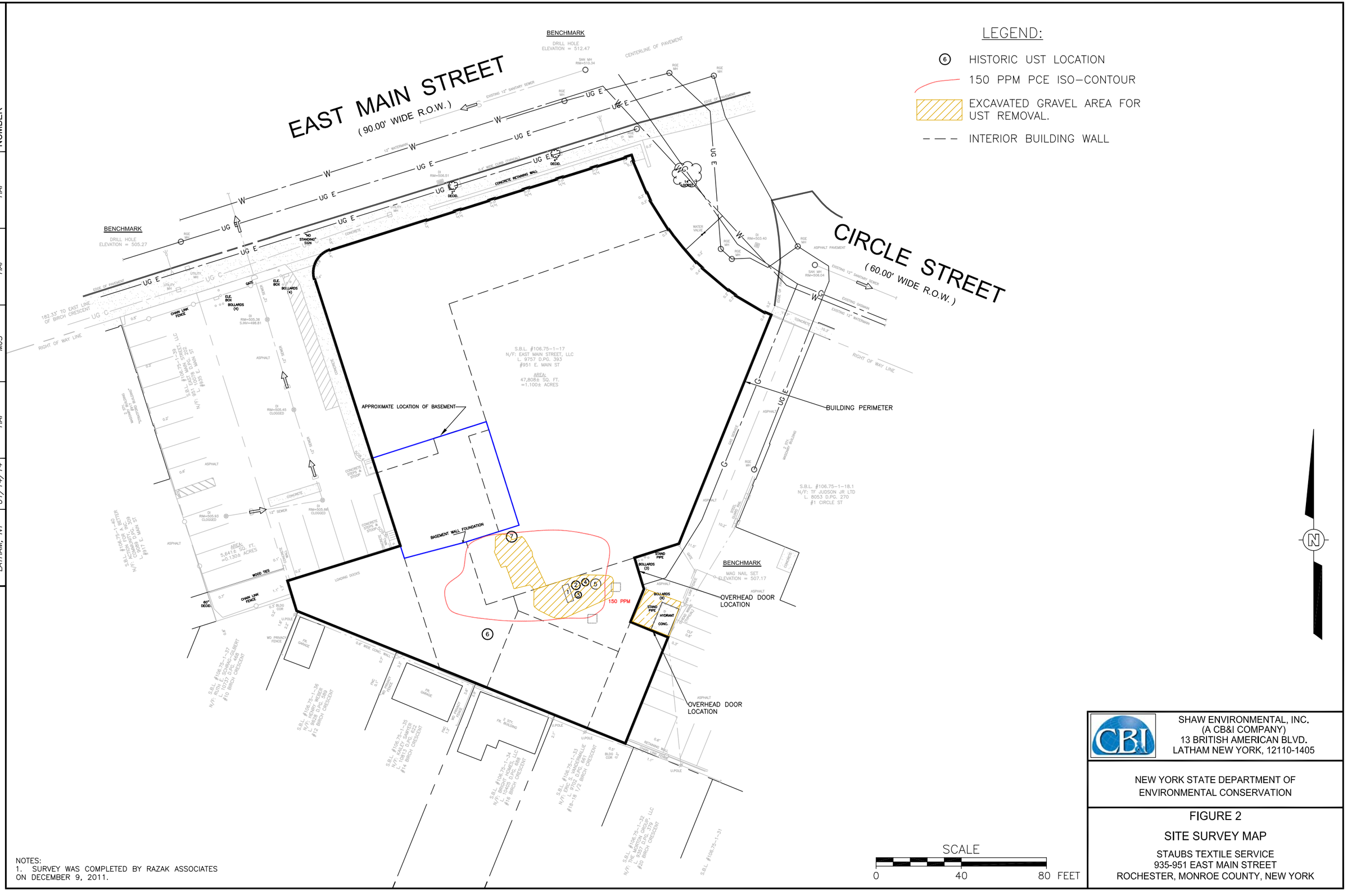
FIGURE 1
SITE LOCATION MAP

STAUBS TEXTILE SERVICE
935-951 EAST MAIN STREET
ROCHESTER, MONROE COUNTY, NEW YORK

File: U:\Project\134685\24\134685-24A1.dwg
Plot Date/Time: Apr 02, 2013 - 10:55am
Plotted By: steven.walsh

