



November 6, 2017

Ms. Gina Gilpin  
Purchasing Agent  
Town of Vienna – Vienna Town Hall  
127 Center Street South  
Vienna, Virginia 22180

**RE: Revised Scope of Work and Cost Proposal for Piney Branch Stream Restoration –  
RFP Number 18-02**

Dear Ms. Gilpin,

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) is pleased to submit our revised scope of work and cost proposal for the Town's *Piney Branch Stream Restoration Project* based on our conference call held on November 2. The attached revised cost proposal includes a breakdown of fully burdened hourly rates for all proposed individuals along with the estimated hours for each individual by task. We have also included our revised detailed scope of work which reflects the revisions agreed upon during our discussion. Please feel free to let us know if any further discussion is necessary to clarify the aforementioned changes.

Again, we greatly appreciate the opportunity to continue our partnership with the Town in supporting this project. Should you have any questions or require additional information regarding our scope of work and cost proposal, please feel free to contact me at (703) 209-6394 or [tucker.clevenger@amecfw.com](mailto:tucker.clevenger@amecfw.com).

Sincerely,  
Amec Foster Wheeler Environment & Infrastructure, Inc.

Tucker Clevenger, PE, CFM  
Project Manager

Attachment 1 – Project Scope  
Attachment 2 – Cost Proposal

# PINEY BRANCH STREAM RESTORATION

## PROPOSED SCOPE OF SERVICES

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### A. GEOMORPHIC ASSESSMENT

#### PROPOSED SUBTASKS

The geomorphic/stream assessment will include the following items, to be performed sequentially:

- ▶ Watershed Assessment
- ▶ Geomorphic Channel Assessment / Hydrologic Comparison
- ▶ Detailed Stream Characterization
- ▶ Riparian Buffer Assessment
- ▶ Assessment of Stable Reaches Along Piney Branch

#### Watershed Assessment

Amec Foster Wheeler will review the Fairfax County Difficult Run Watershed Study and obtain existing readily available mapping data that will be used to assess historical, present, and planned land use practices and their impact on the morphology of Piney Branch. This data will also be used to develop a clear understanding of watershed history and its influence on the hydrologic characteristics of Piney Branch. Such an understanding is necessary to determine restoration potential for the subject corridor. The data reviewed could include any of the following depending on availability from the Town:

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|--|--|
| ▶ Climatic data  | ▶ Personal interviews to determine past stream conditions, channel and floodplain alterations, and land use activities |
| ▶ Aerial photographs (recent and historical)               | ▶ Major development plans for the watershed upstream of the project  |
| ▶ Site photographs   | ▶ Basin hydrology  |
| ▶ Topographical map of the watershed                       | ▶ Water quality data including information on point source and non-point source pollutants and stormwater outfalls     |
| ▶ Land use and land cover maps                             |  |
| ▶ Historical documents describing past land use activities |  |
| ▶ Geology  |  |
| ▶ Soils  |  |

Amec Foster Wheeler will verify existing watershed boundaries and sub-watershed boundaries to the project area. All of the collected information will be reviewed to develop an initial understanding of why certain reaches are unstable.

#### Geomorphic Channel Assessment/Hydrologic Comparison

Urban systems such as Piney Branch are supply-limited systems. The watershed has been built out, and sediment coming from colluvium and alluvium from ephemeral streams has been replaced with parking lots and storm sewers. This man-man landscape delivers smaller gravel, sands, and salts from road operations and construction. The primary source of moving sediment in these systems is local bank erosion. When this erosion is corrected through restoration, the amount of sediment delivered downstream is drastically reduced.

Degraded urban streams are out of equilibrium. Due to incision and disconnection from the floodplain, the bankfull discharge or "channel filling discharge" does not necessarily correlate well with the effective discharge, or discharge responsible for moving the most sediment over time. Urban streams have such a high degree of instability that there are usually limited physical indicators present to establish a bankfull stage for the project stream reach.

Amec Foster Wheeler will identify and validate bankfull stage/channel filling stage indicators for the project stream reach prior to completing the morphological survey. The stage validation will be accomplished

through an analysis and comparison of field identified indicators within the reach and output from hydraulic computations. Investigation of the inner berm features located along the incised channel will help determine the design discharge to be used for sizing the channel. Amec Foster Wheeler will conduct a hydrologic analysis to determine the channel filling (bankfull) discharge for the site. The analysis will be performed considering regional curve data, USGS gage data (where available) and special geological considerations that may alter expected runoff at the site.

