



ARLINGTON COUNTY, VIRGINIA

**AGREEMENT NO. 19-261-RFP-A2
AMENDMENT NUMBER 2**

This Amendment Number 2 is made on the date of execution by the County and amends Agreement Number 19-261-RFP (“Main Agreement”) dated 11/24/2020 between HDR Engineering, Inc. (“Contractor”) and the County Board of Arlington County, Virginia (“County”).

The County and the Contractor agree to amend the Main Agreement as follows:

- 1. PURSUANT TO CLAUSE 4. CONTRACT TERM, THIS AGREEMENT IS HEREBY RENEWED FROM DECEMBER 1, 2023, TO NOVEMBER 30, 2024.**
- 2. ADD THE ATTACHED DOCUMENTS TO THE AGREEMENT:**
 - a. EXHIBIT B.2 SCOPE OF WORK PHASE 2**
 - b. EXHIBIT C.2 SCOPE OF WORK PHASE 2 SCHEDULE**
 - c. EXHIBIT E.2 SCOPE OF WORK PHASE 2 ASSUMPTIONS**
 - d. EXHIBIT F.2 SCOPE OF WORK PHASE 2 CONTRACT PRICING**

All other terms and conditions of the Main Agreement remain in effect.

WITNESS these signatures:

THE COUNTY BOARD OF ARLINGTON
COUNTY, VIRGINIA

HDR ENGINEERING, INC.

AUTHORIZED SIGNATURE: DocuSigned by:
Dr. Sharon Lewis
89B88B1AD301462...

AUTHORIZED SIGNATURE: DocuSigned by:
Andrea Ryon
708A8FEA73904DD

NAME: Dr. Sharon Lewis

NAME: Andrea Ryon

TITLE: Purchasing Agent

TITLE: Senior Vice President

DATE: 11/22/2023

DATE: 11/22/2023

EXHIBIT B.2

ENGINEERING PROGRAM MANAGEMENT CONSULTING SCOPE OF SERVICES FRAMEWORK - PHASE 2A

General Description and Overview

This scope describes continuation of program management services pertaining to the implementation of new solids handling processes at the Arlington Water Pollution Control Plant (WPCP) for the Water Pollution Control Bureau (WPCB). This scope of services is based on the framework Phase 2 Scope of Work, included as Exhibit B to Contract 19-261-RFP, executed on November 24, 2020 between the County Board of Arlington County, Virginia (County) and HDR Engineering, Inc. (HDR). As provided in Arlington County Purchasing Resolution 4-102(2)C, the Project is being executed utilizing multiphase professional services contracts to HDR because critical information developed in Phase 1 was necessary to develop this scope for the next phase. The new solids handling processes will entail upgrades or replacement of nearly all solids handling processes (Facilities). A Thermal Hydrolysis Process (THP) followed by Anaerobic Digestion (THP/AD) form the backbone of the new treatment train. A marketable Class A biosolids product and biogas utilization system to clean and make use of methane gas either on- or off-site are also envisioned. HDR will serve as the Program Manager for the upgrades. Brian Balchunas, P.E. will serve as the overall Program Manager and is responsible for day-to-day management, execution of the program, and all matters related to the Scope. Mary Strawn from the Arlington County WPCB will serve as the Project Officer and is the main point of contact for all matters related to the scope, unless another County staff member is designated.

The services provided under this scope are a continuation of work completed under Phase 1 of the program management services. Under the Phase 1 services, the following work was completed:

- Reviewed and confirmed the recommendations of technologies for implementation
- Determined that generation of Renewable Natural Gas (RNG) was the most appropriate strategy for use of the produced biogas
- Prepared a Facilities Plan for the upgrades
- Assisted in determining the optimal project delivery methods, including traditional design-bid-build for the Gravity Thickener Upgrades, and design build for the remainder of the work.
- Assisted with procurement of Delivery Teams for completion of the work
- Planned for the necessary local, state, and federal permits required
- Assisted in initial discussions with outside utilities and other agencies for product use
- Engaged in community outreach
- Provided other related as-needed program management tasks during the term of the Agreement.

The remaining program management services will focus on delivery of the design, construction, and implementation of the Program. The Phase 2 program management services will be divided into phases.



This scope of work is for “Phase 2A” which includes the following in alignment with the original Phase 1 Service Areas:

- Service Area 1 - Ongoing Services (SA1): HDR will update the previously completed Program Management Plan (“Work Plan”) including updating controls to track schedule and budget. HDR will also provide continued administrative, communication, permitting, and cost estimating services.
- Service Area 2 - Scope Development (SA2): Scope associated with SA2 was completed in Phase 1 through completion of the Facilities Plan and Biogas Utilization Plan.
- Service Area 3 - Project Delivery and Procurement (SA3): The majority of scope associated with SA3 was completed in Phase 1 through selection of the delivery methods and the Delivery Teams. The Phase 2A scope includes continued assistance with potential contracts and agreements for biogas utilization.
- Service Area 4 – Planning and Design (SA4): SA4 will be the primary focus of the Phase 2A scope. HDR’s role during the design period is to ensure that planned program meets Arlington County’s objectives, including reliability and operations and maintenance needs. Items affecting these needs will include design reviews, value engineering, incorporating value added changes, project documentation and delivery team negotiations. HDR will provide design management services associated with the Gravity Thickener Upgrades design-bid-build project and the Comprehensive Biosolids Upgrades Design Build project.
- Service Area 5 – Construction Oversight (SA5): HDR’s role during the construction period is to ensure that the executed Program meets Arlington County’s operations and maintenance needs through final completion. This may include routing construction documents for review and approval, full time on-site inspections, equipment testing and verification. The Phase 2A scope includes construction oversight for the Gravity Thickener Upgrades design-bid-build project and the Early Work Implementation Phase for the Comprehensive Biosolids Upgrades Design Build project. Construction oversight for the Main Project under the Comprehensive Biosolids Upgrades Design Build project will be included in future phases.
- Service Area 6 – Operations and Maintenance (SA6): HDR will oversee and advise WPCB staff on integrating the improved solids handling processes into daily operations. Services include asset management, evaluating operating parameters, development of system O&M manuals, providing additional training, and other assistance as needed. The Phase 2A scope includes coordination of design elements into the asset management program and start-up and commissioning for the Gravity Thickener Upgrades and any mechanical work as part of the Early Work Implementation Phase. Phase 2A also includes continued development of rationale for increased staffing, including justification to County leadership. Future phases will include start-up and commissioning services for the Main Project, assistance with operations and maintenance contracts (chemicals, hauling, etc.) and a comprehensive biosolids marketing plan.
- Service Area 7 – Other Services (SA7): HDR will continue to provide other services as requested and approved by the County. These services include, but are not limited to: coordinating site visits, pilot testing, and process optimization.



The current schedule projects that the Program will be completed in 2029. As provided in Arlington County Purchasing Resolution 4-102(2)C, the Project will be executed utilizing multiphase professional services contracts to HDR because critical information developed in Phase 1 was necessary to define the scope of work for the following phases. The scope of work provided herein is for Phase 2A services, which generally consists of SA1, SA3, SA4, and portions of SA5, SA6 and SA7.

Phase 2A services are anticipated to last 26 months. Refer to Exhibit C.2 for a preliminary schedule.

SA	SA Title	Phase 1 (completed)	Phase 2A (this scope)	Future Scope
1	Ongoing Services	General program management	Continued ongoing services	
2	Project Scope Development	Completion of Facilities Plan and Gas Utilization	Completed in Phase 1, no additional work	
3	Project Delivery and Procurement	Main program delivery and pre-selection of thermal hydrolysis	Ongoing support of biogas contracts	
4	Planning and Design	Initial design management for gravity thickener	Design Management for all work	None – will be complete in Phase 2A
5	Construction Management	No work	Construction management for Gravity Thickener Upgrades and Early Work Implementation Phase	Construction management for main Design Build Project
6	Operations and Maintenance	Preliminary biosolids market assessment and staffing evaluations	Planning activities	Commissioning, testing, training for all projects. Marketing for Class A biosolids services. Operations and maintenance contracts
7	Other Services	General program support	Continued other services	

Service Area Descriptions

Service Area 1: Ongoing Services

HDR will provide ongoing services for program management including program controls, communication, permitting, and cost estimating throughout the Program. HDR will also update the Program Management Plan (“Work Plan”) for Phase 2 services. Throughout the course of the Program, HDR will be responsible for the following activities:

1. **General.** Perform Program Management Administration under the direction of the Project Officer:



- a. Program Administration activities will entail the full range of duties to ensure that staffing, schedule, budget (HDR and program), and other controls are appropriate and documented.
 - b. HDR will provide on-site staff for Phase 2A services at an agreed upon schedule with Arlington County. At a minimum, full-time staff will be provided for Service Area 5, Construction Management Services (see SA5 below). Temporary facilities for housing the on-site staff will be provided by the Comprehensive Biosolids Upgrades Design Builder.
2. **PM Work Plan.** HDR will complete the services and provide deliverables required under the PM Work Plan. The Phase 2 PM Work Plan will update the road map for all development and implementation aspects of the program and documents roles, responsibilities, policies, requirements, and systems that will be utilized to ensure effective implementation of the Program. Except for the Risk Management and Construction Management Plans, the PM Work Plan was updated for Phase 2 under HDR's Phase 1 Scope of Work. The PM Work Plan is a living document and will be updated throughout all phases of the program. The PM Work Plan includes the following:
 - a. Program Goals
 - b. Program and Project Management Procedures.
 - c. Overall Program Schedule for each Phase and Resource Management Plan. Use Microsoft Schedule for schedule updates and Microsoft Excel for cost control plans.
 - d. Program Information System Plan
 - e. Program Communication Plan, covering both internal and external communications
 - f. Financial Management Plan (both internal to HDR and external for the program)
 - g. Gravity Thickener Upgrades Design Management Plan
 - h. Comprehensive Biosolids Upgrades Design Management Plan
 - i. HDR Billing and Delivery Teams Invoice Control including Procurement Procedures
 - j. HDR Cost Controls Management Plan and Change Management Procedures
 - k. HDR Monthly Progress Report Procedures
 - l. Program Risk Management Plan
 - m. Program Safety Plan for HDR's services
 - n. Coordination of other projects within the plant that may impact the program
 - o. Program Sustainability Goals
 - p. Operations and Maintenance Performance and Integration Goals
 - q. Quality Assurance and Quality Control (QA/QC Plan)
 - r. Construction Management Plan for Early Work Implementation Phase. The Construction Management Plan for the Main Construction Phase will be developed separately.
3. **On-going Program Management Activities**
 - a. **Meetings.**
 - i. Conduct internal weekly program update meetings with the Project Officer and others as needed to provide progress updates. Establish a standing



- agenda and customize the agenda before each meeting. Include past two-week progress, four-week look ahead, change management, action item review, and expected onsite presence for next two weeks in each meeting. Meetings will be held onsite unless otherwise agreed to via e-mail ahead of the meeting. Document each meeting with informal notes.
- ii. Conduct all programmatic meetings and coordinate activities to develop and implement the solids handling upgrades. This process involves targeted meetings, workshops and related sessions on specific issues, utilizing key resources, to make decisions in a timely and thoroughly developed and documented process. It is assumed that all delivery focused meetings will be coordinated by the Design Engineer or Contractor for the Gravity Thickener Upgrades project and the Design Builder for the Comprehensive Biosolids Upgrades, unless noted otherwise. Meetings are further discussed in SA4 below.
- b. **Site Coordination.** Coordinate with the planning and execution of other projects at the WPCB that are outside of these upgrades that may include, but not be limited to: energy efficiency upgrades and liquids side optimization projects, secondary blower upgrades, primary and secondary clarifier upgrades, and any odor control improvements outside the scope of the Program. Program Manager (HDR) to lead coordination efforts for construction coordination including master schedules and site planning for projects at the WPCP. HDR will assist with coordination of design elements impacting biosolids projects.
- c. **E-Builder.** Use e-Builder as an electronic project management tool for all project information, communications, and data storage.
- i. Provide training to the County and Delivery Teams for implementation.
 - ii. Recommend additional modules that may be used for implementation. All programming or module development will be done by Arlington County.
- d. **HDR Project Management Activities.**
- i. Monthly invoices will include a breakdown by Service Area and employee role, hours and rates. As a cost control measure, HDR will compare progress achieved versus the current Plan and then compare actual costs incurred versus planned costs. With Arlington's input, HDR will update relevant portions of the PM Work Plan and budget for the next milestone for the County's approval.
 - ii. Prepare and distribute monthly progress reports, including design and permitting status, performance assessment, schedule status and problem area identification.
 - iii. Develop program management logs for use on each of the delivery projects, including:
 - 1. Change Management Register
 - 2. Risk Register
 - 3. Decision Log



4. Action Items Log

iv. Maintain project files, records, correspondence and submittals.

