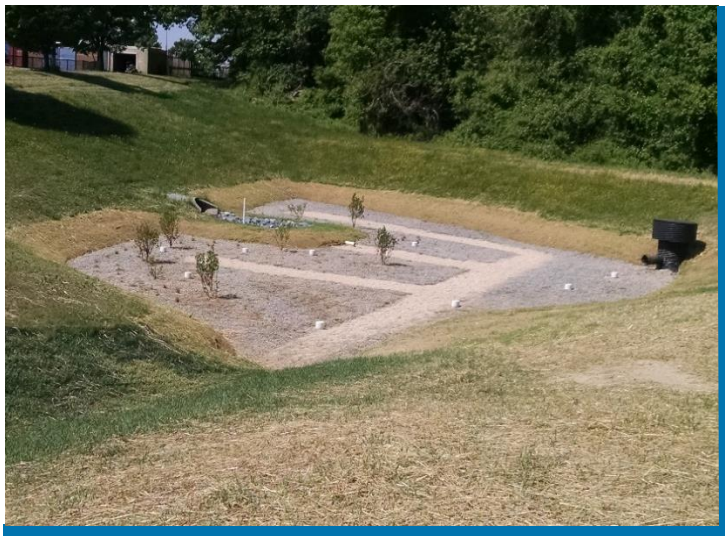

MDOT State Highway Administration | Office of Procurement & Contract Management

Areawide Total Maximum Daily Load (TMDL) Design-Build Contract No. AX7665D82

Technical Proposal

Submittal Due: October 30, 2018 | 12:00PM

Submitted by:

HGS, LLC, a RES company

Table of Contents

Design-Builder Capability

i. Key Staff

Design-Build Project Manager | Joe Caterino, PE | RES

As Senior Project Manager with RES, Joe Caterino manages water resource engineering projects for residential, commercial, industrial, and recreational developments. His involvement begins at site selection, where Joe works with a team of environmental specialists to define environmental constraints of the property. Joe prepares water quality plans to reduce non-point source pollutants by implementing conventional, low impact and innovative integrated management strategies, often near roadways / within ROW.

Joe has been an integral part of the design and construction management team for numerous turnkey and design-build stream restoration and stormwater retrofit projects for MS4 permittees within the Chesapeake Bay region. Other management responsibilities include managing watershed management and planning studies, dam rehabilitation, erosion and sediment control design, floodplain studies including FEMA no-rise, CLOMR, and LOMR certifications, project bidding, on-site construction administration, and post-construction monitoring.

Contact

jcaterino@res.us | 804.729.9113

Years' Experience

23 years

Education

BS, Civil Engineering

Professional Engineer

- Virginia, #035242
- Maryland, #28756
- Pennsylvania, #080339

Professional Training

- Rosgen Level I-III
- Advanced Stream Restoration Design Principals
- NSCD Stream Restoration Construction Management Workshop
- Rivermorph Stream Restoration Software Training

Select Project Experience

Design-Build Stream Restoration Services. Maryland Department of Transportation, State Highway Administration, Statewide: Serves as Project Engineering Manager to provide a total of 34,148 LF of design-build stream restoration projects. RES will be providing services on eight separate sites under this contract. For each site, RES is responsible for site selection, land acquisition, survey, design, permitting, construction, monitoring and adaptive management to support the Administration's Chesapeake Bay restoration goals.

Wancopin Creek Design- Build Stream Restoration. Virginia Department of Transportation, Middleburg, VA: Serves as Project Engineering Manager to provide an innovative design-build stream restoration project. The Project will be enrolled as part of VDOT's Bay TMDL Action Plan, with the associated nutrient reductions credited toward compliance with the Bay TMDL Special Conditions applicable to VDOT as a regulated MS4 under Virginia's MS4 General Permit Program. This project involves the restoration of approximately 15,000 linear feet of significantly degraded reaches of stream channel located along Wancopin Creek, as well as several unnamed perennial and intermittent tributaries to Wancopin Creek and Goose Creek. All land acquisition, design, permitting, construction, monitoring and maintenance work has or will be performed by RES.

Statewide MS4 / TMDL Implementation & Related Activities On-Call Contract. Virginia Department of Transportation, Statewide, VA: Serves as Project Engineering Manager for five-year, open-end contract with the Virginia Department of Transportation (VDOT) to provide design-build services for the development and implementation of projects to meet applicable Total Maximum Daily Load (TMDL) Action Plans in support of VDOT's Municipal Separate Storm Sewer (MS4) Program. This included developing maintenance-of-traffic (MOT) plans for project sites located along state routes. Tasks under this contract include ecological assessment, regulatory permitting, design, construction, construction oversight, and maintenance and monitoring services.

Project Design Manager | David D. Dee, Jr., PE, D.WRE | WSP

David Dee serves as the manager of the civil engineering group in WSP's Baltimore office. He is a senior supervisory engineer and certified senior project manager with over 30 years of experience, including design-build, on a wide range of projects from simple roadway and bridge projects to multi-project, multi-million-dollar programs. As a project manager and task manager, he has been responsible for coordinating the work with not only each discipline within the firm, but also with joint venture partner firms, subcontractors, and client representatives, as well as coordinating work with regulatory agencies and utility companies to obtain construction approvals and permits. Dave has extensive experience with MDOT SHA processes and permit requirements, and specializes in site development design, roadway design, culvert design, utility layout and relocation, hydrology and hydraulic design, and stormwater management facility design. He has been recognized for his professional qualifications in water resources having been awarded a Certificate of Special Knowledge with the title of Diplomate by the American Academy of Water Resources Engineers (D.WRE).

Contact

David.Dee@wsp.com | 410.454.9767

Years' Experience

31 Years

Education

- Master of Engineering, Civil and Environmental Engineering
- BS, Civil and Environmental Engineering

Professional Engineer

- Maryland, #19903
- West Virginia #13888
- Kentucky, #29911

Select Project Experience

TMDL Project Management. MD Dept. of Transportation, State Highway Administration, Statewide, MD: Serves as Consultant Project Manager for the Office of Environmental Design, Water Programs Division helping manage consultant designers performing TMDL retrofits for BMP projects. Responsibilities include developing and reviewing scope, identifying out of scope items, coordinating with various Administration disciplines and consultant designers, conducting milestone review meetings, preparing an advertisement set including the IFB book, coordinating with permitting agencies including MDE, Critical Area Commission, MAA, and Plan Review Division, and coordinating with the contractor and Administration teams during construction, including preparing addendums, redline and green-line drawings, reviewing shop drawings and responding to RFI's.

CSX Casky Inspection Yard Design Build. Balfour Beatty Rail, Inc., Hopkinsville, KY: Served as Design Project Manager on a $60 million design-build project working for CSX Transportation to construct its new Inspection Yard in Christian County. The project developed approximately 283 acres into a train inspection yard and fueling depot primarily for coal trains. The design team was based in the Baltimore, MD office that included 2 additional office spaces dedicated to the contractor as well as the owner during the early design stages. The facility was designed for ultimate build-out, but only Phase 1 of 2 was constructed. The project was completed on time and within budget in December 2015 despite 9 months' delay due to weather and permit acquisitions. The project included track design, roadway design, site development design, facilities design, electrical and lighting design, security and communications design, utility design, drainage design, erosion and sediment control design, stormwater management control design, and permit acquisitions.

I-270 at Watkins Mill. Maryland State Highway Administration, Montgomery County, MD: Served as Project Manager for a joint venture to provide detailed highway design engineering services from project inception to the PI stage for the I-270 at Watkins Mill Road Extended Interchange. The project included four ramps of a full diamond interchange with Watkins Mill Road and included coordination with the developer designing Watkins Mill Road Extended and Administration Structures division designing the structure over I-270 in setting and matching tie-in points for all four ramps. The project also involved drainage design, erosion and sediment control design, bridge design, culvert design, stream restoration, minimizing stream impacts, and meeting the 2010 Maryland Department of the Environment (MDE) stormwater requirements to provide ESD to the MEP.