In order to determine discharge values for the project area along Piney Branch where applicable, Amec Foster Wheeler will compare information from the Difficult Run Watershed Study along with urban regression equations based on United States Geological Survey Water-Supply Paper 2207 and streamflow data from a surrounding USGS gaged site. These comparisons will allow Amec Foster Wheeler to determine design discharges for higher return intervals (i.e. 100-yr discharge) as well as for lower more frequent discharges which will aid in sizing the channel.

#### **Deliverable:**

- A one page or less technical memo will be submitted to the Town summarizing the results of the discharge values based on the USGS Water-Supply Paper 2207.

#### **Detailed Stream Characterization**

Once the geomorphic map is completed, Amec Foster Wheeler will survey stream morphological character in detail within the project limits. The detailed survey will only be conducted on selected representative reaches identified during the development of the geomorphic map.

The detailed stream survey will describe the existing morphological character of the stream within the project limits. The Rosgen Stream Classification system will be used to describe the morphological character of the surveyed streams. The Stream Channel Classification (Level II) will be completed for each representative reach and the following data will be collected:

- ▶ Bankfull/channel filling dimensions
- ▶ Plan-form dimensions
- ▶ Flood-prone dimensions
- ▶ Longitudinal facet profile
- ▶ Channel substrates

The reach-wide pebble count procedure (developed by Wolman, 1954 and modified by Rosgen, 1996) will be used to determine the composition of the streambed for stream classification purposes. Channel substrate material will be selected and measured in accordance with the procedure. After counts and tallies are complete, the data will be plotted by size class and frequency. In order to further characterize the upstream sediment supply, Amec Foster Wheeler will perform pebble counts and bar sampling of both the channel substrate and bank material to develop an understanding of sediment processes through the project reach. The upstream and downstream reach sediment deposition conditions will be used to assess the current sediment transport capacity and equilibrium conditions.

**Deliverables:**

- Stream Channel Classification
- Pebble Count Form and Plot

### **Riparian Buffer Assessment**

Amec Foster Wheeler will perform a riparian buffer assessment, to include visual reconnaissance of the plant communities occurring within the riparian area of the stream reach. Information on plant species composition and areal cover, by strata (canopy, shrub, and ground story), will be recorded for each plant community. Additional information to be recorded will include presence and cover of nuisance plant species and occurrences (areas) of vegetative/ground disturbance. Photographic documentation of existing site conditions will be obtained.

**Deliverable:**

- A brief memorandum (3-page maximum) on the results of the riparian buffer assessment, along with a photographic log, will be provided to the client.

### **Assessment of Stable Reaches along Piney Branch**

Amec Foster Wheeler will walk upstream and downstream of the reach in order to field verify and locate stable geomorphic sections along Piney Branch. Amec Foster Wheeler will survey cross sections and slopes and perform pebble counts along the stable reach. These stable cross sections will be modeled (at a section model using Manning's equation) and velocity, shear stress, and stream power for infrequent higher discharges will be determined along with the floodplain width, floodprone width, etc. This information will provide a valuable insight to how the stable sections are able to carry flow, and these parameters will be incorporated into the design along the project reach.

**Deliverable:**

- A one page or less technical memorandum will be submitted to the Town summarizing the results of the stable reaches along Piney Branch

## **B. STAKEHOLDER MEETING – PUBLIC OUTREACH**

### **PROPOSED SUBTASKS**

#### **Identification of Restoration Objectives**

Two Amec Foster Wheeler staff will work with the Town to facilitate a kickoff meeting and conduct a stream walk with the Town and community stakeholders (identified by the Town). The purpose of the meeting and stream walk is to familiarize stakeholders with the project, identify initial concerns and issues, and develop restoration objectives that take into account stream stability and habitat improvement as well as the needs of the community and watershed.

Based on discussions with the Town, the kick-off meeting and stream walk can be structured to be one event, or divided into two events (such as having the meeting on a week night and the stream walk on a weekend). At the meeting, Amec Foster Wheeler will present the findings of the geomorphic assessment, describe the challenges and potential solutions, and facilitate discussion to develop project objectives. Objectives will cover the following areas:

- ▶ Provide for natural channel design and ecological restoration principles
- ▶ Address watershed and stream constraints
- ▶ Be practical and feasible
- ▶ Consider the potential for long term success and minimal maintenance
- ▶ Recognize and address problems occurring within the watershed which contribute to stream system problems
- ▶ Be clearly defined
- ▶ Meet the major needs of the vested partners
- ▶ Allow for the community and stakeholders to be engaged and that important feedback is incorporated into the design

#### **Deliverables:**

- The stream walk will include a brief on-site orientation and overview of the project followed by a walk-through of the project site to highlight significant issues, challenges, and proposed solutions.
- Based on the kick-off meeting and stream walk, Amec Foster Wheeler will develop a memorandum summarizing the stakeholder discussion and the key restoration objectives.

