



226 Rubber Avenue, Naugatuck, Connecticut

Analysis of Brownfield Cleanup Alternatives

Borough of Naugatuck

229 Church Street, Naugatuck, Connecticut 06770

Prepared by:

SLR International Corporation

45 Glastonbury Boulevard, Glastonbury, Connecticut, 06033

SLR Project No.: 126.V20367

Client Reference No: BF-00A01460

July 21, 2025 (Revision 1)

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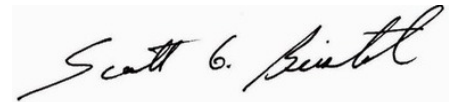


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Borough of Naugatuck
229 Church Street
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This document has been prepared by SLR International Corporation (SLR). The material and data in this report were prepared under the supervision and direction of the undersigned.



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Table of Contents

1.0 Introduction & Background	1
1.1 Site Location	1
1.2 Site Assessment Findings	1
1.3 Project Goal (Site Reuse Plan).....	2
2.0 Applicable Regulations and Cleanup Standards	2
2.1 Cleanup Oversight Responsibility.....	2
2.2 Applicable Cleanup Standards	2
3.0 Evaluation & Selection of Cleanup Alternatives	5
3.1 Cleanup Alternatives	5
3.1.1 Remedial Area 1 (Central portion of Site surrounding SB-3, SB-5, and B-4).....	5
3.1.2 Remedial Area 2 (Arsenic and Lead Exceedances).....	6
4.0 Summary.....	8

Appended Figures/Drawings

Figure 1. Site Location Map

Figure 2. Remedial Areas



Acronyms and Abbreviations

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
ADOT	Alaska Department of Transportation & Public Facilities
AFFF	aqueous film-forming foam
ASTM	American Society for Testing and Materials
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAP	Corrective Action Plan
CFR	Code of Federal Regulations
CMP	corrugated metal pipe
COC	chain of custody
cy	cubic yards
DRA	drag-reducing agent
DRO	diesel-range organics
DS	drill site
GRO	gasoline-range organics
MDL	method detection limit
µg/Kg	microgram per kilogram
µg/L	microgram per liter
mg/Kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	method reporting limit
ND	not detected
NIMS	National Incident Management System
OIT	Organic Incineration Technologies
PAH	polynuclear aromatic hydrocarbon
pfc	per cubic feet
PID	photoionization detector
PPE	personal protective equipment
ppm	parts per million
QA	quality assurance
QAR	quality assurance review
QC	quality control



RCRA	Resource Conservation and Recovery Act
ROW	right of way
RRO	residual range organics
SIM	selective ion monitoring
SLR	SLR International Corporation
SUPSALV	Supervisor of Salvage and Diving
SVE	soil vapor extraction
TAH	total aromatic hydrocarbons
TAqH	total aqueous hydrocarbons
TCLP	toxicity characteristics leaching procedure
TOC	total organic carbon
µg/L	micrograms per liter
µg/kg	micrograms per kilogram
UHF	ultra high frequency
USCS	Unified Soil Classification System
USEPA	U.S. Environmental Protection Agency
VHF	very high frequency
VOC	volatile organic compound
VSM	vertical support members



1.0 Introduction & Background

SLR International (SLR) was contracted to conduct environmental assessment and Site remediation planning for the former industrial property known as the Former Naugatuck Recycling Center, located at 226 Rubber Avenue in Naugatuck, Connecticut, ("Site" or "Subject Property") (Figure 1). The Borough of Naugatuck ("BON") identifies the parcel as Map/Block/Lot 35-363. The Subject Property was part of the Goodyear's Metallic Rubber Shoe Co. complex from approximately 1887 through approximately 1923. During this time, the western portion of the property was developed with three buildings. Based on a review of available historical Sanborn mapping of the vicinity, the westernmost building was used for packaging, manufacturing, and storage. Products were varnished and stored in the central building. The easternmost building was primarily used as storage space. By 1960, the Subject Property was operated by United States Rubber Co., which changed its name to Uniroyal, Inc. in 1967. In 1970, Uniroyal, Inc. conveyed the property to the BON, which demolished the buildings by 1972. From May 1991 through July 2, 2020, the Subject Property operated as the Naugatuck Recycling Center. A sign for the recycling center listed various wastes accepted by the former facility, including car batteries, antifreeze, scrap metal, motor oil, and motor oil filters. The recycling center was relocated in 2020.

