Request for Bid

Fixed-Price Defined Scope of Work

Site Characterization and
Combined Supplemental Site Characterization Report & Remedial Action Plan

Solicitor

Mr. Theodore Lutz

Russell City Store

1536 Route 66/948
Kane, Elk County, Pennsylvania 16735

PADEP Facility ID #: 24-30431 **PAUSTIF Claim #: 2014-0170(I)**

Date of Issuance

March 25, 2021

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The Pennsylvania Underground Storage Tank Indemnification Fund (PAUSTIF), on behalf of the claimant who hereafter is referred to as the Client or Solicitor, is providing this Request for Bid (RFB) to prepare and submit a bid to complete the Scope of Work (SOW) for the referenced Site. The Solicitor is the former owner/operator of the Site. PAUSTIF has determined that the claim reported by the Solicitor is eligible for coverage from the PAUSTIF subject to the applicable statutes and regulations. Reimbursement of Solicitor approved reasonable and necessary costs, not to exceed the claim aggregate limit, for the corrective action work described in this RFB will be provided by PAUSTIF. Solicitor is responsible to pay any applicable deductible and/or proration.

Each bid response will be considered individually and consistent with the evaluation process described in the PAUSTIF Competitive Bidding Fact Sheet which can be downloaded from the PAUSTIF website https://ustif.pa.gov.

Calendar of Events

Activity	**Date and Time**
Notification of Intent to Attend Site Visit (due to COVID-19 pandemic this is a required activity)	April 8, 2021 by 5 p.m.
Mandatory Pre-Bid Site Visit (The Technical Contact will provide a scheduled time to each person who submits a Notification of Intent to Attend Site Visit)	April 15, 2021
Deadline to Submit Questions	May 6, 2021 by 5 p.m.
Bid Due Date and Time	May 13, 2021 by 3 p.m.

Contact Information

Technical Contact
Mr. Robert Breakwell, P.G. **Excalibur Group, LLC** **1193 State Road** **Monessen, PA 15062** **rbreakwell@excaliburgrpllc.com**

All questions regarding this RFB and the subject Site conditions must be directed via email to the Technical Contact identified above with the understanding that all questions and answers will be provided to all bidders. The email subject line must be **"Russell City Store, Claim #2014-0170(I) – RFB QUESTION".** Bidders must neither contact nor discuss this RFB with the Solicitor, PAUSTIF, the Pennsylvania Department of Environmental Protection (PADEP), or ICF unless approved by the Technical Contact. Bidders may discuss this RFB with subcontractors and vendors to the extent required for preparing the bid response. Questions and their respective answers will become part of the RFB, which in turn, will become part of the final contract. Bidders are responsible to monitor questions and answers and address any changes, modifications or clarifications made to the RFB as a result of the questions and answers.

Requirements

Mandatory Pre-Bid Site Meeting

On behalf of the Solicitor, the Technical Contact, or their designee will hold a mandatory Site visit on the date listed in the Calendar of Events to conduct a Site tour for one (1) participant per bidding company. The Technical Contact may answer questions at the Site meeting or may collect questions and respond via email. All questions and answers will be provided via email to all attendees. This meeting is mandatory for all bidders, no exceptions. This meeting will allow each bidding company to inspect the Site and evaluate Site conditions. Due to the circumstances surrounding the COVID-19 pandemic, the number of attendees on-site at the same time will be limited; and, all attendees should follow CDC safety guidelines. **A notice of the bidder's intent to attend this meeting is required to be provided to the Technical Contact via email by the date listed in the Calendar of Events with the subject line "Russell City Store, Claim #2014-0170(I) – SITE MEETING ATTENDANCE NOTIFICATION".** The name and contact information of the company participant should be included in the body of the email. A detailed schedule for the mandatory pre-bid site meeting, including arrival and departure times for participants and meeting point, will be distributed via email to the attendees within two (2) business days after the due date for the Required Notification of Intent to Attend Site Visit in the Calendar of Events. **Attendance at the Pre-Bid Site Meeting is mandatory and each attendee must check in with the Technical Contact on site to record attendance**. Changes to the Site meeting date and/or time due to inclement weather conditions or other unexpected circumstances will be posted at https://ustif.pa.gov/bids; and, the Technical Contact may notify via email all companies that provided Site Meeting Attendance Notification.

Submission of Bids

To be considered for selection, an electronic .pdf version of the signed bid package must be submitted to **RA-Bid-Submission@icf.com** by the bid due date and time in the Calendar of Events. Bid cost spreadsheets may be submitted in Microsoft Excel format. File sizes in excess of 5 MB are to be submitted using a file share service of your choosing. If you do not have access to a file share service, an email must be send to RA-Bid-Submission@icf.com, at least 24 hours prior to the bid due date and time, to request access to PAUSTIF's third party administrator, ICF, file share service. Reply messages will be sent to acknowledge receipt of emails. Bid responses will only be accepted from those companies that attended the Mandatory Pre-Bid Site Meeting. Bids attempted to be submitted through ground services such as USPS, UPS, Fed-Ex, etc. or hand delivery will not be considered for selection. PAUSTIF, in its discretion, reserves the right to reject or allow correction to bid submissions that are substantively deficient in some manner, but any late submission will be rejected.

The bid must be received by 3 p.m., on the due date shown in the Calendar of Events. Bids will be opened immediately after the 3 p.m. deadline on the due date. Any bids received

after this due date and time will be returned. If, due to inclement weather, natural disaster, or any other cause, the deadline for submission may be extended. The PAUSTIF's third party administrator, ICF, may notify all companies that attended the Mandatory Pre-Bid Site Meeting of an extended due date. The hour for submission of bids shall remain the same. Submitted bid responses might be subject to disclosure pursuant to the Pennsylvania Right-to-Know Law.

Bid Requirements

The Bid Submission Coversheet included as Attachment 1 to this RFB must be completed, signed by an authorized representative of the company, and included as the first page of the Bid Submission. Bids that are not signed may be rejected. The name and contact information of the person who is to be contacted in the event the bid is selected by the Solicitor and/or a Right to Know request is received by PAUSTIF must be listed on the Bid Submission Coversheet.

The Solicitor wishes to execute a mutually agreeable contract with the selected consultant ("Remediation Agreement"). The Remediation Agreement is included as Attachment 2 to this RFB. The bidder must indicate if the Remediation Agreement is accepted with no changes. If changes are proposed, bidder must identify and document proposed modifications to the Remediation Agreement language other than obvious modifications to fit this RFB (e.g., names, dates, and descriptions of milestones). The number and scope of any modifications to the standard agreement language must be listed on the Required Responses Submission Form (Attachment 3), including, but not limited to, terms and conditions, Exhibits A and B, Site-Specific Assumptions and Provisions; and, will be one of the criteria used to evaluate the bid and will need to be agreed upon by both the Solicitor and PAUSTIF (for funding).

The selected consultant will be provided an electronic copy of the draft Remediation Agreement in Microsoft Word format to allow agreement-specific information to be added. The selected consultant shall complete the agreement-specific portions of the draft Remediation Agreement and return the document to the Technical Contact within 10 business days from date of receipt.

The Remediation Agreement fixed costs shall be based on unit prices for labor, equipment, materials, subcontractors/vendors, and other direct costs. The total cost quoted in the bid by the selected consultant will be the maximum amount to be paid by the Solicitor unless a change in scope is authorized and determined to be reasonable and necessary. There may be deviations from and modifications to this SOW during the project. The Remediation Agreement states that any significant changes to the SOW will require approval by the Solicitor, PAUSTIF, and PADEP. NOTE: Any request for PAUSTIF reimbursement of the reasonable costs to repair or replace a well will be considered on a case-by-case basis.

The bidder must complete and include in their bid response the Required Responses Submission Form, included as Attachment 3 to this RFB.

The bidder shall provide its bid cost only in the Bid Cost Submission Form (included as Attachment 4) with descriptions for each task provided in the body of the bid document. No cost information should be provided in the technical submittal. Bidders are responsible to ensure all costs are provided in the Bid Cost Submission Form, and calculations (including, but not limited to the total bid cost) are accurate; the Bid Cost Submission Form must be signed by an authorized representative of the company. In addition, bidders are required to include, as backup for the Bid Cost Submission Form, a list of bid labor rates and a detailed breakdown of each milestone fixed-cost including, but not limited to, labor, subcontractor costs and mark-up, direct costs, and equipment. Copies of subcontractor quotes and/or estimates should be included as part of the cost submittal backup. The technical score for bids will be based solely on those tasks represented as milestones included in the Bid Cost Submission Form and the total bid cost. Any optional bidder-defined tasks, milestones, or cost adders that are not requested as part of this RFB will not be considered by the Bid Evaluation Committee in the technical review and technical score for the bid.

Each bid will be assumed to be valid for a period of up to 180 days after receipt unless otherwise noted. The costs quoted in the Bid Cost Submission Form will be assumed to be valid for the duration of the Remediation Agreement.

Please note that the total fixed-price bid must include all costs, including those cost items that the bidder may regard as “variable”. These variable cost items will not be handled outside of the total fixed-price quoted for the SOW unless the RFB requests costing alternatives for specific items or services.

The RFB is requesting a total fixed-price bid unless the RFB requests costing alternatives for specific items or services. PAUSTIF will not agree to assumptions (in bids or the selected bidders executed Remediation Agreement) referencing a level of effort and/or hours. Costs provided in your bid should be developed using your professional opinion, experience, and the data provided. PAUSTIF will not reimburse costs for additional hours to complete activities included as part of the base bid/contract price.

Each bid response document must include at least the following:

1. Completed Bid Submission Coversheet (Attachment 1), Required Responses Submission Form (Attachment 3) and Bid Cost Submission Form (Attachment 4 and must include supporting documentation).

2. Demonstration of the bidder’s understanding of the Site information provided in this RFB, standard industry practices, and objectives of the project.

3. A clear description, specific details, and original language of how the proposed work scope will be completed for each milestone. The bid should specifically discuss all tasks that will be completed under the Remediation Agreement and what is included (e.g., explain groundwater purging/sampling methods, which guidance documents will be followed, what will be completed as part of the Site specific work scope/SCR/RAP implementation). Bidders must bid the Scope of Work as requested in this RFB. Recommendations for changes/additions to the Scope of Work proposed in this RFB shall be discussed, quantified, and priced separately; however, failure to also bid the SOW "as is" may result in a low technical score. Bids should include enough original language conveying bidder's thought such that the understanding of site conditions, closure approach (if applicable), and approach to addressing the scope of work can be evaluated. Since bidders are not prequalified, the bid response must provide the Bid Evaluation Committee and Solicitor enough information to complete a thorough review of the bid and bidder.

4. A copy of an insurance certificate that shows the bidder's level of insurance consistent with the requirements of the Remediation Agreement. Note: The selected consultant shall submit evidence to the Solicitor before beginning work that they have procured and will maintain Workers Compensation, commercial general and contractual liability, commercial automobile liability, and professional liability insurance commensurate with the level stated in the Remediation Agreement and for the work to be performed.

