

I. SCOPE OF WORK

A. DEFINITIONS:

For the purposes of this solicitation the following terms and definitions shall apply:

1. Active Corrective Action: The scope of work to be implemented under this solicitation as defined in the Technical Specification Package (Section I.A.15).
2. Area of Concern: The horizontal and vertical area, identified in the Appendix, in which concentrations of petroleum chemicals of concern have been quantified and/or can be relatively determined by actual data and subsequent interpretation using accepted scientific principles.
3. Area of Excavation: the horizontal and vertical area, identified in the appendix, to be removed.
4. ACQAP: Annual Contractor Quality Assurance Plan
5. Catastrophic Occurrence: An event (e.g., hurricane) that results in a declared state of emergency and directly and substantially affects the Site Rehabilitation Contractor's operations at a site.
6. Chemicals of Concern (CoC): Specific petroleum constituents that are identified for monitoring and corrective action.
7. Corrective Action Completion Time (CACT): The time in months, submitted by the Site Rehabilitation Contractor, and acceptable to the South Carolina Department of Health and Environmental Control (DHEC), necessary to reduce Free Phase Product (FPP) thicknesses to or below 0.01' and verify attainment of all performance requirements as set forth in Section III.B, and remove and/or properly abandon assessment and corrective action components (wells, treatment lines, etc.) as determined by DHEC. All activities must be completed within 5 years of the Financial Approval Date. Any request for an extension beyond the 5-year time frame must be made in writing by the Owner/Operator and the Corrective Action Completion Time may be extended with a written no cost extension granted by DHEC.
8. Corrective Action Cost: The total amount established via the procurement process to complete the scope of work/specifications detailed in the solicitation unless otherwise modified pursuant to the terms of this solicitation. The maximum

allowable corrective action cost DHEC can establish is dependent upon the remaining State Underground Petroleum Environmental Response Bank (SUPERB) account balance for the individual release, less any costs required for verification of performance milestones. All corrective cost above the maximum amount allowable, as established in S.C. Code Ann. § 44-2-40 (2018), are the responsibility of the owner/operator.

9. Corrective Action Plan (CAP): A document submitted by the Site Rehabilitation Contractor that outlines and details proposed corrective action(s) and contains a timetable consistent with the CACT, to include any subsequent CAP addendums or amendments.
10. Corrective Action Plan Implementation Date: The date on which the Contractor initiates corrective action (i.e., physical treatment activities such as excavation, extraction, injection, etc.) under the approved CAP. The date must be within 30 days of receipt of a Notice to Proceed issued by DHEC.
11. Day: For the purpose of this solicitation, any reference to day(s) will be intended as calendar day(s) and not business day(s).
12. Free-Phase Product (FPP): Petroleum lighter than water non-aqueous phase liquid (LNAPL) identified for monitoring and corrective action.
13. Performance milestone: Milestones set forth in Section III.B of this solicitation for which the Site Rehabilitation Contractor will receive payment under the Technical Specifications Package.
14. Quality Assurance Program Plan for the Underground Storage Tank Management Division (UST QAPP): The UST QAPP Revision under implementation at the time this solicitation is posted.
15. Technical Specifications Package: This document, to include the attached Appendix, which provides site-specific information and defines the scope of work to be completed at the site(s) under this solicitation.
16. Oxygen Releasing Compound (ORC): ORC in this solicitation, refers to a generic Oxygen Releasing Compound. The selected ORC compound, regardless of the name brand or vendor, must generate a minimum of 2,700 pounds oxygen over a minimum 6-month time period.

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17. Persulfate Compound: A compound of persulfate with various amendments (e.g. potassium, ammonium, etc.) which will be blended with soil as part of the backfill process.
18. Reporting Period: The time period between submittal of Corrective Action System Evaluation (CASE) Reports.

B. SOLICITATION STATEMENT

Frederick N Cecchini and Broad River C Store LLC, with assistance from the Underground Storage Tank (UST) Management Division of DHEC, are seeking services to perform active corrective action of a petroleum release or petroleum releases at a regulated underground storage tank site in accordance with the performance requirements as set forth in Section III.B. There are three specific components to this solicitation: free-phase product (FPP) removal, FPP migration control, and excavation. All Applicants must be SCDHEC-certified Class I Site Rehabilitation Contractors and must remain in compliance with R.61-98 for the duration of the CACT.

C. SCHEDULE OF DELIVERABLES

The following table summarizes the deadlines for deliverables associated with this solicitation:

Please note that DHEC must be notified 15 calendar days prior to any activities to be conducted at the site.

DELIVERABLE DUE	DEADLINE
Questions	By August 28, 2020
Corrective Action Solicitation Response Form	By September 18, 2020 at 5:00 pm <i>in sealed envelope</i>
CAP and UST QAPP Contractor Addendum or Site-Specific Work Plan for Corrective Action	Within 30 days of receipt of Notice to Proceed from DHEC for CAP Preparation.
CAP Implementation for Migration Prevention of Free Phase Product and Free Phase Product Removal	Within 30 days of receipt of Notice to Proceed from DHEC for CAP Implementation of each component
CAP Implementation Reports for Migration Prevention of Free Phase Product and Free Phase Product Removal	Within 60 days of receipt of Notice to Proceed from DHEC for CAP Implementation of each component
CASE Report	Semi-annually with initial sampling to occur 90 days after CAP Implementation and report due within 30 days of sampling.

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Update UST QAPP Contractor Addendum or Site-Specific Work Plan for Corrective Action	First quarter of each year and as needed until completion of corrective action.
Notify Project Manager of implementation of Corrective Action Activities	At least 15 days prior to initiation.
ECAP Implementation	Immediate upon receipt of Notice to Proceed for Excavation and written approval and verification by DHEC that the Migration Prevention is effective
Completion of Excavation	Within 60 days receipt of Excavation Notice to Proceed from DHEC
Excavation Report	Within 60 days of receipt of Excavation Notice to Proceed from DHEC
Demobilization and Site Restoration	Within 60 days of receipt of Notice to Proceed from DHEC for Demobilization and Site Restoration.

D. SITE SPECIFIC INFORMATION

The scope of work defined in this technical specification package is to be implemented at **Broad River Amoco (UST Permit #11946), 4335 Broad River Road, Columbia, SC** for the release(s) reported on January 4, 2011 and November 16, 2018. A copy of the technical file will be available on-line at <https://scdhec.gov/environment/land-management/underground-storage-tanks/release-assessment-clean/active-corrective-0> until the CAP is approved. The technical file may also be reviewed at the Freedom of Information (FOI) Office located at the Sims/Aycock Building, 2600 Bull Street, Columbia, SC, 29201 (803-898-3882). **Appointment(s) to view the technical file may be scheduled on weekdays between the hours of 8:30 A.M. to 5:00 P.M. by calling the FOI Office at 803-898-3882. A brief technical summary, including maps and data tables, is attached in the Appendix.** UST Site Rehabilitation Contractors are strongly encouraged to review the file(s) to ensure a complete understanding of corrective action requirements. It will be presumed, upon submittal of an offer, that the UST Site Rehabilitation Contractor has reviewed and understands all available information in the technical file.

II. SOLICITATION REQUIREMENTS

A. GENERAL REQUIREMENTS

1. PAYMENT PERIOD: The payment period will be effective from the date of financial approval until corrective action is complete as outlined in this solicitation.

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2. EQUAL OPPORTUNITY EMPLOYMENT: Site Rehabilitation Contractors must agree to make positive efforts to employ women, minorities, and minority-owned businesses.
3. AMENDMENTS: All amendments to this solicitation shall be in writing from DHEC. DHEC shall not be legally bound by any amendment, interpretation or settlement that is not in writing.
4. RESTRICTION: the only official contact person at DHEC during the solicitation and financial approval process is Debra Thoma. Site Rehabilitation Contractors are not to contact any other DHEC personnel or other contractors.
5. FINANCIAL APPROVAL: The UST Owner/Operator has the right to select a SCDHEC-certified Class I Site Rehabilitation Contractor to perform corrective action in accordance with the SUPERB Act (S.C. Code Ann. §§ 44-2-10 *et seq.*) and is not limited to Site Rehabilitation Contractors who respond to this solicitation. Therefore, financial approval may be made to a Site Rehabilitation Contractor who has been selected by the Owner/Operator but has not responded to this solicitation. The financial approval will be for the reasonable cost as defined in Section II.A.6. The selected Site Rehabilitation Contractor must agree to make positive efforts to employ women, minorities, and minority-owned businesses. **Pursuant to S.C. Code Ann. § 44-2-120(B), the Owner/Operator is ultimately responsible to DHEC for the actions of their selected Site Rehabilitation Contractor. Therefore, DHEC will pursue enforcement actions against the Owner/Operator if their selected Site Rehabilitation Contractor does not make satisfactory progress towards achieving the performance requirements as outlined in Section III.B.**
6. REASONABLE COST: The lowest corrective action cost submitted in response to the solicitation will determine the reasonable or SUPERB-allowable cost to complete corrective action as defined by the solicitation. DHEC reserves the right to reject any and all submitted Corrective Action Solicitation Response Form that propose Corrective Action Costs that are not advantageous to the State of South Carolina, that propose a CACT that is not protective of public health and the environment, and that propose remediation technology(ies) or method(s) that cannot be permitted in the State of South Carolina and/or that are not protective of public health and the environment.
7. SITE WORK VERIFICATION: The Site Rehabilitation Contractor will be required to complete all components of the corrective action as defined in Section III. Verification that FPP removal and interim performance milestones have been achieved will be based upon gauging/sampling results from the SSTL wells and

sampling points listed in the Appendix, and extraction wells installed as part of corrective action. Verification that the final performance milestone has been achieved will be based upon sampling results from all wells and gauging points listed in the Appendix and all verification wells to be installed at locations and depths designated by DHEC (see Section III.B for more details). It is understood that seasonal fluctuations in FPP thicknesses will occur. It is the intent of this corrective action to prevent further degradation of the aquifer(s) by continued migration of FPP into areas not previously impacted. If the corrective action allows FPP to migrate into areas not previously impacted, the Site Rehabilitation Contractor will be responsible for completing assessment activities necessary to re-define the impacted areas and for providing amendments to their CAP to address the additional impact. An on-site inspection must be performed and all required documentation submitted in order to verify the completion of the scope of work, as defined in the Technical Specification Package.

8. REPORTS: Reports are to be submitted to DHEC on or prior to the established due dates unless otherwise approved in writing by DHEC. Deliver one paper copy and one electronic copy of each plan and report to: SCDHEC, Bureau of Land and Waste Management, UST Management Division 2600 Bull Street, Columbia, SC 29201. The electronic copy should be submitted on compact disk (CD) in Personal Data Format (PDF). All data tables should be in MS Excel or comparable format. One copy of each plan or report must be delivered to each party listed on the Distribution List included in the Appendix. The distribution copies may be electronic or paper as agreed upon by the party and the Site Rehabilitation Contractor. Based on permitting and other requirements, additional copies of plans and reports may be required by DHEC.
9. INVOICING: Invoices will be submitted to SCDHEC, Bureau of Land and Waste Management, UST Management Division, ATTN: Financial Section, 2600 Bull Street, Columbia, SC 29201, using the Corrective Action Invoice form. The initial invoice must be received at the above address within 4 months of CAP approval or funds will be uncommitted as required by S.C. Code Ann. § 44-2-40(B). If funds are uncommitted, the invoice will be held until funds become available. Payment will be in accordance with the documented completion of each component of this solicitation as defined in this Technical Specification Package.
10. LIMITATIONS: **The approved Corrective Action Cost will be final and will not be increased for any reason (e.g., unanticipated iron fouling of a system, wells clogging because of biological activity or sediments, damage by lightning, increased subcontractor costs, loss of utilities, modification to the system to meet the performance milestones, etc.) with the exception of: 1) unforeseen**

subsurface conditions as determined solely at the discretion of DHEC or 2) identification of additional FPP or CoC from a confirmed release that occurs subsequent to financial approval and that adversely impacts corrective action as determined by DHEC. Payment will only be made for achieving the performance milestones as set forth in Section III.B. No interim or partial payments will be made once corrective action is initiated. Once Active Corrective Action has been initiated, and in the event of a cancellation due to any of the conditions described in this Section, final payment, if appropriate, will be a percentage of the Corrective Action Cost as determined by DHEC.