Water Resources Engineer | Kelly Lennon, PE | WSP

Kelly serves as the Maryland Water Area Manager for WSP's Water & Environment Group. She has over 21 years of experience in the planning, analysis, design, technical direction, project management, and construction oversight of environmental and water quality improvement projects, including stream restoration, stormwater management, LID, Green Technology, and wetland creation projects. She has extensive experience with MDOT SHA processes and permit requirements and has managed numerous watershed assessment, prioritization and planning studies covering over 500 stream miles of watersheds, full stream restoration and outfall design and public outreach/stakeholder building activities. Kelly is a highly-qualified stream designer having completed all four levels of the Rosgen Natural Channel Design courses and several post-graduate stream/sediment transport courses.

Contact

Kelly.Lennon@wsp.com | 410.385.4162

Years' Experience

21 Years

Education

- MS, Civil Engineering
- BS, Civil Engineering

Professional Engineer

Maryland #26525

Professional Training/Certifications

- Rosgen Level I – IV
- MD SHA Erosion & Sediment Control Green Card Training
- MD SHA Erosion & Sediment Control Yellow Card Training # 06649
- MD SHA Erosion & Sediment Control Designer Training #D08-064

Select Project Experience

TMDL/NPDES Program Management. MD Dept. of Transportation, State Highway Administration, Office of Environmental Design, Water Programs Division (WPD), Statewide, MD: Providing on-site support to the Administration, Kelly is serving as the WPD TMDL Stream and Outfall Implementation Manager, where she is responsible for overseeing the design and construction of over 100,000 LF of stream and outfall restoration projects. She leads a team of 20+ staff to implement more than 40 stream and outfall restoration projects in Maryland totaling over $150 million in construction and design. She is responsible for the selection and prioritization of alternative BMP projects such as stream restoration, outfall restoration and step pool stormwater conveyance systems that are being used to meet the Administration's MS4 Permit. The stream and outfall projects provide impervious acres treated as well as pollutant load reductions (TP, TN, and Sediment). The fast-paced project includes coordination within the Administration and with surrounding MS4 municipalities. It includes management of survey, natural resources, NEPA, permitting (USACE, MDE Wetland and Waterway, PRD), right of way acquisition, design and construction processes. She has recently obtained MDE approval for an alternative headwater and outfall channel protocol that will increase the amount of impervious area credit and load reductions that can be achieved with outfall restoration projects by 20 to 50% using sound scientific principles.

Maryland Transportation Authority (MDTA), NPDES Permit Support Services, Statewide, MD: Kelly led WSP's NPDES watershed planning efforts associated with the MDTA's major facilities. She reviewed local watershed plans and made recommendations for potential long-term partnerships. Kelly also led a corridor-wide water quality BMP search along I-95/I-395 from I-695 to the Fort McHenry Tunnel. Activities included preliminary hydrologic analysis, development of drainage areas, impervious drainage areas, treatment types, preliminary facility sizing, pollutant loading rates, potential pollutant load reductions and development of 17 concept design packages including plan sheets, project description, preliminary hydraulic computations, pollutant estimates, and cost estimates.

Baltimore County Dept of Environmental Protection and Sustainability: Serves as Contract Manager for multiple on-call watershed and stream restoration design contracts. Work includes site assessment, watershed planning, TMDL implementation, public outreach/coordination, hydrologic/hydraulic/water quality modeling, Water Quality BMP design, geomorphic assessment and stream restoration design.

Geotechnical Design Engineer | Jason Kotova, PE | WSP

Jason Kotova is a lead geotechnical engineer with WSP experienced in inspection of subsurface investigations, including visual classification of soils and rock tunnelling, pavement design, settlement analysis, earth pressure calculations, slope stability evaluation, seepage analysis, shallow and deep foundations, retained earth systems, pile drivability analysis, numerical modeling, staged construction, wick drain design, and reinforced slope design. He is experienced in the design and preparation of construction documents for highway structures, including bridges and retaining walls, stormwater design support, earthwork construction, and instrumentation monitoring. Mr. Kotova has substantial construction monitoring experience specifically related to earthwork and foundation construction, as well as key structural elements. He is skilled in the following software: Plaxis, FLAC, GRLWeap, GROUP, Lpile, Settle3D, DRIVEN, COM624, SLOPE/W, SEEP/W, STEDwin, MSEW, ReSSA, ReSlope, XSTABL gINT, AutoCAD, and Microstation.

Contact

Jason.Kotova@wsp.com | 410.246.0526

Years' Experience

18 Years

Education

- MS, Civil Engineering
- BS, Civil Engineering

Professional Engineer

Maryland #32585

Select Project Experience

Maryland Route 355 Widening. MD Dept. of Transportation, State Highway Administration, Rockville, MD: Serves as Geotechnical Engineer for roadway widening that involves the construction of a retaining wall to support additional roadway lanes. Responsible for review of geotechnical analyses for cast-in-place cantilever and soldier pile-and-lagging wall alternatives and review of foundation report.

TMDL/NPDES Program Management Support. MD Dept. of Transportation, State Highway Administration, Office of Environmental Design, Water Programs Division (WPD), Prince George's County, MD: Provided geotechnical engineering support services for several critical outfall restoration sites in Prince George's County. Reviewed consultant geotechnical studies and global stability analysis. Provide recommendations to TMDL on necessary analyses required to complete the final design.

Governor Harry W. Nice Memorial Bridge. MDTA, Maryland and Dahlgren, VA: Served as Geotechnical Engineer for preliminary engineering for an approximate 1.7-mile bridge for US 301 over the Potomac River. At the channel crossing, the bridge deck will be over 100 feet above the water, which is up to 75 feet deep. The subsurface conditions generally consist of 50 feet to over 100 feet of very soft, fine-grained alluvium, overlying more competent coarse and fine-grained strata and cemented sand. Supervising field inspector responsible for oversight of three drilling crews and one testing crew, conducting work on multiple barges. Geotechnical engineer responsible for feasibility studies regarding deep foundation types and sizes.

Biddison Run Stream Restoration. Baltimore City Department of Public Works, Baltimore, MD: Served as Geotechnical Engineer for Preliminary engineering evaluation of various design concepts to repair a 15-foot (4.6-meter) vertical erosion scarp undermining the pavement section of Moravia Road. The project includes slope stability analysis and cantilevered beam and lagging retaining wall design in conjunction with stream channel restoration to inhibit erosion. Project required extensive MOT and lane closures in order to complete repairs.

I-95 Express Toll Lane Improvements and System Preservation. MDTA, Baltimore, MD: Served as part of the General Engineering Consultant (GEC). Performed top-down wall design and global stability analyses for stabilization of a slope failure adjacent to a ramp. Provided emergency technical support relative to the failure of a contractor's temporary support of excavation for constructing a 40-foot high MSE wall, including investigation and assessment of the failure mode, instrumentation monitoring, and design review of approximately $11 million of mitigation measures.

GIS Specialist | Joel Gladfelter, PE, GISP | WSP

Joel Gladfelter is an accomplished Professional Engineer (PE) and Geographic Information Systems Professional (GISP) who has a comprehensive and diverse engineering, construction, inspection, systems, and GIS project work experience.

