Town of Vienna

Environmental Professional Services

Original
RFP No.: 24-16
Date: March 26, 2024

13530 Dulles Technology Drive
Suite 300
Herndon, VA
(703) 742-5700
wsp.com

March 26, 2024

Procurement Officer
Town of Vienna – Vienna Town Hall
127 Center Street South
Vienna, Virginia 22180

Request for Proposal for Environmental Professional Services – RFP #24-16

Dear Mr. Amacker,

WSP USA Environment & Infrastructure, Inc. (WSP) is pleased to submit the enclosed proposal for Environmental Professional Services. Although the company name has changed over the years (first AMEC Foster Wheeler, then Wood, and now WSP), our Northern Virginia office has been proud to continually support the Town of Vienna's (Town) stormwater needs since 2011. As the incumbent service provider, we have assisted the Town with a wide range of environmental and engineering projects, including MS4 permit compliance, stormwater ordinance development, and stream restoration projects.

One of the many strengths of WSP is that we are a global, full-service civil, water resources, and environmental engineering firm that also has deep roots in the local community. As a result, we are able to draw on environmental professionals from across the United States, while providing hands-on, personalized consulting and technical services within an easy 10-mile drive to Vienna Town Hall.

The most important strength of WSP, however, is our people. We are a team that works well together and keenly understands the challenges faced by the Town. These include increasingly rigorous MS4 permit requirements, TMDL compliance, and inspection and maintenance of the Town's BMP infrastructure – both public and private. Our team will continue to be led by David Bulova, who has served in this role for more than a dozen years. David will be supported by an exceptional team of engineers, environmental scientists, GIS technicians, and field personnel from our Herndon, Virginia office. We are excited to add Wetland Studies and Solutions, Inc. (WSSI) to our team. WSSI brings a wealth of experience in the areas of environmental permitting, surveying, BMP maintenance and restoration, and stream restoration inspections and maintenance. WSP and WSSI have teamed up to provide similar quality services to other MS4 clients throughout Northern Virginia.

As you review our proposal, we ask that you consider the following WSP team differentiators:

- Direct Experience with Vienna – We know the Town's stormwater program inside and out. In addition to working with Vienna staff to develop key policy documents, we have presented to Town Council and have been out in the field to assess stream restoration projects and screen stormwater outfalls for potential illicit discharges.
- Superior Experience in Virginia – WSP delivers similar services to Fairfax County, Loudoun County, Prince William County, the Town of Herndon, and the Town of Leesburg. This level of collaboration allows us to learn from other clients and apply innovations to the benefit of the Town.
- A Proven Team Approach – Nowhere is our level of commitment to the Town more evident than in the team of professionals highlighted in this proposal. David Bulova, Lynne Mowery, Ilana Ton, and Troy Biggs have worked closely with the Town for many years. We deeply value our relationship with the Town.

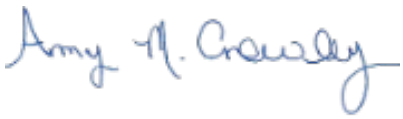
- Regulatory Advocacy – WSP staff have a strong working relationship with state regulators. This allows us to effectively advocate for our clients and gain insight into upcoming regulatory mandates.
- Innovative Technology – We have used our in-house technical capability to make the Town's program more effective and efficient. This includes the development of a mobile app for the Town's dry weather screening program and creating web-based pollution prevention training for ease of delivery during the pandemic.
- Ability to Leverage Grant Funding – We understand the importance of leveraging outside resources to meet the Town's stormwater needs. WSP has assisted Town staff with successful Stormwater Local Assistance Fund grants and has experience helping other localities apply for Virginia Community Flood Preparedness Fund grants.

On behalf of the entire WSP team, we look forward to building on our past successes together and continuing to provide the technical support, experienced and knowledgeable staff, and quality of services needed for the Town to meet new challenges ahead.

Should you have any questions or require additional information about our qualifications, please contact me at (615) 516-8122 or amy.crowley@wsp.com.

Respectfully submitted,

WSP USA Environment & Infrastructure Inc.



Amy Crowley, PE, PMP, CFM

Vice President, Business Line Lead

Environmental Water Services, Capital District

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Section 1
Executive Summary

Executive Summary

The Town of Vienna has requested professional environmental, engineering, and other consulting services to support the Town's stormwater management program, ensure compliance with state and federal mandates, and meet the community's goals related to environmental stewardship and water quality protection.

WSP USA Environment & Infrastructure, Inc. (WSP), as demonstrated in the attached proposal, is fully capable and qualified to provide all the professional environmental services requested by the Town. We are proud of our work with local governments across Northern Virginia and the United States. However, the most important demonstration of our qualifications is the partnership we have had with the Town for over a dozen years. We believe our record speaks for itself that we are not only able to deliver quality services in a timely and cost-effective manner, but that we are truly vested in the Town's long-term success.

Brief Overview of WSP

For most of the past five years, the Town of Vienna has known us as Wood. In 2022, we became part of the WSP USA family. We are excited that the acquisition of Wood's Environment & Infrastructure business by WSP means we can provide an even greater depth and breadth of expertise to meet the Town's professional environmental services needs.

WSP USA is the United States operating company of WSP, which is one of the world's leading engineering, environment, and professional services firms. Recognized on Fast Company's "Brands that Matter" list for 2022 as a top Community Minded Business, WSP USA brings together engineers, planners, technical experts, strategic advisors, and construction management professionals dedicated to collaborating in the best interests of local communities. Headquartered in New York with a regional office in Washington D.C., WSP USA has 300+ offices and over 15,500 employees across the United States.

Work for the Town of Vienna will continue to be managed from our Northern Virginia office, located in Herndon. The office has more than 60 full-time employees who primarily engage in stormwater and water resources planning and design, environmental, and GIS/data management services.

Our Firm's 150-year History

- **1873** **E.C. Jordan Company** founded in Portland, ME
- **1987** E.C. Jordan Company purchased by **Combustion Engineering Environmental, Inc.**
- **1990** Acquired by **ABB Envionrmental Services, Inc.**
- **1998** HLA Acquired by **Harding Lawson Assocaites (HLA)**
- **2000** Acquired by MACTEC
- **2002** MACTEC acquires **Law Engineering and Environmental Services**
- **2011** amec acquires MACTEC
- **2015** AMEC and Foster Wheeler merge and become **Amec Foster Wheeler** (amec foster wheeler)
- **2017** wood. Wood Group & Amec Foster Wheeler join together forming **Wood PLC**
- **2022** Wood Environment & Infrastructure Solutions, Inc. acquired by WSP

WSP's Environmental Services Capabilities

WSP's technical capabilities include all the services requested in the RFP, including stormwater permit compliance, field work, water quality monitoring, site inspections, engineering design and construction, GIS mapping, operational assistance, policy and ordinance development, and other general program support. These services are further complemented and enhanced by WSSI's capabilities, including surveying, maintenance and rehabilitation of stormwater BMPs and stream restoration projects, and nutrient management planning.

Environmental Services

WSP understands that the primary focus of the work requested relates to environmental permit compliance. The Town must comply with its Municipal Separate Storm Sewer (MS4) permit, the newly consolidated Virginia Erosion and Stormwater Management Act (VESMA), and the Chesapeake Bay Preservation Area Designation and Management Regulations, as well as other state and federal permitting and regulatory requirements.

WSP has worked with hundreds of clients nation-wide in the development and implementation of MS4 Phase I and Phase II permit programs. In addition to our work with the Town of Vienna, our current Virginia clients include Fairfax County, Loudoun County, Prince William County, the City of Bristol, the Town of Herndon, and the Town of Leesburg. This experience means that we have a deep understanding of Virginia's MS4 permit and the ability to assist our clients with all aspects of the MS4 permit's six minimum control measures (MCMs).

The following is a summary of WSP's MS4 capabilities:

Overall MS4 Program Compliance

WSP takes a holistic approach to assisting our clients with their MS4 program needs. This includes working with clients to submit permit registration statements to the Virginia Department of Environmental Quality (DEQ), developing the MS4 program plan to provide a clear and consistent pathway to permit compliance, and assisting with submittal of MS4 annual reports. WSP has extensive experience working with clients to successfully navigate the state MS4 program audit process – including compilation of documents requested by DEQ, mock audits to prepare staff for questions and interviews, and preparation of follow-up requests and action items.