### **C. SURVEY**

#### **Surveying Services to Support the Stream Restoration for Design and Engineering**

Bowman Consulting Group (BCG) will perform the necessary topographic survey services need to complete the design and engineering of the stream restoration, including easement plat preparation (if required) and a post construction as-built survey. Survey services includes the following:

#### **PROPOSED SUBTASKS**

- ▶ Establish a semi-permanent horizontal and vertical control network using GPS and conventional technology. Horizontal datum will be NAD83, and vertical will be NGVD88 as required. This task includes setting temporary control as needed to complete the surveying. Semi-permanent control will be usable for construction and as-built operations.
- ▶ BCG will perform property research to determine current ownership on the properties adjacent to the stream restoration survey, includes acquiring subdivision plats, right-of-way information and public utility easements. With parcel and right-of-way research complete and composite maps built in AutoCAD; our surveyors will then perform reconnaissance and locate property corner monuments and property line evidence, including, iron pins, fence corners, fence lines, etc. Property survey will accurately orient the stream and proposed improvements to critical surrounding properties.

BCG will perform a field run topography/stream cross-section survey and utility as-built necessary to design the proposed stream restoration. This task includes the following:

- ▶ Perform a run topographic cross-section survey at approximately on about 1,400 linear feet of the Piney Branch stream as necessary for the geomorphic analysis of the stream, etc.
- ▶ Cross-section survey will include the following details on the stream channel:
- ▶ TWG – thalweg (deepest part of channel cross section – not centerline).
- ▶ WL – water level.
- ▶ RCH – right toe of channel (bottom edge of channel, or toe of channel bank).
- ▶ RTB – right top of bank (of main channel).
- ▶ LCH – left toe of channel (bottom edge of channel, or toe of channel bank).
- ▶ LTB – left top of bank (of main channel).

Cross-sections will be taken at approximately 50-foot intervals and includes intermediate cross-sections at bends, or other critical features in the stream. Cross-sections will extend a minimum of 100-feet beyond the edge of the top of bank on both side of the stream.

- ▶ Topographic survey will include locating significant natural and manmade features within the stream channel and survey limits.

- ▶ Topography will represent 2-foot contour intervals.
- ▶ BCG surveyors will take photographs of significant features and link them to the topographic survey.
- ▶ BCG will locate all visible indications of utility such as water meter, fire hydrants, valves, poles – including pole numbers, wires, transformers, pedestals, vaults, etc. Sanitary sewer and accessible storm sewer structures will locate and as-built, to acquire invert of pipes, and pipe sizes and pipe material. Any storm culverts will be surveyed and as-built.
- ▶ Roadway crossing(s) will be included in the survey, including a detailed survey of the roadway, other existing improvements, banks, etc.
- ▶ After a completed inspection of the site, BCG will coordinate with Miss-Utility to locate any suspected subsurface utilities. If subsurface utilities are delineated on the ground, BCG surveyors will locate the paint or flags, identify the utility and include the information on the topographic survey base.
- ▶ BCG will field locate wetlands flagged by the environmental consultant and provide the wetlands location to the environmental consultant and update the topographic survey base to include the flagged wetlands.
- ▶ Individual trees 12" in diameter and larger (measured at breast height) will be identified by species, tagged and survey located within the survey limits.

#### **Deliverable:**

- AutoCAD digital file developed at the scale required for engineering, depicting 2-foot contour intervals and select spot elevations will be shown

#### **Add Alternate Services**

#### **Preparation of Temporary Construction / Easement Plats (if required):**

Under the supervision of a licensed surveyor in the Commonwealth of Virginia, BCG will prepare individual plats for dedication of temporary construction and or permanent easements as needed. Plats will be prepared in accordance with the Town of Vienna and Commonwealth of Virginia standards.