Contractor-owned items used on-site for the corrective action that are damaged or destroyed by acts of nature, improper maintenance or handling, theft or vandalism will not be replaced or reimbursed by the SUPERB Account. The Site Rehabilitation Contractor cannot delay progress or suspend corrective action activities at the site without written approval from DHEC based upon a claim of a suspected new petroleum release from the UST system. Unless directed otherwise by DHEC, the Contractor must continue to perform corrective action activities during any period of time during which a new petroleum release from the UST system is being investigated. The Contractor must clearly demonstrate sufficient evidence of the release in the form of analytical test results or other demonstrative evidence to DHEC. The determination that a new petroleum release from the UST system has occurred that post-dates the financial approval, and that adversely impacts corrective action at the site, is in the sole discretion of DHEC. **In the event that all performance requirements are not achieved within the CACT stated in Section I this Active Corrective Action may be cancelled, and the Owner/Operator will be held to the requirements in Section II.A.5.**

12. PERIODIC MEETINGS: DHEC may require periodic meetings, as necessary, with the selected Contractor and the Owner/Operator via teleconference, at DHEC, or at the site to verify progress of the Corrective Action.

B. SPECIFIC REQUIREMENTS

1. SCOPE OF SOLICITATION: This technical specification package is for corrective action at one site in South Carolina.
 - a. The CACT for the site shall be entered on the Corrective Action Solicitation Response Form in Section IV.B.
 - 1) Time is of the essence in completing the site work to restore the aquifer and protect human health and the environment.

Therefore, the UST Site Rehabilitation Contractor is encouraged to strive for efficient corrective action methods and to propose the shortest practical completion time for the site.

- 2) The UST Site Rehabilitation Contractor shall enter the number of months in the space provided for the site in Section IV.B

2. INQUIRIES: A copy of the technical file will be available on-line at <https://scdhec.gov/environment/land-management/underground-storage-tanks/release-assessment-clean/active-corrective-0> until the CAP is approved. The technical file may also be reviewed at the FOI Office located at the Sims/Aycock Building, 2600 Bull Street, Columbia, SC 29201 (803-898-3882). All questions or requests for information must be submitted in writing to Debra Thoma, FAX number (803) 898-0673, in accordance with the date specified in Section I.C. After this date, no further questions or requests for information will be addressed. A written response will be provided.

III. SPECIFICATIONS FOR CORRECTIVE ACTION

A. GENERAL SPECIFICATIONS

1. SUBMITTALS: All Offerors must submit a completed Corrective Action Solicitation Response form (Section IV). All submittals must be either hand-delivered or mailed in a sealed envelope to SCDHEC, UST Management Division, 2600 Bull Street, Columbia, SC 29201, ATTN: Debra L. Thoma. The envelope must be marked as a Corrective Action Solicitation Response form for Broad River Amoco, UST Permit 11946. The response outlines in general terms the Offeror's approach to complete the scope of work as defined in this Technical Specification Package.

2. MINIMUM REQUIREMENTS: Corrective action will be considered complete when: 1) all components, as described in Section III.B, of this solicitation have been completed, 2) all assessment and corrective action components (e.g., piping, wells, trenches, etc.) have been removed from the site or are properly abandoned; and 3) the facility and associated adjacent properties have been restored to the condition that existed prior to assessment and corrective action in accordance with Section III.B. Per R.61-98, all site rehabilitation activities associated with a UST release must be performed by a DHEC-certified Class I Site Rehabilitation Contractor. The Contractor will be required to adhere to all applicable portions of the UST QAPP. A copy of UST QAPP is available at <https://scdhec.gov/environment/land-waste/underground-storage-tanks/release-assessment-clean/quality-assurance>. All

CAPs and reports must be sealed by a Professional Engineer or Professional Geologist registered in the State of South Carolina. All engineering reports, drawings and plans must be sealed by a Professional Engineer registered in the State of South Carolina. All laboratory analysis for CoCs must be performed by an SC-certified laboratory. All monitoring, verification, injection, and extraction wells must be installed and abandoned by an SC-certified well driller. All applicable certification, training, permits, applications, and fees associated with well installation; injection, discharge, treatment, or transportation of groundwater, air, or soil; construction or operation of a corrective action system; and any other action requiring a permit are the responsibility of the Contractor. Any required business or occupation licenses and occupational safety and health training (e.g. OSHA) as defined by the laws and regulations of the United States of America, the State of South Carolina, the county, or city are also the responsibility of the Contractor. The terms and conditions of all applicable permits will be met. Any contaminated soil and construction debris, contaminated water, and FPP must be properly transported and disposed of, or treated at, an approved facility with prior approval from DHEC. Any costs for utilities construction and service (electric, telephone, sewer, etc.) required by the corrective action are the responsibility of the Contractor.

B. PERFORMANCE REQUIREMENTS

1. **IMPLEMENTATION SCHEDULE:** There are three specific components to this solicitation: FPP removal, FPP migration control, and excavation. The free product migration control must be implemented first. The verification and/or monitoring methods proposed by the contractor, must be installed and tested immediately upon completion of the migration prevention control. Other items may be initiated as the contractor deems appropriate as stated in the CAP. The CAP may be one document detailing all required aspects detailed below or separate CAPs detailing each required component listed above, whichever the selected contractor determines to be most effective and efficient for the overall remediation strategy to be implemented at the site.
 - a. Remedy must be such that the barrier is effective until the time that Free Product Removal is completed. Remedy must be such that the migration prevention is deemed, and can be verified, effective prior to the implementation of excavation activities on the adjacent PlayPals property.

2. MIGRATION PREVENTION OF FREE PRODUCT ONTO PLAYPALS AND ADJACENT PROPERTIES

a. CORRECTIVE ACTION PLAN: The Contractor must complete and submit a detailed CAP and UST QAPP Contractor Addendum or Site-Specific Work Plan for corrective action within 30 days from receipt of a Notice to Proceed for CAP Preparation from DHEC from date of Award. Copies of the CAP must be distributed in accordance with Section II.A.8. **The corrective action method(s) or technology (ies) for FPP Removal must be installed on the Broad River Amoco Property.** It must be shown, by use of scientific models, computations, or discussion, how the migration of FPP will be prevented from moving off the Broad River Road Amoco Property onto the Playpals and adjacent properties and how the contractor plans to verify migration is not occurring. The intent of the migration prevention is to act as a permanent barrier to any current and future migration. Any assumptions used in a model will be listed or shown, as well as appropriate references. The contractor must provide detailed information on the two forms of verification and/or monitoring criteria ensuring that the proposed method is effectively providing hydraulic and migratory control of the free phase product. Specific construction details will be included in the CAP as well as details of assessment and corrective action component abandonment and removal.

The CAP must include a detailed description of the specific scope of work to be completed for CAP Implementation. Additionally, a detailed corrective action timetable that outlines the corrective action activities to be completed and includes demobilization and site restoration will be provided by the Contractor in the CAP. **The designated activities are required to be completed within 90 days of Notice to Proceed; therefore, the submitted timetable for this component shall not exceed that time frame.** Any extension request or submittal of a revised timetable should include an updated Corrective Action Completion Time (CACT).

DHEC will review the CAP or CAP addendum, as appropriate, and initiate a public notice period for a maximum of 30 days. The names and addresses of the owners of all impacted properties and all properties located adjacent to the impacted properties are provided in the Appendix. The Contractor may be required to attend and provide input at one or more public meetings upon request by DHEC. Any CAP amendments and modifications resulting from the public notice must be submitted within 15 days of notification by DHEC. The CAP and any amendments or modifications must be sealed by a qualified Professional Geologist or Engineer registered in the State of South Carolina. The Contractor shall consult with the UST Owner/Operator and any other

affected property owners regarding the location of the corrective action system and obtain written approval from them prior to implementation. Copies of the approval(s) should be included in the CAP Implementation Report. Any aboveground part of the system that is to remain on-site for longer than 30 contiguous days must be secured within a fenced area or building.

- b. PAYMENT:** Payment of 35% will be paid upon completion of installation of free phase product migration prevention barrier, as verified by DHEC. Payment of 30% will be paid upon verification that selected remedy is effective in mitigating the migration of free phase product, and the final 35% will be paid upon completion of final site inspection by DHEC to verify site restoration (See Section III.B.2.i for method of verification/inspection). Invoices will be submitted to: SCDHEC, Bureau of Land and Waste Management, UST Management Division, ATTN: Financial Section, 2600 Bull Street, Columbia, SC 29201, using the Corrective Action (CA) Invoice form. A separate invoice for the site must be delivered with the final reports. The final invoice must be received at the above address within 4 months of approval or funds will be uncommitted as required by the Section 44-2-40(B) of the SUPERB Act. If funds are uncommitted, the submitted invoice will be held until funding is available.
- c. PERMIT APPLICATIONS:** The Contractor must complete and submit all applications for permits (injection, NPDES, BAQC modeling form, thermal treatment, construction, etc.) with the CAP. All submitted applications must comply with the requirements of the respective permitting program. Any required permit changes or corrections will be submitted within 15 days of notification by DHEC.
- d. CAP IMPLEMENTATION:** After the CAP is reviewed and approved in accordance with R.61-92, Section 280.66, the DHEC UST Management Division will issue a Notice to Proceed with CAP implementation. **CAP Implementation must not proceed until a written Notice to Proceed is received from the UST Management Division.** The Contractor will implement the CAP within 30 days of receipt of the Notice to Proceed. If the CAP is not implemented in 30 days, a penalty of \$100 per day will be assessed for each calendar day late unless the Contractor obtains written approval from DHEC regarding a change in the implementation schedule. Any assessed penalty amounts will be deducted from the payment. If any problem with CAP implementation occurs, the Contractor will notify DHEC within 24 hours of problem identification and

will submit written documentation within 5 days of notification.

Disruption to the normal business at the site will be kept to a minimum. Any modification, relocation, disturbance, or destruction of physical structures or features as a result of CAP implementation must be approved in writing by the affected property owner prior to CAP implementation. The Contractor will return the site to the condition that existed prior to installation of the corrective action system (e.g., asphalt paved areas will be repaved with asphalt, concrete areas replaced with concrete, grass area will have soil replaced to the original grade and sod with grass, chain link fence replaced with chain link fence, etc.) or to a preferred condition as determined by the affected property owner. Any deviation in returning the site to the condition that existed prior to the implementation activity must be documented in writing by the Contractor and signed by the affected property owner. The Contractor will, at all times, keep the site free from waste materials and rubbish related to the corrective action. Until completion of the corrective action, the Contractor will keep the premises in a clean, neat and workmanlike condition satisfactory to DHEC. All soil and wastewater generated on-site will be removed from the site promptly. Manifests documenting the proper disposal of the soil, wastewater, or FPP must be included in the CAP Implementation Report. **If the CAP has been implemented and physical treatment activities performed, the Contractor will be required to complete the contract unless conditions outlined in Sections II.A.10 are encountered.**

- e. **UTILITY SURVEY:** After the UST Division issues a Notice to Proceed with CAP implementation and before CAP implementation occurs, the Contractor will conduct a utility survey of the site. The Contractor is responsible for identifying all surface and subsurface utilities.
- f. **PROPERTY ACCESS:** The Contractor will secure access from each affected property owner to complete the corrective action activities. The Contractor will be responsible for any equipment used for corrective action activities.
- g. **REPORTING:** Complete and submit an implementation report. Deliver one paper and one electronic (pdf) copy of each report to: SCDHEC, Bureau of Land and Waste Management, UST Division, 2600 Bull Street, Columbia, SC 29201. A copy of the report must be delivered to the parties listed on the Distribution List included in the Appendix for the site. The report for each site is due within 90 days from the Notice to Proceed.