Public Education and Outreach (MCM #1)

WSP has developed numerous public education plans as well as public outreach materials – including brochures, posters, and videos. We have also worked closely with the Northern Virginia Regional Commission's Clean Water Partners on regional public education efforts. In addition to developing the Town of Vienna's Public Education and Outreach Plan, WSP facilitated the development of Fairfax County's Public Education and Participation Plan. Our approach is grounded in ensuring the Town meets its minimum permit requirements while also ensuring that efforts are achievable and effective. A new capability brought by the acquisition by WSP is access to our Visualization and Data Intelligence Group. This group specializes in communications graphics, which includes developing interactive environmental education publications, web content, and interpretive signage.

Public Involvement (MCM #2)

Public engagement is a cornerstone of MS4 permit compliance. We have designed public engagement plans to meet minimum permit requirements, facilitated small and large community meetings on stormwater-related projects (such as stormwater pond retrofits and stream restoration projects), and presented to community leaders and elected officials, including the Vienna Town Council.

Illicit Discharge Detection and Elimination (MCM #3)

In addition to developing illicit discharge detection and elimination protocols, our staff has extensive experience in both dry and wet weather screening. WSP also has a robust GIS capacity. This gives us the ability to assist with mapping storm pipes, outfalls, and impervious surfaces as well as defining the extent of the regulated MS4 service area.

Construction and Post-Construction Runoff Control (MCM #4 and #5)

WSP has experience with all aspects of Virginia Erosion and Sediment Control and Stormwater Management Program compliance, including ordinance and policy updates. WSP helped to develop the Town's current ordinance in 2014. We are well positioned to assist with implementation of the consolidated Virginia Erosion and Stormwater Management Act (VESMA), which must be adopted by the Town no later than July 1, 2024. WSP has staff that are certified by DEQ to perform erosion and sediment control and stormwater management inspections, while WSSI has the capacity to perform physical BMP maintenance.

Good Housekeeping/Pollution Prevention (MCM #6)

We have helped our clients meet the full range of pollution prevention and good housekeeping requirements.

WSP has developed and implemented stormwater pollution prevention plans (SWPPPs) and good housekeeping standard operating procedures (SOPs). Our staff has delivered pollution prevention training to front-line staff, both in-person and online. Finally, our team has staff certified to develop nutrient management plans (NMPs), which are required for any area where fertilizer is applied to a contiguous area greater than one acre.

TMDL Compliance

Among the most challenging aspects of the MS4 permit is TMDL compliance, since TMDLs establish specific, measurable pollutant reduction targets. In addition to the Chesapeake Bay TMDL, WSP has developed local TMDL action plans for sediment, bacteria, PCBs, and chloride. For the Chesapeake Bay TMDL, WSP works with clients to develop compliance tracking dashboards in Excel and GIS, identify and analyse potential projects to meet pollutant reduction targets, develop project concept plans, and take projects into design and construction.

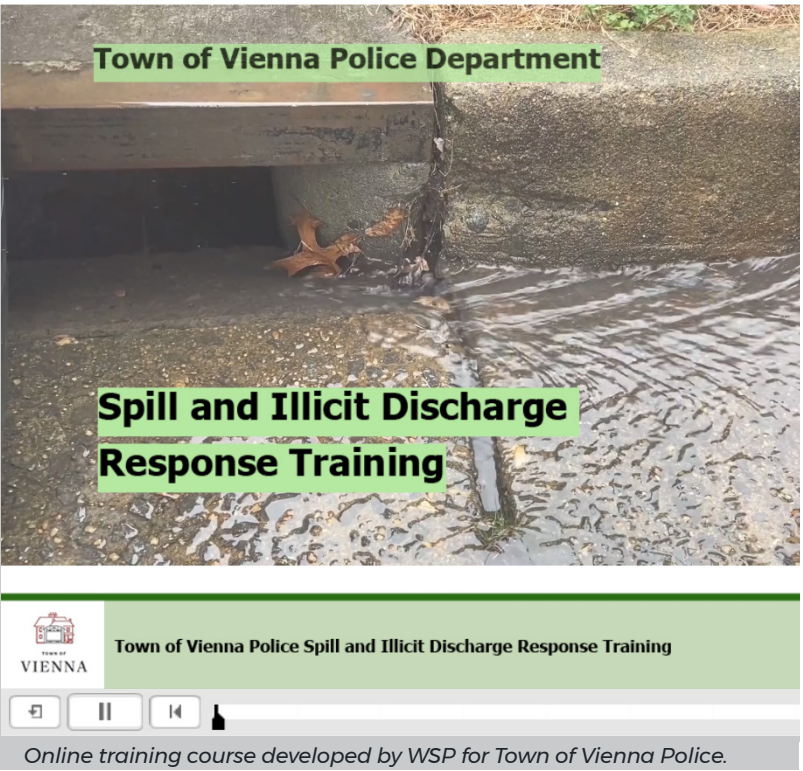
Other Environmental Services

WSP has the capacity to provide all additional environmental services noted in the RFP including:

Watershed Studies/Evaluations: WSP has extensive experience designing and implementing watershed evaluation processes – from qualitative approaches to highly technical water quality monitoring and modeling. For example, WSP prepared several of Fairfax County's watershed management plans, which included modeling, stream assessment, watershed characterization, and ranking procedures. WSP prepared models of the hydrology, hydraulics, and water quality in the watersheds to assess proposed solutions and facilitated an extensive public engagement process.

Water Quality Monitoring: WSP provides wet weather monitoring for several clients in the region. WSP designed and implemented quarterly wet weather monitoring protocols for Fairfax and Prince William Counties. The programs include sampling at two stormwater outfalls using Isco automated samplers and scissor rings. WSP currently performs similar wet weather monitoring services for Leesburg Executive Airport.

Floodplain Studies/Mapping: WSP's Herndon office is a leader in floodplain studies and mapping. As FEMA Region III's preferred Flood Hazard Mapping consultant since 2001, WSP has performed flood studies throughout Virginia. WSP has vast experience in hydrologic and hydraulic modelling in support of FEMA Flood Insurance Study updates. WSP also has significant FEMA program experience in navigating the FEMA Letter of Map Change (LOMC), Letter of Map Revision (LOMAR), and Conditional Letter of Map Revision (CLOMR) process where necessary to comply with FEMA regulations.



Online training course developed by WSP for Town of Vienna Police.

Engineering/Construction/Consulting Services

WSP provides a holistic range of engineering, construction, and other consulting services to plan and implement systems of stormwater controls. With local operations and access to national expertise, we design efficient solutions that meet varying objectives including flood control and drainage, stream channel and bank protection, groundwater recharge, water quality improvement, habitat restoration, climate change adaptation, and public health and safety improvements.

WSP's experience ranges from stormwater master planning through project construction oversight. A solid water master planning approach is essential to ensuring that limited capital resources are applied in an efficient and effective manner, and that potential project issues are identified and vetted early in the process. WSP has assisted numerous localities in the

master planning process. For example, we recently assisted the Town of Leesburg with an analysis of potential stormwater retrofits to meet their Phase III Chesapeake Bay TMDL requirements. Based on this analysis, WSP developed concept plans and pollutant reduction estimates for four stormwater facility retrofits. We also assisted the City of Falls Church with the identification and prioritization of 10 stormwater management projects as part of their Watershed Management Plan. The planning process involved the development of a master list of problem areas/retrofit opportunities and the design of an innovative scoring system that allowed a citizen stakeholder group to make decisions about projects based on their cost-effectiveness to meet local safety/flooding concerns and the Chesapeake Bay TMDL.

In addition, WSP specializes in the design and construction of urban stream restoration. We are proud that this work includes projects in the Town of Vienna. Stream restoration provides a unique opportunity to achieve multiple ecological and structural project objectives while also achieving Chesapeake Bay TMDL water quality credit. Our approach to urban stream restoration uses natural channel design principles to achieve long-term, self-maintaining stable streams. Locally, we have staff who have completed Rosgen (Levels 1-4) short courses, North Carolina State University workshops, and Natural Resources Conservation Service (NRCS) streambank stabilization and restoration courses. Additionally, our staff have executed hydraulic analyses using a combination of HEC-RAS 1-D/2-D and Sediment River Hydraulics (SRH) 2D to evaluate discharge and sediment transport relationships for existing conditions and proposed solutions.