### **D. PERMITTING**

#### **PROPOSED SUBTASKS**

##### **Wetlands and Waters of the U.S. Delineation**

BCG shall conduct a wetland delineation within the Project limits based on the requirements of the Corps of Engineers' Wetlands Delineation Manual (1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0, 2012). BCG shall delineate and flag the boundaries of waters of the U.S. and wetlands, and will collect photographs and data points to document existing site conditions and jurisdictional areas. BCG will then prepare and submit to the Town a Wetland Delineation Report and Map, which summarize the results of the field investigation and identify those areas that are most likely within the regulatory purview of the U.S. Army Corps of Engineers (USACE).

Please note that the flagged waters of the U.S. and wetland boundaries shall be field-located under separate survey task.

##### **USACE Jurisdictional Determination**

Following approval by the Town, BCG shall submit the Wetland Delineation Report and Map with a Jurisdictional Determination (JD) Request to the USACE. BCG shall then meet with the USACE at the Project to review and confirm the flagged waters of the U.S. and wetland boundaries, and will update the Wetland Delineation Map as necessary to reflect any changes agreed to in the field. During the site visit, BCG shall also review the concept design for the Project with the USACE to obtain preliminary feedback concerning the proposed stream restoration activities and Section 404/401 permitting requirements.

##### **Threatened and Endangered Species Review**

BCG shall prepare and submit a Project Review request to the Virginia Department of Conservation and Recreation (DCR), Division of Natural Heritage, to obtain preliminary information related to Federal or State-



listed threatened and endangered species and other natural heritage resources for the Project. BCG shall also conduct searches of the U.S. Fish and Wildlife Service's (FWS) Information, Planning and Conservation System (IPaC) and the Virginia Department of Game and Inland Fisheries' (DGIF) Fish and Wildlife Information Service (VaFWIS) to determine the potential for Federal or State-listed threatened and endangered species on, or in the vicinity of, the Project, and review the Center for Conservation Biology's VA Eagle online database. BCG shall then prepare a summary letter and exhibit to the Town detailing the results of the reviews, general habitat descriptions for the Project, and the potential for the occurrence of listed threatened and endangered species on the Project.

Please note that this task specifically excludes species-specific field surveys that may be recommended or required based on the results of the Review, or during Section 7 consultation by the USACE.

### **Cultural Resources Review**

BCG shall conduct a review of the Virginia Department of Historic Resources' (DHR) Virginia Cultural Resource Information System (V-CRIS) to identify any documented cemeteries, archaeological sites, architectural resources, historic districts or other cultural resources on, or in the immediate vicinity of, the Project. BCG shall then submit a Project Review Request submission package to DHR through their ePIX system to obtain preliminary feedback concerning the proposed stream restoration activities at the Project and potential effects on historic resources. BCG shall then coordinate with the Client concerning the findings and results of DHR's Review, including the extent of any recommended archaeological and cultural resource surveys.

Please note that this task specifically excludes field investigations, archaeological and cultural resource surveys, and Memorandum of Understanding that may be recommended or required by DHR following their review of the Project, or during Section 106 coordination by the USACE.

### **Section 404/401 Permitting**

BCG shall prepare and submit a Joint Permit Application/Pre-Construction Notification (JPA/PCN) for the Project to the USACE, Virginia Department of Environmental Quality (DEQ), and Virginia Marine Resources Commission (VMRC) for authorization to impact waters of the U.S. and wetlands under Nationwide Permit (NWP) 27 (Aquatic Habitat Restoration, Enhancement, and Establishment Activities), for which DEQ has issued conditional Section 401 Water Quality Certification; it is anticipated that VMRC shall issue a No Permit Required Letter for the Project. This task includes serving as Town's Agent and submitting the JPA/PCN package with accompanying exhibits and supporting information, including Section 7 Endangered Species Act and Section 106 National Historic Preservation Act information, and a mitigation monitoring plan with success criteria as required by NWP 27. BCG will also meet and coordinate with the Town and USACE concerning the proposed Project and impacts, respond to additional information requests and agency comments concerning the JPA/PCN, and negotiate the terms and conditions under which the final Permit shall be issued. Add section about morph table, new requirements, etc.

Recently, the USACE published Regional Conditions for the 2017 Nationwide Permits which now require a completed Natural Channel Design Review Checklist and Selected Morphological Characteristics Form. This information is required to complete Section 19 of the Joint Permit Application and will be provided as part of the NWP package.