All rehabilitation activities associated with the UST releases must be performed by a SCDHEC Certified Class I UST Site Rehabilitation Contractor. All air, soil, and groundwater analyses must be performed by a South Carolina certified laboratory.

Monitoring and verification of the effectiveness of the selected migration prevention method should be conducted on a quarterly basis throughout the course of the active corrective action contract period. The monitoring and verification reports should be included with the semi-annual CASE Reports.

- h. **DISPOSAL:** The Contractor must properly dispose of all contaminated water, contaminated soil, and FPP generated during the corrective action. The Owner/Operator of the UST facility is considered to be the generator. Treatment and disposal must be conducted at an SCDHEC-approved facility, and must be documented in the semi-annual CASE reports.
- i. **QUALITY ASSURANCE & VERIFICATION:** DHEC personnel may be on-site during implementation activities. DHEC personnel will complete an inspection of the site at the completion of implementation activities to ensure that the selected remedy is effectively performing as required. In addition to the two forms of verification and monitoring methods proposed by the contractor, the installation of verification monitoring wells will be required by DHEC for long term monitoring and verification of the effectiveness of the selected remedy. The costs for the installation of any required monitoring wells or pits should be considered part of the corrective action cost.
- j. **DEMOBILIZATION:** The Contractor will disassemble and remove any non-permanent components of the corrective action system within 60 days of a written Notice to Proceed received from the UST Management Division confirming that the free product migration prevention has been achieved and maintained as described in this solicitation. **Abandonment of any corrective action system, monitoring well, recovery well, remediation well, etc., may not proceed until a written Abandonment Directive is issued by the UST Management Division.** Disruption to the UST Owner/Operator's or property owner's business must be kept to a minimum.
- k. **SITE RESTORATION:** The Contractor must remove or properly abandon all pre-existing assessment and corrective action components (piping, monitoring wells, injection and/or extraction wells, trenches, etc.) within 60 days of

notification by DHEC that the performance milestone has been achieved and maintained as described this contract. Abandonment will be in accordance with South Carolina Well Standards and Regulations R. 61-71, the UST QAPP, and accepted industry standards for abandonment of trenches and piping/utility runs. Abandonment of any corrective action system, monitoring well, recovery well, remediation well, etc., may not proceed until a written Abandonment Directive is issued by the UST Management Division. Disruption to the Owner/Operator's or property owner's business must be kept to a minimum. The Contractor must provide DHEC with documentation of the abandonment and disposal of any remaining contaminated soil, contaminated groundwater, and FPP. Unless otherwise directed by DHEC, the Contractor will restore the site and adjacent properties to the condition that existed prior to assessment and corrective action (e.g., repaving, reseeding, etc.) as documented by the photographs included in the Initial Monitoring Report or other written documentation detailing a variance from the conditions documented by the photographs. Neither DHEC nor the SUPERB Account will be liable for any damages caused by the Contractor. As required by Section IV.A.4c of the SUPERB Site Rehabilitation and Fund Access Regulations R.61-98, the Contractor shall be required to indemnify the property owner, UST Owner/Operator and the State of South Carolina from and against all claims, damages, losses and expenses arising out of or resulting from activity conducted by the Contractor, its agents, employees or subcontractors. Under no circumstances will final payment exceed 35% of the Corrective Action Cost for this component.

3. **FREE PRODUCT REMOVAL AT BROAD RIVER AMOCO PROPERTY**

- a. **CORRECTIVE ACTION PLAN:** The Contractor must complete and submit a detailed CAP and UST QAPP Contractor Addendum or Site-Specific Work Plan for corrective action within 30 days from receipt of a Notice to Proceed for CAP Preparation from DHEC. Copies of the CAP must be distributed in accordance with the Solicitation. **The corrective action method(s) or technology(ies) will be designed to prevent vapors from entering onsite or adjacent structures for the duration of this contract.** It must be shown, by use of scientific models, computations, or discussion, how FPP will be removed by each method and technology proposed. Any assumptions used in a model will be listed or shown, as well as appropriate references. **The use of existing monitoring well(s) for injection, extraction, or FPP recovery purposes is not allowed.** Accordingly, the CAP may propose installation of additional injection, extraction, or compliance wells. Engineering and construction details will be included in the CAP as well as details of assessment and corrective

action component abandonment and removal.

The CAP must include a detailed description of the specific scope of work to be completed for CAP Implementation. Additionally, a detailed corrective action timetable that is consistent with the CACT submitted by the contractor, must outline the corrective action activities to be completed to achieve each interim performance milestone, outlines when each performance milestone will be achieved, and includes demobilization and site restoration will be provided by the Contractor in the CAP. Corrective action is required to be completed within 5 years from the effective date. The timetable shall itemize when the Contractor expects to meet the FPP removal, 60%, 90%, and 100% interim performance milestones. During corrective action, this timetable may be adjusted (as approved in writing by DHEC) if circumstances beyond the control of the Contractor arise. If the timetable is adjusted, or corrective action activities to be conducted deviate from the original proposed CAP, a CAP addendum must be submitted. Any request for an extension beyond the five year time frame must be made in writing by the awarded contractor and the contract may be extended with a written no cost extension granted by DHEC. Any extension request or submittal of a revised timetable should include an updated CACT. If the Contractor fails to meet the interim performance milestones in the proposed time frames, a remedy will be sought through the procedures outlined in this Solicitation.

DHEC will review the CAP or CAP addendum, as appropriate, and initiate a public notice period for a maximum of 30 days. The names and addresses of the owners of all impacted properties and all properties located adjacent to the impacted properties are provided in the Appendix. The Contractor may be required to attend and provide input at one or more public meetings upon request by DHEC. Any CAP amendments and modifications resulting from the public notice must be submitted within 15 days of notification by DHEC. The CAP and any amendments or modifications must be sealed by a qualified Professional Geologist or Engineer registered in the State of South Carolina. The Contractor shall consult with the UST Owner/Operator and any other affected property owners regarding the location of the corrective action system and obtain written approval from them prior to implementation. Copies of the approval(s) should be included in the CAP Implementation Report. Any aboveground part of the system that is to remain on-site for longer than 30 contiguous days must be secured within a fenced area or building.

b. PAYMENT:

- 1) Payment of 20% of the Corrective Action Cost will be made within 90 days following receipt of an invoice and documentation that the Contractor has completed CAP implementation for Free Product Removal activities. All corrective action activities must be as described in the CAP and are subject to the limitations of Section 44-2-40 of the SUPERB Act. The implementation should be documented in the CAP Implementation Report. The CAP Implementation Report must include the construction logs for all injection and/or extraction wells installed in accordance with the CAP.
- 2) Payment of 80% of the Corrective Action Cost will be made based on achieving interim and final FPP thickness reduction goals as verified in the SSTL wells and gauging points listed in the Appendix, in all injection and/or extraction wells, and in all verification wells. Payments will be made upon receipt of invoices and documentation that the Contractor has achieved interim and final goals of 60, 90 and 100% reduction of total FPP thickness above 0.01' by the implementation of corrective action. The FPP thicknesses are listed in the Appendix.
 - a. The first interim thickness reduction goal will be achieved when 60% of the total FPP thickness above .01' in the SSTL wells and gauging points listed in the Appendix is removed. The following formula will be used to calculate the percent total thickness reduction:
$$\frac{\text{sum of FPP thicknesses above } 0.01' \text{ from initial gauging} - \text{sum of FPP thicknesses above } 0.01' \text{ from subsequent gauging}}{\text{sum of FPP thicknesses above } 0.01' \text{ from initial gauging}}$$
 Payment of 15% of the Corrective Action Cost will be made upon confirmation by CASE report or upon verification (see Section III.B.3.j for the method of verification) that at least 60% of the total FPP thickness above 0.01' has been removed.
 - b. The second interim thickness reduction goal will be achieved when 90% of the total FPP thickness above 0.01' in the SSTL wells and gauging points listed in the Appendix is removed. The formula listed in the site rehabilitation section of the UST QAPP will be used to calculate the percent total reduction. Payment of 20% of the Corrective Action Cost will be made upon verification (see Section III.B.3.j for the method of verification) that at least 90% of the total FPP thickness above 0.01' has been removed. Prior to payment, DHEC will verify achievement of the second (90%) interim thickness reduction goal by gauging.
 - c. The final performance milestone will be achieved when 100% of the total FPP thickness above the SSTLs (at the time the bid is posted) in the SSTL wells and sampling points listed in the Appendix, has been verified as removed in accordance with Section III.B.3.j and Site Restoration has been

completed in accordance with Specifications of this solicitation. **Payment for the 100% removal of FPP above SSTLs and for Site Restoration will be made concurrently, ONLY when both have been achieved, and in accordance with the following conditions:**

- i. 40% of the Corrective Action Cost is allocated for achievement of 100% FPP removal above SSTLs. 100% removal of FPP above SSTLs must be verified in accordance with Section III.B.3.j following two consecutive quarters with all corrective action activities completely ceased in order for DHEC to issue a written Notice to Proceed for site restoration. FPP thickness must not exceed SSTLs in all wells and sampling points listed in the Appendix, in all verification wells, and at any point in the area of concern.
 - ii. 5% of Corrective Action Cost is allocated for site restoration. 5% of the total contract cost will be paid upon DHEC's receipt of an invoice, verification in accordance with Section III.B.3.j that 100% of FPP thickness above SSTLs have been removed (30% of Corrective Action Cost), and verification, with a final inspection by DHEC, that all assessment and corrective action components (e.g., piping, wells, trenches, etc.) have been removed from the site or properly abandoned, and the facility and associated adjacent properties have been restored to the condition that existed prior to assessment and corrective action (5% of Corrective Action Cost). Site restoration must be completed within 60 days from receipt of a Notice to Proceed from DHEC confirming that 100% FPP thickness above the SSTLs is verified to have been removed and site restoration may proceed.
- c. **PERMIT APPLICATIONS:** The Contractor must complete and submit all applications for permits (Injection, NPDES, BAQC modeling form, thermal treatment, construction, etc.) with the CAP. All submitted applications must comply with the requirements of the respective permitting program. Any required permit changes or corrections will be submitted within 15 days of notification by DHEC.
- d. **FREE PRODUCT REMOVAL CORRECTIVE ACTION PLAN IMPLEMENTATION:** After the CAP, QAPP Contractor Addendum or Site-Specific Work Plan, and all permit applications are reviewed and approved in accordance with the most current QAPP revision and R.61-92, Section 280.66, DHEC will issue a Notice to

Proceed with CAP implementation. The Contractor will implement the CAP within 30 days of receipt of the notice to proceed and any required permit to construct. A penalty of \$100 per day will be assessed for each calendar day late if the CAP is not implemented in 30 days unless the Contractor obtains written approval from DHEC regarding a change in the implementation schedule. Any assessed penalty amounts will be deducted from the initial payment. If any problem with CAP implementation occurs, the Contractor will notify DHEC within 24 hours of problem identification and will submit written documentation within 5 days of notification. Disruption to the normal business at the site will be kept to a minimum. Any modification, relocation, disturbance, or destruction of physical structures or features as a result of CAP implementation must be approved in writing by the affected property owner prior to CAP implementation. Upon completion of any required construction, DHEC will inspect the corrective action system and issue a permit to operate. The Contractor will, at all times, keep the site free from waste materials and rubbish related to the corrective action and maintain the site in a neat and workmanlike condition for the duration of the corrective action. All contaminated soil and construction debris, contaminated water, and FPP generated will be removed from the site promptly. Manifests documenting the proper disposal of contaminated soil and construction debris, contaminated water, and FPP must be included in the appropriate report. The Contractor will repair and/or restore the site/facility to the condition that existed prior to corrective action activities and as documented by the photographs included in the CAP Implementation Report in accordance with this Solicitation. Any deviation in returning the site/facility to the condition that existed prior to CAP implementation must be documented in writing by the Contractor and signed by the Owner/Operator and property owner.