WSP is frequently retained to provide construction oversight support services for our clients to ensure that projects are built according to the plan and specifications.

WSP staff conducting dry weather outfall screening.

The following is a representative sample of our local design experience. All projects were managed through our Northern Virginia office.

WSP Recent and Ongoing Stream Restoration Design Projects

- ✓ **Sugarland Run, Herndon, VA (1,250 LF):** Priority I restoration using cross vanes, j-hooks, log-vanes, riffle pool sequences, and, root wads; construction oversight. Construction completed in 2023.
- ✓ **Bear Branch, Vienna, VA (1,315 LF):** Stream restoration using cross vanes, log-vanes, riffle pool sequences, and, root wads; public outreach, developed specifications and will provide construction oversight.
- ✓ **Big Rocky Run, Fairfax, VA (2,500 LF):** Priority I restoration using cross vanes, j-hooks, log-vanes, riffle pool sequences, boulder cluster grade control, root wads, and off-line wetlands; construction oversight.
- ✓ **Tuscarora Creek, Leesburg, VA (2,377 LF):** Priority II restoration using cross vanes, constructed riffles and pools, j-hooks, toe wood, riparian corridor; public outreach; CEI services. Construction completed in 2021.
- ✓ **Meetinghouse Creek, Joint Base Andrews, MD (1,600 LF):** Three separate reaches; removed existing concrete channel; cross vanes, constructed riffles, imbricated walls, and step pool systems; full time construction oversight.
- ✓ **Strawberry Run, Alexandria, VA (829 LF):** Priority II restoration, complete channel realignment based on tree survey; runs through an existing park; constructed riffles, cascades, pools, toe wood, and step pool outfalls; public outreach.

- ✓ **Piney Branch Vienna, VA (1,400 LF):** Severely degraded entrenched system; drainage over one square mile of impervious area; cascades, toe wood, rock toe, constructed riffles with wood, log vanes, and slit trenches; public outreach; construction oversight services; prepared winning SLAF submission. Construction completed in 2021.
- ✓ **Hunters Branch, Vienna, VA (2,000 LF):** Severely degraded non-sinuous channel section running parallel to existing roadway; performed geomorphic assessment and conceptual designs; public meetings for stakeholder input.
- ✓ **Bear Branch, Vienna, VA (1,900 LF):** Two separate stream reaches that run through a neighborhood and park area; helped prepare winning SLAF submission.
- ✓ **City of Alexandria Phase III Stream Assessment:** Field assessments; data collection; existing nutrient and sediment loadings; BANCS modelling; channel classification and investigation; project decision matrix development; conceptual designs; planning level cost estimates; SLAF grant submittal applications; meetings with stakeholders; development of a technical feasibility study report.

WSP Recent and Ongoing Stormwater Design Projects

- ✓ **Runnymede Park, Herndon, VA:** Two bioretention ponds; one tree box filter; vegetated swale.
- ✓ **Herndon Golf Course, Herndon, VA:** Extended detention pond with lowland marsh, principal and emergency spillway, plantings in low flow area.
- ✓ **Kohl's Pond, Leesburg, VA:** Convert existing pond into water quality facility by adding orifice plate to structure, adding a peninsula to increase the flow path.
- ✓ **Greenway Pond, Leesburg, VA:** Two off-line constructed wetlands with five different zones, landscaping, and wetland plantings, forebays, diversion channels.
- ✓ **Foxridge Pond, Leesburg, VA:** Realigned existing low flow channel, forebays, peninsulas; demolished and installed new structure for extended detention.
- ✓ **Exeter, Leesburg, VA:** Increased water quality in existing wet pond through creation of forebay and expanded footprint; retrofit to existing riser structure.
- ✓ **I-95 Landfill Basin 20, Fairfax, VA:** Replaced failed riser structure and reconfigured to provide increased resonance time; added floating wetlands to water quality enhancement and to promote settling.
- ✓ **I-95 Landfill Basin 22, Fairfax, VA:** Replaced deteriorating riser structure; increase pond capacity; increase water quality by creating a sediment forebay at the main outfall into the basin.
- ✓ **I-95 Landfill Basin 23, Fairfax, VA:** Installed floating baffles to increase resonance time to promote improved water quality.

Piney Branch Stream Restoration in Vienna, Virginia.

- ✓ **American Yeast Pond, Baltimore, MD:** Modified the existing pond to increase the treatment capacity for compliance with the site's industrial stormwater permit.
- ✓ **Cardinal Glen, Loudoun, VA:** Designed an ephemeral stable channel section to capture runoff and prevent downstream flooding.
- ✓ **Ridings and Blue Spring, Loudoun, VA:** Repaired existing concrete weir wall where erosion has occurred due to beaver activity; geotechnical investigation and repair designs developed for structure tie-into embankment.
- ✓ **Yorktown Court, Loudoun, VA:** Converted existing detention basin into extended detention; removed riser and existing barrel and design concrete weir wall.
- ✓ **Belle Terra and MD 1745, Loudoun, VA:** Converted a dry pond into a constructed wetlands and wet ponds; developed SLAF grant submissions and conceptual designs.

WSP Recent and Ongoing Outfall Stabilization and Regenerative Conveyance Projects

- ✓ **Loftridge, Fairfax, VA (200 LF):** Ephemeral headwater restoration; 15 grade control structures; underdrain system; riparian corridor; full time construction oversight.
- ✓ **Red Fox, Fairfax, VA (170 LF):** Nine grade control structures; stepped weirs and constructed riffles; riparian corridor; construction oversight.
- ✓ **Miller Heights, Fairfax, VA (255 LF):** Eleven grade control structures; stepped weirs; constructed riffles; step pool system; riparian corridor; full time construction oversight.
- ✓ **Inverchapel Road, Fairfax, VA (130 LF):** Five cross vanes; step pool system; riparian corridor.
- ✓ **Pelham's Trace, Fairfax, VA (160 LF):** Four grade control structures; stepped weirs; splash pads with reinforced bed mix; riparian corridor.
- ✓ **West Drive, Fairfax, VA (50 LF):** Stepped pool system with four cross vanes, riparian plantings
- ✓ **Four Mile Run Levee, Alexandria, VA:** Seven outfall repairs to stabilize existing pipe and headwall infrastructure; 150 LF of imbricated wall to protect embankment.
- ✓ **Lenox Drive, Fairfax, VA (100 LF):** Eight grade control structures; step pool systems; riparian corridor; construction oversight.
- ✓ **Peppercorn Drive, Fairfax, VA (50 LF):** Manhole drop structure; two grade control structures; step pool system; riparian corridor; construction oversight.
- ✓ **Town Branch, Leesburg, VA (60 LF):** Stacked imbricated wall to protect severely eroded embankment along Town Branch.

Miscellaneous Activities

WSP and WSSI have the capability to support the Town with all miscellaneous activities cited in the RFP. Both companies have robust teams of environmental scientists that can provide the full range of field support activities, including wetland delineations, stream assessments, and environmental permitting. WSP has extensive experience with stormwater management facility inspections, while WSSI has the capability to perform physical maintenance of stormwater management facilities. This includes, but is not limited to, sediment and trash removal, re-grading to original design specifications, and invasive plant management.

Finally, WSP is adept at providing regulatory permit assistance and representation. For example, WSP team members were actively involved in negotiating Fairfax County's 2023 Phase I MS4 permit. WSP also worked on behalf of the Town of Vienna to resolve a permit issue with DEQ regarding whether the Town had to develop a local bacteria TMDL action plan for Accotink Creek. WSP negotiated with DEQ and secured additional time for plan development through a Compliance Agreement. WSP worked with DEQ during both audits of the Town's MS4 program to respond to DEQ audit findings and develop corrective action plans.