4. **Communications and Outreach Program:** HDR will work with the Department of Environmental Services' Communications Team to develop and conduct a proactive community outreach effort to facilitate public support for new THP/AD facilities. HDR will assist in public outreach by providing the following services:

- a. Update the overall program communications plan.
- b. Assist with public meetings (up to 8), including logistics management, agendas, slides, handouts and other materials, and meeting summaries. Document meeting input and outcomes, including issues raised, discussions, themes, and any action items.
- c. Assist with stakeholder meetings (up to 9), including meeting materials, logistics management, preparing agendas, slides, meeting summaries and other outreach materials. Document the outreach process, including issues, discussions, goals, outcomes and any action items.
- d. Assist with pop-up outreach events (up to 8) to work to engage those who may not traditionally attend public meetings or other outreach activities.
- e. Develop issue-based and/or process topic videos (up to 2) to educate the public about the program's benefits
- f. Develop program-specific social media content to be posted to the County's existing social media accounts; assume up to 12 social media content calendars, including supporting graphics and copy
- g. Develop content to update website (e.g., graphics, blog posts, photos, etc.); assume up to 8 website updates. It is assumed that HDR will continue to host the Re-Gen website.
- h. Develop information to provide to the media about the program to coincide with key milestones. Assume up to 2 key milestones will be supported during this contract period
- i. Prepare written communications suitable for a variety of formats such as newsletters, flyers, email blasts, etc. Assume up to 6 such communications.
- j. Review internal communications to ensure WPCB staff is kept informed.
 - i. Collaborate with the County to coordinate up to six (6) group staff training sessions to share updates, communicate decisions and options, introduce new terms, and gather input on facility updates. Each training session will be held multiple times to accommodate shift work.
 - ii. Collaborate with the County to coordinate up to five (5) lunch and learn events. Lunch-and-learn events will focus on specific technical or management issues associated with the program. These events will be open to all staff and if possible recorded for those who are unable to attend.
 - iii. Support the development of short presentations for up to four (4) WPCB all-hands meetings. The presentations will be geared toward high-level updates, lasting 15-20 minutes.
 - iv. Support the development of email blasts, flyers by timeclocks, and program update for the WPCB newsletter and posting on the WPCB SharePoint site. Articles, flyers, and newsletter updates are envisioned to be not more than



- one page each or a series of concise bullet points. Flyers shall incorporate updated graphics.
- v. Support presentation development for leadership updates as needed. Assume quarterly meetings with DES leadership.
 - vi. Support review and updates to Manager's Notes to the Board. Assume up to 9 updates to coincide with stakeholder meetings.
 - vii. Support Board two-by-twos and Board presentation updates. Assume four updates total.
- k. **Comment Management and Tracking.** HDR will manage program comments and responses received through the program website, email, comment forms (hardcopy or electronic), face-to-face communications and meeting notes. HDR will implement the Comment Management and Contract Protocol adopted in the communication plan to organize and summarize comments in the database, code comment contact information and summary information into database, summarize comment information in monthly comment reports (26)..
5. **Permitting and Coordination with Outside Agencies:** HDR will work with the Delivery Teams and the County to obtain all necessary permits for the successful completion of the Program. Examples of permits include, but are not limited to, modifications to air permits, Certificates to Construct/Operate, and construction permits.
- a. HDR shall review the Gravity Thickener Upgrades Designer's permitting plan and provide feedback alongside Arlington County's review. HDR shall review the applications for the permits prior to submission to the appropriate party.
 - b. HDR shall review the Design Builder's Permitting Plan and provide feedback alongside Arlington County's review. HDR shall review the applications for the permits prior to submission to the appropriate party.
 - c. HDR shall attend meetings with respective permitting agencies. It is assumed that four meetings will be conducted with VDEQ and six meetings will be conducted with Arlington County Permitting. The respective delivery teams will lead all permitting meetings.
6. **Perform Cost Estimating Functions and Project Funding Opportunities:** Programmatic-level cost estimating will be completed by HDR in order to monitor and control cost changes in the market or created by decisions made in program development. In particular, HDR will provide the following:
- a. For the Gravity Thickener Upgrades project, review the Design Engineer's Opinion of Probable Construction Cost at each milestone. Provide feedback for the Design Engineer to incorporate.
 - b. For the Comprehensive Biosolids Upgrades project:
 - i. Review the Control Budget developed by the Design Builder as part of the Design Confirmation Phase. Provide comments for incorporation by the Design Builder.
 - ii. Work with the Design Builder to establish cost estimating guidelines, including development of work packages and estimating format.



- iii. Develop independent Opinion of Probable Costs for the various Guaranteed Maximum Price (GMP) submittals, at each design milestone for comparison to the Design Builder estimates. Cost estimating for the various phases will be as follows:
 - 1. Schematic Design – Class 3 (-15% to +20%) as defined by Association of Advancement of Cost Engineering (AACE)
 - 2. Design Development – Class 2 (-10% to +15%) as defined by AACE
- iv. After each submittal, review the Design Builder’s estimate and meet with the County and Design Builder to reconcile the estimates. Provide a summary for County review.
- c. Track cost estimates over time for any changes and justify cost changes on both a project and program level.
- d. CIP Coordination:
 - i. HDR shall assist with the preparation of the proposed CIP for future years. Coordination will take place once every two years throughout the life of the program. HDR shall also attend a series of discussions leading up to the yearly CIP update, including preparation of background documents for formal CIP update as related to the program.
 - ii. Within each year of the program, when changes in cost to the Program are known, HDR shall periodically review the program’s progress against the current CIP and provide updates to the County. At a minimum, these periodic updates will happen at major milestones, but they should also occur when other factors that impact costs are identified.
- e. Funding coordination, such as WIFIA and IRA, is included in SA7 below.

7. Sustainability Goals and Envision Efforts

- a. HDR will provide a Sustainability Lead to update the previously developed Sustainability Management Plan and lead the Envision documentation and verification requirements. At a minimum, the project must meet Envision Silver verification, with a goal of Envision Gold. HDR will draft the individual credit evaluations and compile supporting documentation, with support of the Design Builder.
- b. HDR’s Sustainability Lead will work with the Design Builder’s Sustainability Lead to incorporate the Envision framework into project workshops and decisions and work with the Program Manager Envision Lead to identify Innovation Credits and confirm expected credits.

Service Area 2: Scope Development

All Service Area 2 work was completed in Phase 1.

Service Area 3: Project Delivery and Procurement

HDR will provide continued support of potential contract arrangements with Washington Gas and/or third parties in support of the Biogas Utilization. The following activities are included:



1. WGL (Washington Gas)

- a. Meet with Washington Gas quarterly to review project status, potential contract terms, and interconnect requirements. Evaluate requirements in comparison with industry benchmarks.
- b. Review Washington Gas proposal for interconnect analysis and preliminary engineering work and provide recommendation to Arlington County on moving forward with engineering agreement.
- c. Review Washington Gas cost estimates.
- d. Review potential agreement with Washington Gas on interconnection.

2. RNG Agreements

- a. Based on results of market sounding completed in Phase 1, identify potential contract mechanism for RNG marketing and distribution.
- b. Coordinate scope of work between Washington Gas, potential RNG agreements, and Arlington Transit needs, including up to 4 meetings with Arlington Transit.
- c. Assist with the development of solicitations based on the selected contract mechanism, such as RFQs, RFPs and ITBs, for procurement of RNG marketing and distribution services.
 - i. Develop solicitation documents, including: technical scope of work, fixed and operating cost forms, design and performance criteria, facility development requirements, scheduling requirements, permitting requirements, design review and submittal requirements, construction submittals, start-up and acceptance testing requirements, safety requirements, and operation and maintenance requirements.
 - ii. Assist the County in development of requirements and procedures for the review of qualifications submittals and proposal/bidding submittals including the development of evaluation criteria and a scoring methodology for proposals.
 - iii. Participate in pre-submittal and pre-proposal conferences and facility tours to assist in providing potential respondents a summary of the project, a description of solicitation requirements and answers to questions concerning the packages and procurement process.
 - iv. Prepare written responses to questions raised at pre-submittal and pre-proposal conferences and those submitted in writing by prospective respondents for incorporation into procurement document Addenda.
 - v. Review responses for conformance with RFQ and RFP requirements, including confirmation that mandatory minimum requirements have been met. Assist with the analysis of the technical, financial, cost and business information and data included in proposals.
 - vi. Assist with the evaluation, ranking and selection of potential RNG marketing and distribution firms.



- d. Lead internal negotiating strategy sessions and participate in negotiation sessions with any proposing firms to reach agreement on the terms of a final service contract for the applicable portion of the program.
- e. Assist in development of public presentation(s) to County Board, if necessary, in connection with the recommendation of any contract awards.

Service Area 4: Planning and Design

HDR's role during the design period is to confirm that the planned program meets Arlington County's operations and maintenance needs. Responsibilities of the various parties are further detailed in Exhibit E.2.

1. Program Manager Review of Deliverables

- a. For all reviews, incorporate a mutually agreed upon QA/QC process that provides Arlington with a high-quality review. Facilitate County review and consolidate comments from HDR and the County for transmittal to the Design Builder. Track resolution of comments.
- b. Actively coordinate all HDR discipline reviews of the project design, including but not limited to civil, structural, architectural, process mechanical, HVAC, plumbing, electrical, and instrumentation and control.
- c. All major design reviews will be completed in Bluebeam® Studio using Bluebeam Revu software. HDR will set up and manage the Bluebeam Studio sessions, including development of standard commenting tool sets.
 - i. HDR will provide training sessions to Arlington County reviewers in use of Bluebeam Studio, the Bluebeam Revu software, and tools available for comment. Arlington County will be responsible for purchasing Bluebeam Revu.
 - ii. HDR will take any offline comments produced by Arlington County and incorporate them into the Bluebeam Studio session.
 - iii. HDR will track Delivery Team responses to comments through an archived Bluebeam Session. All comments will also be exported to Microsoft Excel.
- d. Minor deliverable review procedures may be outside of Bluebeam® Studio. Procedures shall be reviewed and approved by the County.

