

Request for Bid

Fixed-Price Bid to Result

Remediation to SSS Closure

Solicitor

Mark Properties

Former Avon Grove Citgo

**525 Gap Newport Pike
Avondale, Pennsylvania 19311**

PADEP Facility ID #: 15-42312 PAUSTIF Claim #: 2010-0109(I)

Date of Issuance

December 26, 2019

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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 subject to application of 80% proration with the exception of the cost of Milestone F6B which Solicitor is responsible to pay in full. 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 | January 17, 2020 by 5 p.m. |
| Mandatory Pre-Bid Site Visit | January 21, 2020 at 1 p.m. |
| Deadline to Submit Questions | February 21, 2020 by 5 p.m. |
| Bid Due Date and Time | February 28, 2020 by 3 p.m. |

Contact Information

| Technical Contact |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Mr. Joseph Ozog, Jr., P.G. Excalibur Group, LLC 91 Park Avenue Windber, PA 15963 814-467-6359 joeozog@excaliburgrpllc.com</p> |

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 **“Former Avon Grove Citgo, Claim #2010-0109(I) – RFB QUESTION”**. Bidders must neither contact nor discuss this RFB with the Solicitor, PAUSTIF, the Pennsylvania Department of Environmental Protection (PADEP), or ICF unless approved by the Technical Contact. Bidders may discuss this RFB with subcontractors and vendors to the extent required for preparing the bid response.

Requirements

Mandatory Pre-Bid Site Meeting

The Solicitor, the Technical Contact, or their designee will hold a mandatory Site visit on the date and time listed in the Calendar of Events to conduct a Site tour for one (1) participant per bidding company. The Technical Contact will collect questions and respond via email. All questions and answers will be provided via email to all attendees. This meeting is mandatory for all bidders, no exceptions. This meeting will allow each bidding company to inspect the Site and evaluate Site conditions. **A notice of the bidder's intent to attend this meeting is requested to be provided to the Technical Contact via email by the date listed in the Calendar of Events with the subject "Former Avon Grove Citgo, Claim #2010-0109(I) – SITE MEETING ATTENDANCE NOTIFICATION"**. The name and contact information of the company participant should be included in the body of the email. Notification of intent to attend is appreciated; however, it is not required. Attendance at the Pre-Bid Site Meeting is mandatory. Changes to the Site meeting date and/or time due to inclement weather conditions or other unexpected circumstances will be posted at <https://ustif.pa.gov/bids>; and, the Technical Contact may notify via email all companies that provided Site Meeting Attendance Notification.

Submission of Bids

To be considered for selection, **one (1) hard copy of the signed bid package and one (1) electronic copy (one (1) PDF file on a compact disk (CD) included with the hard copy) must be provided directly to the PAUSTIF's third party administrator, ICF, to the attention of the Contracts Administrator.** The Contracts Administrator will be responsible for opening the bids and providing copies to the Technical Contact and the Solicitor. Bid responses will only be accepted from those companies that attended the Mandatory Pre-Bid Site Meeting. **The ground address for overnight/next-day deliveries is ICF International, 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 # 2010-0109(I)".** Please note that the use of U.S. Mail, FedEx, UPS, or other delivery method does not guarantee delivery to this address by the due date and time listed in the Calendar of Events for submission. Companies mailing bids should allow adequate delivery time to ensure timely receipt of their bid.

The bid must be received by 3 p.m., on the due date shown in the Calendar of Events. Bids will be opened immediately after the 3 p.m. deadline on the due date. Any bids received after this due date and time will be time-stamped and returned. If, due to inclement weather, natural disaster, or any other cause, the PAUSTIF's third party administrator, ICF's office is closed on the bid due date, the deadline for submission will automatically be extended to the next business day on which the office is open. The PAUSTIF's third party administrator, ICF, may notify all companies that attended the Mandatory Pre-Bid Site Meeting of an extended due date. The hour

for submission of bids shall remain the same. Submitted bid responses are subject to the Pennsylvania Right-to-Know Law.

Bid Requirements

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

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

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

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

or cost adders that are not requested as part of this RFB will not be considered by the Bid Evaluation Committee in the technical review and technical score for the bid.

In addition, the bidder shall provide:

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

Each bid will be assumed to be valid for a period of up to 120 days after receipt unless otherwise noted. The costs quoted in the Bid Cost Spreadsheet will be assumed to be valid for the duration of the Remediation Agreement.

Please note that the total fixed-price bid must include all costs, including those cost items that the bidder may regard as "variable". These variable cost items will not be handled outside of the total fixed-price quoted for the SOW unless the RFB requests costing alternatives for specific items or services. Any bid that disregards this requirement will be considered non-responsive to the bid requirements and, as a result, will be rejected and will not be evaluated.

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

Each bid response document must include at least the following:

1. Demonstration of the bidder's understanding of the Site information provided in this RFB, standard industry practices, and objectives of the project.
2. A clear description, specific details, and original language of how the proposed work scope will be completed for each milestone. The bid should specifically discuss all tasks that will be completed under the Remediation Agreement and what is included (e.g., explain groundwater purging/sampling methods, which guidance documents will be followed, what will be completed as part of the Site specific work scope/SCR/RAP implementation). Recommendations for changes/additions to the Scope of Work proposed in this RFB shall be discussed, quantified, and priced separately; however, failure to bid the SOW "as is"

may result in a bid not being considered. Bids should include enough original language conveying bidder's thought such that the understanding of site conditions, closure approach (if applicable), and approach to addressing the scope of work can be evaluated. Since bidders are not prequalified, the bid response must provide the Bid Evaluation Committee and Solicitor enough information to complete a thorough review of the bid and bidder.

3. A copy of an insurance certificate that shows the bidder's level of insurance consistent with the requirements of the Remediation Agreement. Note: The selected consultant shall submit evidence to the Solicitor before beginning work that they have procured and will maintain Workers Compensation, commercial general and contractual liability, commercial automobile liability, and professional liability insurance commensurate with the level stated in the Remediation Agreement and for the work to be performed.
4. The names and brief resumes/qualifications of the proposed project team including the proposed Professional Geologist and Professional Engineer (if applicable) who will be responsible for overseeing the work and applying a professional seal to the project deliverables (including any major subcontractor(s)).
5. Responses to the following specific questions:
 - a. Does your company employ a Pennsylvania-licensed Professional Geologist that is designated as the proposed project manager? How many years of experience does this person have?
 - b. How many Pennsylvania Chapter 245 projects is your company currently the consultant for in the PADEP Region where the Site is located? Please list up to 10.
 - c. How many Pennsylvania Chapter 245 Corrective Action projects involving an approved SCR, RAP, and RACR has your company and/or the Pennsylvania-licensed Professional Geologist closed (i.e., obtained Relief from Liability from the PADEP) using any standard?
 - d. Has your firm ever been a party to a terminated PAUSTIF-funded Fixed-Price (FP) or Pay-for-Performance (PFP) contract without attaining all of the milestones? If so, please explain.
6. A description of subcontractor involvement by task. Identify and describe the involvement and provide actual cost quotations/bids/proposals from all significant specialized subcontracted service (e.g., drilling/well installations, laboratory, etc.). If a bidder chooses to prepare its bid without securing bids for specialty subcontract services, it does so at its own risk. Added costs resulting from bid errors, omissions, or faulty assumptions will not be considered for PAUSTIF reimbursement.
7. A detailed schedule of activities for completing the proposed SOW including reasonable assumptions regarding the timing and duration of Solicitor reviews (if any) needed to

complete the SOW. Each bid must provide a schedule that begins with execution of the Remediation Agreement with the Solicitor and ends with completion of the final milestone proposed in this RFB. Schedules must also indicate the approximate start and end date of each of the tasks/milestones specified in the Scope of Work and indicate the timing of all proposed key milestone activities (e.g., within 30 days of the contract being executed).

8. A description of how the Solicitor, ICF, and the PAUSTIF will be kept informed as to project progress and developments and how the Solicitor (or designee) will be informed of and participate in evaluating technical issues that may arise during this project.
9. A description of your approach to working with the PADEP. Describe how the PADEP would be involved proactively in the resolution of technical issues and how the PADEP case team will be kept informed of activities at the Site.
10. Key exceptions, assumptions, or special conditions applicable to the proposed SOW and/or used in formulating the proposed cost estimate. Please note that referencing extremely narrow or unreasonable assumptions, special conditions, and exceptions may result in the bid response being deemed “unresponsive”.
11. The name and contact information of the person who is to be contacted in the event the bid is selected by the Solicitor and/or a Right to Know request is received by PAUSTIF.

Bid Review and Evaluation

1. Bid Review and Scoring

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

Technical Scoring

Bids are evaluated for technical viability before cost is considered. Bids that have technical scores that fall within 75% of the highest technical score will advance to cost scoring. Bids with technical scores below 75% of the highest technical score are eliminated from further consideration.

Numerical values will be assigned to three categories:

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

Cost Scoring

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

A = the lowest bid cost

B = the bidder's cost being scored

C = the maximum number of cost points available

D = bidder's cost score (points)

If a bid cost is equal to, or greater than, twice the amount of the lowest bid cost, the formula calculation will result in a negative number and the bid will be assigned zero cost points.

2. Evaluation of Bids

A committee comprised of at least two members of the USTIF staff, two members of ICF staff, and the TPR who assisted in developing the bid package will score all bids that are administratively qualified based on the above criteria. USTIF recognizes that several bids may be acceptable and receive similar numerical scores. At the conclusion of the scoring process, the claimant will receive those bids whose numerical scores place them in the category of meeting Reasonable and Necessary criteria and acceptable for USTIF

funding. The claimant may select any of the consulting firms that submitted a qualified bid package to implement the tasks described in the bid; however, USTIF will only provide funding up to the highest fixed price of those bids determined to be Reasonable and Necessary for USTIF funding.

General Site Background and Description

Each bidder should carefully review the existing information and documentation provided in Attachment 3. The information and documentation have 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 former Avon Grove Citgo property encompasses ~1.1 acres on the southwest side of Gap Newport Pike (PA S.R. 41) near the town of Avondale, Pennsylvania. The subject property (or "Site") includes the southeastern half of the property which is developed with a one-story building (with no basement), asphalt and gravel surface, and a former gasoline dispenser canopy. A potable water supply well is located along the northeast side of the Site building. This supply well is currently the only source of potable water to the Site. A septic tank and drain field are located south of the Site building and in the southern corner of the Site. Public water and sanitary sewer do not currently extend to the Site. The northwestern half of the property is vacant and undeveloped, and mainly covered by light vegetation (grass).

This facility reportedly previously used at least two prior generations of UST systems. The first generation of USTs was removed in the 1980s.¹ The second generation of USTs installed in 1985 were situated northwest of the Site building and included three 6,000-gallon unleaded gasoline (ULG) USTs (Tank #001 through 003), dispensers and associated product piping. This second generation of USTs was removed in August 2010. Figure 1 (Attachment 3a) shows where this most recent generation of USTs were located at the Site. Figure 1 also reveals the mixed commercial / residential land use of adjacent and nearby properties. The adjoining and nearby properties to the east and south/southwest also do not currently have access to the public water supply system and, as such, obtain potable water through private water wells.