Town of Vienna, Virginia

Draft Phase III Chesapeake Bay TMDL Action Plan

September 27, 2023 – DEQ Submittal

Town of Vienna
Department of Public Works
127 Center Street, South
Vienna, Virginia 22180

Prepared with assistance by:
WSP USA Earth & Environment
Chantilly, Virginia

Specific Town of Vienna Experience

WSP has been privileged to work with the Town since 2011 to meet its compliance and environmental stewardship needs. In addition to the general experience provided in the previous section, WSP has successfully supported the Town with the following projects under the current contract:

- Update of the Town's MS4 Program Plan
- Preparation of the Town's MS4 annual reports for submittal to DEQ
- Re-registration of the Town's MS4 permit in 2023
- Annual pollution prevention training (in person and online video)
- Police spill response training (online video)
- Annual dry weather stormwater outfall screening for potential illicit discharges
- Update of the Town's MS4 service area map
- Update of the Northside Property Yard SWPPP
- Development of the Nutley Street Maintenance Yard SWPPP
- Preparation of the final Phase II and draft Phase III Chesapeake Bay TMDL Action Plan
- Update of sediment and bacteria TMDL action plan for Accotink Creek and Difficult Run
- Preparation of the Accotink Creek chloride TMDL action plan
- Update of good housekeeping standard operating procedures for municipal operations
- Update of the Town's Illicit Discharge Detection and Elimination (IDDE) Plan
- Assistance with investigation of stormwater management options for outdoor residential living spaces, including a presentation to Town Council
- Assistance with preparation and response to a state MS4 permit audit in 2020
- Preparation of Stormwater Local Assistance Fund (SLAF) grant applications

Success Stories

WSP continuously strives to bring additional value to our clients in all aspects of our work. We are particularly proud of our work with the Town of Vienna. Below are a few highlights of our work with the Town.

Innovative Technology

In response to our client's needs, WSP developed a customized mobile app to expedite the dry weather screening that must be performed annually under the MS4 permit. The Town of Vienna was the impetus for the use of this technology. The mobile app was built to capture and link field photography and GPS coordinates to each outfall location, along with full quantitative characterizations of multiple flows and physical indicators. The mobile app was built with skip and relevance logic so only the applicable attributes are presented to the field inspectors and one response/categorization influences the next set of questions and prompts. This saves the inspector time and makes the field process more efficient.

WSP has also recently developed a BMP inspection mobile application for the Town of Herndon and is compiling data for the Town of Leesburg to create a similar mobile application. For Fairfax County, WSP has developed a dashboard to track NMPs on over 1,000 playing fields and is currently developing an ESRI Field Maps work order system for the County's Operation Stream Shield program.

Regional TMDL Coordination

The MS4 permit requirement to meet specific pollutant reductions in accordance with the Chesapeake Bay TMDL by 2028 represents a significant challenge to not only the Town, but all MS4 localities in Virginia. Working with Fairfax County, WSP helped to facilitate a unique regional approach that allows the Town to meet those reductions in a much more cost-effective manner. After the County implemented a locality-wide Stormwater Service District Fee, a state law was passed that would have exempted the Town from the fee. However, recognizing that a regional approach to TMDL compliance would be mutually beneficial to all residents of the County, WSP worked with the County and the towns of Vienna and Herndon to develop a regional memorandum of agreement (MOA). The MOA provides that the County will implement and pay for stormwater projects using the fee, and that both of the towns receive credit for those projects regardless of their actual location. As a result, Vienna receives 3.5% credit for any project funded by the fee. Thanks in large part to this regional cooperation, the Town of Vienna has now exceeded its Chesapeake Bay TMDL pollutant reduction targets (136% for nitrogen and 278% for phosphorus).

Grant Funding

At WSP we understand the pressure that local governments are under as they deal with the cost of implementing new stormwater infrastructure and stream restoration projects. When the Town identified stream restoration as a local priority, WSP worked with Vienna to develop applications for state Stormwater Local Assistance Fund grants. These efforts resulted in successful SLAF grant awards to the Town of $825K for Piney Branch in 2017 and $1.02M for Bear Branch in 2019.

Future Challenges and Opportunities

Much of the work under the Professional Environmental Services contract will be a continuation of the Town's current MS4 program. This includes ongoing MS4 permit work, dry weather outfall screening, and annual reporting to DEQ. It will also include updating Town documents to reflect the new MS4 permit issued to the Town in 2023. Documents include the MS4 program plan, the final Phase III Chesapeake Bay TMDL Action Plan, local TMDL action plans for Accotink Creek and Difficult Run, SWPPPs for Northside Property Yard and Nutley Street Maintenance Yard, and the Illicit Discharge Detection and Elimination Plan.

In addition to this ongoing work, the new MS4 permit will require several new initiatives:

- Submit a geodatabase or shapefiles containing mapping and other data about the stormwater system to DEQ by November 1, 2025.
- Update and implement procedures relating to the application of anti-icing and deicing agents by November 1, 2025.
- Develop and implement pollution prevention standard operating procedures relating to renovation and significant exterior maintenance activities by November 1, 2026.
- Develop written procedures for inspection and maintenance of ecosystem restoration projects (stream restorations) by November 1, 2026.
- Implement ecosystem restoration inspection and maintenance procedures no later than November 1, 2028.

A further challenge will be complying with the requirement to adopt a consolidated Virginia Erosion and Stormwater Management Act (VESMA) ordinance no later than July 1, 2024 as required by the Code of Virginia. The consolidated ordinance will replace the Town's current erosion and sediment control ordinance and stormwater management ordinance and is meant to streamline the plan review and implementation process. While DEQ has developed a model ordinance for consideration of adoption by affected localities, it will be important to ensure that any ordinance adopted by Town Council includes more stringent requirements adopted by the Town that go beyond state minimum standards. WSP has corresponded with the Town Attorney on potential ways to ensure compliance by July 1, while also allowing for time to better customize the consolidated ordinance for the needs of the Town.

Finally, as the Town's stormwater program matures, stormwater management infrastructure will require maintenance. This includes ensuring that Town stormwater BMPs receive maintenance in a timely manner after an inspection identifies a deficiency. Maintenance of public BMPs has been a focus of recent MS4 program audits by DEQ. However, perhaps more challenging is to ensure that private BMPs are inspected and maintained in accordance with their maintenance agreements. While most private property owners will submit inspections and perform maintenance as required, it is likely that some property owners will not. In these cases, the Town may

be in the position of taking responsibility for inspection and any follow up maintenance. WSP has extensive experience with inspecting private BMPs, while WSSI brings the capacity to perform needed maintenance should that be required.

Perhaps the most exciting opportunity for the Town is to take advantage of funding for stormwater and floodplain projects under the Virginia Community Flood Preparedness Fund, which is administered by the Virginia Department of Conservation and Recreation. This program provides grant funds for resilience capacity building, planning, and projects. WSP worked with Loudoun County to develop a Loudoun County Resilience Plan (approved by DCR in April 2022), which makes the County eligible to apply for capital funding. In addition, WSP developed a grant application for the Town of Leesburg to develop a Stormwater and Flooding Resilience Plan. In March 2024, the Town was informed that it has been awarded $1.7M for the plan. Nearly $54M was released for the most recent round of projects under the fund, with an additional round expected later in 2024. WSP would be thrilled to work with the Town to develop a strategy for leveraging the Virginia Community Flood Preparedness Fund.

Conclusion

We are committed to the success of the Town. Period. WSP has brought together a strong and talented project team that has all the skills necessary to meet and exceed RFP expectations. At the heart of this success is open and consistent communications. The project manager, David Bulova, works very closely with his local government clients to make sure he understands and can anticipate the types of support they need. He is then able to effectively lead the project by implementing WSP's integrated project management system that outlines project objectives and deliverables, assigns appropriate staff to the right tasks, and links with a comprehensive work plan, communication plan, financial management plan, and health and safety plan for the project to ensure we deliver the high-quality product expected.

Our success is demonstrated by our on-going stormwater management and environmental services contracts with numerous local government clients – most important of which is the Town of Vienna.