2. Gravity Thickener Upgrades Project

- a. Design Management associated with the Gravity Thickener Upgrades Basis of Design work is included in Phase 1.
- b. Manage Work of Gravity Thickener Upgrades Design Engineer: HDR will provide administrative monitoring and contract management services for design work performed by the Design Engineer per the guidelines established in the Program Management Work Plan, including the following:
 - i. Review monthly invoices from the Design Engineer and provide comments back to Arlington County.



- ii. Monitor the progress of the design effort with the Design Engineer per the agreed schedule.
- iii. Actively participate in design phase meetings and workshops to facilitate final decisions on process configuration and discipline needs. It is assumed that monthly meetings will occur during design plus four additional miscellaneous workshops.
- iv. Conduct design reviews at all design deliverable stages
 1. Perform biddability and constructability reviews.
 2. Perform operability and maintainability reviews.
- v. Facilitate review of preliminary Maintenance of Plant Operations and Start-up and Commissioning Plans. Review the design to ensure O&M and other agreed-upon goals are implemented in the design.
- vi. Review design documents for compliance with the contract documents (including design and performance criteria), and coordinate review comments with the County to ensure implementation into the design.
- vii. Provide Bid assistance, as needed. Assistance includes participation in pre-bid conference, review of proposed addenda by Gravity Thickener Upgrades Design Engineer.
- viii. Assist the County to manage and expedite contract changes, if necessary.
- ix. Manage and respond to design change requests and provide validity and reasonableness recommendations to the County.

3. Comprehensive Biosolids Upgrades Design Build Project

- a. Manage Work of Design Builder. HDR will provide administrative monitoring and design management services for work performed by the Design Builder. The draft Design Builder scope of work serves as the basis for HDR's scope of work (see Exhibit I.2). See Service Area 5 for Construction Management services. It is currently anticipated that the Design Build project will be delivered in two phases, listed below:
 - i. Phase 1 Design Confirmation Phase (Program Management Phase 2A)
 - ii. Phase 2 Implementation Plan, subdivided into:
 1. Early Work Design Implementation Stage (Program Management Phase 2A),
 2. Design Implementation Stage (Program Management Phase 2A), and
 3. Construction Implementation Stage (Program Management Phase 2B).
- b. General Program Management
 - i. Develop guidelines / management plan for managing the Design Builder (see SA1).
 - ii. Review monthly invoices from the Design Builder and provide recommendation for approval to Arlington County Project Officer.
 1. Perform initial review of draft invoice and supporting documentation and reconcile comments with Design Builder



2. Once revised invoice is provided and reviewed, schedule review meeting with Project Officer to review invoice and agree on any remaining comments.
 3. Provide written recommendation of invoice approval to Project Officer once all comments have been resolved.
 4. Meet with Bureau Chief, as needed, to resolve any final questions prior to processing.
- iii. Track Design Builder's costs against original projections and bring any anomalies to the attention of the Project Officer and Design Builder.
 - iv. Monitor the progress of the design effort per the agreed schedule, including periodic meetings with the Design Builder.
 - v. Actively participate in design phase meetings and workshops, as described in the Design Builder Scope of Work, to facilitate final decisions on process configuration and discipline needs.
 - vi. Facilitate weekly core team meetings, as described in the Design Builder Scope of Work. Include a standing core team meeting agenda and document action items and notes from weekly meeting.
 - vii. Facilitate quarterly Executive Committee Meetings. Document key outcomes of Executive Committee Meetings.
 - viii. Assist the County to manage and expedite contract changes, if necessary, in accordance with the Design Build Contract.
 - ix. Manage and respond to Design Builder change requests and provide validity and reasonableness recommendations to the County. Identify whether change requests shall be from Contingency or County Allowance. Provide recommendations to County for change in Purchase Order amounts. Track Contingency and County Allowance against original budgets and provide recommendations to Project Officer if any adjustments are deemed required.
 - x. Review Design Builder Project Management Plans and Quality Assurance and Quality Control Plans.
 - xi. Perform quality audits for each major milestone deliverable. The quality audit shall select portions of the deliverable for review of quality checks in accordance with the Design Builder Quality Control Plan.
- c. Design Confirmation Reviews
- i. Additional Studies. Review and provide comments on the Technical Memorandums associated with Additional Studies. Provide confirmation of Design Builder recommendations to County.
 - ii. Value Engineering. Participate in two value engineering workshops to review concepts developed by the Design Builder. Provide recommendations to County on the value engineering options presented.
 - iii. Design Confirmation Memo. Review and provide comments on the Design Confirmation memo. Confirm that mutually agreeable changes to the Facility Plan are captured in the Design Confirmation memo.



- iv. Project Site Conditions Review. Review and provide comments on the project site conditions deliverables, including site survey, underground utility investigations, geotechnical investigations, and hazardous materials investigations provided by the Design Builder.
 - v. At the end of the Design Confirmation Phase, provide written recommendation to the County to authorize the Design Builder to proceed with the Implementation Phase.
- d. Design Deliverable Reviews
- i. Conduct design reviews for all Design Builder milestone submittals.
 - ii. Coordinate County design reviews:
 - 1. Conduct multiple “over-the-shoulder” reviews, consisting of separate mini-workshops for Central Maintenance, Electrical and Instrumentation, and Operations and Engineering staff.
 - 2. Review topics of interest at each mini-workshop and identify areas requiring further input from County staff.
 - 3. Document all comments received in the workshops for ultimate transmittal to the Design Builder.
 - iii. Review design documents for compliance with the contract documents (including design and performance criteria), and coordinate review comments with the County to ensure implementation into the design.
 - iv. Review Design Builder work to ensure O&M and other agreed-upon goals are implemented in the design.
 - v. Perform biddability and constructability reviews.
 - vi. Perform operability and maintainability reviews.
- e. Pre-Construction Services
- i. Conduct pre-construction deliverable reviews, including subcontracting procurement plans, quality control plans, permitting plans, Design Builder developed cost estimates, Design Builder developed schedules, health and safety plans, Design Builder constructability reviews, site logistics plan and security plans.
 - ii. Facilitate development of preliminary Maintenance of Plant Operations, Commissioning and Testing, and Performance Guarantee plans. The goal of the plans during design will be to confirm an acceptable approach and define the level of effort on all parties required during construction.
- f. Development and Negotiation of each Guaranteed Maximum Price
- i. Review Design Builder procurement approach and overall bidding process.
 - ii. Review self-performance approach and provide recommendation to the County.
 - iii. Review recommendations from Design Builder for contingency and allowances and provide recommendation to the County.
 - iv. Attend interviews with potential subcontractors for critical bid packages.



- v. Review and provide recommendations on non-bid work, including general conditions.
 - vi. Review complete proposal for GMP and make recommendations to the County on actions to be taken.
 - vii. Lead negotiating sessions with Design Builder.
 - viii. Provide guidance on negotiating strategies to Arlington County. Such guidance may include risk assessments and cost negotiating strategies.
 - ix. Provide final recommendation to Arlington County.
 - x. Prepare for and present recommendations to the County Board.
- g. Other services associated with the Planning, Design and Early Work implementation will include:
- i. Partnering
 - 1. HDR will facilitate an initial partnering meeting to develop the charter for the Comprehensive Biosolids Upgrades Design Build project. An agenda will be developed and approved by Arlington County at least ten days before the initial partnering meeting. The goal of the initial partnering workshop will be to establish project goals, mission, identify project issues, and agree to a dispute resolution process. HDR will develop a partnering report summarizing the results of the initial partnering meeting.
 - 2. HDR will facilitate additional partnering sessions every three to four months. These partnering sessions will focus on team performance, critical issues, and path to resolution. Team member surveys will be included as part of the partnering process. HDR will summarize survey results and action items from the partnering sessions.
 - ii. HAZOP workshop:
 - 1. HDR will facilitate and lead a four (4) day Hazard and Operability (HAZOP) Workshop with the Design Builder. The HAZOP workshop will be completed after the Schematic Design deliverable. The HAZOP study is a critique of the design as it stands with respect to its ability to meet its design intent in a safe and efficient manner. It will consider materials of construction and plant layout. The HAZOP study will identify potential hazards and failure modes but does not quantify the frequency or likelihood of such hazards occurring. The study will identify deviations from the design intent that may lead to poor operational performance, may lead to process failure, may adversely affect the safety of personnel operating the installation (and third parties) or may affect the environment. It is up to the Design Builder's Design Professional to implement mitigation for these deviations, as appropriate. Not all deviations may require mitigation.
 - 2. HDR will provide a facilitator and process experts to attend the HAZOP Workshop. HDR will document the results of the workshop in a series of



worksheets, including deviations identified and possible mitigation. The Design Builder will finalize these worksheets with final mitigation techniques and recommendations. The worksheets will be used throughout the completion of design to track compliance with the recommendations.

- iii. Value engineering. HDR will lead a formal five-day Value Engineering (VE) Workshop with the Design Builder as described in the Design Builder Scope of Work. The VE Workshop will be completed after the Schematic Design Deliverable. HDR will provide a Certified Value Specialist (CVS) to lead the Workshop, subject to approval by the County.
 1. HDR will provide recommendations to the County on Design Builder team member to participate in the VE Team.
 2. HDR will recommend HDR discipline specific staff to participate in the VE Team, subject to County approval.
 3. The lead CVS will facilitate the value engineering ideas and recommendations developed by the VE Team and lead the conclusion session where the findings of the VE Team will be presented.
 4. The results of the VE analysis will be summarized in a VE Report. A follow-up workshop will be completed to discuss the contents of the report and final disposition of VE recommendations.

Service Area 5: Construction Management

HDR's role during the construction period is to ensure that the executed program meets Arlington County's operations and maintenance needs through final completion. This will include routing construction documents for review and approval, site inspections, equipment testing and verification. Construction management services provided for Phase 2A are for Gravity Thickener Upgrades and Early Work Implementation Phase of the Comprehensive Biosolids Upgrades construction only. Construction management services for the Main Project of the Comprehensive Biosolids Upgrades will be scoped separately in Phase 2B.

HDR's observation or monitoring portions of the work performed under the construction contracts will not relieve the construction contractor(s) from responsibility for performing work in accordance with applicable contract documents. HDR will not control or have charge of, and shall not be responsible for, construction means, methods, techniques, sequences, procedures of construction, health or safety programs or precautions connected with the work and will not manage, supervise, control or have charge of construction. HDR will not be responsible for the acts or omissions of construction contractors or other parties on the project.

