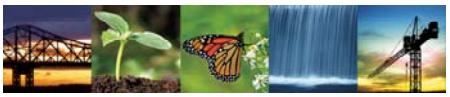
REMEDIAL ACTION PLAN
FORMER AMERBELLE PROPERTY
104 EAST MAIN STREET
VERNON, CONNECTICUT

PREPARED FOR:
Town of Vernon
14 Park Place
Vernon, Connecticut 06066

PREPARED BY:
GZA GeoEnvironmental, Inc.
655 Winding Brook Road- Suite 402
Glastonbury, Connecticut 06033

July 2015
File No. 45441.00



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655 Winding Brook Drive
Suite 402
Glastonbury, CT 06033
860.286.8900
www.gza.com

July 2, 2015
GZA File 05.0045441.00

Town of Vernon
14 Park Place
Vernon, Connecticut 06066

Attention: Mr. John Ward

Re: Remedial Action Plan
Former Amerbelle Property
104 East Main Street, Vernon, Connecticut

Dear Mr. Ward:

GZA GeoEnvironmental, Inc. (GZA) has prepared the attached Remedial Action Plan (RAP) for the Former Amerbelle Property located at 104 East Main Street in Vernon, Connecticut (Site). The RAP provides an outline of remediation activities proposed for areas of environmental concern where contaminants in soil and/or groundwater exceed Remediation Standard Regulation criteria. The Remedial Action Plan is subject to a 45-day public comment period, after which site remediation can be conducted. This report is subject to the attached Limitations in Appendix A.

We appreciate the opportunity to partner with you to address soil and groundwater issues at this important property where redevelopment is planned. Should you have any questions or require additional information on the proposed remedial measures, please contact the undersigned, at your convenience.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Christopher J. Frey, LEP
Senior Project Manager

James T. Hutton, LEP
Senior Project Manager

Gordon T. Brookman, P.E., LEP
Principal

Gary J. Cluen, LEP
Consultant/Reviewer

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Glossary of Frequently-used Abbreviations

ALC	Aquatic Life Criteria
AOC	Area of Concern
AST	Aboveground Storage Tank
ATV	all-terrain vehicle
BDL	below detection limits
DCB	dichlorobenzene (a specific chemical)
COC	Constituent of Concern
CGS	Connecticut General Statutes
CSM	Conceptual Site Model
CTDEEP	Connecticut Department of Energy and Environmental Protection
DEC	Direct Exposure Criteria
DNAPL	Dense non-aqueous phase liquid
DQA	Data Quality Assessment
DQO	Data Quality Objective(s)
DUE	Data Usability Evaluation
ELUR	Environmental Land Use Restriction
EPA	Environmental Protection Agency (U.S.)
EPH	Extractable Petroleum Hydrocarbon (a category of chemicals)
ESA	Environmental Site Assessment
ETPH	Extractable Total Petroleum Hydrocarbons (a category of chemicals)
eV	Electron volt (unit of measure)
fbg	feet below grade (unit of measure)
GA-PMC	Pollutant Mobility Criteria applicable in Class GA Groundwater Area
GB-PMC	Pollutant Mobility Criteria applicable in Class GB Groundwater Area
GPR	Ground Penetrating Radar
GWPC	Groundwater Protection Criteria
GWVC	Groundwater Volatilization Criteria
GZA	GZA GeoEnvironmental, Inc.
I/C-DEC	Industrial/Commercial Direct Exposure Criteria
LCS	Laboratory Control Sample
LNAPL	Light non-aqueous phase liquid
MEK	methyl ethyl ketone (a specific chemical)
mg/Kg	milligrams/kilogram (unit of measure, equivalent to parts per million)
mg/L	milligrams/liter (unit of measure, equivalent to parts per million)
MRLs	Minimum (Laboratory) Reporting Limits
MS	Matrix spike
MSD	Matrix spike duplicate
msl	Mean sea level (a reference elevation)
MW	Monitoring well
ORP	Oxidation reduction potential
OVM	Organic vapor meter

PAH	Poly Aromatic Hydrocarbon (a category of chemicals)
PCB	Polychlorinated Biphenyl (a category of chemicals)
PCE	Perchloroethylene (a.k.a. tetrachloroethylene, a specific chemical)
PID	Photoionization Detector
PMC	Pollutant Mobility Criteria
PP	Priority Pollutants
ppmv	parts per million by volume (unit of measure)
psi	pounds per square inch (unit of measure)
PVC	Polyvinyl chloride (typically material of construction of monitoring well)
QA/QC	Quality Assurance/Quality Control
R-DEC	Residential Direct Exposure Criteria
RCP	Reasonable Confidence Protocols
RCRA	Resource Conservation and Recovery Act
RSRs	Remediation Standard Regulations
SB	Soil boring
SPLP	Synthetic Precipitation Leaching Procedure
SVOC	Semi-Volatile Organic Compound (a category of chemicals)
SVVC	Soil Vapor Volatilization Criteria
SWPC	Surface Water Protection Criteria
TCA	1,1,1-Trichloroethane (a specific chemical)
TCE	Trichloroethene (a.k.a, trichloroethylene, a specific chemical)
TCLP	Toxicity Characteristic Leaching Procedure
TP	Test pit
µg/Kg	micrograms/kilogram (unit of measure, equivalent to parts per billion)
µg/L	micrograms/liter (unit of measure, equivalent to parts per billion)
USGS	United State Geologic Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound (a category of chemicals)
VPH	Volatile Petroleum Hydrocarbons (a category of chemicals)

1.0 INTRODUCTION

GZA GeoEnvironmental, Inc. (GZA) was retained by the Town of Vernon (Town) to complete a Remedial Action Plan (RAP) for the former Amerbelle Mill property located at 104 East Main Street, Vernon, Connecticut (Site). GZA has submitted under separate cover a Phase III Data Gap Investigation (Phase III) that summarizes soil, groundwater and sediment testing at the Site which was the basis for the development of the RAP. The Phase III should be reviewed in conjunction with the RAP. Both the Phase III and the RAP have been funded by the State of Connecticut Department of Economic and Community Development (DECD) Remedial Action and Redevelopment Municipal Grant Program with the goal to develop a RAP that, when implemented, would adequately address environmental conditions at the Site to allow for redevelopment and reuse of the property for commercial purposes.

The RAP has been designed to address known soil and groundwater impacts found at concentrations above the Remediation Standard Regulation (RSR) criteria developed by the State of Connecticut Department of Energy and Environmental Protection (CTDEEP).

This report is subject to the Limitations in Appendix A and those of our contract with the Town.

2.0 CONCEPTUAL SITE MODEL

A detailed summary of site history and physiographic setting is contained in the Phase III report submitted under separate cover. Based on the information below, which was obtained during previous Phase I, II and III assessments, GZA developed an updated Conceptual Site Model (CSM) which considers the physical setting, constituents of concern, potential release mechanisms, and likely fate and transport mechanisms for each environmental Area of Concern (AOC) at the Site. The updated CSM used to develop this RAP is summarized below.

2.1 BUILDING USES AND MATERIAL STORAGE

Details on storage tank and building uses at the Site were presented in GZA's Phase III report. The table below briefly summarizes tank and transformer areas and building uses.

HISTORICAL BUILDING USES AND MATERIALS STORAGE		
BUILDING/AREA	***USES/ACTIVITIES***	***CHEMICALS/MATERIALS***
Buildings 1 & 2	Raw materials, flammables, organic coatings storage; Mixing (S side); Hazardous waste storage (NW side).	Formaldehyde, toluene, isopropyl alcohol, hazardous waste.

HISTORICAL BUILDING USES AND MATERIALS STORAGE		
BUILDING/AREA	***USES/ACTIVITIES***	***CHEMICALS/MATERIALS***
Building 2	Loading dock; Materials storage; temporary fuel storage.	Fabrics, fuel (temporary tank trailers at loading dock).
Buildings 3, 4 & 5	General storage; pumps for fire suppression water.	None identified
Building 6	No known uses.	None identified.
Building 7	Solvent coating lines; Thermal oxidizers for VOC gas destruction; Loading dock.	MEK, toluene, fuel for oxidizers.
Building 8	Water filtering; Water holding tanks; Piping for process and cooling water; 55-gal drums of waste oil on containment palettes; Mixing operations; Wastewater treatment operations; Dye house.	Wastewater, waste oil, dyes (mixing and in processes).
Building 9	General storage; chemical storage, Dye storage.	Fabric, chemicals, dyes.
Building 11	Equipment, oil, chemical and dye storage; Dyeing operations (pre-1927); Loading dock; Elevator (W wall)	Equipment, oils, chemicals, dyes, hydraulic oil (elevator).
Building 12	Machine shop; Storage; Maintenance; Welding; Turning; Milling; Grinding; Electrical repair; Parts cleaning.	Parts, machine oil, solvents, welding gas, cutting oils.
Building 13	Latex coating lines; storage of latex (E side); Storage of fabric (W side)	Latex coating chemicals.
Building 14	Textile dyeing and finishing; Loading docks; Textile storage; Elevator; Dye mixing room; Wastewater/floor drain sump; pH neutralizing (two, 7,500 gal neutralization ASTs); Chemical storage in drums;	Dyes, finishing chemicals, formaldehyde, sodium hydroxide, citric acid, soda ash, sodium bicarbonate, wastewater
Boiler Room	Boiler room (along with Bldg. 6)	Fuel.

HISTORICAL BUILDING USES AND MATERIALS STORAGE		
BUILDING/AREA	***USES/ACTIVITIES***	***CHEMICALS/MATERIALS***
Exterior Fuel Oil ASTs Area	Two, 18,000-gal fuel oil ASTs E of Bldg 13 (inactive); Two, former 20,000-gal fuel oil USTs (removed 1989);	Fuel oil. (Contaminated soil removed in 1989)
Exterior Transformer Area	Electrical transformers (three) located S of Bldg 7.	

In addition to the tanks described in the table above, the aboveground storage tanks (ASTs) listed below were identified as being formerly located on the Site:

- One 27,000-gallon production water supply tank
- One 500-gallon tank containing sodium hydroxide for dyeing processes
- Two 275-gallon finishing resin tanks
- One 275-gallon tank containing sodium hydroxide for pH neutralization
- One 275-gallon tank containing sulfuric acid for pH neutralization
- One 10,000-gallon hot water storage tank.

2.2 AREAS OF CONCERN (AOCs) AND CONSTITUENTS OF CONCERN (COCs

Twenty-five AOCs were identified at the Site, based on previous studies and GZA's recent Phase III investigations, as follows:

- AOC 1 - Former xylene USTs south of Building 14
- AOC 2 - Building 14 south loading dock
- AOC 3 - Building 14 west loading dock
- AOC 4 - Northwest corner of Building 14
- AOC 5 - Building 14 wastewater conveyance trenches
- AOC 6 - Southeast corner of Building 14
- AOC 7 - Building 12, Maintenance
- AOC 8 - Slope west of Buildings 1 and 2
- AOC 9 - Building 13, Latex Coating
- AOC 10 - Building 2 loading dock
- AOC 11 - Buildings 1 and 2, Coating Storage
- AOC 12 - Building 3, Storage
- AOC 13 - Building 7, Solvent Coating
- AOC 14 - Fuel oil ASTs
- AOC 15 - Transformers

- AOC 16 - Building 7 loading dock
- AOC 17 - Building 9, Dye Storage
- AOC 18 - Building 8, Former Dye House
- AOC 19 - Building 11, Former Dyeing/ Current Chemical Storage
- AOC 20 - Building 11 loading dock
- AOC 21 - Former off-site gasoline station
- AOC 22 - Fill
- AOC 23 - Groundwater
- AOC 24 - Raceway
- AOC 25 - American Mill Pond.

Attached Table 1 provides a list of AOCs and constituents of concern (COCs) inferred to be associated with each AOC based on our knowledge of historical Site operations. Table 1 also briefly describes our inferred conceptualized mechanisms for the potential release of COCs to the environment. The locations of the AOCs are shown on Figure 2.

2.3 CONCEPTUAL SITE MODEL

Considering the available data from previous and current environmental investigations at the Site, GZA developed a Conceptual Site Model (CSM) that was used as a guide for selecting remedial methods incorporated into this RAP.

Subsurface investigations completed at the Site by others and by GZA (Phase III) indicated unconsolidated materials underlying the site generally consist of sand with varying amounts of gravel, cobbles and silt. The thickness of overburden materials was found to range from less than 3 feet to 27 feet below ground (boring AOC-20-2, located within the Building 8 loading dock area). The thickness of soils over much of the Site is less than 10 feet and appears to thicken toward the northern most boundary of the Site.

GZA notes that access to areas within certain portions of the Site, particularly within building interiors, was limited by structures or materials present within the buildings; in some cases cobbles and/or boulders were encountered below floor slab which resulted in drilling refusal. Where refusal prevented observation of soil down to the water table, GZA used data obtained from groundwater samples downgradient of Site AOCs as additional lines of evidence to assess potential releases.

The primary release mechanism for the majority of the Site's AOCs (those located within historical process areas and former material handling and storage areas), is inferred to be the release of hazardous constituents or petroleum/oils to the building's floor slab or exterior paved surfaces. These surface releases likely migrated through floors and pavement via cracks and/or joints within those surfaces to shallow soils below. Exceptions to this pattern would be release of chemicals/petroleum directly to the subsurface soil from the base of conveyance trenches, pits in the building floors, drain lines and/or underground storage tanks (USTs) formerly located at the Site.

Soils below the northern building complex are widely impacted by metals (chiefly arsenic and lead) and PAHs, ETPH at concentrations greater than DECs primarily from coal ash in fill, and incidental releases of petroleum from historical operations. We anticipate these soils can be managed by application of institutional controls at the site and either allowing impacted soils to remain below buildings that will be left standing or to capping these areas with new buildings, paved parking areas, planned landscaped areas, etc. as part of the reconstruction of the Site.

Data indicate there are two areas in the northern section of the Site where elevated concentrations of constituents of COCs appear to be the results of a separate release and not related to fill: The release of petroleum apparently associated with the former 20,000-gallon fuel out USTs (2) at AOC 15 and a release of CVOCs, primarily PCE, below Building 11. Concentrations of constituents within these areas are above both I/C-DECs and GB-PMCs and will require some form of active remedial effort to reduce constituent concentrations and/or potential threats of exposure to achieve levels that comply with the remedial standards established within the RSRs.

Soils within the southern parcel have only indicated minor impacts and data from that area do not indicate that management or exposure from these soils would pose a concern.

Given the relatively permeable native soils at the Site, releases from Site AOCs would have the potential to migrate downward through subsurface soils to the water table below. In the case of chlorinated solvents, since they are relatively immiscible in water and typically have densities greater than water, a solvent release of a sufficient quantity could form a dense non-aqueous phase liquid (DNAPL) which could migrate down through saturated soils (below the water table) to the bedrock surface, and potentially into bedrock cracks and joints.

