



**Analysis of Brownfield Cleanup
Alternatives**

315 Main Street,
Cañon City, Colorado 81212

EPA Cooperative Agreement Number:
4B95821202

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October 30, 2024

Prepared for:

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Sign-off Sheet

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Table of Contents

ACRONYMS AND ABBREVIATIONS	I
1.0 INTRODUCTION AND BACKGROUND	1.1
1.1 SITE DESCRIPTION AND HISTORY OF OPERATION	1.1
1.2 PREVIOUS ASSESSMENTS	1.2
1.2.1 315 Main Street and 316 Macon Avenue	1.2
1.3 DATA GAP ASSESSMENT	1.3
2.0 APPLICABLE REGULATIONS AND CLEANUP STANDARDS	2.5
2.1 CONTAMINANTS OF CONCERN	2.5
2.2 POTENTIAL RECEPTORS AND EXPOSURE PATHWAYS.....	2.5
2.3 CLEANUP STANDARDS.....	2.6
2.4 CLEANUP GOAL	2.6
3.0 CLEANUP ALTERNATIVES.....	3.7
3.1 CLEANUP ALTERNATIVES CONSIDERED	3.7
3.1.1 Description of Alternatives.....	3.7
3.1.2 Alternative #1 – Demolition of Existing Buildings, Excavation of Impacted Soils and Implementation of a Municipal Setting Designation	3.7
3.1.3 Alternative #2 – Seal Vapor Entry Points, Installation of Cap Over Impacted Soils, and Implementation of an Institutional Control.....	3.8
3.1.4 Alternative #3 – Installation of Sub-Slab Depressurization System and Implementation of an Institutional Control.....	Error! Bookmark not defined.
3.2 EVALUATION OF CLEANUP ALTERNATIVES.....	3.9
3.2.1 Alternative #1 – Demolition of Existing Buildings, Excavation of Impacted Soils and Implementation of a Municipal Setting Designation	3.9
3.2.2 Alternative #2 – Seal Vapor Entry Points, Installation of Cap Over Impacted Soils, and Implementation of an Institutional Control.....	Error! Bookmark not defined.
3.2.3 Alternative #3 – Installation of Sub-Slab Depressurization System and Implementation of an Institutional Control.....	3.10
4.0 RECOMMENDED CLEANUP ALTERNATIVE.....	4.12
5.0 OPINION OF PROBABLE COST LIMITATIONS	5.13
6.0 REFERENCES	6.14

LIST OF FIGURES

Figure 1 – Property Location Map

Figure 2 – Property Layout and Vicinity Map

LIST OF TABLES



 Table 1 – Preliminary Opinion of Probable Cleanup Costs

 **LIST OF APPENDICES**

Appendix A – Previous Reports

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Acronyms and Abbreviations

AACE	American Association of Cost Estimating International
ABCa	analysis of brownfield cleanup alternatives
ACRES	Assessment, Cleanup & Redevelopment Exchange System
bgs	below ground surface
BZ	benzene
CCL4	carbon tetrachloride
cis-1,2-DCE	cis-1,2- dichloroethylene
DCA	1,2-dichloroethane
DCB	1,4-dichlorobenzene
EDR	Environmental Data Resources, Inc.
EPA	United States Environmental Protection Agency
ESA	environmental site assessment
ETBZ	ethylbenzene
ID	Identification Number
µg/m ³	micrograms per meter cubed
mg/L	milligrams per liter
MSD	Municipal Setting Designation
PID	photo-ionization detector
PCE	perchloroethylene
PCL	Protective Concentration Level
ppbv	parts per billion per volume
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
Stantec	Stantec Consulting Services Inc.
TCE	trichloroethylene
UST	underground storage tank
VC	vinyl chloride
VCP	Voluntary Cleanup Program
VEP	vapor entry point
VIE	vapor intrusion evaluation
VOC	volatile organic compound



ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES, 315 MAIN STREET, CANON, CO 81212

Introduction and Background

October 30, 2024

1.0 INTRODUCTION AND BACKGROUND

On behalf of the Cañon City (City), Stantec Consulting Services Inc. (Stantec) has prepared this Analysis of Brownfield Cleanup Alternatives (ABC) report for the property formerly known as New Method Laundry & Dry Cleaning located at 315 Main Street, Cañon City, Colorado (the "Property") identified under Environmental Protection Agency (EPA) identification (ID) number (No.) COR000218040. The location of the Property is shown on **Figure 1**. The ABC screens and identifies a practical remedial alternative that would reduce contaminant exposure to levels protective of human health and the environment, based on site-specific conditions, technical feasibility, and preliminary cost evaluations, and was completed to meet the requirements of Colorado Hazardous Waste Act (CHWA) under a Unilateral Compliance Order pursuant to 6 CCR 1007-3, Part 100.26. and United States Environmental Protection Agency (EPA) Vapor Intrusion Screening Levels (VISLs) (June 2015) and Regional Screening Levels (RSLs) for air (EPA, 2024).

1.1 SITE DESCRIPTION AND HISTORY OF OPERATION

The Property is defined as Fremont County Assessor's parcel number 11004160 (315 Main Street) and consists of approximately 8040 square (sq) feet (ft) or 0.185 acres of land. The Property is located in the City's Central Business District in the heart of downtown, immediately north of Main Street and south of Macon Avenue. The property was previously developed with a two-story adobe building that has been remodeled and reconstructed with a façade believed to be made of concrete. The first floor of the building was used for laundry and dry-cleaning operations and the 2nd floor was living quarters, offices and storage. This building was demolished by the City in 2024. The east adjoining property is a vacant commercial property. The west adjoining property is a gym.. The north adjoining property is an alley followed by an unpaved parking lot (316 Macon Avenue), which was purchased in 2022 by the City from the same owner. **Figure 2** is a site map showing the site layout.

The building at 315 Main Street (constructed in 1882/1883 as 315, 317 and 319 Main Street) was used by several retail/service businesses up until 1926, including a boot & shoe shop, a saloon and a fruit store (1883), a millinery and a drug store (1886), a restaurant, a bicycle shop, and a barber shop (1895), a saloon, a bicycle shop, and a billiards hall (1901), and a Salvation Army facility (1908), and a second hand shop and a billiards hall (1908 and 1914). At least three times, in 1886, 1890 and 1914 the building was partially vacant. In 1926, 315 Main Street was used for a laundry and the east adjoining building at 317 and 319 Main Street was used by an automobile garage with a gasoline tank. Later the garage space was used for the dry-cleaning portion of the business. The property has been used for laundry and dry-cleaning ever since, ceasing operation in late 2020.



ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES, 315 MAIN STREET, CANON, CO 81212

Introduction and Background

October 30, 2024

1.2 PREVIOUS ASSESSMENTS

Previous assessments for the 315 Main Street and 316 Macon Avenue properties are described below.

1.2.1 315 Main Street and 316 Macon Avenue

The following assessments were conducted between 2017 and 2021.

1.2.1.1 2020 Phase I ESA

Stantec conducted a Phase I Environmental Site Assessment (ESA) for the 315 Main Street Property and neighboring 316 Macon Avenue site in March 2021 (Stantec 2021) and an update in March 2022 (Stantec 2022). The Stantec assessments identified the following evidence of recognized environmental conditions (RECs) and Vapor Encroachment Conditions (VEC) in connection with the Property:

315 Main Street

- The use of the Property as a dry cleaning and laundry business for 75 to 94 years or more and questionable housekeeping practices are a REC and a VEC.
- The lack of secondary containment around drums and equipment, may have resulted in one or more releases to the environment and is a REC a VEC.
- The use of a wood floor in the main equipment room of the building to contain potential leaks or releases from equipment may have resulted in one or more releases to the environment and is a REC a VEC.
- Potentially unpermitted emissions of PCE from the drums and equipment in the building are a REC and a VEC.
- The use of a gasoline storage tank at the automobile garage at 317 and 319 in 1926 before this location was used as part of the laundry and dry-cleaning business is a REC and a VEC.