HDR's construction management services will include the following. Responsibilities of the various parties are further detailed in Exhibit E.2:

1. Office Based Services



- a. Submittal Management
 - i. Review the Gravity Thickener Contractor and Design Builder submittal logs and identify "Critical" submittals requiring review by the County and HDR.
 - ii. Review critical submittals for conformance with the contract document requirements for providing submittals (quantity, format, etc.) and compliance with technical requirements. Distribute copies to the appropriate reviewers within the County and HDR and provide recommended comments. Consolidate review comments and return to the Contractor or Design Builder in accordance with the contract documents.
 - iii. Track and log critical submittals.
 - b. Requests for Information
 - i. Receive, log and coordinate reviews and responses to Requests for Information (RFI's)
 - ii. Review and provide recommended responds to RFI's incorporating comments from the County.
 - iii. If the response leads to a change to the contract, work with the County, Contractor, and/or the Design Builder to issue a Field Order or Change Proposal Requests as appropriate.
 - c. Provide technical process support, as needed, during construction. This may include modeling various operational scenarios in order to understand the impacts of certain MOPO activities, such as units out of service. Site visits will be made to the WPCP as needed to provide this support.
 - d. Review proposed design changes from the Engineer of Record (for either project). Provide recommendations to the County on acceptance or rejection of any such change.
 - e. Program management leadership shall attend regular monthly progress meetings
2. Field Based Services
- a. Temporary field office for HDR field personnel will be provided by the Design Builder. A total field staff of four people is anticipated at various times during the construction activities in Phase 2A. A total of 12 months has been included based on the projected Phase 2B construction initiation date. These construction personnel are anticipated to include:
 - i. Construction manager
 - ii. Field engineer (part-time)
 - iii. Inspector (1 full-time, 1 part-time)
 - iv. Document control specialist (part-time)
 - b. Conduct pre-construction meeting and review contractor's documentation of pre-construction conditions for both the Gravity Thickeners and Early Work Implementation Phase.
 - c. Receive, track, review, and distribute contractor's RFIs, shop drawings submittals, schedules, progress payment requests, and other submittal. Process them to the appropriate staff for review and approval. Upon the receipt of any review comments, HDR shall consolidate the comments and prepare a response for the WPCB Project



- Officer's review and approval. The document tracking requirements will differ between the Gravity Thickener Upgrades and Early Work Implementation Phase, as detailed in Attachment 1.
- d. Provide full-time construction inspection services during construction phase for compliance with contract documents (including performance and owner's criteria); provide one full-time on-site inspector with supplemental trade inspectors involved, as needed, to ensure an appropriate level of oversight during all phases of construction. Provide daily inspection reports inclusive of photographs.
 - i. For the Gravity Thickener project, HDR will lead Quality Control activities for definable features of work, including pre-construction activities, initial inspection, periodic inspections, and final inspection.
 - ii. For the Early Work Implementation Phase, the Design Builder is responsible for Quality Control activities for the definable features of work. HDR on-site staff will serve in a Quality Assurance role.
 - e. Coordinate Special Inspections of Engineer of Record required specialty testing. Special Inspections for both projects will be provided by the County on-call Special Inspections firm.
 - f. Facilitate regularly scheduled construction progress meetings with contractors, primary subcontractors and County representatives, and other applicable meetings, and prepare and distribute minutes from these meetings.
 - g. Facilitate weekly plant coordination meetings with contractors and County representatives. Distribute action items from these meetings.
 - h. Attend quality control meetings, including pre-activity meetings and initial and final inspections.
 - i. Attend other onsite meetings as may be necessary to facilitate the work.
 - j. Review progress schedule, action items, status of changes, submittals, change order requests, problems, safety issues, and prepare recommendations for the County's Project Officer's review and approval.
 - k. Review monthly invoices from the Contractor and Design Builder and provide recommendation for approval to Arlington County Project Officer.
 - i. Perform initial review of draft invoice and supporting documentation and reconcile comments with Contractor and Design Builder
 - ii. Once revised invoice is provided and reviewed, schedule review meeting with Project Officer to review invoice and agree on any remaining comments.
 - iii. Provide written recommendation of invoice approval to Project Officer once all comments have been resolved .
 - iv. Meet with Bureau Chief, as needed, to resolve any final questions prior to processing.
 - l. Coordinate with the County Prevailing Wage Compliance Manager related to the contractor's compliance with Prevailing Wage classification requirements.
 - m. Prepare change orders, field orders and all correspondence for the Arlington Project Officer's approval and signature.



- n. Coordinate construction activities impacting plant processes with WPCB Operations and Maintenance. This includes reviewing shutdown plans and activities sequence, meeting with affected parties, providing sufficient notice to WPCB staff, and coordinating activities during the shutdown to ensure that the plan is executed.
- o. Review and approve the use of any temporary equipment that is used to maintain operations during construction to ensure proper sizing and tie-ins with existing systems.
- p. Assist the County in expediting decisions on changes that may be needed to maintain project schedule.
- q. Assist the County in developing monetary levels that will guide the change management process.
- r. Manage and respond to Design Builder change requests and provide validity and reasonableness recommendations to the County. Identify whether change requests shall be from Contingency or County Allowance. Provide recommendations to County for change in Purchase Order amounts. Track Contingency and County Allowance against original budgets and provide recommendations to Project Officer if any adjustments are deemed required.
- s. Supervise Startup and Testing activities, including:
 - i. Oversee and monitor factory acceptance, dry and functional equipment testing, equipment manufacturer's inspections and certification of installations, walk down functional equipment systems with contractor, and document results of system performance testing. Review test reports prepared by contractor. Track readiness for facility acceptance and turnover.
 - ii. Conduct start-up meetings with contractors before scheduled start-up, and review start-up and testing plans.
 - iii. Actively participate in equipment / systems testing and start-ups, commissioning, and generate deficiency list(s) for completion or acceptance.
 - iv. Coordinate system and equipment trainings with vendors. Trainings will repeat so that all responsible staff members can attend.
 - v. Review training materials and attend various training sessions. Training sessions may need to be repeated multiple days/times.
 - vi. Review and approve contractor O&M manuals.
- t. Monitor project closeout, including the following:
 - i. Coordinate a comprehensive final inspection of the project to verify that the materials furnished and work performed are in accordance with the contract documents,
 - ii. Coordinate the preparation and completion of punch lists indicating items of work remaining to be accomplished.
 - iii. Determine the value of any uncorrected or deficient work.
 - iv. Coordinate the turnover to the County all equipment lists, recommended spare parts lists, guarantees, warranties, and operating and maintenance manuals required by the contract documents.



- v. Review contractor's and Engineer record drawings in accordance with the specifications, and recommend approval of record documents to the County upon completion.
- vi. Conduct warranty walkthroughs with contractors to assure the County that all elements under warranty are functioning properly and provide documentation of any deficiencies that need attention.
- vii. Submit paper (where applicable) and electronic records for archiving, along with an index for record retrieval.

Service Area 6: Operations and Maintenance

HDR will oversee and advise WPCB staff on integrating the improved solids handling processes into daily operations. Services include asset management, evaluating operating parameters, development of system O&M manuals, providing additional training, and other assistance as needed. For Phase 2A, these services are anticipated to include:

1. Review vendor O&M manuals for the Gravity Thickener Upgrades.
2. Confirm new gravity thickeners are performing as intended, comparing actual operating conditions to expected performance.
3. Review gravity thickener Standard Operating Procedures (SOPs), developed by the Gravity Thickener Upgrades Design Engineer.
4. Assist with vendor and Design Engineer led training.
5. Develop protocols for integrating new equipment into the County's Computerized Maintenance Management System (CMMS).
6. Oversee equipment tagging, location identification, warranty tracking, spare parts, and preventive maintenance strategies to confirm compliance with Arlington County WPCB standards. The Engineer of Record for the various projects will develop data to be input into the CMMS by Arlington County Maintenance Planning staff.
7. Coordinate with County on timing for future staffing, including any updated recommendations to the staffing plan developed under Phase 1 of the Program Management services.
 - a. Provide staffing justification memos for the following positions:
 - i. Three senior operators
 - ii. One mechanic
 - iii. One electrician
 - iv. One instrumentation technician
 - b. Meet with the County to review staffing memos
 - c. Finalize memos and meet with DES leadership to review

Service Area 7: Other Services

HDR will provide other services as requested and approved by the County. These services include, but are not limited to: coordinating site visits, geotechnical evaluations, pilot testing, process optimization,



and tracking WPCB impacts to the County's sustainability goals. Allowance budgets will be established for all SA7 work and will not be utilized without prior authorization of the County.

1. Coordinate site visits to other facilities as needed. Potential site visits might include evaluation of operating THP systems, digestion, and RNG systems. Program Manager to assist with planning site visits and provide a site visit trip report summarizing each site visit. All site visits will be approved through the County.
2. Coordinate on-going pilot work that is being completed by Virginia Tech through a separate contract with the County. HDR will provide specific protocols and recommendations for pilot work, including facilitating any special sampling at the WPCB, and review findings from the pilot work. The results from the pilot work will validate design criteria including digestibility, dewaterability, inhibition, and final product quality; estimate biogas production; confirm recycle loads and their impacts (inhibitory or other) to the liquid stream; and identify potential process pitfalls.
3. Monitor and investigate additional technologies of interest including, but not limited to: on-going evaluation of carbon recycling and carbon capture systems.
4. Update calculations and documentation to demonstrate reduced impact of the new processes on the WPCP's carbon footprint as the design proceeds, to ensure consistency with the County's Energy Plan and that the County's Energy Plan goals are met. These evaluations will support the County's carbon accounting and continued discussion with stakeholders.
5. Assist in identifying Federal, state or other grant and/or loan funding opportunities. Periodically, the PM will review and provide an update on funding available for this project. At a minimum, this periodic update will correspond with the PM Work Plan update.
6. Provide full-time staff augmentation during design to support the Arlington WPCP team in design reviews and other design related activities. Budget has been included for nine months of engineer level.
7. Provide additional inspectors. Budget has been included for one additional inspector for six months.
8. Provide videographer for live video shoots in support of educational videos.
9. Provide contract administration support for complying with Federal or state funding requirements, including Davis-Bacon wage compliance and American Iron and Steel requirements.
10. Develop e-Builder or custom dashboard using key performance indices (KPIs) available from e-Builder or other platforms.
11. Additional unscoped items that are a requirement of the Program and may arise through development of the Program.
12. Any Policies and Procedures developed as part of the Program shall be in conformance with the American Public Works Association best practices.

ARLINGTON WATER POLLUTION CONTROL PLANT (WPCP)
 CONTRACT NUMBER 19-261
 EXHIBIT C.2
 ENGINEERING PROGRAM MANAGEMENT CONSULTING
 PHASE 2A FEE ESTIMATE - SCHEDULE

Phase	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26			
Gravity Thickeners																																		
Detailed Design	█	█	█	█	█	█	█	█	█	█																								
Bidding and Award											█	█	█	█	█	█																		
Construction																	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
Comprehensive Biosolids Upgrades																																		
Design Confirmation	█	█	█	█	█																													
EWP Design Development						█	█	█	█																									
EWP GMP and Approval										█	█	█	█																					
EWP IFC										█	█	█	█	█																				
EWP Construction																																		
MP Schematic Design							█	█	█	█	█	█																						
MP Design Development													█	█	█	█	█	█																
MP GMP and Approval																																		
MP IFC																																		
MP Construction NTP																																		

█ Gravity thickener work included in Phase 2A
█ Design-Build work included in Phase 2A
█ On-going construction work included in subsequent phases

EXHIBIT E.2

ENGINEERING PROGRAM MANAGEMENT CONSULTING SCOPE OF SERVICES - PHASE 2A Assumptions and Responsibilities

The following provides general assumptions for the Scope of Work for the Engineering Program Management Consulting services for the Arlington WPCB Solids Facility upgrades. Note, main task headings match scope items and numbering in fee spreadsheet. Subtask numbering may not match exactly.