The depth to bedrock groundwater was measured to range from 4.5 feet bgs at well ME-1 to 18.5 feet bgs at well MW-02 and appears to drop off sharply near the northern boundary of the Site. The water table was encountered below the bedrock surface at most monitoring wells constructed at the Site. Groundwater was only encountered within the overburden soils at monitoring wells AM-1, AM-7 and GZ-4, (the latter two wells are both located within Building 11). Overburden monitoring well GZ-5, located to the north of Building 11, was found dry when gauged on April 30 and May 7, 2015.

Based on depth to bedrock groundwater measurements made at Site wells during groundwater sampling on April 30, 2015, bedrock groundwater flow at the Site is inferred to generally be to the north-northwest in the western portion of the site and to the north-northeast in the central and eastern portions of the Site. Bedrock groundwater apparently discharging to American Mill Pond in the western portion of the Site and to the northeast toward East Main Street in the eastern portion of the Site. The more eastward groundwater flow direction in the eastern portion of the site differs from what was depicted in previous investigations. Water table elevation data from a second gauging of

Site wells on May 7, 2015 confirmed the easterly flow direction. Based on measurements taken through the floor of Building 7 to the raceway below, it appears that the groundwater table is below the base of the raceway, at least within the northern portion of the Site and inferred groundwater flow patterns don't appear to be affected by that hydraulic feature.

As the gradient of the raceway is quite steep and flow through the raceway is rapid and with high energy it was inferred that conditions there would not constitute a depositional environment wherein contaminant constituents might be expected to accumulate. Instead potential impacts to the river system were assessed at the downstream American Mill Pond where dissolved and particulate contaminant constituents released from the Site would more likely be expected to be present.

Sampling and analysis of Site groundwater indicated three areas where concentrations of COCs in groundwater were elevated to levels exceeding RSR numeric criteria:

- An apparent dye release downgradient of the northwestern corner of the Building 14 where blue tinged groundwater was observed and aniline was reported above SWPC in groundwater from ME-2;

- Building 7 loading dock area where lead was reported above the SWPC in groundwater at well AM-1; and

- Building 11 area where concentrations of metals and PAHs were reported above SWPCs (AM-7) and CVOCs (PCE and vinyl chloride) were reported above I/C-GWVCs.

GZA notes that multiple alternatives are allowed under the RSRs to determine compliance with the SWPCs. Additional rounds of ground monitoring will be necessary to allow such a determination to be made.

Sampling and analysis of surface water and sediment from the Hockanum River, upstream and downstream of the Site, indicated impacts from metals (chromium, lead, and mercury) were higher in downstream samples than in upstream samples relative to the Site. Concentrations of these constituents were also at levels above screening benchmark criteria. No direct release or direct migration of these constituents from the site to the pond were identified as part of the Site investigations.

We note however, CTDEEP and USGS have identified the American Mill Pond and Hockanum River as impaired and the water quality of the river no longer supports one or more designated uses for a Class B surface water body due to its history of heavy industrial use, urbanized setting and impacts from historical point and nonpoint source discharges. The impacts to sediments both upstream and downstream of the Site is reflective of the degraded quality of the river due to its urban setting and historical industrial usage.

As the data set population generated through this study is very small and contaminants in sediments are typically heterogeneously distributed, any conclusions drawn from this data set regarding impacts from the Site can only be very limited. Further evaluation of sediment conditions through a formal Ecological Risk Assessment is needed to reach any definitive conclusions as to whether the presence of those constituents present a significant risk of impacts to the ecology of that aquatic system that would require a remedial action.

3.0 APPLICABLE RSR CRITERIA

In 1996, the CTDEEP adopted the RSRs which set criteria for certain constituents in soil, soil vapor and groundwater and provides some alternative methods of demonstrating that cleanup has been achieved at sites in Connecticut. The RSRs were revised in June 2013. These regulations apply to many sites, including those which are under order by the CTDEEP, those which enter the CTDEEP's Voluntary Remediation Program, and those "establishments" which are transferred and thus subject to the Connecticut Transfer Act process. For sites which meet none of these criteria, the RSRs are often used to provide a basis for comparison of existing conditions to a set of criteria. The Site is subject to the RSRs as a result of being in the Transfer Act upon transfer.

In accordance with Section 22a-133k-2 of the RSRs, the criteria that are applicable to soil include the Direct Exposure Criteria (DEC) and the Pollutant Mobility Criteria (PMC). In accordance with RSR Section 22a-133k-3, the criteria that are applicable to the groundwater include the Groundwater Protection Criteria (GWPC), the Groundwater Volatilization Criteria (GWVC), and the Surface Water Protection Criteria (SWPC). A description of applicable RSR criteria is presented in GZA's Phase III report. Applicable criteria used to develop this RAP include the Industrial/Commercial Direct Exposure criteria (I/C-DEC) and class GB Pollutant Mobility Criteria (GB-PMC) in soil. In ground water applicable criteria are the Surface Water Protection Criteria (SWPC) and the Industrial/Commercial Groundwater Volatilization Criteria (GWVC).

In general, where the RSRs do not contain numeric criteria for substances detected at concentrations of potential concern, the RSRs require that risk-based calculations be made, using formulae contained in the RSRs to develop criteria. Such criteria are subject to approval by the CTDEEP. In some cases, CTDEEP has developed draft criteria for certain Additional Polluting Substances and indicated that site-specific approval of these values can be requested and are likely to be approved. Some COCs detected on Site will require development and CTDEEP approval of criteria for additional polluting substances prior to Site verification. As part of this RAP, draft 2008 values for DEC and PMC were used where possible for evaluating the need for remediation.

4.0 SITE CHARACTERIZATION CONCLUSIONS AND RECOMMENDATIONS

GZA has made the following findings based on the completion of the Phase III Data Gap investigations at the Site:

- A release of petroleum hydrocarbons is present in soils at three AOCs where no investigations had previously been performed:

  AOC-1 Former Solvent USTs;
  AOC-4 Former Dye Mixing Room; and
  AOC-7 Former Maintenance / Machine Shop.

  Concentrations of COCs in AOCs 1 and 4 were detected at concentrations below applicable RSR remedial criteria. Additional investigations of these areas (recommended during the remedial phase of operations) is needed to more fully assess degree of impacts and whether a remedial response may be required.

  The concentration of petroleum hydrocarbons in soils at AOC-7 (Maintenance Machine Shop) exceed the I/C-DEC and GB-PMC, indicating a need for a remedial response. As Building 12 is designated to be preserved under future development plans, we anticipate this condition can be addressed through the placement of institutional controls on that structure.

- Analysis of soils below Building 14 supported data derived from previous investigations that soil there exhibit low levels of degradation from COCs (VOCs, metals, ETPH, PAHs and aniline dye) at concentrations below RSR remedial criteria. Groundwater sampled in wells GZ-2 and GZ-3 also supported that finding.

- Higher levels of COCs (PAHs, ETPH and metals) are present in soils below the complex of Site buildings north of Brooklyn Street at levels exceeding R-DECs, I/C-DECs and GB-PMCs.

- A release of petroleum hydrocarbons is confirmed in the area east and north of the 18,000-gallon No. 2 Fuel Oil above ground storage tanks building (AOC-14) at concentrations exceeding I/C-DECs and GB-PMCs. It inferred this release is related to a historical release from 20,000-gallon USTs removed from that location in 1989.

- The current data set supports previous data indicating that a release of metals, ETPH and PCE is present in soils below Building 11 (AOC-19) at concentrations exceeding I/C-DECs and GB-PMCs. In addition, sampling and analysis of groundwater from newly installed well GZ-4 indicates PCE is present in groundwater below the floor slab at concentrations exceeding the SWPC and I/C-GWVC.

- The current data set indicates concentrations of COCs are present above SWPC in groundwater at wells AM-1 (lead) and ME-2 (aniline). Further monitoring may be required to determine if an actual exceedance of the SWPC by those constituents may be present.

- Sediment samples from American Mill Pond, downstream of the facility, indicate potential impacts from COCs released as a result of historical Site activities may be present there. No impacts to the quality of the Hockanum River were indicated by analyses of surface water samples.

A summary of the findings of the Supplemental Phase III environmental assessment of the twenty AOCs investigated at the Site is provided in Table 1.

GZA understands that the property owner is contemplating implementation of environmental land use restrictions or other mechanisms that would allow contaminated soil to remain in place. In addition, plans for future site renovations anticipate the demolition of many of the existing structures, leaving some existing buildings in place and the construction of new structures. Future planned use of the property will be limited to commercial retail and office space. Unless environmental land use restrictions (ELURs) are imposed on some portion or all of the property and site-specific approval (from CTDEEP) for alternative remedial criteria are obtained, soils impacted above June 27, 2013 RSR Residential Direct Exposure Criteria and/or Class GB Pollutant Mobility Criteria would require remediation. In order to do so, partial building demolition may be required to access some of that soil.

5.0 GROUPING OF AOCs BY SIMILAR CONDITIONS

GZA's analysis of Site characterization data has identified certain Site environmental conditions that were similar at multiple AOCs. Since specific remedial methods can be applied to multiple AOCs with similar environmental conditions, we have organized the remaining Sections of this RAP by remedial methods. Each remedial method will be employed on a group of AOCs to bring those areas into compliance with the RSR criteria.

Assessment of environmental conditions at the Site are based on widely spaced borings and are therefore an approximation of conditions that are present at the Site. As the data set of any investigation is inherently limited, there is some potential that conditions may be present which constitute non-compliance with applicable remedial criteria. Should previously unrecognized environmental conditions be found during Site redevelopment, such conditions should be brought to the attention of GZA and the Town and should be discussed in the context of this RAP.

As described in the Phase III Report, there are five distinct conditions at the Site that require unique remedial actions to attain compliance with the RSRs. These conditions are:

- **Condition 1**: Site-wide locations where shallow impacted soil or urban fill containing asphalt fragments or coal ash is present, and is impacted with metals (specifically arsenic and lead), PAHs and occasionally ETPH at concentrations greater than I/C-DEC. These materials are exempt from the GB-PMC under the RSRs. Some limited excavation and capping may be required to render soils inaccessible in accordance with the RSRs. An area outside (south of) the Building 7 loading dock where investigation results

indicated shallow soils in a parking area contain concentrations of arsenic and PAHs greater than the I/C-DEC criteria.

- **Condition 2**: An area in the vicinity of boring AOC-7-2 where ETPH was detected in shallow soil at 8,000 mg/Kg, which is above the I/C-DEC and GB-PMC. This area is located in the western portion of Building 12, which housed a former maintenance/machine shop. Concentrations of other COCs were reported below RSR criteria at this location, therefore, remediation is only needed to address petroleum.

- **Condition 3**: An area next to the former UST storage area was found to contain concentrations of ETPH above the I/-DEC and GB-PMC (both criteria being 2,500 mg/Kg).

- **Condition 4**: Soils below the floor slab of Building 11 where releases of CVOCs (primarily PCE) and ETPH were identified at concentrations greater than the I/C-DEC and GB-PMC criteria; also certain metals (primarily arsenic) were found at concentrations above I/C-DEC criteria. A sample from monitoring well GZ-4, installed inside Building 11, indicates groundwater in the overburden aquifer (which is potentially a perched groundwater condition) below the northwest end of the building is impacted with PCE at a concentration that exceeds the SWPC and I/C-GWVC. Also, a sample from well ME-6, installed north of Building 11 in the shallow bedrock aquifer contained vinyl chloride above the I/C-GWVC; we note that no groundwater was observed in well GZ-5 which was installed in overburden soils above the bedrock surface adjacent to ME-6.

- **Condition 5**: Sediments at the bottom of the impounded portions of the Hockanum River (ponds), found upstream and downstream of the Site buildings, contain concentrations of metals (cadmium, chromium, lead, and mercury) and PAHs that are elevated compared to screening level benchmark criteria. Concentrations of metals in downstream sediments exceed upstream concentrations. Analytical data infer releases from historical Site operations and/or upstream sources may have impacted sediments within the American Mill Pond at levels that could result in a potential adverse impacts to benthic biota in the pond (ecological risk). We note that the sediment data set is limited and contaminants in sediment are often unevenly distributed in such a shifting, fluvial aquatic system.

A number of AOCs at the Site were fully characterized during Phase I, II and III investigations and no further action or remediation is warranted. The following AOCs were fully characterized, meet RSR criteria, do not fall under any of the five Conditions noted above and, as such, require no further action or remediation:

AOCs REQUIRING NO FURTHER ACTION

- AOC 2 - Building 14 south loading dock

- AOC 3 - Building 14 west loading dock
- AOC 5 - Building 14 wastewater conveyance trenches
- AOC 6 - Southeast corner of Building 14
- AOC 8 - Slope west of Buildings 1 and 2
- AOC 9 - Building 13, Latex Coating
- AOC 10 - Building 2 loading dock
- AOC 11 - Buildings 1 and 2, Coating Storage
- AOC 12 - Building 3, Storage
- AOC 17 - Building 9, Dye Storage
- AOC 18 - Building 8, Former Dye House
- AOC 20 - Building 11 loading dock
- AOC 21 - Former off-site gasoline station
- AOC 25A - American Mill Pond (surface water only)

Remaining AOCs not listed above, will require action or remediation to bring them into compliance with the RSRs. We have assumed that a Site-wide ELUR will be imposed on all or portions of the Site (as selected to conform to redevelopment plans) to preclude residential use and to allow usage of the less stringent I/C-DEC and I/C-GWVC. The table below groups AOCs that require further action or remediation under the five Conditions noted earlier in this Section:

Environmental Condition	Grouped AOCs With Summary Descriptions	Remedial Measures Planned
Condition 1	**AOC 13** – Building 7 former solvent coating lines, impacted soil below floors **AOC 22** – Site-wide fill **AOC 16** – Building 7 loading dock soils with arsenic & PAHs >I/C-DEC	Environmental Land Use Restriction to render soils "Inaccessible", placement of pavement or clean soil cover needed at certain locations
Condition 2	**AOC 7** – Building 12 soils below floor with ETPH above I/C-DEC and GB-PMC.	Environmental Land Use Restriction to render soils "Inaccessible" and "Environmentally Isolated" below a building
Condition 3	**AOC 14** – 18,000-gal UST that will be excavated, impacted soil likely beneath **AOC 15** – PCB transformer pad that will be removed, impacted soils likely beneath and around pad	Soil excavation, off-Site disposal or on-Site reuse under future buildings with ELUR for inaccessible and environmentally isolated, paving and use of Environmental Land Use Restriction for soils above DEC but below PMC

Environmental Condition	Grouped AOCs With Summary Descriptions	Remedial Measures Planned
Condition 4	**AOC 19** – Building 11 VOCs in soil and groundwater beneath floor, ETPH and metals above RSRs	Floor removal, limited soil excavation, soil vapor extraction (SVE) and air sparging systems
Condition 5	**AOC 25** – American Mill Pond (sediments only)	Sampling and risk assessment

GZA notes that soils will be excavated from the northern and southern portions of the Site in order to construct foundations for proposed new buildings. The materials excavated for new buildings will include shallow fill materials that have low level impacts below the RSRs but must be managed as "polluted soil" due to the presence of asphalt fragments, coal ash and other low level contaminants from historical mill operations or poor quality fill. A soil management plan should be developed and implemented to address "polluted soil" that will be excavated but does not fall under the five specific contamination Conditions listed in the table above. If design of the new buildings allows placement of excavated soils as fill below buildings, the fill will be inaccessible and environmentally isolated and will not pose a risk to Site occupants. However, if the excavated materials must be exported off-Site, then the materials should be properly recycled or disposed of at a facility that can accommodate "polluted fill". Excavated materials from the Site should not be considered "clean fill" based on available data.