Implementation of the CAP is not authorized until the Contractor receives a Notice to Proceed from DHEC. If unauthorized implementation occurs, DHEC will not reimburse related costs incurred by the Contractor from the SUPERB Account, and the Corrective Action Cost will be reduced by the amount of the incurred costs. If DHEC agrees with early implementation to better protect human health in an emergency and provides approval in writing, early implementation without any reduction to the Corrective Action Cost will be authorized.

A Corrective Action Plan Implementation Report will be due 60 days from the Notice to Proceed and shall include a description of work sufficient to document CAP implementation activities and the associated dates of work.

- e. **PROPERTY ACCESS:** The Contractor will secure access to the site and adjacent properties to sample wells and sampling points, and to install any corrective action components, as required. The Contractor will be responsible for corrective action components installed on adjacent properties. Costs to repair or replace components of the corrective action system damaged due to the actions of adjacent property owners cannot be paid by the SUPERB Account.
- f. **START-UP:** The Contractor will initiate corrective action within 15 days of receipt of the permit to operate, if required. Corrective action as defined by the CAP will begin upon start-up. NOTE: The application of corrective action technologies or natural fluctuations in the water table can mobilize FPP and cause possible appearance of FPP in non-SSTL wells and gauging points.
- g. **REPORTING:** The Contractor must complete and submit a CAP Implementation Report within 60 days of the Notice to Proceed. The Contractor must also complete and submit a Corrective Action System Evaluation (CASE) report on a quarterly schedule. The CAP Implementation Report and CASE reports will be distributed in accordance with Section II.A.8. The first CASE report is due within 90 days of the FPRCAP Implementation Report. CASE reports must be submitted regardless of the status of corrective action activities.

All wells and gauging points listed in the Appendix will be gauged on a quarterly schedule and sampled on a semi-annual schedule in accordance with the most current QAPP Revision. Following submittal of the CAP Implementation Report. The Contractor must submit a written request for a change in the protocol to DHEC. Approval for any reduction in the number of wells and gauging points to be gauged/sampled, or for any lengthening of the reporting interval, is at the sole discretion of DHEC.

CASE reports must include, at a minimum, all items stipulated in the Documents and Records section and Active Site Rehabilitation Procedures section of the most current QAPP Revision. CASE reports must also include any additional data required by permits (e.g., air analyses, wastewater effluent analyses, etc.). The Contractor will be provided with the proper report forms and reporting format prior to Corrective Action Plan implementation. DHEC will notify the Contractor regarding any revisions to the forms or format 60 days prior to the due date for the next CASE report.

h. **SAMPLING:** The Contractor must collect water samples from all wells and gauging points listed in the Appendix on a semi-annual schedule. Do not sample wells and sampling points containing measurable (>0.01') FPP. If measurable FPP is present, the thickness of product and depth to groundwater must be recorded to the nearest 0.01'. The sampling will be conducted in accordance with applicable portions of the most current QAPP Revision. Additional samples (air, groundwater, effluent, soil) required by permits must be collected in accordance with established QA/QC protocol and submitted to an SC-certified laboratory for analysis. The samples will be analyzed for parameters stipulated in the permits. Sampling and analytical data for each sample (e.g., field sampling logs, chain of custody forms, certificates of analysis, lab certification number) will be included in the CASE report.

The Contractor must submit a written request to DHEC for a change in the gauging protocol. Approval for any reduction in the number of wells and gauging points to be gauged is at the sole discretion of DHEC. The Contractor may choose to conduct gauging more frequently in order to document that a performance milestone has been achieved.

- i. **DISPOSAL:** The Contractor must properly dispose of all contaminated water, contaminated soil, and FPP generated during the corrective action. The Owner/Operator of the UST facility is considered to be the generator. Treatment and disposal must be conducted at an SCDHEC-approved facility, and must be documented in the CASE reports.
- j. **QUALITY ASSURANCE & VERIFICATION:** **If the Contractor anticipates that a performance milestone has been achieved, the Contractor must conduct a gauging event and submit the finalized gauging data electronically and via mail to DHEC for review. If the gauging event shows that the performance milestone has been achieved, the contractor must completely suspend corrective action and provide notification to DHEC. After 30 days, the contractor will conduct another gauging event. DHEC will schedule verification gauging to coincide with the contractor's gauging event. DHEC must be allowed at least 15 calendar days in order to schedule a time to conduct verification of the gauging event. Furthermore, the Contractor will be allowed one verification attempt during each reporting period for each of the performance milestones.**

Once gauging data indicate 100% FPP thickness reduction, the Contractor must completely suspend corrective action and provide notification to DHEC. After 30 days, the Contractor will gauge all wells and gauging points listed in the Appendix and all injection and/or extraction wells to verify that the final (100%) FPP thickness reduction goal has been achieved and maintained. If the goal is maintained, the date of the 30-day gauging event will be considered the start of the four-quarter, post-corrective action verification period. During the verification period, the Contractor will conduct quarterly gauging and semi-annual sampling of all wells and gauging points listed in the Appendix and all verification wells, and quarterly gauging of all injection and /or extraction wells. Do not sample wells and gauging points containing measurable ($>0.01'$) FPP. If measurable FPP is present, the thickness of product and depth to groundwater must be recorded to the nearest 0.01'. The samples should be analyzed for the parameters listed in the Appendix, and for dissolved oxygen, ferrous iron, methane, nitrate, and sulfate using the analytical methods and reporting limits detailed in the most recent QAPP Revision.

If gauging results show that the final (100%) FPP thickness reduction goal has not been maintained, and/or the FPP thickness exceeds 0.01' in any injection, extraction, or verification well, corrective action must be resumed. DHEC may require the Contractor to propose a revised corrective action strategy and timetable to achieve and maintain the goal. The strategy may require modification of the existing corrective action system. The post-corrective verification period will be suspended and corrective action will continue until the final (100%) FPP thickness reduction goal is again achieved. The Contractor will again suspend corrective action and gauge all wells and gauging points, and all injection and/or extraction points after 30 days. If the goal is maintained, a new verification period will begin. The aforementioned cycle of activity must be repeated until FPP thicknesses remain at or below 0.01' in all wells and gauging points listed in the Appendix, in all injection and/or extraction wells, and in all verification wells for 4 consecutive quarters.

DHEC may require installation of four (4) verification well(s) during the post-corrective action verification period at designated locations and depths. Costs for the verification wells will be considered part of the Corrective Action Cost. The SSTL for any verification well will be an FPP thickness of 0.01'.

DHEC will conduct gauging to verify achievement of the second (90%) interim FPP thickness reduction goal, to confirm the start of the four-quarter, post-corrective action verification period, and to confirm that corrective action goals

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have been maintained at the end of the verification period. DHEC may also conduct gauging to verify achievement of the first (60%) interim FPP thickness reduction goal.

If the Contractor anticipates that gauging by DHEC is warranted, and desires to participate or is required to participate in the gauging, DHEC must be allowed at least 2 weeks to schedule a mutually agreeable time for the gauging event.

- k. **DEMOBILIZATION:** The Contractor will disassemble and remove the corrective action system and associated components installed as part of this corrective action including piping, injection or extraction wells, or utilities within 60 days of a written Notice to Proceed received from the UST Management Division confirming that the 100% performance milestone has been achieved and maintained for 2 consecutive quarters as described in Section III.B.3.j. of this solicitation. Abandonment will be in accordance with the South Carolina Well Standards and Regulations R. 61-71, the UST QAPP, and the Contractor's ACQAP, and accepted industry standards for abandonment of trenches and piping/utility runs. **Abandonment of any corrective action system, monitoring well, recovery well, remediation well, etc., may not proceed until a written Abandonment Directive is issued by the UST Management Division.** Disruption to the UST Owner/Operator's or property owner's business must be kept to a minimum.
- l. **SITE RESTORATION:** The Contractor must remove or properly abandon all pre-existing assessment and corrective action components (piping, monitoring wells, injection and/or extraction wells, trenches, etc.) within 60 days of notification by DHEC that the 100% performance milestone has been achieved and maintained for 2 consecutive quarters as described in Section III.B.3.j. of this solicitation. Abandonment will be in accordance with South Carolina Well Standards and Regulations R. 61-71, the UST QAPP, and accepted industry standards for abandonment of trenches and piping/utility runs. Abandonment of any corrective action system, monitoring well, recovery well, remediation well, etc., may not proceed until a written Abandonment Directive is issued by the UST Management Division. Disruption to the Owner/Operator's or property owner's business must be kept to a minimum. The Contractor must provide DHEC with documentation of the abandonment and disposal of any remaining contaminated soil, contaminated groundwater, and FPP. Unless otherwise directed by DHEC, the Contractor will restore the site and adjacent properties to the condition that existed prior to assessment and corrective action (e.g., repaving, reseeding, etc.) as documented by the photographs

included in the Initial Monitoring Report or other written documentation detailing a variance from the conditions documented by the photographs. Neither DHEC nor the SUPERB Account will be liable for any damages caused by the Contractor. As required by Section IV.A.4c of the SUPERB Site Rehabilitation and Fund Access Regulations R.61-98, the Contractor shall be required to indemnify the property owner, UST Owner/Operator and the State of South Carolina from and against all claims, damages, losses and expenses arising out of or resulting from activity conducted by the Contractor, its agents, employees or subcontractors. Under no circumstances will payment for Site Restoration exceed 5% of the Corrective Action Cost for this component.

4. EXCAVATION OF PLAYPALS PROPERTY AND REPLACEMENT OF FRENCH DRAIN SYSTEM

- a. **EXCAVATION CORRECTIVE ACTION PLAN (ECAP):** The Contractor must submit a detailed ECAP within 30 days from the Notice to Proceed issued from DHEC. A site map depicting the area to be excavated is provided in the Appendix (Figure C). The ECAP must also identify any possible obstacles to excavating the designated area (e.g. utilities, etc.), type of equipment to be used for the excavation, size and number of trucks that will be used for hauling the contaminated soil, dewatering requirements, the disposal destination, excavation shoring information, and safety protocol to meet OSHA requirements.

The ECAP should include color photographs with date stamp of the site and surrounding properties to provide documentation of the condition of the site prior to implementation of any corrective action. The ECAP should include a UST QAPP Addendum/Site Specific Work Plan detailing the installation of up to four (4) monitoring wells in the area of concern after the excavation is complete.

A corrective action timetable including demobilization and site restoration will be provided by the Contractor. **The designated activities are required to be completed within 60 days of Notice to Proceed; therefore, the submitted timetable shall not exceed that date. The excavation activities are not to be initiated until installation of the free product migration barrier remedy is installed and has been verified as effective.** If the Contractor fails to complete the designated activities in the required time frame, a remedy will be sought by DHEC.

DHEC will complete a public notice period. The Contractor may be required to attend and provide input at one or more public meetings upon request by DHEC. Any ECAP amendments and modifications resulting from the public notice must be submitted within 15 days of notification by DHEC. The ECAP and any amendments or modifications must be sealed by a qualified Professional Geologist or Engineer registered in the state of South Carolina. The Contractor shall consult with affected property owners regarding the location of the excavation and obtain written approval from them prior to implementation. Copies of the approval should be included in the ECAP Implementation Report.