The BON currently leases the western portion of the Site to a seasonal flower vendor. This Analysis of Brownfield Cleanup Alternatives (ABCA) presents selected remedial actions and possible alternatives for conducting environmental clean-up at the Site.

In accordance with CGS 22a-133x(g) and 45 days prior to the initiation of remedial activity, public notice of Site remediation shall be issued in the form of clear, visible signage throughout the Site's physical boundaries, a posting in the Borough's most circulated newspaper, and letters of notification sent to the Mayor and Health Official of the BON.

1.1 Site Location

The Site is located at 226 Rubber Avenue in Naugatuck, Connecticut (Figure 1).

1.2 Site Assessment Findings

Previous environmental investigations conducted at the Site include the following:

- Phase I Environmental Site Assessment (ESA), prepared by SLR (November 20, 2020)
 - o This report provided an inclusive list of four Areas of Concern (AOCs):
 - AOC-1: Former Manufacturing Operations
 - AOC-2: Former Recycling Operations
 - AOC-3: Offsite Groundwater Impacts
 - AOC-4: Temporary Storage of Hazardous Waste
- Phase II Environmental Site Investigation (ESI), prepared by SLR (February 28, 2022)
- Soil and Groundwater Investigation, prepared by SLR (June 26, 2025)

The results of the soil and groundwater investigations suggest that soil impacts at the Subject Property (soil samples with concentrations of contaminants that exceed CTDEEP RSR criteria) appear to exist within the central portion of the Subject Property where three samples from the shallow materials contained PAHs at concentrations above the RSR criteria, and two samples contained ETPH at concentrations exceeding criteria. The presence of the exceeding



concentrations of petroleum and PAH compounds in this area could have resulted from a former petroleum-related release, the presence of non-soil fill materials, or may be incidental, as these compounds are commonly found in asphalt and asphalt-related demolition debris.

Arsenic and/or lead impacts were encountered in certain areas along the southern and eastern portions of the Subject Property. Given the widespread presence of urban fill materials observed in soil borings and test pits, the elevated concentrations of lead and arsenic are likely indicative of fill materials rather than an on-site release.

Impacts to groundwater were observed in one monitoring well (MW-3), with RSR exceedances for ETPH, lead, benzene, and xylenes in two sampling events (2021 and 2025). The sewer odor, discoloration, and foam noted in the MW-3 groundwater sample are indicative of a potential leak in an unmarked sewer line in the vicinity and is not presumed to represent a release from former manufacturing operations (AOC-1) or from former recycling center storage (AOC-2). However, to date, no such sewer line has been identified. Groundwater collected from the downgradient monitoring well, MW-5 did not contain any concentrations above the laboratory detection limits. Due to the lack of downgradient groundwater impacts, the contamination detected in MW-3 does not appear to migrate off site.

1.3 Project Goal (Site Reuse Plan)

The Site is currently zoned for industrial/commercial use. The BON has agreed in concept to sell a portion of the property located at 226 Rubber Avenue to a local business. The proposed purchaser intends to purchase the subdivided parcel and construct a new building that would house a retail store and potentially one or two other small retail or professional businesses. Redevelopment of the parcel is considered important in the context of the continued revitalization of the Rubber Avenue corridor.

2.0 Applicable Regulations and Cleanup Standards

2.1 Cleanup Oversight Responsibility

The cleanup will be overseen by a Connecticut-State licensed environmental professional (LEP), Scott G. Bristol of SLR, ensuring that the remediation is completed with the goal of achieving compliance with the RSRs and the ABC Program specified in Connecticut General Statutes (CGS) Section 32-768(f).

2.2 Applicable Cleanup Standards

The Connecticut RSR criteria are used to gauge the relative magnitude of identified releases and assist in determination of potential risks to human health and the environment. The RSRs are used to evaluate the analytical data collected during the environmental investigations conducted at the Site. Based on the findings of the Phase I ESA (SLR, 2020), the Site meets the definition of an "Establishment" as defined by the CTA and thus is subject to investigation and remediation requirements as established in the Connecticut RSRs. The following factors were used to evaluate the levels of COCs in soil and groundwater at the Site:

- The Site is currently zoned for commercial usage and future commercial development plans are intended.