Please note that under all remedial alternatives discussed in this RAP, a compliance groundwater monitoring program (Site-wide) consistent with the RSRs will be required at the completion of the work (see Section 10.00). Since Site-wide compliance groundwater monitoring is described later in this RAP, we have not repeated groundwater monitoring procedures as part of the remedial methods described below in Sections 6.0, 7.0, 8.0 and 9.0. Based on past groundwater monitoring and the physical properties of the primary constituents of concern, we do not anticipate compliance monitoring will trigger the need for further remedial actions. We will be prepared, however, to address future groundwater data as it is received, if data does not demonstrate groundwater compliance.

6.0 REMEDIATION OF CONDITIONS 1 & 2 USING LAND USE RESTRICTION

We understand the intended future use of the property may include some combination of commercial use for offices and retail operations mixed with limited residential use. Therefore, to mitigate existing or potential environmental risks related to poor quality urban fill materials, which are present across much of the Site (AOC 22, Site-wide fill), an Environmental Land Use Restriction (ELUR) will be placed on the entire property or portions of the property (as selected to correspond with redevelopment plans) to prohibit residential use. Soils at sample locations AOC-1-2 (Former Xylene USTs on south side of Building 14) exhibited ETPH that was above laboratory detection limits but below RSRs. Sample AOC-4-3 (Dying/Mixing Room at northwest corner of Building 14) exhibited ETPH

and VOCs that were above laboratory detection limits but below RSRs. Since the detections at these locations indicate a release, additional testing should be performed to confirm other samples from the release area do not have higher contaminant concentrations (above RSRs) and the limits of the release area are fully identified.

Also, AOC 13 soils below the floor of Building 7 (location of former solvent coating lines) contained COCs above the I/C-DEC, therefore, after Building 7 has been demolished (as proposed by the Town) no additional remediation will be needed except that required to render soil inaccessible by limited excavation and capping.

The RSRs define "inaccessible" soil as those soils that are:

1. More than 4 feet below the ground surface;
2. More than 2 feet below a 3 inches thick (or more) paved surface (depth can include road base materials);
3. Directly below 3 inches (or more) of pavement if contaminants are petroleum hydrocarbons, PAHs or metals (metals must be less than 2 times the I/C-DEC);
4. Beneath a building;
5. Beneath another structure that is used to prevent contact with underlying soils and has been approved, as such, by the CTDEEP Commissioner.

Using an ELUR will allow fill materials with contaminants that exceed the I/C-DEC to remain in place, while protecting Site workers/occupants from future exposure to impacted soils. Site development plans must consider the ELUR and its limitations when designating excavation areas or demolition of buildings. Since appropriate cover materials is a key element of the ELUR, it will not be finalized and implemented until Site development is complete. The ELUR requires a designation of Regulated Areas that will be inaccessible environmentally isolated or limited in their use. The Regulated Areas must be represented on an A-2 Level Survey Map of the Site which will be placed on file with Vernon Land Records.

For AOC 7 soils below the floor of Building 12, which are impacted by petroleum (ETPH) at concentrations above both I/C-DEC and GB-PMC, the building will act as a cap over the impacted soils which will render soils beneath both "inaccessible" and "environmentally isolated". As such, the DEC and PMC do not apply to AOC 7 as long as the soils are not polluted with VOCs above the RSRs. Building 12 will have to remain in-place as part of the future Site redevelopment, as has been proposed by the Town. Additional testing to confirm ETPH does not exceed RSR criteria beyond the Building footprint (in the street to the north) will be required.

7.0 REMEDIATION OF CONDITION 3 USING EXCAVATION AND LAND USE RESTRICTION

For Condition 3, it appears limited excavation of the most highly impacted soils is warranted to achieve compliance with the RSRs. However, once soils with the highest concentrations of contaminants have been removed, lesser impacts may be able to remain in-place and be

considered compliant under the RSRs through the use of ELUR restricting residential use. Since the Town intends to place an ELUR on the Site to address Conditions 1 and 2, adding the excavation areas to the ELUR will require minimal additional cost (see ELUR description in Section 6.0, above). The procedures below will apply to excavation of contaminated soils.

7.1 PUBLIC NOTICE

Prior to the commencement of remedial action the owner of the property will publish a notice of remedial action in a newspaper having a substantial circulation in the town where the property is located and notify the director of health of the municipality where the parcel is located. Also, a legible sign will be erected and maintained for at least thirty (30) days which will be not less than six (6) feet by four (4) feet, is clearly visible from a public highway and will include the words "ENVIRONMENTAL CLEAN-UP IN PROGRESS AT THIS SITE. FOR FURTHER INFORMATION CONTACT: Gordon T. Brookman at GZA GeoEnvironmental, Inc. at 860-858-3109" from which any interested person may obtain additional information about the pending remedial action.

7.2 SOIL EXCAVATION

Areas where levels of contaminants (arsenic, PAHs and ETPH) in soil exceed the I/C-DEC and/or the GB-PMC at AOCs 14 and 15 will be excavated for disposal. Soil excavation limits inferred by existing data are discussed below and the anticipated limits of excavation are shown on Figure 2. In addition, limited excavation may be required at AOC 13 to remove surficial soils to achieve compliance with the I/C-DEC by rendering deeper soils “inaccessible”.

Excavation at AOC 13 (South of Building 2 Coating Lines)

Soil sample AOC-13-3 contained PAHs above I/C-DEC. Excavation of the area around sample AOC-13-3 is planned. Soil at sample location SB-103 also contained ETPH but below I/C-DEC. If the area around sample AOC-13-3 is paved or covered by a building, then no excavation would be necessary. However, the extent of impacts to the east is not defined. Some excavation may be necessary to achieve compliance for impacted soil outside the planned new building footprint. Since it is our understanding the Town plans to redevelop the areas where excavation is planned as landscaped areas without overlying pavement, excavation of the area east of sample AOC-13-3 to 2 feet below grade may be required. Prior to excavation, supplemental borings and sampling will be performed to confirm the extent of I/C-DEC impacts in this area. The AOC-13-3 excavation would extend approximately 10 feet east of location AOC-13-3. After excavating to 2 feet below grade, confirmation samples would be collected from the base of the excavation and be analyzed for PAHs (AOC-13-3 area). If soils at the base of the excavation exceed RSRs, the Town will have to decide whether to backfill the area with clean soil and install pavement that is 3-inches thick or more (to render soils below inaccessible) or to continue excavation to 4 feet

below grade, so soils could be rendered inaccessible below 4 feet of clean fill without pavement.

Excavation at AOC 14 (Existing 18,000-Gallon AST/Former USTs) and AOC 15 (Existing Transformer Pad)

A release of fuel (Number 2) oil is suggested by documentation of a failed tank tightness test for former USTs which were removed in 1989 and were co-located with current 18,000-gallon ASTs at AOC 14. Access to this area was limited by the presence of existing ASTs and their concrete containment structure, but remedial soil excavation is anticipated based on the suggested release from the USTs. However, if the containment structure is removed and no evidence of a release is noted, the AOC 14 area may be able to be brought into compliance using an ELUR only.

In addition, soils at AOC-15 are impacted with ETPH above the I/C-DEC and GB-PMC; PAHs are present at concentrations below RSRs and no PCBs were detected in soils. Excavation of the ETPH impacted soils at the AOC 15 transformer pad will be completed at the same time as the AOC 14 excavation since these two areas are adjacent.

The steel ASTs, their concrete containment and the surrounding metal building should be removed prior to remedial soil excavation to allow access to the potentially impacted soils below the containment.

Since the Town plans to redevelop the area surrounding the proposed excavation as landscaped areas without overlying pavement or buildings, excavation will initially be to 2 feet below grade across the approximately 30 foot by 40 foot area surrounding the tanks and encompassing the west half of the transformer pad footprint, where elevated ETPH was detected. After removal of 2 feet of soil, confirmation samples will be collected at 2 feet below grade and approximately 10 samples will be analyzed for ETPH. If soils at the base of the excavation exceed GB-PMC; excavation must continue until results comply with the GB-PMC (and I/C-DEC) at 2,500 mg/Kg.

We anticipate excavation will be limited to select areas where petroleum impacts are evident. However, it is possible that the entire area beneath the AST containment is impacted with petroleum. Therefore, as a contingency, we have estimated the soil excavation area will be 30 feet by 40 feet, and will extend to 7 feet below grade beneath the concrete containment (after containment is removed). We are also assuming the excavation will extend to the top of bedrock since GZA soil borings GZ-1 and GZ-2 indicate top of bedrock is approximately 5 to 7 feet below grade in this area.

Excavation at AOC 16 (South of Building 7 at Loading Docks)

Soil samples from this area exceed I/C-DEC and contain coal ash fill. Fill with coal ash is exempt from the GB-PMC under the RSRs. However, due to elevated arsenic concentrations being greater than two times the I/C-DEC, this area cannot be directly paved

to achieve compliance with I/C-DEC. Therefore, excavation of the loading dock area from Building 7 to Brooklyn Street is planned. Since the Town plans to redevelop the area surrounding the proposed excavation as landscaped areas without overlying pavement or buildings, excavation will initially be to 2 feet below grade. The excavation would extend from Brooklyn Street to the foundations of Buildings 7 and 9 to the north and east. The excavation would extent approximately 40 feet west of Building 9 to the concrete slab covering the raceway. After excavating to 2 feet below grade, samples would be collected from the base of the excavation and be analyzed for total arsenic. If soils at the base of the excavation exceed I/C-DEC, the Town will have to decide whether to backfill the area with clean soil and install pavement that is 3-inches thick or more (to render soils below inaccessible) or to continue excavation to 4 feet below grade, so soils could be rendered inaccessible below 4 feet of clean fill without pavement.

Anticipated Soil Volume

Soil excavation at AOC 13 is anticipated to generate approximately 80 to 90 cubic yards of impacted soil if the entire area is contaminated down to the top of bedrock at approximately four to five feet below grade. A more likely scenario is that PAH impacts above I/C-DEC will be limited to shallow soils impacted by top down releases to depths of only two feet below grade. Therefore, excavation may be limited to 2 feet below grade (or approximately 35 to 45 cubic yards) if samples at 2 feet deep are in compliance with applicable RSRs. We note that fill containing coal ash and asphalt fragments is exempt from the GB-PMC. At this time, it is our understanding that a new building will be constructed over a portion of the excavation area after remediation which may limit the need for some excavation (PAH impacted soils below the building could stay in place).

Soil excavation at AOC 14 and 15 is anticipated to generate approximately 350 to 370 cubic yards of impacted soil if the entire 30 foot by 45 foot area is contaminated down to the top of bedrock at approximately 7 feet below grade. A more likely scenario is that petroleum impacts above GB-PMC will be limited to smaller areas where the former USTs or their piping failed. Also, excavation may be limited to 2 feet below grade (volume of approximately 100 to 120 cubic yards) if samples at 2 feet deep are in compliance with the I/C-DEC and GB-PMC. We note that soil above GB-PMC will have to be excavated down to rock unless a building or impermeable cap is planned over the area which would allow the soils to be rendered "environmentally isolated". At this time, it is our understanding that new buildings will not be constructed over the excavation areas after remediation.

Soil excavation at AOC 16 is anticipated to generate approximately 330 to 350 cubic yards of impacted soil if the entire 40 foot by 55 foot area is removed down to four feet below grade. However, excavation may be limited to 2 feet below grade (approximate volume of 165 to 175 cubic yards) if samples at 2 feet deep are in compliance with I/C-DEC. At this time, it is our understanding that new buildings will not be constructed over the excavation areas after remediation. If soils at the base of the excavation exceed I/C-DEC, the Town will have to decide whether to backfill the area with clean soil and install pavement that is 3-inches thick or more (to render soils below inaccessible) or to continue excavation to 4

feet below grade, so soils could be rendered inaccessible below 4 feet of clean fill without pavement.

The total volume of impacted soil that needs to be excavated to achieve compliance with the RSRs will vary depending on selection of final cover (landscaping, pavement, new buildings) for the areas that have been identified and analytical results for samples collected at each stage of the remedial process. We estimate the volume of excavated impacted soil could range from 340 to 810 cubic yards.

We note that the contaminated soils that are excavated from AOCs 13, 14, 15 and 16 could potentially be used as fill within the footprint of Building 2, which has a basement and will be demolished during Site redevelopment. Placement of the impacted soils within the Building 2 footprint and then construction of a new building over this area will render the impacted soils "inaccessible" and "environmentally isolated" below a building. The basement level of Building 2 is estimated to be 40 feet by 70 feet by 8 feet high, with a volume of approximately 933 cubic yards. Therefore, the estimated maximum volume of contaminated soil from AOCs 13, 14, 15 and 16 would potentially fit in the Building 2 area as long as a basement is not planned for the new building that will cover the Building 2 area.

7.3 MANAGEMENT OF SOIL, STORMWATER AND GROUNDWATER

7.3.1 Management of Soil During Remedial Excavation

The full extent of the remedial excavation areas are not yet known, but have been estimated based on available data. Excavation will proceed to the limits noted above, or will be adjusted based on field observations. All materials excavated during remedial activities will be observed for visual and olfactory indications of contamination and field-screened with a photoionization detector (PID) by a qualified environmental scientist.

At this time we anticipate the impacted soil will be directly loaded to trucks for off-Site disposal or relocated on-Site, if design of the proposed buildings has room for such fill placement. Based on soil testing completed to date and waste characterization results, excavated soils can be combined for disposal due to the presence of similar contaminants at similar concentrations.

During excavation, the remedial contractor will follow the procedures below.

- The contractor will prevent contaminated soil from falling to the ground as it is loaded to shipping containers. Shipping containers will be placed adjacent to the excavation area and plastic sheeting will be laid down around the container to contain soils that might fall from the excavator as loading proceeds. At the end of remedial excavation, soils that have fallen to the ground will be cleaned up by the contractor and the residual soils and plastic sheeting will be placed in the shipping container for disposal.