Site & Release History

The Site has historically been used for both automotive repair and retail gasoline sales. These commercial operations are believed to have first begun in the 1960s or 1970s and continued until sometime in 2005 when the retail gasoline sales ceased at the Site. In 2005 the subject property was purchased by the current owner (Solicitor) and used only for automobile repair until sometime during 2010 or 2011. The ULG UST system was reportedly in Temporary Out-of-Use status for approximately five years (2005-2010) prior to closure via removal. The ULG release associated

¹ No other information is available on these pre-1980 USTs, including details such as where the USTs were located and regarding closure/removal of the USTs.

with PAUSTIF Claim #2010-0109(l) was discovered during the UST closure activities in 2010. A succession of site investigations followed the 2010 ULG release discovery.

Prior to the 2010 release discovery and associated site investigations, there have been previous environmental assessments. For example, a soil investigation was completed in 1997, due diligence soil and groundwater sampling was conducted in 2000, and a Phase I environmental site assessment (ESA) was completed in 2005. The 1997 soil investigation appears to have been initiated at the request of a financial institution for purposes of extending credit to the facility. The work reportedly involved drilling two soil borings² in the area of former, first generation (pre-1980s) tanks, to a depth of 14 feet and collecting two soil samples for laboratory analyses including Total Petroleum Hydrocarbons (TPH) and benzene, toluene, ethylbenzene, and xylenes (BTEX). The record indicates that while these soil samples contained detectable levels of TPH, no BTEX compounds were detected in either sample.

During the 2000 ESA, soil samples were reportedly collected around the gasoline UST system and a water sample was collected from the on-Site water supply well as part of due diligence for refinancing during the prior Site ownership. One of the soil samples reportedly exhibited concentrations above PADEP Statewide Health Standards (SHS).³ MTBE was detected in the supply well water sample but at a concentration below PADEP SHS. The on-Site water supply well was sampled again during the 2005 Phase I ESA, and MTBE was not detected. There is no record in the file of any new release being reported to PADEP in connection with either the 2000 or 2005 investigations.

The specific source and cause of the 2010-discovered ULG release has not been identified; however, it has been suggested that a failure of the Tank 001 / system components would be consistent with the excessive soil contamination found beneath Tank 001. A total of 16 soil samples were collected following removal of the three USTs, product piping, and dispensers. Two of the soil samples contained regulated petroleum compounds at concentrations exceeding PADEP's SHS. These samples were contaminated with 1,2,4-trimethylbenzene (1,2,4-TMB) in excess of PADEP SHS. The two excessively contaminated soil samples (1C-13' and 1B-18') were collected from beneath Tank 001 footprint at depths of 13 and 18 feet. The record indicates no contaminated soil was removed from the UST cavity for off-property disposal during the UST closure / Site restoration activities. The locations of the former UST system and closure soil samples are shown on a figure in the 2010 UST Closure Report (Attachment 3k) and on Figure 2 in Attachment 3a.

² A drawing showing the location of the two soil borings is not available for this RFB.

³ No other information was made available regarding the number of soil samples collected, location/depth, and analytical results.

Site Characterization & Interim Remedial Activities⁴

Trimpi Associates initiated characterization of the 2010 release covered by PAUSTIF Claim # 2010-0109(I) during March 2011. Aquaterra Technologies, Inc. (Aquaterra) subsequently continued environmental investigations when it took over environmental consulting responsibilities later in 2011. The characterization activities have included: advancing 20 on-property soil borings (SB-1 through SB-12 and SB-A through SB-H); collecting / analyzing soil samples from select soil borings and well borings; installing 15 on-property monitoring wells (MW-1S/MW-16⁵, MW-1D, MW-2S, MW-2D, MW-3S, MW-3D, MW-4S, MW-4D, MW-5, MW-6, MW-8, MW-9, MW-17, MW-18, and MW-19) and six off-property monitoring wells (MW-7, MW-10 through MW-13, and MW-15); collecting / analyzing groundwater samples from the 21 monitoring wells on a quarterly basis; installing and sampling two soil vapor points (SG-1 and SG-2); performing a surface geophysical survey; performing a geophysical survey of the borehole of the on-property water supply well; collecting / analyzing samples from the on-property water supply well and six off-property private potable water wells; and performing four high vacuum extraction events at select wells. The locations of the soil borings are shown on Figure 2 in Attachment 3a. Monitoring well locations are provided on Figure 3 (Attachment 3a).

Soil borings and well borings advanced to a depth of ~19.5 to 53 feet below grade reportedly identified fill material (gravel with sand and/or clay) extending up to approximately two feet below grade underlain by natural unconsolidated deposits consisting mainly of silty clay and a mix of clay, silt, and sand that is micaceous and is reportedly consistent with the weathering of bedrock belonging to the Wissahickon Formation. A micaceous sand layer overlies competent bedrock, which was encountered at depths varying between 35 to 40 feet below grade. Wet soil conditions during drilling were reportedly first encountered at a depth of ~31 to 41 feet below grade within weathered or competent bedrock reportedly composed of the Wissahickon Formation.

Adsorbed-Phase Contamination

A total of 44 soil samples were collected from on- and off-property soil borings and well borings from the unsaturated zone, periodically saturated zone (or smear zone) or the permanently saturated zone. Concentrations of benzene, toluene, ethylbenzene, naphthalene, and 1,2,4-TMB were found to exceed the PADEP SHS in soil samples collected from a depth interval of 27 to 40 feet below grade (samples from the smear zone and permanently saturated zone). Soil impacts exceeding PADEP SHS were generally limited to the former UST system locale, extending into the Gap Newport Pike right-of-way. The highest soil contaminant concentrations are located in the vicinity of the former UST system (see Figure 6 in June 2018 RAP, Attachment 3e).

⁴ Throughout this section, comparisons of environmental sampling results are made to PADEP's Non-Residential Statewide Health Standards (NR SHS). The NR SHS are used only as points of reference in this discussion as the selected cleanup standard for this site is SSS via pathway elimination.

⁵ Well MW-1S was overdrilled on 2/28/17 and replaced with the installation of MW-16 at the same location.

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

There are 21 monitoring wells historically used to evaluate groundwater quality and flow direction consisting of: (a) on-property wells MW-1S/MW-16, MW-2S, MW-2D, MW-3S, MW-3D, MW-4S, MW-4D, MW-5, MW-6, MW-8, MW-9, MW-17, MW-18, and MW-19)⁶ and; (b) off-property wells MW-7, MW-10 through MW-13, and MW-15. The current monitoring wells are variously installed to depths ranging between ~14 and 53 feet below grade. Nested pairs of shallow and deeper wells been installed in several locations (MW-2S & MW-2D, MW-3S & MW-3D, and MW-4S & MW-4D) with the shallow wells installed to ~14 to 30 feet below grade and the deeper well installed to ~40 to 45 feet below grade. All other on- and off-property wells are installed to depths of ~36 to 53 feet below grade. Three of the shallow wells (MW-2S, MW-3S, and MW-4S) are routinely dry. Static groundwater levels within the on-property wells have ranged from ~25 to 37 feet below top of casing (TOC), with the water levels in the off-property wells ranging from ~27 to 44 feet below TOC. Overall groundwater flow appears to be generally in an easterly direction with a hydraulic gradient of ~0.02 feet/foot.

LNAPL was initially observed in January 2017. Subsequently, LNAPL has been observed in on-property wells MW-1D, MW-16, and MW-19, all located immediately east/northeast (hydraulically downgradient) of the former UST system area and the LNAPL plume extends to off-property well MW-7 located within the ROW for PA S.R. 41. LNAPL thicknesses have ranged from a sheen to 1.85 feet. During the 1Q2017, LNAPL thicknesses peaked on- and off-property with thicknesses ranging from 1.26 feet at MW-19 to 1.85 feet at MW-16, and a thickness of 1.06 feet at off-property MW-7. Since 1Q2017, LNAPL appearance in the monitoring wells has generally declined (with thicknesses generally less than 0.2 foot). However, during the 1Q2018, the LNAPL thickness temporarily rebounded to 0.45 feet at MW-1D to 1.15 feet at MW-16 on-property and to a thickness of 0.71 feet at off-property MW-7. Since Q1 2018, LNAPL thickness has subsided again to the point where no LNAPL was found in any of the four problem wells since the 3Q2018. It is unclear what effect the unusual amount of precipitation or LNAPL recovery efforts (discussed below) in 2018 might have had on LNAPL thickness during the year. One interpretation of the extent of the LNAPL plume based on available measurements is shown on Figure 4 (Attachment 3a).

LNAPL recovery has included two high vacuum extraction events using a vacuum truck along with hand bailing, where reportedly a total of ~1,200 gallons of combined groundwater/LNAPL (unknown proportions) were recovered cumulatively from each of the four problem wells. The high vacuum extraction events were performed on 2/16/17 and 3/20/17 at on-property MW-1D and off-property MW-7, and only on 3/20/17 at on-property MW-16 and MW-19. Following these LNAPL recovery events, the LNAPL thickness appears to have decreased but how much of a role the extraction events played in the thickness reductions remains unclear, especially since LNAPL rebounded in the 1Q2018 to thicknesses similar to those observed during 1Q2017. Since July

⁶ Well MW-16 replaced MW-1S in 2/28/17.

2018, LNAPL recovery has consisted primarily of using absorbent socks in wells MW-1D, MW-7, MW-16, and MW-19. The historical and persistent rebound of LNAPL in these four wells suggests that further remedial/recovery efforts are required before it can be demonstrated that the LNAPL has been recovered to the maximum extent practicable.

Dissolved-Phase ULG Contamination

The dissolved ULG contaminant plumes appear centered on the LNAPL mass as expected. While the dissolved ULG plumes have spread to the southeast, the apparent downgradient direction, they have also migrated cross-gradient, elongating the plumes perpendicular to the potentiometric gradient. In addition to extending cross-gradient under the Gap Newport Pike (PA S.R. 41) ROW, the plumes likely extend to some limited degree beneath the adjoining residential community complex property in the downgradient direction to the southwest. Preferential fracture flow in the underlying weathered and competent bedrock reportedly affects the position and orientation of the dissolved contaminant plumes along with the hydraulic gradient. Monitoring wells MW-1D, MW-16, and MW-19 located immediately downgradient of the former tank field (source area), and downgradient well MW-7 along with side-gradient MW-2D consistently have the highest concentrations of dissolved contaminants of concern (COC) and/or thickness of LNAPL. These wells consistently produce water sample containing benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, and 1,2,4-TMB exceeding the PADEP Non-Residential SHS. Other on-property wells further downgradient and sidegradient of the former UST system (MW-6, MW-7, MW-8, and MW-9) have also been impacted with contaminants exceeding SHS for benzene, toluene, ethylbenzene, naphthalene, and 1,2,4-TMB at similar or lower concentrations.