Implementation of the ECAP is not authorized until the Contractor receives correspondence from the UST Division indicating that the required public notice period has been successfully completed. If premature implementation occurs, the UST Division will not reimburse those costs from the SUPERB Account, and the bid award will be reduced by that amount. If SCDHEC agrees with early implementation to better protect human health in an emergency and provides approval in writing, early implementation without any reduction to the corrective action amount will be authorized.

- b. **PAYMENT:** Upon completion of final site inspection by DHEC to verify site restoration for the excavation component (See Solicitation Section III.B.4.p for method of verification/inspection), an invoice for this remedial action may be submitted. Invoices will be submitted to: SCDHEC, Bureau of Land and Waste Management, UST Management Division, ATTN: Financial Section, 2600 Bull Street, Columbia, SC 29201, using the Corrective Action (CA) Invoice form. A separate invoice for the site must be delivered with the final reports. The final invoice must be received at the above address within 4 months of CAP approval or funds will be uncommitted as required by the Section 44-2-40(B) of the SUPERB Act. If funds are uncommitted, the submitted invoice will be held until funding is available.
- c. **CAP IMPLEMENTATION:** After the CAP is reviewed and approved in accordance with R.61-92, Section 280.66, the DHEC UST Management Division will issue a Notice to Proceed with ECAP implementation. **CAP Implementation must not proceed until a written Notice to Proceed is received from the UST Management Division.** The Contractor will implement the CAP within 15 days of receipt of the Notice to Proceed. If the CAP is not implemented within 15 days, a penalty of \$100 per day will be

assessed for each calendar day late unless the Contractor obtains written approval from DHEC regarding a change in the implementation schedule. Any assess penalty amounts will be deducted from the payment. If any problem with ECAP implementation occurs, the Contractor will notify DHEC within 24 hours of problem identification and will submit written documentation within 5 days of notification.

Disruption to the normal business at the site will be kept to a minimum. The Contractor shall schedule activities such that the excavation, dewatering, backfilling, and site restoration activities are completed as one continuous operation without any significant delays or lag time. Any modification, relocation, disturbance, or destruction of physical structures or features as a result of CAP implementation must be approved in writing by the affected property owners prior to CAP implementation. The Contractor will return the site to the condition that existed prior to installation of the corrective action system (e.g., asphalt paved areas will be repaved with asphalt, concrete areas replaced with concrete, grass area will have soil replaced to the original grade and sod with grass, etc.) or to a preferred condition as determined by the affected property owner. Any deviation to returning the site to the condition that existed prior to the implementation activity must be documented in writing by the Contractor and signed by the affected property owner. The Contractor will, at all times, keep the site free from waste materials and rubbish related to the corrective action. Until completion of the corrective action, the Contractor will keep the premises in a clean, neat and workmanlike condition satisfactory to DHEC. All soil and wastewater generated on-site will be removed from the site promptly. Manifests documenting the proper disposal of the soil, wastewater, or FPP must be included in the Excavation report. **If the CAP has been implemented and physical treatment activities performed, the Contractor will be required to complete the contract unless conditions outlined in Solicitation Section II.A.10 are encountered.**

- d. **UTILITY SURVEY:** After the UST Division issues a Notice to Proceed with ECAP implementation and before excavation occurs, the Contractor will conduct a utility survey of the site. The Contractor is responsible for identifying all surface and subsurface utilities. In the event that the results of the utility survey indicate that it is not possible to proceed with excavation, the contract will be cancelled, and the Contractor will be reimbursed \$1,000.00 for personnel mobilization, utility survey, and survey report preparation and associated costs.

- e. **PROPERTY ACCESS:** The Contractor will secure access from each affected property owner to complete the excavation activities. The Contractor will be responsible for any equipment used for corrective action activities.
- f. **SAFETY OFFICER:** A person designated as a safety officer shall be on-site during all activities. This person shall ensure all individuals have appropriate OSHA training, coordinate and oversee excavation, ingress and egress from the excavation (if necessary). Access to the area being excavated/treated is restricted to only those individuals involved in the project, and is responsible for the general safety of all on-site personnel.
- g. **START-UP:** The Contractor will initiate corrective action immediately upon receipt of the Notice to Proceed. Corrective action as defined by the CAP will begin upon start-up. **NOTE: FPP may be present at this site. The application of corrective action technologies or natural fluctuations in the water table can mobilize FPP and cause possible appearance of FPP and/or elevated CoC concentrations in non-SSTL wells and sampling points.**
- h. **REPORTING:** Complete and submit an excavation report. Deliver one paper and one electronic (pdf) copy of each report to: SCDHEC, Bureau of Land and Waste Management, UST Division, 2600 Bull Street, Columbia, SC 29201. A copy of the report must be delivered to the parties listed on the Distribution List included in the Appendix for the site. The excavation report for each site is due within 90 days from the Notice to Proceed. The excavation report must include:
- 1) A narrative portion describing excavation, disposal activities and photographs of field work.
 - 2) A scaled site map showing the locations of buildings, roads, monitoring wells, the former UST system, utilities, and the excavation area superimposed.
 - 3) Pre-excavation and post-excavation compaction test results.
 - 4) A copy of the SCDHEC approval letter and manifests/ weight tickets for all contaminated soil, groundwater, or FPP removed from the site for treatment and/or disposal.
 - 5) 1903 Well Install Forms for any required replacement wells.
 - 6) Signature and seal by a Professional Engineer or Professional Geologist registered in the State of South Carolina.

All rehabilitation activities associated with the UST releases must be performed by a SC Certified Class I UST Site Rehabilitation Contractor. All air, soil, and groundwater analyses must be performed by a South Carolina certified laboratory.

- i. **REPLACEMENT OF FRENCH DRAIN:** The Contractor must include details for the replacement of the French drain in the CAP; detailing the methods by which the French drain will be removed and replaced. The French drain should be designed by a licensed engineer with experience in French drain design and construction, The French drain must be designed to provide sufficient drainage of the Playpals property, taking into account runoff from adjacent properties and decreased infiltration due to the impermeable barrier installation. General construction details must be included in the CAP (e.g., excavate 3,000 cubic yards of impacted soils, etc.). The Contractor will be required to remove and excavate the entire French drain that currently exists on the PlayPals Property, including all contaminated aggregate, fill, and soils surrounding the French drain.
- j. **EXCAVATION:** DHEC will be notified of the proposed excavation dates at least two weeks in advance of the excavation event. The area to be excavated and the estimated excavation depth are detailed in the Appendix of this Solicitation (Figure C). The contractor should be prepared to dewater the area and be able to handle saturated soils. The excavation must be backfilled with properly compacted clean soil, a persulfate compound, an oxygen releasing compound (ORC), an impermeable barrier compatible with the ORC installed at 3 feet below grade, and then leveled to the existing grade. All excavation activities must be conducted in strict accordance with 29 CFR 1926. See Section III.B.4.m for specifications.
- k. **DEWATERING:** Excavation will extend below the water table interface. An approved method to address dewatering, containment, and disposal of petroleum impacted water shall be on-site to remove any FPP and petroleum impacted groundwater that may enter the open excavation. The proposed method for dewatering should meet all QAPP requirement, state and federal regulations, and be detailed in the selected contractor's CAP.
- l. **EQUIPMENT:** The Contractor is responsible for selecting the appropriate type and size of excavation equipment. The Contractor selected shall consider at a minimum:

- 1) The excavation will take place on tax parcels R06108-04-67 and R06108-04-68. The northwest side is bounded by State Road S-40-929 and the northeast side by the Broad River Amoco site. The southeast and southwest sides are each bounded by an adjacent property and a fence. An aerial photograph is provided in the Appendix (Figure C).
 - 2) Excavation is anticipated to continue below the water table. Appropriate equipment to maintain dewatering during excavation activities will be the responsibility of the selected Contractor and should be considered in the price of the bid.
 - 3) The area to be excavated varies in width and length but will extend to a depth of 7 feet.
 - 4) There are 4 monitoring wells in the excavation area that will need to be abandoned prior to excavation (MW-11A, MW-11B, MW-18A & MW-18B).
 - 5) Up to 4 monitoring wells will be installed, in locations to be determined by the project manager in consultation with the property owner, after the excavation and backfill is complete. A UST QAPP Addendum/Site Specific Work Plan is to be submitted detailing the installation of the monitoring wells.
 - 6) Sheet piling may be necessary for this excavation.
 - 7) Sampling: Upon completion of excavation activities and prior to backfilling, one soil sample should be collected from every sidewall of each excavation area (Conceptual ORC Distribution Zones) at a depth of 4-5 feet and one from the center of the bottom of the excavation, for a total of up to 5 for each excavation area. The samples should be analyzed for the parameters as shown in the Appendix. The location of the samples should be depicted on a site map included in the CAP implementation report and the results should be provided as an Appendix to the report.
- m. **BACKFILL & COMPLETION:** The open excavation pit shall be 7 feet deep. A total of 15,000 pounds of a selected Persulfate compound and 15,000 pounds of an appropriate ORC shall be mixed with clean soil and placed in the bottom of the open excavation pit from 7 to 3 feet below grade. The mixture of soil and chemicals should meet the compaction requirements as stated in ASTM D698. The selected ORC compound, regardless of the name brand or vendor, must generate a minimum of 2,700 pounds oxygen over a minimum 6-month time period. The distribution of the Persulfate compound and ORC vary by depth interval (7'-5', 5'-4', 4'-3'), and zone (1-7), and should be added in accordance with the approximate values and locations found in the three (3) Conceptual Persulfate & ORC Distribution Figures located in the Appendix.

Addition of the amendment shall be completed in accordance with the manufacturer's instructions.

The excavation shall be backfilled in compacted lifts with subsoil type S-1 structural fill material. Thickness of the lifts should be determined based on the compaction method to be utilized. No amendments to the structural fill shall be added shallower than 3 feet below grade. Each lift shall be compacted to 95% of the Standard Proctor maximum dry density as determined by ASTM D698. The contractor shall perform a minimum of one set of density tests for each vertical foot required. Density tests must be evenly distributed throughout the excavation area. Locations and results of the post excavation tests will be submitted in the excavation report. An impermeable liner will be placed at 3 feet below grade and then extended to the top edge of the pit. Above the impermeable liner, from 3 feet below grade to grade, will be the French Drain replacement.

- n. **SECURITY:** During excavation activities, the contractor is responsible for securing the excavation (e.g. flagging, cones, barriers, etc.) in order to prevent unauthorized persons or traffic from entering the area. A security fence surrounding the excavation may be necessary. In the event that excavation is not completed at the end of the workday, the contractor must ensure that the excavation area remains secured overnight.
- o. **DISPOSAL:** The Contractor must properly dispose of all contaminated water, contaminated soil, free phase product, and construction debris generated during the corrective action. In the case of an orphan site, the Contractor will be considered the generator. Treatment and disposal must be conducted at a SCDHEC-approved facility, and must be documented in the Excavation Report.
- p. **QUALITY ASSURANCE & VERIFICATION:** DHEC personnel may be on-site during excavation and French drain replacement activities. DHEC personnel will complete a final inspection of the site to verify that the site has been restored to a condition as good as or better than the condition that existed prior to excavation and French drain removal.
- q. **SITE RESTORATION:** Disruption to the site's normal business will be kept to a minimum. All disturbed ground surfaces shall be leveled. Ground covering should be replaced with same material that existed prior to excavation. Photographs of the site before, during and after excavation shall be included in the final Excavation Report.