DRAWING NUMBER	APPROVED BY	CHECKED BY	DRAWN BY	DESIGNED BY
134685-24B23	HAF	HAF	MJS	HAF

OFFICE	DATE
LATHAM, NY	01/14/14



LEGEND:

- (6) HISTORIC UST LOCATION
- 150 PPM PCE ISO-CONTOUR
- EXCAVATED GRAVEL AREA FOR UST REMOVAL.
- INTERIOR BUILDING WALL

NOTES:
1. SURVEY WAS COMPLETED BY RAZAK ASSOCIATES ON DECEMBER 9, 2011.

SHAW ENVIRONMENTAL, INC.
(A CB&I COMPANY)
13 BRITISH AMERICAN BLVD.
LATHAM NEW YORK, 12110-1405

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FIGURE 2

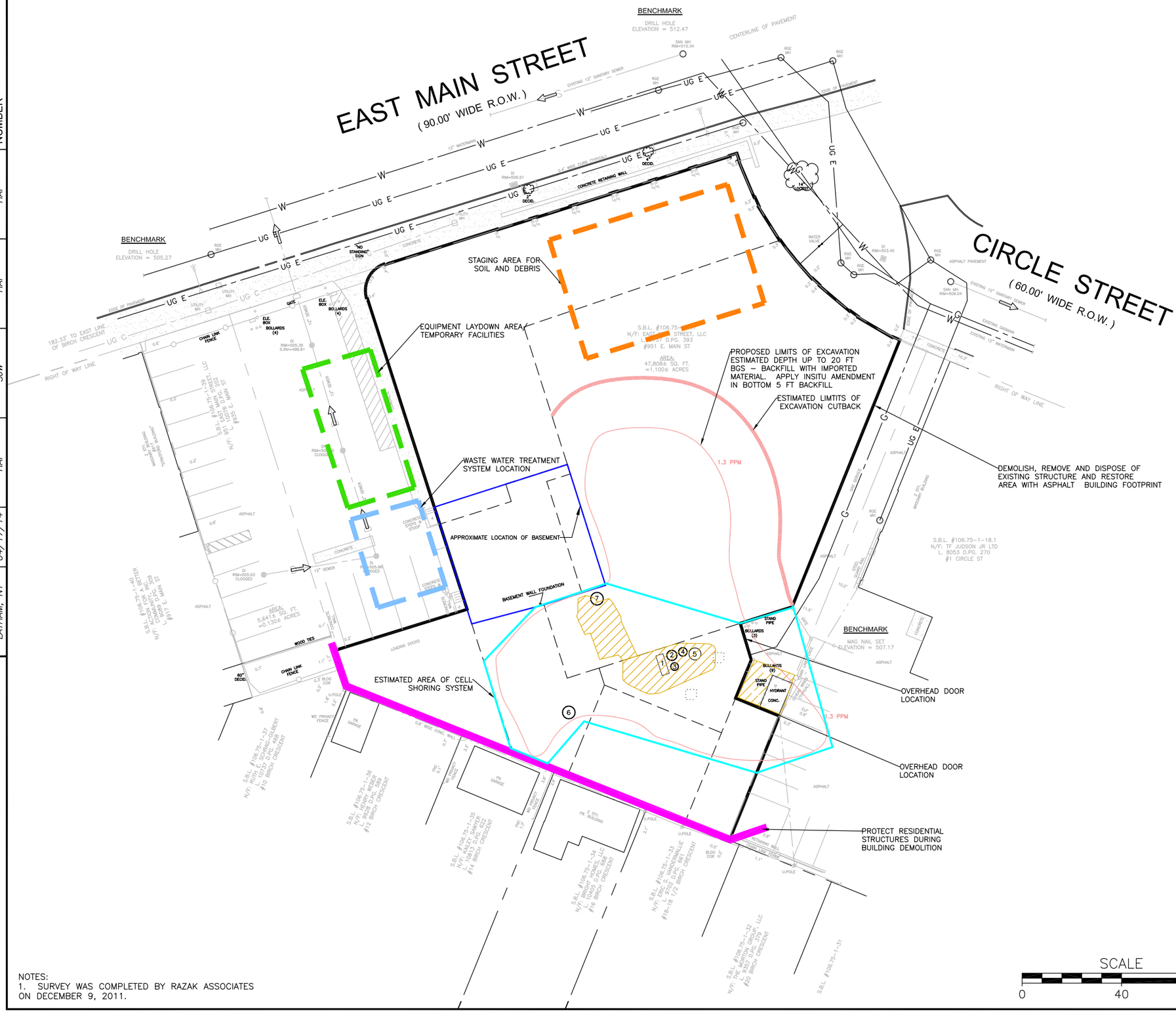
SITE SURVEY MAP

STAUBS TEXTILE SERVICE
935-951 EAST MAIN STREET
ROCHESTER, MONROE COUNTY, NEW YORK

File: U:\Project\134685\24\FS\134685-24B23.dwg
Plot Date/Time: Jan 22, 2014 - 5:15pm
Plotted By: steven.walsh
Xref :
Image : cbi-logo.jpg

DRAWING NUMBER	APPROVED BY	CHECKED BY	DRAWN BY	DESIGNED BY
134685-24B28	HAF	HAF	SJW	HAF

OFFICE	DATE
LATHAM, NY	04/17/14



NOTES:
1. SURVEY WAS COMPLETED BY RAZAK ASSOCIATES ON DECEMBER 9, 2011.

LEGEND:

- ⑥ HISTORIC UST LOCATION LIMITS OF PROPOSED EXCAVATION
- PREVIOUSLY EXCAVATED GRAVEL AREA
- INTERIOR BUILDING WALL
- EQUIPMENT LAYDOWN AREA/TEMPORARY FACILITIES
- WASTEWATER TREATMENT SYSTEM LOCATION
- STAGING AREA FOR SOIL AND DEBRIS
- RESIDENTIAL PROTECTION
- ESTIMATED LIMIT OF EXCAVATION CUTBACK
- ESTIMATED LAYOUT OF CELL SHORING SYSTEM

SCALE
0 40 80 FEET

SHAW ENVIRONMENTAL, INC.
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13 BRITISH AMERICAN BLVD.
LATHAM NEW YORK, 12110-1405

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FIGURE 3
ALTERNATIVE 3 - RESTORATION TO PRE-DISPOSAL OR UNRESTRICTED CONDITIONS

STAUBS TEXTILE SERVICE
935-951 EAST MAIN STREET
ROCHESTER, MONROE COUNTY, NEW YORK

File: U:\Project\134685\24\FS\134685-24B28.dwg
Plot Date/Time: Jun 16, 2014 - 11:27am
Plotted By: steven.walsh
Xref :
Image : cbi-logo.jpg