Joel has extensive experience with a wide range of geospatial services including Geographic Information Systems (GIS) and Computer Aided Design (CAD) designs and plans, GIS data management, GIS program management, GIS field collection and GIS mapping applications, GIS data migration, geodatabase design, enterprise geodatabase operations and maintenance, GIS modeling and automation, software development for civil infrastructure applied technology solutions, asset management, and plans/specifications/cost estimates for project delivery. He has provided asset management and field data collection using geospatial solutions to support the Maryland Transportation Authority (MDTA), business analyst services to the Maryland Transit Administration (MTA), as well as systems engineering and contract procurement services for the MTA

Contact

Joel.gladfelter@wsp.com | 410.385.4180

Years' Experience

17 years

Education

BS, Civil Engineering

Professional Engineer

- Maryland, #33939
- Delaware, #16534

Professional Registrations

- National Council of Examiners for Engineering and Surveying #59348
- Certified Geographic Information Systems (GIS) Professional #67653

Professional Associations

- Institute of Transportation Engineers
- Maryland Association of Engineers
- National Council of Examiners for Engineering and Surveying
- Maryland State Geographic Information Committee

Select Project Experience

Prince George's County, Department of Public Works and Transportation, National Pollutant Discharge Elimination System (NPDES) Stormdrain Inventory, Largo, Maryland: Project Manager of $484K GIS Pilot Project assessment to complete the county-wide NPDES Municipal Separate Storm Sewer System (MS4) Storm Drain Inventory (SDI) and assessment pilot project. Joel managed the scope, schedule, budget, and staffing of approximately 12 WSP GIS Analysts and subconsultant Chesapeake Environmental Management (CEM) to develop and standardize protocols and processes to complete the NPDES/MS4 Storm Drain Inventory county-wide. Conducted stakeholder workshops from Prince George's County agencies to identify needs and requirements and produced a report out summary. As technical lead, Joel designed, built, and deployed open source PostgreSQL databases and enterprise-class multiuser geodatabases using replication and versioned workflows. Joel technically led and managed the design and deployment of the Stormdrain Inventory Geodatabase, project area footprint, and GIS web-based applications for multiuser editing GIS data in disconnected environments and using mobile field collection equipment. Led all project management and technical aspects of this project as our team collected and processed GIS data including georeferencing of over 600 plan sheets, spatial analysis of over 2,400 plan sets, inspected and evaluated GIS and plan set data, performed GIS spatial analysis, data inventory & conversion, field validation and quality assurance, and condition assessment of SDI network.

Maryland State Highway Administration, Impervious Area Disconnect. Anne Arundel, Harford, and Charles Counties, Maryland: Supported SHA efforts as GIS analyst and technical lead running GIS models and processing execution Anne Arundel, Harford, and Charles County-wide tiles to identify SHA non-rooftop impervious disconnect credits for MDE reporting. GIS task manager and technical lead that set up and deployed open source PostgreSQL database and enterprise-class multiuser geodatabases. Created and published GIS web mapping using ArcGIS Online services, tools, and applications to conduct field inventory and data collection for field crew windshield surveys across multiple field teams.

Construction Manager | William Weaver IV | RES

Mr. Weaver's experience encompasses all facets of construction, construction administration and management, including estimating and bid documentation, permit approval and compliance, as well as construction implementation for multiple types of projects. Mr. Weaver has been involved with the construction of Stormwater Management (SWM) facilities and utilities, inspection of erosion and sediment controls, and unique projects for stabilization of vulnerable areas.

Contact

wweaver@res.us | 301.850.0448

Years' Experience

11 years

Education

BS, Environmental Geology

Professional Certifications

- MD Green Card – Erosion and Sediment Control Certification
- MD Yellow Card – State Highway Administration Erosion and Sediment Control Certification
- MD Orange Card – State Highway Administration Temporary Traffic Control Manager
- MD Certified Pesticide Applicator – Aquatic

Select Project Experience

On-Call Contract for Design/Build Restoration. Baltimore County Dept. of Environmental Protection and Sustainability, Baltimore County, MD: Serves as Contract Manager, currently overseeing the restoration of several SWM facilities as part of a $5M, five-year contract with Baltimore County. Project tasks include replacement of low flow pipes, installation of new outfalls, dredging of excess material, and grading and stabilization of project sites. Manages project schedule and budget to ensure projects are completed on time and within estimated budget.

On-Call Contract for Design/Build Restoration. Baltimore County Department of Public Works (DPW), Storm Drain Design Section, Baltimore County, MD: Serves as Contract Manager, currently managing projects for $6M, five-year contract with Baltimore County DPW for design-build environmental restoration. Projects include installation of bio-swales, bioretention ponds, permeable pavers, restored stream channels, and submerged gravel wetlands. Manages project schedule and budget to ensure projects are completed on time and within estimated budget.

Full Delivery of Water Quality Improvements. Anne Arundel County Government. Anne Arundel County, MD Provides contract oversight to carry out the implementation of new water quality improvement practices; including design, permitting, construction, and maintenance on private properties throughout Anne Arundel County. These water quality improvement projects are eligible for water quality credits consistent with current MDE standards and include several pond retrofits using real-time control applications.

Indefinite Delivery Indefinite Quantity (IDIQ) Contract for Sewer Main, Sewer House Connection and Manhole Repair, Replacement, and Renewals of Sewers in Environmentally Sensitive Areas (ESA) for Sligo Creek Basin in Prince George's and Montgomery Counties, Maryland. WSSC, Various Locations, MD: Serves as Contract Manager for an $18M contract with WSSC. Oversees contract compliance, subcontractor oversight, production, and quality control. These projects involve the repair, replacement, and protection of water and sanitation lines located in streams in Prince George's and Montgomery Counties in MD, including installation of access roads. Specific tasks include hard armoring of infrastructure pipes and installation of in-stream cross vanes, step pools, slope toe protection, and imbricated riprap walls. Direct sewer work under these contracts is undertaken by a specialized subcontractor with RES oversight.

Functional Enhancements of Seven (7) Stormwater Management Facilities. MD Dept. of Transportation, State Highway Administration, Anne Arundel County, MD: Project Manager to complete the retrofits of seven stormwater management facilities were conducted along Maryland Route 100 and Maryland Route 32 in Anne Arundel County Maryland.

ii. Firm Past Performance

VDOT Statewide MS4 / TMDL Implementation & Related Activities On-Call Contract | RES

Statewide, VA | Virginia Department of Transportation

RES currently holds a five-year, open-end contract with the Virginia Department of Transportation (VDOT) to provide technical services for the development and implementation of projects to meet applicable Total Maximum Daily Load (TMDL) Action Plans in support of VDOT's Municipal Separate Storm Sewer (MS4) Program. Projects include stream restoration, land cover conversion, shoreline stabilization, and retrofits of structural and non-structural Stormwater Management (SWM) Best Management Practices (BMPs), often near roadways, to reduce pollutant loads and meet TMDL action plans. In-house services provided by RES under this contract include ecological assessment, regulatory permitting, design, construction, construction oversight, and maintenance and monitoring services. RES conducts these services on both VDOT owned properties, in ROW, and private, offsite, land acquired by our land team. Under this contract to date, RES has been assigned the following projects:

Timsbury Creek Restoration: This project includes the restoration of approximately 2,300 linear feet of stream channel to reduce TSS, TP and TN loads to Timsbury Creek and tidal James River. The project will restore fish passage along Timsbury Creek by removing existing culverts and a road bed crossing the stream. This project includes a detailed FEMA floodplain study.

Pike Branch Restoration, Fairfax County*:* This project involves the restoration of approximately 4,000 linear feet of stream channel to reduce TSS, TP and TN loads. The project will restore stream bank stability in a deeply incised, highly urban stream channel with stream banks often more than 10 feet tall. Services provided by RES include BEHI/NBS field data collection and pollutant load calculations, hydrology and hydraulic studies, geomorphic stream assessments, stream restoration design, fish passage assessment, wetland restoration, permitting and construction. This project includes a detailed FEMA floodplain study as well as outreach to Fairfax County and local stakeholders.