## **E. CONCEPT DESIGN ALTERNATIVES**

Using the information and topics discussed during the initial meeting with the Town and stakeholders, Amec Foster Wheeler staff will develop two (2) concept design alternatives. The concept design alternatives will include the following:

- ▶ Existing Conditions
- ▶ Typical Cross Sections
- ▶ Stream Structure Details
- ▶ Preliminary Planform layout

A meeting will be held with the Town and other project stakeholders to select the preferred alternative, and an additional stream walk will take place to review the design. After approval of the concept design (it is assumed it could require an additional meeting to select the preferred concept), Amec Foster Wheeler will meet with the Town to discuss the required number of sheets and that will be required by the Town, for a complete set of construction documents

After the concept design has been agreed upon, Amec Foster Wheeler will prepare a planning level cost estimate based on costs (actual costs from qualified contractors) provided by the Town for the approved concept design. This planning level cost estimate should be used for budgeting purposes only.

#### **Deliverables:**

- Additional stream walk with Town and stakeholders followed by meeting
- Technical Memorandum with maps of design alternatives, and recommendation for preferred alternative
- Additional meeting(s) with Town and stakeholders
- Preferred Alternative Meeting and Meeting Minutes
- Planning Level Cost Estimate for concept design

## **F. 90% & 100% CONSTRUCTION DOCUMENTS**

### **PROPOSED TASKS**

#### **90% Plan Submission**

The final design (90%) will advance the Conceptual Design completed and presented to the Town of Vienna and associated stakeholders. As Amec Foster Wheeler works toward the 90% and final design, hydraulic analysis will be conducted using a combination of HEC-RAS 1-D and/or 2-D. Amec Foster Wheeler will evaluate the hydraulics for the proposed solutions and evaluate velocity, sheet stress, and stream power. An initial evaluation of the project extent shows that the project will terminate upstream of the Federal Emergency Management Agency (FEMA) Zone A (approximate) Floodplain. As a result it is assumed that a Conditional Letter of Map Revision (CLOMR), which requests FEMA's conditional approval of proposed encroachment within the floodplain, will not be required. The Amec Foster Wheeler team will attend one meeting with the Town to discuss the review comments for the 90% plan set. Amec Foster Wheeler will also facilitate a final meeting with community stakeholders to review the 90% plan (or earlier version, could be closer to the 75% plan) and ensure that any remaining issues or concerns have been adequately addressed. Comments from the Town and stakeholder meetings will be addressed/incorporated as appropriate in the plan set under the 100% Final construction document submission, which will be sealed by a VA Licensed Professional Engineer. Amec Foster Wheeler will offset the 50 foot and 100 foot RPA buffer area from edge of bank and show on the construction documents. The work will be conducted in accordance with the guidelines published by the Virginia Department of Environmental Quality entitled Resource Protection Area Onsite Buffer Delineation (revised June 15, 2009). The Final construction documents sheet (agreed upon in Task E) will most likely include:

- |  |   |
|--|---|
| ▶ Cover Sheet  | ▶ Soils Map                                     |
| ▶ Design Narrative & Computations                                | ▶ Geometry Plan                                 |
| ▶ General Notes  | ▶ Overall Grading Plan                          |
| ▶ Existing Conditions Legend and Property Owner Information Info | ▶ Piney Branch Plan and Profile                 |
| ▶ Existing Tree Survey with Identification Table                 | ▶ Piney Branch Cross Sections                   |
| ▶ Existing Conditions / Demolition Plan                          | ▶ Stormsewer Outfall Plan and Profile           |
| ▶ Erosion and Sediment Control Ph I                              | ▶ Piney Branch Typical Stream Sections          |
| ▶ Erosion and Sediment Control Ph II                             | ▶ Stream Structure Details and Notes            |
| ▶ Erosion and Sediment Control Notes                             | ▶ Structure Stakeout Plan                       |
| ▶ Erosion and Sediment Control Details                           | ▶ Water Quality Narrative and TMDL Computations |



- Riparian Planting Plan
- Riparian Planting Plan Notes & Schedule
- Riparian Planting Plan Details

#### **Deliverables:**

- Entire set of 90% and 100% Plan Submission After concept design is agreed upon – three (3) printed plan sets provided to the Town at 90% and 100% submissions. Amec will also develop the technical specifications for the project.
- Amec Foster Wheeler will submit the final design plans to obtain approval from:
  - Town of Vienna Department of Public Works
  - U.S. Army Corps of Engineers (NWP #27)
  - Virginia Marine Resource Commission Permit (confirmation of no permit required)
  - Virginia Department of Environmental Quality (confirmation of DEQ's 401 certification for NWP #27)
- Construction Cost Estimate - Amec Foster Wheeler will prepare the Bill of Quantities (BOQ) and Cost Estimate for the Final Design using the prevailing unit prices and information provided by the Town of Vienna.

