Request for Bid

Fixed-Price Bid to Result

Remediation to Statewide Health Standard Closure

Solicitor

Harry Klodowski, Esq

Catanese Bros.

655 Little Deer Creek Valley Road
Russellton, Allegheny County, PA 15076

PADEP Facility ID #: 02-25149 **PAUSTIF Claim #: 2015-0109(F)**

Date of Issuance

February 17, 2020

Table of Contents

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 current owner 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. No proration is applicable and the deductible has been met.

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	February 27, 2020 by 5 p.m.
Mandatory Pre-Bid Site Visit	February 28, 2020 at 11 a.m.
Deadline to Submit Questions	March 20, 2020 by 5 p.m.
Bid Due Date and Time	March 27, 2020 by 3 p.m.

Contact Information

Technical Contact
Mr. Joseph Ozog, Jr., P.G. Excalibur Group, LLC 91 Park Avenue Windber, PA 15963 joeozog@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 **"Catanese Bros, Claim #2015-0109(F) – 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.

Requirements

Mandatory Pre-Bid Site Meeting

The Solicitor, the Technical Contact, or their designee will hold a mandatory Site visit on the date and time listed in the Calendar of Events to conduct a Site tour for one (1) participant per bidding company. The Technical Contact will 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. **A notice of the bidder's intent to attend this meeting is requested to be provided to the Technical Contact via email by the date listed in the Calendar of Events with the subject "Catanese Bros, Claim #2015-0109(F) – SITE MEETING ATTENDANCE NOTIFICATION".** The name and contact information of the company participant should be included in the body of the email. Notification of intent to attend is appreciated; however, it is not required. Attendance at the Pre-Bid Site Meeting is mandatory. 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, **one (1) hard copy of the signed bid package and one (1) electronic copy (one (1) PDF file on a compact disk (CD) included with the hard copy) must be provided directly to the PAUSTIF's third party administrator, ICF, to the attention of the Contracts Administrator.** The Contracts Administrator will be responsible for opening the bids and providing copies to the Technical Contact and the Solicitor. Bid responses will only be accepted from those companies that attended the Mandatory Pre-Bid Site Meeting. **The ground address for overnight/next-day deliveries is ICF, 4000 Vine Street, Middletown, PA 17057, Attention: Contracts Administrator. The outside of the shipping package containing the bid must be clearly marked and labeled with "Bid – Claim # 2015-0109(F)".** Please note that the use of U.S. Mail, FedEx, UPS, or other delivery method does not guarantee delivery to this address by the due date and time listed in the Calendar of Events for submission. Companies mailing bids should allow adequate delivery time to ensure timely receipt of their bid.

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 time-stamped and returned. If, due to inclement weather, natural disaster, or any other cause, the PAUSTIF's third party administrator, ICF's office is closed on the bid due date, the deadline for submission will automatically be extended to the next business day on which the office is open. 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 are subject to the Pennsylvania Right-to-Know Law.

Bid Requirements

The Solicitor wishes to execute a mutually agreeable contract with the selected consultant ("Remediation Agreement"). The Remediation Agreement is included as Attachment 1 to this RFB. The bidder must identify and document in their bid any modifications that they wish to propose to the Remediation Agreement language in Attachment 1 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 will be one (1) of the criteria used to evaluate the bid. **Any bid that does not clearly and unambiguously state whether the bidder accepts the Remediation Agreement language in Attachment 1 "as is", or that does not provide a cross-referenced list of requested changes to this agreement, will be considered non-responsive.** This statement should be made in a Section in the bid entitled "Remediation Agreement". Any proposed changes to the agreement should be specified in the bid; however, these changes will need to be reviewed and agreed upon by both the Solicitor and the PAUSTIF.

The selected consultant will be provided an electronic copy (template) 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 shall provide its bid cost using the Bid Cost Spreadsheet (included as Attachment 2) with descriptions for each task provided in the body of the bid document. Please note, if costs are provided within the text of the submitted bid and there is a discrepancy between costs listed in the Bid Cost Spreadsheet and in the text, the costs listed within the Bid Cost Spreadsheet will be used in the evaluation of the bid and in the Remediation Agreement with the selected consultant. Bidders are responsible to ensure spreadsheet calculations are accurate. The technical score for bids will be based solely on those tasks represented as milestones included in the Bid Cost Spreadsheet 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.

In addition, the bidder shall provide:

1. The bidder's proposed unit cost rates for each expected labor category, subcontractors, other direct costs, and equipment;
2. The bidder's proposed markup on other direct costs and subcontractors (if any);
3. The bidder's estimated total cost by task consistent with the proposed SOW identifying all level-of-effort and costing assumptions; and
4. A unit rate schedule that will be used for any out of scope work on this project.

Each bid will be assumed to be valid for a period of up to 120 days after receipt unless otherwise noted. The costs quoted in the Bid Cost Spreadsheet 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. Any bid that disregards this requirement will be considered non-responsive to the bid requirements and, as a result, will be rejected and will not be evaluated.

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. Demonstration of the bidder's understanding of the Site information provided in this RFB, standard industry practices, and objectives of the project.
2. 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). Recommendations for changes/additions to the Scope of Work proposed in this RFB shall be discussed, quantified, and priced separately; however, failure to bid the SOW "as is"

may result in a bid not being considered. 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.

3. 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.
4. The names and brief resumes/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)).
5. Responses to the following specific questions:
    a. Does your company employ a Pennsylvania-licensed Professional Geologist that is designated as the proposed project manager? How many years of experience does this person have?
    b. How many Pennsylvania Chapter 245 projects is your company currently the consultant for in the PADEP Region where the Site is located? Please list up to 10.
    c. How many Pennsylvania Chapter 245 Corrective Action projects involving an approved SCR, RAP, and RACR has your company and/or the Pennsylvania-licensed Professional Geologist closed (i.e., obtained Relief from Liability from the PADEP) using any standard?
    d. Has your firm ever been a party to a terminated PAUSTIF-funded Fixed-Price (FP) or Pay-for-Performance (PFP) contract without attaining all of the milestones? If so, please explain.
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.). 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. Please note that referencing extremely narrow or unreasonable assumptions, special conditions, and exceptions may result in the bid response being deemed “unresponsive”.
11. 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.

Bid Review and Evaluation

1. Bid Review and Scoring

   Bidders' submissions that are administratively qualified (attend the mandatory pre-bid site meeting, submission of the bid by the designated due date and time) will be evaluated.

   Technical Scoring

   Bids are evaluated for technical viability before cost is considered. Bids that have technical scores that fall within 75% of the highest technical score will advance to cost scoring. Bids with technical scores below 75% 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: $(1-((B-A)/A)) \times C = D$

   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 equal to, or greater than, twice the amount of the lowest bid cost, the formula calculation will result in a negative number and 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 ICF staff, and the TPR who assisted in developing the bid package will score all bids that are administratively qualified based on the above criteria. 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 submitted a qualified bid package 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 3 ("Source Documents"). The Source Document information 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, the bidder shall defer to the Source Documents.

Background Summary

The Catanese Bros property is comprised of four discontinuous parcels of land totaling ~6.5 acres located on the west side of Little Deer Creek Valley Road north of the town of Russellton, Pennsylvania. The portion of the property where the subject release occurred ("Site") encompasses ~3.5 acres, along Little Deer Creek Road, which cuts through the southeast corner of Site. Little Deer Creek extends along or near the western edge of Site. Surrounding properties are a mix of vacant, undeveloped land, residential, and commercial land uses. Figures 1 and 2 (Attachment 3a) show Site location and layout, respectively.

Site has been developed with a single-story building (now vacant) along with concrete and asphalt surfaces. Historically, commercial operations included automobile and truck service/repair along with retail petroleum sales that included gasoline, diesel fuel, and kerosene. These commercial operations which reportedly date back until at least the late 1940s to early 1950s, ceased sometime in 2014. No activities/operations currently occur at Site.

There are nine steel motor fuel UST units known to have been historically constructed and operated at Site:

- One 1,000-gallon kerosene UST installed in 1972 (Tank 001);
- One 4,000-gallon diesel UST installed in 1979 (Tank 002);
- One 4,000-gallon gasoline UST installed in 1982 (Tank 003);
- Three 8,000-gallon gasoline USTs installed in 1982 (Tanks 004 – 006); and
- Three storage units in one compartmentalized 4,000-gallon UST installed in 1995 that consisted of one 2,000-gallon gasoline (Tank 007), one 1,000-gallon diesel (Tank 008), and one 1,000-gallon kerosene (Tank 009).

All nine USTs were located south of the Site building with associated dispenser islands located immediately east of the USTs. Tanks 002 and 003 were located within one tank cavity bordering the south side of the building, and Tanks 001, 004, 005, and 006 were located in separate tank cavities adjoining the east side of the cavity for Tanks 002 and 003. Tanks 002 and 003 were

closed via removal in 1995, with Tanks 007-009 installed at this same location as Tanks 002 and 003. Tanks 001, and 004 through 009 were closed via removal in May 2018 along with all product piping and dispensers. Figure 3, in Attachment 3a shows where these former UST systems were located.

Release History

There are two documented Site releases: one that occurred in 1994; and the second in 2015.

1994 Diesel Fuel Release

In December 1994, a diesel fuel release was discovered when facility personnel found that the diesel UST (Tank 002) was very low on inventory, and also observed petroleum product in a tank field observation well along with a product sheen on Little Deer Creek. The release was reported to PADEP and PAUSTIF. It was reportedly deduced that approximately 843 gallons of diesel fuel had been released from the tank. Interim remedial activities included product recovery activities within Little Deer Creek. Site characterization activities in response to the 1994 release were initiated in late 1995 and continued into 1996.

In March 1995, diesel Tank 002 and gasoline Tank 003 were closed via removal. Following removal of these USTs, a soil excavation was conducted reportedly removing impacted soils to a depth of ~15 feet below grade, resulting in the total removal of approximately 397 tons of petroleum-contaminated soil. During backfilling, Tanks 007, 008, and 009 were installed at generally the same location of former Tanks 002 and 003.

In October 1996, additional soil excavation activities occurred west of Tanks 007, 008, and 009, with reportedly ~1,110 tons of petroleum-contaminated soil being removed for off-site disposal. See drawings in Attachment 3e depicting the estimated proposed limits for this 1996 soil excavation.[1] Refer to Attachment 3e for more details on the 1994 release, characterization activities, and remedial excavations.

September 2015 Gasoline Release (PAUSTIF Claim #2015-0109F)

In March 2014 a Phase I Environmental Site Assessment (ESA) was performed. This was followed in August 2015 by a Phase II (ESA). These were reportedly completed as part of due diligence in support of a potential real estate transaction within the Catanese family. The due diligence work identified concentrations of benzene, MTBE, and 1,2,4-Trimethylbenzene (1,2,4-TMB) exceeding PADEP SHS in soil. A confirmed release of unleaded gasoline (ULG) was subsequently reported to PAUSTIF in 2015 (Claim #2015-0109F).

[1] Final or completed boundaries of the 1996 soil excavation have not been found in the available Site environmental record.

Site Characterization & Interim Remedial Activities

A succession of site investigations and interim remedial action (IRA) followed the 2015 ULG release discovery (PAUSTIF Claim #2015-0109F). These activities included:

- Advancing 46 on-and off-property soil/bedrock borings;
- Installing 12 on-property overburden monitoring wells (MW-1/MW-1R[2] through MW-6, MW-8 through MW-11, MW-15, and MW-16);
- Installing eight on-property bedrock monitoring wells (MW-7D, MW-12D, MW-13D, MW-14D, MW-17D through MW-20D), and two off-property bedrock monitoring wells MW-21D and MW-22D;
- Installing one overburden (RW-2) and three bedrock (RW-1, RW-3, and RW-4) on-property pilot testing recovery wells[3];
- Installing and gauging of two stream gauges (SG-1 and SG-2) in Little Deer Creek[4];
- Sampling/analysis of soil, groundwater, and surface water samples;
- Installing and sampling/analysis of three on-property soil vapor sampling locations (near source VP-1[5] and interior sub-slab VP-2 and VP-3); and
- Excavating and disposing excessively contaminated soils as an IRA after closing the remaining UST systems (Tanks 001, and 004 through 009).

The locations of the soil borings, wells, soil vapor sampling points, and extent of the IRA soil excavation are shown on Figure 2 in Attachment 3a and the figures in the attached November 2019 SCR/RAP (Attachment 3c).

<u>Soil & Bedrock Profile</u>

Site investigation borings (advanced to ~9 to 35 feet below grade) have identified the soil profile generally consisting of unconsolidated deposits of fill material (sand and gravel) underlain by native silty clay and sandy clay soil further underlain by bedrock. Fill in the 1995 soil excavation area extended down to 10-14 feet below grade. Fill did not extend so deeply in other areas with only 2 feet of fill in some locations.

[2] MW-1 was destroyed during the 2018 interim remedial soil excavation and replaced with shallow/overburden well MW-1R.
[3] Recovery wells RW-1 and RW-2 were destroyed during the 2018 interim remedial soil excavation.
[4] Both stream gauges were destroyed during flash flooding in the spring of 2019.
[5] VP-1 was destroyed during the 2018 IRA soil excavation.

Sandstone bedrock was identified beneath the native silty clay and sandy clay overburden soil. The sandstone was encountered as shallow as 5 to 15 feet below grade. Weathered shale was found beneath the sandstone, encountered between ~16 and 25 feet below grade. Wet soil conditions in the overburden material was reportedly first encountered at a depth of ~8 to 12 feet below grade. Wet conditions were also encountered within the weathered shale.

Groundwater / Hydrology

Static groundwater levels across the Site within the shallow/overburden wells have generally ranged from ~3.5 to 14 feet below top of casing (TOC), and groundwater levels in bedrock wells have generally ranged from ~8 to 20 feet below TOC. Saturated conditions appear to be continuous between the overburden and the bedrock zones with no obvious confining stratigraphy or strong potentiometric differences. The Site shallow hydrogeology is conceptualized as a relatively thin overburden water bearing zone atop the bedrock water bearing zone.

Overburden groundwater potentiometric surface depictions indicate flow occurring in a southwesterly direction toward Little Deer Creek. Bedrock groundwater flow is perceived as having more of a southerly flow component. Groundwater and surface water elevation data suggest that overburden and bedrock groundwater discharge into Little Deer Creek and this creek is viewed as a hydraulic divide.

Resolution of Soil via IRA

Excessively impacted soil was delineated by 38 soil boring samples. It was generally found in the vicinity of the former dispenser islands and immediately south of the former UST cavities. This secondary source material was remediated via the two IRA excavations completed in July 2018. The excavations reportedly removed ~1,094 tons of excessively contaminated soil down to~12 feet (top of bedrock). The excavations encompassed the area once occupied by the UST systems.

The location of the two excavations and dimensions are provided as Figures 20 and 23 of the November 2019 SCR/RAP (Attachment 3c). Post-excavation sidewall soil sampling results are sufficient to demonstrate attainment of the PADEP's Non-Residential SHS (NR SHS) for soils via statistical 75% 10x rule at both excavation locations (see Table 9 and Figure 23 of the November 2019 SCR/RAP in Attachment 3c). Reportedly, the excavations were backfilled with shale rock fragments of various sizes. The below photograph is said to show the character of the shale rock fragments used for the excavation backfill.

Source: Letterle & Associates. Used with permission

Groundwater Contamination

Dissolved-Phase ULG Contamination

Overburden groundwater was initially found contaminated with relatively high concentrations of the full set of PADEP unleaded gasoline short list compounds. However, since completing the 2018 IRA soil excavations, contaminant concentrations in the overburden have largely been remediated leaving only a few contaminants still exceeding NR SHS. As of 3Q2019, only benzene, MTBE, or 1,2,4-TMB are found slightly in excess of the NR SHS in only a few on-property wells (MW-1R, MW-5, MW-9, and MW-10). The SCR/RAP interprets theses residual overburden groundwater impacts above NR SHS to be contained within the Site boundaries.

The SCR / RAP reports only dilute concentrations of benzene and MTBE exceeding the NR SHS in bedrock groundwater. While benzene is interpreted to be contained within Site boundaries, the SCR/RAP shows the bedrock NR SHS MTBE plume extending off-property about 20 feet to the south.

Light Non-Aqueous Phase Liquids (LNAPLs) / Free-Phase ULG

LNAPL has been measured in bedrock wells MW-7D, MW-13D, MW-17D, MW-19D, and RW-4. LNAPL thicknesses have ranged from ~5.5 feet (MW-13D) to less than one inch. As of the 3Q2019, four of these wells continue to still show measurable levels of LNAPL with measurements being ~3.5 feet at MW-7D to 0.6 and 0.1 feet at MW-13D and MW-19D. No LNAPL

has been measured at MW-17D since 2/25/19. A total of ~16 gallons of LNAPL has been recovered via hand bailing.

The SCR / RAP does not include any substantial discussion regarding the oddity of the bedrock LNAPL and the incongruous measurements of only dilute concentrations of benzene and MTBE dissolved in groundwater samples from the same areas. Typically, when gasoline LNAPL is present, groundwater samples would be expected to contain the spectrum of unleaded gasoline compounds at very high concentrations. Absent the expected dissolved impact to groundwater, the LNAPL would normally be suspected to be something other than gasoline (e.g. fuel oil). Although not presented in the SCR / RAP, the site characterization actually included a laboratory evaluation of the bedrock LNAPL. This December 2018 evaluation, included in Attachment 3d, concluded that the LNAPL was a weathered gasoline and did not resolve the apparent discrepancy.

Soil Vapor

None of the sub-slab and near source soil vapor samples exceeded any of PADEP's 2019 soil gas screening levels. Therefore, the current residual levels of soil and groundwater impacts do not appear to pose an indoor air vapor intrusion impediment to a future demonstration of attainment of the NR SHS.

Surface Water (Little Deer Creek)

No ULG COCs were detected in any of the surface water samples collected from Little Deer Creek.

Solicitor's Selected Closure Standards & Remedial Approach

Cleanup Standard

Solicitor's chosen closure approach for the Site is the NR SHS for both soil and groundwater. In November 2019, the Solicitor's consultant, Letterle, provided PADEP with a SCR/RAP prescribing vacuum enhanced groundwater extraction (VEGE) on-property to remediate residual groundwater impacts in the bedrock groundwater, and monitor natural attenuation (MNA) of the off-property MTBE contamination. PADEP subsequently provided approval of the remedial goals and proposed approach (with modifications) via letter to the Solicitor dated January 2, 2020. The approval included the following modifications, accounted for within the work scope of this RFB.

- Adding overburden wells MW-9 and MW-10 as POC wells;
- Installing an additional bedrock monitoring well near existing overburden well MW-8;

- Conducting fate and transport modeling as part of the RACR to demonstrate attainment at the groundwater/surface water interface at Little Deer Creek;
- Continuing with LNAPL recovery until maximum extent practicable is reached; and
- If the RAP remedy transitions at some point to exclusively MNA of residual MTBE, a more intensive sampling plan and remedial plan would be required.

Given the selected NR SHS cleanup goal and current residual Site contamination, remediation will necessarily need to be focused on bedrock groundwater contamination to reduce LNAPL to the maximum extent practicable (MEP) and to address the dilute dissolved contaminants until NR SHS can be demonstrated.

The SCR/RAP's prescribed VEGE approach is based on the results of pilot testing the technology on the bedrock water bearing zone as briefly summarized below.

VEGE Pilot Testing

Bedrock recovery wells RW-3 (tested on 5/14/19) and RW-4 (tested on 5/16/19) were used sequentially as extraction points for two separate phases of the May 2019 VEGE pilot study. Overburden and bedrock monitoring wells were used as influence observation points during the VEGE feasibility testing. Key results of feasibility testing included:

- Sustained short-term (i.e., 120-minute) yields from each well were in the range of 1.5 to 2 gallons per minute (gpm) without applying a vacuum;
- The RW-3 and RW-4 short-term yields increased to >3.5 gpm when vacuums of up to 24 inches of mercury (inHg) were applied;
- Application of higher levels of vacuums on RW-3 and RW-4 produced silt entrainment in extracted groundwater;
- VEGE at each of RW-3 and RW-4 generated significant bedrock hydraulic influence (ROI) more than 125 away and over 30 feet away in the overburden;
- Total iron and total suspended solids (TSS) extracted from RW-3 were reported at concentrations of 9.03 mg/l and 311 mg/l, respectively. Total iron and TSS were reported at concentrations of 48.7 mg/l and 1,780 mg/l, respectively, at RW-4.

Scope of Work (SOW)

This RFB seeks competitive bids from qualified contractors to perform the activities in the SOW specified herein. PADEP Southwest Regional Office (SWRO) reviewed and did not have any technical comments on the RFB.

Objective

The Solicitor, PADEP, the Technical Contact, and the PAUSTIF have agreed that each of the following alternative remedial pathways forward offers a technically viable and cost-effective means of attaining residential SHS soil and groundwater cleanup goal:

1) **Alternative 1 – VEGE as per the PADEP-approved RAP.** This alternative includes the RAP-specified VEGE system to recover bedrock LNAPL to the MEP and remediate limited residual bedrock and overburden groundwater contaminants utilizing six recovery wells as per the RAP. For the purposes of fixed price bidding, this alternative assumes an operation and maintenance (O&M) timeframe of the VEGE system of five full years (85% minimum operational efficiency) after which a demonstration of attainment of the residential SHS may be made for groundwater, OR;
2) **Alternative 2 – Modified VEGE + In-situ Enhanced Bioremediation.** This alternative includes the RAP-specified VEGE system to recover bedrock LNAPL to the MEP and remediate limited residual bedrock and overburden groundwater contaminants utilizing six recovery wells as per the RAP plus:
    a. Installing and operating pre-treatment equipment to sequester or remove iron to limit iron fouling of downstream treatment equipment and poor operational efficiencies;
    b. Installing, connecting and operating two additional bedrock recovery wells. One in the vicinity of MW-18D to address the elevated MTBE contamination there and a second in the vicinity of MW-19D to address the persistent LNAPL in this area;
    c. Trenching, installing and connecting pneumatic, vapor extraction and water return lines to existing RW-3 and installing a road box around RW-3 to enable the well to be readily used as a contingency VEGE recovery well, if necessary, by simply moving the pneumatic submersible from one of the other VEGE recovery wells; and
    d. Conducting enhanced in-situ bioremediation of residual dissolved MTBE and 1,2,4-TMB in overburden groundwater in the vicinity of shallow/overburden monitoring wells MW-9, and MW-10 using either a pulverized activated carbon or oxygen delivery technologies.

For the purposes of fixed price bidding, this alternative assumes an O&M timeframe of the VEGE system of four full years (85% minimum operational efficiency) after which a demonstration of attainment of the residential SHS may be made for groundwater, OR;

3) **Alternative 3 – Modified VEGE + Contaminant Flushing + In-situ Bioremediation.** This alternative includes the RAP-specified VEGE system to recover bedrock LNAPL to the MEP and remediate limited residual bedrock and overburden groundwater contaminants utilizing six recovery wells as per the RAP plus:

    a. Installing and operating pre-treatment equipment to sequester or remove iron to limit iron fouling of downstream treatment equipment and poor operational efficiencies;

    b. Installing, connecting and operating two additional bedrock recovery wells. One in the vicinity of MW-18D to address the elevated MTBE contamination there and a second in the vicinity of MW-19D to address the persistent LNAPL in this area;

    c. Trenching, installing and connecting pneumatic, vapor extraction and water return lines to existing RW-3 and installing a road box around RW-3 to enable the well to be readily used as a contingency VEGE recovery well, if necessary, by simply moving the pneumatic submersible from one of the other VEGE recovery wells;

    d. Conducting enhanced in-situ bioremediation of residual dissolved MTBE and 1,2,4-TMB in overburden groundwater deployed in the vicinity of shallow/overburden monitoring wells MW-9 and MW-10 using either a pulverized activated carbon or oxygen delivery technologies; and

    e. Re-injecting at least 20% of extracted and treated bedrock groundwater into the backfilled excavation area of former UST systems to help flush out and remediate the residual impacts.

    For the purposes of fixed price bidding, this alternative assumes an O&M timeframe of the VEGE system of three full years (85% minimum operational efficiency) after which a demonstration of attainment of the residential SHS may be made for groundwater.

Each bidder shall propose one of these three remedial approaches in its bid response.

Solicitor seeks competitive, fixed-price bids, for this Bid to Result RFB to complete the milestones outlined below intended to take this Site to closure. To be deemed responsive, each bid *must* respond *in detail* to each of the milestones, including describing the bidder's understanding of the conceptual site model and how that model relates to the bidder's proposed approach to executing the SOW. "Bid to Result" RFBs identify task goals and rely on the bidders to provide a high level of project-specific detail on how they will achieve the goal. Each bid must detail the approach and specific methods for achieving the milestone objectives. In reviewing the quality of bids submitted under Bid to Result solicitations, there is an increased emphasis placed on technical

approach and reduced emphasis on cost (as compared to bids for “Defined Scope of Work” RFBs).

Selecting one of the three remedial approaches as discussed above shall be the basis for preparing a SOW and presenting a competitive fixed-price bid.

Constituents of Concern (COCs)

The COCs for soils and groundwater associated with demonstrating attainment for the 2015 ULG release are the short list for ULG (benzene, toluene, ethylbenzene, xylenes (BTEX); MTBE; cumene; naphthalene; 1,2,4-TMB; and 1,3,5-TMB).

General SOW Requirements

The bidder’s approach to completing the SOW 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:[6]

- 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 will also include

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

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. 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 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 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.

Site-Specific Guidelines

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

Off-Property Access. Selected consultant will be responsible for securing off-property access where needed to implement the remedial approach. Work required to negotiate, and secure off-property access shall be included within the fixed price of the associated milestones for which off-property access is necessary. It is reasonable to assume that Solicitor will assist, as needed, with this effort.

Field Activities. All on- and off-site work should 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 respective Solicitor / property owner. The

selected consultant will be responsible for determining and adhering to the restrictions discussed in this section that apply to the Site.

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 and 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 remedial actions in order to move the site toward closure.

Field Instrumentation. Each bidder should state in their 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 release at this site is unleaded gasoline. As such, any field-screening instrumentation used at the site should be able to detect the presence of hydrocarbons associated with that type of product.

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

Investigation Derived Waste Disposal. The investigation derived waste (including, but not limited to, soil/rock cuttings, used carbon, well development/purging liquids, and groundwater during pilot testing activities) 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-site, but should be removed from the site in a timely manner. Bidders will be responsible for including costs in their bid response to cover the disposal of all potential waste related to the milestones included in the SOW. Each bidder should estimate the volume of waste using its professional opinion, experience and the data provided. **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 – Supplemental Site Characterization Activities and Reporting. This Milestone provides bidders the opportunity to identify the additional site characterization work that will be completed in advance of finalizing the remedial approach design and moving ahead with its implementation. Conducting supplemental investigative activities under this Milestone is mandatory. PAUSTIF will be reimbursing up to $10,000 for supplemental site characterization and reporting costs under this Milestone. Bidders are to describe what supplemental site characterization will be completed, the rationale for the work, and how the derived data will be used. For purposes of bidding, and to ensure consistent cost scoring of bids, each bidder will enter exactly $10,000 as the bid price for Milestone A in the Bid Cost Spreadsheet. PAUSTIF will only reimburse up to $10,000 of reasonable and necessary costs for those tasks actually performed. The selected bidder must provide time and material documentation in addition to supporting documentation required (in Exhibit B of the executed Remediation Agreement) to support the requested reimbursement and completion of this Milestone.

Bidders may use this opportunity to: 1) confirm any elements of the site characterization completed by a previous consultant; 2) address any perceived data gaps in the existing site characterization work; 3) assist in the evaluation and determination of remedial technologies and system design which are characterization-type activities (e.g., analysis for C_4-C_{10}); 4) assist with refining the cleanup timeframe estimate and/or other reasons related to validating the bidder's remedial approach and design (e.g., additional sampling to better determine mass in place). Note that all tasks and costs related to pilot testing and reporting must be captured under the Pilot Testing and Reporting Milestone, not Supplemental Site Characterization Activities and Reporting. If pilot testing tasks and costs are included in this Site Characterization Milestone, the bidder's technical score will be negatively impacted.

<u>Milestone A activities shall be conducted as soon as possible following execution of the Fixed-Price Agreement.</u>

Each bidder shall describe in detail its scope of work for additional site characterization activities along with corresponding technical rationale supporting the need for each additional activity. When considering what additional site characterization activities may or may not be necessary, bidders are strongly encouraged to review Letterle's November 2019 SCR/RAP (Attachment 3c), and the other documents provided in Attachment 3, rather than relying solely on the summary information presented in this RFB.

Example potential activities for bidders to consider may include tasks such as – collecting groundwater samples to better determine the distribution of residual contamination and mass, assessing the former excavation backfill material / infiltration geotechnical properties, and/or evaluate the potential for and mechanisms to avoid treatment system fouling (i.e. iron, sediment). Any and all Milestone A activities that are proposed with your firm's bid shall be accompanied by

the following:

- The purpose and need for each Milestone A activity and an appropriate breakdown;
- A detailed scope description of each activity including the use and incorporation of any pre-existing site data;
- The timing and schedule of each activity relative to the overall project schedule; and
- A description of the anticipated results of each activity and how such results may impact your proposed conceptual remedial action plan.

Following completion of the additional site characterization activities, these Milestone A activities shall be documented as discussed in Milestone C.

Milestone B – Installation of Additional Bedrock Monitoring Well. Under this task, bidders shall provide a firm fixed-price cost for installing and sampling one additional bedrock monitoring well near existing overburden well MW-8 to address PADEP's request in its January 2, 2020 conditional approval of the SCR/RAP. Each bidder shall independently consider the final location relative to utilities, bidder's own interpretation of bedrock groundwater flow variations, and configuration of the bedrock dissolved-phase plumes. Each bid response must provide the proposed labeled (with distinct identification) bedrock well location on a site drawing, along with the rationale for the location.

For costing purposes, bidders shall assume the boring for the bedrock well will be advanced into bedrock similar to the other bedrock wells to a depth no greater than 30 feet. If a bidder believes the bedrock well depth should be shallower or deeper than 30 feet, the bidder shall provide an alternative depth along with rationale. Bidders shall assume examining and describing drilling cuttings / soil cores for lithology, groundwater occurrence, and potential staining / odor indicative of hydrocarbon contamination. No soil samples will be collected from the well borehole for laboratory analysis.

The bedrock well shall be constructed in general accordance with the PADEP Groundwater Monitoring Guidance Manual. Each bidder in the bid response shall indicate the drilling methods used to advance the borehole, total depth for the well, and well construction details (i.e. well casing diameter, screened interval, sand pack, etc.). Final construction of the bedrock monitoring well must ensure that the screened interval is sealed within the bedrock and intersects the bedrock water table surface and accounts for seasonal groundwater fluctuations.

Also, under this milestone, a groundwater sample shall be collected from this the new bedrock well. The initial groundwater monitoring and sampling event shall be performed within two weeks

of installing and developing the new bedrock well, but no sooner than one week after the well has been developed. Bidders shall assume that the subsequent confirmatory monitoring and sampling event of this new bedrock well will be performed during a pre-remedial quarterly monitoring and sampling event with the other monitoring wells under Milestone F. The confirmatory event shall be conducted at least two to four weeks after the initial event.

The bedrock monitoring well shall be purged and sampled in accordance with the PADEP Groundwater Monitoring Guidance Manual and standard industry practices. The groundwater sample shall be analyzed for the PADEP short-list of unleaded gasoline 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. Bidders shall specify the analytical methods to be used for the monitoring well sample. In addition, the sampling event shall include field measurements for the following parameters: pH, temperature, specific conductance, dissolved oxygen (measured in-situ), oxidation/reduction potential, and total dissolved solids (TDS).

Each bid response shall also describe and include in the fixed-price 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 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 bedrock well location and top-of-casing elevations. Well drilling / installation and development along with supporting documentation (e.g., waste manifests, boring logs and construction details, etc.) shall be documented in a quarterly RAPR (Milestone E).

Vehicle access to the on-property MW-8 area will require securing off-property access with neighboring property owner(s). The fixed price cost for this milestone shall include work necessary for securing off-property access.

Milestone C – Pre-Remediation LNAPL Testing. Based on the available documents, it appears that no data has been collected concerning the physical and hydraulic properties of the LNAPL. Therefore, in order to establish hydraulic parameters for the LNAPL and assist with demonstrating recovery to the MEP, the bidders shall perform the following testing before implementation of pilot testing (Milestone D).

Milestone C1. LNAPL Transmissivity Testing. Bidders shall provide a firm fixed-price cost to perform single well transmissivity tests on one of the four wells that routinely exhibit measurable LNAPL, and each bid must identify the most likely well to be used for transmissivity testing, rationale, and provide a description of the proposed transmissivity test procedures and the planned techniques for reducing the data. Each bid response must also identify the amount of LNAPL necessary in order to perform the transmissivity testing. The transmissivity tests shall be performed in accordance with accepted industry standards and the data shall be reduced / evaluated using appropriate methods. (e.g., ASTM E2856). Documentation of the transmissivity

testing methods, results, and conclusions shall be provided in the reporting for Milestone E, and the transmissivity testing results shall be utilized when demonstrating that LNAPL has been recovered to the MEP in the Remedial Action Closure Report (RACR) in Milestone J.

If an adequate LNAPL thickness, as identified by the selected bidder, is not measured in one of the monitoring wells, resulting in the transmissivity testing not able to be completed prior to implementing the remedial approach, then the selected bidder would not be reimbursed for this milestone. The successful bidder will only be reimbursed for necessary tasks actually performed.

Milestone C2. LNAPL Physical/Chemical Properties. Bidders shall provide a firm fixed-price cost to perform testing on a LNAPL sample to evaluate the chemical/physical properties of the LNAPL. This testing may include, but is not limited to, vapor pressure, density, viscosity, solubility, and mole fractions. Each bid must identify the most likely well to be sampled, number of samples, and provide a description of the proposed test procedures and how the data would be used. Each bid response must also identify the amount of LNAPL necessary in order to perform the proposed testing. The proposed tests shall be performed in accordance with accepted industry standards. Documentation of the testing methods, results, and conclusions shall be provided in the reporting for Milestone E, and also utilized when demonstrating that LNAPL has been recovered to the MEP in the RACR in Milestone J.

If an adequate LNAPL thickness, as identified by the selected bidder, is not measured in one of the monitoring wells, resulting in the proposed testing not able to be completed prior to implementing the remedial approach, then the selected bidder would not be reimbursed for this milestone. The successful bidder will only be reimbursed for necessary tasks actually performed.

Milestone D – Pilot Testing and Reporting

Bidders shall prepare a conceptual remedial action plan including the conceptual design of a VEGE remedial system in their response to this RFB. To support the feasibility of bidder's proposed VEGE technology, approach and design, a pilot test shall be conducted. The purpose of the VEGE pilot test is to confirm that the bidder's proposed VEGE is:

- Technically feasible;
- Cost-effective;
- Will provide a timely closure; and,
- Designed consistently with site-specific criteria.

The bidder shall provide a detailed description of the proposed VEGE pilot testing including objectives and rationale, the use of existing or installation of new data monitoring/collection points, proposed methods and equipment to be used, data that is proposed to be collected, and including identifying any concerns with the project file pilot testing and perceived existing data gaps. Additionally, the bidder shall specify up to five basic, objective criteria that would be evaluated to determine whether the remedial action proposed in the bid response document is feasible. These "critical criteria" shall be listed with an upper and lower limit that will define the range of acceptable results (i.e., pilot testing results) relevant to the proposed remedial approach. These critical criteria must be tightly-controlled measurements or calculations that could be independently measured or verified by others during the pilot test.

For example, bids shall include language such as, "For our proposed remedial action approach to be successful and for the technology(ies) used thereby to operate as planned and meet our proposed clean up schedule, the Milestone D pilot testing must show:

1. A hydraulic ROI of at least X feet;
2. A single well vacuum-assisted sustained groundwater extraction yield between Y and Z;
3. A sustained re-infiltration rate potential of at least AA gpm per former excavation injection well; and
4. Iron and manganese levels within groundwater at or below BB and CC milligrams per liter (mg/L)."

This is only an example. Actual bid language and the associated critical criteria will vary by bidder.

The critical criteria identified in each bid and their associated acceptable range of testing results will be evaluated by the bid evaluation committee as part of the technical review. Unrealistic critical criteria or critical criteria that are unreasonable narrow will reduce the favorability of the bid as viewed by the bid evaluation committee.

Please note that all bidders shall perform a VEGE pilot test, even if the bidder is proposing to use exactly the same design as specified in a PADEP approved RAP for the subject site. In the event a bidder is proposing to use exactly the same remedial technology and design as specified in a PADEP approved RAP for the subject site, the bidder shall perform pilot testing to confirm the data and conclusions presented in the PADEP approved RAP and to confirm that the proposed remedial system and design as proposed in the bid response is feasible.

The selected bidder will prepare a Pilot Test Report and submit it to the Solicitor and PAUSTIF. The Pilot Test Report shall show that the VEGE pilot test was conducted according to the selected consultant's bid and shall constitute documentation for payment of Milestone D regardless of the result. If the results of the pilot testing show that the proposed remedial action is feasible based

on the specified critical criteria and ranges, the selected consultant shall move forward on the project.

"Pilot Test Off-Ramp" – The selected consultant and the Solicitor are protected from being obligated to move forward with a remedial action under the executed Remediation Agreement if the proposed remedial approach cannot be implemented as proposed in the conceptual design based on critical criteria outside the bidder's defined ranges from the pilot test data from Milestone D. Exhibit A of the Remediation Agreement (Attachment 1) will contain a provision that if the selected consultant's proposed remedial approach is not reasonable based solely on pilot test results indicating that it cannot be implemented as proposed in the conceptual design based on critical criteria outside the bidders defined ranges from the pilot test data from Milestone D, then one of the following conditions will apply:

1. With advance Solicitor and PAUSTIF approval, the selected bidder may elect to modify the remediation plan and continue with the project at no additional cost; that is, for the same total fixed price found in the bid response or a lesser fixed-cost. If selected consultant's modified plan is approved by Solicitor and by PAUSTIF for funding, the executed Remediation Agreement may be amended, if necessary, to agree with the modified remediation plan and costs; however, the total fixed price of the Remediation Agreement shall not be increased.
2. If the Solicitor or PAUSTIF choose not to approve the selected consultant's revised remediation plan adjusting to the new data, the Remediation Agreement for the project will terminate.
3. If the selected consultant adequately demonstrates the site conditions revealed by the results of pilot testing performed under Milestone D could not have reasonably been expected prior to conducting the Milestone D activities, the selected consultant may elect to not proceed and to terminate the Remediation Agreement for the project.

If either party elects to cancel the Remediation Agreement, the PAUSTIF will have complete discretion regarding the use of the information obtained during Milestone D activities and/or in the Pilot Test Report. The PAUSTIF may use the data as the basis for rebidding the project; however, it will be specified that any use that a third party makes of the supplemental site characterization data and/or Pilot Test Report will be at the sole risk of the third party. End of "Pilot Test Off-Ramp" language.

For consistency, bidders shall budget a maximum of 10% of the total bid cost for this Milestone, with a maximum of $50,000. For example, if the total proposed cost for Milestones A through K (excluding D) is determined to be $300,000, the fixed-price cost of Milestone D specified in the bid cost spreadsheet shall be up to, but not exceed $30,000. However, if the total proposed cost for Milestones A through K (excluding D) is determined to be $550,000, the fixed-price cost of Milestone D specified on the bid cost spreadsheet shall be up to, but not exceed $50,000.

Milestone E – Preparation/Submittal and PADEP Approval of a RAP Addendum or Preparation of a Modified Remedial Action Progress Report (RAPR). Upon completing Milestones A through D described above, and if a bidder has chosen remedial Alternative 1, the bidder's fixed price for this milestone shall include the work necessary to document the supplemental site characterization activities/findings, installation of additional bedrock monitoring well, LNAPL testing, and pilot testing in a RAPR (Milestone F). If on the other hand a bidder has chosen remedial Alternative 2 or 3, a RAP Addendum (RAPA) shall be prepared to document the supplemental site characterization activities/findings, installation of additional bedrock monitoring well, LNAPL testing, pilot testing, and the details of the amended remedial approach. This RAPA shall contain all necessary information required under 25 PA Code §245.311 and be of sufficient quality and content to reasonably expect PADEP approval.

The modified RAPR (Alternative 1) or RAPA (Alternatives 2 or 3) shall document, describe, and evaluate all findings provided from Milestones A through D, incorporate information and relevant findings from the previous site documentation (as necessary), and contain all necessary and appropriate figures, tabulated data, and appendices. The work for the RAPA shall be completed to comply with the regulatory requirements for and to obtain PADEP approval of this document. The modified RAPR or RAPA shall include updating the conceptual site model (CSM) for the Site and its vicinity based on evaluating the results of the milestones outlined above. The RAPA shall include design drawings including a process flow diagram (PFD), a piping and instrumentation diagram (P&ID) and equipment layout plan.

If preparing a RAPA, this report shall be first submitted in draft form to the Solicitor and PAUSTIF for review and comment before being finalized and submitted to PADEP. Each bidder's project schedule shall provide two (2) weeks for Solicitor and PAUSTIF review of the draft document. The final RAPA shall address comments received from the Solicitor and PAUSTIF on the draft report before it is submitted to the PADEP for its review.

The applicable document / report 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 RAPA.[7]

For only the RAPA, the successful bidder will be eligible to receive payment for 75% of the bid amount for Milestone E when there is proof the document has been completed and submitted to

[7] All figures included in the report (e.g., site plan, remedial design layout, etc.) shall be available in electronic format to the Solicitor upon request.

PADEP. The 25% balance will be due for reimbursement once proof has been provided that PADEP has approved the Milestone E deliverable document.

Milestone F – Pre-Remediation Quarterly Groundwater Monitoring, Sampling & Reporting, and Monthly LNAPL Recovery. Under this milestone, bidders shall provide a firm fixed-price to continue with quarterly groundwater monitoring and sampling events, monthly LNAPL recovery, and quarterly reporting while performing the supplemental site characterization activities (Milestone A), installing the additional bedrock monitoring well (Milestone B), LNAPL testing (Milestone C), pilot testing (Milestone D), preparation/submittal of the modified RAPR or RAPA (Milestone E), waiting on PADEP approval of the RAPA, and install/startup of the remedial system (Milestone G). For the purposes of this RFB, it is assumed that this work will be required for three quarters. However, each bid must specify the number of quarterly events, including monthly LNAPL recovery (hand bailing), that will be needed prior to, and during implementation of Milestone G along with supporting rationale. Any additional quarterly monitoring, monthly LNAPL recovery, and reporting events, beyond the three quarters specified in this RFB, shall be defined on the Bid Cost Spreadsheet and shall be incorporated in the Remediation Agreement as Optional Cost Adder Milestone F.[8]

Each groundwater monitoring and sampling event shall include the sampling of the existing 12 on-property overburden wells (MW-1R through MW-6, MW-8 through MW-11, MW-15, and MW-16), eight on-property bedrock monitoring wells (MW-7D, MW-12D, MW-13D, MW-14D, MW-17D through MW-20D), two off-property bedrock monitoring wells (MW-21D and MW-22D), and the additional on-property bedrock monitoring well installed under Milestone B.[9] During each quarterly groundwater monitoring and sampling event, the depth to groundwater shall be gauged in all existing available monitoring wells and prior to purging any of the wells for sampling. 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 in accordance with the PADEP Groundwater Monitoring Guidance Manual and standard industry practices. Any well exhibiting a measurable thickness of LNAPL shall not be purged and sampled.

Work under this milestone shall also include the recovery of LNAPL once per month at monitoring wells exhibiting measurable thickness of LNAPL. Bidder shall assume that the LNAPL recovery will be performed via hand bailing and documenting the amount of LNAPL recovered each month.

[8] The Remediation Agreement includes a Provision that the quarterly site monitoring and sampling, monthly LNAPL recovery, and quarterly reporting events are limited to the three quarters in the base contract under Milestone F plus the number of events defined in Selected Consultant's bid under Optional Cost Adder Milestone F. If additional events are required under Milestone F, pre-approval from Solicitor and PAUSTIF (for funding) is required.

[9] The fixed price cost shall also include any additional monitoring well(s) that the bidder proposes to install under Milestone A (if any).

Bidders shall manage purged groundwater, LNAPL, and other derived IDW generated by the well purging and sampling activities in accordance with the PADEP SWRO guidance.

Groundwater samples shall be analyzed for the PADEP short-list of unleaded gasoline 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. Bidders shall specify the analytical methods to be used for the monitoring well samples. Appropriate quality assurance / quality control (QA/QC) samples shall also be collected during each event and analyzed for the same parameters.[10] In addition, each event shall include field measurements for the following parameters: pH, temperature, specific conductance, dissolved oxygen (measured in-situ), oxidation/reduction potential, and total dissolved solids (TDS).

The Remedial Action Progress Reports (RAPRs) describing the sampling methods and results, and month LNAPL recovery, will be provided to the PADEP on a quarterly basis and within 30 days of the receipt of analytical results for each quarter. At a minimum, each RAPR shall contain the following:

- A summary of site operations and remedial progress made during the reporting period;
- Narrative description of the sampling procedures and results;
- Tabulated data collected from the monitored wells documenting the depth to groundwater and thickness of any free product encountered;
- Tabulated LNAPL recovery estimates;
- Groundwater elevation contour maps depicting groundwater flow direction;
- Tabulated historical quantitative groundwater analytical results including results from the current quarter;
- Current quarter laboratory analytical report(s);
- Graphical depiction of LNAPL thickness across the site and per well and total recovery estimates over time;
- One site-wide iso-concentration contour map for each compound detected in any one well above the SHS during the quarter;[11]
- For each well exceeding SHS, a graphical depiction of historical key contaminant concentrations and groundwater elevations to provide an

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

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

assessment of correlations between fluctuating water levels / precipitation events and contaminant concentrations;

- For each well containing measurable LNAPL, a graphical depiction of historical LNAPL measurements and groundwater elevations to provide an assessment of correlations between fluctuating water levels / precipitation events and LNAPL levels;
- 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, shrinking, or expanding plume;
- Treatment and disposal documentation for waste generated during the reporting period; and
- Demonstration of compliance with the required Federal, State, and local permits and approvals.

PAUSTIF will only reimburse for the necessary quarterly groundwater sampling / reporting events actually completed under this milestone (e.g., this milestone shall be considered completed with the initiation of Milestone G). Each 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 and documented in the groundwater attainment demonstration report).

Milestone G – RAP Implementation. Under this milestone, bidders shall provide a fixed price bid inclusive of all the manpower, machinery, materials, and other costs needed to fully implement the remedial solution for the site whether it be remedial Alternative 1, 2, or 3 as described in the bidders modified RAPR or RAPA.

Milestone G1 – Installation of VEGE Recovery Wells. Under this task, bidders shall provide a firm fixed-price cost for installing the five additional VEGE recovery wells as described in the RAP (remedial Alternative 1) or seven additional recovery wells if the bidder has chosen remedial Alternative 2 or 3. A bidder that has chosen remedial Alternative 2 or 3, shall explicitly identify the number, location and construction (e.g., screened interval) of proposed VEGE wells along with rationale. Each bidder shall independently consider the final locations relative to utilities, bidder's own interpretation of groundwater flow variations, evaluation of the available remedial feasibility testing data, and configuration of the bedrock dissolved-phase plumes. Each bid response must provide the proposed labeled (with distinct identifications) well locations on a site drawing, along with the rationale for each location.

The borings for the remediation wells shall be advanced into bedrock to a depth no greater than 25 feet per the RAP specifications to limit the potential for extracting non-impacted water at depth.

If a bidder believes the recovery well depths should be shallower or deeper than 25 feet, the bidder shall provide an alternative depth along with rationale. Bidders shall assume examining and describing drilling cuttings / soil cores for lithology, groundwater occurrence, and potential staining / odor indicative of hydrocarbon contamination. No soil samples will be collected from the well borehole for laboratory analysis.

The remediation wells shall be constructed in general accordance with the PADEP Groundwater Monitoring Guidance Manual. Each bidder in the bid response shall indicate the drilling methods used to advance boreholes, total depth for each well, and well construction details (i.e. well casing diameter, screened interval, sand pack, etc.). Final construction of the VEGE recovery wells must ensure that the screened interval intersects the bedrock water table surface and accounts for seasonal groundwater fluctuations.

Each bid response shall describe and include in the fixed-price 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 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 along with supporting documentation (e.g., waste manifests, boring logs and construction details, etc.) shall be documented in a quarterly RAPR (Milestone E).

Milestone G2 – In-Situ VEGE Remedial System Final Design, Equipment Purchase, and Assembly. This milestone shall include all equipment necessary to successfully implement the remedial approach of Alternatives 1, 2 or 3. Any equipment[12] that has moving parts or is part of the electronic control system (e.g. pumps, blowers, gauges, electrical sensors & switches) necessary to implement the PADEP approved RAP or RAPA shall be purchased new, and other equipment (e.g. holding tanks, trailer/shed) is not required to be purchased new provided that such used equipment is guaranteed to properly function for the life of the contract. The remedial system shall be pre-assembled and tested as much as possible as a turn-key prefabricated system prior to site deployment. Under this approach, the purchased equipment is to be fully integrated and tested electrically and mechanically inside an enclosure (properly insulated with appropriate lighting, and heating & ventilation systems) meeting applicable NFPA/NEC codes before being shipped to the site. After delivery and setting in place, final connections shall be made to the electrical service and subsurface piping / conduits installed as part of the Site Preparation Work (see below). Clear and legible copies of all equipment manuals and warranties shall be provided to Solicitor.

For the purpose of this RFB, bidders shall assume that the two ~600-pound vapor-phase granular activated carbon (VGAC) vessels, as per the PADEP approved RAP, will be sufficient for treating

[12] All equipment purchased under this contract will become the property of the Solicitor. The selected consultant shall be responsible for operating and maintaining the equipment for the effective period of the Remediation Agreement.

system off-gas. However, should it be demonstrated through pilot testing that temporary use of a catalytic oxidizer (CatOx) unit may be more efficient / economical to treat system off-gas during the first few months of remedial system operation, based on the vapor-phase contaminant mass being extracted, related costs will be covered under Optional Cost Adder Milestone UC1.

Bidders that chose remedial Alternative 2 or 3, shall review the iron and manganese data provided in the PADEP approved SCR/RAP (Attachment 3c) along with discharge permit requirements, and determine what iron sequestration removal equipment is necessary and appropriate. In addition, bidders shall determine if the oil / water separator is adequate for both LNAPL separation and sediment removal as described in RAP. If a bidder believes that additional equipment is needed for sediment filtration, the bidder shall identify the equipment, provide the rationale, and shall be included within the fixed price cost for this milestone. Bidders that elect to not propose any additional equipment to address the inorganics and/or sediment must provide the technical rationale (basis) for this decision within their bid and must explicitly state within their bid that they understand and have accounted for iron and other hardness and sediment fouling potential in their operational estimates.

Please note that the proposed remedial system shall be equipped with some form of telemetry as indicated in the PADEP approved RAP. The selected consultant shall coordinate with the telephone, cable or internet service provider to bring and provide appropriate service to the location of the remediation equipment to allow remote communications and document up-time. Payment of the service connection shall be the responsibility of the selected consultant and shall be accounted for in the quoted fixed-price bid.

Milestone G3. Site Preparation Work. The selected consultant shall obtain all necessary construction and operational permits and/ or permit exemptions and post same as required. Solicitor shall be provided copies of all permits / permit exemptions before field construction activities commence. On-site mark-out of buried utilities shall be completed in advance of any drilling or trenching activities. PA One Call notification shall be made and documented prior to drilling or trenching activities.

The selected consultant shall coordinate with the electrical service provider to bring and provide appropriate electrical service to the location of the remediation equipment. Payment of the electrical service connection, permitting, and inspections shall be the responsibility of the selected consultant and accounted for in the fixed-price bid.

Milestone G4 – In-Situ VEGE Remediation Equipment Pad, Trenching, Subsurface Piping, Mechanical, and Electrical. The selected consultant shall prepare the area where the remediation equipment will be located as specified in the approved RAP or RAPA, or as otherwise directed by the Solicitor, including, if necessary, construction of a concrete pad. Required and appropriately sized piping and electrical conduit/wiring shall be trenched and buried below the frost line extending between the remediation equipment location and the recovery wells. Buried piping

shall be installed with tracer wire to facilitate locating the subsurface lines after the trenches have been backfilled. Buried piping shall be tested for integrity and documented before trench backfilling. The successful bidder shall provide the Solicitor and PAUSTIF with documentation demonstrating integrity of the buried piping. Buried piping and conduit stub-ups shall be terminated and secured in the remediation equipment area to facilitate final connections to remediation equipment and winterization of the stub-ups. Surface restoration from all trenching and well head completions shall be similar to current conditions. Bids shall clearly describe the proposed activities to complete this milestone.

If proposing Alternative 3, bidders shall include in Milestone G4 a description and associated cost of the approach (e.g., infiltration well(s) or trench design) to re-infiltrate the proposed non-trivial fraction of the treated groundwater into the former 2018 excavation. Alternative 3 bids shall indicate the proposed target re-infiltration rate range.

Milestone G5 – Final Connections and Startup / Trouble-Shooting of the In-Situ VEGE Remediation System. The selected consultant shall make the final connections between piping/conduit stub ups and power drop/meter and the manifold(s)/conduits on the interior of the pre-assembled and tested treatment system. Any sections of above-grade piping located outside of the equipment enclosure will need to be freeze-protected (e.g., by insulation and heat tracing).

The selected consultant shall start up and demonstrate proper operation of the remediation system equipment, and each bid response shall describe start up / trouble-shooting procedures. At a minimum, such demonstration shall include documentation that: (a) above-grade piping final connections shall be tested for integrity and documented; (b) all below- and above-grade equipment is operational; (c) the design parameters are achievable at the treatment system and at the well heads; (d) all safety and control switches function properly; and (e) the system can operate automatically (without manual intervention). The successful bidder shall provide the Solicitor and PAUSTIF with startup documentation demonstrating proper operation of the system. To the extent problems are identified during the site work preparation and/or remediation system installation and start-up phases, the successful bidder shall repair these problems and repeat the proper system operation demonstration.

Also as part of this task, the selected consultant shall prepare an operations and maintenance (O&M) Plan, and as part of the O&M Plan, the selected consultant shall also be responsible for developing a checklist to be completed by field technicians during subsequent O&M visits that will provide key information deemed necessary to evaluate remediation performance, permit compliance, and system maintenance on a continuing basis. Each bid response shall include an appropriate example of an O&M checklist that identifies typical minimum data requirements to be recorded during each O&M site visit.

The selected consultant will provide the Solicitor with a copy of the O&M Plan prior to remediation system startup, and a hard copy of as-built drawings for the remediation system upon completion of the successful system startup.

The Solicitor and the PAUSTIF shall have the opportunity to inspect and confirm that the system has been installed as described in the fixed-price agreement and in the remedial system final design and is in daily operation as described in the remedial system final design. The selected consultant shall contact PAUSTIF (through their third-party administrator) immediately following completion of startup / trouble-shooting and when the system is fully operational in order to advise that the system is ready for inspection.

Milestone G6 – VEGE Remediation System O&M, Site Monitoring, Sampling, and Reporting. For this milestone, bidders shall provide the Solicitor and PAUSTIF with firm quarterly fixed-price unit costs that would include the routine O&M of the remedial system;[13] quarterly groundwater, monitoring, and sampling of the on- and off-property monitoring wells; and reporting. The quarterly fixed price cost shall also include responding to any unexpected telemetry-triggered O&M visits.

For the purposes of this RFB, it is assumed the Milestone G6 activities will be required for 20 quarters (five years) for Alternative 1, 16 quarters (four years) for Alternative 2, and 12 quarters (three years) for Alternative 3. However, each bid *must* specify the remediation timeframe (i.e., number of O&M quarters) that the bidder's proposed remedial approach will need in order to achieve the project goal of LNAPL recovery to the MEP and of reducing groundwater contaminant concentrations to below NR SHS, enabling initiation of groundwater attainment demonstration.[14][15] The bidders realistic assessment of remediation timeframe (total number of operating quarters) shall be defined on the Bid Cost Spreadsheet, and shall include the additional number of remediation quarters, beyond 20 quarters (Alternative 1), 16 quarters (Alternative 2), or 12 quarters (Alternative 3) specified in this RFB (for example, if a bidder believes it can complete the remediation in a total of 22 quarters of O&M for Alternative 1, the additional number of quarters to be included on the Bid Cost Spreadsheet is two quarters). If the bidder's O&M remediation timeframe exceeds the RFB-specified 20 quarters (Alternative 1), 16 quarters (Alternative 2), or 12 quarters (Alternative 3), the number of quarters exceeding, as specified for each Alternative, will be incorporated in the Remediation Agreement as Optional Cost Adder Milestone G6. Bidders shall assume that the remediation will need to continue until LNAPLs in monitoring wells have been recovered to the MEP and the contaminant concentrations in all of the point of compliance

[13] Electric usage; telephone, cable, internet service; and any discharge will be reimbursed as time and material cost adders to the Remediation Agreement.

[14] During the bidder's specified timeframe of site operations, maintenance, and monitoring subsequent to remediation system startup, the selected consultant, at its own expense, including **all** associated labor, shall be responsible for repairing or replacing equipment purchased for the RAP implementation that becomes damaged, destroyed, or defective.

[15] If the remediation is discontinued prior to reaching the bidders specified timeframe for remedial system operation, the selected consultant will only be reimbursed for O&M events that have been completed.

(POC) wells (as defined in Milestone H) are either below the PADEP NR SHS or “non-detect” for at least two consecutive quarterly monitoring and sampling events. Under these remediation “Termination Criterion” conditions, it is deemed appropriate to initiate the groundwater attainment demonstration. Each bid must explicitly state bidder’s understanding of the project remedial timeframe and the remediation Termination Criterion-Criteria, allowing groundwater attainment sampling to begin.

Each bid must specify the number of site visits to occur each quarter. O&M tasks will be primarily focused on data collection and evaluations to: (1) determine, demonstrate, and document remediation performance; (2) properly maintain the system equipment; and (3) demonstrate compliance with permits and other applicable regulatory requirements. The fixed price for this milestone shall include the necessary work to maintain any iron and/or sediment filtration equipment (either approved RAP or proposed in RAPA) along with any sampling associated with the equipment and/or discharge permits.

- *Performance monitoring* shall include data collection and evaluations geared toward evaluating how well the remedial strategy is working and making necessary adjustments to the system operational configuration to optimize system performance. Performance monitoring activities are to include, but not necessarily be limited to, measurements that show the groundwater is being recovered at expected yield, design vacuum is being maintained at the well heads, hydraulic influences are being sustained across the target contaminant zone, and LNAPL occurrence and thickness is diminishing. The selected consultant shall report quarterly concerning its evaluations of system performance and system optimizations performed.
- *System maintenance & monitoring* shall include monitoring and routine maintenance as specified by the equipment manufacturer(s) to ensure warranties are not voided and the equipment is kept in good working order. Operational time shall be logged by system instrumentation and monthly run-time meter readings for the VEGE extraction blower shall be reported in each quarterly RAPR. If less than 85% uptime has been achieved, documentation of operations problems shall be provided along with the changes/modifications implemented to improve performance consistency. The selected consultant is expected to maintain system operations for at least an 85% uptime by design vacuum during each quarter. Failure to meet this minimum expectation over two consecutive quarters will constitute, at the Solicitor's sole discretion, a breach of contract and the Solicitor may choose to terminate the contract.
- *Compliance monitoring* shall include system and site sampling needed to demonstrate compliance with permits and other applicable regulatory requirements. Bidders shall assume that the NPDES sampling will be performed as per the regulations including the appropriate parameters and frequency

monitoring requirements. Documentation of compliance shall be provided to the Solicitor in quarterly RAPRs and in any other reporting required by permitting agencies (i.e. NPDES).

The quarterly groundwater monitoring and sampling events will include the on- and off-property monitoring wells (including the new bedrock monitoring well to be installed adjacent to MW-8) as detailed in Milestone F. If a RAPA is proposed which includes fewer or more remediation wells, this should be explicitly stated in the Milestone G6 response and accounted for in the bidder's Milestone G6 quarterly and total cost. Groundwater samples shall be analyzed as detailed in Milestone F. During the quarterly sampling events, bidders shall keep the VEGE system operating during the monitoring and sampling events, until the last year of O&M. During the last year of O&M, the VEGE system shall be idled at least two weeks prior to the scheduled quarterly monitoring and sampling event and restarted immediately upon completion of sampling.

The RAPRs shall be prepared as detailed in Milestone F, with the addition of the following:

- A summary of site operations and remedial progress made during the reporting period, including estimates of contaminant mass recovery by the VEGE extraction along with LNAPL recovery estimates. These estimates shall be based on accurate groundwater recovery and air flow rate measurements and laboratory analyses of extracted groundwater and air (pre-treatment) samples collected at the same location. Laboratory analyses of the air samples shall include the ULG short list parameters[16] plus TPH (C4-C12), collected quarterly at a minimum;
- Graphical depiction of LNAPL thickness and recovery estimates over time, including an evaluation to demonstrate LNAPL recovery to the MEP;
- Evaluation of system performance including TPH contaminant mass recovery quantification for the quarter and cumulatively and system optimizations performed;
- Hydraulic and pneumatic influence measurements each quarterly demonstrating effectiveness across the treatment area;
- If applicable, groundwater chemistry measurements indicating successful influence of applied pulverized activated carbon or oxygen delivery technologies at overburden wells MW-9 and MW-10 (Milestone G7); and
- Operational time shall be logged by system instrumentation and reported in the RAPRs. If less than 85% uptime has been achieved, documentation of operations problems shall be provided along with the changes/modifications implemented to improve performance consistency.

[16] BTEX, MTBE, cumene, naphthalene, 1,2,4-TMB, and 1,3,5-TMB.

PAUSTIF will only reimburse for the necessary quarterly O&M and groundwater sampling / reporting events actually completed under this milestone (e.g., this milestone shall be considered completed with the initiation of Milestone H). If, in order to achieve the remediation Termination Criterion / Criteria, it is necessary to extend the period of O&M beyond the RFB-specified 20 quarters (Alternative 1), 16 quarters (Alternative 2), or 12 quarters (Alternative 3), each additional quarter, up to the total number of Consultant's bid O&M remedial timeframe, will be addressed via Optional Cost Adder Milestone G6. Consultant shall seek and obtain written approval from Solicitor and PAUSTIF to continue operation of the remedial system (Optional Cost Adder Milestone G6).[17]

Each quarterly RAPR shall be signed and 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 RAPR).

If after VEGE has been conducted for the bid number of quarters without achieving the cleanup progress that would allow groundwater attainment demonstration to begin and if a transition to exclusively MNA is, therefore necessary, this would be considered a Changed Condition of the Remediation Agreement. The concern PADEP raised with this hypothetical scenario in its January 2, 2020 SCR/RAP approval would be addressed via the Changed Conditions mechanism of the Remediation Agreement.

Milestone G7 – Enhanced *in-situ* bioremediation via injection of pulverized activated carbon or oxygen delivery product at overburden wells MW-9, and MW-10. If selecting remedial approach Alternative 2 or 3, bidders are required under Milestone G7 to provide a detailed work scope and fixed price cost for the injection of pulverized activated carbon (PAC) or oxygen delivery product (ODP) technologies into the overburden in the area of overburden wells MW-9, and MW-10 to address the residual contamination exceeding NR SHS in the overburden groundwater at these locations. Bidders shall assume that the injections would be applied to the periodic saturated / smear zone and saturated zone of the overburden to aid in reducing contaminant concentrations at these locations. Each bid must provide a schedule for when the injection would occur, a drawing showing the proposed injection locations, permitting, details regarding the proposed manufacturer and product model / composition, design volume of material to be used (and basis), how the product will be applied to the subsurface and volume per injection location, the number of injection locations, and depth interval for the injectant. In addition, bidders shall provide their injection performance criteria and proposed approach for determining if this criteria has been met.

[17] The Remediation Agreement includes a Site Specific Assumption that remediation will be complete and soil and groundwater attainment activities will be initiated within the O&M timeframe Consultant has bid.

Upon proof of successful delivery / application of the mass of the product into the subsurface as bid, the successful bidder will be eligible for reimbursement of the bid price for the application event. For the purposes of this RFB, it is assumed that only one injection event would be required to have groundwater concentrations reduced to below SHS at the two well locations. However, each bid must specify the timeframe along with supporting rationale for when a second injection event would occur if a second injection event is eventually determined to be necessary prior to implementation of attainment monitoring (Milestone H). Any additional injection event, beyond the one specified in this RFB, shall be defined on the Bid Cost Spreadsheet and shall be incorporated in the Remediation Agreement as Optional Cost Adder Milestone G7.[18]

Each bid response shall describe and include in the fixed-price 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 location using vacuum excavation; (ii) borehole abandonment and surface restoration; and (iii) management of IDW. Detailed description of this work and any supporting documentation (e.g., waste manifests, etc.) shall be documented in a quarterly RAPR (Milestone F5).

Milestone G8 – Engineering Performance Review. After the second quarter of consistent remedial system operation, the selected bidder shall complete an engineering performance evaluation of the remedial system in the second quarterly report. The performance evaluation shall determine if the remedial approach is efficiently and effectively remediating contaminant mass to achieve the remedial goal in the contract timeframe. The remedial performance evaluation shall be concluded with a written report within 30 days of the end of the second quarter of operation. Milestone G8 shall culminate in a written report presenting the testing performed, conclusions reached and recommendations to address any deficiencies and to improve remediation effectiveness. Recommendations may include both changes to operations and modifications / augmentations to the remedial design. All recommendations shall include estimated costs to implement and Solicitor may decide to accept or reject any or all recommendations. Should the selected consultant identify deficiencies and recommend actions to optimize remedial effectiveness, and the stakeholders agree with the necessity and appropriateness of one or more of the recommendations, then enabling contracting mechanisms will be explored at that time.

More specifically, the purposes of the performance evaluation shall include a critical analysis of:

- Groundwater extraction rates;
- Hydraulic and pneumatic influence measurements for the operating in-situ remediation system;

[18] The Remediation Agreement includes a Site Specific Assumption that the injection events will not exceed the one under Milestone G7 plus the one additional event under Optional Cost Adder Milestone G7.

- Quantified liquid, vapor-phase, and LNAPL contaminant mass recovery estimates;
- Groundwater quality and contaminant distribution;
- Changes in LNAPL thickness and recovery rates; and
- Comparison of progress relative to plan, identifying any deficiencies / planned corrective measures.

The bidder shall provide a detailed description of the: i) proposed performance evaluation and rationale for testing; ii) proposed methods; iii) use of existing or installation of new data monitoring/collection points; iv) proposed equipment to be used; and v) data that is proposed to be collected. Each bid shall also describe how the data/information would be evaluated.

The Milestone G8 shall reflect an understanding that the selected bidder will prepare the final Remedial Performance Evaluation Report (RPER) for Solicitor's, PAUSTIF's and its technical agent's review and comment. The final RPER shall show that the performance evaluation testing was conducted according to the selected consultant's bid and shall constitute documentation for payment of Milestone G8, and the activities shall also be reported in a concurrent RAPR.

Should the selected bidder ultimately identify deficiencies and recommend actions to optimize remedial effectiveness in the Remedial Performance Evaluation Report, and the stakeholders agree with the necessity and appropriateness of one or more of the recommendations, then enabling contracting mechanisms will be explored at that time.

Milestone H – Groundwater Attainment Demonstration. Under this task, bidders shall provide a firm fixed-price to complete up to eight quarters of groundwater monitoring and sampling events to demonstrate that LNAPL has been recovered to the MEP and that groundwater has attained NR-SHS in the POCs.[19] Each groundwater monitoring and sampling event shall include the gauging and sampling of – a) on-property overburden POC wells MW-1R, MW-3, MW-5, MW-6, MW-8, MW-9, and MW-10; b) on-property bedrock POC wells MW-13D, MW-14D, MW-17D, the additional bedrock monitoring well installed under Milestone B; off-property defacto bedrock POC wells MW-21D and MW-22D; and interior source bedrock wells MW-7D and MW-19D. If a RAPA is proposed which includes fewer or more remediation wells, this should be explicitly stated in the Milestone H response and accounted for in the bidder's Milestone H quarterly and total cost.

Groundwater monitoring, sampling, and sample analysis shall be completed as detailed in Milestone F. The conduct and results of each attainment gauging and sampling event shall be documented in quarterly RAPRs as described in Milestone F. The RAPRs shall be prepared as

[19] Bidders shall include language in their bid that if groundwater data in the POC wells has been either non-detect or below SHS for four consecutive quarters, the PADEP will be petitioned to approve a reduction in the number of groundwater attainment sampling events.

detailed in Milestone F, with the addition of the following:

- a historical graphical depiction of LNAPL thickness and recovery estimates over time (i.e. trend graphs, chronological LNAPL extent maps over time);
- a discussion of LNAPL transmissivities; and
- Discussion of the data to offer an updated assessment whether these data are consistent with a stable, shrinking, or expanding LNAPL and dissolved contaminant plume, and demonstration of LNAPL recovery to MEP.

If additional quarterly attainment events would be needed beyond eight quarters, four additional quarters will be incorporated in the Remediation Agreement as Optional Cost Adder Milestone H.[20] Consultant shall seek and obtain written approval from Solicitor and PAUSTIF to continue with quarterly groundwater attainment events (Optional Cost Adder Milestone H).

Milestone I – Post-Remedial Vapor Intrusion Evaluation. Bidders shall provide a firm fixed-price to conduct an evaluation of the indoor air exposure pathway post-remediation, which shall be consistent with the requirements of the vapor intrusion guidance document, dated January 19, 2019, provided in Section IV of the Act 2 Technical Guidance Manual (TGM). As part of this evaluation, each bid shall include the sampling of the two on-property sub-slab soil vapor sampling points. Each of the sampling events shall be completed twice post-remediation and separated by at least 45 days. The samples shall be analyzed for the PADEP short-list of unleaded gasoline parameters (BTEX, MTBE, cumene, naphthalene, 1,3,5-TMB, and 1,2,4-TMB) by a PADEP-accredited laboratory using appropriate analytical methods and detection levels. Each bid shall describe their approach in detail, including providing the location of the sampling points on a site drawing, rationale for the proposed locations, sampling methods and analysis, and schedule for when the sampling would be anticipated. Each bidder's approach to implementing this milestone shall clearly identify the number of sampling events, number of samples per event, QA/QC measures and samples, analytes, analytical method, and other key assumptions affecting the bid price.

Milestone J – Preparation, Submission, and PADEP Approval of RACR. Under this milestone, the bidder will prepare a fixed-price cost to prepare a draft and final RACR following the completion of milestones F through I, and related optional cost adder milestones. The RACR shall be prepared in accordance with Section 245.313. At a minimum, the RACR shall provide the details for Tasks A through I, and optional cost adder milestones. The RACR shall also include plume stability analysis; fate and transport modeling conducted, in part, to demonstrate attainment of the SHS or the lowest surface water quality criterion of the groundwater/surface water interface

[20] If it becomes evident anytime during the groundwater attainment demonstration (initiated subsequent to completing Milestone G6) that the attainment demonstration will not be successful within the 8 quarters, and up to 4 additional quarters (Optional Cost Adder Milestone H) in one or more of the POC wells (e.g., a greater than 10X result or more than two SHS exceedances, etc.), this will represent a New Condition under the contract.

at Little Deer Creek; discuss the selected closure criteria for the site; provide proof of soil and groundwater attainment; and request permanent closure for the site for the current release under an Act 2 Relief of Liability (ROL). The project schedule should allow two (2) weeks for Solicitor and PAUSTIF review of the draft RACR before a final version is submitted to the PADEP. The selected consultant shall then prepare and submit the final RACR to the PADEP in accordance with Section 245.313, and 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 RACR). The fixed-price cost shall also include addressing any PADEP comments on the RACR.

Milestone I – Site Closure / Restoration Activities. Under this milestone, the bidder shall describe and provide a fixed-price bid for properly closing the site, including: removal of the remedial system and proper disposal of any remaining wastes; in-place abandonment of remedial system below grade piping; in-place abandonment of monitoring and recovery wells, and vapor monitoring points consistent with PADEP guidelines; well head removals; and re-vegetation, concrete / asphalt repairs, as necessary, for areas that have been disturbed by site characterization or remedial action activities. This task shall also include photo–documenting the site restoration work and completion / submittal of the well abandonment forms. Copies of these photographs and forms shall be provided for the Solicitor's files.

Each bid shall specify the number of days for initiating Milestone I following approval of the RACR by PADEP, and shall be conducted in accordance with standard industry practices and applicable laws, regulations, guidance, and PADEP directives. Well, vapor monitoring point abandonment, remedial system removal, and restoration activities will be coordinated with the Solicitor.

The selected consultant shall determine whether the Solicitor wishes to maintain any components of the remedial system (e.g. treatment building), as applicable, before removing it from the Site.

Optional Site Specific Milestones

Bidders shall also provide fixed unit pricing on a number of optional milestones that may or may not be required over the course of the contract. These optional milestones are not expected to be required and none shall be implemented by selected consultant without all of the following: written request by the selected consultant along with rationale; review of selected consultant's written request by Solicitor, PAUSTIF / ICF and its technical agent; and written approval by Solicitor. Reimbursement for the optional milestones will only be for those pre-approved in writing.

Optional Cost Adder Milestone F – Additional Pre-Remediation Quarterly Monitoring, Sampling & Reporting, and Monthly LNAPL Recovery. Under this milestone, bidders shall provide the Solicitor and PAUSTIF with a firm quarterly unit fixed-price cost that would include the quarterly groundwater monitoring, sampling / analysis of the on- and off-property monitoring wells

identified in Milestone F;[21] monthly LNAPL recovery, and quarterly reporting beyond the three quarters specified in Milestone F. The SOW for this unit cost adder milestone should follow Milestone F guidelines. Each bid must include the rationale for needing to implement this optional cost adder milestone.

Optional Cost Adder Milestone G6 – Additional Remediation System O&M, Site Monitoring, Sampling, & Reporting. Under this milestone, bidders shall provide the Solicitor and PAUSTIF with a firm quarterly unit fixed-price cost that would include the routine O&M of the remedial system; quarterly groundwater, monitoring, and sampling of the on- and off-property monitoring; and reporting beyond the timeframe specified in Milestone G6. The SOW for this unit cost adder milestone should follow Milestone G6 guidelines. Each bid must include the rationale for needing to implement this optional cost adder milestone.

Optional Cost Adder Milestone G7 – Additional Enhanced *in-situ* bioremediation via injection of pulverized activated carbon or oxygen delivery product at overburden wells MW-9 or MW-10. Under this milestone, bidders shall provide the Solicitor and PAUSTIF with a firm unit fixed-price cost that would include one additional remedial injection event in the vicinity of one well location. Each bid must specify the timeframe along with supporting rationale for when a second injection event would occur if a second injection event is eventually determined to be necessary. The SOW for this unit cost adder milestone should follow Milestone G7 guidelines. Each bid must include the rationale for needing to implement this optional cost adder milestone.

Optional Cost Adder Milestone H – Additional Groundwater Attainment Demonstration. Under this milestone, bidders shall provide the Solicitor and PAUSTIF with a firm quarterly unit fixed-price cost that would include the quarterly groundwater, monitoring, and sampling of the on- and off-property POC wells, and interior source wells identified in Milestone H; and reporting beyond the timeframe specified in Milestone H. The SOW for this unit cost adder milestone should follow Milestone H guidelines. Each bid must include the rationale for needing to implement this optional cost adder milestone.

Optional Cost Adder Milestone UC1 – Temporary Operation of CatOx Unit. Under this milestone, bidders shall provide a firm fixed-price unit cost incorporating charges for delivery and subsequent return of a CatOx unit, installation and removal of the CatOx unit from the remedial system, and CatOx unit rental and operational charges (e.g., electric usage) for a period of three months. Before implementing this optional milestone, Consultant must provide system data to PAUSTIF and Solicitor demonstrating the need for a CatOx unit and shall secure PAUSTIF/Solicitor approval. The fixed-price unit cost shall be inclusive of all labor, subcontractor costs, any permitting fees, and waste handling / disposal items. Bidder's shall also identify the mass recovery rate threshold / criterion for switching from CatOx treatment to VGAC (e.g., once

[21] The fixed price cost shall also include any additional monitoring well(s) that the bidder proposes to install under Milestones A (if any).

TPH as gasoline mass recovery rates decrease to below X pounds per day, the CatOx unit will be replaced with VGAC).

Optional Cost Adder Milestone UC1A – Additional Month of CatOx Unit Rental. Bidders shall utilize this optional cost adder milestone for invoicing monthly rental of the CatOx unit beyond the period of three months specified under Optional Cost Adder Milestone UC1 above. Any additional months of CatOx rental beyond the three months specified under Milestone UC1 will require PAUSTIF/Solicitor approval and shall adhere to the unit costs specified for Milestone UC1 in the Remediation Agreement. Note that charges for delivery and subsequent return of the CatOx unit, and installation / removal of the CatOx unit from the remedial system, will be fully captured under Milestone UC1.

Optional Cost Adder Milestone UC2 – Liquid GAC (LGAC) Change-Out. Under this milestone, bidders shall provide a firm fixed-price unit cost for each LGAC change-out event of the "primary" LGAC vessel, placing the vessel with the fresh virgin GAC in the secondary position. Bidders shall detail the size of the LGAC units (pounds / type of GAC), scope of work and provide the criteria or "trigger(s)" that would be used in determining when the LGAC needs to be replaced (e.g., once the carbon in the LGAC unit has adsorbed 15% of its weight in TPH as gasoline contamination determined by mass recovery calculations). The fixed-price cost shall be inclusive of all labor, subcontractor costs, LGAC replacement, and waste handling / disposal items.

Optional Cost Adder Milestone UC3 – VGAC Change-Out. Under this milestone, bidders shall provide a firm fixed-price unit cost for each VGAC change-out event of the "primary" VGAC vessel, placing the vessel with the fresh virgin GAC in the secondary position. Bidders shall detail the size of the VGAC units (pounds / type of GAC), scope of work and provide the criteria or "trigger(s)" that would be used in determining when the VGAC needs to be replaced (e.g., once the carbon in the VGAC unit has adsorbed 15% of its weight in TPH as gasoline contamination determined by mass recovery calculations). The fixed-price cost shall be inclusive of all labor, subcontractor costs, VGAC replacement, and waste handling / disposal items.

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 1, 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. Remediation Agreement
2. Bid Cost Spreadsheet
3. Site Information/Historic Documents
    a. Figures 1 through 3
    b. 4th Quarter 2019 RAPR, dated January 2020
    c. SCR/RAP, dated November 2019 & PADEP Approval Letter
    d. LNAPL Forensic Evaluation Report, dated December 2018
    e. 1994 Diesel Release Information