

FORMER RISDON FACILITY

0 ANDREW AVENUE AKA 1 RISDON STREET
NAUGATUCK, CONNECTICUT

Analysis of Brownfield Cleanup Alternatives

Prepared for:

Borough of Naugatuck

Client Ref: 141.12129.00039

March 23, 2023



Analysis of Brownfield Cleanup Alternatives

Prepared for:

Borough of Naugatuck
229 Church Street
Naugatuck, Connecticut 06770

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.

Scott G. Bristol, LEP
Principal Consultant

Peter Shea, LEP
Principal Environmental Scientist

CONTENTS

1.	INTRODUCTION & BACKGROUND	2
1.1	Site Location.....	2
1.2	Previous Site Uses & Previous Cleanup/Remediation	2
1.3	Site Assessment Findings	3
1.4	Project Goal (Site Reuse Plan).....	7
2.	APPLICABLE REGULATIONS AND CLEANUP STANDARDS	8
2.1	Cleanup Oversight Responsibility.....	8
2.2	Applicable Cleanup Standards	8
3.	EVALUATION & SELECTION OF CLEANUP ALTERNATIVES	10
3.1	Cleanup Alternatives.....	10
3.1.1	Remedial Area 1 (AOC-3, AOC-6, and AOC-9).....	10
3.1.2	Remedial Area 2 (AOC-7)	12
3.1.3	Remedial Area 3 (AOC-10)	13
3.1.4	Remedial Area 4 (AOC-13)	14

FIGURES

- Figure 1 Site Location Map
- Figure 2 Remedial Areas

1. INTRODUCTION & BACKGROUND

SLR International Corporation (SLR) was contracted to conduct environmental assessment and Site remediation planning for the former industrial property known as the Former Risdon Facility located at 0 Andrew Avenue (also known as 1 Risdon Street) in Naugatuck, Connecticut, ("Site" or "Subject Property") (Figure 1). The Site was formerly occupied by the Risdon Corporation and is currently owned by the Borough of Naugatuck ("BON"). The BON currently uses the Site as a recycling center but intends to utilize the Site as the location of a future public works garage. This Analysis of Brownfield Cleanup Alternatives (ABCA) presents selected remedial actions and possible alternatives for conducting environmental clean-up at the Site.

The Site has been accepted into the Connecticut Department of Energy & Environmental Protection (CTDEEP) Abandoned Brownfield Cleanup Program (ABC) on October 4, 2019, which allows the BON to limit remediation to on-Site impacts and not require cleanup for off-Site impacts. Funding for the assessment of the Site has been provided through the United States Environmental Protection Agency (EPA) and administered by the Naugatuck Valley Council of Governments (NVCOG).

The Site is also enrolled in the Voluntary Cleanup Program (VCP) which allows for Site remediation planning, oversight, and eventual verification to be automatically delegated to a Licensed Environmental Professional (LEP).

In accordance with CGS 22a-133x(g) and 45 days prior to the initiation of remedial activity, public notice of Site remediation had been issued in the form of clear, visible signage throughout the Site's physical boundaries, a posting in the Borough's most circulated newspaper (The Republican American, December 21, 2022), and letters of notification sent to the Mayor and Health Official of the BON.

The Site has a long history of chemical waste handling and manufacturing practices since at least 1912 through 2002. As documented in the Site's Environmental Conditions Assessment Form (ECAAF) submitted to CTDEEP in December 2019, several previous environmental investigations have been conducted to investigate potential releases within 10 identified areas of concern (AOCs). These investigations resulted in remediation work at the Site with the purpose to achieve compliance with the Connecticut Remediation Standard Regulations (RSRs).

1.1 SITE LOCATION

The Site is located at 0 Andrew Avenue (also known as 1 Risdon Street) in Naugatuck, Connecticut (Figure 1).

1.2 PREVIOUS SITE USES & PREVIOUS CLEANUP/REMEDATION

The former Risdon Corporation (Risdon) utilized the Site from at least 1915 to 1989. Risdon was a deep draw metalworking company that conducted operations such as degreasing, transfer press machining, secondary press work, lathe work, soldering, and cleaning. Former manufacturing operations on-Site utilized various oils, solvents, metals, and cleaners, including the following: heating oil, solvents

(trichloroethylene [TCE], tetrachloroethylene [PCE], and 1,1,1-trichloroethane [1,1,1-TCA]), water soluble oils, cutting oils, cleaning detergents, raw metal stock, and cyanide-based metal cleaning solution. These materials were stored in either bulk tanks or drums.