- According to the CTDEEP Water Quality Classification Map, the Site is located within an area where groundwater quality has been classified as GB, meaning that water is presumed to be not suitable for human consumption without treatment.
- The nearest named surface waterbody is the Long Meadow Pond Brook, which is located along the southern boundary of the Site. Long Meadow Pond Brook is a class B-designated surface water body. Class B designated uses are habitat for fish and aquatic life and wildlife; recreation; navigation; and industrial and agricultural water supply.
- In general, groundwater flows to the southeast towards the Long Meadow Pond Brook. MW-5 and MW-6 are the most downgradient locations for evaluating groundwater compliance criteria.
- In general, fill materials were observed throughout the Site, consisting of anthropogenic material (i.e., asphalt, rubber, brick, concrete, wood, etc.).
- A Site-Specific Quality Assurance Project Plan (SS-QAPP) was prepared by SLR and approved by the Environmental Protection Agency (EPA) prior to initiation of each phase of investigation.

Soil Criteria

Regulations of Connecticut State Agencies (RCSA) Section 22a-133k-2 requires polluted soil at a release area to be remediated to meet the Direct Exposure Criteria (DEC) to help ensure that human health is not at risk due to exposure to COCs.

Direct Exposure Criteria (DEC) – The was developed to be protective of human health in the event of direct contact with soil impacted by COCs. Regardless of the use or zoning of the Subject Property, the Residential DEC (RDEC) apply to all properties in Connecticut. The RSRs also contain another category of DEC, the Industrial/Commercial DEC (I/CDEC), which can be used on nonresidential properties with the placement of an EUR on the Site. Such an EUR would restrict the use of the Site from residential uses as defined in the RSRs (§22a-133k-1[53]). The DEC apply to all soils within 15 feet of the ground surface regardless of the elevation of the water table. For the purposes of this assessment, both the RDEC and I/CDEC have been considered.

In certain circumstances, soils can be defined as "inaccessible," meaning they are located greater than 15 ft bgs; located beneath four feet of clean soil (unpaved areas); located more than two feet below a paved surface (minimum three inches of bituminous concrete or concrete, which two feet may include the depth of any material used as subbase for the pavement); or located beneath a building or structure approved by CTDEEP. Impacted soils satisfying the definition of "inaccessible" can remain in place as long they are managed through the placement of some form of non-disturbance EUR.

Revisions to the RSRs in June 2013 also allow polluted fill to be located beneath a bituminous concrete or concrete surface comprised of a minimum of three inches of bituminous concrete or concrete if such fill is:

- I. polluted in excess of applicable direct exposure criteria only by semivolatile substances or petroleum hydrocarbons that are normal constituents of bituminous concrete,
- II. polluted by metals in concentrations not more than two times the applicable direct exposure criteria, or
- III. any combination of the substances or limits identified in clause (i) or (ii) of this subparagraph.



Soil considered inaccessible under these provisions will also require the implementation of some form of non-disturbance EUR.

Pollutant Mobility Criteria (PMC) -- The PMC were developed to protect groundwater resources from soil-bound COCs that could mobilize and degrade groundwater quality. Because groundwater at the Site has been classified by CTDEEP as GB, the GB PMC was used to evaluate the available soil data. These criteria apply to all soils located at or above the seasonal high-water table (measured to be between 9.5-12' below grade).

Groundwater Criteria

The Groundwater RSRs (Regulations of Connecticut State Agencies [RCSA] Section 22a-133k-3) require that a groundwater plume shall meet the Surface Water Protection Criteria (SWPC) and Volatilization Criteria (VC) or the background concentration for groundwater for each substance in such plume at the point at which the plume discharges to a surface waterbody. Data was compared to the SWPC and Groundwater VC during the investigations.



3.0 Evaluation & Selection of Cleanup Alternatives

The Connecticut RSR criteria are used to gauge the relative magnitude of identified releases and assist in determination of potential risks to human health and the environment. The RSRs are used to evaluate the analytical data collected during the environmental investigations conducted at the Site per the CTDEEP.