### **G. VSMP Permit**

Amec Foster Wheeler will provide technical assistance to apply for a General VPDES Permit for Discharges of Stormwater from Construction Activities for this Project. As part of this effort, Amec will develop a Stormwater Pollution Prevention Plan (SWPPP) as required by the Construction General Permit (CGP). Amec will complete the Registration Statement for your signature and prepare the SWPPP, in addition to coordinating the submittal of the required Registration Statement and fee forms to the Virginia Stormwater Management Program (VSMP) Authority on behalf of the Town of Vienna. This task excludes all required permit application fees and all CGP annual permit maintenance fees that may be required by the VSMP Authority.

### **H. PREBID MEETINGS / RESPONSE TO BIDDER QUESTIONS**

Amec Foster Wheeler will attend one pre bid conference and assist with answering contractor questions about the design documents. Amec Foster Wheeler shall also attend two pre-construction meetings to assist the Town with Contractor questions. In addition, Amec Foster Wheeler will respond to bidder questions provided by the Town. Amec Foster Wheeler will also provide the Town prequalification language which can be used in the bidding process to ensure a qualified contractor is selected.

### **I. CONSTRUCTION OBSERVATION SERVICES**

The Amec Foster Wheeler team will provide construction oversight services to represent the Town of Vienna and ensure proper construction and installation, provide on-site clarification to contractors, and assist in rectifying the unforeseen.

The construction contractor will be responsible for providing the stakeout and providing stakes at key structure locations and to identify the extent of the work. Amec Foster Wheeler will field review the stakeout with the contractor and identify and locate key structures and components, and field-adjust the design as needed. Amec Foster Wheeler will contact the Town as soon as possible if problems or issues are discovered during the site visit.

#### **PROPOSED SUBTASKS**

##### **Construction Inspection and Oversight Services**

- Responses to Contractor questions through the Client for the duration of the project

- ▶ Amec Foster Wheeler will review shop drawings, construction submittals, materials, as-builts, and related data submitted by the general contractor
- ▶ Construction inspection for the duration of all construction activities and/or as directed by the Town by a qualified and experienced construction inspector onsite to observe and record all construction activities for the purpose of determining if the construction is in compliance with the construction contract documents. One Amec Foster Wheeler staff will be onsite during construction.
- ▶ Coordinating with the Town and addressing any necessary field changes due to unexpected field conditions.
- ▶ Amec Foster Wheeler will be available to attend weekly construction inspection and progress meetings held by the Town and the Contractor.
- ▶ Weekly submittals documenting daily construction inspections. Construction activities to be inspected and documented include, but are not limited to:
  - ✓ Determining and documenting the acceptability as specified in the construction contract documents
  - ✓ Furnished and salvaged construction materials.
  - ✓ Finished grading.
  - ✓ Constructed proposed channel cross section, longitudinal profile, and channel geometry. Dimensions and elevations of cross sections, structures, and longitudinal profile will be checked as part the construction inspection using the non-certified as-built survey data
  - ✓ In-stream structures within the channel (rock structures (footer and top rock placement) and reinforced bed material), including photographic documentation of the installation of each structure to highlight key elements such as footer rock placement, etc. Include selected photographs in inspection forms and provide a final digital copy of photographs and reports on CD.
  - ✓ Erosion and sediment control measures.
  - ✓ Plant materials and plant material installation.
  - ✓ Approval of the final as-built survey
  - ✓ Recommending corrective actions if necessary

Amec Foster Wheeler will only communicate issues concerning design and construction with the Town. Amec Foster Wheeler will not supervise, direct, or have control over the Contractor's work, nor will Amec Foster Wheeler have authority over or responsibility for the construction means, methods, techniques, sequences or procedures, or for safety precautions. Amec will observe and report and supply observations and findings to the Town. Amec will follow safety rules of the contractor while on-site.

### Final Construction Certification

Amec Foster Wheeler will conduct final construction inspection, and submit a punch list of construction work that needs repaired, replaced, adjusted, or finished. This walk-through will occur before the contractor demobilizes from the site. The required submittal includes the punch list, supporting photographs, and other information to support the inspection findings.