In 1989, Risdon Corporation sold its Fabricated Metal Products (FMP) business to First Hartford Capital Corp., including the entire Subject Property and facility. FMP operations included degreasing, lacquering, transfer press machining, secondary press work, lathe work, soldering, and cleaning. Approximately 70,000 square feet of office and manufacturing space was leased by Risdon's Metal Cosmetics Division.

The former main building was demolished between 2006 and 2008. Former secondary buildings were subsequently demolished, and the Site is currently vacant except for the BON recycling center.

Contaminated soil and groundwater associated with releases have been documented in several previous Site investigation reports. The extent of these impacts was evaluated through previous remedial activities and investigations from its sale in 1989 and continued use of the facility by FMP through 2002. Work at the Site was not completed, and compliance with the RSRs was not achieved prior to the BON acquiring the property in 2019 through foreclosure.

1.3 SITE ASSESSMENT FINDINGS

Previous environmental investigations conducted at the Site include the following:

- *Supplemental Information – Environmental Site Assessment Report for Risdon Corporation's Metal Cosmetics Division* by Hailey & Aldrich (H&A), December 15, 1995
- *Letter Report on Baseline Environmental Assessment for Fabricated Metal Products, Inc. (FMP), Former Risdon Corporation Facility* by Advanced Environmental Interface, Inc. (AEI), July 21, 2003
- *2003 Annual Report – Risdon Site – Naugatuck, Connecticut* letter from Levine Fricke, Inc. (LFR) to the CTDEEP, April 9, 2004
- *Phase I Environmental Site Assessment, "Risdon" Property*, by Milone & MacBroom, Inc. (MMI, now SLR), May 22, 2019.
 - This report summarized the previous reports findings and provided an inclusive list of a total of 13 AOCs for the Site:
 - AOC-1: Former Underground Storage Tanks (USTs)
 - AOC-2: Covered Scrap Dock
 - AOC-3: Risdon Chemical Storage Area
 - AOC-4: FMP Chemical Storage Area
 - AOC-5: FMP Trichloroethylene (TCE) Tank
 - AOC-6: Finishing Department Degreasers and Underslab Drains
 - AOC-7: FMP Degreaser Area
 - AOC-8: Former Drum Storage Area (Waste Treatment Area)
 - AOC-9: Crawl Space
 - AOC-10: Former 1,1,1-TCA Storage Building/Raw Metal Goods Storage Area
 - AOC-11: Former Transformers
 - AOC-12: Two Abandoned Tanks

- AOC-13: Building Debris
- *US EPA Region 1/Brownfields Environmental Assessment Activities, Site-Specific Quality Assurance Project Plan (SS-QAPP), USEPA Grant #BF-00A00581, RFA#21086, November 4, 2021.*

Following the acceptance of the SS-QAPP by the EPA, the BON initiated remedial investigation activities. SLR oversaw this work that was conducted between August 26 and September 9, 2021, which consisted of the installation and sampling of groundwater monitoring wells and the advancement of soil borings and soil sampling and summarized the results in a report submitted to the BON for review, *O Andrew Avenue/Risdon Property, Borough of Naugatuck – Remedial Investigation/Feasibility Study* in May 2022. The report also provided additional options for completing the remainder of the work to achieve RSR compliance. Based on a review of the investigation data, the following updates to the previously discussed AOCs were provided in this report:

- AOC-1: Former UST – not investigated as part of 2022 activities
 - Based on the documented removal of the UST in 1989, and the results of the data collected from 1993 to 1995, it was deemed that no further action was needed for AOC-1. In addition, laboratory results of a groundwater sample recently collected from a downgradient well MW-2 indicated no impact to groundwater associated with release from the former tank.
- AOC-2: Covered Scrap Dock – not investigated as part of 2022 activities
 - Based on the results of previous investigations, there were low-level detections of ETPH in soil, but no detections above the reporting limits in groundwater samples.
- AOC-3: Risdon Chemical Storage Area– not investigated as part of 2022 activities
 - Based on soil vapor survey results from 1993 to 1995 and the results of a soil sample collected from the recently installed boring SB-10, there were no detections of VOCs in the underlying soil; therefore, no further investigation for VOCs was conducted.
 - The SB-10 soil sample contained arsenic at a concentration above both the RDEC and I/CDEC.
- AOC-4: FMP Chemical Storage Area – not investigated as part of 2022 activities
 - Historical data will be utilized to demonstrate compliance with the RSRs in addition to the filing of an ELUR.
- AOC-5: FMP TCE Tank – not investigated as part of 2022 activities
 - Based on the previous investigation results for soil and soil vapor, there does not appear to be a release from the former storage tank to the underlying soil. The groundwater results from the downgradient well did not contain COCs associated with the AOC above the RL.
- AOC-6: Finishing Department Degreasers and Under Slab Drains
 - There appears to be an ongoing source of petroleum-related compounds and residual solvents impacting soil and groundwater around SB-15 and MW-4 within this AOC.