316 Macon Avenue

- No RECs or VECs were identified for this Property.

1.2.1.2 2021 Phase II Subsurface Investigation

Based on the findings in the Phase 1 ESA, EPA contracted Tetra Tech, Inc., a Superfund Technical Assessment and Response Team (START) V Contractor, to conduct a Phase II assessment at both 315 Main Street and 316 Macon Avenue to evaluate whether and to what extent groundwater contamination caused by dry-cleaning or other chemicals is present at the Property (TetraTech 2021). This phase II, conducted between April and August of 2021, also included installation of seven (7) on-Property groundwater monitoring wells, as well as an analysis for asbestos and lead based paint. Results from this testing showed minimal levels of asbestos (primarily in pipe wrap), identified areas of PCE contamination and determined the general direction of ground water flow:



ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES, 315 MAIN STREET, CANON, CO 81212

Introduction and Background

October 30, 2024

- Shallow groundwater was encountered at approximately 5 ft below ground surface (bgs) in very coarse alluvial sediment material, the investigation did not determine the bottom of the coarse alluvial zone and total depth of contamination but determined the general direction of groundwater flow as towards the nearby Arkansas River which is approximately 1,160 ft south of the Property.

Additional investigative activities may be warranted to better understand the presence and extent of VOCs in groundwater. Tetrachloroethene (PCE) is the main constituent of concern. Cañon City has demolished the New Method Laundry building and has plans to use Property as a parking lot. Therefore, vapor intrusion (VI) from potential PCE in soil and groundwater would not be a significant concern for future use of the Property but may affect down and cross gradient properties.

1.2.1.3 2022 Phase II Subsurface Investigation

A second Phase II ESA was conducted by Tetra Tech into evaluate the lateral extent of the PCE plume. A subsequent third sampling event was completed at the request of CDPHE to evaluate for the potential natural attenuation of PCE in groundwater during high water.

Based on the initial characterization conducted by Tetra Tech, a second evaluation was conducted on site which included the installation of eight (8) additional groundwater monitoring wells to define the lateral extent of groundwater contamination off-site, in March 2022. The persistence of VOC contamination in the well network, a third phase of groundwater sampling was performed by Tetra Tech in July 2022.

Based on the extensive use of PCE over several decades during operation of the business, and persistent detection of PCE in groundwater wells, additional sampling for PCE was conducted in 7 downgradient wells at the Site during the July 2022 sampling event. The highest concentration was observed in well NM-MW-06 at 28.8 ppb during the July event and in well NM-MW-06 PCE during the August 2021 of 64 ppb. The hydraulically down-gradient wells NM-MW-10 and NM-MW-12 also slightly exceeded the PCE MCL in July 2022 with concentrations of 5.3 ppb and 6.3 ppb, respectively. PCE break-down products, trichloroethene (TCE) and cis-1,2-dichloroethene (cDCE), were observed in one of the furthest downgradient wells, NM-MW-16. Given the close proximity of the site to the Arkansas River, the steep hydraulic groundwater gradient toward the river, and the coarse mixture of highly transmissive aquifer sediments, Tetra Tech concluded that it is likely that impacted groundwater from the Site is in contact with the Arkansas River.