Phase 2A may overlap some with Phase 1. All SA1 and SA2 tasks will be administered in Phase 2A after approval but some distinct Phase 1 tasks may continue after Phase 2A is approved.

Phase 1 will be closed when the following tasks are completed:

- Final agreement negotiated with Design Builder with Board Approval for the Design Build Agreement. Board approval will provide authorization for the team to proceed with all design and Early Work Package construction.
- Completion of the Gravity Thickener project preliminary design.
- Pre-qualification of the THP vendors for selection by the Design Builder

Phase 2A will start when either of the following tasks are initiated:

- Start of detailed design for the Gravity Thickener project
- Notice-to-proceed for the Design Builder

Phase 2A will be considered complete when the following:

- Main Project Guaranteed Maximum Price (GMP) agreement and Board Approval
- Early Work Package construction complete (or by time)
- Gravity Thickener construction complete (or by time)

The current Phase 2A scope includes 12 months of construction administration services (overlap of Early Work Package and Gravity Thickener services). Remaining construction administration services will be provided in future phases.

Service Area Assumptions

Service Area 1: Ongoing Services

1. Perform Program Management Administration:



- a. General project management and oversight for the project will consist of approximately 2 hours per month for Program Principal, 3 hours a week for the Program Manager, and 4 hours a week for the Design Manager (Senior Engineer rate category).
 - b. Hours onsite per scope. The hours throughout the rest of the proposal account for this time onsite.
 - c. General – QC by Technical Leads, Program Principal, Program Manager, or dedicated QC staff. All deliverables to be QC'd by those not directly involved in the work.
2. PM Work Plan:
- a. Overall PM Work Plan to be led by SA1 lead with input from program manager where applicable.
 - b. Hours pretty minimal as most work was updated in Phase 1.
3. Ongoing activities:
- a. Meetings and workshops. –
 - i. Internal weekly meetings accounted for here – 1 hour meeting + 1 hour prep per week. Program Manager only.
 - ii. All other meetings included elsewhere
 - b. Coordination with other project: Assumes 8 two-hour meetings with on-call consultants to discuss any potential design impacts based on work on-going by others.
 - c. E-Builder use:
 - i. Training – 40 hours total
 - ii. Additional modules – 56 hours total
 - d. Project Updates
 - i. Monthly cost control: 26 updates over Phase 2A
 - ii. Monthly progress reports: 26 progress reports
 - iii. Logs
 1. Change management – 1 hour per week
 2. Risk register – most by DB, 0.5 hours per week
 3. Decision log – 1 hour per week
 4. Action items log – 1 hour per week
 - iv. Maintain files and systems: Assumes 2 hours per week for project controls
4. Communications and Outreach Program:
- a. Communications plan. Updated – 68 hours communications team, 4 hours PgM review
 - b. General public meeting – 4 hours per meeting for PgM, 10 hours per meeting for Comms Specialist, 5 hours per meeting for graphic designer
 - c. Stakeholder meeting – 8 hours per meeting for PgM, 8 hours per meeting for SE, 30 hours per meeting for Comms Specialist, 20 hours per meeting for graphic designer



- d. Pop-up Events Attendance at events – Program Manager and communications lead
 - i. 20 hours per meeting for communications specialist, 6 hours per meeting for graphics designer prep
- e. Educational Videos: Two videos, each up to two minutes in length. The Program Manager will develop a strategic plan, scripts, graphics, storyboards, and final educational videos. The Program Manager will produce program videos using vector animation. Videographer services, if needed, are included in SA7. The Program Manager will provide up to two languages in subtitles on the videos. Review by Program Manager. 60 hours per video for Communications Specialist, 60 hours per video for graphics designer, 10 hours per video for technical lead.
- f. Social Media: The County will be responsible for direct costs associated with social media advertising. 2 hours per month for 26 months for HDR coordination.
- g. Program Website Updates: 10 hours per update (8 total)
- h. Media update – two times, 20 hours each
- i. Prepare written communications suitable for a variety of formats such as newsletters, flyers, websites, listservs, etc. 6 newsletters, 8 hours per newsletter for communications specialist, 8 hours per newsletter for graphics designer.
- j. Review internal communications to ensure WPCB staff is kept informed. The Program Manager will provide materials for the trainings and lunch and learn events. The County will be responsible for sharing via internal platforms.
 - i. Six group staff trainings, each training held four times to accommodate shift work. Led by HDR technical staff. Four hours per training for program manager, 18 hours per training session for prep and training by Sr. Engineer for 2 and Sr. CM for 2 (8 hours presenting over 4 shifts and 10 hours preparation for each session)
 - ii. Five lunch and learns. Led by HDR technical staff. Two hours per training for program manager, 10 hours per lunch and learn for Sr. Engineer for 3, Sr. CM for 2.
 - iii. Four updates. The presentations will be geared toward high-level updates, lasting 5-10 minutes. Use content from other presentations. Program Manager to lead. 4 shifts each. 6 hours per update.
 - iv. Internal written communications – 8 hours per update, 6 updates total
 - v. Leadership presentations: Assume 9 presentations in Phase 2A. Attendance by Program Manager and Sr. CM for final 4 updates. Preparation by Program Manager with assistance from Communications Specialist. Limited effort given on-going regular communications between WPCB and DES leadership, using existing materials created elsewhere.
 - vi. Manager's notes – after each Stakeholder meeting. 1 hour for Program Manager, 1 hour for communications specialist
 - vii. Two-by-twos. Preparation by Program Manager with assistance from Communications Specialist. Limited effort given on-going regular



communications between WPCB and DES leadership, using existing materials created elsewhere. 2 hours per meeting plus 4 hours prep.

- k. Comment Management and Tracking. The Program Manager will use the secure web-based database, Zoho, to log communication activity and track participation throughout the project. County will have access and HDR will provide monthly reports. 4 hours per month for Communications Specialist to manage.

5. Permitting services

- a. GT Permitting Plan review – 4 hours each Sr. Engineer and Engineer
- b. DB Permitting Plan review – 24 hours each Sr. Engineer and Engineer
- c. Four meetings with the Virginia Department of Environmental Quality to discuss the overall program, potential permits, and permit submittal requirements. Six meetings with Arlington County Permit Office (environmental and building) to discuss the overall program, potential permits, and permit submittal requirements. Briefings will be led by delivery teams.

6. Cost:

- a. Full independent estimates with each DB deliverable.
- b. Includes coordination time for developing estimates in line with DB – same SOV
- c. Assumes 1 hr/drawing for estimates - ~ 150 EW, 1000 main package
- d. Process and electrical – senior estimator
- e. Sitework, concrete, mechanical – estimator
- f. Includes 3 workshops for each estimate to reconcile
- g. GT estimate – review of EOR estimate only

7. Sustainability Goals and Envision Efforts:

- a. Sr. Engineer – 2 hours per month for 26 months
- b. Sustainability Lead – 6 hours per month for 26 months

Service Area 2: Scope Development

All Service Area 2 work was completed in Phase 1.

Service Area 3: Project Delivery and Procurement

1. WGL

- a. Meet with WG quarterly – 9 meetings assumed, 4 hours each including preparation. Evaluate requirements against industry benchmarks – 2 hours EIT.
- b. Review interconnect and prelim engineering and make recommendations – 16 hours
- c. Review prelim engineering cost estimates – 6 hours
- d. Review agreement and negotiations – 40 hours



2. RNG Marketing and Distribution Agreements:

- a. Identify potential contract mechanism – 16 hours
- b. Coordinate scope of work – 40 hours
 - a. 4 meetings with transit – 16 hours total
- c. Solicitation
 - a. Develop solicitation documents – 72 hours
 - b. Quals/proposal development – 20 hours
 - c. Conferences – 12 hours
 - d. Addenda – 12 hours
 - e. Review responses – 30 hours (3 proposals, 10 hours each)
 - f. Evaluation, ranking – 8 hours
- d. Negotiations – 40 hours
- e. Board presentations – 8 hours

Service Area 4: Planning and Design

- 1. Program Review
 - a. Bluebeam Training
 - i. 2 initial sessions with project team – project controls led
 - ii. 4 follow-up sessions throughout project – project controls led
- 2. Gravity Thickener Upgrades Design Reviews – assume nine months final design, six months bidding and award
 - a. Review invoices – 15 total, 1 hour per month for PC, 0.5 hr/month for DM
 - b. General monitoring – 4 hours per month. Monthly meetings – 4 hours per month.
 - c. Miscellaneous workshops – assume 4 total. 4 hours per workshop
 - d. Design reviews:
 - i. 60%:
 - 1. General/process/civil – 60 hours
 - 2. Structural – 12 hours
 - 3. Electrical – 16 hours
 - 4. I&C – 8 hours
 - 5. Misc (FP, architectural) – 8 hours
 - 6. Construction Manager – 20 hours
 - ii. 95%
 - 1. General/process/civil – 60 hours
 - 2. Structural – 12 hours
 - 3. Electrical – 16 hours
 - 4. I&C – 8 hours
 - 5. Misc (FP, architectural) – 8 hours
 - 6. Construction Manager – 20 hours



- iii. 100%
 - 1. General/process/civil – 12 hours
 - 2. Structural – 4 hours
 - 3. Electrical – 4 hours
 - 4. I&C – 2 hours
 - 5. Misc (FP, architectural) – 2 hours
 - 6. Construction Manager – 4 hours
 - e. MOPO and Start-up and Commissioning Plan Review – 8 hours design manager, 12 hours Ops specialist
 - f. Over the shoulder reviews
 - i. One 4 hour workshop with Ops and Engineering, 3 attendees
 - ii. One 4 hour workshop with Central Maintenance, 2 attendees
 - iii. One 4 hour workshop with E, I&C, 2 attendees
 - iv. 2 hours to compile notes for each
 - v. 10 hours per submittal to compile and collate comments
 - vi. 4 hours each submittal to back check
 - vii. No workshops for 100%. 10 hours total for comment coordination.
 - g. Bidding assistance
 - i. Pre-bid conference – 4 hours
 - ii. Review of three addenda – 2 hours each
 - iii. Site visits – 2 visits, 1 hour each
 - h. Design changes
 - i. Assume two design changes – 6 hours each
 - ii. Construction changes for GT construction project included with Construction services below.
- 3. Comprehensive Biosolids Upgrades Design Management – assume 26 months for 100% design and all GMP approvals
 - a. General PM
 - i. Develop guidelines – hours included in SA1
 - ii. Invoice review – 5 hours per month project controls and scheduler, 2 hours per month Design Manager (Sr. Engineer). 26 invoices total. 8 hours total for Program Manager.
 - iii. Track costs – 2 hours per month project controls
 - iv. Monitor progress – 8 hours per month Design Manager, 2 hours per month PrgMgr
 - v. Meetings and workshops
 - 1. Subcommittees – assume 8 subcommittees, each with 2 participants within HDR + DM. 6 meetings per subcommittee, 3 hours each. Hours – 18 hours per subcommittee per participant = 432 hours. PGM participates in 1/6 (72 hours). Additional 20 hours for disciplines for 8 subcommittees (160 hours).