The historical dissolved dataset indicates generally stable or decreasing dissolved plume configurations. The current interpreted extent of the dissolved contaminant plumes for the COC exceeding SHS in the groundwater are shown on Figure 7 in the June 2018 RAP provided as Attachment 3e.

Soil Gas

Soil vapor samples were collected from soil gas points SG-1 and SG-2. One of these sampling points is located immediately northwest of the Site building (SG-1) and the other in the source area (SG-2). The sampling points were each sampled twice (3/5/12 and 6/15/17). None of the sampling results exceeded the non-residential site specific screening values calculated as per the 2017 PADEP Vapor Intrusion Guidance. Therefore, there does not appear to be a current VI risk at the existing Site building. Locations of the soil vapor sampling points are shown on Figure 5 (Attachment 3a).

Water Supply Wells

The on-property water supply well is reportedly ~142 feet deep with 6-inch steel casing installed to ~46 feet below grade. Depth to water measured on 12/15/16 was 37.2 feet. This water well has been routinely sampled on at least a quarterly basis since March 2011, and had exhibited a concentration of 1,2,4-TMB (42.1 micrograms per liter [ug/l]) exceeding the PADEP SHS only during the March 2011 event. In March 2011, concentrations of ethylbenzene, total xylenes, cumene, and 1,3,5-TMB were also detected; however, the concentrations were below the PADEP SHS. Samples collected from March 2012 to September 2016⁷ were generally “non-detect”, with the exception of a low concentration of total xylene in June 2013. A point-of-use carbon filtration has been connected to the on-property water supply well to temporary treat water used at the Site. Location of the on-property water supply well is shown on Figure 3 (Attachment 3a).

Another water supply well that has been sampled on a routine basis since June 2012 is located off-property to the east, on the opposite side of PA S.R. Route 41 at the address 524 Gap Newport Pike (R&K Family Partnership LLC property). This supply well has routinely exhibited low concentrations of MTBE that have been below the PADEP SHS. This supply well has provided water to at least three residential dwellings on this property with the addresses 524 – 526 Gap Newport Pike, all located on the R&K Family Partnership LLC property. Bottle water was being supplied to the residents at the off-property location serviced by this supply well. However, it is reported that the residences at this off-property location are currently vacant and the supply well has not been sampled since the 2Q 2018. Location of the water supply well at 524 Gap Newport Pike is shown on Figure 3 (Attachment 3a).

A total of six other off-property water supply wells were sampled once each in 2012, 2014, and 2015, and all six of the water wells were always “non-detect” for the COCs.

Remedial Pilot Testing

Pilot Testing was performed on 3/6/18 and 3/15/18 to assess the feasibility of AS/SVE. Two air sparge pilot test wells (AS-1 and AS-2) were installed southwest of the Site building (AS-1) and north of the Site building, in between wells MW-16 and MW-19 (AS-2). Wells AS-1 and AS-2 were each installed to a depth of 40 feet with a screen depth interval of 38.5 to 40.5 feet. AS well locations are shown on Figure 3 (Attachment 3a) and on the figures in the June 2018 RAP (Attachment 3e). The feasibility testing included the following:

- conducting two short-term SVE extraction tests at wells MW-2S and MW-19 using a regenerative blower to extract vapors from each of the wells for 60 minutes while monitoring vacuum influence and water levels at selected surrounding wells;

⁷ Reportedly, the on-property water supply well is only sampled when in use. Currently, the site is vacant of any operations/activities.

- individual AS tests at AS-1 and AS-2, using a sparge blower were performed for 60 minutes while monitoring air pressure and water levels at selected monitoring wells during each of the tests; and
- combined AS/SVE testing by injecting air into AS-1 and AS-2 simultaneously while extracting vapors via regenerative blower at both MW-2S and MW-19. This combined test was performed for a duration of 120 minutes while monitoring air pressure, vacuum, and water levels at selected surrounding monitoring wells.

During the individual SVE tests at MW-2S and MW-19, the reported average vacuum at the well head during each test was 35 inches of water (in. w.c) at MW-2S and 33 in. w.c. at MW-19, with an average air flow of 52 and 55 scfm, respectively. The resulting calculated estimated radius of influence is generally between 50 and 60 feet from each test. During each of the tests, PID readings were consistently over 1,000 parts per million (ppm) at MW-2S, and around 1,400 ppm at MW-19, vapor samples were collected at the beginning, midway, and end of each test, with >C4-C10 concentrations at MW-2S being between 3,500 and 3,800 ppm, and between 6,300 and 7,700 ppm at MW-19. Vapor recovery rates were calculated at 2.827 pounds per hour (lb/hr) and 5.174 lb/hr at MW-2S and MW-19, respectively.

During the individual AS tests at AS-1 and AS-2, the reported pressures were measured at 15 and 13 psi, respectively; however, the pressure at the wellheads stabilized at 9 psi for both wells. Average airflow was reportedly ~3 scfm at both wells, with the calculated estimated radius of influence of 45 and 50 feet.

The combined AS/SVE test was performed over a duration of 120 minutes and appeared to produce the same results as the individual tests and included air sparging at AS-1 and AS-2 while simultaneously extracting vapors from MW-2S, MW-2D, and MW-19. Applied air pressure at the sparge blower was reportedly 25 psi while the reported pressures at each of the wells ranged from 10-12 psi for AS-1 and 4-9 psi at AS-2 with average air flow reaching 2.4 and 3 scfm (AS-1 and AS-2). During the test, PID readings in the extracted air were consistently around 1,300 to 1,400 ppm. Vapor samples were collected at the beginning, midway, and at the end of the test, with >C4-C10 concentrations being from 3,800 to 5,100 ppm. A vapor recovery rate of 2.924 lb/hr was calculated from the data.

Solicitor's Selected Closure Standards & Remedial Approach

Solicitor's chosen closure approach for the Site is a mix of non-residential SHS and site-specific standards (SSS) for both soil and groundwater.⁸ In June 2018, the Solicitor's consultant, Aquaterra, provided PADEP with a RAP prescribing air sparge/soil vapor extraction (AS/SVE) to remediate residual soil and groundwater impacts. PADEP subsequently approved the remedial

⁸ Non-residential SHS shall be applied to the compounds that have never exhibited concentrations exceeding the non-residential SHS.

goals and proposed approach (with no comments/modifications) via letter to the Solicitor dated 9/5/18.

Solicitor understands and accepts that SSS closure will likely require certain deed restrictions on the subject property (e.g., groundwater use prohibition, vapor intrusion mitigation, soil management plan, etc.) to eliminate exposure pathways, as necessary, and will require the Site building and the residential structures located on the R&K Family Partnership LLC property to be connected to public water. A copy of the plans for the water line installation and connections to the Site building and off-property structures are provided as Attachment 3l. Easements noted on the plans have been executed and the local municipal authority (London Grove Township Municipal Authority [LGTMA]) have provided their approval of the plans. Executed easements and approval documentation is also provided in Attachment 3l. Note that the plans also depict a proposed extension of the sanitary sewer line, which will also be installed as part of this work scope in this RFB.

In addition, the on-property water supply well, and the off-property water supply well located on the R&K Family Partnership LLC property will need to be disconnected from the business and residential plumbing systems and the production wells closed/abandoned in accordance to PADEP guidance. An access agreement between the Solicitor and the owner of the R&K Family Partnership LLC property has been executed for the abandonment of the water supply well on this property and connection of this property to public water. A copy of the off-property access agreement is provided as Attachment 3m.

Solicitor has selected SSS via pathway elimination for all soil or groundwater compounds that do not currently meet PADEP SHS. Groundwater exposure pathways will be eliminated via affected production well closures and connections to municipal water supply on- and off-property and post-remedial care inspections of nearby properties (if necessary) to ensure new potable wells are not installed in the future. The deeper residual contamination appears to preclude on- or off-property utility or construction worker exposure scenarios. Vapor intrusion indoor air exposure pathways on-Site shall be eliminated via vapor mitigation on future buildings (if necessary). Therefore, remediation will be focused on removing LNAPL to the maximum extent practicable (MEP) and demonstrating LNAPL and dissolved-phase plume stability.

Scope of Work (SOW)

This RFB seeks competitive bids from qualified contractors to perform the activities in the SOW specified herein. PADEP – Southeastern Regional Office (SERO) was given the opportunity to review the SOW; however, was unable to review.

Objective

The Solicitor, PADEP, the Technical Contact, and the PAUSTIF have agreed that either of the following alternative remedial pathways forward offer a technically viable and cost-effective means of attaining the combined SHS / SSS – pathway elimination soil and groundwater cleanup goal:

- 1) **Alternative 1 – SVE and Catalytic Oxidizer (CatOx), and monthly gauging and hand bailing of LNAPL to demonstrate LNAPL recovery to the MEP.** This alternative would include the installation and operation & maintenance (O&M) of a rented SVE and CatOx system coupled with monthly gauging / hand bailing of LNAPL over a period of two years. However, the O&M of the rented SVE and CatOx system would be for the first year. Gauging and hand bailing of residual LNAPLs would occur for one year during SVE operation and one year after the SVE system operates (to document LNAPL stability and MEP attainment). Therefore, for the purposes of fixed price bidding, this alternative assumes one year of system rental and O&M, and monthly gauging / hand bailing of LNAPL for two years. Subsequently, a demonstration shall be made that (a) the LNAPL has been recovered to the MEP; (b) the groundwater contaminant plumes are stable; and (c) off-property soil and groundwater do not pose excessive risk to roadway workers in adjoining roadway; OR
- 2) **Alternative 2 – Bioslurping and CatOx, and monthly gauging and hand bailing of LNAPL to demonstrate LNAPL recovery to the MEP.** This alternative would include the installation and O&M of a rented bioslurping and CatOx system coupled with monthly gauging / hand bailing of any residual LNAPL over a period of one and half years (18 months). However, the O&M of the rented bioslurping and CatOx system would be for only the first six months. Gauging and hand bailing of residual LNAPLs would occur for 6 months during bioslurping operation and for one year after the bioslurping system operations (to document LNAPL stability and MEP attainment). Therefore, for the purposes of fixed price bidding, this alternative includes six months of system rental and O&M, and monthly gauging / hand bailing of LNAPL for 18 months (one and half years). Subsequently, a demonstration shall be made that (a) the LNAPL has been recovered to the MEP; (b) the groundwater contaminant plumes are stable; and (c) off-property soil and groundwater do not pose excessive risk to roadway workers in adjoining roadway; OR
- 3) **Alternative 3 – Approved RAP Approach, Air Sparge / SVE (AS/SVE) including CatOx, and monthly gauging and hand bailing of LNAPL to demonstrate LNAPL**

recovery to the MEP. This alternative would include the installation and O&M of a rented AS/SVE and CatOx system coupled with monthly gauging / hand bailing of any residual LNAPLs over a period of one and half years (18 months). However, the O&M of the rented AS/SVE and CatOx system would be for only the first six months. Gauging and hand bailing of residual LNAPLs would occur for 6 months during AS/SVE operation and for one year after the AS/SVE system operation (to document LNAPL stability and MEP attainment). Therefore, for the purposes of fixed price bidding, this alternative assumes six months of system rental and O&M, and monthly gauging / hand bailing of residual LNAPL for 18 months (one and half years). Subsequently, a demonstration shall be made that (a) the LNAPL has been recovered to the MEP; (b) the groundwater contaminant plumes are stable; and (c) off-property soil and groundwater do not pose excessive risk to roadway workers in adjoining roadway.