- Pavement and concrete removed to access underlying soils is typically not suitable as fill and is usually removed and disposed of off-Site. However, if proposed building design includes fill areas that do not require structural fill, then re-use of these materials on-Site may be possible. The excavation contractor will perform excavation and material handling in a manner that limits mixing of materials with different levels and/or types of contamination. The contractor will excavate material by methods that will permit observation of exposed subsurface soils to reduce the potential of mixing contaminated soils with uncontaminated soils. During material handling, boulders, building debris, large slab pieces, etc. will be removed and stockpiled separately.

- Soil excavated from areas with polluted soil that have been previously documented to exceed RSR numerical criteria will not be subject to re-characterization unless the soil exhibits contamination that differs from what is already known about the impacted area or the receiving facility requires additional analyses.

- Designated polluted soil that is to be removed off-Site for disposal will be characterized for waste disposal prior to the start of remedial excavations and data will be used by the remedial contractor to the extent allowed by the disposal facility. We note that each disposal facility requires unique characterization data (although there is significant overlap between facilities) and some supplemental data may be required just prior to disposal. In addition, the sampling frequency will be determined by the receiving disposal or recycling facility selected by the remedial contractor. Polluted soil will not be removed from the Site for off-site disposal or recycling until all appropriate documentation (waste profiles, bills of lading) are prepared and approved by the receiving facility. The Town will be responsible for execution (signing) of environmental shipping documents and manifests, and for making required state or local notifications.

Although not anticipated, if stockpiling of impacted soils prior to loading for disposal is requested by the remedial contractor (as a more cost effective or efficient means of remediation), or stockpiling of soil is required due to unanticipated conditions encountered during the soil remediation (which is not likely), then an alternative soil management plan should be developed by GZA to ensure proper materials handling during remediation and the procedures below should be followed by the remedial contractor.

- Prior to the commencement of earthwork activities at the Site, material stockpile areas, if any, will be cleared and prepared to receive material. CTDEEP's General Permit for Contaminated Soil and/or Sediment Management should be referenced for specific requirements and permit applicability depending on the size, location and nature of stockpiles.

Stockpile areas will be graded such that stormwater run-on and run-off is diverted around and away from stockpiled materials. A snow fence with hay bales and silt fence will be placed continuously around the perimeter of the stockpile area. Stockpile slopes will be no steeper than three horizontal to one vertical (3H:1V). The stockpile area will be fenced or blocked off to limit contact of Site workers and passers-by with stockpiled materials. The area will be visibly marked with appropriate signs warning of potential hazards.

- The first lift of stockpiled materials will be placed on 20-mil thick, polyethylene sheeting. Stockpiled materials will be graded to shed water and covered with a minimum of 20-mil thick polyethylene sheeting at the end of each workday. The cover sheeting will be overlapped and weighted to form a continuous waterproof barrier over the material. The stockpile cover will be maintained to prevent water from entering the stockpiled materials; blowing dust; and contact between contaminated material, uncontaminated soil, Site workers, and the environment.

- Drainage effluent from the stockpiles will be managed in a manner that will not cause injury to public health, water quality of nearby surface water bodies, public or private property, or existing or completed work. The contractor may allow run-off from the stockpile area to flow through hay bales and onto the Site if the runoff has not been in contact with polluted or potentially polluted soils. The transfer of materials from the excavation to the stockpile areas will be conducted in such a manner as to prevent the loss or spread of polluted or potentially polluted materials across the site. Excavation, material handling, and stockpiling will be performed in a manner that limits the mixing of materials with different levels and/or types of pollution to the extent practicable. Details for sedimentation and erosion control and drainage effluent management will be conducted in accordance with the General Permit for Stormwater Management During Construction.

7.3.2 Guidelines for Importing Borrow

Prior to delivering borrow material to the Site, information related to any potential source of contamination (i.e. previous environmental site assessments, etc.) at the borrow source will be provided by the party providing the borrow material.

If material other than crushed stone from a quarry is used, the borrow material must be free of contamination (including petroleum constituents) and must be tested and demonstrated to not exceed ½ the RSR criteria for naturally occurring chemical constituents. Borrow material will be considered acceptable for use at the Site provided that the substance concentrations do not exceed ½ of either the R-DEC and/or GA-PMC with the following exception; borrow material will not be considered acceptable for use at the Site if any concentrations of PCBs, VOCs, pesticides or herbicides are detected.

7.3.3 Excavation Backfilling

After remedial excavation is complete, the excavation will be filled with clean borrow materials. Backfill shall be placed in 12-inch lifts and compacted. The borrow materials/backfill shall be covered by polyethylene sheeting to prevent infiltration of rainwater while stockpiled on the Site.

7.3.4 Construction Dewatering

Groundwater has been observed to be below the surface of bedrock in the vicinity of the remedial excavation areas and no dewatering is anticipated for the remedial excavations.

7.5 CONFIRMATION SAMPLING

Confirmation sampling of remediation areas to document mitigation of constituents above RSR criteria will be required where contaminated soils have been excavated for off-Site disposal.

7.5.1 Sample Collection/Analyses

Soil samples will be collected at the limits of excavation following the removal of contaminated materials as noted in Section 7.2. Soil samples will be preserved and submitted to a Connecticut state certified laboratory for analyses. Applicable laboratory procedures may include:

- Petroleum Hydrocarbons – CT DPH ETPH Method
- PAHs – EPA Method 8270
- Arsenic – EPA Method 6010

Detection limits for analyses shall conform to the RSR criteria. Appropriate QA/QC protocols outlined in the RCP guidance documents will be followed.

7.6 OFF-SITE DISPOSAL/RECYCLING OF CONTAMINATED MATERIALS

Waste classification will be performed in accordance with federal and state regulations regarding the disposal and recycling of contaminated material. Contaminated material designated for off-site disposal or recycling will require testing of parameters required by the disposal facilities permit. Frequency of waste classification sampling will be determined by the disposal facility permit.

8.0 REMEDIATION OF CONDITION 5 USING EXCAVATION, SVE AND AIR SPARGING

For Condition 5 where chlorinated solvents have been found in soil and groundwater below the floor of Building 11, a focused below floor excavation (to partly address soil), followed by installation of a soil vapor extraction (SVE, to complete soil remediation) and air sparging system (to address groundwater), will be performed to address the observed soil and overburden groundwater impacts and achieve compliance with the RSRs. As outlined below, this approach includes removal of the concrete floor, excavation of contaminant "hot spots", installation of SVE and sparging wells, floor restoration, installation of a blower/compressor and controls and operation and maintenance of the remedial system. The length of time that the active SVE and air sparging remedial system operate will be based on extracted soil vapor VOC concentrations and ground water quality data. These active systems will be supplemented with the installation of a sub-slab vapor barrier and sub-slab passive vent piping to mitigate the potential migration of impacted soil vapor into occupied building spaces.

Soils with VOCs will be addressed by excavation, SVE and air sparging, however, soils below the floor of Building 11 are also impacted with ETPH and metals that must be addressed. Since the soils are below a building that will remain in place as part of redevelopment, an ELUR will be used to render soils below Building 11 "inaccessible" (to address metals concentrations that are over the I/C-DEC, since previous testing showed metals in this area did not leach above GB-PMC) and "environmentally isolated" (to address soils with residual ETPH that might be above GB-PMC but will remain in place). Since the Town intends to place an ELUR on the Site to address Conditions 1 and 2, adding the Building 11 area to the ELUR will require minimal additional cost (see ELUR description in Section 6.0).

8.1 PUBLIC NOTICE AND PERMITTING

The public notice described in Section 7.1 will also be used for remediation proposed for Condition 5. A single notification will be made to cover all remedial activities at the Site.

The environmental consultant to the Town will obtain the applicable state and local permits required to install and run the sub-slab SVE and air sparge and venting systems. Permit approvals will be obtained before additional remedial activities listed below are commenced.

8.2 FLOOR REMOVAL

A portion of the concrete floor of Building 11 will be demolished and removed for disposal. Care will be taken by the demolition contractor to not disturb soils below the floor. The concrete floor will be segregated from underlying soil and no soil will be disposed of along with the concrete. As the floor is pealed back, it will be taken to a clean staging area where larger pieces of concrete can be crushed so that concrete meets the size requirements of the disposal/recycling facility. If concrete is stained it will be segregated from non-stained

portions of the floor. Stained concrete would imply impacts and stained material may require recycling and/or disposal at a different facility than clean concrete.

Alternately, the concrete can be crushed on site and can be reused as clean fill material during redevelopment. If the concrete is not used on-Site as fill, it should be disposed of as demolition debris or recycled. Disposal at a landfill as cover material is also a suitable concrete disposal option. The concrete debris should not be used as unrestricted clean fill because it may have surficial staining caused by minor petroleum or other chemical drips and spills from former Amerbelle manufacturing operations.

8.3 REMOVAL OF SUB-SLAB PIPING AND SUMPS

Former Amerbelle piping and sumps located below the floor of Building 11 will be removed to prevent short circuiting of the planned SVE and air sparging remedial system. Piping will be excavated but soils will remain in-place, except for hot spot soils that will be excavated for off-Site disposal (see Section 8.4). Piping will be cut off at the limits of the planned SVE and air sparging area and the remaining piping will be capped. The piping will be disposed of as scrap, if it is metal and/or non-porous material (and free of sediment), or as remediation waste, if it is made of porous material (e.g., concrete, bituminous fibrous piping, etc.).

8.4 IMPACTED SOIL HOT SPOT EXCAVATION AND DISPOSAL

Soils below Building 11 that exhibited the highest concentrations of tetrachloroethylene (PCE) will be excavated for off-Site disposal prior to installation of SVE wells and air sparging points (see Section 8.5). These “hot spot” soils are found in the vicinity of borings AOC-19-5, AOC-19-6 and AOC-19-7 at the northern end of the Building. Removal of soils with the highest PCE concentrations will reduce the timeframe that the active SVE and air sparging system will operate and reduce long term operation and maintenance costs.

Because some of the soils with the highest PCE concentrations are in close proximity to the field stone foundation walls of Building 11, the excavation inside the building will have to be dug with sidewalls at 1.5 to 1 slope to prevent damage to the foundation wall. Certain small “hot spot” areas may be able to be dug with steeper slopes if they are very limited in area (trenches just a few feet wide); but soil excavation adjacent to foundation walls should not be cut too steeply. A Building 11 schematic cross-section sketch is included on Figure 2 and shows the anticipated excavation area below the floor. The schematic sketch also shows the SVE wells, air sparge points, vapor barrier liner and passive venting pipes (see Sections below).

Soils excavated from below Building 11 will have to be managed and disposed of in a manner similar to that described in Section 7.0, so additional description of excavation activities and soil management area not repeated here. However, these soils will have to be characterized separately due to the presence of different contaminants (VOCs and ETPH). Contaminated soils from below Building 11 should be excavated and stockpiled (on,

and covered with heavy plastic sheeting), or be placed in lined and covered roll-off containers, pending characterization for off-Site disposal. For the purpose of this RAP, we have assumed the soils from below Building 11 will require disposal as hazardous waste. We note that characterization results at the time of excavation and stock piling (in roll-off containers) may indicate these soil are non-hazardous and can be disposed of by alternate methods at lower costs. For planning purposes, and until characterization is complete, the Town should assumed the more conservative approach, that soils from below Building 11 will require disposal as hazardous waste.

The excavation areas will require backfill. Specifications for fill will be part of the design phase for the SVE and sparging remedial systems since the fill must be compatible with the remedial piping that will be installed. Fill must also meet design specification for support of the new floor that will be installed (see Section 8.7).

8.5 INSTALLATION OF SVE, AIR SPARGING AND VAPOR MONITORING WELLS/POINTS

Six vertical SVE wells will be installed at locations designated by the environmental consultant during the future remedial design phase of the project. Well locations will be selected based on the highest soil concentrations and an analysis of the likely radius of influence that can be achieved in the soils below Building 11, considering the prior excavation of "hot spots".

The SVE wells will be equipped with screens extending from approximately 2 feet below the floor to the seasonal high groundwater table (approximately 9 feet below the floor, based on available data). The six SVE wells will be connected by solid manifold piping, and only one pipe will extend through the new floor, which will be installed after remedial piping is in place. Alternately, the piping may extend through the foundation wall to the outside.

The vertical SVE well piping will be connected to a blower system that will induce negative pressure in the wells and draw air through the ground which will volatize the chlorinated solvent chemicals adhered to soil below Building 11. The blower system will be sized accordingly to create such negative pressure in the wells to induce a maximum, practical, radius-of-influence in each well. Specifications for the blower system will be part of the future design phase of the project.

Four air sparging points will be installed below the water table, at the north end of Building 11 where VOC contamination in groundwater was highest. The sparge points will be placed to maximize air flow through saturated soils and movement of injected air from sparge points to the SVE wells. Similar to the SVE wells, the sparge points will be connected by manifold piping that will extend up through the floor (or through the foundation wall) at a single point based on the future remedial system design. The manifold piping for sparge points will also be kept one to two feet below the floor level to accommodate a horizontal passive venting system (see Section 8.6) that will be installed after placement of a vapor barrier liner.

Soil vapor monitoring points will be installed concurrently with the SVE and sparge wells to monitor sub-slab vacuums and soil vapor VOC concentrations. The narrow diameter soil vapor monitoring points will be placed at locations that will be used to confirm the effectiveness of the SVE system in removing contaminants from soils and soil vapors below the building.

8.6 INSTALLATION OF SUB-SLAB LINER AND NEGATIVE PRESSURE PIPING

A liner will be installed above the manifold piping for the SVE wells and sparge points to seal off deeper soils and prevent short circuiting of the SVE system through floor penetrations, expansion joints and/or cracks in the floor and to mitigate the potential migration of impacted soil vapor into the building. The liner will consist of a sprayed on asphalt based product that will fill gaps and voids. The liner will extend up the foundation walls so vapors will not escape the remedial venting system along the foundation. Clean, granular fill (devoid of gravel and cobbles) will be placed around and above manifold piping so that the sprayed on liner will be applied to a uniform surface which will prevent gaps in the liner. The depth of the liner layer will be approximately 1 foot below the finished floor level in Building 11 to leave room for passive venting pipes below the floor.

After the liner is installed, clean bedding sand will be placed above the liner. Two horizontal, 2-inch diameter, passive venting pipes will be installed within the bedding sand with the bottom of the passive venting pipes being set approximately 10 inches below the finished floor level. The horizontal passive vent pipes will be connected by solid manifold piping which will extend through the foundation wall or extend up through the floor and then piped to the roof of the building. A wind driven turbine fan system will be installed to maintain air flow through the passive venting pipes. The passive venting system is a backup system that ensures vapors from the contaminant zone do not enter the (future) occupied building spaces.