DRAWING NUMBER	APPROVED BY	CHECKED BY	DRAWN BY	DESIGNED BY
134685-24B26	HAF	HAF	MJS	HAF

OFFICE	DATE
LATHAM, NY	01/15/14

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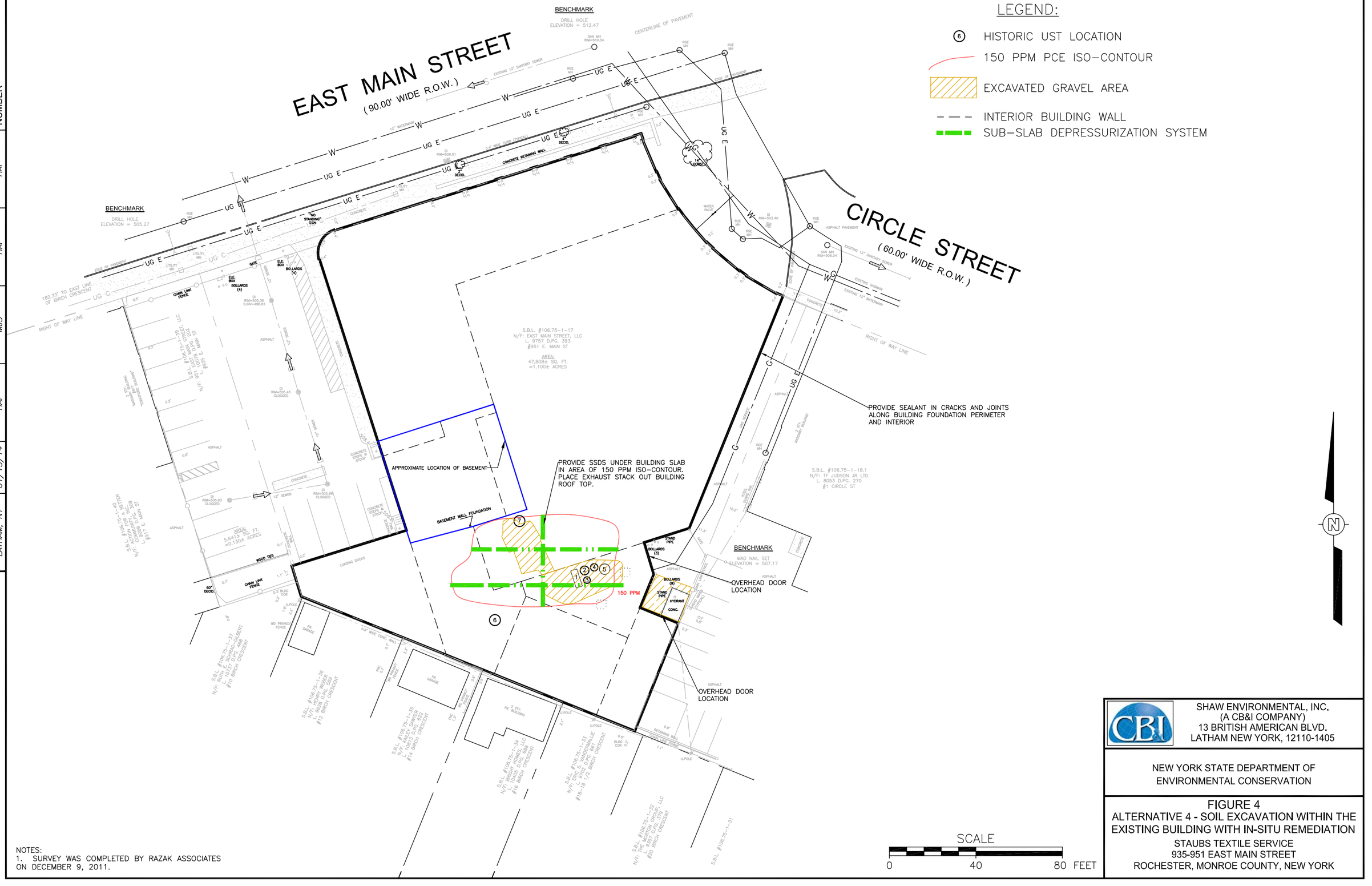
Plotted By: steven.walsh
Xref :
Image : cbi-logo.jpg



LEGEND:

- (6) HISTORIC UST LOCATION
- 150 PPM PCE ISO-CONTOUR
- EXCAVATED GRAVEL AREA
- INTERIOR BUILDING WALL
- SUB-SLAB DEPRESSURIZATION SYSTEM

NOTES:
1. SURVEY WAS COMPLETED BY RAZAK ASSOCIATES ON DECEMBER 9, 2011.