- The horizontal limits of soil impacts appear to be limited based on results from the remaining soil borings in the AOC. The limit of groundwater impact has not been delineated to the extent to determine if the plume is migrating off-Site or is in a diminishing state. Additional groundwater assessment will be necessary to delineate the plume to satisfy the requirements of the RSRs. Based on the soil results, it can be estimated to be a localized area for groundwater impacts.
- Remedial activities will be required to achieve compliance with the GWVC and SWPC. It should be noted that because the Site is in the ABC program the source on-Site will need to be addressed, but the off-Site migration of impacted groundwater will not be required to be evaluated or remediated.
- AOC-7: FMP Degreaser Area
 - Soil Investigation Findings: based on the analytical results, ETPH and PAHs are the primary COCs, with evidence of release to the underlying shallow soil in the upper five feet throughout the AOC and deeper impacts around SB-8 with ETPH at a depth exceeding the cleanup criteria. Metals, VOCs, and PCBs results were reported as not detected above the RL or within typical concentrations below their respective cleanup criteria. Remedial actions will be necessary to remove the exceedances of the DEC and PMC in the shallow soil, with possible use of ELUR to address the exceedances and utilize the less stringent I/C DEC.
 - Groundwater Investigation Findings: based on the results for the MW-3 groundwater sample, it does not appear that the releases to soil or potential ETPH source at SB-8 have impacted groundwater.
 - AOC-8: Former Drum Storage Area (Waste Treatment Area)
 - Based on the soil and groundwater results, there does not appear to be a significant release to soil or groundwater within the AOC. There was no indication of impacted soil with VOCs based on visual, olfactory, and PID readings observed during drilling, and the laboratory results were not detected above the RL. The groundwater results indicate residual TCE and at low level concentrations, well below the RSR criteria.
 - AOC-9: Crawl Space
 - With respect to the previously identified VOCs that were detected below the crawl space, recent soil results indicate that there does not appear to be a source for VOCs, with only residual TCE detected below the concrete slab and downgradient of the AOC in SB-26. The fill encountered in this investigation consisted of coal ash, slag and results in elevated metal impacted soil. The concentrations of arsenic and lead exceed the cleanup criteria for one or more criteria that will require remedial activities to achieve compliance with the RSRs.
 - Groundwater results from MW-6, located side/downgradient of the AOC indicate arsenic is above the SWPC and may be due to leaching from the fill observed within AOC-9.

- AOC-10: Former 1,1,1-TCA Storage Building/Raw Metal Goods Storage
 - Previous investigations within this AOC showed detections of low-level TCE and TCA in shallow soil. There were no detections for VOCs within the four soil borings completed as part of this investigation. ETPH was detected above the RDEC in the sample from SB-6 that will need to be addressed with remedial action with either an ELUR, direct excavation, or alternative compliance measures. ETPH was not detected in groundwater and only chloroform was detected at a low-level indicating impacts to groundwater in this area has not occurred.
 - There are no indications of residual impacts from release of VOCs to soil or groundwater based on the results of this investigation.

- AOC-11: Former Transformers
 - One PCB constituent was detected above criteria at SB-7 at a concentration that exceeded the RDEC. ETPH was detected in all three locations below applicable criteria.
 - As part of previous Site work, this AOC had been addressed through direct removal of approximately 35 tons of PCB-impacted soil. The approximate dimensions of the excavation were 15 feet long by 15 feet wide by approximately two feet deep. Closure soil samples were analyzed for PCB content and the results indicated no detections above the RLs except for one low-level concentration of 0.081 mg/kg, which is well below the RDEC for total PCBs (1 mg/kg).

- AOC-12: Two Abandoned Tanks
 - The two tanks were cleaned and removed from the Site in accordance with CTDEEP guidance. Based on the soil and groundwater results there is no indication of a release from the tanks. The low-level chloroform in groundwater is observed across the Site and the low-level PAH in soil is below RSR criteria.