Skiffes Creek Restoration and BMP, James City County*:* This project includes the restoration of approximately 400 linear feet of stream channel and provides stormwater management for a winter operations facility. The project will restore channel stability along two intermittent/ephemeral channels. Services provided by RES include full site survey, geotechnical studies, BEHI/NBS field data collection and pollutant load calculations, geomorphic stream assessments, hydrology and hydraulic studies, stream restoration design, stormwater drainage and BMP design, permitting and construction.

Outfall Restoration, Chesterfield County*:* This project includes the evaluation of five (5) eroding outfalls or culverts. The project will repair failing outfalls and restore channel stability. Services provided include a full site survey, BEHI/NBS field data collection and pollutant load calculations, geomorphic stream assessments, hydrology and hydraulic studies, stream restoration design, permitting and construction.

This project is relevant to the proposed contract due to our ability to successfully deliver multiple projects at once for a similar transportation agency as well as demonstrating our ability to work near roadways and safely administer MOT plans.

Contact

Tracey Harmon | 804.371.6834

Project Delivery Method

Design – Build

Environmental Permits Required

VDOT coordinates all permits and is permittee holder; examples of permits RES assisted with include:

- Nationwide Permit #27
- VMRC Subaqueous Bed Permit

Contract Value Initial/Actual

$4.3M to date | Estimated $30M upon completion

Contract Period

2016 – 2021

Project Highlights

- Design-build contract
- TMDL & MS4 regulation based
- Turnkey delivery for water quality improvements
- Nutrient reduction credit forecasting, analysis, and delivery

Anne Arundel County Full Delivery of Water Quality Improvements Contract | RES
Anne Arundel County, MD | Anne Arundel County

RES is working with Anne Arundel County to provide cost-effective pollutant (i.e. nitrogen, phosphorus, sediment) reductions and equivalent "impervious acres treated" on private lands throughout the County. These projects include stream restoration, outfall stabilization, and wet and dry pond retrofits, and continuous monitoring on four sites on private property secured by RES. In total, these projects will produce an estimated 188.6 Impervious Acre Credits for the County.

The effort is supported by AECOM Technical Services, Inc. (AECOM) and Opti. AECOM will provide stormwater retrofit engineering and Municipal Separate Sewer (MS4) support services while Opti will provide a cloud-based platform to monitor and control stormwater facilities.

Walmart Arundel Mills - Pond Retrofit: The Walmart - Arundel Mills Pond and a small public portion of the tributary drainage area is located in Hanover, MD. Per regulations at the time of construction, this pond was designed to meet pre-2002 Maryland wet pond standards. The retrofit of the Walmart - Arundel Mills Pond was accomplished using real time control applications under Opti's Continuous Monitoring and Adaptive Control (CMAC) system. By adaptively controlling approximately six vertical feet of storage above the existing permanent pool, the CMAC retrofit achieved a total water quality volume of 4.35 ac-ft., which is 2.6 inches per impervious acre, an increase from the current 0.5 inches per impervious acre. Activities at this site will generate approximately 23.8 Impervious Acre Credits.

Contact

Erik Michaelsen | 410.222.4240

Project Delivery Method

Design – Build

Environmental Permits Required

County Grading Permits were needed for each site, permits held by Anne Arundel County

Contract Value Initial/Actual

$1,404,978 | $1,509,678
Overage due to required construction material and labor costs not accounted for during bid/concept by Owner or DB Team

Contract Period

2017 – 2018

Project Highlights

- 188.6 impervious acre credits produced
- Outfall stabilization and stream restoration projects
- Turnkey delivery for water quality improvements

Site No. 3: Arundel Mills Limited Partnership - Pond Retrofit: The Arundel Mills Limited Partnership wet pond, Hanover, MD, receives stormwater runoff from a commercial development complex. Designed to meet pre-2002 Maryland wet pond standards, this retrofit of the Arundel Mills Limited Partnership Pond was accomplished using CMAC. By adaptively controlling approximately 4.7 vertical feet of storage above the existing permanent pool, the CMAC retrofit achieved a total water quality volume of 34.6 ac-ft., which is 2.6 inches per impervious acre, an increase from the current 1 inch per impervious acre. Activities at this site will generate approximately 63.0 Impervious Acre Credits

Site No. 4: AJ&C Garfunkel - Pond Retrofit: The AJ&C Garfunkel Pond, Laurel, MD, is owned and maintained by AJ&C Garfunkel and designed to meet pre-1995 standards for MD dry ponds. It receives runoff from a commercial retail shopping center. The addition of CMAC provides additional adaptive water quality volume using existing storage. By adaptively controlling approximately 6.1 vertical feet above the existing low flow outlet, the CMAC retrofit achieved a total water quality volume of 6.9 ac-ft., which is 2.6 inches per impervious acre, an improvement from the current 0.0 inches per impervious acre. There are 8.7 feet of vertical storage between the low flow orifice invert and riser overflow weir. Activities at this site will generate approximately 44.0 Impervious Acre Credits.

This contract demonstrates the ability of RES's land team to secure essential access and usage rights on private property to support stormwater project development, as well as our understanding of real-time control retrofits for impervious acre crediting to meet TMDL requirements, similar to those utilized by the Administration, and our ability to implement innovative technologies into our work.

WSSC Environmentally Sensitive Area IDIQ Contracts | RES

Prince George's and Montgomery Counties, MD | Washington Suburban Sanitary Commission

The Washington Suburban Sanitary Commission (WSSC) has awarded RES four Indefinite Delivery Indefinite Quantity (IDIQ) contracts to provide environmental management and stream restoration services in environmentally sensitive areas as a part of the EPA consent decree program to repair, replace, and rehabilitate their sewer infrastructure. These contracts involve the repair and protection of water and sanitation lines located throughout Prince George's and Montgomery Counties in MD.

For these projects, RES has installed in-stream structures such as cross vanes, step pools, j-hooks, slope toe protection, and imbricated riprap walls. Additionally, RES has installed and maintained construction access roads, approved sediment and erosion control devices, stream bypass/diversions, and performed seeding, stabilization and site plantings to return the project sites to their natural pre-construction conditions. RES is currently engaged in ongoing efforts with these contracts.

The hands-on experience with in-stream sewer lines protection and rehabilitation has given RES a thorough understanding of the specific environmental conditions that accompany underground utility lines and the type of maintenance they require.

Contact

Mike Trail | mtrail@wsscwater.com

Project Delivery Method

Design – Bid – Build | Indefinite Delivery Indefinite Quantity

Environmental Permits Required

All applicable environmental permits provided by the Project Owner

Contract Value Initial/Actual

$44,250,000 for all Contracts Combined

Construction Period

2014 – 2020

RES currently serves as a Prime Contractor on the following contracts for WSSC:

Pipe Armoring Construction Services, Prince George's and Montgomery Counties, MD: RES is providing construction services for exposed water and wastewater asset protection as well as stream restoration work and the construction of temporary access roads in environmentally sensitive areas. This is a base term three-year contract with a value of $7,500,000.00.

Sligo Creek Basin, Montgomery County, MD: There are currently three task orders completed or under construction for this contract. TO3 has three stream sites with a total of 775 linear feet (LF) of stream restoration. TO7 under the Sligo Creek contract included 200LF of stream restoration and 4,100LF of access road installation. TO8 included two substantial stream restorations of ~900LF.

Little Falls & Rock Run Basins, Montgomery County, MD: TO1 included a stream restoration site of ~300LF. RES staff will oversee our specialty subcontractors in the rehabilitation of 12 manholes.