1.3 DATA GAP ASSESSMENT

A review of the available Phase II characterization data indicates that additional vertical delineation of VOC in soil and groundwater is necessary. PCE is heavier than water and will tend to sink in porous media. The saturated zone at the Property has been reported to be dominated by coarse sediment that to the full extent of the borings conducted to date. Under such conditions, separate phase PCE will tend to sink through the porous media until it encounters a low permeability layer that prevents further downward migration. Due to refusal during drilling, the bottom of the first encountered water bearing zone was not defined, but depth discrete soil concentration data indicated a decrease in PCE concentration with depth. The data collected to date does not fully address this data gap because it does not provide a description



ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES, 315 MAIN STREET, CANON, CO 81212

Introduction and Background

October 30, 2024

of the lithology documenting that a confining layer was identified at the bottom of the saturated zone, serving as a barrier to further PCE downward migration. Borings that define the vertical extent of PCE impacts and a confining layer at the bottom of the porous first encountered saturated zone are necessary to ensure that additional PCE contamination is not present below the depth of the installed wells. If a confining layer is encountered, that layer should be evaluated to determine whether separate phase is present at the bottom of the water bearing zone and also to document that it represents an adequate barrier to further downward migration should separate phase PCE be present but not detected to date.

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ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES, 315 MAIN STREET, CANON, CO 81212

Applicable Regulations and Cleanup Standards

October 30, 2024

2.0 APPLICABLE REGULATIONS AND CLEANUP STANDARDS

Remediation of the Property will be conducted under the CDPHE corrective action plan (CAP) agreement. Cleanup actions performed must provide adequate protection of human health and the environment based on the current and future uses of the Property.

2.1 CONTAMINANTS OF CONCERN

Based on the findings of the previous assessments for the Property listed in **Section 1.2**, the contaminants of concern include:

Soil

- Concentrations of PCE and petroleum hydrocarbons (benzene, toluene, etc) in soil samples collected are below residential RSLs.

Groundwater

- PCE in monitoring wells MW-06, MW10, MW-11, MW-12, MW-13, MW-15, and MW-16.
- TCE in monitoring well MW-16
- cis-1,2-DCE in monitoring well MW-16
- Groundwater concentrations of VOCs were below applicable EPA RSLs with the exception of MW-06 (0.064 mg/L)

2.2 POTENTIAL RECEPTORS AND EXPOSURE PATHWAYS

Construction workers, site workers, and area residents have been identified as the most likely potential human receptors. Redevelopment and reuse plans for the Property include using both sites for parking with an asphalt surface, eliminating any potential for vapor intrusion into residential or commercial businesses on the Property.

Exposure to hazardous materials in site soils and vapors by construction workers, workers and residents could occur due to vapor intrusion and during remedial excavation, construction, and/or other activities that involve ground disturbing activities at the Property through inhalation, ingestion, and/or dermal contact. Exposure of people on nearby properties to hazardous materials in site soils appears to be unlikely based on concentrations observed in groundwater.

Potential exposure during the remedial work will be managed with a site-specific health and safety plan and a community air monitoring plan designed to protect site workers and the public from fugitive emissions of contaminants of concern during the remedial activities. VOCs detected in soil and groundwater are below levels that would be hazardous to construction workers or classify as hazardous waste. Site construction workers will require current Occupational Safety and Health Administration



ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES, 315 MAIN STREET, CANON, CO 81212

Applicable Regulations and Cleanup Standards

October 30, 2024

Hazardous Waste Operations and Emergency Response training in case unforeseen conditions are encountered.

A perimeter fence will be in place during remedial work to prevent the public from accessing the Property to mitigate that potential exposure pathway. Potential future exposures to residual contamination, if any, will be mitigated using institutional and engineering controls and a site management plan. The Property will be redeveloped as a parking lot and the asphalt surface will serve as a barrier to potential exposure to residual contamination. If plans for development change, a screening level risk assessment is recommended to address potential exposure under the new use. No potential impacts are anticipated to ecological receptors as part of this remedial effort.

2.3 CLEANUP STANDARDS

Contaminants of concern at the Property are defined as the substances for which the concentrations in soil or groundwater exceed the associated Colorado Department of Public Health and Environment (CDPHE) groundwater protection standards, EPA RSLs as outlined in **Section 1.2** and **Appendix A**. The CDPHE values are for protection of human health via direct-contact or ingestion pathway and protection of groundwater. EPA RSLs values are for protection via direct contact to residents or construction workers and potential inhalation pathways.