Section 2
Team Identification and Organization Chart

Team Identification and Organization Chart

Environmental Professional Services work for the Town of Vienna will be managed and substantially performed by staff from WSP's Herndon, Virginia office. The Herndon office is home to over 60 staff who support work in stormwater permit compliance, field work, water quality monitoring, site inspections, engineering design and construction, GIS mapping, operational assistance, and policy and ordinance development, and other general program support. The following information is requested in the RFP:

Firm Name	WSP USA Environment & Infrastructure, Inc. (WSP), WSP USA Headquarters, New York, New York
Firm Type	Corporation
Local Project Office	13530 Dulles Technology Dr #300, Herndon, VA 20171
Primary Contact	Matthew Breen, PE, CFM, Vice President Email: matt.breen@wsp.com; Mobile: 703-725-7923
Local Project Manager	David Bulova, Project Manager Email: david.bulova@wsp.com; Mobile: 703-220-4934
Firm Name	Wetland Studies and Solutions, Inc. (WSSI), WSSI Headquarters, Gainesville, VA
Firm Type	C-Corporation (VA)
Local Project Office	5300 Wellington Branch Dr #100, Gainesville, VA 20155
Primary Contact and Local Project Manager	Jason Beeler, PWS, CPESC, CESSWI, CISEC, ISA Certified Arborist MA-5442A, TRAQ, Manager Ecosystems Restoration Email: jbeeler@wetlands.com; Mobile: 571-643-9384

In addition to the main project office in Herndon, WSP has over 300 offices in the United States. Staff from other WSP offices may be called in when there is a specific need for additional or specialty services.

WSP Project Team

The following section identifies the lead project personnel and their main roles on the Town's Environmental Professional Services contract. Each professional has a specific skill that complements WSP's overall team approach. However, each of these individuals work across disciplines and will provide their expertise on various aspects of the project. Full resumes of all the proposed key team members shown in the Organizational Chart are provided in Section 3.

Project Manager

David Bulova will continue to serve as Project Manager. In that role, he will be the main point of contact for the Town and ensure that the right staff are assigned to specific task orders. David will also lead the Environmental Services/MS4 Compliance team. David has worked with the Town since 2011 and has been the task manager for numerous projects, including the development of the MS4 Program Plan, the Chesapeake Bay TMDL Action Plan, and the Northside Property Yard and Nutley Street Maintenance Yard SWPPPs. He has a strong working relationship with other localities in the region as well as state regulators. In addition to his MS4 experience, David has experience with NPDES stormwater industrial permit implementation, watershed planning, program development and strategic planning, and stormwater funding feasibility studies. He also has extensive experience facilitating both small and large stakeholder groups and presenting before elected officials. He has served as an instructor on effective public communications for the Engineers and Surveyors Institute.

WSP Organizational Chart

Project Manager
David Bulova*

Senior Reviewers
Elizabeth Treadway, PWLF*
Matt Breen, PE, CFM*

Environmental Services/ MS4 Compliance
Lynne Mowery, PE, CFM*
David Bulova*
Ilana Ton*
Christina Davis
Parthenia Gibson
Anna Allie

Engineering and Construction Management
Aaron Jordan, PE*
Troy Biggs, PE, PH, D. WRE*
Seehoon Lee, PE
Shuang Gao, PE
John Humpton, EIT

Field, GIS, and Other Miscellaneous Services

WSP
David Sarr, PE*
Pam Robertson, PE
Luke Clark, PG*
Alexandra Hunt*
Swetha Konduru, PE, CFM
David Cooper, GISP, CF

WSSI
Surveying
Permitting
BMP Maintenance

Project Team Key
* Key Personnel resumes included, others available on request

Senior Review Team

Elizabeth Treadway, PWLF, and Matt Breen, PE, CFM will serve as Senior Reviewers. Elizabeth is a principal at WSP and has over 37 years of experience including the management of local government services in stormwater management and financing, transportation planning, public transit operations, solid waste management, fleet operations, and other public works programs. Her technical expertise includes planning, public policy, permit development and negotiation, cost and benefit analysis, management, scheduling, and implementation of a wide variety of public works initiatives. Prior to joining WSP, she was the Public Works Director for the City of Greensboro, North Carolina. Matt has over 20 years of experience in the water resources engineering field and currently serves as WSP's Herndon Water Resources Department Manager. He assists municipalities with watershed planning and Chesapeake Bay TMDL compliance efforts and has extensive experience with hydrologic and hydraulic modeling. He has provided engineering oversight for many of WSP's local stormwater engineering projects.

Environmental Services/MS4 Compliance Team

David Bulova will continue to serve as the lead on overall Environmental Services/MS4 Compliance Team. He will be supported by Lynne Mowery, PE, CFM, Ilana Ton and Christina Davis. Lynne is a Professional Engineer in Virginia with over 30 years of experience. Since joining WSP in 2001, she has been responsible for successfully managing a wide range of stormwater planning and engineering projects. Her primary areas of expertise are MS4 permit planning and implementation, watershed planning, stormwater program development and management, green stormwater infrastructure design, stream restoration design, stormwater management facility design, stormwater funding studies, and stream assessments. She is currently a project manager for MS4 related services in Fairfax County, Prince William County, and Stafford County.

Ilana Ton will provide inspection and GIS support. Ilana has been supporting the Town's dry weather screening since 2021 and is very familiar with the Town. Christina Davis will provide GIS support and has supported GIS mapping and TMDL development for the Town.

Engineering and Construction Management

Troy Biggs, PE, PH, D. WRE will continue to serve as the lead for Engineering and Construction Management. Troy has extensive experience in the design of low impact development/stormwater best practices, stream restoration, floodplain analysis, hydraulic/hydrologic watershed analysis, and construction site management. He is the leader of the Engineering Design group in the Herndon office. Troy has completed Rosgen Levels I through IV training for stream restoration and has applied this knowledge on several projects in Virginia, including the Bear Branch, Piney Branch and Hunter's Branch restoration projects in Vienna. Troy will be supported by a strong team of engineers, including Aaron Jordan, PE and Seehoon Lee, PE.

Aaron Jordan is an engineer with a broad base of civil, water resouces and geotechnical engineering experience. He has a decade plus in serving as a project engineer/manager for industrial and municipal clients with an emphasis in stormwater and site civil design. More specifically, Aaron's experience includes municipal and industrial site civil stormwater and erosion control design. His municipal design experience includes stormwater best management design plans and supporting computations to obtain state and local construction approval permits.

Field, GIS and Other Miscellaneous Services

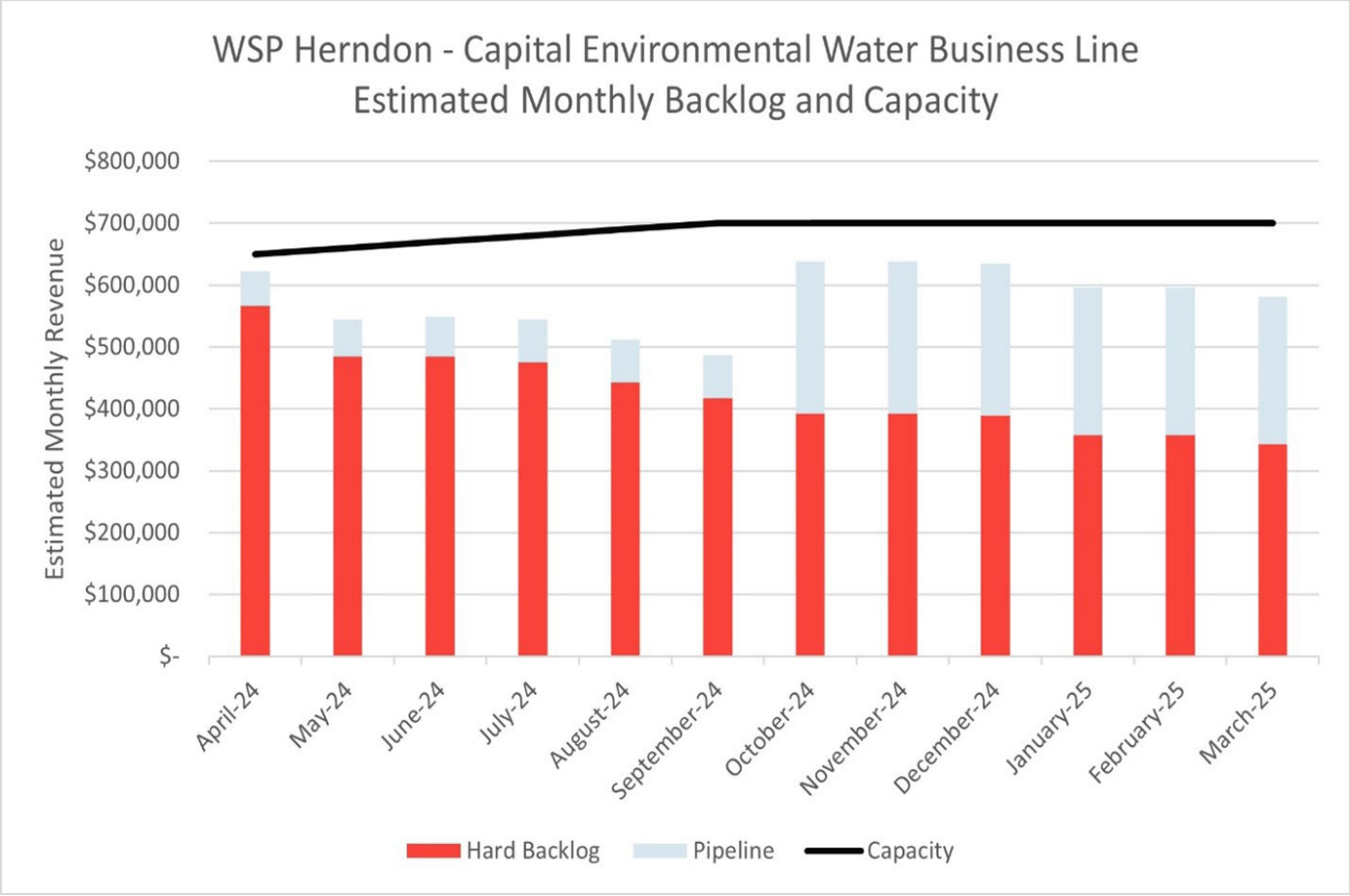
David Sarr, PE will serve as the lead for the Field, GIS and other Miscellaneous Services. David specializes in soil and groundwater investigation and remediation and managing contaminated soil and groundwater during brownfields redevelopment. David has 30 years of professional experience in industrial and hazardous waste investigation and remediation, and 4 years' experience in potable water supply, treatment, and distribution. His fields of technical expertise include environmental characterization, feasibility studies, soil and groundwater remediation, contaminant fate and transport, and hazardous building materials.