Lower Anacostia/Beaverdam/Mattawoman Basins, Prince George's County: TO1 included 450LF of stream restoration that included the installation of 2,200LF of access road. TO3 included two stream restoration sites. These sites totaled 530LF of stream restoration with 2,600LF of access roads necessary for access to the stream sites as well as for the sewer infrastructure rehabilitation.

Additionally, RES currently serves as the primary subcontractor to AM-Liner East on four additional WSSC contracts: **Little Falls/Rock Run Basins,** Montgomery County, **Lower Anacostia/Beaverdam/Mattawoman Basins,** Prince George's County, **Seneca Creek Basin,** Montgomery County, and **Piscataway Creek Basin,** Prince George's County.

Work completed on these contracts has extensive MOT planning as sites are often in unreachable locations, necessitating the need for the creation of access roads. RES has worked on several contracts and performed on multiple Task Orders simultaneously.

The Dulles Corridor Metrorail Project – Package P Stormwater Improvements | RES

Dulles, VA | Metro Washington Airport Authority

The Metropolitan Washington Airports Authority (MWAA) in cooperation with the Washington Metropolitan Area Transit Authority, (WMATA), the Commonwealth of Virginia, Fairfax County, and Loudoun County is designing and constructing a 23.1-mile extension of WMATA's Metrorail System in the rapidly growing Dulles Corridor in Northern Virginia within the greater Washington, D.C., metropolitan area. The Dulles Corridor Metrorail Project is being implemented in two phases – Phase 1 (the Extension to Wiehle Avenue) and Phase 2 (the Extension to Dulles Airport/Route 772). Phase 1 includes 11.7 miles of new track and extends from the East Falls Church station through Tysons Corner to Wiehle Avenue in Reston and includes four new stations.

As part of Phase 2, currently under construction, RES was awarded the design and construction of seventeen selected Best Management Practice Facilities (BMPs) along the project corridor. The BMPs include Dry Swales, Filtering Practices, Bioretentions and Constructed Wetlands. The BMPs are to be designed and constructed in accordance with the Virginia Stormwater Management Program (VSMP) Regulation Part II-B Criteria and the associated permits.

RES, along with design partner Rinker Design Associates, is responsible for the adoption of the approved design, development, construction of the BMPs and permit closeout. RES is responsible for construction of the BMPs to achieve the associated overall stormwater management objectives of the Phase 2 program. These include both quantity and quality control measures.

Contact

Stephen Barna | 703.572.0684

Project Delivery Method

Design – Build

Environmental Permits Required

VSMP Permit | Permittee is Capital Rail Constructors

Contract Value Initial/Actual

$27M – Project in Progress

Construction Period

2018 – 2021

Project Highlights

- 17 BMPs constructed for value engineering
- Multiple BMP Types
- Design-build contract
- TMDL & MS4 regulation based
- Green infrastructure techniques utilized

Throughout the contract, RES is responsible for: developing and obtaining approval of necessary MOT plans and coordinate with any coincident MOT installations; maintaining existing roadways and pavement as necessary to accommodate construction traffic and associated loading, and providing support to public and community outreach activities in partnership with MWAA.

In addition to the retrofitting and construction of these BMPs, an additional goal is to reclaim of higher BMP efficiency; the contract intends to take credit for higher phosphorous removal efficiency, each BMP will be analyzed independently for its ability to perform at a higher efficiency.

To support this contract, RES has hired five new staff members who will provide support from an on-site office.

Similar to the proposed Administration contract, a major aspect of this work is in relation to ROW and MOT's as sites are along major highways leading to the airport, necessitating extensive MOT planning and implementation. To complete this contract, RES has to maintain a productive schedule among multiple key stakeholders including major transportation authorities, local County representatives, and VA DEQ. Additionally, this demonstrates our ability to perform work simultaneously on multiple sites under a strict completion timeline. To perform this work, similar to the proposed Administration's contract, RES put together a team of reliable and exclusive subcontractors and teaming partners.

National Pollutant Discharge Elimination System (NPDES) Services | WSP
Statewide, Maryland | Maryland State Highway Administration

WSP is providing the MDOT State Highway Administration (SHA) with technical support for their NPDES and Total Maximum Daily Load (TMDL) compliance programs. The major tasks completed to date include:

TMDL SWM New BMP and Retrofit Designs in Charles County: WSP prepared designs for 14 new and 11 retrofit SWM BMPs that maximized water quality treatment at the chosen locations. WSP advanced concept designs developed by others and prepared the contract documents necessary to advertise the project as a single construction contract. WSP also provided natural resource assessment, permit support and construction support services throughout the design, advertisement, and construction phases of the project.

Outfall and Drainage Structure Assessment & Remediation: WSP first provided specialized services in the development of guidelines for storm drain outfall assessments as part of SHA's NPDES MS4 program. Then WSP conducted outfall and drainage structure assessments for more than 2,000 outfalls located along multiple SHA roadway corridors. The assessment process consisted of field investigations into structural conditions of the outfalls, outfall protections, and the outfall channel. Once processed, the sites were prioritized and submitted to SHA for database upload along with recommendations for retrofit potential. The high priority sites were bundled together in a design package for a future consultant to prepare design plans.

Grass Swale Assessments along I-95 and I-70: As part of TMDL compliance, SHA assessed the extent to which existing grass channels are providing water quality treatment and are unaccounted for in SHA's NPDES database. WSP performed detailed field assessments and GIS analysis to verify that existing drainage swales meet MDE grass swale criteria and account for water quality treatment. WSP conducted an inventory of 759 grass channels along I-95 and I-70 in six Maryland counties, using GIS analysis and field measurements to verify BMP criteria were met at each location, and to update SHA's NPDES database. The project was completed within a tight four-month time frame.

TMDL Stormwater New BMPs Site Searches, Prioritization & Concept Designs – Howard County: WSP conducted site searches in Howard County to identify potential new SWM BMP locations along SHA-owned roadways and at SHA-owned facilities. After initial desktop analysis of 400 sites using GIS information, and field investigation of the 67 sites with the highest potential for treatment by a new BMP facility, WSP prepared 25 concept SWM BMP designs that maximized water quality treatment at the most feasible locations, then advanced them to full design packages for advertisement and construction.

This contract demonstrates WSP's extensive understanding of MDOT SHA's design and permit process and WSP's efforts to improve the NPDES and TMDL compliance programs.

Contact

Sonal Ram | 410.545.8640

Project Delivery Method

Design-Bid-Build

Environmental Permits Required

COE Joint Permit, MDE, Wetlands, Roadside Tree Permit | Permittee Holder: State Highway Administration

Contract Value Initial/Actual

$2,849,147

Construction Period

2012 - 2017

Project Highlights

- New and Retrofit SWM BMP facilities Assessments and Design
- Outfall and Drainage Structure Guidelines, Protocols and Assessments
- Grass & Drainage Swale Assessments also utilizing mobile GIS technology

General Engineering Consultant (GEC) for the Intercounty Connector (ICC)

Montgomery and Prince George's Counties, Maryland | MDOT State Highway Administration

ICC Corridor Partners, a joint venture comprised of WSP and two other firms, provided program management services on the $2.445 billion, 18.8-mile multi-modal highway connecting the I-270 and I-95/US 1 corridors north of DC. WSP led the development and execution of this design-build procurement, which was divided into five separate design-build contracts.

Design and Construction Phases: As the GEC managing five Section Design Consultants, WSP provided meaningful, constructive, and timely design review comments on thousands of plan sheets and specifications. We navigated the numerous design consultants to meet the project objectives, budgets, and schedules. Construction Management staff was assigned early in the project life cycle so that the Asst. Construction Manager, project engineer, and schedule engineer were engaged throughout the design and/or design-build procurement process and moving into the construction phase. Depending on the project delivery and QA/QC plan, we staffed the project with inspectors or quality overseers to comply with our approved plan.