Relevant regulations and cleanup standards for the Site are listed below.

- Water Quality Control Commission (WQCC) addresses Colorado's standards for groundwater under Regulations 41, 42, and 43
- CDPHE is responsible for administering the Resource Conservation and Recovery Act (RCRA) and enforcing protections for groundwater
- EPA RSLs for soil and groundwater
- Hazardous Waste Regulations, 40 Code of Federal Regulations 261.31
- Section 112 Clean Air Act, National Emission Standards for Hazardous Air Pollutants

2.4 CLEANUP GOAL

Stantec has been made aware of future land use or development plans for the Property. As such, the intention of the remedial alternatives is to achieve compliance with the CDPHE groundwater standards and EPA RSLs and remediate the Property to levels for commercial/industrial use. The purpose of remediation will be to remove any potential on-Property sources in soil and groundwater that continue to act as a source to groundwater downgradient of the Property.



ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES, 315 MAIN STREET, CANON, CO 81212

Cleanup Alternatives

October 30, 2024

3.0 CLEANUP ALTERNATIVES

3.1 CLEANUP ALTERNATIVES CONSIDERED

The nature and extent of contamination for 315 Main Street and 316 Macon Avenue are presented in the previous reports summarized in **Section 1.2** and **Appendix A**. The following sections provide a description of alternatives analyzed as part of this report.

3.1.1 Description of Alternatives

As part of the alternatives analysis, certain assumptions regarding redevelopment have been made. These include future installation of a site-wide asphalt parking lot are part of the baseline costs for Property redevelopment and are not included in the remedial cost analysis for the identified alternatives. To address the management of impacted soil and groundwater at the Property, three remedial alternatives were considered:

- Alternative #1: No Action
- Alternative #2: Excavation of PCE Impacted Soil and Implementation of Monitored Natural Attenuation for VOCs in Groundwater
- Alternative #3: Excavation of Impacted Soil and Implementation of Enhanced In Situ Bioremediation (EISB) for VOCs in Groundwater

3.1.2 Alternative #1 – No Action

The No-Action alternative is included as part of the evaluation process and does not necessarily represent a feasible alternative because it does not address the potential hazards at the Property or long-term impacts of identified contaminants in groundwater.

3.1.3 Alternative #2 – Excavation of PCE Impacted Soil and Implementation of Monitored Natural Attenuation for VOCs in Groundwater

This potential remedial alternative would include excavation of impacted soil identified during site demolition activities to remove potential remaining sources and implementation of monitored natural attenuation (MNA) in accordance with EPA Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater (EPA 1998, 2011).

Based on concentrations identified in soil during Property investigations, it is anticipated that the amount of PCE impacted soil requiring excavation will be minimal, focusing on shallow soil immediately beneath the building. Soil removal will address the first requirement for implementation of MNA according to EPA guidance, which is the removal of sources, where possible. Given the low concentrations of VOCs in groundwater, it is not anticipated that significant source is present in the subsurface that would need to be removed.



ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES, 315 MAIN STREET, CANON, CO 81212

Cleanup Alternatives

October 30, 2024

The second requirement would be to document that conditions conducive to the natural attenuation of chlorinated VOCs is present in groundwater. An evaluation of groundwater chemistry indicates that low concentrations of petroleum hydrocarbons present in soil and groundwater have created reducing conditions conducive to the natural attenuation of chlorinated VOCs.

Finally, a well network is necessary that adequately evaluates the attenuation of PCE in groundwater. In order to adequately assess the attenuation of PCE as groundwater moves through the Property, the well network needs to adequately characterize groundwater geochemistry and PCE concentrations immediately upgradient of the Property, on-Property within the source area, at the Property boundary, and off-Property, downgradient of the source area. The monitoring frequency needs to account for seasonal changes in groundwater with samples collected quarterly for a period of time that adequately characterizes seasonal variation. Once seasonal variation is understood, sampling frequency can be reduced.