Section 3
Team Description, Experience and Accomplishments

Team Description, Experience, and Accomplishments

This section contains the qualifications of the Project Manager along with resumes of key staff who will be assigned to the Town of Vienna.

The current workload of our office Environmental Water Business Line is shown in the table below. Current contracted services are reflected in the hard backlog for municipal stormwater clients and federal and state floodplain clients. The pipeline reflects current task order and other proposal opportunities in process. A new FEMA Production Technical Services task order is anticipated in October 2024 and reflected in the pipeline amount.



David Bulova
Project Manager

Firm Name
WSP

Years of Experience
Industry: 32 (1992)

WSP: 22 (2002)

Education
BA, Government, College of William and Mary, 1991

Fellow, Sorensen Institute for Political Leadership, University of Virginia, 1997

MPA, Public Administration, Virginia Tech, 1996

Office Location
Herndon, Virginia

Career Summary

David has extensive experience in all facets of water resources regulatory compliance and program development. Prior to joining WSP, he served as the Director of Environmental Services for the Northern Virginia Regional Commission. His primary areas of technical expertise include NPDES MS4 Phase I and Phase II permit planning and implementation, NPDES stormwater industrial permit implementation, SWPPP development, TMDL action plan development, watershed planning, program development and strategic planning, and stormwater program funding studies. David is experienced in facilitating stakeholder groups and presenting before elected officials. He has presented to the Environment Virginia Symposium, the Virginia Association of Municipal Stormwater Agencies, and the Metropolitan Washington Council of Governments. He recently served as an expert consultant to the U.S. EPA's Environmental Finance Advisory Board.

Professional Experience

Town of Vienna, Environmental Professional Services, Vienna, Virginia
Project Manager/Task Manager for all aspects of MS4 compliance, including permit preparation, annual reporting, SWPPP development, dry weather outfall screening, Chesapeake, sediment, bacteria, and PCB TMDL action plans, VSMP compliance, ordinance development, development of standard operating procedures, and annual training for Town personnel. Assisted with preparation for two DEQ audits of the MS4 program. Oversaw development of a conceptual plan for structural and layout improvements to the Town's Northside Property Yard to reduce the potential for equipment and materials to become sources of pollution.

Town of Herndon, Stormwater Management Program Services, Herndon, Virginia
Project Manager/Task Manager on all aspects of MS4 compliance, including permit preparation, annual reporting, SWPPP development, dry weather outfall screening, Chesapeake TMDL action plan, VSMP compliance, ordinance development, development of SOPs, and annual training for Town personnel. Oversaw development of a Spill Prevention, Control, and Countermeasures (SPCC) plan for the Town's Public Works Complex fuel station.

Leesburg Executive Airport, NPDES Industrial Stormwater Permit Support Services, Leesburg, Virginia
Project Manager/Task Manager for all facets of NPDES industrial stormwater permit compliance. Developed the original registration statements and SWPPPs for Leesburg Executive Airport and Leesburg Water Pollution Control Facility (WPCF). Coordinated multiple permit renewals and SWPPP updates for both facilities. Annual compliance activities for Leesburg Airport include mapping, annual training, and semi-annual stormwater quality sampling. Facilitated a no-exposure certification for the WPCF, which resulted in the termination of the industrial permit in 2019.

Town of Leesburg, MS4 Support Services, Leesburg, Virginia
Project Manager/Task Manager for all facets of MS4 compliance. Task orders have included the Town's MS4 registration statements, the initial MS4 program plan and subsequent updates, assistance with annual reporting, development of a new Stormwater Management section to the Town Code to meet VSMP requirements,

David Bulova
Project Manager

presentations to Town Council on the impacts of the Chesapeake Bay TMDL, the Town's MS4 boundary and outfall tables in GIS, nutrient management plans, ongoing maintenance of stormwater retrofit facilities and a stream restoration project, and Chesapeake Bay and Goose Creek TMDL action plans. Prepared successful Stormwater Local Assistance Fund grant applications for three stormwater retrofits and a 2023 grant submittal under the Community Flood Preparedness Fund (status pending).

Loudoun County, Chesapeake Bay and Local TMDL Planning Services, Loudoun County, Virginia
Task Manager for the County's final Phase II and draft Phase III Chesapeake Bay TMDL Action Plan and an update of the County's Comprehensive Local TMDLs Action Plan, including two sediment and two bacteria TMDLs. Task Manager for the development of the Loudoun County Resilience Plan, which was approved by DCR and makes the County eligible to apply for Community Flood Preparedness Fund grants.

Fairfax County, MS4 and Stormwater Monitoring Program Support Services, Fairfax County, Virginia
Task Manager/Lead Facilitator providing MS4 Phase I services to Fairfax County. Led development of the planning process adopted by the County to address elements of the MS4 Phase I permit, led the public outreach process for updating the County's stormwater ordinance to comply with VSMP requirements, and facilitated the development of a memorandum of understanding with the towns of Herndon and Vienna to share credit for stormwater projects implemented under the County's Stormwater Service District Fee. Task Manager for the County's Chesapeake Bay TMDL Action Plan and Public Education and Outreach Plan.

City of Falls Church, Watershed Management Plan and Stormwater Funding, Falls Church, Virginia
Project Manager for the development of a comprehensive stormwater management plan for the City of Falls Church. Project elements included an extensive public input and facilitation process, stream characterization using the Rapid Stream Assessment Technique (RSAT), assessment of watershed management alternatives, regulatory and policy analysis, and funding options. After the City Council accepted the recommendation to develop a stormwater utility, assisted with final billing rate, implementing ordinance, and credit policy.

Howard County, Watershed Protection Fee Development and Implementation, Howard County, Maryland
Project Manager for assessment and development of a stormwater utility fee in Howard County. Included all phases of utility development, including stakeholder-based feasibility study, mapping of impervious surface areas, and development of the master account file (MAF) for billing purposes. Assisted with development of implementing ordinance and incentive and credit policies. Continue to assist the County with annual updates to the MAF and development of the billing file.

City of Allentown, Stormwater Utility Fee Implementation and MS4 Permit Assistance, Allentown, Pennsylvania
Lead Facilitator assisting with the implementation of a stormwater utility fee for Allentown, Pennsylvania. Designed and facilitated the stakeholder involvement process for developing the green infrastructure credit and incentive policies. Developed the draft utility implementation ordinance and staff report to City Council. Assisted with the City's response to a draft MS4 Phase I permit renewal released for comment by EPA Region III. Task Manager for updating and consolidating the City's stormwater management ordinance.