- AOC-13: Building Debris
 - The soil results indicate that the shallow fill within the former building structures varies widely with results in overlapping AOCs below all respective criteria. The fill encountered at AOC-7 and AOC-9 appears to be impacted from a release of PAHs and ETPH with impacted soil above one or more criteria. SB-12 located in the center of the Site had a detection of TCE that indicates a release under the slab and not of the quality of fill. Based on Site-wide metal concentrations generally below RSR criteria, PCBs not detected, and cyanide not detected, the fill does not appear to contain building debris with hazardous materials intermixed.
 - Remedial actions related specifically to this AOC does not appear to be necessary beyond further characterization at SB-12, which is more likely related to AOC-7. The impacts observed appear to be related to overlapping AOCs and those other previously discussed releases that had impacted soil and/or groundwater in the area.
 - Groundwater does not appear to be impacted from intermixed building materials in the fill and impacts are associated with releases discussed in overlapping AOCs.

Figure 2 shows an aerial image of the Site as of March 22, 2022 with the AOCs. The results of these investigations allowed for the development of a detailed evaluation of remedial plan actions that may be used to minimize potential health and environmental risks and comply with the RSRs.

1.4 PROJECT GOAL (SITE REUSE PLAN)

The Site is currently zoned for industrial/commercial use. The BON is selecting funding for the construction of an approximate, 36,000 square-foot public works facility in the area near AOC-3, AOC-6, and AOC-9 and another building/garage type structure of approximately 4,100 square feet in dimension over in the northwest corner of the Site, among other covered/sheltered storage areas. The proposed covered/sheltered areas as well as the majority of the Site would be covered in pavement and/or other hardscaping. The BON does not foresee any future potential residential use of the Site.

2. APPLICABLE REGULATIONS AND CLEANUP STANDARDS

2.1 CLEANUP OVERSIGHT RESPONSIBILITY

The cleanup will be overseen by a Connecticut-State licensed environmental professional (LEP), Peter Shea 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) and as specified in the Voluntary Cleanup Program (VCP) in CGS 22a-133x.

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 per the CTDEEP VCP. The VCP is an elective process for property owners who wish to expedite the remediation of a polluted property.

Based on the findings of the Phase I ESA (Milone & MacBroom, Inc., 2019), the Risdon business operations meet the definition of an "Establishment" as defined by the Connecticut Transfer Act (CTA) and thus were subject to investigation and remediation requirements as established in the CTA at the time of a transfer of ownership. The acceptance of the Site into the ABC program supersedes the responsibilities and obligations of the CTA; however, the RSRs still apply. The following factors were used to evaluate the significance of any constituents of concern (COCs) identified in soil and groundwater in Risdon's AOCs.

- The Site is currently zoned for industrial/commercial use, and the future use of the Site is anticipated to be similar, with the potential for the construction of a building structure and more paved areas.
- 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 suitable for consumption without pretreatment.
- The nearest surface waterbody is Long Meadow Pond Brook, which comprises the northern border of the Site (see Figure 1).
- Depth to groundwater is approximately eight (8) feet below ground surface (ft bgs) across the Site. Shallower depths to groundwater are generally reported on the southwestern portion of the Site near the location formerly occupied by the large above ground storage tank (AST). There is evidence of wetlands and standing water adjacent to this area.

Soil Criteria

Based upon the information listed above, this section describes RSR criteria applicable to the Site.

Direct Exposure Criteria (DEC)—The DEC 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 ELUR on the Site. Such an ELUR 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 ELUR.

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 newer provisions will also require the implementation of some form of non-disturbance ELUR.

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 will be 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 1.09 to 17.09 ft bgs across the Site).

In addition, all appropriate permits (e.g., local planning and zoning, inland wetlands, Call Before You Dig [CBYD], soil transport/disposal manifests, etc.) are obtained prior to the commencement of work.

3. 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 VCP. The VCP is an elective process for property owners who wish to expedite the remediation of a polluted property.

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, an approximate 36,000-square-foot structure, and an approximate 4,100-square-foot 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 the remaining AOCs to be addressed within the Site, including AOC-3, AOC-6, AOC-7, AOC-9, AOC-10, and AOC-13. The impacted fill material is present at depths ranging from grade to approximately 15 feet below grade (ftbg).

For the purpose of this ABCA, the impacted material within AOCs -3, -6, and -9 are combined and considered as one remedial area as they are geographically contiguous (west-to-east) across the northern central portion of the Site.

3.1.1 REMEDIAL AREA 1 (AOC-3, AOC-6, AND AOC-9)

Based on previous investigations at these AOCs, soil exceeds the RDEC, I/CDEC, and/or the PMC for arsenic, lead, ETPH, and/or VOCs.