### As-Build Survey

BCG will provide an as-built survey and record drawings. The survey work will be completed during the same site visit as the final inspection if the timing, stream flow, and weather are conducive to survey work. After construction of the stream restoration is complete, BCG surveyors will provide an as-built survey of the site to locate the critical constructed features and representative cross-sections with permanent monuments for future monitoring. This task includes as-built topography, utility as-built, as-built of the critical stream restoration hardscape and natural features, provide photographs, etc.

#### Deliverable:

- Certified survey by a licensed surveyor in the Commonwealth of Virginia, and providing an AutoCAD file, as required.

## **J. POST CONSTRUCTION MONITORING**

As part of the conditions of the NWP #27 permit, monitoring may be required. A post construction as-built survey of the restored stream will be conducted to ensure conformance with the approved design. In addition, Amec Foster Wheeler will conduct annual inspections of the project for a maximum of three years post construction. This monitoring will help determine the success of the project and if any maintenance actions are required to satisfy plan goals during the monitoring period.

### **Deliverable:**

- Annual monitoring report for three years to include a visual inspection and photo documentation of the stream.

## **K. PROJECT MANAGEMENT & CLIENT COORDINATION**

Project management activities include budget and schedule management, invoicing, contract management, and overall project coordination.

## **SCHEDULE**

Amec Foster Wheeler previously provided a schedule with the RFP submission. This project schedule proposed a general guideline for the project duration. Once Notice-To-Proceed has been issued, Amec will coordinate with all subcontractors and the Town to develop a mutually agreeable final schedule.

## **EXCLUSIONS & ASSUMPTIONS**

- ▶ A traffic control plan for the project site entrance would not be required.
- ▶ FEMA conditional approval (CLOMR) or a follow-up floodplain revision (LOMR) will not be required.
- ▶ No separate specifications will be provided.
- ▶ One round of comments will be addressed for the 90% submission.
- ▶ The major stream construction is assumed to be approximately 20 feet/day. Construction Observation time assumes 40 hours per week for 14 weeks for one Amec inspector.
- ▶ Geotechnical borings are not included within this proposal scope.
- ▶ The Threatened and Endangered Species task specifically excludes species-specific field surveys that may be recommended or required based on the results of the Review, or during Section 7 consultation by the USACE.
- ▶ The Cultural Resources Review task specifically excludes field investigations, archaeological and cultural resource surveys, and the Memorandum of Understanding that may be recommended or required by DHR following their review of the Project, or during Section 106 coordination by the USACE.
- ▶ Subsurface Utility Location is not included.
- ▶ The assumed length of the Piney Branch stream restoration project is approximately 1,400 linear feet. Significant deviations to the project.
- ▶ Amec Foster Wheeler and all subcontractors will have open access to the project area.
- ▶ The Town of Vienna will provide Amec Foster Wheeler all relevant data in digital format.
- ▶ It is expected that any wetland and stream impacts determined by regulators are self-mitigating.
- ▶ The project will be drafted and delivered utilizing the AutoCAD platform.
- ▶ Amec Foster Wheeler is not responsible for directing the contractor. We will observe and report and supply observations and findings to the Town.
- ▶ Amec Foster Wheeler will follow the safety rules of the contractor while on site, but is not responsible for on-site safety of others.
- ▶ Amec Foster Wheeler will not perform materials or laboratory analysis as part of this scope.
- ▶ This scope assumes four (4) easement plats.

- A maximum of three (3) printed plan sets will be delivered to the Town at the 90% and 100% design phases.