8.7 FLOOR RESTORATION

The concrete floor of Building 11 will be restored so that the Building is again useable. The new concrete floor will be 6-inches thick with a welded wire mesh reinforcement system

8.8 SYSTEM INSTALLATION, MONITORING AND MAINTENANCE

The SVE blower, air sparging compressor, turbine fan and their associated above grade piping, valves, sampling ports and other equipment will be installed after the new floor has cured sufficiently to bear the weight of the equipment and workers. A vacuum blower system will be installed and connected to the vertical SVE wells and a compressor system will be installed and connected to the sparging points. Equipment will be installed that meets the project design specifications developed by the environmental consultant during the future design phase of the project. The locations for SVE, sparging and passive venting

equipment will be determined during the design phase; SVE and sparging equipment may be located inside or outside of the building, depending on redevelopment plans.

Once the SVE and sparging systems are installed, measurements will be taken at monitoring points that will be installed along piping and on the SVE equipment. The SVE systems will be adjusted, as needed, to meet specifications and to increase their effectiveness and efficiency. Samples of soil vapor will be collected prior to system start up and will be submitted to a laboratory for analysis to determine the baseline concentrations of contaminants in soil vapor below Building 11. Data will be analyzed and documented by the environmental consultant so that remedial progress can be measured.

The SVE and sparge systems will be operated for approximately 3 years with monthly Site visits by the environmental consultant to confirm systems are operational, maintain the systems and collect samples for laboratory analysis.

8.9 REPORTING

Observations and results from maintenance and monitoring of the SVE, sparging and negative pressure remedial systems will be summarized in an annual report. At this time, we have assumed three years of operation of the remedial systems, after which the system's effectiveness will be evaluated and recommendations for continued monitoring, system modification or system closure will be provided to the Town.

9.0 REMEDIATION OF CONDITION 5 USING RISK ASSESSMENT

American Mill Pond and Hockanum River have been identified by CTDEEP as an impaired waterway due to its history of heavy industrial use, urbanized setting and impacts from historical point and nonpoint source discharges. The impacts to sediments both upstream and downstream of the Site reflects the degraded quality of the river due to its urban setting and historical industrial usage.

Since the existing pond sediment analytical data set is very limited historical and impacts upstream have been documents at levels that could potentially impact ecological receptors of the American Mill Pond further assessment should be completed with a Screening Level Ecological Risk Assessment (SLERA).

The purpose of the SLERA at this Site will be to determine if there is a potential that historical discharges from Amerbelle could have created a condition that could pose a risk to the ecological receptors downstream of the Site, specifically within the American Mill Pond, a run-of-river pond within the Hockanum River system.

The risk assessment consultant will review existing natural resource data, analyze prior groundwater sampling reports, conducted a site walkover inspection and evaluate the potential for prior groundwater discharges to affect surface water quality in downgradient receptor wetlands and watercourses. The objective of the SLERA is to characterize the

physical setting of the site, identify representative ecological receptors, and assess the potential for complete exposure pathways from the site to those receptors. Detailed information (if not previously obtained during Phase I, II and III investigations) will be gathered on the following natural resources:

- Landscape setting
- Geologic site features
- Groundwater classification and flow in the subsurface environment
- Surface water resources on and downgradient of the site
- Terrestrial and aquatic habitats and associated biota
- Exposure pathways
- Status of potential threatened and endangered species

After natural resources information is compiled and reviewed, the risk assessment consultant will design a sampling plan, as necessary, to collect sediment, surface water and groundwater samples for laboratory analysis. The risk assessment consultant will then identify indicator species that are likely to be sensitive to on-Site contaminants. The impact of Site specific contaminants on the ecological system will be assessed through an analysis of contaminant pathways and a comparison of Site data with environmental benchmark criteria available in regulatory guidance. The comparisons made will be used to identify potential ecological risks, if any, from Site contaminant discharges to the ecological system.

If the SLERA concludes that there is not likely a significant risk to the ecology of the Hockanum River under existing conditions, or if there is not likely a significant risk to the ecology of the Hockanum River after certain soils are removed per the RAP, then no additional ecological risk assessment efforts would be required. However, in lieu of accepting that there are ecological risks that would be remediated as a result of the SLERA, there exists an option to conduct a more detailed site-specific ecological risk assessment (a.k.a. Baseline Environmental Risk Assessment) to more definitively determine if ecological risks have/will occur. The following factors should be weighed in deciding which avenue to pursue: monetary costs, environmental benefits, and overall project scheduling.

10.00 GROUNDWATER MONITORING PROGRAM

After Site Characterization and remedial actions are complete, the RSRs require groundwater monitoring. Groundwater testing is required to document that 1) any groundwater plumes detected as a result of on-site releases are compliant with RSR groundwater criteria; and 2) groundwater downgradient of remedial areas meets groundwater criteria. At a minimum, four seasonal quarters of groundwater monitoring collected over a two year period are required for demonstration of compliance.

Based upon the results of groundwater sampling, the observations were made with regard to the three identified Site plumes:

Wells ME-1, ME-2, GZ-1, GZ-2, and MW-02 - Potential releases from historical fabric dyeing and coating operations at Building 14:

Generally, low concentrations of metals and SVOCs were detected in groundwater sampled from these wells with concentrations reported below SWPC. In addition, low levels of phenols were detected in ME-2 and ammonia in wells AM-1, ME-2, MW-02, GZ-1, and GZ-2. GZA notes, that a black/blue color was observed in the well purge water at ME-2, which is likely a dye. Based upon our groundwater sample results, it appears a release has occurred. At well ME-2, aniline was detected at 0.47 mg/l which exceeds the SWPC. However, we note that aniline was reported below the laboratory MRL and SWPC in downgradient well MW-02. Therefore, no exceedance of the SWPC is inferred and impacts from this plume to Site groundwater quality are not inferred by this data set; a remedial response is not required for this plume. However, four seasonal quarterly sampling events within 24 months or 12 rounds of groundwater sampling within 12 months are required to demonstrate compliance is maintained.

Wells AM-7, ME-6, and GZ-4 – Building 11

Copper, lead, mercury and zinc and several SVOCs were reported at concentrations above the SWPC numeric criteria in groundwater from well AM-7, located within Building 11. A low concentration of PCE (1.8 µg/L) was also reported in that sample, well below SWPC and Residential-Groundwater Volatilization Criteria (R-GWVC). GZA notes that, due to the very low rate of recharge of groundwater to that well during sampling, low flow sampling could not be completed without incurring excessive drawdown at that well. A grab sample was therefore obtained and tested from AM-7. Based on this circumstance, concentrations may be biased upward due to elevated turbidity in that sample.

Similar to soil analytical results for Building 11, elevated concentrations of PCE and its breakdown products were detected in groundwater from wells installed below the floor, and just north, of Building 11. PCE was detected at concentrations ranging from 1.8 µg/L in sample AM-7 to 5,900 µg/L in sample GZ-4. The concentration of PCE reported in GZ-4 is greater than the SWPC and the I/C-GWVC. In addition, the concentration of vinyl chloride was reported above the I/C-GWVC in groundwater from ME-6, located just north of (outside) Building 11. Based upon our groundwater sample results, it appears a groundwater plume with concentrations of metals, SVOCs and VOCs above SWPC and VOCs at concentrations greater than I/C-GWVCs is present in this area, apparently due to releases identified in Building 11.

As the direction of bedrock groundwater flow in the area of Building 11 is inferred to be to the northeast, well ME-6 is not directly downgradient and concentrations of COCs in the groundwater plume directly downgradient of the most significant VOC impacts still need to be assessed. One or more additional groundwater

monitoring wells will have to be installed in the area directly downgradient of well GZ-4, outside the Building 11 footprint in the street (East Main Street). Subsequent to installation of the proposed new well(s), four seasonal sampling events within 24 months or 12 rounds of groundwater sampling within 12 months are required to demonstrate groundwater compliance. We note that the full groundwater sampling program will be dependent on the initial analytical results for groundwater from the proposed wells.

Wells AM-1 – Building 7 Loading Dock Area

Concentrations of ammonia, metals, and SVOCs were detected in groundwater sampled from AM-1. The concentration of lead, at 0.031 mg/L was reported in exceedance of the numeric SWPC of 0.013 µg/L. Other constituents tested were reported at concentrations below SWPC. GZA notes that, due to a very poor recharge of groundwater to AM-1, low flow groundwater sampling could not be completed at this well without excessive drawdown. As such, a grab groundwater sample was collected from that well. Therefore, results for this sample could be subject to upward bias do to elevated sample turbidity. Based upon groundwater results, additional testing is required to confirm whether a release that has impacted groundwater has occurred.

Based on our review of the most recent groundwater conditions at the Site, it is recommended that an additional bedrock well and overburden well be installed off-Site and downgradient of Building 8 and 11 to assess potential off Site impacts to groundwater quality in bedrock downgradient of the Site and refine groundwater flow patterns within that area. After completion of remedial actions at the site, additional testing of the existing monitoring well network should also be conducted to assess seasonal variation in constituent concentrations. Wells AM-1 and AM-7, should be redeveloped and a low-flow sample collected. If the wells cannot be sampled by low-flow, an additional well should be installed to further assess groundwater in this area and confirm a release. Subsequent to installation of the new well(s), four quarterly sampling events within 24 months or 12 rounds of groundwater sampling within 12 months are required to demonstrate compliance. The groundwater sampling program will be dependent on the results for analyses from the proposed wells.

11.0 LIMITATIONS

Our Site evaluation was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same geographical area, and we observed that degree of care and skill generally exercised by other consultants under similar circumstances and conditions. Our findings and conclusions must be considered not as scientific certainties, but our professional opinion concerning the significance of the limited data gathered during the course of the preliminary Site assessment. Specifically, we do not and cannot represent that the Site contains no hazardous material, oil, or other latent condition beyond that observed by us

during our supplemental environmental Site assessment. This assessment is subject to the Limitations presented in Appendix A.

This study and report have been prepared on behalf of and for the exclusive use of the Town of Vernon solely for use in an environmental evaluation of the Site. This report and findings contained herein shall not, in whole or in part, be disseminated or conveyed to any other party, nor used by any other party in whole or in part, without our prior written consent. GZA's aggregate liability to all parties who my come to rely on this report is limited to the amount set forth in the Terms and Conditions of our contract and is not hereby expanded. No other warranty, express or implied, is made.