3.1 Cleanup Alternatives

The following sections provide a summary of remedial options for the Site based upon the AOCs investigated. The remedial options have been grouped based on the ability to address impacted soil within overlapping or contiguous areas of the Site to minimize cost and provide a more prudent and viable option. Several remedial alternatives have been considered to address both direct exposure and pollutant mobility exceedances at the Site and meet the requirements of the RSRs. Alternatives considered included the following:

- No Action
- Excavation and Off-Site Disposal
- Relocation, Grading, and Engineered Control

Additional options for management of impacted soil on-Site may be available depending upon final Site redevelopment plans. Currently, the construction of the planned Site redevelopment includes maintained paved surfaces, landscaping, and a commercial building structure. These features may be utilized in achieving compliance with the RSRs by rendering the soil beneath the paved surfaces and structures as "inaccessible."

Remedial activities will focus on impacted areas described in Section 1.3.

3.1.1 Remedial Area 1 (Central portion of Site surrounding SB-3, SB-5, and B-4)

Based on investigations in this area, shallow soils exceed the applicable criteria for PAHs and ETPH.

Alternative 1 – No Action

The no-action response would leave the Site in its current condition. Under No Action, conditions would not be monitored or periodically reviewed.

The No Action alternative assumed no additional efforts are made to eliminate potential off-site migration of COCs. The Site would continue to be unused and have a negative impact on the neighborhood. This alternative will not achieve a permanent solution for the impacted soil, nor will it result in compliance with the RSRs.

Alternative 2 – Raising Grade of Site to Render Polluted Soils Inaccessible

Under this alternative, the impacted soils in this area with a concentration greater than the RDEC would be rendered as inaccessible by capping in-place. The capping in-place would require importing four feet of clean soil to render the soil as inaccessible or by importing two feet of clean soil and covering with concrete (minimum three inches of bituminous concrete or concrete, which two feet may include the depth of any material used as subbase for the pavement). Impacted soils satisfying the definition of "inaccessible" would remain in place and would be managed through the placement of a non-disturbance EUR.



Under this proposed alternative, the inherent topographical constraints of the Subject Property—including steep grade variations and limited buildable area—would pose substantial engineering and permitting challenges. The benefit of this alternative would be compliance without the disposal of contaminated soils.

Alternative 3 – Removal of Impacted Soil to 3'

Under this alternative, impacted soils with a concentration greater than the RDEC and PMC to a maximum depth of three feet would be excavated and removed from the Site. Data collected during the Soil and Groundwater Investigation suggests that the presence of shallow impacted soil are a result of anthropogenic materials and not associated with a subsurface release. Soil collected from deeper intervals did not contain PAH and ETPH exceedances, indicating the impact is confined to the first 3'.

The approximate three-foot depth excavation would be completed within the defined area of impacted soil and would include an estimated volume of approximately 285 tons of impacted soil is approximately \$35,000. Collection and analysis of confirmatory soil samples would be estimated at \$3,000.

3.1.1.1 Preferred Remedial Alternative for Remedial Area 1

Alternative 3 for the central portion of the Site is the most feasible option as compliance would be met with CTDEEP RSRs through the least amount of effort and cost.

3.1.2 Remedial Area 2 (Arsenic and Lead Exceedances)

Arsenic and/or lead impacts were encountered in areas along the southern and eastern portions of the Site, in the vicinities of soil borings B-12, B-9, SB-7, and B-11. Given the presence of urban fill materials observed in soil borings and test pits, the elevated concentrations of lead and arsenic are likely indicative of fill materials rather than an on-site release.

Alternative 1 – No Action

The no-action response would leave the Site in its current condition. Under No Action, conditions would not be monitored or periodically reviewed.

The No Action alternative assumed no additional efforts are made to eliminate potential off-site migration of COCs. This alternative will not achieve a permanent solution for the impacted soil, nor will it result in compliance with the RSRs.

Alternative 2 – Removal of Impacted Soil to 15'

Under this alternative, the impacted fill material with a concentration of greater than the RDEC would be excavated (to 15') and removed from the Site. The excavation would be completed within the areas of known impact with an estimated volume of approximately 4,165 tons. The impacted soil would be characterized for off-Site disposal, and clean fill would be imported, placed, compacted, and graded to meet final design. This remedial option would result in achieving compliance with the RSRs by removing all of the applicable DEC-impacted soil from the area and would not require a land use restriction.