For the purposes of this evaluation, it is assumed that MNA will require four new monitoring wells that are located upgradient, within the source area, at the downgradient site boundary, and downgradient of the source area which will be required to be sampled for approximately ten years, assuming quarterly sampling and reporting for two years, semi-annually for an additional three years, and annually for five years. Every five years, a 5-year review would be conducted to determine whether continued monitoring will be required. For cost purposes, two 5-year reviews are assumed, and termination of sampling will occur after the second 5-year review. At that time, the City can consult with the CDPHE and request closure.

Wells will be sampled for field parameters (pH, dissolved oxygen, temperature, specific conductivity, ferrous iron, and oxidation reduction potential), VOCs, total organic carbon (TOC), and dechlorinating microbes (for one time only).

3.1.4 Alternative #3 – Excavation of Impacted Soil and Implementation of Enhanced In Situ Bioremediation (EISB) for VOCs in Groundwater

This alternative would involve excavation of soil sources as proposed in Alternative #2, installation of the same proposed well network, groundwater monitoring following the same proposed sampling frequency, and the same reporting intervals.

EISB uses microbes to biodegrade chlorinated VOCs by creating groundwater conditions that are conducive to biodegradation. Generating the appropriate groundwater conditions requires injection of that help remove dissolved oxygen from groundwater in the treatment area. Injection requires installation of six new injection wells that can be used repeatedly to enhance microbial growth and PCE biodegradation. For cost purposes, it is assumed that two injection events will be required to achieve treatment over the course of the first year of treatment, after excavation is complete and the monitoring network has been installed.

Post treatment monitoring will occur for approximately seven years, with quarterly sampling and reporting for two years and semi-annually for five years, after which the City can consult with CDPHE and request closure.



ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES, 315 MAIN STREET, CANON, CO 81212

Cleanup Alternatives

October 30, 2024

Wells will be sampled for field parameters (pH, dissolved oxygen, temperature, specific conductivity, ferrous iron, and oxidation reduction potential), VOCs, total organic carbon (TOC), nitrate, sulfate, and dechlorinating microbes (for one time only).

3.2 EVALUATION OF CLEANUP ALTERNATIVES

Potential cleanup alternatives are evaluated based on the following criteria: effectiveness, implementation feasibility, remedial costs, and general reasonableness. **Table 2** provides a breakdown of applicable costs.

3.2.1 Alternative #1 – No Action

Effectiveness – This alternative is not an effective way to limit exposure and may result in permanently restricted future use of the Property.

Implementation Feasibility – This alternative is easily implemented.

Resilience and Sustainability - This approach is not sustainable because it does not address residual contamination.

Remedial Costs – This approach has the lowest cost but does not achieve proposed remedial goals.

General Reasonableness – This alternative would require long-term management of the impacted soils and groundwater since they would remain at the Property. This alternative is not recommended for further consideration.

3.2.2 Alternative #2 – Excavation of PCE Impacted Soil and Implementation of Monitored Natural Attenuation for VOCs in Groundwater

Effectiveness – This alternative is an effective way to limit exposure and manage contaminated soils at the Property. An institutional control (i.e., restrictive covenant) would need to be approved by the CDPHE, and post-response care and maintenance of the integrity of the site cap but excavation of identified impacted soil would increase the protectiveness of this alternative and reduce the need for cap maintenance. This option would also reduce the potential for leaching of residual contaminants in soil not addressed by excavation at the Property if the asphalt cap was adequately maintained. MNA monitoring will also address potential long-term migration of PCE in groundwater providing a level of protection for downgradient properties.