TABLES

Table 1
Data Gap Assessment Summary

Amerbelle Mills
Rockville, Connecticut

Area Of Concern (AOC)	AOC Description	Condition Summary/Data Gap Analysis	GZAs Data Gap Investigation																			
			Number of Borings (shallow <4 feet; deep >4 feet)	Samples collected	Laboratory Analysis Performed																Findings/Conclusions	Recommendations
					VOC-8010 (halogenated)	VOC-8020 (aromatics)	ETPH	PAH/SVOCs	Total RCRA-8 Metals	SPLP RCRA-8 Metals	Formaldehyde	Methanol	Ammonia	Glycols	PCBs	Aniline	Phenol	Grain Size Analysis	Total Organic Carbon	Hardness		
AOC 1 - Former Solvent USTs	Location of former 5,000 and 3,000-gallon xylene steel USTs which were removed in 1989. Historical Site map indicates 5,000-gallon Stoddard solvent and 3,000-gallon Xylene USTs were also formerly located at this AOC.	Prior reports indicate one tank to have failed a tank tightness tests conducted and prior to the UST removals. No post-excavation confirmation soils samples were obtained. Analysis of groundwater from downggradient well AM-3 in January 2004 showed no evidence of a release. No direct investigations of soils had been conducted at this AOC. The status of soils at this AOC was identified as a data gap.	2 deep	AOC-1-1 (8-10), AOC-1-2 (8-10)		X	X	X													Soil samples collected below inferred bottom of UST excavations reported ETPH at concentrations of 74 and 330 mg/kg, indicating the presence of a release of petroleum hydrocarbons. Concentrations of ETPH are below R-DEC and GB-PMC.	Additional exploration of soils in area of AOC-1-2 where ETPH reported at 340 mg/kg to determine need for remediation there.
AOC 2 - Bldg. 14 South Loading Dock	Three loading docks located on the south side of Building 14. These loading docks may have been used to service the former dye operations, chemical finish storage and former textile finishing areas.	Soils from nearby boring AM-3(3-5' bgs) had low concentrations of VOCs (2,2-dimethyl hexane) and ETPH (240 mg/Kg). No investigations were previously completed in the immediate vicinity of the loading docks to assess the presence or absence of a release within those areas.	3 shallow	AOC-2-1 (0.5-2), AOC-2-2 (0.5-2), AOC-2-3 (0.5-2)			X	X	X		X	X	X	X							No COCs were detected in soil samples from borings AOC-2-1 and AOC-2-3. Several metals were detected at AOC-2-2 at concentrations below R-DECs, similar to those found Site wide, and are inferred likely associated with fill. Methanol was detected at 20 mg/kg in AOC-2-2, significantly below R-DEC and GB-PMC and is inferred to represent a minor release related to transfer and handling of textile finishing chemicals at the loading dock.	No further action
AOC 3 - Bldg. 14 West Loading Dock	There are three loading docks located on the west side of Building 14. These loading docks are near and may have been used to service the former dye operations, chemical finish storage and former textile finishing areas.	Investigations of this AOC were limited to boring/wells AM-2 and ME-1. Low concentrations of ETPH, PAHs and metals were reported in soils at ME-1; potentially due to presence of fill . No soil analyses was performed at AM-2. Insufficient investigations have been completed to assess the presence or absence of a release at this AOC.	1 shallow/ 1 deep	AOC-3-1 (0.5-2), AOC-3-2 (4-6)		X	X	X	X		X	X		X							Metals were reported in soils at AOC-3-1 and AOC-3-2 at concentrations below R-DEC at concentrations similar to Site-wide soils and are inferred related to fill. Trace concentrations of methanol and formaldehyde reported in shallow soils at AOC-3-2 well below the R-DEC and GB-PMC is inferred as representative of minor incidental release related to transfer and handling of textile finishing chemicals at the loading dock.	No further action
AOC 4 - Northwest Corner of Bldg. 14. Finishing Department	The northwest corner of Building 14 was formerly used for textile dyeing operations and consists of dyeing areas and a former Dye/Mixing Room. Several wastewater conveyance trenches were observed in the AOC. Seeps of dye from cracks in foundation and around exhaust vents have been reported and in 1997, dye-impacted water was observed infiltrating a sewer line excavation near this AOC.	Investigations of this AOC were limited to boring/well ME-2 and AM-8. Formaldehyde at a low concentration was detected in soils at AM-8. Groundwater at AM-2 contained low concentrations of aniline dye and ETPH. Copper, chromium, and lead were detected in AM-2 in exceedance of the SWPC. The potential for a release of process chemicals and dyes from this area has not been adequately characterized by the current data set to assess this AOC.	3 shallow/ 2 deep	AOC-4-1 (4-6), AOC-4-2 (0.5-2), AOC-4-3 (0.5-2), AOC-4-4 (2-4), AOC-4-5 (4-6)		X	X	X	X		X	X		X							Several metals were detected in AOC-4 soil samples similar to those found Site wide and are likely from poor quality fill. ETPH and trace VOCs were detected in soils in the dye mixing room and downgradient of AOC-4 in Brooklyn Street. ETPH and VOCs were below criteria. Formaldehyde was detected east of dye mixing room in soil sample AOC-4-5 at 9 mg/kg well below RSR criteria. Based on our findings a minor release of ETPH has occurred.	Additional explorations and analysis of soils is recommended in area of AOC-4-3
AOC 5 - Wastewater Conveyance Trenches	Extensive trenches and pits were observed in Building which were formerly used to channel dye and finishing process wastewater to the former onsite wastewater treatment system located on the west side of building. Seepage from these trenches may be the source of dye which was observed groundwater.	Explorations were limited to soils at borings AM-8, AM-9 AM-10 AM-11. Low concentrations of VOCs (xylenes, ethylbenzene and formaldehyde) and metals were reported in soils at AM-8 and AM-11. Investigations were found insufficient to adequately demonstrate the presence or absence of a release of chemical dye and/or finishing process wastewaters from the conveyance trenches beneath Building 14. This conditions was identified as a data gap.	2 shallow/ 4 deep	AOC-5-2 (5-7), AOC-5-3 (2-3.25), AOC-5-4 (6-8), AOC-5-5 (4-5.5), AOC-5-6 (4.5-6.5)		X	X	X	X		X	X	X	X							Several metals were detected in AOC-5 soil samples similar to those found Site wide and are inferred related to fill. Trace concentration of formaldehyde was detected in soil at AOC-5-5, well below RSR criteria. VOCs were not detected in groundwater sampled from downgradient wells in Brooklyn Street. Therefore, only minor release of formaldehyde is inferred.	No further action
AOC 6 - Southeast Corner of Bldg. 14. Finishing/Chemical Storage Area	The southwest interior of Bldg. 14 was formerly used for treatment and finishing of textile products prior to dyeing.	Explorations in this AOC were limited to boring AM-9 where low concentrations of VOCs, ETPH , metals and PAHs reported in deeper soil from 7 to 9 ft. bgs. Analysis of shallow soils was not completed. Investigations were found insufficient to adequately characterize releases to sub-slab soils from former operations within the area and to constitute a data gap.	2 shallow	AOC-6-1 (0.5-2), AOC-6-2 (0.5-2)		X	X		X												Several metals were detected in soil AOC-6 at concentrations similar to those found Site wide and are inferred to be a product of poor quality fill.	No further action
AOC 7 - Bldg. 12 Maintenance/Machine Shop	The ground floor of Building 12 was formerly used for the repair and maintenance of parts and equipment.	No investigations were completed within this area. The presence or absence of a potential release of oils and/or solvents to the soils below the floor slab has not been assessed and remains a data gap.	2 shallow	AOC-7-1 (0.5-2), AOC-7-2 (0.5-2)		X	X	X													ETPH was detected in soil boring AOC-7-2 at 8,000 mg/kg in exceedance of R-DEC and GB-PMC. This boring is located downgradient of a pit observed in the floor.	Application of an ELUR to Building 12 rendering soils below environmentally isolated and inaccessible.
AOC 8 - Wooded Slope West of Bldgs. 1 and 2	There is an undeveloped wooded area on the Site west of Buildings 1 and 2. This wooded area slopes steeply to American Mill Pond. Solid waste was reported to be observed in this area and dye impacted water was reported to be seeping from face of slope.	This area has a very steep slope which is unsafe to perform investigations on. Impacts from dye to groundwater within the area are to be assessed through sampling and analysis of groundwater in upgradient wells (see AOC-23).	No Borings Performed	No Samples Collected																	Sampling of groundwater at upgradient well MW-02 detected Aniline at a concentration slightly exceeding SWPCC, inferred as likely related to dye release reported downgradient of Bldg. 14. Additional groundwater monitoring required to determine if an actual exceedance is present.	See AOC-23 for a discussion of recommendations for additional post-remediation groundwater sampling.
AOC 9 - Bldg. 13 Former Latex Coating Area	Water based latex coatings were formerly applied to textile products in Building 13.	Shallow soils borings SB-101 and SB-102 were advanced within this AOC. Low concentrations of PAHs were detected in a shallow soil sample collected from SB-102. The presence of PAHs in SB-102 is inferred likely related to degraded fill and not indicative of a release. As such, no data gaps were identified with respect to this AOC.	No Borings Performed	No Samples Collected																	No investigation conducted	No further action

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Amerbelle Mills
Rockville, Connecticut

Area Of Concern (AOC)	AOC Description	Condition Summary/Data Gap Analysis	GZAs Data Gap Investigation																			
			Number of Borings (shallow <4 feet; deep >4 feet)	Samples collected	Laboratory Analysis Performed																Findings/Conclusions	Recommendations
					VOC-8010 (halogenated)	VOC-8020 (aromatics)	ETPH	PAH/SVOCs	Total RCRA-8 Metals	SPLP RCRA-8 Metals	Formaldehyde	Methanol	Ammonia	Glycols	PCBs	Aniline	Phenol	Grain Size Analysis	Total Organic Carbon	Hardness		
AOC 10 - Building 2 Loading Dock	The loading dock is located on the west side of Building 2 and was likely used to service Buildings 1 and 2. Building 2 was formerly used for storage of organic coatings and chemicals and Building 1 formerly contained a hazardous waste storage area.	Three borings were advanced outside of the loading dock area (SB-112, SB-113, and SB-114) and shallow soil samples collected. The three soil samples submitted contained low concentrations of metals and SB-112 contained PAHs below applicable criteria, and inferred related to ash in fill. No indication of a release due to former site operations was reported and no data gaps identified.	No Borings Performed	No Samples Collected																	No investigation conducted	No further action
AOC 11 - Buildings 1 and 2	Building 2 was formerly used for storage of organic coatings and chemicals and Building 1 formerly contained a hazardous waste storage area in the lower area.	Sub-slab sampling in sub-basement area was reported as not possible as the concrete slab directly overlies bedrock. Bis(2-ethylhexyl)phthalate and ammonia were detected in groundwater at MW-2, at lower concentrations than the up gradient well. No stains or other indications of a release were observed within the building. No data gaps were identified with respect to this AOC.	No Borings Performed	No Samples Collected																	No investigation conducted	No further action
AOC 12 - Building 3 General Storage	Building 3 was formerly used for general storage of textiles and other materials.	Soil at two borings completed in this AOC (SB-104 and AM-6) were reported to contain low concentrations of metals and PAHs at concentrations below I/C-DECs and GB-PMCs. ETPH at AM-6 also below I/C-DEC and GB-PMC. The detected metals, ETPH, and PAHs are inferred to be from poor quality fill and minor incidental releases. As Bldg. 3 is to remain in place under current development plans, the current data set was inferred as adequate to address Site fill and actions to mitigate potential hazards and threats of exposure through application of an ELUR. No data gaps were inferred for this AOC.	No Borings Performed	No Samples Collected																	No investigation conducted	No further action
AOC 13 - Building 7 Former Solvent Coating Lines	Building 7 formerly contained the solvent coating operations. The raceway passes under the eastern portion of the former location of the coating lines. The solvent coating operation primarily used toluene, isopropyl alcohol and methyl ethyl ketone (MEK)) in its process.	A shallow soil sample was collected from to the north of the western end of this AOC. Low concentrations of metals, PAHs, and ammonia were detected in the sample. ETPH was detected at 600 mg/kg, below I/C-DECs and GB-PMCs. No investigation of soils were completed directly within the area of the former coating lines. Therefore, a potential for a release from this area was not inferred to have been adequately characterized by the former data set.	3 shallow	AOC-13-1 (0.5-2), AOC-13-2 (0.5-2), AOC-13-3 (0.5-2)	X	X	X	X													PAHs detected in boring AOC-13-1 and AOC-13-2, coincident with fill. Trace ETPH, and 1,1,1-trichloroethane detected in AOC-13-3 below applicable criteria. PAHs in AOC-13-3 exceed R-DEC and PMC. However, based upon prior SPLP analysis by former consultants, PAHS do not exceed PMC.	Potential excavation of shallow soils with PAH > DECs after building removed. Application of an ELUR to render soil remaining soils to render inaccessible
AOC 14 - 18,000-Gallon Fuel Oil ASTs	Two 18,000-gallon No. 2 fuel oil ASTs are located within a steel building between Brooklyn Street and Building 7. These ASTs are within a concrete containment area. Prior to the installation of these two 18,000-gallon ASTs, it was reported there were two 20,000-gallon oil USTs present from 1949 to 1989. The tanks were reported to contain No. 6 fuel oil and re-refined off specification and specification used fuel oils.	Prior to removal of the USTs, it was reported one of the tanks failed a tightness test and no post-excavation confirmation soil samples were obtained after removal of the USTs. A composite sample collected at the time of tank removal had a reported concentration of 150 mg/kg of ETPH. No additional soil sampling is proposed due to access limitations within building. However, the potential for a release will be assessed remotely through sampling and analysis of groundwater from a bedrock well (GZ-3) which was installed north of the area (see AOC-23).	No Borings Performed	No Samples Collected																	No investigation conducted. This AOC was investigated indirectly through evaluation of groundwater. See AOC-23 for a discussion of groundwater sampling results.	Testing of soils after removal of ASTs, excavation of shallow impacted soils and application of an ELUR to render remaining inaccessible
AOC 15 - Former PCB Transformer Area	Four oil-cooled electrical transformers were formerly located on concrete pad within fenced enclosed area. Three of the transformer reportedly contained PCB dielectric fluid.	One shallow soil sample (SB-111) collected adjacent to northwest corner of the pad reported ETPH (3,900 mg/Kg) and PAHs (as high as 12 mg/kg) above the I/C-DECs and GB-PMCs, indicating a release. The vertical and horizontal extent of the release of the release of petroleum constituents has not been adequately characterized by the single shallow soil sample and PCBs have not been assessed.	3 shallow	AOC-15-1 (0.25-2), AOC-15-2 (0.25-2), AOC-15-3 (0.5-2.5)			X								X						PAHs were detected in boring AOC-15-1 and AOC-15-3 below applicable criteria. ETPH was detected in AOC-15-2 at 3,300 mg/kg in exceedance of R-DEC and GB-PMC. Based on proximity, AOC-14 (the two 18,000-gallon ASTs) is inferred likely the source of ETPH in soils at this AOC. .	Testing of soils after removal of ASTs, excavation of shallow impacted soils into the western portion of the area and application of an ELUR to render remaining soils inaccessible
AOC 16 - Building 7 Loading Dock	Building 7 was formerly used for solvent coating of textiles prior to dyeing. The loading dock may have been used to service the former solvent coating operations.	Analysis of soils at borings AM-1, ME-5, SB-117, and SB-118 reported elevated concentrations of several metals and arsenic at concentrations up to 122 mg/kg (AM-1), exceeding I/C-DECs. PAHs were also detected in exceedance of R-DEC and GB-PMC. ETPH was detected at 920 mg/kg in AM-1. At SB-117, ETPH was reported at 58 mg/Kg and ammonia was reported at 140 mg/Kg. ETPH was detected in groundwater at well AM-1. Elevated metals and PAH concentrations are inferred to be associated with ash in fill reported in shallow soils. ETPH was inferred as associated with incidental release for trucks and vehicles. Additional investigations of ETPH and ammonia recommended to better define degree and extent of those releases.	1 deep	AOC-16-1 (9-11)			X		X	X			X								Soils found to contain metals (primarily arsenic) exceeding I/C-DECs. PAHs and arsenic PM may be considered exempt from PMCs as exceedances appear to be associated with coal ash present in shallow soils there. Release of ammonia and ETPH found to be limited and inferred related to incidental releases at loading dock.	Excavation of shallow soils and application of an ELUR to rendering remaining soils inaccessible
AOC 17 - Building 9	Building 9 was formerly used for general storage and dye storage prior to 1927. In 1989, a survey of the site reported storage of miscellaneous chemicals on the ground floor of the building.	Soils from boring SB-107 (0.5-2') were reported to contain ETPH at concentration of 680 mg/kg and metals (arsenic, barium, cadmium, chromium, copper, lead, and mercury) above background. Arsenic was reported in exceedance of R-DEC. Reported metal concentrations area inferred to be associated with impacted fill and not indicative of a release from former facility operations. The vertical extent of the ETPH impacted soils within this area was not assessed by this investigation and identified as a data gap.	1 shallow	AOC-17-1 (2-4)	X		X														No COCs detected in soil boring AOC-17-1.	No further action