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

Solicitor seeks competitive, fixed-price bids, for this Bid to Result RFB to complete the milestones outlined below intended to take this Site to closure. To be deemed responsive, each bid *must* respond *in detail* to each of the milestones, including describing the bidder's understanding of the conceptual site model and how that model relates to the bidder's proposed approach to executing the SOW. "Bid to Result" RFBs identify task goals and rely on the bidders to provide a high level of project-specific detail on how they will achieve the goal. Each bid must detail the approach and specific methods for achieving the milestone objectives. In reviewing the quality of bids submitted under Bid to Result solicitations, there is an increased emphasis placed on technical approach and reduced emphasis on cost (as compared to bids for "Defined Scope of Work" RFBs). The Solicitor has elected to pursue environmental closure based on demonstrating attainment of the PADEP Act 2 SSS's via pathway elimination for all soil and groundwater contaminants exhibiting concentrations that are above PADEP non-residential SHS.

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

Constituents of Concern (COCs)

The COCs for soils and groundwater associated with demonstrating attainment for the 2010 ULG release are the short list for ULG (benzene, toluene, ethylbenzene, xylenes (BTEX); MTBE; cumene; naphthalene; 1,2,4-TMB; and 1,3,5-TMB).

General SOW Requirements

The bidder's approach to completing the SOW shall be in accordance with generally accepted industry standards/practices and all applicable federal, state, and local rules, regulations,

guidance, and directives. The latter include, but are not limited to, meeting the applicable requirements of the following:

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

During completion of the milestone objectives specified below and throughout implementation of the project, the selected consultant shall:⁹

- 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 management costs shall be included in each bidder's pricing to complete the milestones specified below.
- Be responsible for coordinating, managing, and completing the proper management, characterization, handling, treatment, and/or disposal of all impacted soils, water, and derivative wastes generated during the implementation of this SOW. The investigation-derived wastes, including purge water, shall be disposed in accordance with standard industry practices and applicable laws, regulations, guidance, and PADEP directives. Waste characterization and disposal documentation (e.g., manifests) shall be maintained and provided to the Solicitor and the PAUSTIF upon request. All investigation derived wastes shall be

⁹ As such, all bids shall include the costs of these activities and associated functions within the quote for applicable tasks/milestones.

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 the applicable milestones. 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 the restrictions discussed in this section that apply to the Site.

Each bid response shall acknowledge an understanding of this schedule.

Responsibility. The selected consultant will be the consultant of record for the site. The selected consultant will be required to take ownership of the project and will be responsible for representing the interests of the Solicitor and PAUSTIF with respect to the project. This includes utilizing professional judgment to ensure reasonable, necessary and appropriate actions are recommended and undertaken to protect sensitive receptors and carry out adequate remedial actions in order to move the site toward closure.

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

Safety Measures. Each bidder should determine the safety measures necessary to appropriately complete the milestones. Specifically, if a consultant feels that it is appropriate and necessary to complete utility clearance using an air knife, the cost should be included in their fixed-price cost. If a bidder includes costs to conduct specific safety measures or activities, the bidder should specify it in the bid response and discuss why it is appropriate and necessary and indicate which methods will be utilized and to what extent. As discussed in the RFB, cost is not the only factor when evaluating bid responses and other factors are taken into consideration during the bid evaluation process, including appropriate safety measures.

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

Site-Specific Milestones

Milestone A – Supplemental Site Characterization Activities and Reporting. This Milestone provides bidders the opportunity to identify the additional site characterization work that will be completed in advance of finalizing the remedial approach design and moving ahead with its implementation. Conducting supplemental investigative activities under this Milestone is mandatory. PAUSTIF will be reimbursing up to \$10,000 for supplemental site characterization and reporting costs under this Milestone. Bidders are to describe what supplemental site characterization will be completed, the rationale for the work, and how the derived data will be used. For purposes of bidding, and to ensure consistent cost scoring of bids, each bidder will enter exactly \$10,000 as the bid price for Milestone A in the Bid Cost Spreadsheet. PAUSTIF will only reimburse up to \$10,000 of reasonable and necessary costs for those tasks actually performed. The selected bidder must provide time and material documentation in addition to supporting documentation required (in Exhibit B of the executed Remediation Agreement) to support the requested reimbursement and completion of this Milestone.

Bidders may use this opportunity to: 1) confirm any elements of the site characterization completed by a previous consultant; 2) address any perceived data gaps in the existing site characterization work; 3) assist 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).

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 rationale supporting the need for each additional activity. When considering what additional site characterization activities may or may not be necessary, bidders are strongly encouraged to review Aquaterra's November 2017 SCR and June 2018 RAP (Attachments 3i and 3e), 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 soil contamination which may be contributing LNAPLs to groundwater in area of the former UST system and/or within the roadway, and / or to collect data to further define the extent of LNAPL or estimate residual LNAPL mass remaining at the Site. 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 A¹⁰ activities shall be documented as discussed in the reporting for Milestone D.

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

Milestone B1. LNAPL Transmissivity Testing. Bidders shall provide a firm fixed-price cost to perform single well transmissivity tests on one of the four wells that routinely exhibit measurable LNAPL, and each bid must identify the most likely well to be used for transmissivity testing, rationale, and provide a description of the proposed transmissivity test procedures and the planned techniques for reducing the data. Each bid response must also identify the amount of LNAPL necessary in order to perform the transmissivity testing. The transmissivity tests shall be performed in accordance with accepted industry standards and the data shall be reduced / evaluate using appropriate methods. (e.g., ASTM E2856). Documentation of the transmissivity testing methods, results, and conclusions shall be provided in the reporting for Milestone D, and the transmissivity testing results shall be utilized when demonstrating that LNAPL has been recovered to the MEP in the Remedial Action Closure Report (RACR) in Milestone J.

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

Milestone B2. LNAPL Physical/Chemical Properties. Bidders shall provide a firm fixed-price cost to perform testing on a LNAPL sample to evaluate the chemical/physical properties of the LNAPL. This testing may include, but is not limited to, vapor pressure, density, viscosity, solubility, and mole fractions. Each bid must identify the most likely well to be sampled, number of samples, and provide a description of the proposed test procedures and how the data would be used. Each

¹⁰ In order to receive reimbursement under this task, thorough documentation of any additional site characterization activities must be provided to PAUSTIF.

bid response must also identify the amount of LNAPL necessary in order to perform the proposed testing. The proposed tests shall be performed in accordance with accepted industry standards. Documentation of the testing methods, results, and conclusions shall be provided in the reporting for Milestone D, and also utilized when demonstrating that LNAPL has been recovered to the MEP in the RACR in Milestone J.

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

Milestone C – Pilot Testing and Reporting. Each bidder shall submit with its bid a remedial technology testing plan / approach in order to produce the site-specific information it believes is necessary to move forward with bidder’s selected remedial alternative. The testing plan shall describe why each component is necessary relevant to bidder’s conceptual design.

The pilot testing plan shall be designed to confirm / establish:

- The proposed approach is technically feasible;
- The proposed approach can be expected to be meet or exceed the remedial scenario timeframe assumptions; and
- The critical remedial design criteria for the “off-ramp” provision discussed below.

The bidder shall provide a detailed description of the proposed pilot testing, objectives and rationale, including identifying any concerns with the project file pilot testing, perceived existing data gaps, proposed methods, 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.

Additionally, the bidder shall specify up to five basic, objective criteria that would be evaluated to determine whether the remedial action proposed in the bid response document is feasible. These “critical criteria” shall be listed with an upper and lower limit that will define the range of acceptable results (i.e., pilot testing results) relevant to the proposed remedial approach. These critical criteria must be tightly-controlled measurements or calculations that could be independently measured or verified by others during the pilot test.

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

1. An SVE pneumatic radius of influence (ROI) greater than CC and air sparge ROI of greater than DD; and
2. SVE air flows / applied vacuum ranging between A and B; and
3. A bioslurping extraction vacuum of at least X, sufficient to air lift mounded water up the drop tube while not exceeding an average extracted air flow rate of Y and average groundwater yield of Z; and,
4. An air sparge flow rate between XX and YY under applied pressures of between WW and ZZ.”

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

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

The selected bidder will prepare a Pilot Test Report and submit it to the Solicitor and PAUSTIF. The Pilot Test Report shall show that the pilot test was conducted according to the selected consultant's bid and shall constitute documentation for payment of Milestone C regardless of the result. If the results of the pilot testing show that the proposed remedial action is feasible based on the specified critical criteria and ranges, the selected consultant shall move forward on the project. The Milestone C 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 remedial approach cannot be implemented as proposed in the conceptual design based on critical criteria outside the bidder's defined ranges from the pilot test data from Milestone C. 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 C, then one of the following conditions will apply:

1. With advance Solicitor and PAUSTIF approval, the selected bidder may elect to modify the remediation plan and continue with the project at no additional cost; that is, for the same total fixed price found in the bid response or a lesser fixed-cost. If selected consultant's modified plan is approved by Solicitor and by PAUSTIF for funding, the executed Remediation Agreement may be amended, if necessary, to agree with the modified remediation plan and costs; however, the total fixed price of the Remediation Agreement shall not be increased.

2. If the Solicitor or PAUSTIF choose not to approve the selected consultant's revised remediation plan adjusting to the new data, the Remediation Agreement for the project will terminate.
3. If the selected consultant adequately demonstrates the site conditions revealed by the results of pilot testing performed under Milestone C could not have reasonably been expected prior to conducting the Milestone C 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 C 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 L (excluding C) is determined to be \$300,000, the fixed-price cost of Milestone C 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 L (excluding C) is determined to be \$550,000, the fixed-price cost of Milestone C specified on the bid cost spreadsheet shall be up to, but not exceed \$50,000.

Milestone D – Preparation/Submittal and PADEP Approval of a Revised RAP or RAP Addendum. Upon completing Milestones A through C described above, a Revised RAP shall be prepared if a bidder has selected remedial Alternative 1 or 2; or a RAP Addendum if a bidder has selected remedial Alternative 3.