IV. CORRECTIVE ACTION SOLICITATION RESPONSE FORM

A. ACCEPTANCE and DELIVERY STATEMENT

In compliance with the solicitation and subject to all conditions thereof, the UST Site Rehabilitation Contractor agrees, if selected by the UST Owner/Operator within _____ days from the date of financial approval form submittal, to complete the corrective action as specified at the price set forth for the site as stated below. For the purpose of this submittal and possible acceptance of financial approval, I certify that this company understands the nature of the release(s) and the geologic conditions at the site as documented in the technical file and this solicitation. **Any quantities listed in the corrective action method(s) below are estimates and changes to those quantities or to the listed method(s) will not affect the financial approval amount.** Additionally, I certify that this company understands that acceptance is based on total cost to treat the area of concern.

UST Site Rehabilitation Contractor (Print)

UST Site Rehabilitation Contractor Certification #

Registered Professional Name (Print)

Registered Professional Signature (required)

P.G. P.E. (check appropriate box) Professional Certification # _____

B. CORRECTIVE ACTION SOLICITATION RESPONSE

Please respond to the following questions for Broad River Amoco, UST Permit #11946, 4355 Broad River Rd., Columbia, SC:

1. PREVENT MIGRATION OF FREE PRODUCT ONTO PLAYPALS AND ADJACENT PROPERTIES
 - a. State and describe the corrective action method(s) or technology(ies) that will be discussed in detail in the CAP to effectively prevent migration of FPP onto Playpals and adjacent properties and achieve all reduction milestones in 90 days, should financial approval occur. Only method(s) and/or technology(ies) that will be implemented on site should be included. Attach an additional sheet if necessary.

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b. Please provide the two method(s), which will be discussed in detail in the CAP, used to verify that both the short term and long term migration prevention system meets the design objective and monitor the physical and/or chemical effectiveness of method(s) or technology(ies) listed in Section III.B.2.

c. The Corrective Action Cost for this component is _____,
in whole dollars, regardless of the type, quantity, or duration of the permitted
technology applied, to prevent the migration of the free phase product
onto Playpals and adjacent properties; complete all associated monitoring and post-
corrective action verification; prepare all plans, reports, and correspondence; obtain
and meet all terms and conditions of all required permits and licenses; design, install,
monitor, operate, maintain, and when completed, properly abandon and/or remove all
assessment and corrective action components, if necessary; and complete other items
outlined in this solicitation

- d. Please provide a cost breakdown and estimated timetable (as shown in Solicitation Section VIII.4.A) for implementation as well as attainment of contractual remediation goals pertaining to this specific component.

2. FREE PRODUCT REMOVAL AT BROAD RIVER AMOCO PROPERTY

- a. Please provide detailed information as to how the active corrective action treatment techniques that will be discussed in the CAP will, in accordance with this solicitation, effectively remove free phase product to reach target SSTL values and achieve all performance milestones within the 5 year contract period. Please include the number of proposed injection points, proposed number of extraction points, proposed volume of excavated material, proposed volume of injected material, etc. Only method(s) and/or technology(ies) that will be implemented on site should be included. Attach an additional sheet if necessary.

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b. The Corrective Action Cost, pertaining to this specific component, in whole dollars is _____, regardless of the type, quantity, or duration of the permitted technology applied, to treat the area of concern shown in the Appendix such that FPP thickness does not exceed SSTLs at any point in the area of concern; complete all associated monitoring and post-corrective action verification; prepare all plans, reports, and correspondence; obtain and meet all terms and conditions of all required permits and licenses; design, install, monitor, operate, maintain, and when completed, properly abandon and/or remove all assessment and corrective action components; and complete other items outlined in this solicitation.

c. Please provide how the corrective action costs stated in item #1b will be allocated for the corrective action activities listed in item #2a to include, but not limited to, sampling/analyses over the entire duration of the contract, corrective action system installation, site restoration, etc. Attach an additional sheet if necessary.

d. The CACT, in months, to achieve all performance milestones from the date of CAP implementation until the final corrective action performance milestone have been achieved and maintained for 2 consecutive quarters is ____ months. All activities must be completed within 5 years of the effective date. Any request for an extension beyond the 5 year time frame must be made in writing by the Owner/Operator and the CACT may be extended with a written no cost extension granted by DHEC.

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

e. Please provide a cost breakdown and estimated timetable (as shown in Solicitation Section VIII.4.A) for implementation as well as attainment of contractual remediation goals pertaining to this specific component.

3. EXCAVATION OF PLAYPALS PROPERTY AND REPLACEMENT OF FRENCH DRAIN SYSTEM

a. The Corrective Action cost is _____, in whole dollars, to complete all component tasks as described in this solicitation including, but not limited to, excavation of the impacted soil, sheet piling, dewatering, addition of the amendments (Persulfate Compound & Oxygen Releasing Compound), backfilling and compaction of clean fill, installation of up to 6 replacement monitoring wells, preparation of all documentation/reports, and replacement of the French drain.

b. Please provide the manufacturer and name of the proposed Persulfate Compound & Oxygen Releasing Compound (ORC) to be used in backfill of the excavation area.

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

4. TOTAL CORRECTIVE ACTION COST FOR ALL COMPONENTS:

- a. Please provide an estimated timetable for implementation of all proposed techniques discussed in Item 1, 2, and 3 as well as attainment of all performance milestones (i.e. Free Product Removal, 60% reduction, 90% reduction, 100% reduction, etc.) **Please note, the table is for example purposes only and not inclusive, actual line items to be included may vary depending on the technology and costs that will actually be incurred. All anticipated costs should be accounted for in the table along with the appropriate time for completion.**

Item	Cost	Time (date)
Preconstruction Cost		
Baseline Sampling	\$9,500	July 2020
Surfactant Selection	\$15,000	August 2020
CAP Design	\$10,000	August 2020
Construction Cost		
Site Preparation	\$8,000	September 2020
Well Installation/Drilling Services	\$25,000	October 2020
Drill Cuttings/Disposal	\$3,000	October 2020
Surfactant Cost	\$40,000	September 2020
Chemical Injection Cost	\$25,000	September 2020
Installation of Air Sparging/Vapor Extraction	\$35,000	October 2020
Soil Excavation	\$45,000	November 2020
Soil amendments & Backfill costs	\$20,000	November 2020
AFVR w/ off gas (10 events/96 hours)	\$85,000	July 2023
Wastewater/Product Disposal (200,000 gallons)	\$95,000	July 2023

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Skimmers/Socks	\$6,500	July 2023
Operations & Maintenance Costs		
Labor Costs	\$85,000	August 2025
Utilities/Indirect Misc Cost	\$23,000	August 2025
Analytical/Groundwater Sampling (# events & frequency)	\$65,250	August 2025
Total	\$595,250	

Appendix

Distribution List for Plans and Reports

	Contact Name	Contact Address	Tax Map #
1.	Frederick Cecchini	429 Press Lindler Road, Columbia, SC 29212	R06108-04-69
2.	Broad River C Store LLC	41 Cromwell Court, Irmo, SC 29063	R06108-04-69
3.	William R & Bonnie B Saville Trust	4209 Wade Street, Columbia, SC 29210	R06108-04-68 R06108-04-67
4.	Wesley E Gray	141 Turnberry Lane, Lexington, SC 29210	R06108-04-66
5.	Todd W Mielke	133 Timmons Road, Chapin, SC 29036	R06108-04-65 R06108-04-30 R06108-04-29
6.	W & G Investments LLC	141 Turnberry Lane, Lexington, SC 29072	R06108-04-64
7.	Betty Barry	1231 Dothan Road, Columbia, SC 29210	R06108-04-31
8.	Janice Bernice Lucke	1251 Dothan Road, Columbia, SC 29210	R06108-04-28
9.	James R & Wendy S Rice	22 Caddis Creek Court, Irmo, SC 29063	R06108-04-27
10.	MDC Associates	4403 Broad River Road, Columbia, SC 29210	R06108-04-26 R06108-04-25
11.	David G Noto Trust	4417 Broad River Road, Columbia, SC 29210	R06108-04-24
12.	Herteline Lowman	4315 Broad River Road, Columbia, SC 29210	R06108-04-70
13.	Rolling Pines Horizontal	PO BOX 290189, Columbia, SC 29229	R06108-04-74
14.	State of South Carolina	Wade Hampton Building, Columbia, SC 29201	R06108-05-01
15.	State of South Carolina	General Services, 300 Gervais Street, Columbia, SC 29201	R06200-03-02
16.	State of SC State Law Enforcement Division	4400 Broad River Road, Columbia, SC 29221	R06200-03-04

*Information is subject to change due to sale or other exchange of property

Adjacent Facilities

	Facility Name	Facility Address	UST Permit #
1.	Sam's Food Mart 4	4140 Broad River Road, Columbia, SC 29210	07891
2.	Broad River Fueling Facility	4424 Broad River Road, Columbia, SC 29210	18391
3.	SLED	4400 Broad River Road, Columbia, SC 29210	13776
4.	SC Computer Data Center	4430 Broad River Road, Columbia, SC 29210	18422
5.			

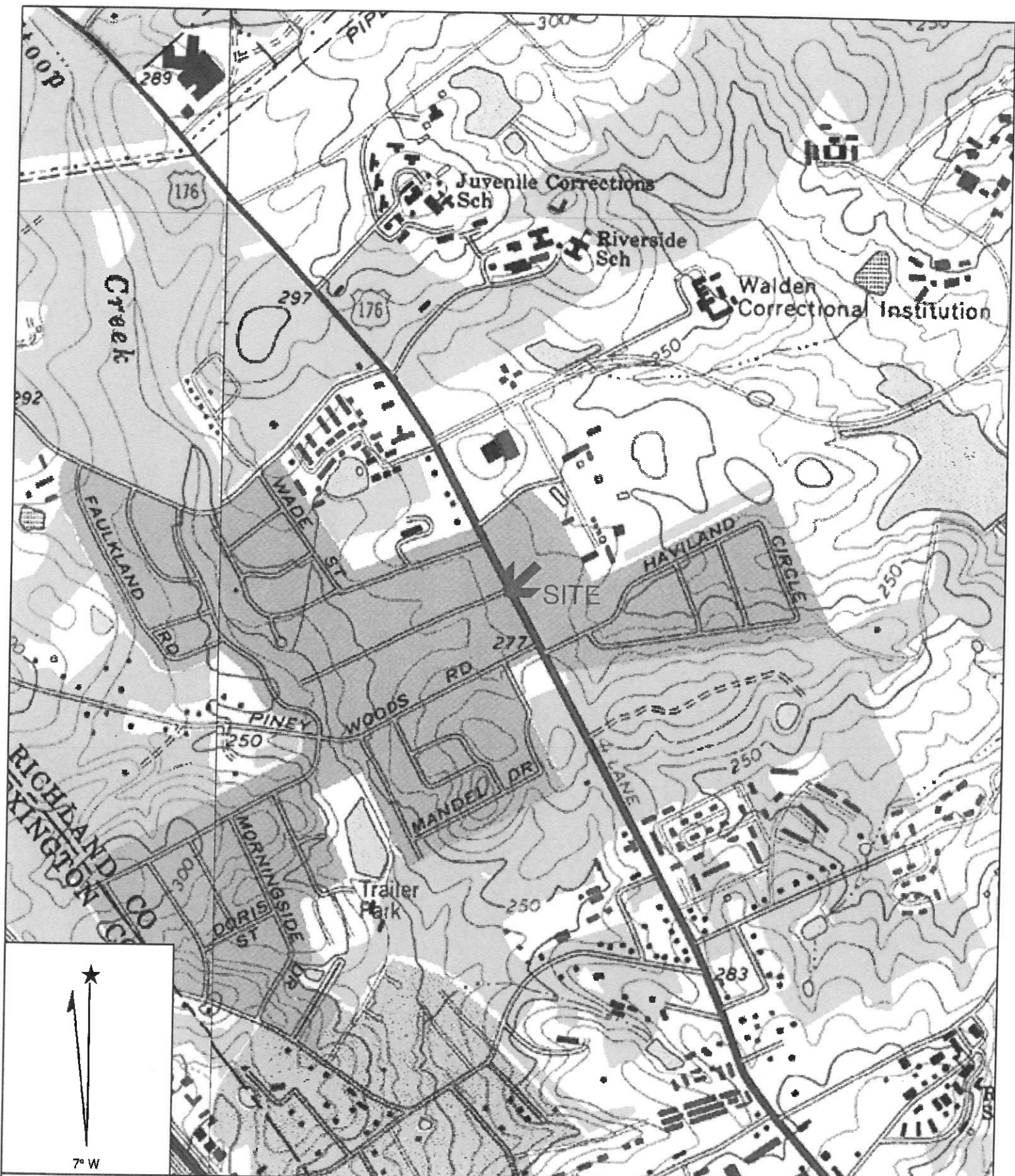
Analytical Parameters

Analyte	Analytical Method	Reporting Limit
BTEX	8260B	5 µg/L
MTBE	8260B	5 µg/L
Napthalene	8260B	5 µg/L
1,2-DCA	8260B	5 µg/L
EDB	8011	0.02 µg/L
TAA	8260B	100 µg/L
TAME	8260B	10 µg/L
ETBA	8260B	100 µg/L
TBA	8260B	100 µg/L
TBF	8260B	50 µg/L
DIPE	8260B	5 µg/L
Ethanol	8260B	200 µg/L
ETBE	8260B	10 µg/L