Alternative 3 – No Excavation with Filing of ELUR and EC Implementation

Under this alternative, no excavation would occur, and the implementation of ECs and the filing of an EUR to restrict Site use would address the existing impacted fill material with a concentrations greater than the RDEC. This remedial option would result in achieving compliance with the RSRs by the implementation of ECs (demarcation layer cover and a clean cap/building structure/pavement) and the filing of an EUR at the Site with the Borough and CTDEEP to prevent intrusive activities in the future, and would require the maintenance of the top 4' (or as applicable 2') of soil cover in the area. The EUR would render the DEC-exceeding soils as inaccessible.

Soils exceeding the GB PMC following an SPLP analysis were observed in lead within SB-7. Based on the collected analytical data from downgradient monitoring wells, lead does not appear to be migrating offsite. No downgradient monitoring wells contain detectable lead concentrations.

Continued groundwater monitoring to evaluate decreasing groundwater concentrations would be implemented. Downgradient monitoring wells do not contain contaminant concentrations exceeding the SWPC, therefore groundwater contamination appears to be isolated within the area of MW-3. SLR suggests continued monitoring and evaluation of groundwater.

The filing of an ELUR and application preparation and submittal of ECs would cost approximately \$10,000. The cost for continued evaluation for groundwater at the Site would cost approximately \$10,000. The estimated total for this alternative would be approximately \$20,000.

3.1.2.1 Preferred Remedial Alternative for Remedial Area 2

Alternative 3 for Remedial Area 2 is the most feasible option as compliance would be met with CTDEEP RSRs through the least amount of effort and cost.



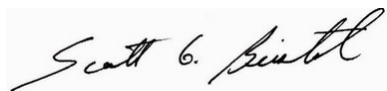
4.0 Summary

This document has been prepared by SLR International Corporation (SLR). Based upon this analysis of clean-up options, a combination of removal of near-surface soils in the central portion of the Site coupled with an institutional control to limit excavation in the southern and eastern portions of the Site appears to be the most prudent option to allow for Site redevelopment. Continued groundwater monitoring will be necessary under all options to evaluate/demonstrate compliance with applicable criteria.

The material and data in this report were prepared under the supervision and direction of the undersigned.