2. Design workshops – see summary tab. 40 workshops total over 26 months.
- vi. Core team meetings – weekly, 1 hour each. Attended by PgM, DM, and Project Controls. 1 hour per meeting for PgM, 1.5 hours per meeting for DM, and 2 hours per meeting for Project Controls. 113 weeks.
- vii. Executive meetings – quarterly – 9 meetings total, 2 hours each + 1 hour prep. ProgPrinc, PgM, and DM. Add CM for final 4 meetings.
- viii. Design changes
 1. Assume four design changes – 16 hours each
 2. Construction changes for EWP included with Construction services below.
- ix. DB Plan reviews
 1. PMP – DM 8 hours, PgM – 2 hours
 2. Communications Plan – DM 4 hours
 3. Cost Modeling Plan – DM 4 hours, Sr. Cost Estimator – 4 hours
 4. BIM – DM 2 hours, Sr. BIM – 4 hours
 5. Change Management – DM 2 hours
 6. Risk Register – DM 1 hour per month, SE 1 hour per month, PgM – 8 hours total
 7. Permitting Plan – DM 2 hours, Sr. Eng – 4 hours
- x. Quality audits
 1. EWP DD – PgM 2 hours, QAM 8 hours, Eng 4 hours
 2. MP SD and DD – PgM 2 hours, QAM 16 hours, Eng 16 hours
 3. Four final design deliverables – PgM 1 hr, QAM 8 hours, Eng 8 hours
- b. Design Confirmation
 - i. Additional studies – assume 6 in scope + 2 additional. 1 hr PgM, 4 hours DM, 10 hours additional per study. 120 hours total.
 - ii. VE Recommendations. Workshop hours covered above. VE recommendation review and memorialize – 4 hours PgM, 10 hours DM, 10 hours SE
 - iii. Design Confirmation Memo – 4 hours PgM, 10 hours DM, 20 hours SE, 20 hours discipline reviews
 - iv. Project Site Conditions Reviews
 1. Existing conditions and survey - 8 hours
 2. Underground utilities – 20 hours
 3. Geotechnical investigations – 20 hours
 4. Hazardous materials investigations – 8 hours
- c. Design Reviews
 - i. EWP – assume 100 drawings
 1. 60%:
 - a. General/process/civil – 60 hours
 - b. Structural – 12 hours
 - c. Electrical – 16 hours



- d. I&C – 4 hours
- e. Misc (FP, architectural) – 4 hours
- f. Construction Manager – 20 hours
- 2. 95%
 - a. General/process/civil – 60 hours
 - b. Structural – 12 hours
 - c. Electrical – 16 hours
 - d. I&C – 4 hours
 - e. Misc (FP, architectural) – 4 hours
 - f. Construction Manager – 20 hours
- 3. 100%
 - a. General/process/civil – 12 hours
 - b. Structural – 4 hours
 - c. Electrical – 4 hours
 - d. Construction Manager – 4 hours
- ii. Main Package – assume 1000 drawings
 - 1. 30%
 - a. General/process/civil – 240 hours
 - b. Structural – 40 hours
 - c. Electrical – 40 hours
 - d. I&C – 80 hours
 - e. Misc (FP, architectural) – 20 hours
 - 2. 60%:
 - a. General/process/civil – 240 hours
 - b. Structural – 120 hours
 - c. Electrical – 120 hours
 - d. I&C – 80 hours
 - e. Architectural – 40 hours
 - f. Fire Protection – 20 hours
 - g. Construction Manager – 80 hours
 - 3. 95%
 - a. General/process/civil – 120 hours
 - b. Structural – 180 hours
 - c. Electrical – 160 hours
 - d. I&C – 40 hours
 - e. Architectural – 40 hours
 - f. Fire Protection – 20 hours
 - g. Construction Manager – 80 hours
 - 4. 100%
 - a. General/process/civil – 40 hours
 - b. Structural – 20 hours
 - c. Electrical – 20 hours



- d. I&C – 10 hours
 - e. Architectural – 10 hours
 - f. Fire Protection – 6 hours
 - g. Construction Manager – 20 hours
 - iii. Over the shoulder reviews
 - 1. EWP
 - a. One 4 hour workshop with Ops and Engineering, 3 attendees
 - b. One 4 hour workshop with Central Maintenance, 2 attendees
 - c. One 4 hour workshop with E, I&C, 3 attendees
 - d. 2 hours to compile notes for each
 - e. 10 hours per submittal to compile and collate comments
 - f. 4 hours each submittal to back check
 - g. No workshops for 100%. 10 hours for compiling comments
 - 2. Main Package
 - a. Two 4 hour workshop with Ops and Engineering, 4 attendees
 - b. Two 4 hour workshop with Central Maintenance, 3 attendees
 - c. Two 4 hour workshop with E, I&C, 4 attendees
 - d. 4 hours to compile notes for each
 - e. 40 hours per submittal to compile and collate comments
 - f. 10 hours each submittal to back check
 - g. No workshops for 100%. 28 hours for compiling comments
- d. Pre-construction services
 - i. Deliverable reviews
 - 1. Subcontracting procurement plans – PgM 20 hours, DM 20 hours, Sr. CM 10 hrs
 - 2. Quality control plans – PgM 4 hrs, DM 10 hrs, Sr. CM 20 hrs, CM 10 hrs
 - 3. Permitting plans – included in permitting above
 - 4. Delivery Team developed cost estimates – including in cost estimates above
 - 5. Design Builder developed schedules – PgM 4 hrs, DM 4 hrs, CM 20 hrs, Scheduler 40 hrs
 - 6. Health and safety plans – PgM 2 hrs, CM 8 hrs
 - 7. Design Builder constructability reviews – DM 20 hrs, CM 40 hrs
 - 8. Site logistics plan and security plans – PgM 2 hrs, DM 8 hrs, CM 20 hrs
 - ii. MOPO, Commissioning and Testing, and PG Plans
 - 1. MOPO – PgM 10 hrs, DM 40 hrs, SE and Eng 40 hrs (total), CM 20 hrs, Ops Specialist 20 hrs
 - 2. Commissioning and Testing – PgM 20 hrs, DM 60 hrs, Technical and Principal Eng 20 hrs, SE and Eng 80 hrs (total), Ops Specialist 40 hrs, CM 20 hrs
- e. GMP Reviews and Negotiation
 - i. EWP



1. Bidding process – included with Pre-construction Services
 2. Self-performance approach – included with pre-construction services
 3. Contingency and allowances – based on risk analysis. 40 hours.
 4. Interviews. Assume two people at six interviews two hours each. 24 hours.
 5. Non-bid work. Included with cost estimates above.
 6. Review GMP – 60 hours
 7. Negotiating sessions. Three sessions, 3 hours each, attended by three people. One hour per session for notes. 36 hours
 8. Final recommendations. 12 hours
 9. County board – no presentation required for EWP
- ii. Main Project
1. Bidding process – included with Pre-construction Services
 2. Self-performance approach – included with pre-construction services
 3. Contingency and allowances – based on risk analysis. 80 hours.
 4. Interviews. Assume two people at twelve interviews two hours each. 48 hours.
 5. Non-bid work. Included with cost estimates above.
 6. Review GMP – 180 hours
 7. Negotiating sessions. Six sessions, 4 hours each, attended by three people. 2 hours per session for notes. 108 hours.
 8. Final recommendations. 24 hours
 9. County board – 40 hours
- f. Other Services
- i. Partnering
1. Assume 9 sessions, 4 hours each
 2. Facilitator
 - a. Initial session prep – 20 hours
 - b. Initial session documentation – 20 hours
 - c. Remaining sessions prep – 8 hours (64 hours)
 - d. Remaining sessions documentation – 8 hours (64 hours)
 - e. 2 hours per session for PgM coordination
 3. HDR attendees, PgM, DM, SEx2, Engineer, Sr. CM, CM, Facilitator
- ii. Hazop
1. 4 day workshop led by Principal Engineer
 2. HDR attendees: PgM, DM, 1 SE, 1 Eng, 1 EIT
 3. Principal Engineer – 20 hours prep
 4. EIT – 40 hours prep
 5. Principal Engineer – 10 hours post workshop
 6. EIT – 40 hours post workshop to document
 7. Other attendees – 8 hours prep and follow-up
- iii. Value Engineering



1. VE team – team leader, team co-leader, four subject matter experts (Sr. Biosolids Engineer, Sr. Process Mechanical, Sr. Structural, and Sr. Electrical)
2. 32 hours total prep time
3. 40 hours for all participants in workshop
4. 60 hours by team leader and co-leader for draft report
5. 22 hours total for report implementation meeting and final report

Service Area 5: Construction Management

1. Office Based Services
 - a. Submittal Reviews
 - i. Identification of critical submittals – 8 hours each GT and EWP
 - ii. Review of critical submittals – full review with comments based on experience
 1. GTs – 20 submittals, six hours each, three hours for resubmittal
 2. EWP – 30 submittals, six hours each, three hours for resubmittal
 - iii. Tracking and logging by onsite document control specialist
 - b. RFIs
 - i. Tracking of RFIs through onsite document control specialist
 - ii. GT RFIs – assume 10 RFIs that need Program Manager support. Four hours each.
 - iii. EWP RFIs – assume 20 RFIs that need Program Manager support. Four hours each.
 - iv. Change management
 1. Most handled by onsite team.
 2. GTs – 4 changes that require office support. 10 hours each.
 3. EWP – 6 changes that require office support. 10 hours each
 - c. Technical support
 - i. 20 hours per month for 12 months total both projects
 - d. Engineer recommended changes
 - i. GTs – 4 changes that require office support. 5 hours each.
 - ii. EWP – 6 changes that require office support. 5 hours each
 - e. Monthly meetings – Sr. CM, DM and Prg Mgr attend. One meeting for GT and one meeting for DB each for 12 months.
2. Onsite services
 - a. Scope covered by onsite personnel
 - b. CM – 12 months
 - c. Field engineer – 6 months
 - d. Sr. Inspector – 12 months
 - e. Part-time inspector – 6 months
 - f. Document control specialist – 6 months

**Service Area 6: Operations and Maintenance**

1. Review O&M Manuals – 20 hours total
2. Confirm performance, data review – 8 hours
3. Review SOPs – 20 hours total
4. Vendor and engineer training – 10 hours
5. CMMS Protocols – 20 hours
6. Oversee CMMS integration efforts – 40 hours
7. Staffing validation – 48 hours
8. Biosolids marketing plan – future scope

Service Area 7: Other Services

1. Site visits:
 - a. Local Visits (2) – Location to be determined by County/HDR discussion
 - i. Attended by Program Manager, Sr. Engineer, Engineer and Engineer in Training.
 - ii. Three-day duration, including travel.
 - iii. HDR will make all travel plans/itineraries as well as secure ground transportation and hotel reservations.
 - b. Out of Town (within US) Visits (2) – Location to be determined by County/HDR discussion
 - i. Attended by Program Manager, Two Sr. Engineer
 - ii. Three-day duration , including travel.
 - iii. HDR will make all travel plans/itineraries as well as secure ground transportation and hotel reservations.
 - iv. Arlington County will book airline travel (as applicable) for County staff.
2. Coordination of pilot work: Review and provide comments, schedule regular calls with Virginia Tech to review data, provide recommendations on testing to be done and evaluation of data. 4 hours per month Sr. Engineer, 2 hours per month Technical Lead and PgM.
3. Other technologies – Hours included for Sr. Engineer, Engineer, and Engineer in Training to monitor and investigate additional technologies. Up to 60 hours total is budgeted for this work.
4. Carbon footprint – 60 hours for updating past work with new assumptions
5. Grant funding – assist with development of applications and coordination with outside agencies. 112 hours assumed.
6. Full-time staff augmentation – 9 months of Engineer level
7. One additional inspector – 6 months of budget
8. Videographer – 20 hours from communications team, budget included as subcontract
9. Support for compliance with DB and Buy America. 8 hours per month during construction.
10. Dashboards. Scope to be developed, as necessary. Include 20 hours for Technical Specialist and 80 hours for Sr. Engineer.
11. Unscoped items. Scope to be developed, as necessary. Include various hours for technical team.
12. APWA best practices: No assumptions.