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 assumes no additional efforts are made to eliminate potential off-Site migration of contaminants of concern (COCs) from being wind-blown or erosion of the contaminated fill identified at the Site. The Site would continue to be unused and a blight on the neighborhood. This alternative will not achieve a permanent solution for the AOC, nor will it result in compliance with the RSRs.

Alternative 2 – Removal of Impacted Soil to 15 Feet

Under this alternative, the impacted fill material with a concentration of greater than the RDEC would be excavated and removed from the Site. The excavation would be completed within the entirety of the three AOCs with an estimated volume of approximately 11,000 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 AOCs and would not require a land use restriction.

The estimated cost for the disposal of approximately 11,000 tons of impacted soil is \$1.15 million. Therefore, while technically a viable option, economically it is not feasible. Additional costs would include construction, purchase of clean fill, and regrading, bringing the cost of this option well above \$2.0 million. The main benefit would be compliance with any type of future land use.

Alternative 3 – Removal of Impacted Soil to Two Feet

Under this alternative, impacted fill material with a concentration greater than the RDEC to a maximum depth of two feet would be excavated and removed from the Site. Engineering Controls (ECs) would be used to render the remaining impacted soil inaccessible. Implementing ECs involve the installation of a demarcation layer lain over any remaining impacted soil covered with the appropriate required layer(s) of clean material(s), and finally the installation of a structure or paved or hardscape surface placed over the clean material. In addition, a land use restriction for limiting the type of use at the Site from residential would be filed with the Borough and CTDEEP to prevent future exposure to contaminated soil. 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 environmental use restriction (EUR) at the Site with the Borough and CTDEEP to prevent future residential-type use.

The approximate two-foot depth excavation would be completed within the area of the three AOCs at an estimated volume of approximately 2,250 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 rendering the remaining impacted soil inaccessible through the use of ECs and the filing of the EUR.

The estimated cost for the disposal of approximately 2,250 tons of impacted soil is approximately \$298,000 and the filing of an EUR would be approximately \$9,000.

3.1.1.1 Preferred Remedial Alternative for Remedial Area 1

Alternative 3 for Remedial Area 1 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 (AOC-7)

Based on the analytical results, soil exceeds the RDEC, I/CDEC, and/or the PMC in soil primarily at a shallow depth of within four feet below grade but extends to approximately 10 feet below grade. Primary constituents of concern are ETPH and PAHs.

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 assumes no additional efforts are made to eliminate potential off-Site migration of contaminants of concern (COCs) from being wind-blown or erosion of the contaminated fill identified at the Site. The Site would continue to be unused and a blight on the neighborhood. This alternative will not achieve a permanent solution for the AOC, nor will it result in compliance with the RSRs.

Alternative 2 – Removal of All RDEC Impacted Soil to Five Feet

Under this alternative, the impacted fill material with concentrations greater than the RDEC within the entire AOC-7 area would be excavated and removed from the Site. The excavation would be completed within the AOC with an estimated volume of approximately 7,500 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 AOC and would not require a land use restriction.

The estimated cost for the disposal of approximately 7,500 tons of impacted soil is estimated at \$600,000, with the added cost of manpower, laboratory costs, and equipment fees of approximately \$50,000. The estimated total for this alternative would be approximately \$650,000. While technically a viable option, economically it is not feasible. The main benefit would be compliance with any type of future land use.

Alternative 3 – Removal of I/CDEC Impacted Soil to Four Feet

Under this alternative, impacted fill material with a concentration greater than the I/CDEC to a maximum depth of four feet would be excavated and removed from the Site. Engineering Controls (ECs) would be used to render the remaining impacted soil within the AOC-7 inaccessible. The ECs would be the combination of a demarcation layer, capped with the appropriate thickness of clean material, then finally covered with either a building structure or pavement/other hardscape. In addition, a land use restriction for limiting the type of use at the Site from residential would be filed with the Borough and CTDEEP to prevent future exposure to contaminated soil. This remedial option would result in achieving compliance with the RSRs by the removal of I/CDEC-exceeding material, the implementation of ECs to address the remaining material impacted with RDEC-exceeding soil (demarcation layer cover and a clean cap/building

structure/pavement), and the filing of an environmental use restriction (EUR) at the Site with the Borough and CTDEEP to prevent future residential-type use.