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FIGURE 4
ALTERNATIVE 4 - SOIL EXCAVATION WITHIN THE EXISTING BUILDING WITH IN-SITU REMEDIATION

STAUBS TEXTILE SERVICE
935-951 EAST MAIN STREET
ROCHESTER, MONROE COUNTY, NEW YORK

DRAWING NUMBER	APPROVED BY	CHECKED BY	DRAWN BY	DESIGNED BY
134685-24B27	HAF	HAF	MJS	HAF

OFFICE	DATE
LATHAM, NY	01/16/14

File: U:\Project\134685\24\FS\134685-24B27.dwg Xref :
Plot Date/Time: Jun 16, 2014 - 11:22am Image : cbi-logo.jpg
Plotted By: steven.walsh

EAST MAIN STREET
(90.00' WIDE R.O.W.)

CIRCLE STREET
(60.00' WIDE R.O.W.)

BENCHMARK
DRILL HOLE
ELEVATION = 512.47

BENCHMARK
DRILL HOLE
ELEVATION = 505.27

BENCHMARK
MAG NAIL SET
ELEVATION = 507.17

S.B.L. #106.75-1-17
N/F: EAST MAIN STREET, LLC
L. 9757 D.P.G. 393
#951 E. MAIN ST

AREA:
47,808± SQ. FT.
=1.100± ACRES

APPROXIMATE LOCATION OF BASEMENT

BASEMENT WALL FOUNDATION

CONCRETE RETAINING WALL

PROVIDE SEALANT/CONCRETE FILL FOR EXISTING GRAVEL AREA TO PROVIDE EFFICIENT VACUUM AT VAPOR EXTRACTION WELLS

SVE TREATMENT SKID UPGRADE
10 HP BLOWER MIN. WITH HEAT EXCHANGER VAPOR TREATMENT. INSTALL WITH 240V OR 480V SUPPLY WITH 120V CONTROLS

SVE-1 SVE-2 SVE-3 SVE-4 SVE-5 SVE-6 SVE-7

SVE SKID

20 FOOT STAINLESS STEEL PIPE STACK EXHAUST THROUGH ROOFTOP

150 PPM

EXISTING SVE SYSTEM (USED FOR PILOT TEST) 6

PROVIDE SEALANT IN CRACKS AND JOINTS ALONG BUILDING FOUNDATION PERIMETER AND INTERIOR

OVERHEAD DOOR LOCATION

OVERHEAD DOOR LOCATION

PROVIDE ADDITIONAL PIPE NETWORK, VALVES, GAUGES AND APPURTENANCES AS NEEDED TO MEET DESIGN REQUIREMENTS UTILIZE EXISTING PIPE NETWORK, VALVES AND APPURTENANCES AS APPLICABLE

LEGEND:

- 6 HISTORIC UST LOCATION
- 150 PPM PCE ISO-CONTOUR
- EXCAVATED GRAVEL AREA
- INTERIOR BUILDING WALL

SCALE
0 40 80 FEET

NOTES:
1. SURVEY WAS COMPLETED BY RAZAK ASSOCIATES ON DECEMBER 9, 2011.

SHAW ENVIRONMENTAL, INC.
(A CB&I COMPANY)
13 BRITISH AMERICAN BLVD.
LATHAM NEW YORK, 12110-1405

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FIGURE 5
ALTERNATIVE 5 - UPGRADING EXISTING SOIL VAPOR EXTRACTION SYSTEM

STAUBS TEXTILE SERVICE
935-951 EAST MAIN STREET
ROCHESTER, MONROE COUNTY, NEW YORK