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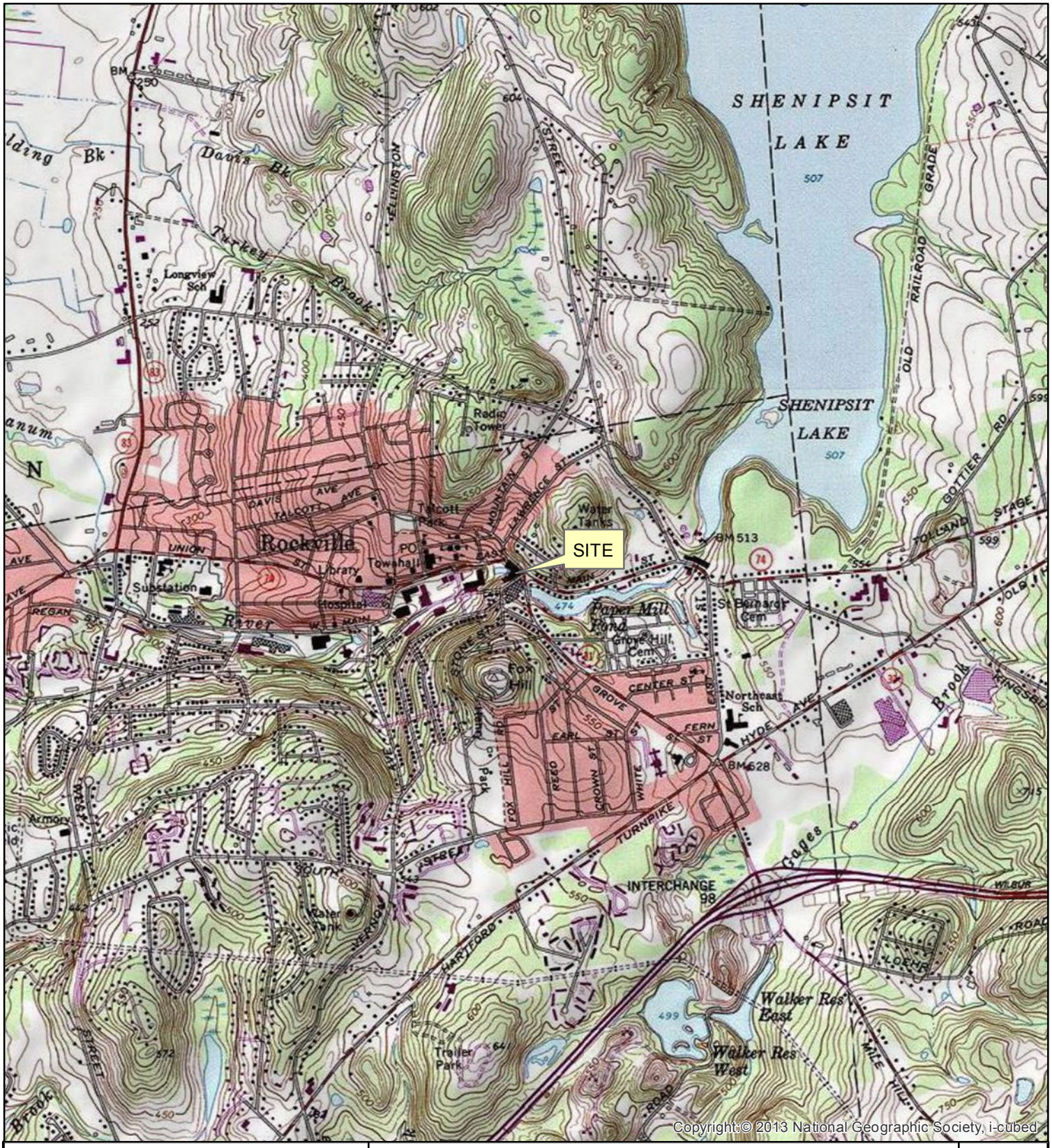
			Number of Borings (shallow <4 feet; deep >4 feet)	Samples collected	Laboratory Analysis Performed																	Findings/Conclusions	Recommendations
					VOC-8010 (halogenated)	VOC-8020 (aromatics)	ETPH	PAH/SVOCs	Total RCRA-8 Metals	SPLP RCRA-8 Metals	Formaldehyde	Methanol	Ammonia	Glycols	PCBs	Aniline	Phenol	Grain Size Analysis	Total Organic Carbon	Hardness		
AOC 18 - Building 8	Prior to 1927, it was reported the building was a dye house and test dry cleaning was performed on the upper stories of the building and the waste tetrachloroethene (PCE) was stored within the building. More recently, the building was used to filter water pumped from the Hockanum River prior to its use as process water. Several sand filters in poor condition were observed within this building. Process wastewater was discharged to the sanitary sewer from the building. Floor drains present in the basement of the buildings also discharge to the sanitary sewer.	Two shallow soil samples were collected (SB-105 and SB-106). Low concentrations of metals were detected in both samples. Several PAHs in exceedance of R-DEC were detected in SB-106. Concentrations of metals and PAHs are likely from Site wide poor quality fill and not indicative of a release from former facility operations. Shallow soils from SB-105 were reported to contain low concentrations of PCE (at 41 ug/kg), ammonia (at 74 mg/kg). ETPH reported at 130 mg/kg in SB-106. The concentrations are below applicable R-DEC and GB-PMC. Additional investigation of PCE and ETPH was recommended to better characterize degree and extent of those constituents in fill below the building.	5 deep	AOC-18-1 (0.8-2.8), AOC-18-1 (7-9), AOC-18-2 (0.5-2.5), AOC-18-2 (5.5-7.5), AOC-18-3 (0.5-2.5), AOC-18-3 (8-10), AOC-18-4 (0.5-2), AOC-18-4 (8-10), AOC-18-5 (0.5-2), AOC-18-5 (14-16)	X		X															Soils underlying building found to be degraded urban fill containing coal ash. Soils contain low levels of CVOCs and ammonia, with ETPH and PAHs at concentration exceeding R-DECs, interpreted as artifact of fill material. Soils will be addressed as part of Site-wide ELUR restricting residential use.	No further action
AOC 19 - Building 11	Prior to 1927 the building was used for dyeing operations. Post 1927, the building was used for the storage of equipment and drums of oils and other chemicals. The building has a concrete trench system at grade level which was reported to convey infiltration groundwater out of the building. However, the trench may have been used for the conveyance of waste dye process water. The trench system is presumed to discharge to the American Mill Pond.	Three shallow borings (SB-108, SB-109, and SB-110) and one deep boring (AM-7) were advanced within this AOC. A soil sample from boring SB-109 contained TCE at 2 mg/kg, PCE at 36 mg/kg, ETPH at 4,700 mg/kg, arsenic at 10.8 mg/kg, lead at 6030 mg/kg, and ammonia at 190 mg/kg. Low concentrations of VOCs were reported at SB-110. At SB-108, ETPH was also detected at 230 mg/kg and ETPH at AM-7 was reported at 83 mg/Kg. The detection of VOCs and ETPH is indicative of a release. Concentrations of metals were reported in the four borings and is inferred indicative of coal ash in fill and not indicative of a release from former facility operations. The full lateral and vertical extent of the release of ETPH and CVOCs was not fully characterized and was considered a data gap.	2 shallow/ 7 deep	AOC-19-1 (0.5-2), AOC-19-1 (8-10), AOC-19-2 (0.5-2), AOC-19-2 (6-7.5), AOC-19-3 (5-7), AOC-19-4 (0.5-2), AOC-19-4 (10-12), AOC-19-5 (8-10), AOC-19-5 (13.5-15.5), AOC-19-6 (0.5-2), AOC-19-6 (4.5-6.5), AOC-19-7 (2-4), AOC-19-7 (6-8), AOC-19-8 (0.5-2.5), AOC-19-9 (0.5-2.5)	X		X															Arsenic and lead at concentrations exceeding I/C-DECs were reported in soil at SB-109. ETPH and VOCs were detected in several shallow and deep soil borings. ETPH concentrations ranging from non-detect to 33,000 mg/kg and PCE detections range from non-detect to 1,700 mg/kg were detected. ETPH and PCE exceeded R-DECs and GB-PMCs at several locations in soils below northern portion of building.	Excavation of "hot spot" CVOC soils, installation of air sparging/SVE and sub-slab venting system, application of ELUR to render remaining soils inaccessible and environmentally isolated
AOC 20 - Building 11 Loading Dock	The loading dock for Building 11 is located on the north side of the building.	One boring was advanced (SB-119) and two wells installed (AM-5 and ME-6) to assess this AOC. Analysis of shallow soils at boring SB-119 (0.5-2.0 ft. bgs) indicate low concentrations of metals and ETPH, consistent with those found Site wide, and PCE at 0.0072 mg/kg. Groundwater from bedrock well ME-6 was reported to contain PCE at 0.21 mg/l and TCE at 0.22 mg/l, below applicable criteria. Based upon the reported findings, it appears a release has occurred in the AOC. Additional investigations were recommended to better defined vertical and lateral extent of the release of PCE.	1 shallow/ 2 deep	AOC-20-1 (9-11), AOC-20-2 (0.5-2), AOC-20-2 (24-27), AOC-20-3 (0.5-2)	X	X	X	X														PAHs detected in boring AOC-20-1 and AOC-20-2were inferred as related to poor quality fill. Several VOCs, including PCE, were detected in three of the four soil samples. PCE and ETPH reported in sample AOC-20-2 from 24-27 feet bgs was below seasonal high water table and therefore exempt from GB-PMC. Based upon the findings of our investigation, it appears impacts at AOC-20-2 from a release to groundwater from upgradient AOC-19.	No further action
AOC 21 - Former Gasoline Station	A former gasoline service station was located east of Building 14 in an area that is currently a park.	Sampling of groundwater from onsite wells was completed in 2006. No indications of a release from the former gasoline station was observed in Site wells. Based upon groundwater elevation contours it appears the former gasoline station is downgradient of the Site. The potential for the migration of petroleum constituents from a potential offsite release downgradient of the Site was adequately characterized through previous groundwater sampling events and no data gaps remain.	No Borings Performed	No Samples Collected																		No investigation conducted	No further action
AOC 22 - Site Fill	Impacted fill containing asphalt fragments, coal ash brick and other miscellaneous materials has been identified across the site at depths up to 13 feet bgs.	Impacts typically include elevated concentrations of metals (particularly arsenic and lead), PAHs and occasionally ETPH. Arsenic and PAHs are often reported above DECs. It is GZA's opinion that sufficient data is available from investigations completed to date to adequately address site fill and actions to mitigate potential threats from hazards from exposure through application of a Site-wide ELUR restricting residential development and use and other measures incorporated under current redevelopment plans.	No Borings Performed	No Samples Collected																		No investigation conducted	Seek exemption for PMC due to coal ash, Site-wide ELUR to restrict against use of property for residential purposes
AOC-23 Site Groundwater	Analysis of site groundwater has indicated the presence of chlorinated VOCs in groundwater the northeast portion of the site, presumably from the release of those constituents identified within Building 11. In addition, concentrations of metals (copper, lead and zinc) were reported at concentrations above respective SWPC in groundwater at well AM-7, located within Building 11, presumably from the release of dye and process water from operations at Bldg. 14.	Previous investigations indicated ETPH was detected at trace concentrations in groundwater at the Site and at 11,000 ug/L at well W-1. PCE was detected at 210 ug/L at well ME-6, in exceedance of the GWPC and SWPC and TCE was detected at 220 ug/L in exceedance of the GWPC and R-GWVC. At well AM-7, PAHs and metals were detected in exceedance of SWPC. At well ME-2, were detected in exceedance of SWPC as well as trace concentrations of acetone, SVOCs, ammonia, formaldehyde and aniline dye. Incomplete characterization of the extent of groundwater contamination across the Site was inferred and additional installation and sampling of wells was recommended.	GZA installed 3 bedrock wells and 2 overburden wells. In addition, GZA sampled 8 existing wells installed by others.	GZ-1, GZ-2, GZ-3, GZ-4, AM-1 (grab), AM-7 (grab), ME-1, ME-2, ME-6, MW-01, MW-02, MW-03	X	X	X	X	X		X	X	X			X	X	X	X	X	Sampling and analysis of Site groundwater indicated three areas where concentrations of COCs in groundwater were elevated to levels exceeding RSR numeric criteria: An apparent dye release downgradient of the northwestern corner of the Building 11 where blue tinged groundwater was observed and aniline was reported above SWPC in groundwater from ME-2; Building 7 loading dock area where lead was reported above the SWPC in groundwater at well AM-1; and Building 11 area where concentrations of metals and PAHs were reported above SWPCs (AM-7) and CVOCs (PCE and vinyl chloride) were reported above I/C-GWVCs.	GZA notes that multiple alternatives are allowed under the RSRs to determine compliance with the SWPCs. Additional rounds of ground monitoring necessary to allow such a determination to be made.

Table 1
Data Gap Assessment Summary

Amerbelle Mills
Rockville, Connecticut

Area Of Concern (AOC)	AOC Description	Condition Summary/Data Gap Analysis	GZAs Data Gap Investigation																				
			Number of Borings (shallow <4 feet; deep >4 feet)	Samples collected	Laboratory Analysis Performed																	Findings/Conclusions	Recommendations
					VOC-8010 (halogenated)	VOC-8020 (aromatics)	ETPH	PAH/SVOCs	Total RCRA-8 Metals	SPLP RCRA-8 Metals	Formaldehyde	Methanol	Ammonia	Glycols	PCBs	Aniline	Phenol	Grain Size Analysis	Total Organic Carbon	Hardness		
AOC 24 - Raceway	The Hockanum River is channeled through a stone-lined raceway which flows northeast through the Site and discharges to American Mill Pond. The race way passes below the eastern corner of Building 14, Brooklyn Street, Building 7, Building 5.	The steep gradient of the raceway and high energy flow are not conducive to reliably assess if a release to this feature may have occurred. Instead, potential impacts from historical discharges will be evaluated through sampling of sediment and surface water from American Mill Pond (see AOC-25).	No Borings Performed	No Samples Collected																		No investigation conducted	No further action
AOC 25 - American Mill Pond	American Mill Pond is located in the northern portion of the site. It is suspected that process waste waters may have been discharged to the pond prior to institution of wastewater treatment operations at the Site.	No investigations have been completed within this area. Potential impacts from historical discharges had not been defined.	6 surface water and 6 sediment samples	American Mill Pond: AOC-25 SW-1, AOC-25 SW-2, AOC-25 SW-3, AOC-25 SED-1, AOC-25 SED-2, AOC-25 SED-3				X	X				X			X	X	X	X	X	Ammonia, SVOCs, and aniline were not detected in the surface water samples both upgradient and downgradient of the Site. Metals were also not detected, with the exception of barium, which was reported to range in concentrations from 0.022 to 0.024 mg/l in upgradient Paper Mill Pond samples and from 0.022 to 0.023 mg/l in American Mill Pond. The reported hardness of the surface water samples were similarly close, ranging from 24.5 to 25.5 mg/l in upstream Paper Mill Pond and from 24 to 24.6 mg/l in downstream American Mill Pond samples. Phenolic were detected above the laboratory MRL in one sample (AOC-25 SW-4) from the upstream Paper Mill Pond at 0.022 mg/l.	No impacts to surface water inferred - No further action
				Paper Mill Pond: AOC-25 SW-4, AOC-25 SW-5, AOC-25 SW-6, AOC-25 SED-4, AOC-25 SED-5, AOC-25 SED-6				X	X				X			X	X	X	X	X	Concentrations of and metals (cadmium, chromium, lead, and mercury) were found elevated in downstream sediment samples in comparison to upstream sample and at concentrations exceeding benchmark screening criteria. PAHs also detected at concentrations exceeding screening level benchmark criteria, but were reported at equivalent or higher concentrations in upstream samples. Therefore, not inferred to result from a release from the site.	Potential for risk of impacts from metals s in sediments - Screening Level Ecological Risk Assessment recommended

FIGURES



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Engineers and Scientists
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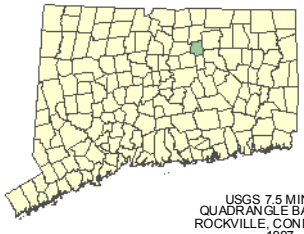


USGS 7.5 MINUTE QUADRANGLE BASE MAP: ROCKVILLE, CONNECTICUT 1997

SITE LOCUS

104 EAST MAIN STREET
VERNON, CONNECTICUT

Source: TOPO! maps are USGS topographic maps, Copyright:© 2011 National Geographic Society, i-cubed and are provided by arcgisonline.com.