Direct Cost Assumptions

1. Included a \$50,000 allowance for SherAI assistance related to staffing, O&M, and training assistance. This allowance will only be used with approval of Arlington County.
2. Included a \$40,000 allowance for continued assistance by Dr. Novak and Dr. Higgins on pilot testing. This allowance will only be used with approval of Arlington County.
3. Travel costs:
 - a. General:
 - i. \$0.655/mile, out of town mileage only
 - ii. \$600/flight
 - iii. \$15/day for parking
 - iv. \$223/night for hotel – average GSA per diem rate for Arlington for year
 - v. \$79/day for meals – average GSA per diem rate for Arlington
 - vi. \$60/day for rental car
 - vii. \$30/trip for Uber
 - b. Miscellaneous site visits by technical leads – 16 out of town visits with flights. Overnight
 - c. Gravity thickener upgrades – 18 meetings for Design Manager. Assume rental car from Virginia Beach.
 - d. DB Workshops – travel based on assumed attendance. 40 workshops total.
 - i. 37 out of town flights with 1 day lodging, 2 day meals, 2 days parking, 20 miles to airport
 - ii. 66 out of town by rental car with 1 day lodging, 2 day meals, 2 day rental cars
 - e. Partnering – 9 sessions total
 - i. 1 attendee by flight, 1 attendee driving with rental car. 1 night hotel for each, 2 days of meals.
 - f. HAZOP
 - i. 3 out of town attendees, 2 by flight, 1 by rental car. 4 nights hotel for each, 5 days of meals.
 - g. VE
 - i. 5 out of town attendees, 4 by flight. 4 nights hotel for each, 5 days of meals. 2 rental cars.
 - h. Local site visit
 - i. Two site visits with four attendees each.
 - ii. 2 hotel nights per attendee, 3 days meals per attendee
 - iii. Two rental vans for three days
 - iv. No costs included for Arlington (other than travel in van)
 - i. Domestic Site Visits
 - i. Two site visits with three attendees each, six flights
 - ii. 2 hotel nights per attendee, 3 days meals per attendee
 - iii. Two rental vans for three days
 - iv. No costs included for Arlington (other than travel in fan)
4. Strat Comm Expenses
 - a. \$1,000 in advertising



- b. \$20,000 in printing for marketing materials
 - c. 17 meetings with in person refreshments
 - d. Two video voiceovers
 - e. Does not include smart screens or rental expenses for venues
- 5. General reproduction costs - \$5,000
 - 6. Videographer allowance for recording training sessions - \$15,000
 - 7. CM vehicles – one vehicle for CM and one vehicle for inspector, \$1,300 per month for 12 months. Rate all inclusive of fuel and maintenance.



Responsibilities Matrix

P/L = Prepare/Lead

D/C = Distribute/Compile Comments

P/A = Prepare/Assist

C/S = Coordinate/Support

R/A = Review and Approve

R/C = Review and Provide Comments

N/A = Not applicable

R/R = Review, Provide Comments and Recommend Approval

Table 1.1 - Gravity Thickener Upgrades Responsibilities

Task	County	HDR	Contractor	Design Engineer
Design milestones Deliverables	R/A	D/C R/R	N/A	P/L
Design Invoices	R/A	D/C R/R	N/A	P/L
Construction Invoices	R/A	D/C R/R	P/L	N/A
Maintenance of Plant Operations Plans during Design	R/A	D/C R/R	N/A	P/L
Maintenance of Plant Operations Plans during Construction	R/A	D/C R/R	P/L	R/A
Start-up and Testing Plans during Design	R/A	D/C R/R	N/A	P/L
Start-up and Testing Plans during Construction	R/A	D/C R/R	P/L	R/A
Bidding Assistance	R/A	R/R	N/A	P/L
Conformed Documents	R/R	R/R	N/A	P/L
Pre-Construction Meeting	C/S	P/L	C/S	C/S
Pre-Construction Documentation	R/A	R/R	P/L	R/A
Construction NTP	R/A	R/R	N/A	N/A
Shop Drawing Review – Major Submittals	R/C	D/C R/C	P/L	R/A
Shop Drawing Review – Minor Submittals	N/A	D/C	P/L	R/A
Contractor Request for Information	R/A	D/C R/C	P/L	R/A
Construction Schedules and Schedule of Values	R/C	D/C R/C	P/L	N/A
Payment for Stored Materials	R/A	R/R	P/L	N/A
Special Inspections	P/L	C/S	C/S	R/A
Resident Engineering	N/A	N/A	N/A	P/L
Other Construction Inspection	N/A	P/L	N/A	N/A
Contractor's Daily Reports	N/A	R/C	P/L	N/A



Task	County	HDR	Contractor	Design Engineer
Construction Management Daily Reports	R/C	P/L	N/A	N/A
Change Order Requests/ Contractor Claims	R/A	D/C R/R	P/L	R/R
Change Order Paperwork	R/A	P/L	C/S	C/S
Field Order Paperwork	R/A	P/L	C/S	C/S
Progress Meetings	C/S	P/L	C/S	C/S
Coordination Meetings	C/S	P/L	C/S	C/S
Coordination Site Plans	R/A	P/L	C/S	C/S
Startup and Testing Documentation	R/A	R/R	P/L	C/S
Start-up Meetings	C/S	P/L	C/S	C/S
Deficiency Lists	R/A	P/L	C/S	C/S
Vendor Training	R/A	D/C R/R	P/L	R/A
Process Training	R/A	D/C R/R	N/A	P/L
Contractor O&M Manuals	R/A	D/C R/R	P/L	R/A
Plant O&M Manuals/Standard Operating Procedures	R/A	R/R	N/A	P/L
Final Inspection	R/A	P/L	C/S	C/S
Punch Lists	R/A	P/L	C/S	C/S
Final Turnover	R/A	R/R	P/L	C/S
Record Documents	R/A	D/C R/R	P/L	R/A P/L
Final Payment	R/A	P/L	C/S	C/S

**Table 1.2 – Comprehensive Biosolids Upgrades Design Build Responsibilities**

Task	County	HDR	Design Builder	Design Builder's Engineer
Design Milestones Deliverables	R/A	R/R	D/C R/C	P/L
Project Management Plans	R/A	R/R	D/C P/L	P/A
Project Site Conditions	R/A	R/R	D/C P/L	P/A
Pre-construction Deliverables	R/A	R/R	D/C P/L	P/A
Implementation Stage NTP	R/A	P/L	N/A	N/A
Partnering	C/S	P/L	C/S	C/S
Executive Meetings	C/S	P/L	C/S	C/S
Core Team Meetings	C/S	P/L	C/S	C/S
HAZOP Workshop	C/S	P/L	C/S	P/A
VE Workshop	C/S	P/L	P/A	C/S
Invoices	R/A	D/C R/R	P/L	N/A
Maintenance of Plant Operations Plans	R/A	R/R	D/C P/L	P/A
Start-up and Testing Plans	R/A	R/R	D/C P/L	P/A
Subcontractor Bidding	R/C	R/C	P/L	N/A
GMP Development	R/A	D/C R/R	P/L	N/A
Construction NTP	R/A	P/L	N/A	N/A
Pre-Construction Meeting	C/S	C/S	P/L	C/S
Pre-Construction Documentation	R/A	R/R	P/L	R/A
Conformed Documents	R/R	R/R	D/C	P/L
Shop Drawing Review – Major Submittals	R/C	D/C R/C	P/L	R/A
Shop Drawing Review – Minor Submittals	N/A	R/C	D/C P/L	R/A
Contractor Request for Information to Engineer	N/A	R/C	P/L	R/A
Contractor Request for Information to Owner	R/A	D/C R/R	P/L	N/A
Construction Schedule of Values	R/C	R/C	P/L	R/C
Construction Schedules	R/C	D/C R/C	P/L	N/A
Payment for Stored Materials	R/A	R/R	P/L	N/A
Contingency Authorization	R/A	R/R	P/L	N/A
Allowance Authorization	R/A	R/R	P/L	N/A
Schedule of Values Adjustments	R/C	R/C	P/L	N/A



Task	County	HDR	Design Builder	Design Builder's Engineer
Design Changes During Construction	R/A	R/R	P/L	R/A
Special Inspections	P/L	C/S	C/S	R/A
Resident Engineering	N/A	N/A	P/A	P/L
Other Construction Inspection	N/A	R/C	P/L	N/A
Contractor's Daily Reports	N/A	R/C	P/L	N/A
Construction Management Daily Reports	R/C	P/L	N/A	N/A
Change Order Requests/ Contractor Claims	R/A	D/C R/R	P/L	P/A
Change Order Paperwork	R/A	P/L	C/S	C/S
Field Order Paperwork	R/A	P/L	C/S	C/S
Progress Meetings	C/S	C/S	P/L	C/S
Coordination Meetings	C/S	P/L	C/S	C/S
Coordination Site Plans	R/A	P/L	C/S	C/S
Startup and Testing Documentation	R/A	R/R	P/L	C/S
Start-up Meetings	R/A	R/R	P/L	C/S
Performance Testing Documentation	R/A	R/R	P/L	C/S
Deficiency Lists	R/A	R/R	P/L	C/S
Vendor Training	R/A	R/R	D/C P/L	R/A
Process Training	R/A	R/R	D/C	P/L
Contractor O&M Manuals	R/A	R/R	D/C P/L	R/A
Plant O&M Manuals/Standard Operating Procedures	R/A	R/R	D/C	P/L
Final Inspection	R/A	R/R	P/L	C/S
Punch Lists	R/A	R/R	P/L	C/S
Final Turnover	R/A	R/R	P/L	C/S
Record Documents	R/A	R/R	P/L	P/A
Final Payment	R/A	P/L	C/S	C/S

ARLINGTON WATER POLLUTION CONTROL PLANT (WPCP)
 CONTRACT NUMBER 19-261
 EXHIBIT F.2
 ENGINEERING PROGRAM MANAGEMENT CONSULTING
 PHASE 2A FEE ESTIMATE - SUMMARY