Providing Design Services as Required for Corridor-wide Components: The proposed alignment of the ICC traversed several areas of parkland and sensitive natural resources. Close coordination with the environmental agencies during the development of the EIS led us to investigate environmentally sensitive construction methodologies. The location of haul and access roads was developed including areas of disturbance at each point within the resource area. The footprint area of these disturbances was minimized to the extent possible given the various construction operations that were required. The resulting impacts to streams, wetlands and parklands were calculated and included in the EIS.

Contact

Bob Michael | 410.537.7813

Project Delivery Method

Design-Build

Environmental Permits Required

COE Joint Permit, MDE, Wetlands, Roadside Tree Permit | Permittee Holder: State Highway Administration

Contract Value Initial/Actual

$22,139,830

Construction Period

2005 - 2014

Project Highlights

- $2.445 billion, 18.8-mile multi-modal highway
- Six-lane (three per direction) section with variable width median, 60 mph design speed
- Extensive environmental mitigation and enhancements
- Environmentally safe construction methodologies

Geotechnical: Obtaining soil borings, corresponding data and testing was necessary to properly design the many bridges, retaining and noise walls on this project. We recommended and implemented 12 months of aggressive drilling to obtain sufficient data to share the risk with the design-builder.

Right-of-Way: Roughly $25M of privately held ROW was acquired for this project. This value was approximately five times the largest annual acquisition the Administration had ever performed. Property availability was critical to the design-builders schedule and was very cost sensitive. If the design-builder was forced to work around properties not acquired, additional risk dollars would be added to the project.

Development of a New QA/QC Approach Where the Design-Build Team is Responsible for QA/QC: The GEC developed a new QA/QC approach for SHA where the contract documents placed a significant responsibility on the design-builder for the project's quality. The design-builder performed quality design and construction activities traditionally performed as quality assurance by the Administration.

This project is relevant to the proposed contract due to our ability to successfully manage a major design-build project for the Administration, including our ability to acquire Right of Way and provide geotechnical support.

iii. Organizational Chart

RES
WSP
Construction Subcontractors & Suppliers
Design & Consulting Subcontractors
Land Services Subcontractor

*Denotes MBE Firm
Hours Per Week = HPW

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

DESIGN - BUILD PROJECT MANAGER HPW: 25
Joe Caterino, PE
- Reports to Project Owner
- Responsible for: Overall Project Delivery & Oversees all Submittals and Project Timelines

QA/QC MANAGER HPW: 20
Ethan Cassee, CPMSM
- Reports to DB PM
- Responsible for Environmental Compliance

EHS&S SPECIALIST HPW: 20
Elaine Browning
- Reports to DB PM

PROJECT DESIGN MANAGER HPW: 25
David Dee, PE
- Supports DB PM & Construction Manager
- Oversees all Design & Consulting Subs

Design Build

Coordination

CONSTRUCTION MANAGER HPW: 20
William Weaver
- Reports to DB PM
- Supports Project Design Manager
- Oversees all Construction Subs & suppliers

LAND/LEGAL SERVICES MANAGER HPW: 10
Allison Reeves
- Supports DB PM & Project Owner Land Rep
- Property Acquisition
- ROW Acquisition

WATER RESOURCES ENGINEER HPW: 25
Kelly Lennon, PE
- Reports to Project Design Manager

GEOTECHNICAL DESIGN ENGINEER HPW: 20
Jason Kotova, PE
- Reports to Project Design Manager
- Supports Water Resources Engineer & the Administration

GIS SPECIALIST HPW: 15
Joel Gladfelter, PE, GISP
- Reports to Project Design Manager
- Supports Water Resources Engineer & the Administration

ADDITIONAL DESIGN & CONSULTING SUBCONTRACTORS
Stantec
Ecotone
SuYash Consulting*
Chesapeake Environmental Management*
Hanover Land Services*
DMY Engineering*
MA Engineering*
EAC, Archaelogy Inc*
AULtec, Inc.*
CADED Consulting Corporation*

CONSTRUCTION SUBCONTRACTORS & SUPPLIERS
Envirenew
Ecotone
North State
Triangle Contracting
Chavis Enterprises*
Empire Landscaping, LLC*
WG Construction
EmNet
BeeMat

LAND SERVICES SUBCONTRACTOR
Diversifed Property Services *

Project Understanding and Design-Build Approach

i. Understanding of Scope

Understanding of Scope and Roles

RES and our Design-Build (D/B) team understand the overall project goal is to deliver the Administration a series of projects that will result in at least 500 TMDL Credit Acres (Credits) while minimizing impacts to environmental resources. In addition, the Administration seeks projects that result in facilities that are easily maintained, safe for the public during and after construction, and minimize the acquisition of property. We have assembled a team with an optimal mix of specialized knowledge and skill, and large project management experience. RES has selected project sites from the Administration inventory issued with the RFP that will maximize credit potential by completing a combination of outfall/stream restoration and SWM BMP pond retrofit projects. With the project budget set at $50 million, our project team will seek to deliver credits well above the minimum, with respect to the Administration's additional requests. Initial tasks will include survey, geotechnical, and utility investigations to develop construction plans and acquire necessary permits, approvals, and right-of-way (ROW). RES will initiate construction beginning with the highest expected credit yield sites.

Our approach began with an extensive screening of potential sites to select those most efficient, and now includes a strategically diversified variety of stormwater facility retrofits (SW retrofits) with outfall and stream restorations to minimize risk of delivery. Regarding SW retrofits, we selected sites with higher contributing drainage areas and lower levels of existing treatment, resulting in the highest possible credit potential. RES will also engage with other jurisdictions, where advantageous, to capture credits associated with off-site contributing drainage area. We will construct SW retrofits to increase pond volume and modify riser structures and supplement this traditional approach with the innovative use of a real-time flow control system, to enhance both water quality treatment and quantity control within the existing facility footprint (minimizing ROW acquisition). This combined approach to SW retrofits accounts for about 40% of our proposed TMDL credits at up to 24 facilities.

Outfall and stream restoration site selection also sought maximized credit potential. Sites were evaluated to minimize ROW needs, and maximizing impervious area draining to each site. RES will implement an approved ATC that enhances credit yield significantly for stream restoration associated with selected outfall stabilization projects. By extending these work areas to include multiple outfalls and longer sections of stream, we will cut down mobilization costs and greatly increase our construction and cost efficiency. This combined approach to outfall and stream restoration accounts for about 60% of our proposed TMDL credits through the restoration of up to 42 sites.

In summary, RES will maximize the Administration's budget by restoring or retrofitting the most cost-effective sites available (primary sites). RES also has identified dozens of additional sites (secondary sites) where retrofits and restoration are still feasible, but not necessarily as cost-effectively as the primary sites. These secondary sites will be considered if any primary sites must be abandoned during the design or construction process.

RES will serve as the prime contractor, responsible for overall management and ultimate credit delivery. RES will provide the Administration with comprehensive services by leading, and delegating to, a sophisticated team of specialized industry professionals and contractors. The D/B team expects to work closely with Administration staff to gain access to project sites, acquire necessary approvals and permits, adjust design plans to field conditions and maintain a successful timeline and schedule of activities.

Environmental Permitting

The D/B team has an exemplary record in successful planning, permitting, and completion of environmentally-sensitive transportation/infrastructure projects for FHWA/MDOT SHA and others throughout the Mid-Atlantic

Region. Excellence in partnering proactively with inter-disciplinary review teams has helped identify and address evolving project challenges, streamline permitting, and reduce delays. Team staff are proficient in predicting design changes well in advance, providing necessary coordination to resolve conflicts with multiple governing agencies / regulations, and adapt regulation changes without hindering permit acquisition.