Elizabeth Treadway, PWLF

Senior Reviewer

Firm Name
WSP

Years of Experience
Industry: 37 (1987)

Education
BA, Political Science, University of Hawaii

MS, Graduate Studies, Finance, George Washington University

Institute of Government, Graduate Municipal Administration, University of North Carolina

Professional Memberships
Member, American Public Works Association

Office Location
Herndon, Virginia

Career Summary

Elizabeth has over 37 years of experience in water resource management with 16 years directly managing governmental environmental programs for public works operations. Her technical expertise includes permit planning and regulatory compliance, permit audit preparation and response support, program analysis, management, scheduling, and implementation of public works services.

She specializes in MS4 program development and permit assessment, regulatory compliance, strategic planning, financial analysis, and organizational policy. She served on behalf of the American Public Works Association as a Phase 2 MS4 national trainer. She led a successful strategy for developing permit documents, education materials, model ordinance, and inspection programs. She began her career in local government as a transportation planner.

Since joining the firm in 1999, Elizabeth has worked with municipalities, counties and State DOTs across North America on stormwater and water resource management MS4 permits including program reviews, organizational alignment, permit negotiation, management structure and staffing, infrastructure asset capital planning and financing strategies.

Professional Experience

Fairfax County, MS4 Phase I Compliance, Fairfax County, Virginia

Project Director in the renegotiation of Fairfax County's MS4 Phase I permit. Assisted County staff in preparation for a U.S. EPA audit of its stormwater program. In addition to ensuring that client relationships are strong and Wood performance meets or exceeds expectations, provides consultation services on critical County policy, working directly with County leadership on issues that include support in TMDL strategies, organizational alignment, permit reporting, program development and audit response, water quality monitoring, structural and source controls, database management for permit tracking, and other elements of the MS4 program.

Fairfax County , Public Agency Program Management, Fairfax County, Virginia

At the request of the client, served as the County's Assistant Public Works and Environmental Services Director for Stormwater, working directly in the County government offices, leading two operating divisions, and building a new program of services. Provided operational oversight for the stormwater program, served on the Department Leadership Team, interacted with the Board of Supervisors, and developed budgets and CIP plans.

Fiarfax County, Stormwater Business Plan, Fairfax County, Virginia

Project Director and Financial Analyst for the County's 2017 Stormwater Business Plan. The Business Plan was developed through a complete analysis of operations, capital project planning, financial sufficiency, and permit compliance. Developed a 10-year financial forecast, capturing staffing needs, operations, and capital plan costs, including the development of scenario analysis tools to assist in long-range planning.

City of Charlottesville, Water Resources Protection Program and Funding Strategy, Charlottesville, Virginia

Technical Director for the creation of a long-range strategy for improvements in

Elizabeth Treadway, PWLF *(continued)*
Senior Reviewer

stormwater management for the City of Charlottesville, including the implementation of a new funding strategy through the charging of user-fees. Provided program direction, policy development, community outreach support, and overall project leadership for the creation of a five-year program plan and user-fee structure, including the development of a rate structure and rate analysis.

City of Falls Church, Watershed Management Plan and Stormwater Funding, Falls Church, Virginia
Senior Technical Lead for the financial analysis for implementing a new stormwater utility fee. Responsible for the completion of rate and cash flow models.

Matt Breen, PE, CFM

Senior Reviewer

Firm Name
WSP

Years of Experience
Industry: 23 (2001)

WSP: 20 (2004)

Education
BS, Civil Engineering, Virginia Tech

Professional Registrations
Professional Engineer: VA, MD, DE

ASFPM Certified Floodplain Manager (CFM)

Office Location
Herndon, Virginia

Career Summary

Matt has over 23 years of experience in the water resources engineering field. He is currently serving as the Water Resources Team Lead for the Capital Region and based out of WSP's Herndon office. The Team consists of three groups, including: Stormwater Planning, Hydrology/Hydraulics, and Water Technology. In total, there are 20 engineers, GIS analysts and planners in the branch supporting dozens of municipalities with MS4 Program Planning, Chesapeake Bay TMDL Compliance, stormwater utility feasibility assessments and implementation, floodplain modeling and mapping, and risk identification/planning. In addition to Matt's broad NFIP experience, his work with municipal stormwater departments has spanned two decades and includes watershed planning, TMDL compliance, Hydrologic and Hydraulic modeling, and design support.

Professional Experience

FEMA, FY22 FEMA Region 3 Task Order, Herndon, Virginia

Task Order Manager, manages execution of $11.6M production task order containing including discovery, outreach, data development, preliminary issuance and post preliminary processing for over 60 FEMA Risk MAP projects throughout Region 3 (includes Pennsylvania, Delaware, Maryland, Virginia, West Virginia and Washington D.C.) Coordinates Joint Venture partners supporting the task order, performs high-level review of certain deliverables, client meeting preparation and logistics, projects progress tracking, and financial reporting entire portfolio.

Town of Vienna, Floodplain Review Support, Vienna, Virginia

Project Manager and Senior Engineer supporting Town staff with review of floodplain studies at 116 Fardale, 311 Ayito and 801 Follin. Wood staff performed field visits and detailed review of submittals to the Town including: FEMA background, Hydrology, Hydraulics, compliance with Fairfax County Public Facilities Manual, Floodplain Mapping, etc. Wood generated comments for the applicant(s), met with Town staff to discuss comments, and coordinated on an ad-hoc basis with applicants on unresolved issues. In addition. Wood reviewed FEMA's draft Special Flood Hazard Area update for the Town of Vienna and identified unmapped locations and other inconsistencies. Wood worked closely with Town staff to help usher applicants through the process while making sure to comply with existing ordinance and mimize future complications with FEMA's Flood Insurace Rate Maps which are being updated.

Selma Estates Floodplain Analysis and Mitigation Alternatives Assessment, Loudoun County, Virginia

Quality Assurance Lead for detailed flood study and mitigation alternatives assessment. A recently developed neighborhood contains over a dozen homes that have experienced multiple significant flooding events in the last 5 years. These flooding events resulted in damage to residential structures as excessive runoff forced its way through the windows and doors and into basements of residences. The project site was impacted by underlying karst features and alterations to the natural channel, and the severity of flooding had become a source of public attention. To better simulate the multidirectional flooding occurring in the politicized area, Wood developed a detailed HEC-RAS 2D hydraulic model. In

Matt Breen, PE, CFM *(continued)*
Senior Reviewer

addition to the existing conditions model, Wood also investigated mitigation alternatives, including: a berm, a storage pond, upsized culverts, and a buyout plan of the affected properties. Wood also facilitated the collection of LiDAR data, field survey, Lowest Adjacent Grade (LAG) data collection, and a geophysical survey. Results were delivered in the form of a comprehensive technical report and were presented to the Loudoun County Board of Supervisors in a board meeting and to the affected homeowners in a local community meeting. Wood is supporting the County with an ongoing LOMR submittal to establish more accurate regulatory water surface elevations and allow residents to pay premiums more closely aligned with their risk.

ALERT - GIS and Spreadsheet Tools for Evaluating TMDL Compliance, Multiple Northern Virginia Jurisdictions
Project Manager Research and development project manager to build GIS software to help Municipal Separate Storm Sewer System (MS4)-permitted communities plan for compliance with the Chesapeake Bay TMDL. These tools help stormwater planners and elected officials understand and visualize what will be required for TMDL compliance. Using the ArcGIS Python API, the GIS tools let planners analyze realistic BMP scenarios by placing stormwater projects geospatially. Custom Excel spreadsheet tools estimate overall treatment and cost requirements at a multi-year program level. These GIS and spreadsheet tools are used together to help develop realistic engineering and financial plans for compliance with TMDLs. This custom toolset has been used to analyze Chesapeake Bay TMDL compliance for the Town of Leesburg, City of Alexandria, the City of Falls Church, the Town of Herndon, the Town of Vienna, and Fairfax County.