The Revised RAP or RAP Addendum shall document the supplemental site characterization activities/findings; pilot testing; LNAPL transmissivity testing; other LNAPL testing; and the details for the modifications to the LNAPL remedial approach (remedial Alternative 3) or revised LNAPL remedial approach (remedial Alternatives 1 or 2) as discussed in this RFB. Clarification shall be provided in the Revised RAP or RAP Addendum that the focus of the remediation will be LNAPL recovery to the MEP since the soil and groundwater exposure pathways will be eliminated under the SSS approach. This Revised RAP or RAP Addendum 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 report shall document, describe, and evaluate all findings provided from Milestones A through C, 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 report shall include updating the conceptual site model (CSM) for the Site and its vicinity

based on evaluating the results of the milestones outlined above. Information contained in the prior site investigation reports may also be referenced. The Revised RAP or RAP Addendum shall also contain a discussion on the information to be used once remediation is complete to demonstrate that the LNAPL has been recovered to the MEP.

The Revised RAP or RAP Addendum 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 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 report). The fixed-price cost shall also include addressing any PADEP comments on the Revised RAP or RAP Addendum.¹¹

The successful bidder will be eligible to receive payment for 75% of the bid amount for Milestone D when there is proof the document has been completed and submitted to PADEP. The 25% balance will be due for reimbursement once proof has been provided that PADEP has approved the Milestone D deliverable document.

Milestone E – Continue Quarterly Groundwater Monitoring, Sampling & Reporting. Under this milestone, 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), pre-remediation LNAPL testing (Milestone B), pilot testing (Milestone C), preparation/submittal of the Revised RAP or RAP Addendum (Milestone D), waiting on PADEP approval of the Revised RAP or RAP Addendum, and design and implement the bidders selected LNAPL 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 startup of the LNAPL remedial system under Milestone 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.¹²

¹¹ All figures included in the Revised RAP or RAP Addendum (e.g., site plan, remedial design layout, etc.) shall be available in electronic format to the Solicitor upon request.

¹² Pre-remedial quarterly site monitoring, sampling & reporting events will be limited to Milestones E1 through E3 in the base contract plus the number of events under Optional Cost Adder Milestone E4 as defined in selected consultant's bid. If additional events are required under Milestone E4, pre-approval from Client and PAUSTIF (for funding) is required.

Each groundwater monitoring and sampling event shall include the sampling of the existing 15 on-property wells MW-1D, MW-2S/MW-2D, MW-3S/MW-3D, MW-4S/MW-4D, MW-5, MW-6, MW-8, MW-9, and MW-16 through MW-19, the six existing off-property wells MW-7, MW-10 through MW-13 and MW-15.¹³ This work shall also include the sampling of the on-property water supply well and the off-property supply well located at R&K Family Partnership LLC property; however, the sampling and analysis of these two water supply wells will be handled via unit cost adders (UC 2 and UC 3, respectively) as provided on the Bid Cost Spreadsheet in Attachment 2. During each quarterly groundwater monitoring and sampling event, the depth to groundwater shall be gauged, along with gauging and tracking any LNAPL thickness in all existing available monitoring wells and prior to purging any of the wells for sampling. Groundwater level measurements obtained from the monitoring wells shall be converted to groundwater elevations for assessing groundwater flow direction and hydraulic gradient.

Each of the monitoring wells designated for sample collection shall be purged and sampled in accordance with the PADEP Groundwater Monitoring Guidance Manual and standard industry practices. Any well exhibiting a measurable thickness of LNAPL shall not be purged and sampled. Bidders shall manage purged groundwater, LNAPL, and other derived IDW generated by the well purging and sampling activities in accordance with the PADEP SERO guidance.

Groundwater samples shall be analyzed for the PADEP short-list of unleaded gasoline parameters (BTEX, MTBE, cumene, naphthalene, 1,2,4-TMB, and 1,3,5-TMB) by a PADEP-accredited laboratory using appropriate analytical methods and detection levels. Bidders shall specify the analytical methods to be used for the monitoring well samples and potable water well samples. Appropriate quality assurance / quality control (QA/QC) samples shall also be collected during each event and analyzed for the same parameters.¹⁴ In addition, each event shall include field measurements for the following parameters: pH, temperature, specific conductance, dissolved oxygen (measured in-situ), oxidation/reduction potential, and total dissolved solids (TDS).

The Remedial Action Progress Reports (RAPRs) describing the sampling methods and results 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

¹³ The fixed price cost shall also include any additional monitoring well(s) that the bidder proposes to install under Milestone A (if any).

¹⁴ 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.

groundwater, thickness of any free product encountered, and volume of LNAPL recovered;

- 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;¹⁵
- 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 containing measurable LNAPL, a graphical depiction of historical LNAPL measurements and groundwater elevations to provide an assessment of correlations between fluctuating water levels / precipitation events and LNAPL levels;
- For each well exceeding SHS, a graphical depiction of recent key contaminant concentration trends;
- Discussion of the data to offer an updated assessment whether these data are consistent with a stable, shrinking, or expanding plume;
- Treatment and disposal documentation for waste generated during the reporting period; and
- Demonstration of compliance with the required Federal, State, and local permits and approvals.

PAUSTIF will only reimburse for the necessary quarterly groundwater sampling / reporting events actually completed under this milestone (e.g., this milestone shall be considered completed with the initiation of Milestone F). Each RAPR shall be sealed by a Professional Geologist and / or Professional Engineer registered in the Commonwealth of Pennsylvania (bidders shall refer to state licensing laws to determine which seals are required based on the work performed and documented in the groundwater attainment demonstration report).

Milestone 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

¹⁵ 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.

the LNAPL remedial solution for the Site whether it be remedial Alternative 1, 2, or 3 described in the bidder's Revised RAP or RAP Addendum (Milestone D) once approved by PADEP.

Whether bidding on Alternative 1, 2, or 3, bidders shall prepare a fixed-price cost to implement that is broken down into the sub-milestone components listed below. Bidders shall clearly identify which alternative is being bid and the bidders work scope shall be detailed within each sub-milestone.

Milestone F1 – LNAPL Remediation System As-Built Drawings and Specifications.¹⁶ The rented, turn-key LNAPL remediation system shall be pre-assembled and tested prior to site deployment. The system shall be fully integrated and tested electrically and mechanically inside an enclosure (properly insulated with appropriate lighting, and heating & ventilation systems). **Given the close proximity to residential neighbors, noise pollution is a concern; therefore, the equipment enclosure shall be insulated, and sound proofed with mufflers on all exhaust and other penetrations to minimize exterior noise.** All applicable NFPA/NEC codes shall be met in system wiring, switches, motor enclosures and elsewhere. System motors, pumps, blowers and other components shall meet the RAP-design operational specifications. After delivery and setting in place, final connections shall be made to the electrical service and subsurface piping / conduits installed as part of Milestone F2.

As-built PFD, P&ID and equipment layout drawings shall be prepared with specifications and any significant variances from the RAP design shall be identified. Photographic documentation of the assembled system shall also be provided along with testing records demonstrating that the equipment is operational and capable of achieving or exceeding the RAP design capacities prior to site deployment. An operations checklist shall also be provided that details the tasks needed to be conducted at regular frequency to keep the equipment in good working order (e.g., checking and replacing filters, checking / replacing lubricants, etc.).

Please note that the proposed rented LNAPL remediation system shall be equipped with some form of telemetry. The selected consultant shall coordinate with the telephone, cable or internet service provider to connect to the appropriate service to the remediation equipment compound 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 F2. 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

¹⁶ The selected consultant shall be responsible for operating and maintaining the equipment with minimal allowable downtime for the effective period of the Remediation Agreement. Any repairs shall be promptly completed by the selected consultant and at the selected consultant's sole expense. These conditions call for reliable equipment without excessive prior use.

activities commence. On-site mark-out of buried utilities shall be completed in advance of any drilling and/or trenching activities. PA One Call notification shall be made and documented prior to drilling or trenching activities. Bids shall include all traffic control measures required to complete the remediation system installation work in accordance with all applicable state and local DOT and traffic safety requirements.

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 F3 – In-Situ LNAPL Remediation Equipment Pad, Trenching, Subsurface Piping, Mechanical, and Electrical. The selected consultant shall prepare the area where the LNAPL remediation equipment will be located as specified in the Revised 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 remediation 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. Any work conducted within the ROW for Gap Newport Pike shall include all traffic control measures required to complete the remediation system installation work in accordance with all applicable state and local DOT and traffic safety requirements.

Under this milestone, bidders must identify the existing wells to be used as LNAPL remediation wells, and/or additional proposed remediation wells. **Each bidder in their bid response must show the LNAPL remediation well locations on a site drawing.** If a bidder believes the remediation well(s) should be placed elsewhere or that more well(s) are needed, the bidder shall identify the alternative location(s) and provide rationale. For example, if a bidder proposes to install additional remediation wells, all of the work to install the remediation well(s) including surface restoration and waste disposal shall be included in the fixed price for this milestone. Any additional proposed remediation wells shall be constructed in general accordance with the PADEP Groundwater Monitoring Guidance Manual. Each bidder in the bid response shall indicate the drilling methods used to advance boreholes, total depth for each well, and well construction details (i.e. well casing diameter, screened interval, sand pack, etc.).

If additional remediation wells are proposed, each bid response shall describe and include in the fixed-price for: (i) identifying subsurface utilities and other buried features of concern including, but not necessarily limited to, contacting PA One Call and clearing the borehole location using vacuum excavation; (ii) well development activities; (iii) management of IDW; (iv) professional

surveying of the new well locations and top-of-casing elevations; and (v) if necessary, meeting DOT traffic safety requirements while conducting roadway work. 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 F4 – Final Connections and Startup / Trouble-Shooting of the In-Situ LNAPL 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 electrical heat tracing equipment).

The selected consultant shall start up and, when ready, demonstrate to PAUSTIF's / ICF's technical agent 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 LNAPL remediation 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 startup / trouble-shooting when the system is fully operational.

Milestone F5 – LNAPL Remediation, 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 system rental and routine O&M of the LNAPL remediation system;¹⁷ once per month (monthly) gauging / LNAPL hand bailing; tracking LNAPL thicknesses and recovery volumes; and quarterly groundwater, monitoring, and sampling of the on- and off-property monitoring wells; and reporting. The quarterly fixed price cost (during O&M of the LNAPL remediation system only) shall also include responding to any unexpected telemetry-triggered O&M visits. Bidders shall identify which wells will be used for remediation/recovery, mode of operation and rationale.

The remedial quarters under this milestone are separated into the following, and as provided on the Bid Cost Spreadsheet (Attachment 2):

- Milestone F5A – LNAPL Remediation via the proposed technology using a rented system, O&M of the rented remedial system, LNAPL Gauging/Hand Bailing, and Groundwater Sampling, Monitoring and Reporting.
- Milestone F5B – Post system remediation LNAPL Gauging/Hand Bailing and Groundwater Sampling, Monitoring and Reporting.

For the purposes of this RFB, the number of Milestone F5As and Milestone F5Bs shall be as follows:

- Remedial Alternative 1 – Four quarters (12 months) under Milestone F5A followed by four quarters (12 months) under Milestone F5B, and
- Remedial Alternatives 2 and 3 – Two quarters (6 months) under Milestone F5A followed by four quarters (12 months) under Milestone F5B.