Implementation Feasibility – This alternative would be easy to implement because it would not require extensive planning and coordination with potential redevelopment activities to limit worker exposure to impacted soils that might remain at the Property. Wells can be located on-Property and on up and down gradient properties without inconveniencing occupants. Concentrations identified in soil and groundwater to date do not represent a significant threat to site construction workers or occupants or downgradient residents.



ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES, 315 MAIN STREET, CANON, CO 81212

Cleanup Alternatives

October 30, 2024

Resilience and Sustainability - This approach addresses potential residual risk associated with contaminant migration should concentrations persist in groundwater after source soil excavation. Conditions are present in groundwater that are expected to continue attenuating PCE and mitigating contaminant migration. Therefore, the approach is resilient to potential minor changes in site conditions and sustainable over the duration of implementation.

Remedial Costs – Soil excavation and disposal/backfill, well network installation, on-going monitoring and reporting are estimated to cost \$562,510 for implementation. Monitoring is assumed to occur for 10 years at decreasing frequency as outlined above.

General Reasonableness – This alternative addresses soil contamination, prevents infiltration and direct contact in case residual soil contamination remains, and monitors groundwater to document attenuation over time. It represents a viable alternative for site management.

3.2.3 Alternative #3 – Excavation of Impacted Soil and Implementation of Enhanced In Situ Bioremediation (EISB) for VOCs in Groundwater

Effectiveness – This alternative addresses soil sources, residual groundwater impacts, contaminant migration, and infiltration and direct contact pathways as well as potentially expediting attenuation of concentrations in groundwater. An institutional control (i.e., restrictive covenant) would need to be approved by the CDPHE, and post-response care and maintenance of the integrity of the site cap but excavation of identified impacted soil would increase the protectiveness of this alternative and reduce the need for cap maintenance. This option would also reduce the potential for leaching of residual contaminants in soil not addressed by excavation at the Property if the asphalt cap was adequately maintained. EISB treatment and monitoring is also the best alternative to address potential long-term migration of PCE in groundwater providing a level of protection for downgradient properties.

Implementation Feasibility – This alternative would be moderately difficult to implement because it would require additional injection wells that are difficult to install given the site lithology and need to accommodate potential redevelopment activities. The approach does help limit worker exposure to impacted soils that remain at the Property. Concentrations identified in soil and groundwater to date do not represent a significant threat to site construction workers or occupants or downgradient residents, therefore this alternative would be feasible and protective.

Resilience and Sustainability - This approach should not be affected by significant changes to Property use given that it has a shorter duration than Alternative #2 and is likely to provide greater effectiveness. The materials used and approach are robust and not susceptible to changing conditions because treatment can be adjusted to address any changes in groundwater flow and conditions.

Remedial Costs – This alternative includes soil excavation and disposal/backfill, well network installation, injection well network installation, on-going monitoring and reporting and is estimated to cost approximately \$693,810. Monitoring is anticipated to take approximately 7 years to achieve closure.

General Reasonableness – This alternative would not require significant long-term management because most contaminants would be removed from the Property. However, this alternative effectively reduces the



ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES, 315 MAIN STREET, CANON, CO 81212

Cleanup Alternatives

October 30, 2024

PCE concentrations in groundwater but represents the most expensive alternative. Accordingly, this is a reasonable cleanup option and represents a viable alternative for site management.

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ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES, 315 MAIN STREET, CANON, CO 81212

Recommended Cleanup Alternative

October 30, 2024

4.0 RECOMMENDED CLEANUP ALTERNATIVE

The recommended cleanup alternative is Alternative #3 – Excavation of Impacted Soil and Implementation of Enhanced In Situ Bioremediation (EISB) for VOCs in Groundwater. This alternative will effectively provide the owner with the most flexibility relative to redevelopment options and will achieve the cleanup goal of complying with the EPA RSLs and CDPHE groundwater standards.

During well network installation, vertical profiling to identify the bottom of the water bearing zone is recommended to address the remaining data gap.