Verification Wells

Number (4) verification well(s) may be installed during the post-corrective action verification period at locations designated by the UST Program. Costs for the well installation(s) are considered part of the approved Corrective Action Cost. The UST Program will calculate SSTLs for the verification well(s) and provide data to the contractor in writing. During the verification period, all wells must be sampled for the parameters listed in the Analytical Parameters Table as well as the following parameters:

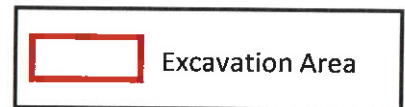
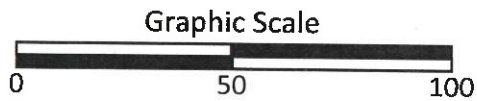
Analyte	Analytical Method	Reporting Limit
Dissolved Oxygen	SM4500-O G	500 µg/L
Ferrous Iron	SM3500-Fe D	30 µg/L
Methane	Kerr Method	1000 µg/L
Nitrate	9056/9210	100 µg/L
Sulfate	9038/9056	1000 µg/L



Name: COLUMBIA NORTH
 Date: 5/8/2019
 Scale: 1 inch equals 1000 feet

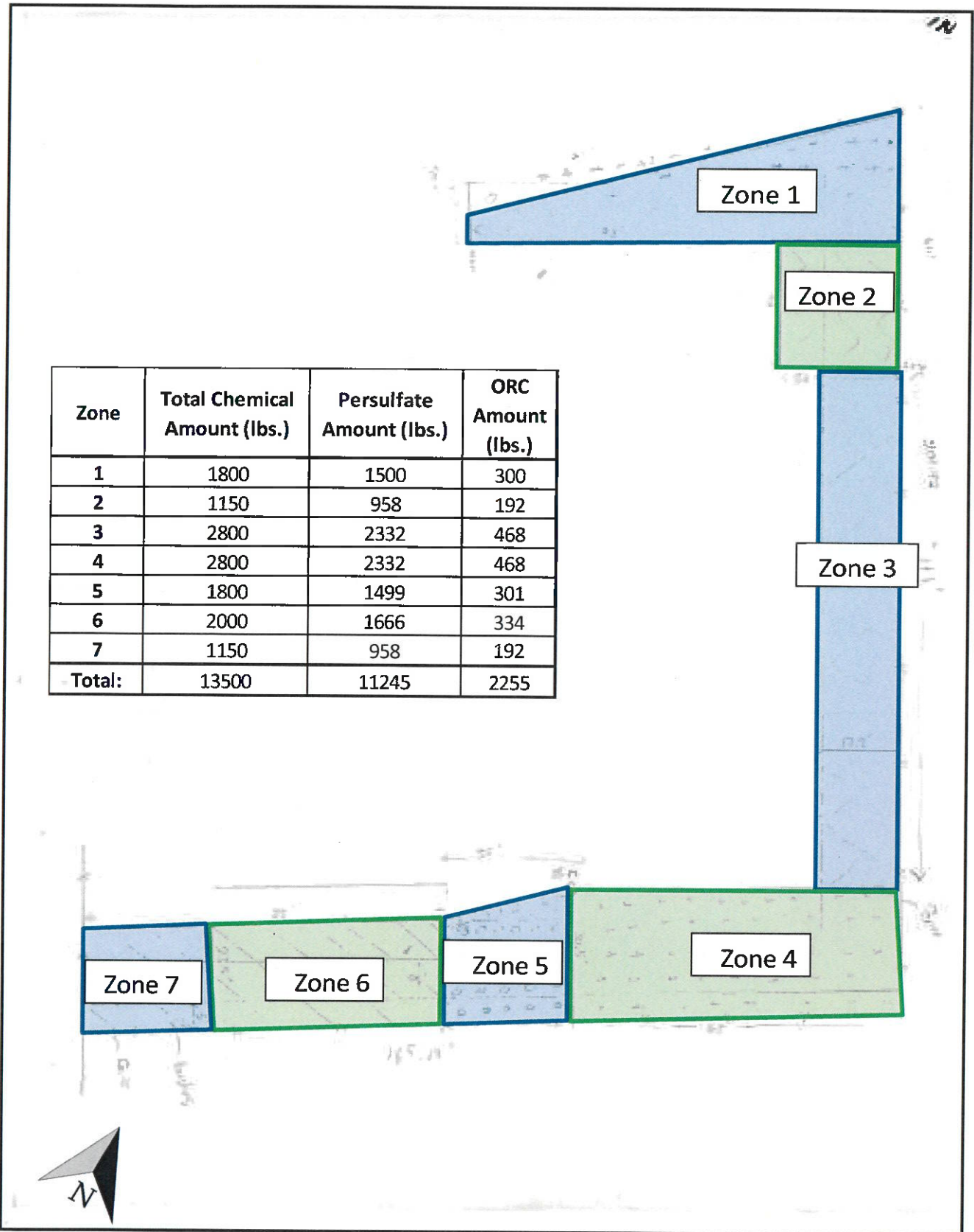
Location: 034° 03' 54.9" N 081° 07' 01.6" W
 Caption: Figure 1
 Broad River Amoco, Site 11946
 CTSI Proj. No. 18-6580

FIGURE C
Approximate Excavation Area



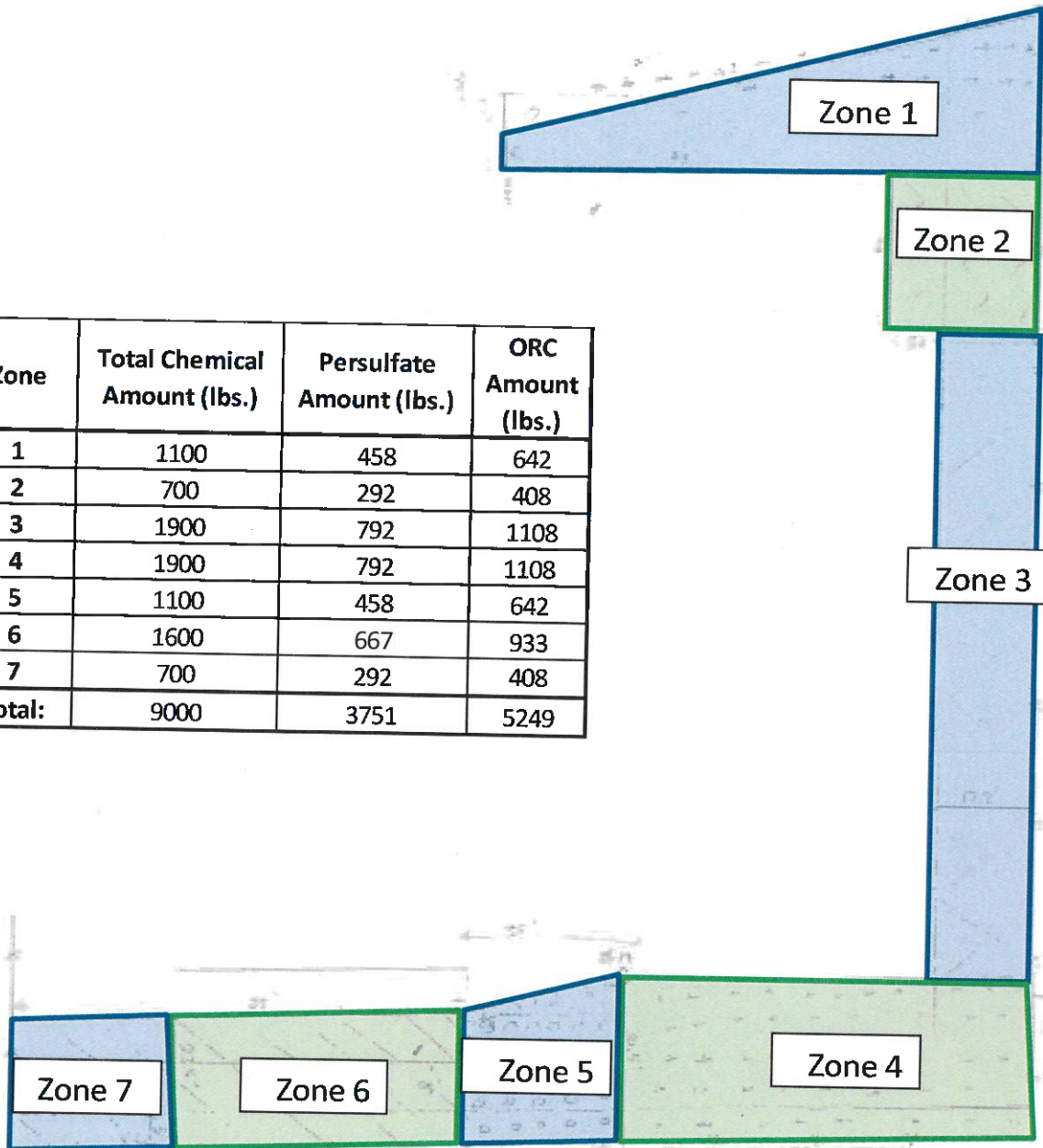
Total Approximate Area: 9,255 ft²
Total Approximate Volume: 1,376 yd³