Our experts have begun to carefully evaluate environmental conditions, areas of concern, and environmental risks associated with this Project and have developed an integrated approach to address and solve perceived issues.

Avoiding and Minimizing Impacts

RES is committed to successful Project completion while avoiding and minimizing impacts to environmental resources, and ensuring full compliance with applicable regulations, Administration specifications, and special provisions. This approach also works to streamline the permitting process.

To identify the most viable sites for this contract, the D/B team completed a preliminary environmental analysis of hundreds of sites based on approximate work areas. A ranking system was established to eliminate sites with high potential for lengthy NEPA, Section 106, or other permitting processes. Resultingly, primary and secondary sites were selected on maximum TMDL credit yield, least environmental impacts and ease of permitting.

Excellent coordination is at the heart of RES' impact minimization and permitting expediency. As a best practice, RES will request a pre-application meeting with permitting agencies (USACE or MDE), as well as other commenting agencies, to discuss the project and verify our intended regulatory strategy prior to submitting the permit application. Coordination efforts with other relevant agencies (regulatory, utilities, transportation, etc.) will commence immediately upon NTP. RES is prepared and fully capable to: exceed the Project's technical requirements; adhere to applicable regulations and NEPA commitments; minimize environmental impacts; incorporate sustainability goals; manage environmental risk; and avoid adverse schedule and cost impacts.

Environmental Compliance

RES and its D/B team have extensive experience providing services to protect our clients' liabilities associated with multiple environmental permits during construction. Because we have obtained hundreds of environmental permits for various project types (including SW retrofits, outfall rehabilitation and stream restoration), we are inherently familiar with the specific monitoring components, impact allowances, and other permit requirements addressed by each regulatory agency. For example, RES has procured, and/or performed site compliance activities in conformance with the following types of permits or regulations (not an exhaustive list):

- Clean Water Act, Sections 401/404, and State equivalent regulatory permits for jurisdictional impacts USACE TMDL RGPs (Cat I, II, III)
- USACE State Programmatic Permits (SPGP)
- USACE Nationwide & Individual Permits
- MDE Authorization to Proceed or Letter of Authorization
- MDE Permits
- Clean Water Act, Section 402: National Pollutant Discharge Elimination System (NPDES)
- Municipal Stormwater permits, Bay TMDL, and local TMDL limitations
- Industrial Stormwater permits
- Chesapeake Bay Critical Area Act
- Local stormwater and environmental ordinances
- DNR Roadside Tree, Reforestation, and Forest Conservation Act approvals

The D/B team will ensure designs are consistent with approved NEPA documents and other environmental permits, and appropriately address any agency concerns. To this end, a specific, internally-developed compliance checklist will be used to track the progress of fulfilling permit conditions, and the status of compliance and project commitments. All designs will be presented to the Administration to discuss how the project scope remains consistent with NEPA decisions and commitments, and any revisions identified to maintain consistency with the

NEPA scope will be made. Our construction compliance program will focus on proper installation of erosion and sediment controls and a functional monitoring and maintenance program for effective pollution prevention.

ii. Understanding of Relevant and Critical Risks

Throughout over a decade of solution delivery, RES has overcome a variety of threats to project timelines, including permit restrictions, varying site conditions, infield design modifications, severe weather, subcontractor scheduling difficulties, and utilities coordination. By working through these difficulties firsthand, RES has gained valuable experience developing project management approaches to understanding and minimize critical risks. With respect to the Project, we have identified the following relevant and critical risks:

Permit Delays: A critical risk to the Administration's expedited project completion schedule is permit delays, as they not only can affect design goals, but construction completion. As described earlier, RES has already eliminated sites with likely permitting problems, via the screening and evaluation process. For selected sites, to counteract permit delays, we will engage in direct conversations and/or field walks with the client and relevant agencies to corporately solve issues, address agency concerns directly, and facilitate issuance of the permit.

One specific and possible permit-related delay is time-of-year restrictions for in-stream construction when a project may be approaching a critical juncture near initiation of the stream closure period. Given this scenario, RES strives in advance to augment staffing resources and extend daily and/or weekend construction hours to accelerate the schedule and meet stream closure deadline. RES will also prepare a detailed schedule to determine the feasibility of completing necessary construction work prior to the closure period. If work completion does not appear feasible, RES will coordinate with DNR and MDE well in advance to demonstrate the measures the Team is taking to complete work before the closure period. If necessary, the Team will work with the client, project engineer, and regulating agency to seek a temporary waiver from the closure period. In past circumstances, we have been granted the waiver to complete the necessary construction work during the stream closure period. Presently, RES anticipates that the Administration's expedited permit processes implemented specifically for this Project are complementary to our overall approach and will facilitate an efficient permitting process.

Varying Site Conditions: This risk is also critical to the Administration's expedited project completion schedule, but also could affect budget variance. When site conditions vary from the time a project is designed to construction initiation, it is often due to severity of erosion onsite, large storms, and/or the result of a significant time lag between plan creation and construction start. Having encountered these issues firsthand on the ecological projects that are our specialty, our experience is to assess new site conditions as proactively as possible. Since flexible retrofit and restoration designs are inherent in this D/B Project approach, affected designs will be modified to minimize negative impacts due to new site conditions. Though not anticipated, in the event impacts cannot be sufficiently avoided, a more limited approach will be assessed for feasibility, or the primary site may be abandoned and substituted with a secondary site. Utilizing this proactive assessment and communication approach will best protect the Project schedule, and this risk will be addressed solely by the D/B team.

Design Modifications: Infield design modifications can significantly disrupt a project's schedule. When faced with these modifications, RES seeks to expedite the process by communicating the potential impacts of proposed changes, be they schedule or budgetary. To best protect the schedule, RES will continue to work on unaffected project components in the meantime. The RES team foresees including the Administration and MDE in design reviews and approvals if modifications are deemed necessary.

Weather: With its unpredictability, potential severity, and given the fact that the Project involves areas directly affected by stormwater, weather is an obvious critical risk. If weather significantly impacts production, RES will increase our work force, and/or increase work hours (having obtained necessary permissions), to counteract schedule delays. RES also has accrued creative solutions to weather problems given our vast experience working with stormwater and within floodplains and Waters of the US.

Unforeseen Utilities: The RES team is adept at thorough underground utility location, and though unforeseen utilities is anticipated to be minimal in our work, their presence could constitute critical risk. RES has also experienced situations in which utilities initially outside the project scope were brought into the project area. This scenario could impact design, permitting, and construction, as design modifications and/or additional permits may be necessary. When constructing other firms' designs, RES has identified unknown gas and water lines not located by utility marking services. If such a scenario occurs, the D/B team will immediately assess and mitigate any safety concerns, then coordinate with all relevant parties for awareness, and lastly, apply a flexible approach to avoid impacts, modifying designs, as necessary, to protect utility infrastructure. Each solution is site-specific, and RES will endeavor to mitigate associated risks from unforeseen utilities while facilitating site work as designed.

MDE Approvals For ATC's: RES has submitted three (3) ATC's, contigent upon MDE approval for crediting. Gaining MDE's approval is critical to achieving the proposed credit total described herein, and there is risk associated with relying on contigent ATC's. RES has mitigated this risk by preparing, in advance, alternative sites that are not dependant on a particular ATC to serve as backup sites in the event an ATC is not approved in time. The Administration shares in this risk should it affect overall project delivery and may consider supporting the approval process of these ATCs, if deemed acceptable and advantageous.