Piney Branch Stream Restoration  
Cost Estimate  
6-Nov-17



Task	Principal-in-Charge	Project Manager	Senior Technical	Senior Engineer	Design Engineer	Project Engineer	Junior Engineer	Engineering Technician	Senior Planner	Riparian Specialist	Direct Expenses			Total Expenses (5% Markup)	Total Cost
											Jennings Environmental	Bowman Consulting Group	Mileage/ Printing		
Rates	\$247.08	\$204.13	\$183.07	\$159.91	\$129.14	\$100.75	\$91.74	\$82.93	\$150.96	\$91.74					
Task A - Geomorphic Assessment	0	0	35	12	7	30	12	0	0	16	\$4,000	\$0	\$915	\$5,161	\$19,982
Watershed Assessment			5	2	1	2	1							\$0	\$1,658
Geomorphic Channel Assessment/Hydrologic Comparison			12	4	2	8	3				\$2,000		\$40	\$2,142	\$6,318
Detailed Stream Characterization			10	4	2	12	4				\$2,000		\$75	\$2,179	\$6,483
Riparian Buffer Assessment										16			\$600	\$630	\$2,098
Assessment of Stable Reaches along Piney Branch			8	2	2	8	4						\$200	\$210	\$3,426
Task B - Stakeholder Meeting - Public Outreach	0	4	26	0	0	0	0	0	24	0	\$0	\$0	\$0		\$9,199
Kickoff Meeting/Present Assessment Findings		4	14						12						\$5,191
Stream Walk			4						4						\$1,336
Identify Restoration Objectives			8						8						\$2,672
Task C - Survey	0	0	4	0	0	10	4	4	0	0	\$0	\$27,250	\$0	\$28,613	\$31,051
Survey												\$27,250		\$28,613	\$28,613
Coordination with Bowman			4			10	4	4							\$2,438
Task D - Permitting	0	0	25	0	0	16	0	0	0	0	\$0	\$19,500	\$0	\$20,475	\$26,664
Wetlands and Waters of the U.S. Delineation												\$5,500		\$5,775	\$5,775
USACE Jurisdictional Determination												\$1,500		\$1,575	\$1,575
Threatened & Endangered Species Review												\$1,500		\$1,575	\$1,575
Cultural Resources Review												\$2,500		\$2,625	\$2,625
Section 404/401 Permitting												\$8,500		\$8,925	\$8,925
Coordination with Bowman / Natural Channel Checklist & Geomorph Table			25			16									\$6,189
Task E - Concept Design Alternatives	0	0	78	8	6	44	15	10	32	0	\$2,500	\$0	\$3,000	\$5,775	\$33,578
2 Concept Design Alternatives			30	8	6	40	15	10			\$2,500		\$3,000	\$5,775	\$19,557
Meeting with Town and Stakeholders			14						14						\$4,676
Stream Walk			4						4						\$1,336
Additional Meeting with Town and Stakeholders			10						10						\$3,340
Memo - Preferred Alternative and Meeting Minutes			16						4						\$3,533
Planning Level Cost for Preferred Concept			4			4									\$1,135
Task F - 90% and 100% Construction Documents	0	0	134	40	20	177	55	50	28	16	\$2,500	\$0	\$3,000	\$5,775	\$72,005
Submit 90% Set			55	30	10	95	30	25	10	16	\$2,500		\$3,000	\$5,775	\$39,307
Meeting with Town to Discuss 90% Comments			6			6									\$1,703
Meeting with Town and Stakeholders			8						8						\$2,672
Address Comments and Finalize Plan Set			40	10	10	50	25	25	10						\$21,127
Technical Specifications			15			18									\$4,560
Develop Engineering Cost Estimate			10			8									\$2,637
Task G - VSMP Permit / SWPPP	0	0	16	0	0	0	12	0	0	0	\$0	\$0	\$0	\$0	\$4,030
Technical Assistance VSMP / SWPPP			16				12								\$4,030
Task H - PreBid Meetings/Response to Bidder Questions	0	0	32	0	0	16	0	0	0	0	\$0	\$0	\$0	\$0	\$7,470
Provide Town with Prequalification Language			4												\$732
Attend one Pre-Bid Conference Meeting			4			4									\$1,135
Attend two Pre-Construction Meetings			8			8									\$2,271
Assist with Answering Contractor Questions			16			4									\$3,332
Task I - Construction Observation Services	0	0	264	0	0	360	0	0	0	0	\$5,000	\$18,500	\$0	\$24,675	\$109,275
Review shop drawings and submittals			16												\$2,929
Construction Inspection			224			336					\$5,000			\$5,250	\$80,110
Final Construction certification			12			12									\$3,406
As-Built Survey												\$18,500		\$19,425	\$19,425
Coordination with Bowman			12			12									\$3,406
Task J - Post Construction Monitoring	0	0	3	0	0	36	0	0	0	0	\$0	\$0	\$0		\$4,176
Yearly monitoring for up to 3 yr period			3			36									\$4,176
Task K - Project Management	4	95	20	0	0	0	0	0	0	0	\$0	\$0	\$0		\$24,042
Overall Project Management, Invoicing and Client Coordination	4	95	20												\$24,042
TOTAL	4	99	621	60	33	689	86	64	84	32	\$14,000	\$65,250	\$6,915	\$90,473	\$341,473