Sincerely,

SLR International Corporation



Scott G. Bristol, LEP
Senior Principal Consultant



Tom Killilea
Associate Scientist



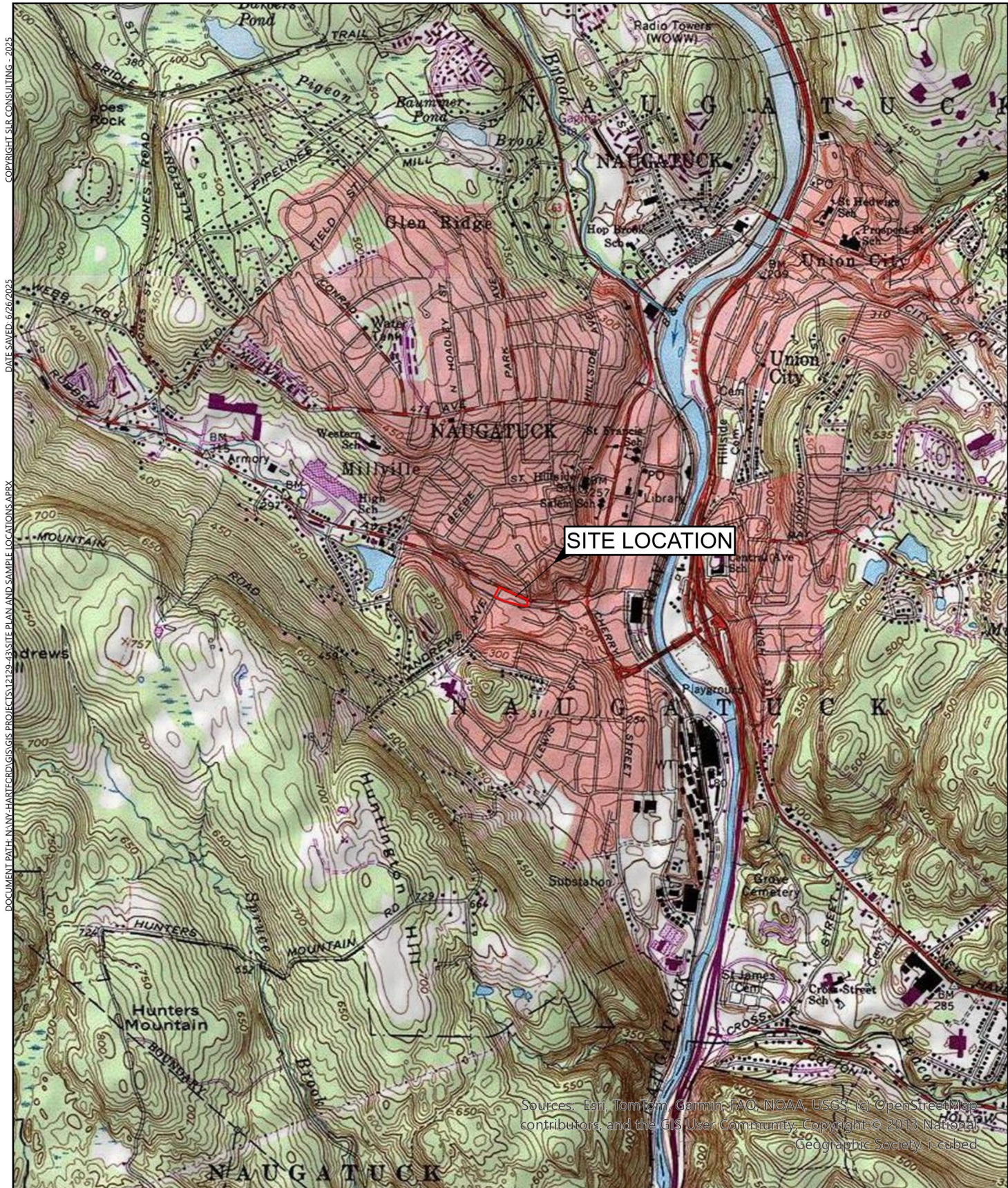
Figures/Drawings

226 Rubber Avenue, Naugatuck, Connecticut

Analysis of Brownfield Cleanup Alternatives

Borough of Naugatuck





Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community. Copyright: © 2013 National Geographic Society, I-cubed