However, **each bid *must* specify the LNAPL remediation timeframe (i.e., number of quarters) that the bidder’s proposed remedial approach will need in order to achieve the project goal of: a) demonstrating that the LNAPL has been recovered to the MEP as defined in the Revised RAP or RAP Addendum (Milestone D); and b) to demonstrate stability of the LNAPL and dissolved contaminant plume.**^{18,19}

¹⁷ Electric usage; telephone, cable, internet service; and any discharge to local treatment facility will be reimbursed as time and material cost adds to the Remediation Agreement according to PAUSTIF guidelines (no markup, no late fees).

¹⁸ During the bidder’s specified timeframe of site operations, maintenance, and monitoring subsequent to LNAPL remediation system startup, the selected consultant, at its own expense, including **all** associated labor, shall be responsible for repairing or replacing equipment for the RAP implementation that becomes damaged, destroyed, or defective.

¹⁹ If the groundwater data allows for discontinuing LNAPL remediation activities prior to reaching the bidders specified timeframe for LNAPL remediation activities, the selected consultant will only be reimbursed for quarterly events that have been completed.

The bidders realistic assessment of LNAPL remediation timeframe (total number of system O&M and gauging / hand bailing quarters) shall be defined in their bid response, and shall include the additional number of LNAPL remediation quarters, beyond eight quarters (Alternative 1) and six quarters (Alternatives 2 and 3) on the Bid Cost Spreadsheet (Attachment 2). For example, under Alternative 1, if a bidder believes it can complete the LNAPL remediation in a total of 10 quarters, extending Milestone F5A an additional two quarters [total six quarters of system O&M coupled with gauging/hand bailing LNAPL and four quarters of gauging/hand bailing LNAPL post system O&M], the additional number of quarters to be included on the Bid Cost Spreadsheet is two quarters system O&M and gauging/hand bailing LNAPL (Optional Cost Adder Milestone F5A). If the bidder's remediation timeframe exceeds the RFB-specified number of quarters, the number of quarters exceeding eight quarters (Alternative 1) and six quarters (Alternatives 2 and 3) will be incorporated in the Remediation Agreement as Optional Cost Adder Milestone F5A and/or Optional Cost Adder Milestone F5B. Each bid response must identify the wells to be gauged for LNAPL and hand bailed once per month during the remedial timeframe. Bidders shall specify their rationale for when LNAPL remediation would be discontinued; however, shall assume that the remediation will need to continue until it can be demonstrated that LNAPL has been recovered to the bidder's defined MEP and that the LNAPL and dissolved plumes are stable. Under these conditions, it is deemed reasonable to initiate the post-remediation groundwater monitoring to demonstrate LNAPL and dissolved plume stability. **Each bid must explicitly state bidder's understanding of the project goal for when the LNAPL remediation would be discontinued and post-remediation monitoring shall begin.**

Each bid must specify the number of site visits to occur during each quarter of LNAPL remediation system operations, and during each quarter of LNAPL hand bailing activities. 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 show the design vacuum is being applied to the well heads that reveal pneumatic influence across the target contaminant zone and allow contaminant mass recovery 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 monthly run-time meter readings

for the extraction equipment and shall be reported in each quarterly RAPR. If less than 85% uptime has been achieved, documentation of operations problems shall be provided along with the changes/modifications implemented to improve performance consistency. The selected consultant is expected to maintain system operations for at least an 85% uptime at design vacuum during each quarter. Failure to meet this minimum expectation will constitute, at the Solicitor's sole discretion, a breach of contract and the Solicitor may choose to terminate the contract.

- *Compliance monitoring* shall include system and site sampling needed to demonstrate compliance with permits and other applicable regulatory requirements. 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 existing 15 on-property wells MW-1D, MW-2S/MW-2D, MW-3S/MW-3D, MW-4S/MW-4D, MW-5, MW-6, MW-8, MW-9, and MW-16 through MW-19, the six existing off-property wells MW-7, MW-10 through MW-13 and MW-15. The fixed price for this milestone shall not include the on-property water supply well, and the off-property supply well located at R&K Family Partnership LLC property as it is assumed that these two water supply wells will be abandoned sometime during LNAPL remediation. However, if one or both of the water supply wells still exist, sampling and analysis of these wells will be handled via unit cost adders (UC 2 and UC 3) in the Bid Cost Spreadsheet in Attachment 2.²⁰ If the Revised RAP or RAP Addendum proposes the use of fewer or more wells, this should be explicitly stated in the Milestone F5 response and accounted for in the bidder's Milestone F5 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. Bidders shall manage purged groundwater and other derived IDW generated by the well purging and sampling activities in accordance with the PADEP SERO guidance.

Groundwater samples shall be analyzed for the PADEP short-list of unleaded gasoline parameters (BTEX, MTBE, cumene, naphthalene, 1,2,4-TMB, and 1,3,5-TMB) by a PADEP-accredited laboratory using appropriate analytical methods and detection levels. Bidders shall specify the analytical methods to be used for the monitoring well samples and potable water well

²⁰ The fixed price cost shall also include any additional monitoring well(s) that the bidder proposes to install under Milestone A (if any).

samples. Appropriate QA/QC samples shall also be collected during each event and analyzed for the same parameters.²¹ In addition, each event shall include field measurements for these water 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 LNAPL thickness measurements and mass recovery estimates, and a graphical depiction of LNAPL thickness and recovery estimates over time;
- 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;²²
- 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 containing measurable LNAPL, a graphical depiction of historical LNAPL measurements and groundwater elevations to provide an assessment of correlations between fluctuating water levels / precipitation events and LNAPL levels;
- For each well exceeding SHS, a graphical depiction of recent key contaminant concentration trends;
- Discussion of the data to offer an updated assessment whether these data are consistent with a stable, shrinking, or expanding LNAPL and dissolved plume;

²¹ Each bidder's approach to implementing Milestone F5 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.

²² 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.

- 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.

PAUSTIF will only reimburse for the necessary quarterly LNAPL remediation, 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 G). If, in order to achieve the cleanup goals, it is necessary to extend the period of LNAPL remediation beyond the RFB-specified eight quarters (Alternative 1) and six quarters (Alternatives 2 and 3), each additional quarter, up to the total number of Consultant's bid remedial timeframe, will be addressed via Optional Cost Adder Milestones F5A and/or F5B. Consultant shall seek and obtain written approval from Solicitor and PAUSTIF to continue operation of the remedial system (Optional Cost Adder Milestones F5A and/or F5B).²³

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 remediation performance and optimize LNAPL recovery efforts for maximal efficiency in completing the remediation of LNAPL to achieve closure as expeditiously and cost effectively as possible, **10% of each quarterly payment for this milestone (and Optional Cost Adder Milestones F5A and/or F5B, if implemented) will be withheld and accumulated pending successful completion of the remediation efforts and initiation of post-remedial groundwater monitoring activities (Milestones G)**. 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.²⁴ The 10% hold-back milestone will not be paid for the LNAPL remediation efforts that has not attained the cleanup goal within the Consultant's bid remediation timeframe.

²³ The Remediation Agreement includes a Site Specific Assumption that remediation will be complete and post-remediation groundwater monitoring activities will be initiated within the LNAPL remediation timeframe Consultant has bid.

²⁴ Lump sum payment request shall be made prior to the on-set of initiating Milestone G.

Milestone F6 – Installation/Connection of Public Water to The Site and the Off-Property Location (R&K Family Partnership LLC) and Extension of the Public Sanitary Sewer Line. Drawings depicting the proposed water line extension and sanitary sewer extension submitted to the LGTMA for review are provided in Attachment 3I. LGTMA provided approval on 7/1/19 during a regular meeting of the municipal authority (see Attachment 3I). Easements noted on the plans have been executed. Executed easements and approval documentation are provided in Attachment 3I.

NOTE: LGTMA fees for installing the water line and sanitary sewer lines shall be the responsibility of the Solicitor (outside of the Remediation Agreement) and are NOT to be included in the bid responses. More specifically bids shall not include any funding of Solicitor's LGTMA fees including, but not limited to, those identified below:

- Water Line Application Fee
- Water Line Tap-in Fee
- Water Line Financial Guarantee
- Water Line LGTMA Oversight Expense
- Sewer Line Application Fee
- Sewer Line Tap-in Fee
- Sewer Line Financial Guarantee
- Sewer Line LGTMA Oversight Expense

Milestone F6A. Installation/Connection of Public Water to The Site and the Off-Property Location (R&K Family Partnership LLC).

Under this milestone, bidders shall provide a firm fixed-price to perform the work to install and connect the Site and the R&K Family Partnership LLC property to public water. The water line shall be installed to meet all applicable regulatory codes including PENNDOT and LGTMA plumbing codes and include obtaining the necessary permits and providing a copy of the permits to the Solicitor for submittal to the LGTMA. Bidders may assume PENNDOT will waive fees for right of entry and USTIF will assist with waiver if necessary. Each bid response shall detail bidder's specific work scope for the public water line installation and connections to the Site building and to four structures located on the R&K Family Partnership LLC property. The work shall include identifying subsurface utilities and other buried features of concern including, but not necessarily limited to, contacting PA One Call. Required and appropriately sized piping shall be trenched and buried below the frost line extending between the location where the existing public water is terminated near the corner of Gap Newport Pike and London Way (see Attachment 3I) and the on- and off-property structures. Note that on the drawings, the water line installed within the ROW for Gap Newport Pike is to be installed the entire length of the R&K Family Partnership LLC property line frontage with Gap Newport Pike. Buried piping shall be tested for integrity and documented before trench backfilling. Surface restoration from all trenching shall match current

conditions. This milestone includes disconnecting the Site water supply line from the on-property potable well, disconnecting the water supply lines from the four off-property structures from the off-property potable well, and connecting the Site and the off-property structures to the new public water line including meter installation. Although not noted on the drawings, bidders shall assume that water meters will be installed at each of the four structures at the off-property location. Any work conducted within the ROW for Gap Newport Pike shall include all traffic control measures required to complete the water line installation work in accordance with all applicable state and local DOT and traffic safety requirements.

Milestone F6B – Extension of the Public Sanitary Sewer Line.