Cost Break Down by Service Area	Total Hours	Total \$
Service Area 1: Ongoing Services Total Cost	7,310	\$ 1,555,400
1.1 Program Management Administration	895	261,909
1.2 Program Work Plan	165	37,107
1.3 On-going Program Management Activities	1,188	258,110
1.4 Communications Program	2,148	424,784
1.5 Permitting	91	22,186
1.6 Cost Estimating	2,602	504,615
1.7 Sustainability Goals	221	46,689
Service Area 3: Project Delivery and Procurement Total Cost	405	\$ 112,119
3.1 WGL (Washington Gas)	111	31,719
3.2 RNG Agreements	294	80,400
Service Area 4: Planning and Design	9,517	\$ 2,226,428
4.1 Program Manager Review	40	7,805
4.2 Gravity Thickener Upgrades Project	622	135,120
4.3 Comprehensive Biosolids Upgrades Design Build Project	8,855	2,083,504
a-b. General Design Builder Management	3,256	802,504
c. Design Confirmation Reviews	273	63,427
d. Design Deliverable Reviews	2,707	566,691
e. Pre-Construction Services	665	163,032
f. Guaranteed Maximum Price	683	192,750
g. Other Services	1,271	295,100
Service Area 5: Construction Management	7,685	\$ 1,382,222
5.1 Offsite	1,169	245,790
5.2 Onsite	6,516	1,136,432
Service Area 6: Operations and Maintenance Total Cost	176	\$ 42,130
TOTAL LABOR BREAKDOWN	25,093	\$ 5,318,299
TOTAL LABOR BREAKDOWN with SA7 (below)	29,121	\$ 6,109,486
EXPENSES BREAKDOWN (PLACEHOLDERS)		
SherAI		50,000
Higgins and Novak		40,000
Travel Costs		139,607
CM Vehicles		31,200
Printing		5,000
Strategic Communications Direct Expenses		22,965
Videographer		15,000
TOTAL EXPENSES BREAKDOWN		303,772

GRAND TOTAL LABOR & EXPENSES **\$ 5,622,071**

GRAND TOTAL LABOR & EXPENSES with Service Area 7 (below) **\$ 6,413,258**

Service Area 7: Other Services Total Cost	4,028	\$ 791,187
7.1 Site Visits	400	98,686
7.2 Coordinate On-Going Pilot Work	270	75,527
7.3 Technology Monitoring	62	11,957
7.4 Carbon Footprint Analysis	62	11,427
7.5 Grant Funding	118	24,167
7.6 Full-time staff augmentation	1,466	290,195
7.7 Full-time inspector	978	131,854
7.8 Videographer	21	2,777
7.9 Wage and Buy America Requirements	116	20,170
7.10 Develop e-Builder KPIs	105	27,836
7.11 Other unscoped items	430	96,592

ARLINGTON WATER POLLUTION CONTROL PLANT (WPCP)
 CONTRACT NUMBER 19-261
 EXHIBIT F.2
 ENGINEERING PROGRAM MANAGEMENT CONSULTING
 PHASE 2A FEE ESTIMATE - LABOR

Task No.	Task	Program Principal	Program Manager	Technical Specialist	Quality Control	Principal Engineer	Sr. Engineer	Engineer	Engineer-in-Training	Comm. Specialist	Sr. BIM/CAD	BIM/CAD	Graphics Designer	Sr. Architect	Architect	Sr. CM	CM	Sr. Inspector	Inspector	Sr. Ops. Specialist	Ops. Specialist	Sr. Scheduler	Project Controls	Sr. Cost Estimator	Cost Estimator	Admin	Hours	Cost
Fully Burdened Rates		\$326.35	\$342.40	\$328.49	\$282.48	\$288.90	\$251.45	\$197.95	\$134.82	\$187.25	\$187.25	\$136.96	\$110.21	\$192.60	\$139.10	\$251.45	\$197.95	\$197.95	\$134.82	\$265.36	\$197.95	\$170.13	\$170.13	\$192.60	\$192.60	\$96.30		
Project Hours & Total Project Cost		91	2,503	309	109	247	5,513	5,293	1,343	1,252	162	36	597	75	52	701	2,151	1,861	1,909	44	52	98	1,234	971	1,464	1,054	29,121	\$6,109,486.00
Service Area 7: Other Services		-	211	126	16	23	552	1,673	192	14	84	-	37	-	-	29	-	-	978	-	-	-	-	-	-	93	4,028	\$791,186.89
7.1	Site Visits		100				184	50	50																	16	400	\$98,686.10
	Local Visit 1		25				34	25	25																	4	113	\$25,813.75
	Local Visit 2		25				34	25	25																	4	113	\$25,813.75
	Out of Town Visit 1		25				58																			4	87	\$23,529.30
	Out of Town Visit 2		25				58																			4	87	\$23,529.30
7.2	Coordinate On-Going Pilot Work		63	63			125																			19	270	\$75,527.02
7.3	Technology Monitoring			2	2		25		33																		62	\$11,957.25
7.4	Carbon Footprint Analysis		2	2		2		31	25																		62	\$11,426.53
7.5	Grant Funding		4				42	42		8			22														118	\$24,167.02
7.6	Full-time staff augmentation							1466																			1466	\$290,194.70
7.7	Full-time Inspector																		978								978	\$131,853.96
7.8	Videographer									6			15														21	\$2,776.65
7.9	Wage and Buy America Requirements						29									29										58	116	\$20,169.50
7.10	Develop e-Builder KPIs			17	4		84																				105	\$27,836.05
7.11	Other unscoped items		42	42	10	21	63	84	84		84																430	\$86,592.11

ARLINGTON WATER POLLUTION CONTROL PLANT (WPCP)
CONTRACT NUMBER 19-261
EXHIBIT F.2
ENGINEERING PROGRAM MANAGEMENT CONSULTING
PHASE 2A FEE ESTIMATE - EXPENSES

Task Name	Sub Task Name	ITEM	UNIT	AMOUNT	\$/EACH	TOTAL	NOTES
BASAE SERVICES							
1	General Program Management						
	1	Miscellaneous Meetings/Site Visits - 16 total					
		Car Mileage	Miles	320	\$0.655	\$209.60	
		Flights	Trip	16	\$600.00	\$9,600.00	
		Airport Parking	Days	32	\$15.00	\$480.00	
		Hotel	Days	16	\$223.00	\$3,568.00	
		Meals	Days	32	\$79.00	\$2,528.00	
		Rental Car	Days	32	\$60.00	\$1,920.00	
		Total Miscellaneous Meetings				\$16,176.00	
		Production	Dollars	1.00	\$5,000.00	\$5,000.00	Miscellaneous printed materials
		Total Production				\$5,000.00	
1.4	Communications Program						
		Strategic Communications Direct Expenses					
		Expense	Unit	Number	Price	Total	
		Advertising	Dollars	1.00	\$1,000.00	\$1,000.00	
		Smart screens	Dollars	0.00	\$1,500.00	\$0.00	Not included
		Production	Dollars	1.00	\$20,000.00	\$20,000.00	Meeting materials, handouts, meeting boards, and direct mail
		Meeting Refreshments	Dollars	17.00	\$45.00	\$765.00	Public and stakeholder meetings
		Rental fees for public meeting venues	Dollars	0.00	\$100.00	\$0.00	Assume by County
		Voiceovers	Dollars	2.00	\$600.00	\$1,200.00	Educational videos
		Total Strategic Communications Direct Expenses				\$22,965.00	
4.2	Gravity Thickener Upgrades						
4.3.b.v	Travel Costs (Workshops)						
		Car Mileage	Miles	0	\$0.655	\$0.00	
		Flights	Trip	0	\$600.00	\$0.00	
		Airport Parking	Days	0	\$15.00	\$0.00	
		Hotel	Days	18	\$223.00	\$4,014.00	Arlington per diem rates (average)
		Meals	Days	18	\$79.00	\$1,422.00	Arlington per diem rates
		Rental Car	Days	36	\$60.00	\$2,160.00	
		Uber per Trip	Days	0	\$30.00	\$0.00	Multiple Uber rides per trip
		Total Travel Costs (Workshops)				\$7,596.00	
4.3.b	Design Build General Program Management						
4.3.b.v	Travel Costs (Workshops)						
		Car Mileage	Miles	740	\$0.655	\$484.70	
		Flights	Trip	37	\$600.00	\$22,200.00	
		Airport Parking	Days	74	\$15.00	\$1,110.00	
		Hotel	Days	103	\$223.00	\$22,969.00	Arlington per diem rates (average)
		Meals	Days	154	\$79.00	\$12,166.00	Arlington per diem rates
		Rental Car	Days	132	\$60.00	\$7,920.00	
		Uber per Trip	Days	37	\$30.00	\$1,110.00	Multiple Uber rides per trip
		Total Travel Costs (Workshops)				\$67,959.70	
4.3.g.i	Partnering						
		Travel Costs (Partnering)					
		Car Mileage	Miles	180	\$0.655	\$117.90	
		Flights	Trip	9	\$600.00	\$5,400.00	
		Airport Parking	Days	18	\$15.00	\$270.00	
		Hotel	Days	18	\$223.00	\$4,014.00	
		Meals	Days	36	\$79.00	\$2,844.00	
		Rental Car	Days	18	\$60.00	\$1,080.00	
		Uber per Trip	Days	9	\$30.00	\$270.00	
		Total Travel Costs (Partnering)				\$13,995.90	
4.3.g.il	HAZOP						
		Travel Costs (HAZOP)					
		Car Mileage	Miles	40	\$0.655	\$26.20	
		Flights	Trip	2	\$600.00	\$1,200.00	
		Airport Parking	Days	10	\$15.00	\$150.00	
		Hotel	Days	12	\$223.00	\$2,676.00	
		Meals	Days	15	\$79.00	\$1,185.00	
		Rental Car	Days	5	\$60.00	\$300.00	
		Uber per Trip	Days	10	\$30.00	\$300.00	
		Total Travel Costs (HAZOP)				\$5,837.20	
4.3.g.iii	VE						
		Travel Costs (VE)					
		Car Mileage	Miles	80	\$0.655	\$52.40	
		Flights	Trip	4	\$600.00	\$2,400.00	
		Airport Parking	Days	20	\$15.00	\$300.00	
		Hotel	Days	20	\$223.00	\$4,460.00	
		Meals	Days	25	\$79.00	\$1,975.00	
		Rental Car	Days	10	\$60.00	\$600.00	
		Uber per Trip	Days	0	\$30.00	\$0.00	
		Total Travel Costs (VE)				\$9,787.40	
5.2	Onsite Services						
		Vehicles	Months	24	\$1,300.00	\$31,200.00	Two vehicles for 12 months, all expenses in unit rate
Service Area 7: Other Services							
7.1	Site Visits						
7.1.a	Travel Costs, Local (Rental Van)						
		Lodging Nights	Days	16	\$223.00	\$3,568.00	
		Meals, per Diem HDR	Days	24	\$79.00	\$1,896.00	
		Rental Car	Days	12	\$150.00	\$1,800.00	Assume two vehicles
		Rental Fuel	Gallons	120	\$5.00	\$600.00	Assume 1/2 tank of gas per day of rental car
		Total Travel Cost (Site Visits)				\$7,864.00	
7.1.b-e	Travel Costs, Domestic Site Visits						
		Airfare	Trip	6	\$600	\$3,600.00	
		Airport Parking	Days	18	\$15	\$270.00	
		Meals	Days	18	\$79	\$1,422.00	
		Hotel	Days	12	\$223	\$2,676.00	
		Rental Car	Days	12	\$150	\$1,800.00	Assume two vehicles
		Rental Fuel	Gallons	120	\$5.00	\$600.00	Assume 1/2 tank of gas per day of rental car
		Total Travel Cost (Site Visits)				\$10,368.00	
7.8	Videographer						
		Videographer				\$15,000.00	

HDR Program Management Phase 2A - Approximate Labor Distribution