Conceptual Persulfate & ORC Distribution – 7-5 ft Vertical Treatment Interval



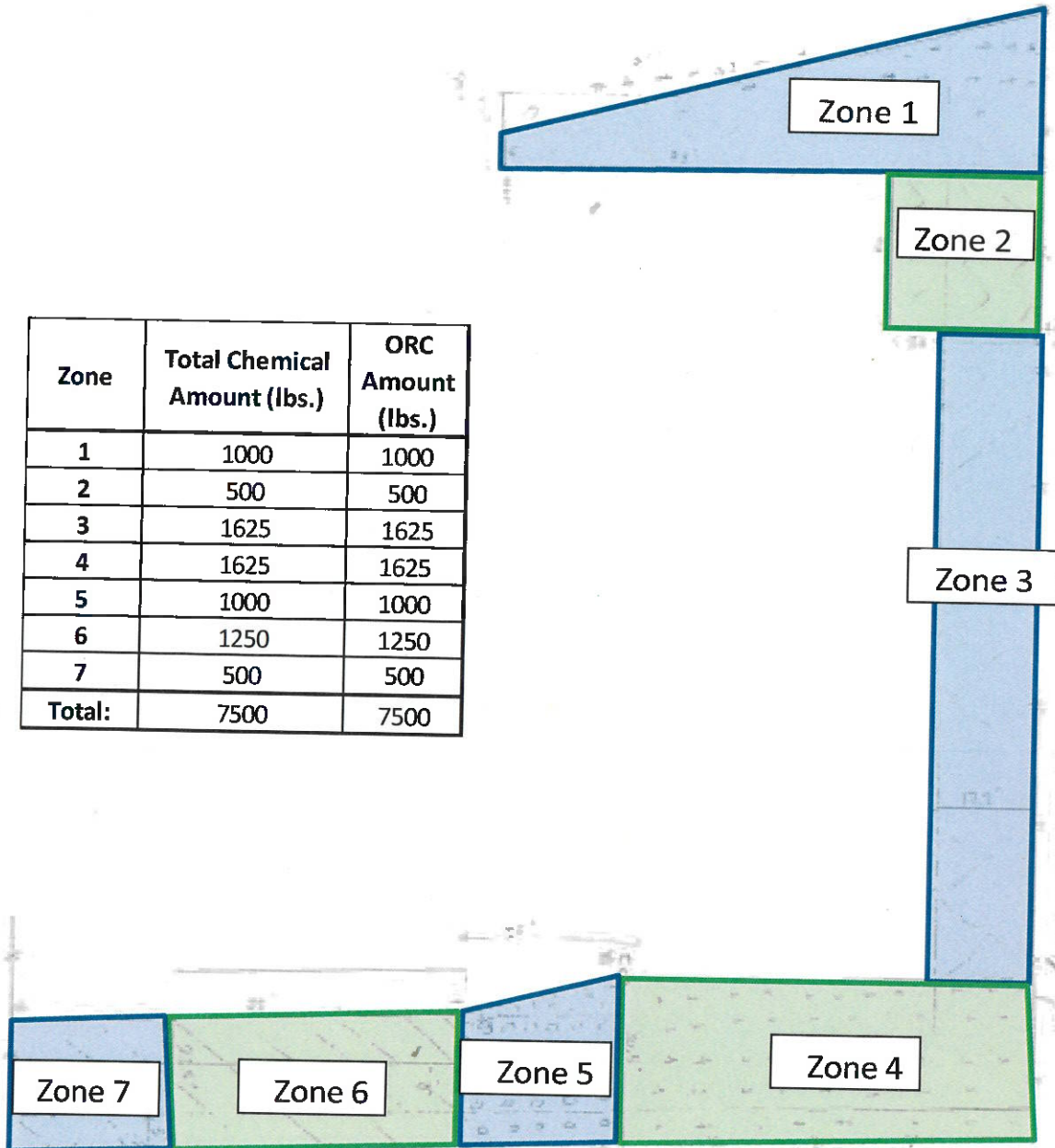
Conceptual Persulfate & ORC Distribution – 5-4 ft Vertical Treatment Interval

Zone	Total Chemical Amount (lbs.)	Persulfate Amount (lbs.)	ORC Amount (lbs.)
1	1100	458	642
2	700	292	408
3	1900	792	1108
4	1900	792	1108
5	1100	458	642
6	1600	667	933
7	700	292	408
Total:	9000	3751	5249



Conceptual Persulfate & ORC Distribution – 4-3 ft Vertical Treatment Interval

Zone	Total Chemical Amount (lbs.)	ORC Amount (lbs.)
1	1000	1000
2	500	500
3	1625	1625
4	1625	1625
5	1000	1000
6	1250	1250
7	500	500
Total:	7500	7500



Dissolved CoC Groundwater Concentrations collected during Sampling/Gauging event conducted in April 2019.

Monitoring Well ID#	FPP Thickness 3/2019	FPP Thickness 7/2019	FPP Thickness 11/2019	FPP Thickness 07/2020	Benzene	Toluene	Ethylbenzene	Xylenes	MRBE	Naphthalene	1,2 DCA	EDB	TAA	TAME	ETBA	TBA	TBF	DIPE	Ethanol	ETBE
MW-1					2100	8900	2600	9800	62	600	<40	<0.019	3200	<42	<800	<800	<200	<40	<5200	<40
MW-2	0.49				12000	17000	1300	7000	15000	350	<80	0.12	33000	240	<1600	11000	<400	<80	680000	<80
MW-3		1.77	5.11	3.74	340	56	21	250	6.2	36	<2	<0.022	98	<2.1	<40	<40	<10	<2	<260	<2
MW-4		0.01			7200	720	3300	5200	5800	930	<80	<0.020	3200	150	<800	4100	<200	<40	<5200	<40
MW-5	0.19	0.01		2.2	20000	38000	3300	17000	5900	630	<80	<0.019	7200	200	<1600	2400	<400	<80	3000000	<80
MW-6A					<0.40	0.52	<0.40	0.61	<0.40	<0.40	<0.40	<0.021	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-6B					<0.40	2.6	<0.40	2.8	<0.40	<0.40	<0.40	<0.019	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-7A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.021	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-8A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-08B					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-9A					2	13	2.8	24	1.7	1.5	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-9B					<0.40	<0.40	<0.40	<0.45	1.7	<0.40	<0.40	<0.019	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-10A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-10B					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-11A					2.2	<0.40	<0.40	<0.45	0.77	0.47	<0.40	<0.021	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-11B					<0.40	<0.40	<0.40	<0.45	0.56	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-12A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-12B					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-13A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-13B					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-14A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-14B					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.021	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-15A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.021	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-15B					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-16A					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-16B					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-17B					62	0.51	0.74	11	270	6	2	<0.020	520	0.95	<8.0	1600	<2.0	5.6	<52	1.7
MW-18A					2700	5400	530	2400	96	65	<20	<0.020	530	<21	<400	<400	<100	<20	<2600	<20
MW-18B					<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-19B					1.1	0.82	<0.40	<0.45	<0.40	<0.40	<0.40	<0.021	20	<0.42	<8.0	20	<2.0	<0.40	<52	<0.40
MW-20A					22	88	41	240	0.44	17	<0.40	<0.021	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-20B					<0.40	<0.40	<0.40	<0.45	11	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40

Dissolved CoC Groundwater Concentrations collected during Sampling/Gauging event conducted in April 2019.

Monitoring Well ID#	FPP Thickness 3/2019	FPP Thickness 7/2019	FPP Thickness 11/2019	Benzene	Toluene	Ethylbenzene	Xylenes	MRBE	Naphthalene	1,2 DCA	EDB	TAA	TAME	ETBA	TBA	TBF	DIPE	Ethanol	ETBE
MW-21A				4.9	<0.40	<0.40	<0.40	0.77	<0.40	<0.40	<0.020	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-21B				<0.40	<0.40	<0.40	<0.40	<0.45	3.6	<0.40	<0.019	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-22A				<0.40	<0.40	<0.40	<0.40	<0.45	<0.40	<0.40	<0.019	<8.0	<0.42	<8.0	<2.0	<2.0	<0.40	<52	<0.40
MW-22B				<0.40	<0.40	<0.40	<0.40	<0.45	6.7	<0.40	<0.020	<8.0	<0.42	<8.0	9.5	<2.0	<0.40	<52	<0.40
MWR2-1				16	0.76	4.3	3.9	120	1.20	<0.40	<0.020	430	1.5	<8	72	<2.0	2.2	<52	<0.40
MWR2-2				3000	17000	830	11000	1200	330	<40	3.9	2800	<42	<800	<800	<200	<40	<5200	<40

Recovery Well ID#	FPP Thickness 3/2019	FPP Thickness 7/2019	FPP Thickness 11/2019	FPP Thickness 07/2020
RW-1				
RW-2				
RW-3				
RW-4				
RW-5		0.01	0.03	0.02
RW-6				
RW-7				
RW-8				
RW-9				
RW-10	0.37	0.03	8.64	0.03
RW-11				
RW-12			0.02	0.51
RW-A	0.02	0.05	0.03	0.02
RW-B	10	2.22	1	0.08
RW-C	0.07	0.12		0.85
RW-D				

Vapor CoC Concentrations (ug/m3) for event conducted December 5, 2018

	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MtBE	MtBE
A-1	2.6	9.91	2.03	10.36	<1.05	<0.721	<0.721
A-2	NA	NA	NA	NA	NA	NA	NA
A-3	183	1790	530	2956	12.9	<0.721	<0.721
A-4	19	120	29.4	199	2.43	<0.721	<0.721
SG-1	28.6	23.5	<23.6	<47.3	<28.5	<19.6	<19.6
SG-2	<6.39	30.4	<8.69	47.1	10.5	<0.721	<0.721
SG-3	5.69	43.3	11.2	64.5	2.69	<0.721	<0.721
SG-4	3.45	32.8	9.16	55.6	1.64	<0.721	<0.721
SG-5	4.54	40.3	12.2	73.9	2.63	<0.721	<0.721
SG-6	22.8	52.4	12.6	73.8	<10.5	<0.721	<0.721

Vapor CoC Concentrations (ug/m3) for event conducted June 2019

	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MtBE	EBD
A-1	0.677	2.82	0.304	3.27	<1.05	<0.721	0.117
A-2	NA	NA	NA	NA	NA	NA	NA
A-3	1.03	5.28	4.06	13.24	1.32	<0.721	0.36
A-4	2.2	2.59	0.604	2.933	<1.05	<0.721	0.295
A-5	1.02	6.82	0.5	3.8	<1.05	<0.721	0.105
A-6R	0.393	1.09	0.161	0.573	<1.05	<0.721	<0.081
A-7	0.361	2.69	0.208	1.107	21.1	<0.721	0.17
SG-1	<0.639	5.69	1.06	4.81	<1.05	<0.721	<0.809
SG-2	<0.639	7.12	1.44	6.72	<1.05	<0.721	<0.809
SG-3	<0.639	4.33	0.921	1.12	<1.05	<0.721	<0.809
SG-4	<0.639	6.93	1.65	2.09	<1.05	<0.721	<0.809
SG-5	2.21	5.77	1.8	6.85	<1.05	<0.721	<0.809
SG-6	<0.639	4.6	1.26	5.68	<1.05	<0.721	<0.809

Vapor CoC Concentrations (ug/m3) for event conducted August 2019

	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	MtBE	MtBE
A-1	0.639	2.69	0.404	2.9	<0.262	<0.721	<0.721
A-2	NA	NA	NA	NA	NA	NA	NA
A-3	<0.319	<1.72	0.339	1.47	<0.262	<0.721	<0.721
A-4	0.45	0.897	0.152	0.653	<0.262	<0.721	<0.721
A-5	0.329	0.648	0.109	0.539	<0.262	<0.721	<0.721
A-6R	0.319	0.92	1.15	0.642	<0.262	<0.721	<0.721
A-7	<0.466	1.72	0.304	1.244	5.82	<0.721	<0.721
SG-1	<0.639	3.00	0.947	4.28	<1.05	<0.721	<0.721
SG-2	<0.639	<0.639	3.84	1.12	<1.05	<0.721	<0.721
SG-3	<0.639	4.18	1.19	5.39	<1.05	<0.721	<0.721
SG-4	<0.639	3.13	<0.869	8.81	<1.05	<0.721	<0.721
SG-5	<0.639	1.86	<0.869	2.01	<1.05	<0.721	<0.721
SG-6	<0.639	2.59	<0.869	8.71	<1.05	<0.721	<0.721

Broad River Amoco, UST Permit #11946
Richland County

Target Free-Phase Product thickness SSTL

MW ID#	FPP SSTL
MW-2	0.01
MW-3	0.01
MW-4	0.01
MW-5	0.01
MWR2-6	0.01
MWR2-7	0.01
MWR2-8	0.01
MWR2-9	0.01
MWR2-12	0.01
MWR2-14	0.01