Within this milestone each bid response shall provide a firm fixed price for the installation of the sanitary sewer line. The work completed under Milestone F6B is not reimbursable by USITF; Solicitor is responsible to pay 100% of the cost of Milestone F6B. Bidder's Scope of Work and costs to complete Milestone F6B will not be evaluated by PAUSTIF; however, will be evaluated by Solicitor and included in the final Remediation Agreement with Solicitor. The sanitary sewer extension shall be installed to meet all applicable regulatory codes including PENNDOT and LGTMA plumbing codes, and include obtaining the necessary permits and providing a copy of the permits to the Solicitor for submittal to the LGTMA. Each bid response shall detail their work scope for the sanitary sewer line installation with the work including identifying subsurface utilities and other buried features of concern including, but not necessarily limited to, contacting PA One Call. Required and appropriately sized piping shall be trenched and buried below the frost line extending between the location where the existing sanitary sewer line is terminated northwest of the Site, near the intersection between Gap Newport Pike and E. Baltimore Pike (see Attachment 3I). Note that on the drawings, the sanitary sewer line installed within the ROW for Gap Newport Pike is to be installed the entire length of the R&K Family Partnership LLC property line frontage with Gap Newport Pike. Buried piping shall be tested for integrity and documented before trench backfilling. Surface restoration from all trenching shall match current conditions. This milestone also includes a piping lateral extending beneath Gap Newport Pike terminating at the Site property boundary for future connection to the Site and a lateral for future connection to the R&K Family Partnership LLC property. Any work conducted within the ROW for Gap Newport Pike shall include all traffic control measures required to complete the sanitary sewer line installation work in accordance with all applicable state and local DOT and traffic safety requirements.

Milestone F7 – Abandonment of the On-Site Potable Water Supply Well. This water supply well along with connecting public water to the Site is being done to eliminate the groundwater exposure pathway. It is assumed that this work would be completed pre-remediation. The water supply well is reportedly ~142 feet in depth with 6-inch steel casing installed to a depth of ~46 feet below grade. Borehole below ~46 feet is ~6 inches diameter. Depth to water is ~37 feet. Under this milestone, the bidder shall describe and provide a fixed-price bid for properly closing / in-place abandonment of the on-property water supply well consistent with PADEP guidelines, along with well head removals and re-vegetation, concrete / asphalt repairs, as necessary. This task shall

also include photo–documenting the well abandonment work and completion / submittal of the well abandonment forms. Copies of these photographs and forms shall be provided for the Solicitor’s files.

Milestone F8 – Abandonment of the Off-Property Potable Water Supply Well at the R&K Family Partnership LLC property. This water supply well along with connecting public water to this off-property location is being done to eliminate the groundwater exposure pathway to this off-property location. It is assumed that this work would be completed pre-remediation. The water supply well is reportedly ~49 feet in depth, and bidders are to assume this depth of 49 feet and a borehole diameter of 6 inches. However, the accuracy of construction depth of this off-property water well is uncertain; therefore, this task shall include accessing this potable water well and determining the well depth. Under this milestone, the bidder shall describe and provide a fixed-price bid for obtaining the well depth, properly closing / in-place abandonment of the on-property water supply well consistent with PADEP guidelines, along with well head removals and re-vegetation, concrete / asphalt repairs, as necessary. This task shall also include photo–documenting the well abandonment work and completion / submittal of the well abandonment forms. Bidders shall also provide a unit cost per foot (inclusive of all labor, equipment, and materials) for the abandonment of this water well (UC 1 on the Bid Cost Spreadsheet provided as Attachment 2), to be used if the water well extends a depth greater than 49 feet.

Milestone F9 – Engineering Performance Review. After the first month of consistent system operation, the selected bidder shall complete an engineering performance evaluation of the remedial system in first quarterly report. The performance evaluation shall determine if the remedial approach is efficiently and effectively remediating contaminant mass and reducing LNAPLs to achieve the maximum extent practicable recovery goal in the contract timeframe. The remedial performance evaluation shall be concluded with a written report within 45 days of the end of the first quarter of operation. Milestone F9 shall culminate in a written report presenting the testing performed, conclusions reached and recommendations to address any deficiencies and to improve remediation effectiveness. Recommendations may include both changes to operations and modifications / augmentations to the remedial design. All recommendations shall include estimated costs to implement and Solicitor may decide to accept or reject any or all recommendations. Should the selected consultant identify deficiencies and recommend actions to optimize remedial effectiveness, and the stakeholders agree with the necessity and appropriateness of one or more of the recommendations, then enabling contracting mechanisms will be explored at that time.

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

- Hydraulic and pneumatic influence measurements, as applicable, for the operating in-situ remediation system;
- Quantified vapor-phase contaminant mass recovery estimates;

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

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

The Milestone F9 shall reflect an understanding that the selected bidder will prepare the final Remedial Performance Evaluation Report (RPER) for Solicitor's, ICF's and its technical agent's review and comment. The final RPER shall show that the performance evaluation testing was conducted according to the selected consultant's bid and shall constitute documentation for payment of Milestone F9, and the activities shall also be reported in a concurrent RAPR.

Milestone G – Post-Remediation Groundwater Monitoring. Under this task, bidders shall provide a firm fixed-price to complete up to four quarters of groundwater gauging, monitoring and sampling events to demonstrate that the LNAPL has been recovered to the MEP, and stability of the LNAPL and dissolved contaminant plume(s) as part of the SSS closure. Each groundwater monitoring and sampling event shall include the existing 15 on-property wells MW-1D, MW-2S/MW-2D, MW-3S/MW-3D, MW-4S/MW-4D, MW-5, MW-6, MW-8, MW-9, and MW-16 through MW-19, and the six existing off-property wells MW-7, MW-10 through MW-13 and MW-15.²⁵ The conduct and results of each event shall be documented in quarterly RAPRs. If additional quarterly events would be needed beyond four quarters, up to an additional four quarters are incorporated in the Remediation Agreement as Optional Cost Adder Milestone G.²⁶ Consultant shall seek and obtain written approval from Solicitor and PAUSTIF to continue with quarterly groundwater monitoring/sampling events (Optional Cost Adder Milestone G).

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

²⁵ The fixed price cost shall also include any additional monitoring well(s) that the bidder proposes to install under Milestone A (if any).

²⁶ If it becomes evident anytime during the LNAPL and groundwater plume stability demonstration (initiated subsequent to completing Milestone F) that plume stability will not be successful within the four quarters, and up to four additional quarters (Optional Cost Adder Milestone G), this will represent a New Condition under the contract.

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 SERO guidance.

Groundwater samples shall be analyzed for the PADEP short-list of unleaded gasoline parameters (BTEX, MTBE, cumene, naphthalene, 1,2,4-TMB, and 1,3,5-TMB) by a PADEP-accredited laboratory using appropriate analytical methods and detection levels. Bidders shall specify the analytical methods to be used for the monitoring well samples. Appropriate QA/QC samples shall also be collected during each event and analyzed for the same parameters.²⁷ 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;
- a historical graphical depiction of LNAPL thickness and recovery estimates over time;
- 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;²⁸
- For each well exceeding SHS, a graphical depiction of historical key contaminant concentrations and groundwater elevations to provide an assessment of

²⁷ 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.

²⁸ 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.

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

- For each well containing measurable LNAPL, a graphical depiction of historical LNAPL measurements and groundwater elevations to provide an assessment of correlations between fluctuating water levels / precipitation events and LNAPL levels;
- For each well exceeding SHS, a graphical depiction of recent key contaminant concentration trends 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 LNAPL and dissolved contaminant 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 H – Plume Stability Assessment, Fate and Transport Modeling and Demonstration LNAPL Recovered to the MEP. Under this task, bidders shall provide a fixed-price cost and describe their approach in detail for evaluating the groundwater data, demonstrating LNAPL recovered to the MEP, and demonstrating LNAPL and dissolved contaminant plume stability. This work is anticipated to include, but is not necessarily limited to: a) evaluating dissolved contaminant trends in individual wells, performing both a quantitative (e.g. contaminant fate-and-transport model) and qualitative (e.g. chronological extent maps, trend lines, etc.) to address all dissolved-phase constituents whose concentrations exceed the non-residential used aquifer SHS; b) evaluating LNAPL thickness trends in individual wells and performing a qualitative evaluation (e.g. chronological LNAPL extent maps); and c) evaluating LNAPL thickness trends with LNAPL recovery estimates over time, along with using transmissivity data and other site information (i.e. geology, vapor recovery data) per PADEP guidance.

Bid responses will be expected to describe how the preponderance of data would be used to assess the nature of overall plume stability with the recognition there may be localized perturbation of constituent concentrations (e.g., due to groundwater fluctuations in the plume core) that may or may not be a reflection of the stability of the plume as a whole. Bidders are expected to provide a description of how plume stability will be evaluated qualitatively (e.g., using a sequence of plume limit contours chronologically over the post-remedial period to evaluate if

the LNAPL and dissolved plumes generally remains in the same area over time). Additionally, if quantitative statistics are proposed to be used by bidders (e.g., Mann-Kendall) to supplement a qualitative evaluation, bidders shall describe these techniques and how difference between qualitative analysis and quantitative analysis will be resolved.

Bidders shall describe what groundwater fate and transport modelling methods will be employed to determine the hypothetical steady-state configuration of the post-remediation plumes as part of demonstrating to PADEP that all the potentially complete current and future human exposure pathways have been identified and addressed via engineering or institutional controls. Bidders shall assume that the methods, results and graphics associated with the fate and transport modelling will be presented along with the LNAPL MEP demonstration in the RACR.

Milestone I – Post-Remediation Exposure Pathway Evaluation with Risk Assessment.

Under this milestone, each bidder shall provide a detailed work scope and fixed price cost to evaluate the exposure pathways and seek to eliminate all potentially complete pathways that present excessive risks via engineering or institutional controls. For example, bidders shall incorporate the following on-property restrictions or others as necessary to render current or future potential exposure pathways that might pose excessive risks incomplete:

- No potable water wells;
- No residential land use;
- Vapor barrier on future building construction; and
- Soil management plan for future digging on excessively contaminated portions of property.

Bidders shall assume that no environmental covenants / land use restrictions will be implemented at adjoining off-property locations and that post-remedial care inspections of the off-property locations to ensure that off-property well exposure pathways remain incomplete. Bidders shall also assume that PADEP will provide an environmental covenant waiver with respect to future installation of potable wells in the roadway right-of-way for Gap Newport Pike. Bidders shall consider the depth of groundwater and soil impacts when determining whether there are potentially complete exposure pathways to utility or construction workers in the roadway right-of-way (e.g., construction / utility worker pathways may not be complete if soil and groundwater impacts are 15 feet or more below grade). With respect to vapor intrusion, bidders shall perform the work consistent with the requirements, guidance document, “Land Recycling Program Technical Guidance Manual for Vapor Intrusion into Buildings from Groundwater and Soil under Act 2”, dated January 18, 2017.

In the event that one or more potentially complete pathways on-property present an excessive human health risk, the pathway(s) shall be eliminated by one or more land use restriction(s). The successful consultant shall assess the human health risks associated with the potentially complete pathways based on residual contaminants in soil, groundwater, and vapors following

remediation. This task shall include comparing current and projected future residual soil and groundwater contaminant levels against applicable soil and groundwater screening criteria²⁹. For those soil and groundwater contaminants passing through the screening criteria, the human health exposure risks shall be quantified. If human health risks are excessive (organ-specific HI >1 and /or carcinogenic risk of >1 x 10⁻⁴), then appropriate land use restrictions for the spill property shall be identified to eliminate the pathway causing the excessive human health risk. Should excessive human health risks continue to persist on-property, in the roadway or other off-property locations after the remediation and despite use of all available / applicable on-property land use restrictions, then this would represent a New Condition under the contract.