Right of Way Acquistion: ROW acquisition is critical to delivering the proposed number of TMDL credits, on budget, and RES accepts the risk of acquiring site access and permanent ROW for this Project. Per site, RES has assessed specific risks associated with ROW acquisition during this initial phase, and has ensured contingency plans in the event that ROW is not granted on primary sites. RES will mitigate the risk of acquiring ROW by engaging our highly effective, internal Land Team and Land Council, as well as our specialized ROW subcontractor, to approach landowners quickly upon award of contract to begin the acquisition process.

Performance Period/Timeline: The expedited performance period derived from the compressed timeline by which the Administration must obtain credits is understood by RES. To accomplish construction within this timeframe, RES will develop a project-specific schedule to most efficiently utilize staff resources. If pre-set scheduling does not meet Administration or regulatory agency approval, RES will utilize adaptive management techniques to re-assess and develop an alternative strategy that ensures project timeliness. To further assist in project completion, RES has additional equipment, manpower, and an exclusive, experienced subcontractor team that can be allocated as-needed.

iii. Approach of Design-Build

Design & Construction Development

RES' project approach is to develop a working partnership with our clients, and any other project stakeholders, to ensure successful implementation of the complex, environmental projects that are our specialty. The key personnel selected for this proposal will work to make sure each task is done right the first time, recognizing that open and direct communication is our best tool for this. RES' project-specific approach and ample staff resources will ensure all projects and tasks assigned to this contract are administered based on the client's goals and objectives. Quality begins with a clear understanding of the scope and requirements of each task.

RES has demonstrated successful completion of similarly large and complex environmental restoration projects. For instance, we recently completed, ahead of schedule, the largest stream restoration project of its kind in the US: assembling over 40 parcels of land on which over 28 miles of contiguous stream channels were restored.

Coordination & Decision Making

RES employs a multi-tier oversight and reporting system to ensure projects are executed successfully. The D/B Project Manager serves as the primary point of contact and is responsible for development and delivery of all technical deliverables, client representation, and budget and schedule compliance. The D/B Project Manager

directs key personnel in performance of project tasks specific to their individual expertise and will work closely with the Project Design Manager. The Project Design Manager oversees the full design and permit process.

In addition to the minimum required Key Staff, Ethan Cassee will serve as the overall Quality Assurance/Quality Control (QA/QC) manager, and support the Project Manager, Project Design Manager and Construction Manager throughout the project to verify the technical deliverables for high quality standards. He will be responsible for ensuring the availability of resources for the project; scheduling, budget and billing oversight; conflict mediation; and verification of technical deliverables for high quality standards.

Permitting

As described previously, RES has successfully obtained and complied with hundreds of Federal and/or State regulatory permits on a wide variety of projects, including design-build SW retrofits, stormwater outfall rehabilitation, and stream and wetland mitigation and restoration projects. Our staff are adept at quick and precise delineations, and we pride ourselves on our excellent working relationships with local and statewide representatives of the USACE, EPA, US Fish and Wildlife Service (USFWS), MD Department of Environment, MD Department of Natural Resources, Chesapeake Bay Critical Area Commission (CAC), and other state and federal agencies.

Right of Way Acquisition

RES anticipates the ROW acquisition process to include the following tasks:

- Gather Title Reports
- Complete Appraisal
- Conduct Independent Appraisal review
- Submit Appraisal for SHA review
- Prepare Offer Package
- Conduct Negotiations, as needed
- Prepare Condemnation package, as needed
- Finalize Settlement or Condemnation

Upon NTP, RES will conduct initial meetings to gage property owners' interest in participating in the TMDL project. This will minimize the amount of repeat work that may be necessary when a property owner declines participation.

Design Quality Management

RES will utilize a specific strategy to manage and guide the Design portion of this project. To facilitate an efficient workflow, the D/B Project Manager will work with the Project Design Manager and Water Resource Engineer to develop and implement the following action plan for completion of design specification drawings for each site. The process will begin with NEPA clearance and acquisition of ROW where necessary. Our Geotechnical Design Engineer will oversee field survey crews to perform as-built topographic surveys of the project locations, including topographic surveys, utility designations and geotechnical investigations. These surveys will be utilized to verify and map existing conditions and provide the basis for final design plans. Our design team will oversee all aspects of the project related to roadway / access improvements, maintenance-of-traffic (MOT) planning, environmental permits and design coordination. Following the completion of survey, the design team will draft our concept plans including the MOT plans specific to each project location.

The Project Design Manager will also coordinate and oversee efforts to prepare Erosion and Sediment Control Plans (ESC), including the evaluation of the existing environmental permits and proposed Limits of Disturbance (LOD) to ensure compliance. Any alterations to plans or LOD that potentially lead to impacts will be coordinated with the Administration for encroachment request or impact mitigation approval.

Our lead designer, WSP, is a certified ISO 9001 company with an established QA/QC program. WSP will implement a process to review, approve, and manage design submittals to control project quality. This will include the development of a project management plan, a quality management/quality assurance plan, a risk management plan, a safety plan specific to each project site, and an environmental management plan.

Quality reviews will be conducted on all deliverables, and assurance reviews at established milestones. Any issues identified by a quality assurance review will be documented and evaluated to determine what work product may have been affected. Corrective actions will be initiated to resolve any immediate issues, and safeguards established to prevent future occurrences. Any corrective actions will be monitored until closure.

All project personnel will be indoctrinated in the requirements of the Project QA/QC Plan. Customizing this program to meet specific project and client requirements allows for tighter controls and a quality product for the Administration.

Environmental Quality

WSP's Baltimore office is ISO 14001 certified. ISO 14001 is an international standard that provides a framework for an Environmental Management System (EMS) by presenting or specifying the general elements of an effective system. These requirements have been developed so that they may be objectively audited under certification process. WSP's EMS is a systematic approach to managing environmental impacts, and focused in five broad areas to improve environmental quality:

- Sustainable site planning
- Safeguarding water and water efficiency
- Energy efficiency and renewable energy
- Conservation of materials and resources
- Indoor environmental quality

The EMS applies sustainability from the planning, conceptual and preliminary engineering phase, through the final design, construction, and commissioning and operations phase.

Safety in the Work Environment

At RES, we prioritize safety as our top core value, and hold that the safety, security, and health of our employees, partners, communities, and the environment is of paramount importance. Our approach to safety is specific, methodical, deliberate and collaborative. All Team members are required to abide by RES' Environmental, Health, Safety and Sustainability Program requirements.

We will begin the project with a team-focused and comprehensive risk assessment, designed to account for all site-specific hazards. After developing a risk mitigation plan, an emergency action plan and communication strategy will be developed. Routine worksite inspections will reinforce our culture of safety and compliance. We will ensure an open line of communication between Project stakeholders, and any identified risks or hazards will be met with immediate response. All staff assigned to this contract will review the project scope and work activities to ensure adequate controls are in place for workplace hazards; ensure that a Project Safety Plan (PSP) is prepared and understood for the project; incorporate the Administration's Field Work Guidelines and Protection Vehicle Usage Memorandum directives into the PSP; and revise the PSP based on field or project changes. Employees are trained to be vigilant of uninvited third parties, during and after work hours, and the project manager shall include site orientation, incident reporting forms, and results of any onsite audits in the PSP.

Change Management

In the event of staff departure or reassignment, respective team members will be replaced by staff with equal or better qualifications, pending Administration approval. Replacement staff will receive a full debriefing and undergo a training period with outgoing project staff. In such instances, the Project Manager will provide close oversight via weekly status calls with the incoming and outgoing staff, both together and separately, to ensure all relevant contract information and client preferences are communicated. QA/QC Managers will also be involved throughout any staff transitions and provide support to senior management.

RES' goal is to provide the Administration responsive, efficient, and high-quality service, as well as technical deliverables that meet or exceed expectations.