5. The names and brief resumes and statement of qualifications of the proposed project team including the proposed Professional Geologist and Professional Engineer (if applicable) who will be responsible for overseeing the work and applying a professional seal to the project deliverables (including any major subcontractor(s)). Resumes should directly follow the Required Responses Submission Form.

6. A description of subcontractor involvement by task. Identify and describe the involvement and provide actual cost quotations/bids/proposals from all significant specialized subcontracted service (e.g., drilling/well installations, laboratory, etc.) as part of the bid cost submission back up. If a bidder chooses to prepare its bid without securing bids for specialty subcontract services, it does so at its own risk. Added costs resulting from bid errors, omissions, or faulty assumptions will not be considered for PAUSTIF reimbursement.

7. A detailed schedule of activities for completing the proposed SOW including reasonable assumptions regarding the timing and duration of Solicitor reviews (if any) needed to complete the SOW. Each bid must provide a schedule that begins with execution of the Remediation Agreement with the Solicitor and ends with completion of the final milestone proposed in this RFB. Schedules must also indicate the approximate start

and end date of each of the tasks/milestones specified in the Scope of Work, and indicate the timing of all proposed key milestone activities (e.g., within 30 days of the contract being executed).

8. A description of how the Solicitor, ICF, and the PAUSTIF will be kept informed as to project progress and developments and how the Solicitor (or designee) will be informed of and participate in evaluating technical issues that may arise during this project.

9. A description of your approach to working with the PADEP. Describe how the PADEP would be involved proactively in the resolution of technical issues and how the PADEP case team will be kept informed of activities at the Site.

10. Key exceptions, assumptions, or special conditions applicable to the proposed SOW and/or used in formulating the proposed cost estimate. Key exceptions, assumptions, or special conditions that bidder proposes as modification to the Remediation Agreement must be identified and listed on the Required Responses Submission Form (Attachment 3). Please note that referencing extremely narrow or unreasonable assumptions, special conditions, and exceptions will be considered during bid evaluation and may negatively impact technical score.

Bid Review and Evaluation

1. Bid Review and Scoring

   Bid submissions where the bidder was represented at the mandatory pre-bid site meeting and that were properly submitted by the designated due date and time will be accepted for review.

   Clarification & Additional Information

   After receipt of the bids, the USTIF shall have the right to contact Bidders for the purpose of:

   - Seeking clarification of the Bid which informs the USTIF's understanding of statements or information in the Bid;
   - As a result of clarification, determining whether the bidder seeks to withdraw their bid.

   Administrative Evaluation

   USTIF will determine if a bid is administratively qualified based on certain criteria including, but not limited to acceptance of the Remediation Agreement, proposed modifications to the Remediation Agreement, history of terminated Remediation Agreements and demonstration of insurance requirements.

   Technical Scoring

   Bids that are considered administratively qualified are evaluated for technical viability before cost is considered. Bids that have technical scores that are equal to or greater than 70% of the highest technical score will advance to cost scoring. Bids with technical scores below 70% of the highest technical score are eliminated from further consideration.

   Numerical values will be assigned for defined SOW bids for two categories:

   - Understanding the problem and demonstrating knowledge of how to perform the work
   - Qualifications and Experience

   Numerical values will be assigned to three categories in those cases where there is a bid-to-result request:

   - Understanding of the problem
   - Technical and Regulatory Approach to Remediation
   - Qualifications and Experience

Cost Scoring

Cost scores are determined by a cost formula. The bid(s) with the lowest total cost receives the maximum cost points available. The remaining bids are scored by applying the following cost formula: (1-((B-A)/A)) x C = D

A = the lowest bid cost
B = the bidder's cost being scored
C = the maximum number of cost points available
D = bidder's cost score (points)

If a bid cost is double or greater than double the amount of the lowest bid cost the bid will be assigned zero cost points.

2. Evaluation of Bids

A committee comprised of at least two members of the USTIF staff, two members of TPA staff, and the TPR who assisted in developing the RFB will score all bids that are administratively qualified based on the above criteria. USTIF reserves the right to assign additional non-scoring members to the evaluation committee as needed. USTIF recognizes that several bids may be acceptable and receive similar numerical scores. At the conclusion of the scoring process, the claimant will receive those bids whose numerical scores place them in the category of meeting Reasonable and Necessary criteria and acceptable for USTIF funding. The claimant may select any of the consulting firms that had a technical score that allowed the bid to advance to cost scoring, to implement the tasks described in the bid; however, USTIF will only provide funding up to the highest fixed price of those bids determined to be Reasonable and Necessary for USTIF funding.

General Site Background and Description

Each bidder should carefully review the existing information and documentation provided in Attachment 5. The information and documentation has not been independently verified. Bidders may wish to seek out other appropriate sources of information and documentation specific to this Site. If there is any conflict between the general Site background and description provided herein and the source documents within Attachment 5, the bidder should defer to the source documents.

Summary of Site Background and Features

The Russell City Store (RCS) property is located at 1536 Route 66 in the village of Deyoung, Elk County, Pennsylvania. It is comprised of three parcels [1] collectively encompassing approximately 0.43 acres (Figure 1, Attachment 5a). The property previously supported retail motor fuel sales from sometime in the 1960s until late 2014 although the convenience store (c-store) remains in operation.[2] A two-story convenience store (c-store) building with second floor private residence is located near the north central portion of the property. Land use in the vicinity of the RCS facility consists of residential and undeveloped parcels.

An automotive repair garage formerly operated on the adjacent property to the east (Niklas property) where closed USTs reportedly remain in-place. The Niklas property comprises two parcels. The parcel adjacent to the RCS eastern property boundary appears to support the Niklas residence which is believed to be currently inhabited.[3] The adjoining parcel further east supports the deteriorating automotive repair garage structure on which the closed USTs are presumed to exist (the exact location of these tanks is unknown). The type of water supply on the Niklas property (public source or private well) is also unknown since Mr. Niklas was unresponsive to the water use survey as described below. Groundwater impacts from the RCS facility likely extend beneath the Niklas property, at least below the parcel on which the residence is located.

USTs that were formerly operated by the RCS facility included three unleaded gasoline (ULG) tanks including Tank #001 (3,000 gallons), #002 (2,000 gallons) and #003 (2,000 gallons).[4] A fourth UST, Tank #004 (1,000 gallons), was initially used for storing kerosene and was later converted for storage of unleaded gasoline. All USTs, piping and dispensers were removed from the property during two UST system closure events completed in July 1999 and November 2014. The common tank field was located east of the c-store building, adjacent to the Niklas

[1] Lots 31, 33 and 35.
[2] Based on available information, Solicitor sold the RCS facility to Soggy Bottom, LLC in 2016. Solicitor retains responsibility for the environmental cleanup.
[3] It is unclear whether the residential structure has a basement.
[4] Tank #001 originally stored leaded gasoline before conversion to unleaded gasoline.

property line, and the dispenser island was located immediately north of the building (between the building and State Route 66).

Buried and overhead utilities located on and adjacent to the RCS facility include natural gas, public water, storm sewer and electric.[5] Site features, buried and overhead utilities and surrounding properties are depicted on Figure 1 within Attachment 5a.

Potable water is supplied to the RCS facility and surrounding parcels via either a non-permitted community water supply derived from a natural spring[6] or private wells. A water use survey indicating type of water supply available at the RCS facility and surrounding parcels is provided in the August 2019 Site Characterization Report (SCR) in Attachment 5d. As indicated in the water use survey, the RCS facility is connected to the community water supply. It is unclear, however, why the RCS facility has reportedly used bottled water for consumption since 2017. As requested by PADEP, the community water supply was sampled in October 2008 and analyzed for ULG parameters and other water quality constituents. Laboratory analytical results indicated that no ULG compounds were detected although total coliform and e-coli bacteria were present in the sample.

Facility Release History

July 1999 UST Systems Closures & Piping Replacement

On 7/16/99, ULG Tanks #001 and #002 were removed and the piping for ULG Tanks #003 and #004 was replaced (upgraded). According to the 8/24/99 UST Closure Report (Attachment 5b), Tank #001 was in fair condition with minimal scaling or rust, but Tank #002 was in poor condition with scaling and pitting. Reportedly, no holes were observed in either tank. Obvious contamination was not observed during the removal of Tank #001, however, during the removal of Tank #002, localized petroleum contamination was noted around the tank fill sump and the related piping under the dispenser island. Localized petroleum contamination beneath the dispenser island was also observed during the piping upgrade for Tank #003. The petroleum impacts were attributed to overfills, spills, seepage and dispenser filter changes. No contamination was reported during the piping upgrade for Tank #004. Groundwater was not encountered during the tank closures and piping upgrades.

According to the August 1999 UST Closure Report, between 5 and 8 tons of soil was excavated and spread out on plastic alongside the c-store building and bioremediated via land-farming. Based on the PADEP's review of the UST Closure Report and accompanying confirmatory soil pile sampling report, the Department issued a letter on 8/28/00 providing liability protection

[5] Site information indicates the RCS facility utilizes an on-lot septic tank. The location of the septic tank and related piping is not known.
[6] The spring is located over 1,000 feet north of the RCS facility. No map is available depicting the location of the spring.

under Act 2 and mentioning that the reports indicate soil at the site meets the SHS for residential use.

November 2014 UST Systems Closures

Tanks #003 and #004, along with the product piping and dispensers, were removed on 11/25/14. The 1/23/15 UST Closure Report (Attachment 5c) indicates that the USTs and piping were in very good condition and that petroleum contaminated soil was observed only beneath the dispenser island. Soil contamination beneath the dispensers was reported as not localized.
Analytical results from UST closure soil samples indicated that concentrations of 1,2,4-TMB exceeded the SHS Residential Used Aquifer (RUA) MSCs for two shallow dispenser island sampling locations at the east and west ends of the island. Concentrations of 1,2,4-TMB in these samples were 32,300 and 48,900 micrograms per kilogram (u/kg), respectively, in comparison to the applicable SHS RUA standard of 8,400 ug/kg. Target petroleum compounds in the remaining closure soil samples were either not detected or were at concentrations significantly below current PADEP Act 2 SHS standards.

The 2015 UST Closure Report indicates that all soil excavated during the UST removal work was staged on-property and reused as backfill.[7] The report does not mention having performed any contemporaneous over-excavating of the reported "non-localized" soil contamination beneath the dispenser island. It appears the dispenser soil impacts were left in-place at the time of the closure work but were later excavated.[8]

After removal of the UST systems in July 1999 and November 2014, two phases of site characterization activities were conducted (March 2015 and July 2017 through January 2019) to delineate subsurface ULG impacts to soil and potentially to groundwater. Following the site characterization work, the consultant of record [9] submitted a SCR to the PADEP in August 2019 (Attachment 5d). PADEP's review of the August 2019 SCR is currently pending receipt of a Remedial Action Plan (RAP).

Overview of Site Characterization Activities and Results

The following sections briefly summarize the results obtained from Consultant's key site investigation activities. Bidders are directed to Consultant's August 2019 SCR source document (Attachment 5d) for more specific details & additional site characterization information.