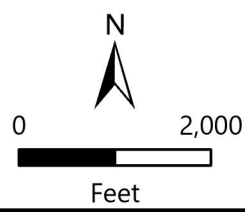


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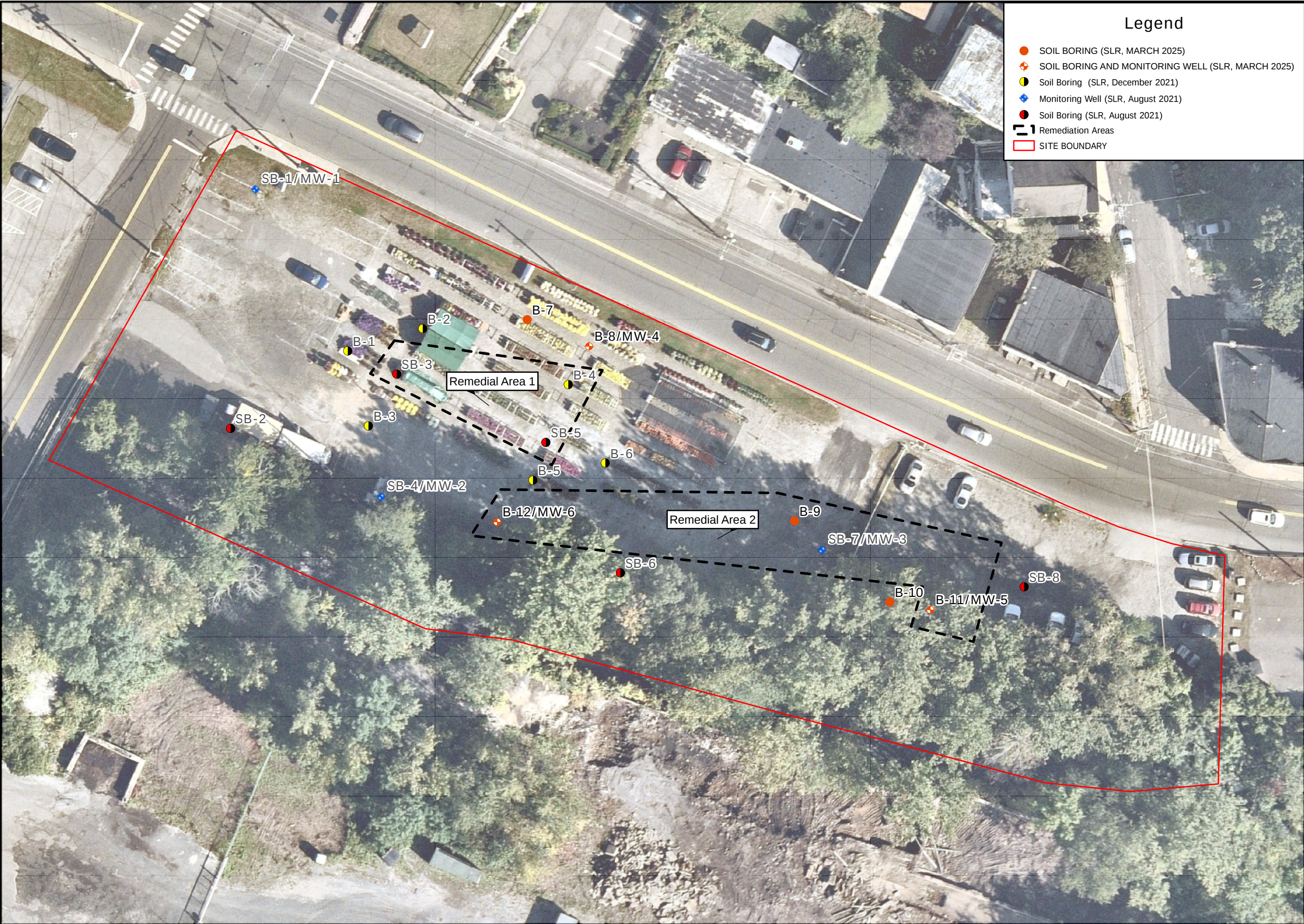
SITE LOCATION MAP

SOIL AND GROUNDWATER INVESTIGATION
BOROUGH OF NAUGATUCK

226 RUBBER AVENUE
NAUGATUCK, CONNECTICUT



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FIG. 1	



Legend

SOIL BORING (SLR, MARCH 2025)

SOIL BORING AND MONITORING WELL (SLR, MARCH 2025)

Soil Boring (SLR, December 2021)

Monitoring Well (SLR, August 2021)

Soil Boring (SLR, August 2021)

Remediation Areas

SITE BOUNDARY

N

0

20

40

Feet

SLR

45 GLASTONBURY BLVD
1ST FL
GLASTONBURY, CT 06033
860.400.5680

REMEDIAL AREAS

SOIL AND GROUNDWATER INVESTIGATION
BOROUGH OF NAUGATUCK
226 RUBBER AVENUE
NAUGATUCK, CONNECTICUT

SCALE

1:480

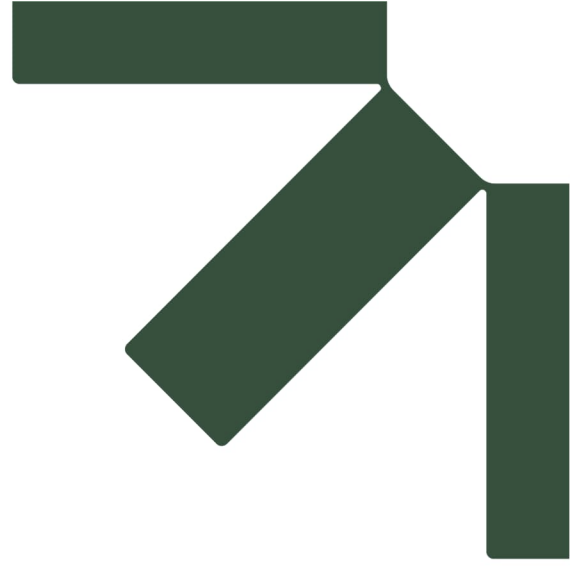
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FIG. 2



 SLR