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ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES, 315 MAIN STREET, CANON, CO 81212

Opinion of Probable Cost Limitations

October 30, 2024

5.0 OPINION OF PROBABLE COST LIMITATIONS

The opinion of probable costs presented herein represents a Class 5 estimate as defined by the American Association of Cost Estimating International (AACE). The AACE defines a Class 5 estimate as follows:

Class 5 estimates are generally prepared based on very limited information, and subsequently have wide accuracy ranges. They are often prepared for strategic planning purposes, market studies, assessment of viability, project location studies, and long-range capital planning. Virtually all Class 5 estimates use stochastic estimating methods such as cost curves, capacity factors, and other parametric techniques. Expected accuracy ranges are from -20% to -50% on the low side and +30% to 100% on the high side, depending on technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.

Stantec has used its professional judgement given the available information and our experience with similar remedial techniques on other sites. Accordingly, the Client agrees that Stantec cannot and does not make any warranty, promise, guarantee, or representation, either expressed or implied, that proposals, bids, project construction costs, or cost of operation or maintenance will not vary substantially from this good-faith cost estimate.

Accordingly, the extent and magnitude of subsurface impacts requiring remediation upon which the opinion of probable costs has been developed is unknown. Therefore, the final extent of excavation, and resultant costs, will be dependent upon the collection and laboratory analyses of confirmatory soil samples at the time of excavation and based on the duration of MNA monitoring and time to achieve closure requirements.



ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES, 315 MAIN STREET, CANON, CO 81212

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October 30, 2024

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FIGURES



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TABLES

TABLE 1
PRELIMINARY OPINION OF PROBABLE CLEANUP COSTS

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Table 1
Analysis of Brownfield Cleanup Alternatives Cost Estimates

Remedy Component	Unit Cost	Units	Alternative		Alternative 1		Alternative 2		Alternative 3	
			No Action		Excavation & MNA		Excavation & EISB			
			Years	10	10	7	Qty	Cost	Qty	Cost
Remedy Component	Unit Cost	Units	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost
Excavation, Disposal, and/or Treatment										
Prepare Workplan and Coordination with CDPHE	\$10,000	lump sum	0	\$0	1	\$10,000	1	\$10,000		
Excavate Impacted Soil and Backfill (Est 100 CYs = 175 tons)	\$75	per ton	0	\$0	100	\$7,500	100	\$7,500		
Excavation Backfill and oversight	\$1,800	per day	0	\$0	4	\$7,200	4	\$7,200		
Confirmation Sampling	\$1,500	per day	0	\$0	2	\$3,000	2	\$3,000		
Transport and Disposal (Est 100 CYs = 175 tons)	\$150	per ton	0	\$0	100	\$15,000	100	\$15,000		
Well Network Installation (4 wells to 40 ft bgs)	\$15,000	per well	0	\$0	4	\$60,000	4	\$60,000		
Groundwater Monitoring ^a MNA (4 wells)	\$3,500	per event	0	\$0	20	\$70,000	18	\$63,000		
Groundwater Monitoring ^a All Other Wells (17 wells)	\$10,000	per event	0	\$0	10	\$100,000	7	\$70,000		
EISB Injection Well Network (6 wells to 40 ft bgs)	\$15,000	per well	0	\$0	0	\$0	6	\$90,000		
Injection for EISB	\$40,000	per event	0	\$0	0	\$0	2	\$80,000		
Reporting ^b	\$16,000	per year	0	\$0	10	\$160,000	8	\$128,000		
<i>Subtotal</i>				\$0		\$432,700		\$533,700		
<i>30% contingency</i>				\$0		\$129,810		\$160,110		
<i>Total</i>				\$0		\$562,510		\$693,810		

Assumptions:

(a) -- Additional monitoring is assumed for EISB to account for additional parameters.
 (b) -- Additional reporting is assumed for EISB due to additional regulatory requirements.

Notes: