Request for Bid

Fixed-Price Bid to Result

Remediation to Closure

Solicitor

Betty Hess

Cooks Country Store

21042 Cooks Road
Robertsdale, Pennsylvania 16674

PADEP Facility ID #: 31-07856 **PAUSTIF Claim #: 2014-0163(I)**

Date of Issuance

November 28, 2016

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

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

Calendar of Events

Activity	Date and Time
Notification of Intent to Attend Site Visit	December 9, 2016 by 5 p.m.
Mandatory Pre-Bid Site Visit	December 12, 2016 at 11 a.m.
Deadline to Submit Questions	January 13, 2017 by 5 p.m.
Bid Due Date and Time	January 27, 2017 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 **"[insert Site name and claim number provided on cover page] – 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 may answer questions at the Site meeting or may collect questions and respond via email. All questions and answers will be provided via email to all attendees. This meeting is mandatory for all bidders, no exceptions. This meeting will allow each bidding company to inspect the Site and evaluate Site conditions. **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 "[insert Site name and claim number provided on cover page] – 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.

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 # [insert claim number provided on cover page]".** 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). Bidders shall prepare a conceptual remedial action plan including the conceptual design of a remedial system in their response to this RFB. Recommendations for changes/additions to the Scope of Work proposed in this RFB shall be discussed, quantified, and priced separately; however, failure to bid the SOW "as is" may result in a bid not being considered.
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”.

General Site Background and Description

Each bidder should carefully review the existing information and documentation provided in Attachment 3. The information and documentation has not been independently verified. Bidders may wish to seek out other appropriate sources of information and documentation specific to this site. If there is any conflict between the general site background and description provided herein and the source documents within Attachment 3, the bidder should defer to the source documents.

Background Summary

The Cook Country Store facility is located at 21042 Cooks Road northeast of the town of Robertsdale, Pennsylvania, occupying ~1.61-acres, irregular-shaped, property bisected by Cooks Road (PaDOT SR 3019), and immediately south of the intersection of Cooks Road and Old Plank Road (PaDOT SR 994). Location of the Site is shown on Figure 1 provided in Attachment 3a. The portion of the subject property on the west side of Cooks Road is improved with the following: a one-story commercial structure (former Cooks Country Store); a two-story residential dwelling; a pavilion; a shelter; and former dispenser island canopy. These improvements are all located in the central portion of the subject parcel. The portion of the subject property on the east side of Cooks Road is essentially vacant land with vegetation and is only improved with a gravel parking area. Surrounding properties are mainly vacant/undeveloped and residential with exception of a commercial landscaping business to the northeast, on opposite side of Old Plank Road. Cooks Road and its right-of-way (ROW) bisects the subject property. There are two additional ROWs adjoining the property: the ROW for Old Plank Road to the north/northeast; and ROW for an abandoned railroad to the east. The property is adjoined to the west by a vacant / residential lot.

There are two unused production water wells located on the Site. The Site also has an on-Site septic tank and leach field (see Figure 2). One of the water wells is located in a crawl space beneath the commercial structure (also referred to as the “Inside Well”) and the second water well is located west of the residential dwelling (also referred to as the “Outside Well”). The Inside Well is reportedly accessible; however, there are no construction details available. The Outside Well is also reportedly accessible and is constructed to ~50 feet in depth but the depth of the surface casing is not available. Both water wells are reportedly functional, but not currently in-use. As discussed later in this RFB, no gasoline contaminants have been detected in samples from these water wells. The locations of the on-property water wells are shown on Figure 2.

No fuel dispensing or other operations / activities are currently conducted at the Site. The Site reportedly had two generations of UST systems. The first generation included three gasoline USTs, which consisted of one 2,000-gallon (Tank 001), one 3,000-gallon (Tank 002), and one 4,000-gallon (Tank 003), formerly located along the north side of the former Cooks Country Store building. The dispenser island was located east of the former Cooks Country Store building, between the building and Cooks Road. Tanks 001, 002, and 003 were removed in

May 1997 and replaced by installing three USTs in the southern corner of the Site, south of the Cooks Country Store building. The UST system installed in May 1997 included one 4,000-gallon (Tank 004), one 3,000-gallon (Tank 005), and one 2,000-gallon (Tank 006), all containing unleaded gasoline. The May 1997 UST system upgrades also included the product piping and dispensers. Tanks 004, 005, and 006 were closed via removal in November 2014. See Figures 1 and 2 in Attachment 3a for the location and layout of the former UST systems.

Release History / UST System Closure

In January 1997, a release was suspected while performing product piping modifications on the former UST systems located north of the former Cooks Country Store building when groundwater with "vapors" was encountered.[1] Two groundwater samples collected contained concentrations of MTBE, benzene, toluene, ethylbenzene, and naphthalene exceeding PADEP standards. This release was reported to PAUSTIF and was granted eligible as claim #1997-0027(M). Tanks 002 and 003 (3,000- and 4,000-gallon gasoline) were located in the same tank cavity, and Tank 001 (2,000-gallon gasoline) was located in a separate tank cavity to the east of Tanks 002 and 003. Three test pits were excavated around the former tank fields, and soil samples collected from two of the three test pits did not exhibit concentrations above PADEP standards. Due to the contamination, the property owner[2] decided to install new USTs in the southern corner of the Site, south of the former Cooks Country Store building and removed the three USTs that existed at this time (Tanks 001, 002 and 003).

After installation of the replacement UST systems (Tanks 004, 005, and 006) in May 1997, Tanks 001, 002, and 003 were closed via removal also in May 1997. During closure activities, soils directly located below the product piping for Tank 002 (3,000-gallon) and Tank 003 (4,000-gallon) was "grossly contaminated".[3] Product piping was reportedly in very bad condition, and the source of the release is believed to have occurred at a 90-degree elbow in the piping for Tank 002.[4] Groundwater was encountered at ~5 feet below grade, and ~100 tons of contaminated soils were removed for off-property disposal. Following removal of contaminated soils, five soil samples were collected from the sidewalls of two tank cavities, three from the Tank 002 and 003 cavity and two from the Tank 001 cavity, with the samples results being below PADEP standards. In addition, two soil samples were collected from below the two gasoline dispensers located east of the former Cooks Country Store building, with sample results indicating concentrations of benzene and naphthalene exceeding PADEP standards. Three observations wells were installed in the tank cavities prior to backfilling. Layout of the UST system and sample locations are provided in the 1997 UST Closure report in Attachment 3e.

Characterization activities performed in February 1997, prior to the removal of Tanks 001, 002, and 003, included the excavation of three test pits surrounding the tank fields and collection /

[1] Notification of Reportable Release/Notification of Contamination form, dated January 24, 1997.
[2] Previous property owner, not the current Claimant / Solicitor of this RFB.
[3] Letter to ICF Kaiser prepared by Earthtech, dated June 6, 1997.
[4] Underground Storage Tank System Closure Report Form, dated July 31, 1997.

analysis of soil samples. Soil sample results were reportedly below the PADEP standards at this time.[5] Following removal of the three tanks, three observation wells were installed within both tank fields. Samples collected from the three observation wells were either below PADEP standards at this time or "non-detect".[6] No SCR appears to have been prepared associated with the 1997 UST removal work and soil exceedances identified beneath the dispensers, and no further investigation or remedial actions appear to have been performed.

The UST systems installed in 1997 were registered as temporary-out-service (TOS), and the facility was closed and inactive since May 2012. In November 2014, during UST closure / removal activities, a release (associated with PAUSTIF Claim 2014-0163(I)) was suspected based on "stained soils" and "strong odors",[7] and later confirmed at the former gasoline dispenser island[8], associated with Tanks 004 (4,000-gallon), 005 (3,000-gallon), and 006 (2,000-gallon). As a result, a verbal notification of a reportable release was provided to PADEP on 11/25/14 and a written notification was submitted on 11/26/14. On 11/24-25/14, Tanks 004, 005, and 006, portion of the product piping[9], and dispensers were closed via removal. Impacted soils were discovered underneath the dispenser islands; however, no noticeable impacts were reportedly observed in the area of the tank cavity in the southern portion of the property. Source of the release is believed to be caused by faulty unleaded gasoline dispensing equipment and/or piping/connections beneath the dispensing equipment.[10] A total of five post-removal soil samples were collected from the tank cavity (two sidewall), product piping (one sample), and dispenser islands (two samples) with both soil samples collected in the location of the former dispenser islands containing concentrations of benzene, toluene, ethylbenzene, naphthalene, 1,2,4-trimethylbenzene (1,2,4-TMB), and 1,3,5-trimethylbenzene (1,3,5-TMB) exceeding PADEP Statewide Health Standards (SHS). Groundwater was encountered in the tank cavity and samples collected there were reportedly all "non-detect" for all compounds. The former locations of Tanks 004, 005, and 006, product piping, and dispenser islands, and sample locations are shown in the 2015 UST Closure Report (Attachment 3d).

Site Characterization & Interim Remedial Activities

Site characterization activities associated with the 2014 confirmed unleaded gasoline release were initiated in August 2015 by the Solicitor's consultant, Mountain Research LLC (MRLLC). The characterization activities included: advancing 48 on-property soil borings (SB-1 through SB-31, and for those associated with monitoring wells MW-1 through MW-7, MW-9 through MW-12, MW-1D, RW-1, MW-1D Abandoned, VP-3 Abandoned); collecting / analyzing soil samples from select soil borings; installing shallow overburden groundwater monitoring wells MW-1 through MW-12; installing one bedrock monitoring well MW-1D; installing shallow overburden recovery well RW-1 used for feasibility testing; collecting / analyzing groundwater samples; installing five soil vapor monitoring points VP-1 through VP-5 to depths ranging from 2

[5] Copies of the soil analytical reports are not available.
[6] Groundwater concentrations were also below current PADEP Statewide Health Standards.
[7] UST Closure Report, prepared by Petroleum Maintenance Service, dated February, 9, 2015.
[8] Same location when previous former Tanks 001, 002, and 003 existed as the Site.
[9] A portion of the product piping appears to have been abandoned in-place.
[10] February 2016 Site Characterization Report.

to 5 feet below grade; collecting / analyzing soil vapor samples; aquifer testing (slug testing and single well pump testing); and conducting a geophysical survey. Locations for the soil borings, monitoring wells, and soil vapor points are shown on Figures 2 and 3 in Attachment 3a.

Based on the available site information, soil borings were advanced to a depth of 4 to 15 feet below grade, with exception of on-property boring for bedrock well MW-1D. Shallow overburden monitoring wells were installed to depths ranging from 6 to 13.5 feet below grade. Bedrock monitoring well (MW-1D) was installed to a depth of 28 feet. Sandstone or shale bedrock was encountered during the characterization activities at depths ranging from 7.5 to 15 feet below grade. The unconsolidated materials underlying the Site consist of a mixture of fill material and natural silty clay, sandy clay, sand, sandy silt, gravel and cobbles with weathered shale and sandstone. The fill material (sand, silt, pea gravel, limestone and sandstone rock fragments) extended to a depth of ~5 feet was only encountered at borings MW-4, SB-7, SB-10, and SB-18 in the area of the former dispenser island and on the north side of the commercial building. Soil saturation during drilling was reportedly first encountered in the overburden material at a depth of ~3 to 10 feet below grade.

A total of 63 soil samples were collected from on-property soil borings, with most of the soil samples collected from the periodically saturated (or smear zone) and saturated zone based on water level data. Concentrations of benzene, toluene, ethylbenzene, total xylenes, naphthalene, 1,2,4-TMB, and 1,3,5-TMB were found to exceed the PADEP SHS in soil samples collected within the unsaturated and smear zone. Soil impacts exceeding PADEP SHS within the unsaturated and smear zone includes the area in the general vicinity between the former commercial building and Cooks Road (location of the former dispenser islands), and possibly extending beneath a portion of the commercial building and the ROW for Cooks Road. Soil boring locations are shown on Figure 3 in Attachment 3a. Approximate area for unsaturated and smear zone soil impacts exceeding SHS is shown on Figure 15 in the September 2016 Supplemental Site Characterization Report / Remedial Action Plan (SSCR/RAP) provided as Attachment 3b[11].

The current monitoring well network consists of shallow overburden wells MW-1 through MW-12, and one bedrock monitoring well MW-1D. Wells MW-5 and MW-6 are located to the east of the source area on the opposite side of Cooks Road (sidegradient / downgradient) of the source area. In addition, there is one on-property recovery well (RW-1) that was used for pilot testing. Static groundwater levels within the monitoring wells have ranged from ~1 to 4 feet below top of casing. Groundwater flow direction inferred from potentiometric surfaces and dissolved contaminant distribution appears to be generally to the northeast and east towards the nearby stream channels, Yellow Branch Creek to the north and Great Trough Creek to the east.

Shallow overburden monitoring well MW-1, located immediately downgradient of the former dispenser island (source area), currently exhibits the highest concentrations of the COC, with concentrations of benzene, toluene, ethylbenzene, naphthalene, 1,2,4-TMB, and 1,3,5-TMB

[11] According to Consultant, the scales on SSCR / RAP Figures 15 and Figure 21 are incorrect. The scales on these maps should be “1 inch = 20 feet” and, accordingly, the scale bar should show “10” and “20” instead of “15” and “30”.

exceeding SHS. Other wells MW-2 and MW-3, located surrounding the former dispenser island, also exhibit concentrations exceeding SHS for benzene, toluene, naphthalene, and 1,2,4-TMB at similar or lower concentrations than at MW-1. Well MW-4, located in the area of the former dispenser island, has exhibited concentrations of benzene, naphthalene, and 1,2,4-TMB above SHS; however, recently the concentrations have decreased to below SHS. Wells further downgradient of the source area only exhibit concentrations of benzene and 1,2,4-TMB above SHS; however, the concentrations are an order-of-magnitude (OOM) lower than in groundwater from wells MW-1, MW-2, and MW-3. Groundwater samples from bedrock well MW-1D have been "non-detect" during the two sampling events conducted at this well. The assumed extent of the contaminant plumes for the COC exceeding SHS in the shallow overburden groundwater are shown in the 2016 SSCR/RAP (see Attachment 3b).

Two rounds of samples have been collected / analyzed from the two on-property water production wells and a potable water well located off-property to the northeast, on the opposite side of Old Plank Road. This off-property water well is reportedly installed to ~150 feet below grade with at least 50 feet of steel casing. All of the production well groundwater sample results have been "non-detect" for the unleaded gasoline constituents.

Soil vapor samples were collected from VP-1 through VP-5 located along adjoining the east and north sides of the commercial building (VP-1, VP-2, and VP-3) and south side of the residential dwelling (VP-4 and VP-5). The sampling points were each sampled twice (7/8/16 and 7/21/16). Only the samples collected from VP-1 have exhibited soil vapor concentrations exceeding the PADEP indoor air screening levels for benzene, ethylbenzene, total xylenes, 1,2,4-TMB, and 1,3,5-TMB.

Solicitor's Selected Closure Standards & Remedial Approach

Solicitor's chosen closure approach for the Site is residential SHS for both soil and groundwater. In September 2016, the Solicitor's consultant, MRLLC, provided PADEP with a SSCR/RAP prescribing soil excavation/removal followed by use of a vapor enhanced groundwater extraction (VEGE) system on-property to remediate residual soil impacts inaccessible to the excavation and related residual groundwater impacts. PADEP subsequently provided approval of the remedial goals and proposed approach (with no comments/modifications) via letter to the Solicitor dated 9/19/16.

Pilot Testing to assess the feasibility of the proposed VEGE remedial approach was performed at the Site on 6/28/16 and 6/29/16. The feasibility testing included a short term groundwater extraction test and VEGE test using well RW-1. MRLLC performed the groundwater extraction test on RW-1 for ~4.65 hours. A submersible electric pump was initially utilized; however, the pump dewatered the well in a short period of time without any recharge. The test was continued using a pneumatic submersible pump, MRLLC reported that a total of 164.6 gallons of groundwater was extracted over 279 minutes (equating to ~0.5 gpm). The VEGE pilot test on RW-1 was performed over a duration of ~6 hours, and prior to applying any vacuum, RW-1 was dewatered using an electric submersible pump. The test was performed in steps, applying three

levels of vacuum to RW-1 and included: 60 minutes at 2.8 inches of mercury (in Hg); 75 minutes at 4.5 in Hg; and the remaining 255 minutes at 8.6 in Hg. MRLLC calculated a pneumatic radius of influence (ROI) of 26 feet during the applied vacuum of 8.6 in Hg, and that no perceivable ROI was obtained during the applied vacuums of 2.8 and 4.5 in Hg. MRLLC also reported the following groundwater extraction rates: 0.59 gpm with no vacuum; 0.23 gpm at 2.8 in Hg; 0.14 gpm at 4.5 in Hg; and 1.81 gpm at 8.6 in Hg. No explanation was provided in the SSCR/RAP for the reduced yield when initially applying incrementally increased vacuums. Hydraulic ROI was determined to be 70 feet under the vacuum of 8.6 in Hg versus a ROI of 36 and 27 feet using the vacuums of 4.5 and 2.8 in Hg. The reported vapor flow rates were ~2.75, 7.75, and 22.33 standard cubic feet per minute (scfm) under each of the three induced vacuums (2.8, 4.5, and 8.6 in Hg, respectively). By the end of the test, a total of 535 gallons of groundwater was recovered. The pump testing suggests the overburden is comprised of lower permeability soil down to 14.5 feet below grade (depth of RW-1).

The September 2016 RAP prescribes performing a soil excavation followed by installing a VEGE system to remediate residual soil impacts inaccessible to excavation and related groundwater contamination. The soil excavation encompasses the former dispenser island area between the commercial building and Cooks Road and extends to the northeast and southwest along Cooks Road. Because excavation is also being employed as a groundwater remedy, MRLLC has proposed excavating into the zone of permanent saturation. More specifically they have proposed an excavation extending to depths ranging from 3 to 5 feet below grade and has estimated the total excavated volume would amount to 699 cubic yards. The excavation work scope includes screening excavated soils with a photoionization detector (PID) to segregate excessively contaminated soil for off-site disposal and, also, to make any necessary field expansions to the depth and lateral extent of the excavation. Backfilling is reportedly to include clean 2A stone and two foot layer of compacted clay prior to completing with asphalt surface. The clay and asphalt layers are reportedly specified to limit pneumatic short-circuiting during subsequent VEGE. In addition, the RAP work scope includes emplacement of a compacted “clay dike” in the area of the below grade septic discharge line to limit pneumatic short-circuit along this pipe. The septic discharge line is anticipated to be a buried utility encountered in the northern portion of the excavation. The RAP-prescribed extent and depth of the excavation is provided on Figure 21 in the September 2016 SSCR/RAP (Attachment 3b).

The RAP-prescribed VEGE system that would include seven on-property VEGE wells located surrounding the soil excavation area, with one of the seven VEGE wells located within the footprint of the soil excavation, and one “potential” VEGE well proposed to the east on the opposite side of Cooks Road. The number and location of recovery wells was determined based on the VEGE pilot testing, but the RAP noted that the VEGE design should be reevaluated following completion of the soil excavation. MRLLC’s RAP prescribes a VEGE system that anticipates a soil vapor flow rate of 32 actual cubic feet per minute (acfm) per well under a vacuum of 9 in Hg. A groundwater yield of 1.81 gpm per extraction well pneumatic pump is estimated by MRLLC under the applied vacuum of 9 in Hg.

During a prior pump test performed at RW-1 on 6/13/16 by MRLLC, it was reported that excessive turbidity/silt accumulation was observed in the recovery well. It is unclear if these same observations were encountered during follow-up feasibility testing later in June 2016, and the September 2016 RAP does not appear to have evaluated whether there may be remedial system fouling from excessive sediment recovery from the VEGE recovery wells.

One groundwater sample was analyzed for iron hardness and the total iron concentration of 84.4 milligrams per liter (mg/L) indicates a high likelihood of iron fouling / precipitation problems for extraction and treatment equipment. No other iron or manganese hardness samples appear to have been analyzed as part of RAP evaluation to determine if iron sequestration / treatment equipment would need to be included in a system design.

Other Information

To the extent there is any discrepancy between the summary of site conditions provided above and the source documents, bidders shall rely on the source document information. Bidders should carefully consider what information, analyses, and interpretations contained in the background documents can be used in developing their scope of work for their bid in response to this RFB.

Scope of Work (SOW)

This RFB seeks competitive bids from qualified contractors to perform the activities in the SOW specified herein. PADEP – Southcentral Regional Office (SWRO) was given the opportunity to review the SOW; however, had indicated that they would not be able to review the SOW provided within this RFB.

Objective

The PADEP-approved RAP specifies implementation of a soil excavation and VEGE remedy to address on-property soil and groundwater impacts. The remedial standard to be achieved on-property is the Residential SHS for soil and groundwater.

The PADEP, the Technical Contact, and the PAUSTIF have agreed that one of the following will likely be a technically viable and cost effective remedial approach that can bring this site to the stated cleanup goal:

1) Implementation of the soil excavation / VEGE as prescribed in the PADEP-approved RAP (with some limited modifications); or
2) Soil excavation followed by shallow (e.g., 3-5-foot deep, vapor-phase focused), Total Phase Extraction (TPE).

Bidders shall propose one of these two specific remedial approaches in their 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). The Solicitor has elected to pursue environmental closure based on demonstrating attainment of the PADEP Act 2 used aquifer SHS Medium-Specific Concentrations (MSCs) in a Residential setting for soils and groundwater.

Selecting one of the two remedial approaches as discussed above shall be the basis for preparing a SOW and presenting a competitive fixed-price bid. The selected bidder shall perform pilot testing to confirm that the remedial technology proposed in their bid will be feasible to meet the milestone objectives and remedial goal for this site.

Constituents of Concern (COCs)

The COC for soils, groundwater, and vapors are the post-March 2008 short list for unleaded gasoline, which consist of 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:[12]

- 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 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

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

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 of 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 for Milestone D. It is reasonable to assume that Claimant 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 other restrictions that may apply to the Site or surrounding properties.

Responsibility. The selected consultant will be the consultant of record for the site. The selected consultant will be required to take ownership of the project and will be responsible for representing the interests of the Solicitor 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. This milestone provides bidders the opportunity to identify which additional site characterization work 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 inorganics, C_4-C_{10}) 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.

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

Each bidder shall describe in detail its scope of work for additional site characterization activities along with corresponding technical justification to support 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 MRLLC February 2016 Site Characterization Report (SCR) and September 2016 SSCR/RAP (Attachments 3c and 3b, respectively) 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 – advancing additional soil borings to assist in defining the extent of unsaturated / smear zone soil contamination (i.e. beneath roadway ROW), further evaluation of inorganics and sediment in groundwater and conducting groundwater treatability study(ies), etc. 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 D[13].

Milestone B – Pilot Testing and Reporting. Pilot testing shall be proposed to support the feasibility and appropriateness of bidder's proposed remedial technology and approach. More specifically, the purpose of the pilot test is to:

- Confirm that bidder's proposed post-excavation technology choice is technically viable;
- Confirm that bidder's proposed remedial approach can be expected to be efficient & cost-effective;
- Confirm that bidder's proposed technology will achieve the remedial objective within a reasonable timeframe; and
- Confirm assumed / establish remedial design criteria.

The bidder shall provide a detailed description of the proposed pilot testing, objectives and rationale including any concerns with project file pilot testing data, perceived existing data gaps, proposed methods, the use of existing or installation of new data monitoring/collection points, proposed equipment to be used, and the data that is proposed to be collected. Each bid shall also describe how the data/information would be evaluated. In formulating its pilot testing proposal, bidders shall also consider the following:

- Previous pump testing indicated that an accumulation of silt into a recovery well created problems with treating groundwater with carbon. However, there does not appear to be any details in the RAP for evaluating whether to what degree, if any, fouling of the remedial system components may occur. Bidders may want to evaluate whether sediment intrusion would cause fouling of the RAP-prescribed VEGE in-situ remedial system or shallow TPE alternative (i.e. turbidity, grain size analysis) and what potential modifications (i.e. recovery well screen slot size, additional sediment filters, clarifier) may be needed to address any excess siltation problem. Additionally, bidders may wish to evaluate the waste production rates that could be expected at various treatment system stages/components (e.g., clarifier, particulate filters, etc.), shedding more light on likely O&M requirements.
- One groundwater sample was reportedly analyzed for total iron with a concentration of 84.4 mg/L. This iron concentration indicates a high likelihood of iron fouling / precipitation problems for extraction and treatment equipment. Bidders may want to collect additional samples to be analyzed for iron and manganese hardness, to determine if iron sequestration / treatment equipment would needed to be included in a system design.

[13] In order to receive reimbursement under this task, thorough documentation of any additional site characterization activities must be provided to PAUSTIF.

For the Milestone B proposal, bidders shall also specify up to five key pilot test outcome criteria that establish whether the bidder's proposed remedial action 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 bidder's 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 B pilot testing must show:

1. A hydraulic conductivity greater than A, but not more than B;
2. A pumping rate exceeding AA gpm at the end of BB hours of vacuum-enhanced pumping;
3. A pneumatic ROI greater than CC and hydraulic ROI of greater than DD;
4. The capacity to generate a soil vapor extraction vacuum of at least X in the native soil while not exceeding a soil flow rate of Y; and
5. Iron and manganese hardness within groundwater at or below Z 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 as part of the bid review. Unrealistic critical criteria or critical criteria that are unreasonably narrow will reduce the favorability of the bid.

Please note that all bidders shall propose to perform a pilot test, even if the bidder is proposing to use exactly the same VEGE remedial technology and design as specified in a PADEP approved RAP for the subject site. In the event a bidder proposes exactly the same remedial technology and design as specified in a PADEP approved RAP for the subject site, the bidder will still be expected to 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, safe and effective.

The Milestone B proposal shall reflect an understanding that selected bidder will prepare a Pilot Test Report and submit it to the Solicitor and PAUSTIF. The Pilot Test Report shall show that the pilot test was conducted according to the selected consultant's bid and shall constitute documentation for payment of Milestone B 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, safe and effective, then the selected consultant shall be expected to move forward with the project under the contract. The Milestone B activities shall also be included in the reporting for Milestone D.

“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 post-excavation remedial approach cannot be safely or efficiently implemented as proposed in the conceptual design based on critical criteria outside the bidder’s defined ranges from the pilot test data from Milestone B. 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 B, then one of the following conditions will apply:

1) With advance Solicitor and PAUSTIF approval, the selected bidder may elect to modify the post-excavation 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 B could not have reasonably been expected prior to conducting the Milestone B 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 with regard to the use of the information obtained during Milestone B 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 B) is determined to be $300,000, the fixed-price cost of Milestone B 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 B) is determined to be $550,000, the fixed-price cost of Milestone B specified on the bid cost spreadsheet shall be up to, but not exceed $50,000.

Milestone C – Investigation of Potable Water Wells. Under this task, bidders shall provide a firm fixed-price to investigate the two on-property potable water wells to determine the as-built construction characteristics (i.e. depth of surface casing, total depth, screened/open borehole interval) of each water well. Details and findings/results from this investigation shall be included in the report for Milestone D and J. If it is determined that the surface casings on one or both of the water wells are installed to a depth of less than 10 feet then one or both of these will be abandoned and a new water well will be installed further upgradient toward the western property boundary. Abandonment and installation of a new water well will be performed under Optional Cost Adder Milestone L.

Milestone D – Documentation of Findings: RAP Addendum or Revised RAP. Upon completing Milestones A through C described above, there are two possible documentation scenarios for Milestone D. Each bidder shall choose one documentation scenario. The scenarios, triggers for each, and minimum required components are summarized as follows:

(1) **RAP Addendum.** If a bidder proposes to implement the PADEP-approved RAP with modifications (i.e. adjustments to the extent/depth of the soil excavation, addition/adjustments of the VEGE remediation well layout [e.g. VEGE-4 is proposed to be installed within the backfilled excavation and questionable how it would be used], adjustments of the remedial treatment design, etc.), then the supplemental site characterization, pilot testing activities, and water well investigation conducted under Milestones A through C, respectively, and the remedial approach modifications shall be documented and reported to PADEP in a RAP Addendum to secure PADEP approval.; or

(2) **Revised RAP.** If a bidder proposes to implement the one alternative remedial approach for the site, then a Revised RAP shall be prepared to document the supplemental site characterization, pilot testing activities/findings, and water well investigation activities/findings, along with the details of the revised remedial approach. This Revised RAP 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 RAP Addendum or Revised RAP 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 report 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 document, describe, and evaluate all findings provided from Milestones A through C above, updating the conceptual site model (CSM) for the Site and its vicinity based on evaluating the results from the additional site characterization and pilot testing tasks outlined above, and detailing any proposed modifications to the existing PADEP-approved remedial approach. The applicable document / report shall incorporate information and relevant findings from the previous site documentation (as necessary), and contain all

necessary and appropriate figures, tabulated data, and appendices to comply with the regulatory requirements for and to obtain PADEP approval of these documents.

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 RAP Addendum or Revised RAP reports.[14]

Milestone E – Pre-In-situ Remediation Quarterly Groundwater Monitoring, Sampling & Reporting. Under this task, bidders shall provide a firm fixed-price to continue with quarterly groundwater monitoring, sampling, and reporting events while performing the supplemental site characterization activities (Milestone A), pilot testing (Milestone B), water well investigation (Milestone C), coordinating/completing the soil excavation and design/installation of the remedial system (Milestone F). 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 that will be needed prior to implementation of the in-situ remedial system (Milestones F) along with supporting rationale. Any additional quarterly monitoring 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 E.[15]

Each groundwater monitoring and sampling event prior to initiating of the soil excavation, shall include all thirteen (13) existing on-property monitoring wells (MW-1 through MW-12 and MW-1D). Each groundwater monitoring and sampling event following the soil excavation but prior to startup of the remedial system shall include twelve (12) monitoring wells (MW-5 through MW-12, the three shallow monitoring wells replacing wells MW-1, MW-2, and MW-3, and the one replacement bedrock monitoring well following the soil excavation).[16] [17] The quarterly sampling events shall also include the two on-property potable water wells and one off-property potable water well (Cessna Well). The conduct and results of each event shall be documented in quarterly Remedial Action Progress Reports (RAPRs). 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

[14] All figures included in the RAP Addendum or Revised RAP (e.g., site plan, remedial design layout, etc.) shall be available in electronic format to the Solicitor upon request.
[15] The Remediation Agreement includes a Site Specific Assumption that the pre-remedial quarterly site monitoring, sampling & reporting events will not exceed the three quarters under Milestone E plus any additional quarters under Optional Cost Adder Milestone E.
[16] The fixed price cost shall also include any additional monitoring well(s) that the bidder proposes to install under Milestones A and B (if any).
[17] Existing wells MW-1 through MW-4 and MW-1D are to be abandoned prior to completing the soil excavation.

practices. Any well exhibiting a measurable thickness of separate-phase hydrocarbons (SPH) shall not be purged and sampled.[18] Bidders shall manage purged groundwater and other derived IDW generated by the well purging and sampling activities in accordance with the PADEP SCRO guidance.

Groundwater samples shall be analyzed for the PADEP short-list of unleaded gasoline parameters (BTEX, 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 and potable water well samples. Appropriate QA/QC samples shall also be collected during each event and analyzed for the same parameters.[19] 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 RAPRs describing the sampling methods and results 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;
- 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);
- One site-wide iso-concentration contour map for each compound detected in any one well above the SHS during the quarter;[20]
- For each well exceeding SHS, a graphical depiction of historical key contaminant concentrations and groundwater elevations to provide an assessment of correlations between fluctuating water levels / precipitation events and contaminant concentrations;
- For each well exceeding SHS, a graphical depiction of recent key contaminant concentration trends;

[18] No SPH has been observed in any of the monitoring wells.
[19] Each bidder's approach to implementing Milestone E 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.
[20] 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.

- 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 for and documented in the groundwater attainment demonstration report).

Milestone F – 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 the solution described in the existing PADEP-approved RAP, the bidder's RAP Addendum once approved by PADEP, or the bidder's Revised RAP (RRAP), once approved by PADEP.

Existing PADEP-Approved Soil Excavation & VEGE

Bidders shall prepare a fixed-price cost to implement the soil excavation and VEGE remedial approach described in the September 2016 RAP, or some modified version to this approach as described by the successful bidder in a RAP Addendum. The cost breakdown of the RAP-specified or some modified version to the remedial approach shall follow the format prescribed below.

Milestone F1. Soil Excavation. Each bid response must describe the bidders approach in detail and provide a fixed-price inclusive of excavation planning / preparation work (e.g., buried utility location / mark-out, surveying excavation locations, etc.) and excavation and backfilling for the area / volume of the Site as defined on Figure 21 in the September 2016 SSC/RAP in Attachment 3b and as modified herein. Each bid must also include a drawing depicting the area to be excavated. The unsaturated / "smear" zone and shallow permanently saturated soils in this area contain residual petroleum contaminant mass (e.g., BTEX, naphthalene, 1,2,4-TMB, and 1,3,5-TMB) exceeding the SHS. To enable demonstration of attainment of the SHS in soil above the zone of permanent saturation, and to reduce contaminant concentrations in groundwater, the excavation shall remove impacted soil from a depth of 0 to 5 feet throughout the entire excavation area. Figure 21 proposes slightly different depths ranging from 3 feet to 5 feet for three different portions of the excavation labled "Area A", "Area B" and "Area C". However, for establishing a the fixed price for this milestone, each bid response is to instead assume that the excavation will extend to a depth of 5 feet across the entire excavation area depicted in Figure 21 (i.e., vertical excavation perimeter walls inclusive of Areas A, B and C).

Bidders are to assume that the excavated soil will be field screened with a PID and segregated to separate the "not suspected to be excessively contaminated" and "excessively contaminated" soil. To be deemed responsive to this task, bids must discuss: (a) the photoionization detector (PID)[21] screening value selected somewhere around 50 parts per million (ppm) that will be applied to segregate the "excessively contaminated" and "not excessively contaminated" soil removed from the excavation; and (b) the field screening approach and frequency. All "excessively contaminated" soil shall be removed from the site for off-site disposal and "clean" fill shall be imported to replace the exported soil. Contaminated soil transportation and off-site disposal and clean fill import costs shall not be included in the fixed price bid for this task as these will be based on unit costs. Fixed-price and unit cost bids for this work task shall be based upon RFB specifications.

Figure 21 (Attachment 3b) depicts the RAP specified lateral limits for the soil excavation. The bidder's fixed cost shall include the costs to perform all work necessary to safely excavate, screen, segregate / manage soil, backfill, and surface restore the area shown / specified on Figure 21 down to 5 feet below grade, including contacting / obtaining the required permits that may be needed before initiating this task. The 5-foot excavation reaches ~1.5 feet beyond the ~3.5-foot depth to the zone of permanent saturation in order to remove adsorbed contaminants sustaining contaminant concentrations in groundwater. Groundwater level data (~1 to 3.5 feet) from the existing monitoring wells in the area of the excavation, and the soil types (i.e. mixture of silty clay, sandy clay, sands, silts, and gravel) suggests that there may be groundwater accumulation in the excavation, which may require the temporary extraction, removal, sampling, loading, transportation and disposal of impacted groundwater. Since the volume of impacted groundwater that would require management for disposal cannot be precisely determined at this time, compensation to the successful bidder will be based on a fixed, per gallon unit cost for the management, sampling, loading, transportation and disposal (or on-site treatment & regulatory permitted discharge) of impacted groundwater removed from the soil excavation. The successful bidder will only be reimbursed for the actual gallons that needed to be removed from the excavation and properly disposed. The successful bidder is expected to follow normal industry practices when scheduling the work to avoid precipitation events and to conduct the excavation and backfilling work as quickly and efficiently as possible to minimize water production.

After the excavation is completed, and prior to backfilling, biased soil attainment sampling above the zone of permanent saturation in accordance with Regulation 250.707(b)(1)(iii) shall be performed on the side walls of the excavation. Biased soil sampling above the zone of permanent saturation has been prescribed (instead of systematic random soil sampling) due to the limited precision of soil characterization, particularly, in the direction of the ROW for Cooks Road and in the direction of the commercial building on-property. If laboratory analytical results from testing all biased samples collected in accordance with Regulation 250.707(b)(1)(iii) find soil contaminants all below SHS, then the successful bidder shall assume that site soil attainment has been demonstrated. Otherwise, future post-remedial soil attainment will need to

[21] PID with 10.6 eV bulb calibrated to 100 ppm isobutylene.

be demonstrated under Milestone I. For the purposes of this bid, bidders shall assume that attainment of the soil standards will not be successful under Milestone F and, therefore, implementing Milestone I will be required.

Fixed-price bids shall describe the approach, including the depth interval, and the number of soil samples for side wall attainment soil sampling from the completed excavation consistent with PADEP Regulation 250.707(b)(1)(iii). Attainment soil samples shall be analyzed for the post-March 2008 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. Appropriate quality assurance/quality control (QA/QC) samples shall also be obtained for laboratory analysis.[22]

Fixed-price bids shall also include backfilling and mechanically compacting in lifts the excavated area as per the PADEP-approved RAP, and installing the "clay dike" in the area of the below grade septic line, and in the area of any other utilities encountered in the excavation, as discussed in September 2016 RAP. The successful bidder shall backfill to within 5 inches of grade using a combination of reused "clean" site soil and imported clean fill. Excavated material stockpiled on site for re-use shall be sampled prior to backfilling, and the fixed-price bid shall include costs for the sampling and laboratory work in accordance with PADEP guidance documents. Backfill material and placement/compaction methods shall result in a stabilized soil condition capable of supporting normal traffic and use loads. The backfill materials shall be free of vegetation, lumps, trash, lumber, and other unsuitable materials. In general, backfill shall be mechanically compacted by means of tamping rollers, sheep foot rollers, pneumatic tire rollers, vibrating rollers, or other mechanical tampers which are appropriate for the material being compacted. Bids shall also include surface paving and other completion / restoration to restore the area to pre-excavation conditions.

As noted earlier, historical information identifies below grade piping associated with the on-property septic system in the northern portion of the excavation area. In addition to the septic system piping, bidders shall also investigate and locate any below grade utilities that may be encountered before the digging occurs. The fixed-price cost for this task shall include costs for the management and / or replacement of any utilities that may be identified and encountered in the excavation. Costs should also include any temporary repairs made prior to permanent replacements.

Fixed-price bids for the excavation work shall include any waste profiling (including any sampling & laboratory work) and securing waste facility acceptance prior to beginning the soil excavation.

Five existing shallow overburden groundwater monitoring wells, MW-1 through MW-4 and the bedrock well MW-1D, are located within the proposed excavation footprint. These wells will need to be decommissioned in accordance with PADEP guidance as part of this task prior to

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

initiating the excavation. Following completion of the excavation and backfilling, shallow overburden wells MW-1, MW-2, and MW-3 shall be replaced along with the one bedrock well (MW-1D). Locations for the replacement wells shall be at the same as the existing locations. Construction details for the replacement wells shall be identical to existing shallow overburden wells and bedrock well. Each bid response must show the proposed locations for the four replacement wells on a drawing, and explain the bidder's approach to abandonment of the existing five wells and installation details for the three replacement shallow overburden wells and one bedrock well. In addition, the fixed price shall also include well development, surveying the new wells, and bids must indicate on a drawing the proposed locations for the replacement wells.

Expansion of the defined limits of the excavation is not currently anticipated, especially due to physical limitations. However, should it become necessary and appropriate to expand the excavation and should it be expanded to the extent it impacts other wells to the north and/or south, these wells will also need to be abandoned in accordance with PADEP guidance and replaced. Reimbursement of costs for any unexpected additional well abandonment and replacement due to an expanded excavation would be handled on a unit cost basis under Optional Cost Adder Milestone M.

The details of the soil removal activities shall be documented in a concurrent quarterly RAPR (Milestone E) and the RACR (Milestone J), and at a minimum shall include the following: scaled drawings depicting the lateral and vertical dimensions of the completed excavation superimposed on the site plan; all field observations and PID readings; the quantity of soil excavated, disposed off-site, used as backfill, and imported for backfill; waste profiling documentation; soil waste disposal manifests and disposal facility; source and amount of imported fill; impacted groundwater management, biased soil sampling locations & depths, laboratory analyses, and disposal (if needed); dated photographs taken before breaking ground, throughout the excavation, and after restoration; and documentation (boring logs / well construction diagrams and survey information) for any replacement monitoring wells. Additionally, the locations and results of the biased soil attainment sampling shall be well detailed and documented in text, photographs and figures.

In addition to providing a fixed-price bid for excavating, backfilling, restoring the defined excavation area, and well abandonment and replacement activities, bidders shall also provide excavation-related unit costs (included on the Attachment 2, Bid Cost Spreadsheet) to accommodate changes that may be required. These unit costs are:

UC1 Management, loading, transportation and proper off-site disposal of excessively contaminated soils (cost per ton);

UC2 Management, sampling / analysis, loading, transportation and disposal of impacted groundwater removed from the soil excavation (cost per gallon);

UC3 Purchase, transportation and on-site management of clean imported fill to replace exported excessively contaminated soil (cost per ton);

UC4 Surface restoration of areas beyond identified target excavation limits (cost per square foot);

UC5 Additional excavation beyond identified excavation limits, excluding excessively contaminated soil transportation / disposal costs since these are captured under UC1 (cost per in-place cu yard);[23] and

UC6 Additional backfilling and compaction beyond identified limits, excluding clean imported fill costs since these are captured under UC3 (cost per in-place cu yard).

When evaluating the cost component of bid responses, the bidders unit costs for UC1, UC2, and UC3 will be added to the bidders total fixed price provided in Attachment 2 using the following assumed volumes – 765 tons for T&D of impacted soils (60% of the excavated soil requires off-site T&D and same amount of clean fill importation) and 7,500 gallons of impacted groundwater for disposal.

Milestone F2. Installation of Recovery Wells[24]. Under this task, bidders shall provide a firm fixed-price cost for installing the seven VEGE recovery wells described in the RAP or an alternative number of wells as the bidder shall detail in the bid response. Proposed locations for the VEGE wells are shown on Figure 20 of the September 2016 SSCR/RAP (Attachment 3b). Each bidder shall independently consider the final locations relative to the inferred area of soil contamination outside the excavation boundaries; utilities; bidder's own interpretation of groundwater flow variations; evaluation of remedial feasibility testing data; and configuration of the dissolved-phase plume.[25] Each bidder in their bid response must show the proposed locations for the recovery wells on a site drawing. If a bidder believes the remediation wells should be placed elsewhere or that more or fewer wells are needed, the bidder shall identify the alternative location(s) and provide rationale.

The borings for the remediation wells shall be advanced to intersect the shallow water-bearing zone (i.e ~1 to 3 feet below grade based on the existing water level data), and to allow for installation of all below grade piping. Bidders shall assume examining and described 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

[23] The successful bidder cannot count on reimbursement of excavation beyond the limits depicted in Figure 21 (Attachment 3b) without having obtained prior written approval of the supplemental work by Solicitor and PAUSTIF or their agents before completing the supplemental excavation work.

[24] This milestone discusses the installation of VEGE wells; however, if a bidder chooses the alternate remedial approach, the bidders approach shall detail the installation of the TPE wells.

[25] The VEGE recovery well located on the opposite side of Cooks Road is considered a contingent recovery well and should not be included within the fixed price for Milestone F work. The Remediation Agreement will include a Site Specific Assumption that the installation of the contingent VEGE well and all associated trenching and piping installation to this VEGE well will not be required.

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 water table surface and accounts for seasonal groundwater fluctuations, and able to facilitate remediation of any residual unsaturated and periodically saturated soil impacts remaining below the ROW for Cooks Road and beneath the on-property commercial building.

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 F3 – In-Situ Remedial System Final Design, Equipment Purchase, and Assembly. Any equipment[26] that has moving parts or part of the electronic control system (e.g. pumps, blowers, gauges, electrical sensors & switches) necessary to implement the RAP (or RAP Addendum) 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.

The PADEP approved RAP does not appear to include equipment to filter recovered groundwater or sequestration to address potential sediment and/or iron fouling of the remedial system. Bidders shall review the available information and total iron data obtained by the current consultant and determine if additional equipment is necessary; and if so, the fixed price costs for this milestone shall include the purchase, installation, and O&M of this filtration unit or iron sequestration equipment. If a bidder does believe that sediment and/or iron filtration is needed, the bidder must provide the rationale for this decision. The successful bidder may use Milestones A and/or B to confirm its conclusions and equipment requirements. Bidders that elect to not propose any additional equipment to address sediment and/or inorganics 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 sediment and/or iron and other hardness fouling potential in their operational estimates.

[26] 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.

Please note that the proposed remedial system shall be equipped with some form of telemetry as indicated in the 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 F4. 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 F5 – In-Situ 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 RAP (or RAP Addendum) 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. 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.

Milestone F6 – Final Connections and Startup / Trouble-Shooting of the In-Situ 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) all below- and above-grade equipment is operational; (b) the design parameters are achievable at the treatment system and at the well heads; (c) all safety and control switches function properly; and (d) the system can operate automatically (without manual intervention). The successful bidder shall

provide the Solicitor and ICF/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 ICF/PAUSTIF immediately following completion of start up / trouble-shooting when the system is fully operational.

Revised RAP Approach - Shallow TPE

All bids shall include the RAP-specified excavation remediation component as described and modified in this RFB (under Milestone F1). However, if an alternative to the RAP-specified in-situ remedial approach is bid, then the bidder shall prepare a fixed-price cost to implement the following:

> **Post-excavation in-situ TPE** – In this case, bidders shall describe the locations of shallow high vacuum total phase extraction (TPE) wells in excessively contaminated soil areas that could not be excavated. The proposal shall describe TPE wells constructed in native soil with short well screens to focus on the 3- to 5-foot below grade interval, focusing on vapor-phase contaminant mass recovery and bioventing while minimizing groundwater extraction and processing. Bidders shall specify the number and location of the TPE wells that would be installed in impacted soil that was not accessible via excavation. Bidders proposing this approach shall identify their well depth and drop tube depth indicating proposed drawdown in the TPE wells and expected applied well head vacuum.

The cost breakdown of the proposed **Revised RAP approach shall follow the form**at described above in Milestones F1 through F6.

Milestone G – Remediation System O&M, Site Monitoring & Sampling, & 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;[27] quarterly groundwater, monitoring, and sampling of the on-property monitoring wells, the two on-property potable water wells, and one off-property potable water well (Cessna Well); 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 G activities will be required for six quarters (one and half years). 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 reducing soil and groundwater contaminant concentrations to below residential SHS, enabling initiation of groundwater and soil attainment demonstration.[28][29] 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 six quarters specified in this RFB (i.e., if a bidder believes it can complete the remediation in a total of eight quarters of O&M, 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 six quarters, the number of quarters exceeding six will be incorporated in the Remediaiton Agreement as Optional Cost Adder Milestone G. Bidders shall assume that the remediation will need to continue until the contaminant concentrations in all of the point of compliance (POC) wells (as defined in Milestone H) are either below the PADEP SHS or "non-detect" for at least two consecutive quarterly monitoring and sampling events. Under these conditions, it is deemed reasonable to initiate the groundwater attainment demonstration. Each bid must explicitly state bidder's understanding of the project goal for when the remedial system would be discontinued and attainment sampling shall 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.

- *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 allow contaminant mass recovery

[27] Electric usage; telephone, cable, internet service; and any discharge to local treatment facility will be reimbursed as time and material cost adders to the Remediation Agreement.
[28] 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.
[29] If the groundwater data allows for discontinuing remedial activities 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.

quantification. 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 reported quarterly to the Solicitor. The selected consultant is expected to maintain at least an 85% uptime on the system 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 chose to terminate the contract.
- *Compliance monitoring* shall include system and site sampling needed to demonstrate compliance with permits and other applicable regulatory requirements. Documentation of compliance shall be provided to the Solicitor in quarterly RAPRs and in any other reporting required by permitting agencies (i.e. local POTW).

The quarterly groundwater monitoring and sampling events will include the eight existing on-property monitoring wells (MW-5 through MW-12), the three post-excavation shallow overburden wells replacing wells MW-1, MW-2, and MW-3, and replacement bedrock well, the remediation wells proposed to be installed under Milestone F, two on-property water wells, and off-property Cessna water well.[30] If a RAP Addendum or Revised RAP is proposed which includes fewer or more remediation wells, this should be explicitly stated in the Milestone G response and accounted for in the bidder's Milestone G quarterly and total cost.

During each event, the depth to groundwater and any potential SPH shall be gauged in all available monitoring wells 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. The conduct and results of each event shall be documented in RAPRs. Any well exhibiting more than a sheen of SPH shall not be purged and sampled.[31] Bidders shall manage purged groundwater and other derived IDW generated by the well purging and sampling activities in accordance with the PADEP SCRO guidance.

Groundwater samples shall be analyzed for the PADEP short-list of unleaded gasoline parameters (BTEX, 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 and potable water well samples. Appropriate QA/QC samples shall also be collected during each event and analyzed for the same parameters.[32] In addition, each event shall include field measurements for these water

[30] The fixed price cost shall also include any additional monitoring wells installed under Milestone A.
[31] No SPH has historically been observed in any of the monitoring wells installed on- and off-property.
[32] Each bidder's approach to implementing Milestone G 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.

quality parameters: pH, temperature, specific conductance, dissolved oxygen (measured in-situ), oxidation/reduction potential, and TDS.

The RAPRs describing the sampling methods and results 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, including contaminant mass recovery estimates in groundwater;
- 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;
- 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);
- One site-wide iso-concentration contour map for each compound detected in any one well above the SHS during the quarter;[33]
- For each well exceeding SHS, a graphical depiction of historical key contaminant concentrations and groundwater elevations to provide an assessment of correlations between fluctuating water levels / precipitation events and contaminant concentrations;
- For each well exceeding SHS, a graphical depiction of recent key contaminant concentration trends;
- Discussion of the data to offer an updated assessment whether these data are consistent with a stable, shrinking, or expanding plume;
- Evaluation of system performance including contaminant mass recovery quantification and system optimizations performed;
- 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;
- 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.

[33] 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.

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 cleanup goals, it is necessary to extend the period of O&M beyond the RFB-specified six quarters, each additional quarter, up to the total number of Consultant's bid O&M remedial timeframe, will be addressed via Optional Cost Adder Milestone G. Consultant shall seek and obtain written approval from Solicitor and PAUSTIF to continue operation of the remedial system (Optional Cost Adder Milestone G).[34]

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).

To provide added incentive to the successful bidder to regularly scrutinize remedial system performance and optimize system operations for maximal efficiency in completing the remedial O&M to achieve closure as expeditiously and cost effectively as possible, **10% of each quarterly payment for this milestone (and Optional Cost Adder Milestone G, if implemented) will be withheld and accumulated pending successful completion of remediation and initiation of soil and groundwater attainment activities (Milestones H and I).** When this condition has been met, the accumulation of 10% holdback payments, for the Milestones actually completed, will be reimbursed in one lump sum to the successful bidder.[35] The 10% hold-back milestone will not be paid for an in-situ remediation system that has not attained the cleanup goal within the Consultant's bid remediation timeframe.

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.[36] Each groundwater monitoring and sampling event shall include the sampling of on-property POC wells MW-5, MW-6, MW-8 through MW-12, two interior monitoring wells in the source area, two on-property water wells, and off-property Cessna water well. The conduct and results of each event shall be documented in quarterly RAPRs. If additional quarterly attainment events would be needed beyond eight quarters, the number of quarters exceeding eight will be incorporated in the Remediation Agreement as Optional Cost Adder Milestone H.[37] Consultant shall seek and obtain written approval from Solicitor and PAUSTIF to continue with

[34] 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.
[35] Lump sum payment request shall be made prior to the on-set of initiating Milestones H and I.
[36] 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.
[37] If it becomes evident anytime during the groundwater attainment demonstration (initiated subsequent to completing at least the Milestone G six quarters of remedial O&M) 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.

quarterly groundwater attainment events (Optional Cost Adder Milestone H).

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 SPH shall not be purged and sampled. Bidders shall manage purged groundwater 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, 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 and potable water well samples. Appropriate QA/QC samples shall also be collected during each event and analyzed for the same parameters.[38] 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 TDS.

The groundwater attainment demonstration reports describing the sampling methods and results 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 attainment demonstration report 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;
- 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);
- One site-wide iso-concentration contour map for each compound detected in

[38] Each bidder's approach to implementing Milestone H 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.

any one well above the SHS during the quarter;[39]

- For each well exceeding SHS, a graphical depiction of historical key contaminant concentrations and groundwater elevations to provide an assessment of correlations between fluctuating water levels / precipitation events and contaminant concentrations;
- For each well exceeding SHS, a graphical depiction of recent key contaminant concentration trends and results of any qualitative and quantitative analysis;
- 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.

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

Milestone I – Soil Attainment Demonstration. Under this task, bidders shall develop and implement a soil boring program for systematic random soil sampling to demonstrate attainment of the SHS for the unsaturated and periodically saturated soils (i.e., those 3.5 feet below grade and more shallow) in the area of the former dispenser island and other areas on-property where previous site characterization activities have identified soil exceedances of the SHS. More specifically, attainment demonstration would focus on the area(s) where impacted soil was not accessible via excavation. Three dimensional attainment sampling shall be completed to demonstrate attainment of this area(s) and each bid ***must*** describe in detail their approach at addressing soil attainment, and include the depth interval and a drawing showing the locations where the sampling grid would be applied to demonstrate soil attainment.

The location / depth of the soil samples shall be determined using PADEP's systematic random sampling (SRSS) procedures, assuming one soil sample per boring shall be submitted for laboratory analysis. Alternate SRSS points shall be selected for any primary SRSS sample locations positioned within the existing UST system and any existing below grade utilities (i.e. public water and natural gas). Soil samples shall be analyzed for the PADEP short list for unleaded gasoline parameters (BTEX, cumene, naphthalene, 1,2,4-TMB, and 1,3,5-TMB). Appropriate quality assurance/quality control (QA/QC) samples shall also be obtained for

[39] 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.

laboratory analysis. The soil sampling results shall be analyzed using PADEP's 75%/10x Ad Hoc Rule, which shall be documented in detail in the RACR[40].

Milestone J – Preparation, Submission, and PADEP Approval of Remedial Action Completion Report (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 H, and optional cost adder milestones. The RACR shall also 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 K – 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 K 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 Cost Adder Milestone E – Additional Pre-Remediation Quarterly Monitoring, Sampling & Reporting. Under this milestone, bidders shall provide the Solicitor and PAUSTIF

[40] If the sampling data does not allow for attainment of the selected standard, additional work will be considered an out-of-scope task under the Fixed-Price Agreement, which will require Solicitor and PAUSTIF approval of a work plan and cost estimate before beginning the work.

with a firm quarterly unit fixed-price cost that would include the quarterly groundwater monitoring, sampling / analysis of the eight existing on-property monitoring (MW-5 through MW-12), the four post-excavation replacement monitoring wells, and two on-property and one off-property water wells);[41] and reporting beyond the three quarters specified in Milestone E. The SOW for this unit cost adder milestone should follow Milestone E guidelines. Each bid must include the rationale for needing to implement this optional cost adder milestone.

Optional Cost Adder Milestone G – 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-property monitoring and recovery wells, on-property water wells, and off-property Cessna water well; and reporting beyond the timeframe specified in Milestone G. The SOW for this unit cost adder milestone should follow Milestone G guidelines. As described in Milestone G, a 10% holdback will be applied to each Optional Cost Adder Milestone G payment. 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-property POC wells MW-5, MW-6, MW-8 through MW-12, two interior monitoring wells in the source area, two on-property water wells, and off-property Cessna water well; 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 L – Abandonment of Existing Potable Water Well and Installation of Replacement Water Well. Under the milestone, bidders shall provide the Solicitor and PAUSTIF with a firm fixed-price cost to abandon an existing water well and install a replacement water well at a location closer to the western property boundary. It would appear appropriate for the replacement water well to be constructed similar to a nearby off-property water well (150 feet deep and cased to 50 feet). Each bid shall describe the approach in detail for abandoning an existing water well and installing the replacement water well, including connection of the replacement water to the associated structure. Each bid must include the rationale for needing to implement this optional cost adder milestone.

Optional Cost Adder Milestone M – Additional Monitoring Well Abandonment and Installation of Replacement Monitoring Well. Under this milestone, bidders shall provide the Solicitor and PAUSTIF with a firm fixed-price unit cost per monitoring well abandonment / replacement, and including well development and surveying beyond the four wells included under Milestone F1. Each bid shall include a description of the methods for well abandonment and drilling / installation of the replacement well. Construction details for the replacement wells

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

shall be identical to existing wells abandoned. Each bid must also include the rationale for implementing this optional cost adder milestone.

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 tasks identified in the bid. The standard practice of tracking total cumulative costs by milestone will also be required to facilitate invoice review. 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. All necessary modifications to the executed Remediation Agreement will require the prior written approval of the Solicitor and the PAUSTIF. 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. Supplemental Site Characterization Report / Remedial Action Plan, dated September 2016.
    c. Site Characterization Report, dated February 2016
    d. Underground Storage Tank System Closure Report Form, dated February 9, 2015
    e. Underground Storage Tank System Closure Report Form, dated July 31, 1997
    f. Other PADEP Correspondence/Notifications