In developing the SOW and costs for this milestone, bidders shall assume that the post-remediation residual current and future soil and groundwater contaminant risks will need to be separately evaluated for exposures: (a) on the spill property; (b) in the Gap Newport Pike roadway / right-of-way; and (c) on off-property parcels across Gap Newport Pike and adjoining property to the southeast.

The risk assessment shall encompass updating the exposure assessment, toxicity assessment, and risk characterization. The identification of exposure pathways for the Site shall be based upon guidance from the American Society for Testing and Materials (ASTM) and the United States Environmental Protection Agency (USEPA), as required by Act 2, Section 250.404. The risk assessment deliverable shall include separate Exposure Pathway Flowcharts graphics for current and forecast future (a) On-Site; (b) Off-site; and (c) roadway right-of-way to support the risk assessment text. These charts shall graphically depict the thought process in identifying the potentially complete pathways for each of the three areas. The exposure evaluation charts shall include the exposure pathway steps of Constituent Source, Receiving Media, Transport Mechanisms, Exposure Routes and current and future human receptors (i.e., facility workers, construction workers, trespassers, residents, and recreational users and others).

The post-remediation risk assessment shall identify the current and forecast future site soil and groundwater samples used in the risk assessment, show how the constituents of interest (COI) were identified and present the COI for each contaminated media with a potentially complete pathway to a human receptor. Additionally, the risk assessment shall show how the risk assessment exposure point concentrations (EPCs) were calculated³⁰ for each contaminated media with a potentially complete human exposure pathway and summarize the calculated EPCs.

For each potentially complete exposure pathway, the level of carcinogenic risk shall be quantified, and the total cumulative carcinogenic risks shall be calculated. Non-carcinogenic risks shall be calculated using the hazard index. If necessary, the hazard index shall be evaluated on an organ

²⁹ For straight SSS standards, PADEP may expect constituent concentrations to be screened against the USEPA RSLs. However, for a mix of SHS and SSS standards, PADEP may allow screening against SHS. Only those constituents that do not screen out against the risk-based screening levels remain as COPCs for the exposure pathway analysis and/or demonstrating attainment of the PADEP SHS or a risk-based numeric Site Specific Standard.

³⁰ EPCs shall be derived for COIs by statistical analysis (maximum concentrations shall not be used for EPCs).

specific basis. Exposure and toxicity assumptions shall be presented and well documented in the risk assessment report along with an uncertainty analysis. If there are no potentially complete exposure pathways of off-property contamination after eliminating the off-property potable well and imposing the post-remedial care potable well survey program, then off-property human health risks would not need to be evaluated.

In addition, an ecological screening assessment shall be updated to determine if the site poses an unacceptable risk to ecological receptors. The screening assessment shall be conducted in accordance with Section IV.H of the Pennsylvania Land Recycling Program's Technical Guidance Manual and USEPA Region 3 risk assessment screening criteria insofar as is necessary for determining any potential ecological risk.

After completing the exposure analysis / risk assessment, the selected consultant will present its draft findings to the Solicitor and PAUSTIF for review and comment as a separate deliverable. The project schedule should allow two (2) weeks for Solicitor and PAUSTIF to review the draft Risk Assessment before being finalized and incorporated into the RACR (Milestone J).

Milestone J – Preparation, Submission, and PADEP Approval of RACR. Under this milestone, the bidder will prepare a fixed-price cost to prepare a draft and final RACR following the completion of Milestones E through I, and any applicable related optional cost adder milestones. The RACR shall be prepared in accordance with Sections 245.313. At a minimum, the RACR shall provide the details for Milestones A through I, demonstrate that the LNAPL has been recovered to the MEP, 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 Sections 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.

The successful bidder will be eligible to receive payment for 75% of the bid amount for Milestone J when there is proof the document has been completed and submitted to PADEP. The 25% balance will be due for reimbursement once proof has been provided that PADEP has approved the Milestone J deliverable document.

Milestone K – Finalizing / Filing of Environmental Covenants. Under this task, the bidder shall describe and provide a fixed-price bid for finalizing and filing the Environmental Covenant (EC) associated with the PAUSTIF eligible release. The fixed-price shall include all reasonable and necessary activities and required fees to finalize and file the EC for the subject property,

with the local court house and other required entities. The successful bidder will be responsible for coordinating this work with the impacted property owner(s) and their legal counsel(s). Legal fees are not to be included in bid costs. PAUSTIF reimbursement of Client and/or third party legal fees will be considered outside of the executed Remediation Agreement. The fixed price cost for this task shall also include the work necessary in petitioning PADEP for any relevant EC waivers.

Milestone L – Site Closure / Restoration Activities. Under this milestone, the bidder shall describe and provide a fixed-price bid for properly closing the site, including: proper disposal of any remaining wastes; in-place abandonment of remedial system below grade piping; in-place abandonment of all on- and off-property 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 L 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.

Optional Cost Adders

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

Optional Cost Adder Milestone E – Additional Quarterly Monitoring, Sampling & Reporting.

This supplemental groundwater monitoring may be needed if there are unexpected delays outside of the successful bidder’s control ahead of activating the LNAPL remediation operations under this contract. Under this milestone, bidders shall provide the Solicitor and PAUSTIF with a firm quarterly unit fixed-price cost that would include the quarterly groundwater monitoring, sampling / analysis of the existing 15 on-property wells MW-1D, MW-2S/MW-2D, MW-3S/MW-3D, MW-4S/MW-4D, MW-5, MW-6, MW-8, MW-9, and MW-16 through MW-19, the six existing off-property wells MW-7, MW-10 through MW-13 and MW-15, and reporting beyond the three quarters specified in Milestone E.³¹. Sampling and analysis for the on-property water supply well and the

³¹ The fixed price cost shall also include any additional monitoring well(s) that the bidder proposes to install under Milestone A (if any).

off-property supply well located at R&K Family Partnership LLC property will be handled via unit cost adders as provided on the Bid Cost Spreadsheet in Attachment 2. 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 F5A – Additional LNAPL Remediation System Rental, O&M, LNAPL Gauging/Hand Bailing, and Site Monitoring, Sampling, & Reporting. If a bidder has proposed more than four quarters for Alternative 1 or two quarters for Alternatives 2 and 3 of their system rental, O&M, LNAPL Gauging/Hand Bailing, and quarterly sampling and reporting, then this work would continue under this optional cost adder. Under this milestone, bidders shall provide the Solicitor and PAUSTIF with a firm quarterly unit fixed-price cost that would include the system rental; routine O&M; LNAPL Gauging/Hand Bailing; quarterly groundwater, monitoring, and sampling of the existing 15 on-property wells MW-1D, MW-2S/MW-2D, MW-3S/MW-3D, MW-4S/MW-4D, MW-5, MW-6, MW-8, MW-9, and MW-16 through MW-19 and the six existing off-property wells MW-7, MW-10 through MW-13 and MW-15; and reporting beyond the timeframe specified in Milestone F5.³² The SOW for this unit cost adder milestone should follow Milestone F5 guidelines. As described in Milestone F5, a 10% holdback will be applied to each Optional Cost Adder Milestone F5A payment. Each bid must include the rationale for needing to implement this optional cost adder milestone.

Optional Cost Adder Milestone F5B – Additional Post-System Remediation LNAPL Gauging/Hand Bailing, Site Monitoring, Sampling, & Reporting. If a bidder has proposed more than four quarters for Alternative 1 and four quarters for Alternatives 2 and 3 of gauging / hand bailing LNAPL, then this work would continue under this optional cost adder. Under this milestone, bidders shall provide the Solicitor and PAUSTIF with a firm quarterly unit fixed-price cost that would include the monthly gauging / hand bailing of LNAPL; quarterly groundwater, monitoring, and sampling of the existing 15 on-property wells MW-1D, MW-2S/MW-2D, MW-3S/MW-3D, MW-4S/MW-4D, MW-5, MW-6, MW-8, MW-9, and MW-16 through MW-19 and the six existing off-property wells MW-7, MW-10 through MW-13 and MW-15; and reporting beyond the timeframe specified in Milestone F5.³³ The SOW for this unit cost adder milestone should follow Milestone F5 guidelines. As described in Milestone F5, a 10% holdback will be applied to each Optional Cost Adder Milestone F5B payment. Each bid must include the rationale for needing to implement this optional cost adder milestone.

Optional Cost Adder Milestone G – Additional Post-Remediation Groundwater Monitoring. This supplemental milestone may be necessary if post remediation stability is not adequately demonstrated to PADEP satisfaction during the base work scope necessitating further monitoring. 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 existing 15 on-property wells MW-1D, MW-2S/MW-2D, MW-3S/MW-3D, MW-4S/MW-4D, MW-5, MW-6,

³² The fixed price cost shall also include any additional monitoring wells installed under Milestone A (if any).

³³ The fixed price cost shall also include any additional monitoring wells installed under Milestone A (if any).

MW-8, MW-9, and MW-16 through MW-19 and the six existing off-property wells MW-7, MW-10 through MW-13 and MW-15, and reporting beyond the timeframe specified in Milestone G.³⁴ The SOW for this unit cost adder milestone should follow Milestone G guidelines. Each bid must include the rationale for needing to implement 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 identified in the executed Remediation Agreement. Actual milestone payments will occur only after successful and documented completion of the work defined for each milestone. The selected consultant will perform only those tasks/milestones that are necessary to reach the Objective identified in this RFB. Selected consultant will not perform, invoice, or be reimbursed for any unnecessary work completed under a milestone.

Any "New Conditions", as defined in Attachment 1, arising during the execution of the SOW for any of the milestones may result in termination of or amendments to the Remediation Agreement. Modifications to the executed Remediation Agreement will require the written approval of the Solicitor and the PAUSTIF (for funding consideration). PADEP approval may also be required.

³⁴ The fixed price cost shall also include any additional monitoring wells installed under Milestone A (if any).

List of Attachments

1. Remediation Agreement
2. Bid Cost Spreadsheet
3. Site Information/Historic Documents
 - a. Figures 1 through 5
 - b. 1st & 2nd Quarter 2019 RAPRs, dated April 2019 & July 2019
 - c. 4th Quarter 2018 RAPR, dated January 2019
 - d. 3rd Quarter 2018 RAPR, dated Oct. 2018
 - e. RAP, dated June 2018
 - f. 1st Quarter 2018 RAPR, dated April 2018
 - g. PA Natural Diversity Inventory Review, dated Jan. 2018
 - h. 4th Quarter 2017 RAPR, dated Jan. 2018
 - i. SCR, dated Nov. 2017
 - j. 1st Quarter 2017 RAPR, dated May 2017
 - k. UST Closure Report, dated Sept. 2010
 - l. Water line install drawings, executed easements, & approvals
 - m. Other Information (PADEP letters, 2010 NORR, off-property access agreement)
 - n. 3rd Quarter 2019 RAPR, dated October 2019