[7] No sampling / analysis was performed to demonstrate the suitability of this soil for reuse as backfill supposedly based on observations made during the excavation work.
[8] Contaminated soil beneath the dispensers was mostly removed during the May 2015 and March 2017 source soil removals as discussed later in this RFB.
[9] Environmental Remediation & Recovery, Inc. (ER&R).

Site Geology and Hydrogeology

The up to ~14-foot unsaturated overburden appears to generally consist of alternating layers of clay, silty sand, and gravelly sand. The underlying bedrock is weathered shale with secondary siltstone.[10]

Depth to groundwater data and groundwater flow interpretations were provided through gauging the network of 17 on- and off-property shallow and deeper groundwater monitoring wells (MW-1 through MW-17).[11] The depth to groundwater measured in the shallow overburden / weathered bedrock and deeper bedrock wells in the area of soil and groundwater impacts averaged ~12 ft-bg and ~35 ft-bg, respectively. Monitoring well gauging data indicate that groundwater appears to reside primarily in the weathered / competent bedrock zone. For example, the average depth to groundwater (through 2Q20) for the four impacted wells in the target treatment area is either within bedrock or near the soil / bedrock interface: MW-3 (2.3 ft below top rock); MW-4 (0.5 ft above top rock); MW-6 (0.1 ft above top rock); MW-7 (0.1 ft below top rock). Local groundwater flow in the water table aquifer is toward the west to west-northwest at an average hydraulic gradient of approximately 0.04 foot/foot.

Soil Quality

In March 2015, eight soil borings were advanced and sampled (SB-1 through SB-8) to further assess the extent and magnitude of petroleum impacted soil discovered beneath the dispenser island during the 2014 UST systems closures and to investigate the former UST field area despite the historical “clean” tank closures. One to two soil samples were collected from each boring and submitted for laboratory analysis of the current PADEP Act 2 short-list of ULG parameters. Analytical results revealed that shallow soil sample SB-1, collected between 2 to 3 ft-bg beneath the former dispenser island, contained concentrations of benzene (1,110 ug/kg) and 1,2,4-TMB (106,000 ug/kg) which exceeded the SHS RUA MSCs for unsaturated soil. Target analytes for all other soil samples collected in the former dispenser area were either not detected or were significantly below the SHS RUA MSCs.

Within the former UST field, the soil sample collected from boring SB-6 contained concentrations of benzene (579 ug/kg) and 1,2,4-TMB (13,500 ug/kg) which exceeded the applicable standards for saturated soil. Additionally, the soil sample obtained from boring SB-5 advanced beyond the UST field contained 1,2,4-TMB at a concentration of 6,270 ug/kg which also exceeded the applicable saturated soil standard. The SB-5 and SB-6 samples appear to

[10] Bedrock was reportedly encountered at the ground surface at the BH-7 and BH-11 drilling locations located off-property northwest of the RCS facility (see Attachment 5a for BH-7 and BH-11 locations).
[11] All monitoring wells intercept the water table aquifer. Wells MW-8, MW-9 and MW-10 were screened within a deeper bedrock zone of the water table aquifer to assess the vertical distribution of dissolved-phase contamination.

have been collected near the smear zone / permanently saturated soil interface at a depth between 10 to 12.5 ft-bg.
From mid-2017 through early 2019, soil samples were collected from each of the 17 monitoring well borings (except BH-8 / MW-9) and submitted for laboratory analysis of the current PADEP Act 2 short-list of ULG compounds. Laboratory analysis of the soil samples found benzene in BH-3 / MW-3 (1,560 ug/kg; 5 to 7 ft-bg) and BH-9 / MW-6 (3,520 ug/kg; 11 to 12 ft-bg). The detected benzene concentrations in these borings exceeded the SHS RUA MSCs for unsaturated soil (BH-3 / MW-3) and saturated soil (BH-9 / MW-6). Additionally, soil samples obtained from borings BH-4 / MW-4 (9 to 11 ft-bg) and BH-9 / MW-6 (11 to 12 ft-bg) contained 1,2,4-TMB at concentrations of 7,130 and 5,300 ug/kg, respectively, which exceeded the applicable standard for saturated soil.[12]

Soil boring and monitoring well boring locations are depicted in Figures 1 and 2 of Attachment 5a and soil analytical results and boring logs are provided in the August 2019 SCR in Attachment 5d. Figure 2 also includes a rough sketch of the assumed area of remaining excessive soil contamination.

Groundwater Quality

Groundwater quality has been assessed through collecting and analyzing aqueous samples from the network of 17 on- and off-property overburden and deeper bedrock monitoring wells (MW-1 through MW-17).[13] Samples were analyzed for the current PADEP Act 2 short-list of ULG compounds.

Groundwater sample analytical results for on-property shallow overburden wells MW-3 and point-of-compliance (POC) MW-4 consistently report benzene and 1,2,4-TMB concentrations exceeding the SHS RUA MSCs. These wells are both located adjacent to the former UST field. Benzene and 1,2,4-TMB exceeding the SHS have also been persistently found in off-property shallow well MW-7. This well is located in the SR 66 right-of-way (ROW) and upgradient to crossgradient of the former UST field. Depictions of the benzene and 1,2,4-TMB distribution using 5/17/19 data are sketched in Figures 3 and 4 in Attachment 5a.

Benzene in the 3Q20 (9/15/20) groundwater samples from MW-3, MW-4 and MW-7 were 73, 319 and 90 ug/l, respectively (as compared to the 5 ug/L SHS). 1,2,4-TMB in the 3Q20 groundwater samples from MW3, MW4 and MW-7 were 42, 1,070 and 212 ug/l, respectively (as compared to the 15 ug/L SHS).

[12] Samples from BH-4 / MW-4 and BH-9 / MW-6 were obtained from soil near the smear zone / permanently saturated soil interface.
[13] *On-property shallow overburden wells (*MW-1, -3, -4, -5, -13 and -14; depths range from ~13 to 24.5 ft-bg); o*n-property deeper bedrock well* (MW-8; depth ~ 37 ft-bg); o*ff-property shallow overburden wells* (MW-2, -6, -7, -11, -12, -15, -16 and -17; depths range from ~15 to 35 ft-bg); and *off-property deeper bedrock wells* (MW-9 and MW-10; depths range from ~34 to 38 ft-bg).

Benzene exceeding the SHS has frequently been identified in off-property shallow well MW-6 and was reported at a concentration of 63 ug/l during the 3Q20 sampling event. Ethylbenzene and naphthalene have consistently been detected above the SHS in POC MW-4 and were present at concentrations of 723 ug/l and 207 ug/l, respectively, during the 3Q20 sampling event. Sporadic detections of 1,3,5-TMB exceeding the SHS have also been present in POC MW-4 and was reported at a concentration of 742 ug/l as recently as the 1Q20 sampling event (although below the SHS during the 2Q20 and 3Q20 [249 and 258 ug/l, respectively]). No target ULG analytes have been detected in the deeper bedrock monitoring wells MW-8, MW-9 and MW-10. The core of the contaminant plume for the primary COCs benzene and 1,2,4-TMB is centered at the northeast corner of the former UST field at the location of POC MW-4 and near the area of impacted soil borings SB-5 and SB-6.

Monitoring well locations are depicted on Figure 1 of Attachment 5a. Well logs are contained in the SCR (Attachment 5d) and historical groundwater analytical data are tabulated in the 3Q20 Status Report (Attachment 5e). Figures 3 and 4 are sketches outlining the likely extent of benzene and 1,2,4 – TMB in groundwater.

Separate-phase Hydrocarbons

According to the 3Q20 Status Report (Attachment 5e), a “small amount” of separate phase hydrocarbons (SPH) was observed in source area well MW-4. Subsequent clarification from ER&R indicated that <1/8-inch (i.e., observed but not measureable) of SPH was present in MW-4 during the 3Q20 sampling event and that SPH was observed as globules during hand bailing of this well. Based on the available site information, this is the first account of SPH (or hydrocarbon sheen) in any of the site monitoring wells.

Interim Remedial Actions

Two contaminated soil excavations have occurred at the property as interim remedial efforts: one in 2015 and the other in 2017. The locations of these excavations are sketched in Figure 2 of Attachment 5a while a brief description of these interim remedial actions is provided below.

Source Soil Removal – May 2015

In May 2015, remedial soil excavation was completed beneath a portion of the former dispenser island footprint to a depth of ~5 ft-bg to remove source soil identified during the initial March 2015 site characterization work. Soil excavation was also conducted in the former UST field that was centered on soil boring SB-6 and expanded outward to capture portions of the footprints of former USTs #001, #003 and possibly #004. Excavation in the former UST field was extended to the top of weathered bedrock at ~15 ft-bg. A combined total of approximately 40 tons of soil from the former dispensers and UST field areas were transported off-property for disposal. The

figure in Attachment 5a depicts the approximate locations of the May 2015 soil excavations in the former dispenser island and UST field areas.

Following soil excavation in the dispenser area, five (5) post-excavation confirmatory soil samples were collected for laboratory analysis of the current PADEP Act 2 short-list of ULG parameters. The confirmation soil samples were obtained from the four excavation sidewalls at shallow depths ranging from ~2 to 5 ft-bg, and from the excavation base at ~5 ft-bg. Laboratory analytical results indicate that the sample collected from the southern wall of the dispenser excavation contained benzene at a concentration of 585 ug/kg which slightly exceeded the 500 ug/kg SHS RUA MSC for unsaturated soil. Target analytes in the other dispenser area confirmation soil samples were not detected or were identified at concentrations below the applicable standards.

Within the former UST field excavation, "grossly" impacted soil was encountered above the weathered shale bedrock at a depth of ~14 ft-bg (below the seasonal low water table). Following excavation, three (3) confirmation soil samples, BS-1, BS-2 and BS-3, were collected from permanently saturated soil at a depth of 15 ft-bg.[14] Laboratory analysis for the ULG constituents revealed concentrations of benzene and 1,2,4-TMB in each of the samples ranging from 762 to 2,500 ug/kg and from 6,250 to 14,300 ug/kg, respectively, which exceeded the respective benzene and 1,2,4-TMB 500 ug/kg and 2,000 ug/kg SHS RUA MSCs for saturated soil. The August 2019 SCR mentions that due to excavation constraints both vertically and horizontally (e.g., nearby c-store building and natural gas line), residual soil impacts exceeding the SHS in the former UST field area could not be delineated or completely removed. The May 2015 soil sampling locations are identified on Figure 2 in Attachment 5a.

Source Soil Removal – March 2017

Limited follow-up soil excavation was conducted during March 2017 in the former dispensers area. Based on the confirmation soil sample results provided from the May 2015 excavation work, the March 2017 soil removal efforts were focused along the southern wall of the previous excavation where the "South Wall" sample contained benzene at a concentration of 585 ug/kg. The follow-up excavation was reportedly extended to a depth of ~4.5 ft-bg in unsaturated soil and covered an area of approximately 56 ft^2. A total of approximately 14 tons of soil appears to have been removed from the former dispensers area and entirely transported off-property for disposal. The approximate footprint of the March 2017 soil excavation in the former dispenser island area is depicted in Attachment 5a.

After completing the excavation, a soil attainment demonstration was attempted in the former dispenser island area. Specifically, systematic random soil samples were collected at five locations, SS-1, SS-3, SS-8, SS-9 and SS-11, as depicted in Attachment 5a. The soil attainment

[14] Sample depth is assumed to have been near or at the top of weathered shale bedrock.

demonstration failed given that three of the five soil samples (SS-1, SS-8 and SS-9) collected from the base of the excavation (~4.5 ft-bg) contained concentrations of 1,2,4-TMB ranging from 14,800 to 42,900 ug/kg which exceeded the 8,000 ug/kg SHS RUA MSC for unsaturated soil. Soil sample SS-8 also contained benzene at a concentration of 872 ug/kg which exceeded the 500 ug/kg SHS. Concentrations of the other target ULG analytes in the dispenser area soil samples were not detected or were identified at concentrations significantly below the SHS. The March 2017 soil sampling locations are identified on Figure 2 in Attachment 5a. Figure 2 also delineates remaining soil impacts exceeding the SHS that were not excavated during the May 2015 and March 2017 source removal efforts in the former dispensers and UST field areas.

Solicitor's Selected Site Closure Standard

The Solicitor intends to pursue site closure for ULG constituents in soil and groundwater by demonstrating attainment of the PADEP RUA SHS with a TDS concentration of less than or equal to 2,500 mg/l.

Other Information

To the extent there is any discrepancy between the summary of site conditions provided above and the source documents, bidders shall rely on the source document information.

Scope of Work (SOW)

This RFB seeks competitive bids from qualified contractors to perform the activities in the SOW specified herein. The PADEP case manager reviewed the SOW presented in this RFB and PADEP's comments have been incorporated.

Objective

Solicitor seeks competitive, fixed-price bids for this Defined Scope of Work RFB to complete the milestones outlined below prescribing: (a) supplemental site characterization to meet PADEP Act 2 and Chapter 245 regulations & guidance; and (b) preparation / submittal of a combined Supplemental Site Characterization Report / Remedial Action Plan (SSCR / RAP). To be deemed responsive, each bid ***must*** respond ***in detail*** to each of the RFB milestones, including describing the bidder's own interpretation of the conceptual site model and how bidder's proposed approach to executing the RFB milestones relates to its conceptual model. In other words, bidders shall describe how each of the RFB milestones is proposed to be achieved while offering rationale for bidder's SOW methods and approach based on bidder's interpretation of the site conditions.

Constituents of Concern (COCs)

The COCs (i.e., those PADEP short-list ULG contaminants exceeding the applicable SHS MSCs) in site soil currently are benzene and 1,2,4-TMB. COCs in groundwater include benzene, 1,2,4-TMB, ethylbenzene, naphthalene and 1,3,5-TMB.

General SOW Requirements

The bidder's proposed approach to achieving the RFB milestones shall be in accordance with generally accepted industry standards/practices and all applicable federal, state, and local rules, regulations, guidance, and directives. The latter include, but are not limited to, meeting the applicable requirements of the following:

- The Storage Tank and Spill Prevention Act (Act 32 of 1989, as amended);
- Pennsylvania Code, Title 25, Chapter 245 - Administration of the Storage Tank Spill and Prevention Program;
- The Land Recycling and Environmental Remediation Standards Act of 1995 (Act 2), as amended);
- Pennsylvania Code, Chapter 250 - Administration of Land Recycling Program; and
- Pennsylvania's Underground Utility Line Protection Law, Act 287 of 1974, as amended by Act 121 of 2008.

During completion of the milestone objectives specified below and throughout implementation of the project, the selected consultant shall:[15]

- Conduct necessary, reasonable, and appropriate project planning and management activities until the project (i.e., Remediation Agreement) is completed. Such activities may include Solicitor communications/updates, meetings, record keeping, subcontracting, personnel and subcontractor management, quality assurance/quality control, scheduling, and other activities (e.g., utility location). Project planning and management activities shall also include preparing and implementing plans for health and safety, waste management, field sampling/analysis, and/or other plans that are necessary and appropriate to complete the SOW, and shall also include activities related to establishing any necessary access agreements. [16] Project planning and management shall include identifying and taking appropriate safety precautions to not disturb Site utilities including, but not limited to, contacting Pennsylvania One Call as required prior to any ground-invasive work. As appropriate, project management costs shall be included in each bidder's pricing to complete the milestones specified below.
- Be responsible for coordinating, managing, and completing the proper management, characterization, handling, treatment, and/or disposal of all impacted soils, water, and derivative wastes generated during the implementation of this SOW. The investigation-derived wastes, including purge water, shall be disposed in accordance with standard industry practices and applicable laws, regulations, guidance, and PADEP directives. Waste characterization and disposal documentation (e.g., manifests) shall be maintained and provided to the Solicitor and the PAUSTIF upon request. All investigation derived wastes shall be handled and disposed per PADEP's Regional Office guidance. It is the selected consultant's responsibility to conform with current PADEP Regional Office guidance requirements in the region where the Site is located.
- Be responsible for providing the Solicitor, property owner, and facility operator with adequate advance notice prior to each visit to the property. The purpose of this notification is to coordinate with the Solicitor and property owner / facility operator to ensure that appropriate areas of the property are accessible. Return visits to the Site will not constitute a change in the selected consultant's SOW or result in additional compensation under the Remediation Agreement.

[15] As such, all bids shall include the costs of these activities and associated functions within the quote for applicable tasks/milestones.

[16] Reportedly, ER&R was unsuccessful with negotiating off-property access agreements with surrounding residents to install / sample monitoring wells and, therefore, all off-property wells were installed in the PennDOT ROW via a Highway Occupancy Permit.

Site-Specific Guidelines

As part of this RFB, the selected consultant will need to consider the following site-specific guidelines:

On-Property Access. Since the c-store continues to operate, the selected bidder is cautioned to be aware of entering and exiting vehicles and store patrons. Also, vehicle traffic along SR 66 could be heavy at times. As such, bidders shall be mindful that safety precautions (e.g., traffic control measures) prior to and during field activities conducted near, or within the PennDOT ROW will need to be accounted for in responding to this RFB.

Off-Property Access. Selected consultant shall be responsible for securing off-property access, if needed, to implement the site characterization activities. Work required to negotiate and secure off-property access with any adjacent property owners or PennDOT, as applicable, shall be included within the fixed-price for Milestone C. It is reasonable to assume that Solicitor will assist, as needed, with this effort. As mentioned above, however, adjacent property owners were previously reluctant to negotiate access agreements.

Field Activities. All on- and off-property work shall be conducted during the normal business days and hours of 8:00 AM to 5:00 PM from Monday through Friday, unless work outside of these normal business days and hours is authorized by the property owner / facility operator. The selected consultant will be responsible for determining and adhering to other restrictions that may apply to the RCS facility or surrounding properties.

Responsibility. The selected consultant will be the consultant of record for the site. The selected consultant will be required to take ownership of the project and will be responsible for representing the interests of the Solicitor, property owner / facility operator and ICF / PAUSTIF with respect to the project. This includes utilizing professional judgment to ensure reasonable, necessary and appropriate actions are recommended and undertaken to protect sensitive receptors and carry out adequate site investigations to enable evaluation of viable remedial alternatives and preparation of a comprehensive SSCR / RAP.

Field Instrumentation. Each bidder should state in its bid response the appropriate field instrumentation (e.g., pumps, meters, photoionization detectors, etc.) to be used during the completion of the SOW. Specifically, the product associated with the regulated releases at this facility is ULG. As such, any field-screening instrumentation used at the site should be able to detect the presence of hydrocarbons associated with this type of product.

Safety Measures. Each bidder should determine the safety measures necessary to appropriately complete the milestones. For example, if a consultant feels that it is appropriate and necessary to complete utility clearance using an air knife, the cost should be included in its fixed-price cost. If a bidder includes costs to conduct specific safety measures or activities, the

bidder should specify this in its bid response and discuss why it is appropriate and necessary and indicate which methods will be utilized and to what extent. As discussed in the RFB, cost is not the only factor when evaluating bid responses and other factors are taken into consideration during the bid evaluation process, including appropriate safety measures.

Waste Disposal. The investigation derived wastes (e.g., soil/rock cuttings, used carbon, well development / purging liquids, groundwater removed during pilot testing activities, etc.) shall be disposed per the instructions included in the "*General SOW Requirements*" section of the RFB. Bidders will be responsible for arranging any off-site waste disposal (if required) and including costs in their bid response to cover the disposal of all potential waste related to the milestones included in the SOW. Containerized soil and groundwater may be temporarily stored on the RCS property at a location approved by the property owner / facility operator, but should be removed from the property as quickly as possible. Each bidder should estimate the volume of waste using its professional opinion, experience and the data provided. **ICF and PAUSTIF will not entertain any assumptions from the selected bidder in the Remediation Agreement with regards to a volume of waste. Invoices submitted by the selected bidder to cover additional waste disposal costs as part of activities included under the fixed-price Remediation Agreement for this site will not be paid.**

Site-Specific Milestones

Milestone A – Additional Soil Characterization / Delineation. Additional soil sampling and laboratory analysis shall be completed to meet PADEP requirements for vertical and horizontal delineation of soil contamination and to assist with evaluating and identifying viable remedial alternatives for the RAP. As described above, previous site characterization and source soil removal activities found, but did not fully delineate or remove all soil contamination exceeding the RUA SHS. Soil contamination exceeding the SHS was generally identified in the former dispenser island area and within and surrounding the former UST field (see figures in Attachment 5a). Each bid response shall provide a fixed-price cost and a detailed description of the bidder's approach for conducting the supplemental soil characterization under Milestone A as prescribed below.

Each bid shall assume advancing and sampling additional soil borings as follows:

- Three (3) soil borings advanced beyond the southern edge of the former dispenser island to horizontally and vertically delineate the limited residual petroleum contamination exceeding the SHS that was not removed during the March 2017 source soil excavation.

- Ten (10) soil borings advanced within and surrounding the former UST field where previous site characterization soil sampling and post-excavation confirmation soil samples did not fully characterize or delineate adsorbed contaminants. These soil

borings are also intended to better examine and define the "grossly" impacted soil observed near the top of weathered bedrock within the former UST field during the May 2015 source soil removal activities as previously discussed.

- One (1) background soil boring (see below for details on the background soil boring).

Each bid must include a figure showing the proposed soil boring locations (with distinct boring identifications) and a description of the rationale for the proposed locations. Each bid shall also describe the methods that will be used for drilling, for screening, for sampling and to locate buried utilities so that this work can be accomplished safely and without risking damage to below grade utilities.

Even though all UST systems infrastructure has been removed from the RCS property and the approximate locations of buried utilities have been professionally surveyed (Attachment 5a), the possibility exists that one or more of the bidder's proposed soil boring locations may need to be adjusted to avoid subsurface obstacles that could potentially be identified during borehole clearing as described below. If a bidder believes that additional soil borings are necessary, the bidder shall identify the proposed location(s) on a site drawing and provide its supporting rationale for each additional boring location. However, all bidders shall base their bids **on** completing **exactly 14 soil borings** plus the requisite sampling and laboratory analyses. Should a bidder propose additional borings (beyond the 14 specified under this milestone) associated costs shall be offered separately from the bid fixed-price for this milestone.

Each soil boring shall be advanced to a depth that ensures vertical delineation of unsaturated and saturated soil impacts. For the purpose of this RFB, bidders shall advance soil borings within and in the area of the **former UST field** to the top of weathered bedrock and shall assume an **average depth of 15 ft-bg**. Bidders shall also assume that borings in the **former dispenser area** will be advanced to an **average depth of 9 ft-bg** since residual excessive soil contamination beyond the southern edge of the former dispenser pad is not expected to extend any deeper (on average).

In addition to contacting PA One Call and other methods to locate below grade utilities, bidders shall assume clearing and screening the initial five (5) feet of each boring location using methods to minimize the potential for volatilization of soil contaminants (i.e. hand auger and screening using a using a calibrated photoionization detector [PID]). Below five feet, each soil boring shall be advanced using direct-push drilling / sampling methods. Continuous soil samples shall be collected for description of lithologic characteristics, groundwater occurrence, and staining / odor indicative of potential petroleum impacts. The samples shall be screened in the field using a calibrated PID and standard headspace methods. One biased soil sample per boring shall be submitted for laboratory analysis (13 total samples excluding the background sample discussed below). Biased soil samples shall be collected from the depth interval

exhibiting the highest organic vapor concentration based on PID headspace screening. If no elevated organic vapor levels are measured along the length of a boring and no petroleum staining and/or odor are evident, the one sample shall be obtained either from the depth interval immediately above the water table or from the bottom of the borehole, whichever occurs first.

Soil samples shall be analyzed for the current PADEP short-list of ULG parameters (BTEX, MTBE, cumene, naphthalene, 1,2,4-TMB and 1,3,5-TMB) by a PADEP-accredited laboratory using appropriate analytical methods and detection levels. Appropriate quality assurance/quality control (QA/QC) samples shall also be obtained for laboratory analysis.[17] Based on soil analytical results and sample locations / depths, the approximate dimensions and volume of remaining residual source material exceeding the PADEP Act 2 RUA SHS MSCs shall be estimated.

In addition to the 13 soil delineation borings described above, one additional boring shall be advanced to a maximum depth of **12 ft-bg at an on-property background location**. One saturated or periodically saturated soil sample shall be obtained from this boring using standard in-situ Shelby tube collection methods and analyzed for fraction organic carbon (FOC), as well as, soil bulk density, porosity and sieve analyses by an accredited geotechnical laboratory to assist with fate-and-transport modeling and future remedial planning efforts. A soil sample shall also be collected via USEPA Method 5035 and analyzed for the current PADEP short list of ULG parameters to verify background conditions.

To accommodate: i) the possible need to advance borings deeper than the assumed average depths specified above for the former dispenser and UST field areas and the background location that results in total drilling of more than 189 feet (3 x 9 feet plus 10 x 15 feet plus 1 x 12 feet); and ii) the potential need for additional soil samples / analyses, if necessary and appropriate, to delineate the vertical extent of soil contamination based on field observations, bidders shall provide the following unit costs on the Bid Cost Spreadsheet (Attachment 2) under "Schedule of Unit Rates".

- Price per each additional foot of soil boring beyond the assumed cumulative total of 189 feet ($/foot inclusive of boring advancement, logging, screening, abandonment, surface restoration and waste management / disposal); and
- Price per each additional soil sample including sample collection / management & laboratory analysis for the PADEP ULG short list parameters beyond the 14 samples assumed ($/sample).

If during implementation of this milestone excessive soil impacts are evident based on PID field screening and other observations that require advancement of one or more additional soil

[17] Each bidder's approach to implementing Milestone A shall clearly identify the number of samples, QA/QC measures, analytes, and other key assumptions affecting the bid price.

borings for characterizing and delineating the soil impacts, the additional boring(s) will be handled under Cost Adder Milestone A. Written email approval from Solicitor and PAUSTIF will be required before beginning the work and the requisite milestone-specific supporting documentation identified in the executed contract will be required for reimbursement.

Each bidder's fixed-price cost for this milestone shall account for: (i) identifying subsurface utilities and other buried features of concern including, but not necessarily limited to, contacting PA One Call and clearing the borehole locations to a minimum depth of 5 feet using methods that will minimize volatilization of soil contaminants; (ii) professional surveying of the soil boring locations and elevations for inclusion on the site plan and geologic cross sections; (iii) sealing each boring after completion with bentonite and restoring the surface consistent with existing materials (e.g., asphalt, concrete, gravel, etc.); and (iv) management of IDW. The soil boring program methods and results with supporting documentation (e.g., waste manifests, boring logs, etc.) shall be detailed in the combined SSCR / RAP (Milestone H).

Milestone B – Drilling and Installation of Additional Shallow Monitoring Wells. As discussed earlier, seventeen on- and off-property overburden and deeper bedrock monitoring wells (MW-1 through MW-17) were installed during previous site characterization activities. The historical groundwater analytical dataset in the 2Q20 Status Report (Attachment 5e) indicates that concentrations of target ULG constituents exceeding the RUA SHS have been persistent in shallow overburden / weathered bedrock wells MW-3 and MW-4 located adjacent to the former UST field and in off-property shallow wells MW-6 and MW-7 installed in the PennDOT ROW.[18] Although delineation of groundwater contamination exceeding the RUA SHS appears to have been fairly well defined from the previous site characterization work, it seems a few data gaps remain that need to be filled to refine the understanding of plume dimensions and provide a more comprehensive & complete SSCR / RAP. Therefore, additional groundwater monitoring wells shall be installed under this milestone to further evaluate and delineate the shallow groundwater contaminant plume.

Under this milestone, each bidder shall detail its approach and provide a firm fixed-price cost for installing three shallow overburden monitoring wells. The three monitoring wells shall generally be positioned as follows:

- Southwest of existing impacted well MW-3 to better define plume extent roughly between existing wells MW-1 and MW-14.

- Near the northwest side of the c-store building to better define plume extent between existing wells MW-2 and MW-13.

[18] No target ULG analytes have been detected in the deeper on-and off-property bedrock wells MW-8, MW-9 and MW-10.

- Directly along the southeast property boundary (a new POC), roughly situated between existing wells MW-4 and MW-14, to better determine the magnitude of impacts potentially migrating onto the adjacent Niklas property and to further assist with determining the extent to which dissolved contaminants could potentially be migrating from the Niklas property onto the RCS facility. As previously noted, closed USTs reportedly remain on the Niklas property which formerly supported an automotive repair garage. Each bidder shall account for the customary practice of advising the adjacent property owner (Mr. Niklas) of the intent to construct a monitoring well along the property line as a courtesy. In the course of doing so, each bidder shall also account for asking Mr. Niklas' if it would be possible to install one additional delineation well on his property. Mr. Niklas previously rejected access to his property for conducting any site characterization work and it is likely his position has not changed. In the unlikely event that Mr. Niklas agrees, one additional delineation well(s) shall be installed on the Niklas property under the Cost Adder Milestone B requirements described below.

Each bid must identify the proposed locations for the three base SOW shallow overburden / weathered bedrock monitoring wells and one contingent / optional cost adder Niklas well on a site drawing, and include a discussion detailing the rationale for each location. The bids shall convey bidder's understanding of the objectives for installing the new wells. In addition to refining the contaminant delineation, the new wells may also facilitate aquifer testing, contaminant fate-and-transport modeling, and natural attenuation assessment. It is presumed that the final well locations may be adjusted to some reasonable degree by the selected consultant, if necessary, to avoid buried obstacles based on relevant information gained from Milestone A and the subsurface utility clearing work described below for this milestone.

Borings for the shallow monitoring wells shall be advanced to intersect the upper zone of the water table aquifer. For costing purposes, bidders shall assume that each shallow monitoring well boring will be advanced to **an average depth of 15 ft-bg** through the overburden soil and into weathered bedrock. Although the total boring depth may vary based on actual field conditions encountered, bidders shall assume advancing all monitoring well borings using a multi-purpose drilling rig capable of hollow stem auger with continuous split-spoon sampling / standard penetration tests in the overburden soil, and air rotary/air hammer drilling methods, as necessary, in the underlying weathered bedrock. Continuous samples of the overburden materials shall be examined in the field and described for lithology, groundwater occurrence, and potential staining / odor indicative of hydrocarbon contamination. The samples shall be screened in the field using a calibrated PID and standard headspace methods. One biased soil sample shall be collected only from the well boring advanced at the RCS southeast property boundary and submitted for laboratory analysis according to the protocol established under Milestone A.

The overburden groundwater monitoring wells shall be constructed in accordance with the PADEP Groundwater Monitoring Guidance Manual. Bidders shall assume constructing each

well using 2-inch diameter Schedule 40 PVC solid casing and 0.01-inch machine-slotted well screen. Although well depths may vary based on actual conditions encountered at each location, final construction must ensure that the screened interval intersects the water table surface and accounts for seasonal groundwater fluctuations. For cost comparison purposes, bidders shall assume **10 feet of well screen** will be used for each installation.

Annulus materials shall consist of a silica sand filter-pack of appropriate grain size based on the nature of the overburden materials and well-screen slot size, and shall be extended to a height of approximately one foot above the top of the screen section. The sand filter-pack shall be overlain by a seal consisting of hydrated bentonite pellets with a minimum thickness of two feet. The remaining annulus shall be filled with cement / bentonite slurry and finished at the ground surface with an expandable locking cap fitted to the top of the PVC riser and a flush-mounted traffic-rated manhole with bolt-on lid. The flush-mounted manholes shall be set into a 2 ft. by 2 ft. concrete pad.

To accommodate the possible need to install the shallow overburden wells deeper than 15 feet (on average), bidders shall provide the following unit costs on the Bid Cost Spreadsheet (Attachment 2).

- Additional 2-inch diameter Hollow-Stem Auger Drilling & Split-Spoon Sampling / Air Rotary Drilling and Well Installation Footage. Bidders shall provide a fixed-price unit cost per linear foot ($/foot) for excess hollow-stem auger drilling / split-spoon sampling or air rotary drilling and well installation (i.e., beyond the total linear footage of 45 feet [15 feet x 3 wells] assumed in the RFB). This unit cost shall include borehole advancement, logging and screening, well construction materials, well installation labor, and waste management and disposal in the event that additional well footage is required.

If during implementation of this milestone it is determined that one or more additional monitoring wells are necessary to complete groundwater characterization / delineation, the additional well(s) will be addressed under Cost Adder Milestone B. Written email approval from Solicitor and PAUSTIF will be required before beginning any additional well installation.

Each bidder's fixed-price cost for this milestone shall account for: (i) identifying subsurface utilities and other buried features of concern including, but not necessarily limited to, contacting PA One Call and clearing each borehole location to a minimum depth of 5 feet using vacuum excavation; (ii) well development activities; (iii) management of IDW; and (iv) professional surveying of the new well locations and top-of-casing elevations. Well drilling / installation and development activities along with supporting documentation (e.g., waste manifests, boring logs, construction details, updated site plan, etc.) shall be documented in the combined SSCR / RAP under Milestone H.

Milestone C – Groundwater Monitoring, Sampling and Reporting. Under this task, bidders shall provide a firm fixed-price to complete two (2) groundwater monitoring / sampling events. The first event will serve for initial gauging and sample collection from the three new wells installed under Milestone B. The second event shall be comprehensive and include the three new wells installed under Milestone B (confirmation event) as well as the seventeen existing monitoring wells (20 wells total)[19]. The first event shall be performed within two weeks of installing and developing the three new wells, but no sooner than one week after the wells have been developed. The subsequent expanded confirmation event shall serve as a routine quarterly groundwater monitoring / sampling event (i.e., first quarterly event under this RFB) that shall be conducted to reasonably correspond with the existing quarterly sampling schedule (preferably within 3 or 4 weeks as project schedule allows).[20] The initial event will be covered under Milestone C1 and the expanded confirmation event will be covered under Milestone C2. The conduct and results from these sampling events shall be documented in the SSCR / RAP to be produced under Milestone H. Bidders shall assume that data from these two events will also need to be documented in a quarterly Remedial Action Progress Report (RAPR), as described below, given that the SSCR / RAP may not yet be ready for PADEP submittal. Sampling any additional well(s) that may be installed under Milestone B, beyond the three wells specified in this RFB, shall be addressed under Optional Cost Adder Milestone C1.

Under Milestone C, bidders shall also provide a firm fixed-price to continue routine quarterly groundwater monitoring / sampling and reporting while the SSCR / RAP is undergoing PADEP review and until a PADEP-approved RAP can begin to be implemented. Each routine quarterly event shall include the seventeen existing wells and the new wells installed under Milestone B. For the purposes of this RFB, it is assumed that routine quarterly monitoring / sampling and reporting will be required **for three (3) quarters**. The three routine quarterly sampling events will be covered under Milestone C2. Any additional quarterly monitoring, sampling and reporting events, beyond the three quarters specified in this RFB, shall be incorporated in the Remediation Agreement as per event Optional Cost Adder Milestone C2.[21] The conduct and results of each quarterly event shall be documented in a RAPR.

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[19] In the unlikely event that a delineation well is able to be installed on the adjacent Niklas well property outside the RFB base work scope, this well shall also sampled / analyzed with costs for doing so added to the base contract via the unit price adders.

[20] If the initial and confirmation rounds of groundwater sampling results indicate that groundwater characterization is not complete, additional delineation shall be completed prior to conducting any further groundwater monitoring sampling events (Cost Adder Milestone C). Installation and monitoring of any necessary additional monitoring well(s) will be handled under Cost Adder Milestone B and will require Solicitor and PAUSTIF approval before beginning the work. Should work be required to gain property access for well installation, this will be handled outside the Remediation Agreement.

[21] PAUSTIF will only reimburse for the necessary quarterly groundwater monitoring / sampling and reporting events actually completed under this milestone (e.g., this milestone shall be considered completed once a contract is executed for the second phase of competitive bidding [RAP implementation]). Should one or more additional quarterly events be necessary beyond the three specified in this RFB, any additional event(s) will be handled under Cost Adder Milestone C.

During each groundwater monitoring / sampling event, the depth to groundwater and any potential separate-phase hydrocarbons (SPH) shall be gauged in all available monitoring wells before purging any of the wells for sample collection. Groundwater level measurements obtained from the monitoring wells shall be converted to groundwater elevations for assessing groundwater flow direction and hydraulic gradient.

Each of the monitoring wells designated for sample collection shall be purged and sampled using low-flow procedures in accordance with the PADEP Groundwater Monitoring Guidance Manual and standard industry practices. Any well exhibiting more than a sheen of SPH shall not be purged and sampled.[22] Bidders shall manage purged groundwater and other derived IDW generated by the well purging and sampling activities in accordance with PADEP NWRO guidance.

Groundwater samples collected during each sampling event shall be analyzed for the current PADEP short-list of ULG parameters (BTEX, MTBE, cumene, naphthalene, 1,2,4-TMB and 1,3,5-TMB) by a PADEP-accredited laboratory using appropriate analytical methods and detection levels. Groundwater samples collected during the first quarterly sampling event under the RFB work shall also be analyzed for natural attenuation / biodegradation parameters (terminal electron acceptors) of sulfate, nitrate, ferrous iron and methane. At least three samples from this quarterly sampling event shall also be analyzed for total and dissolved iron and manganese and total hardness treatability parameters.

Appropriate QA/QC samples shall also be collected during each event and analyzed for the same VOC constituents.[23] Bidders shall assume per quarterly sampling event, laboratory analysis of VOCs for: one blind duplicate and one trip blank. In addition, each event shall include low-flow purge field measurements for the following parameters: pH, temperature, specific conductance, dissolved oxygen (DO; measured in-situ), oxidation/reduction potential (ORP) and total dissolved solids (TDS).

The conduct and results of the groundwater monitoring/sampling events shall be documented in the SSCR / RAP (depending on timing) and subsequent quarterly RAPRs as defined above and, at a minimum, shall contain the following information:

- Narrative description of the sampling procedures and results;
- Tabulated data collected from the monitored wells documenting the depth to

[22] There is no indication in the available data that SPH has been identified in any of the existing site monitoring wells. If measurable SPH is discovered, any work to address the SPH would be considered a changed condition of the fixed-price contract and will require Solicitor and PAUSTIF approval of a work plan and cost estimate before beginning SPH mitigation work.

[23] Each bidder's approach to implementing Milestone C shall clearly identify the number of sampling events, number of wells / samples per event, well purging and sampling method(s), purge water disposal methods, QA/QC measures, analytes, and other key assumptions affecting the bid price.

groundwater and thickness of any SPH encountered;

- Groundwater elevation contour maps depicting groundwater flow direction in the overburden and deeper bedrock;

- Tabulated historical and current quantitative groundwater analytical results;

- Current laboratory analytical report(s);

- One site-wide iso-concentration contour map for each compound detected in any one well above the SHS during the current sampling event;[24]

- For each well exceeding SHS, a graphical depiction of historical key contaminant concentrations and groundwater elevations to provide an assessment of correlations between fluctuating water levels / precipitation events and contaminant concentrations;

- For each well exceeding SHS, a graphical depiction of recent key contaminant concentration trends;

- Discussion of the data to offer an updated assessment whether these data are consistent with a stable, contracting, or expanding plume; and

- Treatment and disposal documentation for waste generated during the reporting period.

The RAPRs shall be provided to the PADEP on a quarterly basis and within 30 days of the end of the current quarter.

Each quarterly RAPR shall be sealed by a Professional Geologist and / or Professional Engineer registered in the Commonwealth of Pennsylvania (bidders shall refer to state licensing laws to determine which seals are required based on the work performed for and documented in the quarterly Status Reports).

Milestone D – Aquifer Characterization Testing. During the previous phases of site characterization, no data was collected to quantify hydraulic properties for the shallow saturated zone in the impacted area (primarily weathered bedrock). Therefore, to estimate hydraulic parameters for the contaminated area saturated zone, support contaminant fate-and-transport modeling, and assist with developing a conceptual site model, bidders shall provide a firm fixed-

[24] All available figures (e.g., site plan, groundwater elevation maps, dissolved plume maps, etc.) shall be available in electronic format to the Solicitor upon request.

price cost to conduct single-well slug testing in three shallow monitoring wells. The three monitoring wells proposed for slug testing may consist of a combination of existing wells and any of the new wells to be installed under Milestone B, as appropriate. Each bid shall assume that slug testing will be conducted in impacted plume / treatment area wells MW-3, MW-4 and MW-6 and bidders shall provide a description of the proposed slug testing procedures and planned techniques for reducing the data. In general, the monitoring wells to be tested are adequately located to account for potential spatial variation in hydraulic properties so that a reasonable treatment area average for hydraulic conductivity can be established.

Slug tests shall be performed in accordance with accepted industry standards and the data shall be reduced / evaluated using appropriate methods (e.g., Bouwer and Rice slug test solution for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells [1976]). Documentation of the slug testing methods, results and conclusions shall be provided in the combined SSCR / RAP and the slug testing data along with other relevant site information shall be utilized in the contaminant fate-and-transport modeling described in Milestone E.

Milestone E – Contaminant Fate-and-Transport Modeling. After completing the groundwater monitoring well installations, initial and confirmation groundwater monitoring / sampling events and aquifer characterization testing required under Milestones B, C, D and G, quantitative contaminant fate-and-transport modeling shall be developed and calibrated to current conditions in order to predict future contaminant distribution. Each bid shall assume that using the PADEP New Quick Domenico model application will be appropriate for modeling groundwater contaminants in the shallow weathered bedrock.[25]

The August 2019 SCR mentions that the nearest surface water bodies are an unnamed tributary of Coon Creek located greater than 1,000 feet northeast of the site (hydraulically upgradient) and an unnamed tributary of East Branch located over 1,000 feet southwest of the site (hydraulically downgradient). Therefore, for the purpose of this RFB, bidders shall assume that surface water modeling and evaluation using applications such as SWLOAD5B and PENTOXSD will not be necessary given the distance and/or locations of these surface water bodies relative to the site and the current distribution of dissolved contaminants.

The fate-and-transport modeling shall utilize the site-specific data generated from the geotechnical testing (Milestone A), slug testing (Milestone D), and any relevant historical site characterization data. Each bidder shall describe in detail the proposed approach to completing the fate-and-transport modeling and calibration (e.g., likely source wells and calibration wells). The fixed-price cost shall include the modeling effort and documenting the modeling in the SSCR/RAP. Documentation shall describe all model input/output, provide a thorough

[25] The saturated weathered shale can be assumed to have soil like, or semi-soil like qualities including infilled fractures.

explanation of model construction, justify all input parameters, and include a detailed discussion of the modeling results and conclusions regarding current and predicted future plume stability (or lack thereof).

Milestone F – Vapor Intrusion Study. The original c-store structure has a full concrete block wall / concrete floor basement whereas the eastern c-store addition is constructed on a concrete block footing with a crawl space and soil floor (see figure in Attachment 5a). As noted in the August 2019 SCR, there are significant foundation openings including cracks and penetrations in the basement walls and floor of the original building. In addition to the employees working in the c-store on the first floor, multiple adult residents reportedly occupy the second floor apartment. Based on results from vapor intrusion (VI) screening of soil and groundwater data, it appears that the residential SHS VI screening values (SV_{soil} and SV_{gw}) are exceeded at some soil boring and monitoring well locations that fail to meet the established horizontal and vertical proximity distances from the building and at least one external preferential pathway (natural gas lateral).

ER&R conducted a preliminary VI assessment during which one soil vapor sampling point (VP-1) was installed within the dirt floor of the crawl-space below the c-store addition. The location of VP-1 is indicated on Figure 1 (Site Plan) contained in Attachment 5a. VP-1 was sampled only once in October 2018 and the analytical results revealed that vapor concentrations were below the residential sub-slab soil gas SHS VI screening values.[26] These results, however, seem to be inconclusive since the preliminary VI study was conducted inconsistent with PADEP guidance, and vapor point construction and sampling methods, including conduct of pre-sampling integrity testing of VP-1, are unknown.

To determine whether or not the current level of VI risk is acceptable to store employees and apartment residents, bidders shall provide a firm-fixed price cost to conduct an evaluation of the VI exposure pathway consistent with the requirements specified in the PADEP guidance document, "Land Recycling Program Technical Guidance Manual for Vapor Intrusion into Buildings from Groundwater and Soil under Act 2", dated January 18, 2017. Accordingly, under Milestone F, bid responses shall include the installation and sampling of two (2) on-property near-source vapor sampling points. It is generally envisioned that one point would be located at the northeast side (front) of the c-store building and the other located adjacent to the southeast side of the building (i.e., between the building and the adjacent former dispenser island & UST field source areas). Each bid must identify the proposed locations for the two sampling points on a site drawing along with construction details (including depths) and a discussion detailing the rationale for each location. Because sub-slab sampling is not possible unless sealing foundation cracks / openings is first performed, and indoor air sampling could be problematic due to external vapor influences, the objective of the near-source vapor sampling points is to first

[26] VP-1 is not a sub-slab sampling point and seems to be more reflective of a near-source point. However, the analytical results were compared to the more stringent residential sub-slab VI screening values.

assess whether an unacceptable level of VI risk may exist before considering any VI work inside the building.[27] As necessary, and consistent with PADEP guidance, the bidders plan for assessing VI risk must also consider the presence of SPH / globules in the vicinity of source area well MW-4 as previously described under the Overview of Site Characterization Activities and Results section.

Each soil vapor sampling point shall be sampled twice with the sampling events separated by at least 45 days. The samples shall be analyzed for the PADEP current short-list of ULG parameters (BTEX, MTBE, cumene, naphthalene, 1,2,4-TMB, and 1,3,5-TMB) by a PADEP-accredited laboratory using appropriate analytical methods and detection levels (laboratory detection limits for naphthalene and the other compounds shall be low enough for comparison to applicable screening values). Appropriate QA/QC samples (assume one blind duplicate per sampling event) shall also be collected during each event and analyzed for the same constituents.[28] Each bidder shall describe its approach in detail including sampling point integrity testing, sampling methods, sample analysis and schedule for when the sampling would be anticipated. Documentation of the VI study methods, results and conclusions shall be provided in the combined SSCR / RAP (Milestone H).

Milestone G – Remedial Pilot Testing. Although future remediation to attain PADEP's strict SHS may include additional excavation, contamination extending into weathered bedrock, beneath the roadway and beneath the adjacent property, indicates the remedial solution will also likely include some in-situ remediation component. As such, bidders shall provide a firm fixed-price cost for conducting specific remedial pilot testing to support the feasibility and appropriateness of alternative remediation technologies in the RAP. All regulatory approvals and permits needed for the pilot testing shall be included in bidders' bids. For the purpose of this RFB, bidders shall perform the following remedial pilot testing:

1) **Soil Vapor Extraction** in the ~8-foot to ~14-foot overburden horizon within the target remediation area;
2) **Groundwater Extraction** in the ~14-foot to ~24-foot weathered bedrock horizon of the target remediation area;
3) **High Vacuum-Enhanced Groundwater Extraction** in the ~14-foot to ~24-foot weathered bedrock horizon of the target remediation area; and
4) **Injection** (ISCO / CBI simulation) in the ~14-foot to ~24-foot weathered bedrock horizon of the target remediation area.

[27] Should analytical results from the vapor sampling points indicate that further VI assessment within the c-store building is necessary, (e.g., indoor air sampling), or the possible need for vapor mitigation, this work would be considered a changed condition of the fixed-price contract and will require Solicitor and PAUSTIF approval of a work plan and cost estimate before beginning any work.

[28] Each bidder's approach to implementing this milestone shall clearly identify the number of sampling events, number of samples per event, QA/QC measures, analytes, analytical method, and other key assumptions affecting the bid price.

This pilot testing data shall:

- Provide weathered bedrock aquifer fate and transport parameters complementary to those obtained from the Milestone D slug testing to support chemical fate and transport modeling, remedial feasibility determinations and design factors;
- Indicate the feasibility and effectiveness of extracting contaminants from the subsurface in aqueous and vapor-phases and yield the necessary vacuum / flow design requirements;
- Assess the ability to deliver and distribute various potential aqueous remedial agents (e.g., oxidants, pulverized carbon, other remedial products) into the subsurface and reveal necessary pressure / flow design parameters; and
- Provide sufficient information to recommend at least two alternative viable remedies in the RAP.

While the basic requirements of the remedial pilot testing are outlined in this RFB, bidder's responses to this RFB shall provide detailed descriptions of the proposed pilot testing methods, test and observation well locations & construction details, proposed pilot testing equipment and data to be collected and analyses to be performed. Bidders shall assume that methods and results from the remedial pilot testing will be documented in the RAP under Milestone H.

SVE Pilot Test (Minimum Requirements)

Location: extract from native (undisturbed) soil within contaminated soil zone (Figure 2)
Depth: extract from 8 – 14-foot interval
Duration: 4 hours, minimum, of extraction
Number of Extraction Wells (min.): 1
Number of Pneumatic Influence Observation Wells (min.): 5
Extraction Equipment Capacity (min.): 40 scfm at 65 in H2O vacuum
Influence Vacuum Gauge Sensitivity: 0.01 inches of water
Background Pressure / Vacuum Testing: all observation wells before extraction
Air Flow Measurement (SCFM): (a) extracted soil vapor; (b) ambient air bleed; (c) stack
Applied Vacuum Measurement (inH2O): (a) at blower; and (b) at well head
VOC Measurement w/ PID: stack air initially and every hour
Laboratory Analysis: TPH as gasoline of stack air – (a) initially and (b) at end of test
Calculations (min.): (a) effective pneumatic radius of influence; (b) VOC mass recovery potential

Groundwater Extraction (GE) Test (Minimum Requirements)

Location: extract from shallow, contaminated weathered bedrock area (MW-4 vicinity)

Depth: extract from 14-25-foot interval
Duration: 8 hours minimum of extraction at set, continuous flow rate
Number of Extraction Wells: 1
Number of Hydraulic Influence Observation Wells (min): 5
Hydraulic Head Data Loggers: transducers in each observation well & in pumping well
Background and Recovery Hydraulic Head Data Logging: 24-hours before and 24-hours after
Continuous Yield Test: determine constant rate for pump test at least 1 week prior to pilot
Drawdown in Extraction Well at End of Pilot: 7 feet
Flow Totalizer Readings: initially and every ½-hour through the test
Laboratory Analyses (min): PADEP ULG parameters & TPH as gasoline in sample collected at end of pilot test
Calculations (min.): (a) aquifer storativity, transmissivity, conductivity parameters; (b) effective hydraulic area of influence; (c) dissolved VOC mass recovery potential.

High Vacuum-Enhanced Groundwater Extraction (HVEGE) Test (Minimum Requirements)

Location: extract from shallow, contaminated weathered bedrock area (MW-4 vicinity)
Depth: extract from 14-25-foot interval
Duration: 8 hours, minimum of extraction under applied vacuum
Number of Extraction Wells: 1
Number of Hydraulic and Pneumatic Influence Observation Wells (min): 5
Hydraulic Head Data Loggers: transducers in each observation well & in pumping well
Drawdown in Extraction Well at End of Pilot: 7 feet
Vacuum Equipment Capacity: 22 inches of Hg
Influence Vacuum Gauge Sensitivity: 0.01 inches of water
Air Flow Measurement (SCFM): (a) ambient air bleed; (b) stack
Applied Vacuum Measurement (inH2O): (a) at blower; and (b) at well head
Flow Totalizer Readings: initially and every ½-hour through the test
Laboratory Analyses (min): PADEP ULG parameters & TPH as gasoline in air and water samples collected at end of pilot test
Calculations (min.): (a) effective hydraulic area of influence; (b) VOC mass recovery potential (vapor and aqueous phases).

Injection Simulation (IS) Test (Minimum Requirements)

Injected Material: clean tap water w/ non-reactive tracer (e.g. dye)
Location: inject into shallow, contaminated weathered bedrock area (MW-4 vicinity)
Depth: inject into 14-25-foot interval
Duration: 8 hours
Injection Volume: 1,000 gallons
Number of Extraction Wells: 1

Number of Influence Observation Wells (min): 3
Injection Pressure Capacity: 30 psi
Injection Flow Totalizer Readings: initially and every ½-hour through the test
Injection Pressure Readings: initially and every ½-hour through the test
Tracer Measurement at Observation Wells: initially and every ½-hour through the test
Estimations: (a) injection flow rate potential at associated pressure; (b) short-term distribution radius / area

Pilot Study Extraction / Injection & Observation Wells

Bidders shall assume that two designated test wells shall be installed for: (1) SVE; and (2) GE, HVEGE, IS. Additionally, bidders shall assume that two observation wells shall be installed to supplement the existing monitoring well network to monitor performance of the (1) and (2) tests.

The locations of the new observation wells shall be configured to provide performance monitoring at reasonable distance intervals from the designated test wells. Each bid must identify the proposed locations for the test and observation wells on a site drawing. The distances between the pilot testing wells, the new observation wells and pre-existing monitoring wells to be used for influence monitoring shall be specified in the bid response. Drilling and installation of the pilot testing wells shall be conducted concurrent with the monitoring well installations under Milestone B.

For costing purposes, bidders shall assume the following pilot study well installations to supplement the existing monitoring wells:

One SVE Pilot Extraction Well: Installed to 14 feet below grade with screened interval between 8 and 14 feet (2-inch well).

One GE, HVEGE, IS Pilot Well: Installed to 25 feet below grade with screened interval between 14 and 25 feet (4-inch well).

Two Observation Wells: Installed to 25 feet below grade with screened interval between 8 and 25 feet (2-inch well).

Although the total boring depth may vary slightly based on actual field conditions encountered, bidders shall assume advancing all test and observation well borings using a multi-purpose drilling rig capable of hollow stem auger with continuous split-spoon sampling / standard penetration tests in the overburden soil, and air rotary/air hammer drilling methods, as necessary, in the underlying weathered bedrock. Continuous samples of the overburden materials shall be examined in the field and described for lithology, groundwater occurrence, and potential staining / odor indicative of hydrocarbon contamination. The samples shall be

screened in the field using a calibrated PID and standard headspace methods. No soil samples shall be collected for laboratory analysis.

Bidders shall assume constructing the wells using Schedule 40 PVC solid casing and 0.02-inch machine-slotted well screen.

Annulus materials shall consist of a silica sand filter-pack of appropriate grain size based on the nature of the subsurface materials and well-screen slot size, and shall be extended to a height of approximately one foot above the top of the screen section. The sand filter-pack shall be overlain by a seal consisting of hydrated bentonite pellets with a minimum thickness of two feet. The remaining annulus shall be filled with cement / bentonite slurry and finished at the ground surface with an expandable locking cap fitted to the top of the PVC riser and a flush-mounted traffic-rated manhole with bolt-on lid. The flush-mounted manholes shall be set into a 2 ft. by 2 ft. concrete pad. The wellheads for the test wells will subsequently be fitted with equipment necessary to conduct the pilot testing.

To accommodate the possible need to vary the 4-inch diameter test wells and 2-inch diameter observation wells, bidders shall provide the following unit costs on the Bid Cost Spreadsheet (Attachment 2).

- Additional 4-inch diameter Hollow-Stem Auger Drilling & Split-Spoon Sampling / Air Rotary Drilling and Well Installation Footage. Bidders shall provide a fixed-price unit cost per linear foot ($/foot) for excess or reduced hollow-stem auger drilling / split-spoon sampling or air rotary drilling and well installation. This unit cost shall include borehole advancement, logging and screening, well construction materials, well installation labor, and waste management and disposal in the event that additional well footage is required.

- Should the 2-inch diameter observation wells need to be installed deeper or shallower than assumed by this RFB, bidders shall adhere to the unit costs specified under Milestone B for the 2-inch diameter monitoring wells.

Each bidder's fixed-price cost for this milestone shall account for: (i) identifying subsurface utilities and other buried features of concern including, but not necessarily limited to, contacting PA One Call and clearing each borehole location to a minimum depth of 5 feet using vacuum excavation; (ii) well development activities; (iii) management of IDW; and (iv) professional surveying of the new well locations and top-of-casing elevations. Well drilling / installation and development activities along with supporting documentation (e.g., waste manifests, boring logs, construction details, updated site plan, etc.) shall be documented in the combined SSCR / RAP under Milestone H.

Groundwater extracted during the GE and HVEGW pilot testing shall be temporarily contained in an appropriately sized storage tank and subsequently transferred via vacuum truck to an approved and licensed disposal facility. Bidders shall assume that analytical data from a wastewater sample collected from the storage tank will be sufficient for disposal facility acceptance. Bidders shall also assume that 750 gallons of wastewater will be generated during each test (i.e., 1,500 gallons total). In the event that more than 1,500 gallons are generated, bidders shall provide the following unit cost on the Bid Cost Spreadsheet (Attachment 2).

- Price per gallon for wastewater transport & disposal beyond the assumed total of 1,500 gallons ($/gallon).

Milestone H – Preparation, Submittal and PADEP Approval of a Combined SSCR / RAP. Upon completing Milestones A through G described above, the selected consultant shall prepare a combined SSCR / RAP in draft form for review and comment by the Solicitor and PAUSTIF. The combined SSCR / RAP shall contain all necessary information required under 25 PA Code §245.309, 245.310 and 245.311 and be of sufficient quality and content to reasonably expect PADEP approval. The RAP shall propose a path to site closure under the PADEP RUA SHS for soil and groundwater. Each bidder's project schedule shall provide two (2) weeks for Solicitor and PAUSTIF review of the draft document. The final report shall address comments received from the Solicitor and PAUSTIF on the draft before it is submitted to the PADEP for its review. Bidders should note that the PADEP recently granted an extension until October 1, 2021 to submit the combined SSCR / RAP. Should unforeseen circumstances preclude report submittal by this date, the selected consultant would be expected to file another reasonable submittal extension request with the PADEP.

The combined report shall document, describe and evaluate all findings provided from Milestones A through G above (and any necessary cost adder milestones), incorporate information and relevant findings from the previous site documentation (as necessary), and contain all necessary and appropriate figures, tabulated data and appendices to comply with regulatory requirements for and to obtain PADEP approval of the combined reports.[29]

The SSCR shall include an updated conceptual site model (CSM) for the Site and its vicinity based on evaluating results from the historical site investigations and from the additional site characterization milestones defined above. Information considered in developing the CSM shall consist of, but should not necessarily be limited to, stratigraphic and lithologic characteristics / relationships; a discussion of the type and characteristics of the released substance;

[29] Necessary Cost Adders may prompt adjustments to the scopes of work specified herein for any of the preceding milestones or if additional site characterization may prove necessary. Should this occur, the selected consultant should assume that: (a) the schedule for completing this Milestone will need to be adjusted (assuming the PADEP grants the necessary extensions); and (b) any added cost involved in documenting the additional activities in the SSCR / RAP shall be incorporated into the fixed-price costs for the adjusted/added scope of work under the specific task/unit cost/cost adder.

groundwater elevations and flow direction; hydrogeologic controls on groundwater movement and contaminant transport; intrinsic aquifer parameters; the distribution of hydrocarbon contaminants in soil and groundwater; evaluation of potential sensitive receptors; and consideration of the contaminant fate-and-transport modeling results.

The RAP shall identify, describe and evaluate the relative benefits and drawbacks (including estimated total closure costs) of at least two viable remedial approaches to address the identified contamination in order to attain the selected PADEP RUA SHS site closure. At least one of the approaches shall consist of, or include as a component, excavating soil exceeding the RUA SHS. The other approach(es) shall include one or more in-situ technologies that appear to be feasible based on the pilot testing results and other factors. The bidder's proposed remedial approaches will need to be capable of addressing SPH in the area of MW-4. Also, the RAP must specify that the successful bidder will demonstrate that SPH has been recovered to the maximum extent practicable including characterization and modeling of the SPH as applicable for the demonstration.

The combined SSCR / RAP shall be signed and sealed by a Professional Geologist in the Commonwealth of Pennsylvania and may also require the signature and seal of a Professional Engineer registered in the Commonwealth of Pennsylvania (bidders shall refer to state licensing laws to determine if the Professional Engineer seal is required based on the work performed for and documented in the combined report). The fixed-price cost shall also include addressing any PADEP comments on the combined report.

Optional Cost Adder Milestones

A number of optional cost adders may come into play at this site. Therefore, bidders shall provide unit pricing for these contingencies outside the base RFB scope. Note that before any work associated with these unit cost adders is conducted, the selected consultant shall provide a written request and detailed technical explanation for ICF / its technical agent for review and consideration ahead of any written authorization to proceed.

Cost Adder Milestone A – Additional Soil Characterization / Delineation. Provide a unit cost to advance one (1) additional soil boring during the mobilization for Milestone A. The unit cost shall be inclusive of boring advancement, logging, screening, abandonment / surface restoration, any waste handling / disposal, creating a boring log and reporting. The scope of work for this cost adder shall follow Milestone A guidelines. The unit prices for additional drilling footage and additional soil sampling under Milestone A shall also apply to this cost adder milestone.

- **Cost Adder Milestone A1 –** Total fixed-price unit cost to advance one additional soil boring within and in the area of the former UST field to an assumed average depth of 15 ft-bg inclusive of the activities listed above.

- **Cost Adder Milestone A2 –** Total fixed-price unit cost to advance one additional soil boring in the former dispenser area to an assumed average depth of 9 ft-bg inclusive of the activities listed above.

Cost Adder Milestone B – Installation of Additional Shallow Monitoring Well. Provide the following fixed-price unit costs per additional shallow monitoring well installation. The scope of work for this cost adder shall follow Milestone B guidelines including the assumption regarding drilling footage (assume 15-feet well depth). The unit prices under Milestone B for excess drilling and split-spoon sampling shall also apply to this cost adder milestone and would be applied beyond 15-feet per well.

- **Cost Adder Milestone B1** – Total fixed-price cost for boring advancement and installation of one (1) shallow monitoring well during a separate drilling mobilization following completion of the original Milestone B work. The fixed cost shall be inclusive of all labor, equipment, utility clearance, subcontractors, waste handling / disposal, creating a boring log/well construction detail, and reporting related to the installation of one monitoring well. The fixed cost shall also include collection of one soil sample from the well boring, if appropriate based on well location, for laboratory analysis adhering to the Milestone A guidelines.
- **Cost Adder Milestone B2** – Total fixed-price unit cost for installation of one (1) additional shallow monitoring well during the Milestone B1 drilling mobilization. The provided cost shall be inclusive of all labor, equipment, utility clearance, subcontractors, waste handling / disposal, creating a boring log/well construction detail, and reporting. The fixed cost shall also include collection of one soil sample from the well boring, if appropriate based on well location, for laboratory analysis adhering to the Milestone A guidelines.

- **Cost Adder Milestone B3** – Total fixed-price unit cost for preparing and negotiating one access agreement in the event that installing an additional well on an adjoining private property (e.g., Niklas property) is determined to be necessary and appropriate based on the findings from Milestone B.

- **Cost Adder Milestone B4** – Total fixed-price unit cost for preparing one PennDOT Right-of-Entry Agreement application and securing Department approval in the event that installation of an additional monitoring well in the PennDOT right-of-way is deemed necessary and appropriate based on the findings from Milestone B. Bidders should assume that a letter from PAUSTIF will be sufficient for PennDOT to waive application review fee and performance bond costs.

Cost Adder Milestone C – Additional Groundwater Monitoring and Sampling. Provide the

following fixed-price unit costs for additional groundwater monitoring and sampling. The scope of work for this cost adder shall follow Milestone C.

- **Cost Adder Milestone C1** – Unit cost for monitoring and sampling one (1) additional shallow monitoring well during a sampling event conducted for the other shallow wells. The unit cost shall be inclusive of all labor, equipment, laboratory analysis, waste handling/disposal and reporting.
- **Cost Adder Milestone C2** – Unit cost for conducting one additional round of quarterly groundwater monitoring / sampling and preparation of a quarterly Status Report for submittal to the PADEP. The unit cost shall be inclusive of all labor, equipment, laboratory analysis, waste handling/disposal and reporting.

Cost Adder Milestone D – Additional Aquifer Characterization Testing. Should it be determined that additional aquifer characterization testing is necessary to quantify site hydraulic parameters following an evaluation of the data provided from the testing conducted under Milestone D, then the aquifer testing would be expanded to include one or more well locations, as appropriate. Bidders shall provide a fixed-price and work scope for slug testing at one additional well. The scope of work for this cost adder shall follow Milestone D guidelines.

Additional Information

In order to facilitate PAUSTIF's review and reimbursement of invoices submitted under this claim, the Solicitor requires that project costs be invoiced by the milestone identified in the executed Remediation Agreement. Actual milestone payments will occur only after successful and documented completion of the work defined for each milestone. The selected consultant will perform only those tasks/milestones that are necessary to reach the Objective identified in this RFB. Selected consultant will not perform, invoice, or be reimbursed for any unnecessary work completed under a milestone.

Any "new conditions", as defined in Attachment 2, arising during the execution of the SOW for any of the milestones may result in termination of or amendments to the Remediation Agreement. Modifications to the executed Remediation Agreement will require the written approval of the Solicitor and the PAUSTIF (for funding consideration). PADEP approval may also be required.

List of Attachments

1. Bid Submission Coversheet
2. Remediation Agreement
3. Required Responses Submission Form
4. Bid Cost Submission Form
5. Site Information/Historic Documents
    a. Site Figures
    b. August 1999 UST Closure Report
    c. January 2015 UST Closure Report
    d. August 2019 Site Characterization Report
    e. Second Quarter 2020 Status Report