The four-foot depth excavation with dimensions of approximately 20 feet long by 20 feet wide would be completed within the AOC at an estimated total volume of approximately 90 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 rendering the remaining impacted soil inaccessible through the use of ECs and the filing of the EUR.

The estimated cost for the disposal of approximately 90 tons of impacted soil is approximately \$12,500 and the filing of an EUR and EC application would be approximately \$9,000.

3.1.2.1 Preferred Remedial Alternative for Remedial Area 2

This alternative 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.

3.1.3 REMEDIAL AREA 3 (AOC-10)

Based on the analytical results, soil exceeds the RDEC for ETPH in soil down to approximately three feet below grade.

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 assumes no additional efforts are made to eliminate potential off-Site migration of contaminants of concern (COCs) from being wind-blown or erosion of the contaminated material elsewhere at the Site. This alternative will not achieve a permanent solution for the AOC, nor will it result in compliance with the RSRs.

Alternative 2 – No Excavation with Filing of EUR and EC Implementation

Under this alternative, no excavation would occur, and the implementation of ECs and the filing of an EUR to restrict land use would address the existing impacted fill material with a concentration of greater than the RDEC. This remedial option would result in achieving compliance with the RSRs by applying a restriction on land use in this area to prevent exposure combined with applying a cap of clean material and appropriate cover.

The filing of an EUR and application preparation and submittal of ECs would cost approximately \$10,000; however, in addition, the required cover of at least two feet of laboratory-tested, clean material will need to be imported and graded, increasing the cost with manpower and laboratory and equipment fees by approximately \$10,000. The estimated total for this alternative would be approximately \$20,000. While technically a viable option, the isolated nature of an applied cap in this portion of the Site would represent

a long term maintenance issue and could interfere with reuse of this portion of the Site. The main benefit would be compliance with any type of future land use.

Alternative 3 – Removal of Impacted Soil to Four Feet

Under this alternative, the impacted fill material with a concentration of greater than the RDEC would be excavated and removed from the Site. The excavation would be completed within the AOC with an estimated volume of approximately 90 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 AOC and would not require a land use restriction.

The estimated cost for the disposal of approximately 90 tons of impacted soil (approximately \$12,500) and associated manpower and laboratory and equipment fees is approximately \$15,500.

3.1.3.1 Preferred Remedial Alternative for Remedial Area 2

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

3.1.4 REMEDIAL AREA 4 (AOC-13)

Based on the analytical results, soil exceeds the RDEC for TCE in soil down to approximately three feet below grade within this AOC.

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 assumes no additional efforts are made to eliminate potential off-Site migration of contaminants of concern (COCs) from being wind-blown or erosion of the contaminated material elsewhere at the Site. This alternative will not achieve a permanent solution for the AOC, nor will it result in compliance with the RSRs.

Alternative 2 – No Excavation with Filing of EUR and EC Implementation

Under this alternative, no excavation would occur, and the implementation of ECs and the filing of an EUR to restrict land use would address the existing impacted fill material with a concentration of greater than the RDEC. This remedial option would result in achieving compliance with the RSRs by applying a restriction on land use in this area to prevent exposure combined with applying a cap of clean material and appropriate cover. The implementation of ECs would cover an area of approximately 20 feet long by 20 feet wide by approximately four feet in depth.

The filing of an EUR and application preparation and submittal of ECs would cost approximately \$10,000; however, in addition, the required cover of at least two feet of laboratory-tested, clean material will need

to be imported and graded, increasing the cost with manpower and laboratory and equipment fees by approximately \$10,000. The estimated total for this alternative would be approximately \$20,000. While technically a viable option, for RDEC compliance, it is not an option to achieve PMC compliance. The main benefit would be compliance with any type of future land use.

Alternative 3 – Removal of Impacted Soil to Four Feet

Under this alternative, the impacted fill material with a concentration of greater than the RDEC would be excavated and removed from the Site. The excavation would be completed within the AOC with an estimated volume of approximately 90 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 AOC and would not require a land use restriction.

The estimated cost for the disposal of approximately 90 tons of impacted soil (approximately \$12,500) and associated manpower and laboratory and equipment fees is approximately \$15,500.

3.1.4.1 Preferred Remedial Alternative for Remedial Area 2

Alternative 3 for Remedial Area 4 is the most feasible option as compliance would be met with CTDEEP RSRs through the least amount of effort and cost.

Draft_ABCA_Risdon.docx

FIGURES

Analysis of Brownfield Cleanup Alternatives

Borough of Naugatuck

229 Church Street

Naugatuck, Connecticut 06770

March 23, 2023