PROJ MGR: CJF	REVIEWED BY: GTB	PROJECT NO. 05.0045441.00
DESIGNED BY: AJT	DRAWN BY: MJS	DATE: 04-30-15

THIS MAP HAS BEEN COMPILED FROM OTHER MAPS AND/OR SOURCES OF INFORMATION.
THIS MAP SHOULD NOT BE CONSTRUED AS A PROPERTY SURVEY, NOR USED FOR CONSTRUCTION PURPOSES.

0 1,000 2,000 4,000 6,000 8,000
Scale in Feet

N

FIGURE
1

 J:_45,000-45,499\45441 Amerbelle\GIS\mxd\FIG 1 SITE LOCUS.mxd, 4/30/2015, 3:00:53 PM, max.strubel

N/F HOWARD A. FROMSON

CEDAR STREET

LAUREL STREET

N/F JOAN B. SIMON

N/F DONALD PL BERGER

GROVE STREET

PAPER MILL POND

EAST MAIN STREET

BROOKLYN STREET

RACEWAY

SKY WAY

AMERICAN MILL POND

N/F DANIEL MANAGEMENT INC.

WAREHOUSE

PERMITTED COOLING WATER DISCHARGE

FORMER COMPACTING DUMPSTER

LOADING DOCK

TEXTILE STORAGE

STAINLESS STEEL WASTEWATER COLLECTION SUMP

DYE MIXING ROOM

JIG DYEING

BEAM DYEING

JET DYEING

(2) 18,000-GALLON ABOVEGROUND OIL TANKS (COVERED/CONTAINED)

30,000-GALLON PROPANE ABOVEGROUND TANK (REMOVED)

10,000-GALLON FORMER AMMONIA (EMPTY)

10,000-GALLON WATER (NOT USED)

15,000-GALLON WATER

FORMER XYLENE USTs (REMOVED)

TEXTILE DYEING BUILDING NO.14

TEXTILE FINISHING

FINISH CHEMICAL STORAGE

TEXTILE STORAGE AND HANDLING

MAINTENANCE MACHINE SHOP

ORGANIC COATING MIXING

ORGANIC COATING STORAGE

NO.1 NO.2 NO.3 NO.4 NO.5 NO.6 NO.7 NO.8 NO.9 NO.11 NO.12 NO.13

GENERAL STORAGE

FORMER TURBINE

ABOVEGROUND TANK (NOT USED)

BOILER ROOM

BOILER STACK

FORMER PCB TRANSFORMERS

LOADING DOCK

SEE FIGURE 4 FOR GEOLOGIC CROSS SECTION

FORMER GASOLINE STATION AOC-21

MW-01 MW-02 MW-03

SB-101 SB-102 SB-103 SB-104 SB-105 SB-106 SB-107 SB-108 SB-109 SB-110 SB-111 SB-112 SB-113 SB-114 SB-115 SB-116 SB-117 SB-118 SB-119 SB-120 SB-121

AM-1 AM-2 AM-3 AM-4 AM-5 AM-6 AM-7 AM-8 AM-9 AM-10 AM-11

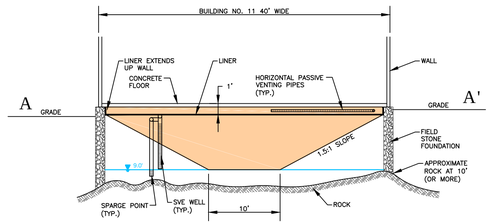
ME-1 ME-2 ME-3 ME-5 ME-6

GZ-1 GZ-2 GZ-3 GZ-4 GZ-5

AOC-1 AOC-2 AOC-3 AOC-4 AOC-5 AOC-6 AOC-7 AOC-8 AOC-9 AOC-10 AOC-11 AOC-12 AOC-13 AOC-14 AOC-15 AOC-16 AOC-17 AOC-18 AOC-19 AOC-20 AOC-24 AOC-25

AOC-1-1 AOC-1-2 AOC-2-1 AOC-2-2 AOC-2-3 AOC-3-1 AOC-3-2 AOC-4-1 AOC-4-2 AOC-4-3 AOC-4-4 AOC-4-5 AOC-5-1 AOC-5-2 AOC-5-3 AOC-5-4 AOC-5-5 AOC-5-6 AOC-6-1 AOC-6-2 AOC-7-1 AOC-7-2 AOC-13-1/GZ-3 AOC-13-2 AOC-13-3 AOC-15-1 AOC-15-2 AOC-15-3 AOC-16-1 AOC-17-1 AOC-18-1 AOC-18-2 AOC-18-3 AOC-18-4 AOC-18-5 AOC-19-1 AOC-19-2 AOC-19-3 AOC-19-4 AOC-19-5 AOC-19-6 AOC-19-7/GZ-4 AOC-19-8 AOC-19-9 AOC-20-1 AOC-20-2/2A AOC-20-3

A A'



BUILDING NO. 11 CROSS SECTION SCHEMATIC
NOT TO SCALE

LEGEND

- OVERHEAD DOOR
- AOC-1 AREA OF CONCERN
- GZA SOIL BORING
- GZA SOIL VAPOR SAMPLE
- OVERBURDEN MONITORING WELL
- BEDROCK MONITORING WELL
- SOIL BORING BY OTHERS
- DESTROYED MONITORING WELL
- EXISTING BUILDING TO REMAIN
- NEW BUILDING PLANNED
- PLANNED EXCAVATION AREA (DEPTHS WILL VARY DEPENDING ON CONFIRMATION SAMPLING)
- SOIL VAPOR EXTRACTION (SVE) AND AIR SPARGING AREA BENEATH BUILDING NO. 11
- POTENTIAL FILL PLACEMENT AREA – BASEMENT LEVEL OF BUILDING 2 WHICH WILL BE DEMOLISHED; AVAILABILITY DEPENDENT ON FINAL DESIGN OF PLANNED PARKING GARAGE/OFFICE BUILDING
- SOIL EXCAVATION AREA FOR "HOT SPOTS" BELOW BUILDING NO. 11 FLOOR
- PLANNED SHALLOW SOIL SAMPLE TO BE ANALYZED FOR PAHs TO CONFIRM LIMITS OF EXCAVATION
- PLANNED SHALLOW SOIL SAMPLE TO B ANALYZED FOR TOTAL ARSENIC AND LEACHABLE ARSENIC
- PLANNED SHALLOW SOIL SAMPLE TO BE ANALYZED FOR ETPH TO CONFIRM IMPACTS LIMITED TO BELOW BUILDING NO. 12, AND SAMPLE TO DEMONSTRATED LIMITS OF IMPACTS ARE BELOW RSRs AT LOCATION AOC-1-2 AND AOC-4-3
- PROPOSED OVERBURDEN/BEDROCK PAIR OF MONITORING WELLS

0 15 30 60 90
SCALE IN FEET

NOTE:
AOCs NOT SHOWN ON PLAN ARE SITE-WIDE AOCs
AOC-22 SITE-WIDE FILL
AOC-23 SITE-WIDE GROUNDWATER

NOTES:
1. THE BASE MAP WAS DEVELOPED FROM A PDF OF A FIGURE PROVIDED BY FUSS & O'NEILL ENTITLED "PROPOSED AND EXISTING SAMPLING LOCATIONS, AMERIBELLE TEXTILES", DATED AUGUST 2009, ORIGINAL SCALE: 1"=60', FIGURE 2. ALL SITE FEATURE LOCATIONS ARE APPROXIMATE.

NO.	ISSUE/DESCRIPTION	BY	DATE

TOWN OF VERNON
VERNON, CONNECTICUT

REMEDIAL ACTION PLAN
EXCAVATION AND SVE AREAS

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:

PROJ MGR: CJF	REVIEWED BY: GTB	CHECKED BY:	FIGURE 2
DESIGNED BY: JTH	DRAWN BY: MJS	SCALE: 1"=30'	
DATE: 05-27-15	PROJECT NO. 05.0045441.00	REVISION NO.	SHEET NO.

APPENDIX A
LIMITATIONS

GEOHYDROLOGICAL LIMITATIONS

Use of Report

1. GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of our Client for the stated purpose(s) and location(s) identified in the Proposal for Services and/or Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not expressly identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

Standard of Care

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Proposal for Services and/or Report and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. Conditions other than described in this report may be found at the subject location(s).

3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made. Specifically, GZA does not and cannot represent that the Site contains no hazardous material, oil, or other latent condition beyond that observed by GZA during its study. Additionally, GZA makes no warranty that any response action or recommended action will achieve all of its objectives or that the findings of this study will be upheld by a local, state or federal agency.

4. In conducting our work, GZA relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Inconsistencies in this information which we have noted, if any, are discussed in the Report.

Subsurface Conditions

5. The generalized soil profile(s) provided in our Report are based on widely-spaced subsurface explorations and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs.

6. Water level readings have been made in test holes (as described in the Report) and monitoring

wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this report. Fluctuations in the level of the groundwater however occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The observed water table may be other than indicated in the Report.

Compliance with Codes and Regulations

7. We used reasonable care in identifying and interpreting applicable codes and regulations necessary to execute our scope of work. These codes and regulations are subject to various, and possibly contradictory, interpretations. Interpretations and compliance with codes and regulations by other parties is beyond our control.

Screening and Analytical Testing

8. GZA collected environmental samples at the locations identified in the Report. These samples were analyzed for the specific parameters identified in the report. Additional constituents, for which analyses were not conducted, may be present in soil, groundwater, surface water, sediment and/or air. Future Site activities and uses may result in a requirement for additional testing.

9. Our interpretation of field screening and laboratory data is presented in the Report. Unless otherwise noted, we relied upon the laboratory's QA/QC program to validate these data.

10. Variations in the types and concentrations of contaminants observed at a given location or time may occur due to release mechanisms, disposal practices, changes in flow paths, and/or the influence of various physical, chemical, biological or radiological processes. Subsequently observed concentrations may be other than indicated in the Report.

Interpretation of Data

11. Our opinions are based on available information as described in the Report, and on our professional judgment. Additional observations made over time, and/or space, may not support the opinions provided in the Report.

Additional Information

12. In the event that the Client or others authorized to use this report obtain information on environmental or hazardous waste issues at the Site not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this evaluation, may modify the conclusions stated in this report.

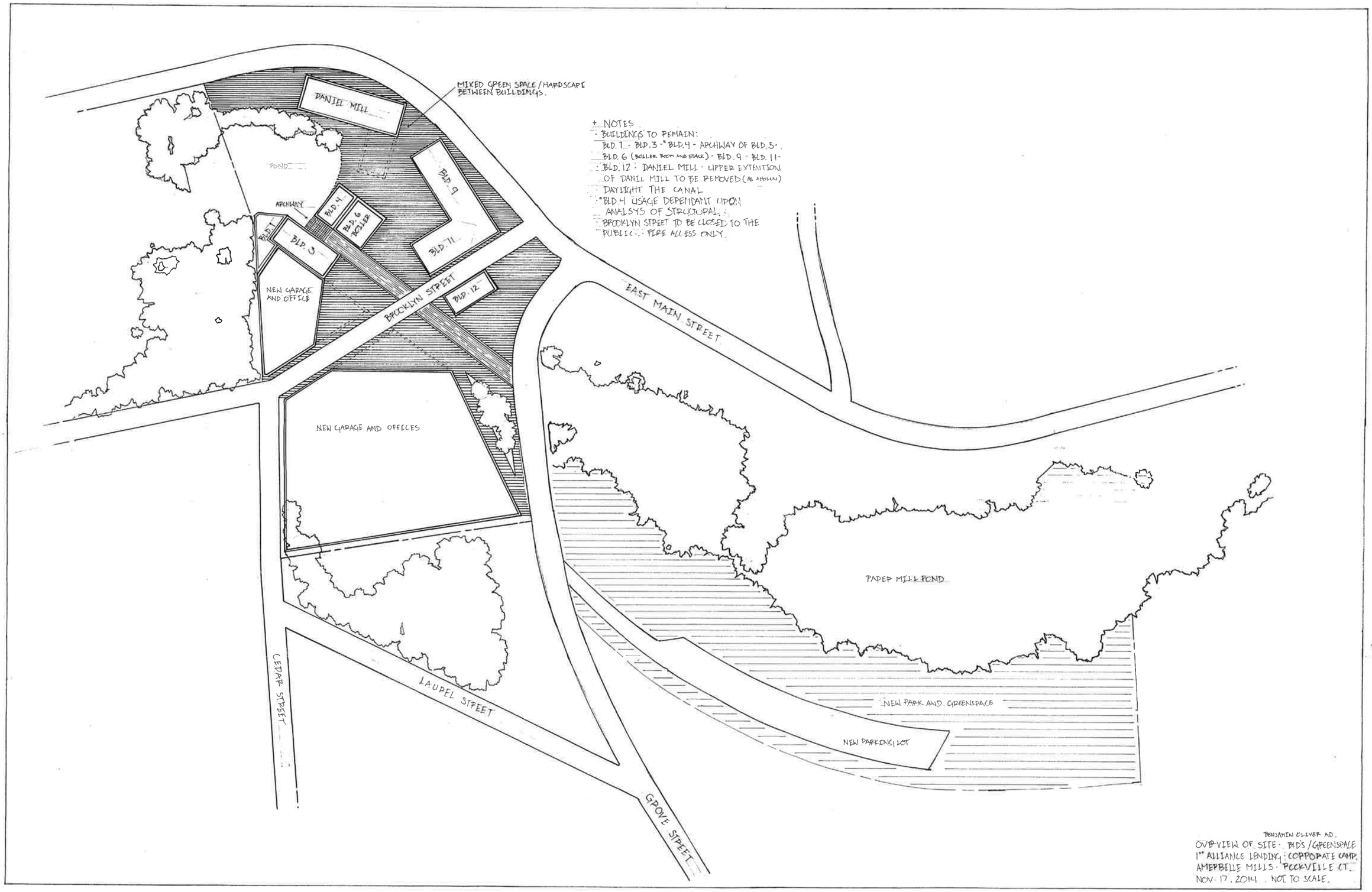
Additional Services

13. GZA recommends that we be retained to provide services during any future investigations, design, implementation activities, construction, and/or property development/ redevelopment at the Site. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.

Conceptual Site Model

14. Our opinions were developed, in part, based upon a comparison of site data to conditions anticipated within our Conceptual Site Model (CSM). The CSM is based on available information, and professional judgment. There are rarely sufficient data to develop a unique CSM. Therefore observations over time, and/or space, may vary from those depicted in the CSM provided in this report. In addition, the CSM should be evaluated and refined (as appropriate) whenever significant new information and/or data is obtained.

APPENDIX B
TOWN OF VERNON CONCEPTUAL DEVELOPMENT PLAN



BENJAMIN OLIVER AD.
OVERVIEW OF SITE · BLD'S / GREENSPACE
1ST ALLIANCE LENDING | CORPORATE CAMP.
AMERBELLE MILLS · ROCKVILLE CT.
NOV. 17, 2014 . NOT TO SCALE.