Lynne Mowery, PE, CFM

Environmental Services/MS4 Compliance

Firm Name

WSP

Years of Experience

Industry: 36 (1988)

WSP: 23 (2001)

Education

BS, Civil Engineering, Virginia Polytechnic Institute and State University, 1986

Professional Registrations

Professional Engineer, VA, No. 24297

Certified Floodplain Manager, US, No. US-08-03449

Professional Memberships

American Public Works Association

Association of State Floodplain Managers

Training and Certifications

Stream Assessment and Restoration Workshop, NC State University

Office Location

Herndon, Virginia

Career Summary

Lynne has extensive experience in water resources engineering with a focus on watershed planning, NPDES municipal separate storm sewer system (MS4) permit programs, stormwater design, stormwater funding studies, and hydrologic/hydraulic studies and restudies for flood hazard identification and mitigation. She has managed municipal stormwater and MS4 contracts ranging in value from $100K to $3M per year. Lynne has extensive project management experience throughout the mid-Atlantic on a variety of water resources projects, including watershed plans, green stormwater infrastructure design, stormwater management facility design, MS4 permitting support services, TMDL plans, stormwater funding studies and stream assessments.

Professional Experience

Fairfax County, Municipal Separate Storm Sewer System and Stormwater Monitoring Program Support Services, Fairfax County, Virginia

Manager of this annual contract to support the County in its stormwater, monitoring and TMDL compliance programs. Selected for three consecutive contracts since 2010. $3M/year maximum. Wood's support over a decade has enabled the County to build a robust MS4 program that has minimized the risk of non-compliance, built partnerships internally and with other jurisdictions, and resulted in cost savings for TMDL and MS4 compliance. Multiple task orders have been performed under this contract, including: development of GIS applications for Nutrient Management Plan Tracking and developing work orders for Operation Stream Shield stream cleanups; preparation of TMDL action plans; tracking of Chesapeake Bay TMDL compliance; and annual updates of MS4 mapping.

Prince William County, MS4 Program Support Services, Prince William County, Virginia

Manager of this task order contract to provide the MS4 permit support and stormwater monitoring services. Selected for two consecutive contracts. The contract includes the following tasks: wet weather monitoring; biological monitoring; MS4 mapping; and MS4 audit support.

Town of Herndon, Program Services, Herndon, Virginia

Senior water resources engineer on this task-order based contract for a variety of storm water services in the Town. Selected for four consecutive contracts since 2002. Projects performed under this contract include: Phase II MS4 permit support; stream stabilization and restoration plan; Runnymede bioretention facility design; Chesapeake Bay TMDL compliance support; Golf course stormwater pond retrofit; outfall and BMP inspection database development; stream assessments; BMP drainage area mapping. Currently performing assessments of BMPs throughout the Town to create a prioritized maintenance plan. Developed a BMP inspection tool in Collector.

Town of Vienna, Program Support, Vienna

Prepared PCB TMDL Action Plan and provided QA/QC review of MS4 annual reports. Supported Town in preparation for DEQ audit of its MS4 program, including mock audit and site visit to Public Works facility. DEQ inspection found no major problems with the Town's MS4 program.

Lynne Mowery, PE, CFM *(continued)*
Environmental Services/MS4 Compliance

Chesapeake Bay TMDL Action Plans, Loudoun County, Virginia
Participated in evaluation of pollutant reduction goals and performed QA/QC review of Chesapeake Bay and Local TMDL Action Plans. Update of MS4 mapping provided clarification to County on its pollutant reduction targets and associated costs.

City of Hagerstown, City Park Flood Study, Hagerstown, Maryland
Project manager that evaluated recurrent flooding in the City Park Area. Project included SWMM modeling of the storm drainage system including 2-D modeling of the flooding areas in the focus area.

Stafford County, Stormwater Engineering Services, Stafford County, Virginia
Managed this task order contract to provide the following services: mapping of the County's MS4 outfalls and service area; development of Chesapeake Bay TMDL Action Plan; and development of a Bacteria TMDL Action Plan. Provided support to the County in discussions with DEQ on the extent of the County's MS4 which led to approval of a smaller MS4 area than originally anticipated, significantly reducing the estimated cost of Chesapeake Bay TMDL compliance.

National Park Service, Chesapeake Bay Phase III Watershed Implementation Plan Support, Maryland, Virginia, Pennsylvania, D.C., West Virginia
Led team to evaluate NPS program to support pollutant reductions required by the Chesapeake Bay TMDL across the entire watershed. Evaluated stormwater project opportunities, documentation, and tracking of progress. Led team in development of BMP tracking tool in ArcGIS Online.

National Park Service, MS4 Support, George Washington Memorial Parkway, Clara Barton Parkway, Suitland Parkway, Baltimore Washington Parkway, Virginia and Maryland
Task manager that led tasks to support MS4 park units with compliance. Prepared stormwater training videos for staff with audio that were provided to staff through a video link during COVID-19. In Virginia, prepared a Phase II Chesapeake Bay TMDL Action Plan, Consolidated TMDL Action Plan covering bacteria and PCBs, and MS4 Annual Report. In Maryland, supported MS4 annual reporting, staff training, and public education through the NPS website.

Millcreek Township, Millcreek Township Pollutant Reduction Plan, Pennsylvania
Led team performing the following tasks: MS4 outfall identification; drainage area delineation to MS4 outfalls; evaluation of impervious areas and pollutant loading rates; existing pollutant load calculation; evaluation of BMPs; field visits to evaluate potential projects; development of Pollutant Reduction Plan; and NPDES MS4 permit application preparation. Careful parsing of the MS4 resulted in a 50% reduction in required pollutant reduction.

Ilana Ton

Environmental Services/MS4 Compliance

Firm Name
WSP

Years of Experience
Industry: 9 (2015)

WSP: 6 (2018)

Education
BS, Environmental Science, University of California, Riverside 2015

Professional Registrations
Virginia DEQ Stormwater Management Inspector, Certificate, No. SWIN2480

Professional Training and Certifications
OSHA 40 Hour HAZWOPER

CPR/AED

First Aid

Office Location
Herndon, Virginia

Career Summary

Ilana has eight years of professional experience in environmental consulting and stormwater management with an emphasis in water quality. Her experience in water quality monitoring includes scheduling and mobilizing staff to conduct monitoring, quality assurance and quality control review of sampling procedures and analytical laboratory data, and report writing. She held the responsibility of task lead for Phase I and Phase II MS4 sampling efforts. Her duties included developing and implementing Receiving Water Monitoring Plans (RWMP) and Quality Assurance Project Plans (QAPP), conducting water quality monitoring for surface and stormwater, and serving a project management role for the Phase II Small Municipal Separate Storm Sewer Systems (MS4) Permit Implementation Assistance with the RWMP. Ilana has also worked as an analytical chemist for an environmental testing laboratory, utilizing and maintaining gas chromatography machines to analyze samples for polychlorinated biphenyls (PCBs), organochlorine pesticides (OCPs), and carbon chains, and analyzing chromatographs for quality of data and results reporting.

Professional Experience

Town of Herndon and Town of Vienna, MS4 Phase II Compliance, Herndon and Vienna, Virginia

Conducting dry weather outfall screening for a minimum of 50 outfalls annually in accordance with the Town's MS4 permit and Illicit Discharge Detection and Elimination protocol. Screening includes a visual assessment, location capture with GPS, digital photographs, and sample collection and testing.

Prince William County, MS4 Phase I Compliance, Biological Monitoring, Prince William County, Virginia

Performed benthic macroinvertebrate sampling using traditional kick/jab collection methods and collected surface water quality samples. Following EPA's Rapid Bioassessment Protocol (RBP), collected habitat assessment data on a mobile tablet, collected water samples and took them to lab for analysis, and compiled seasonal reports.

Prince William County and Fairfax County, MS4 Phase I Compliance, Wet Weather Monitoring, Prince William County and Fairfax County, Virginia

The scope of services includes conducting quarterly monitoring for two sites, data analysis, and subsequent reporting. Stormwater samples are collected using ISCO 6712 Full-Size Portable Samplers, which have been programmed specifically for this project. Results of the water quality analysis are reviewed and summarized in quarterly reports.

Stormwater Control Plans, IDDE Plan Implementation, and Feasibility Plans, Ten Mile River Watershed, Rhode Island Department of Transportation

Assisted with the development of five Stormwater Control Plans (SCPs) which are reports that assess the Rhode Island Department of Transportation (RIDOT) roadways and properties that discharge to five impaired waterbodies in the Ten Mile River Watershed in Rhode Island and identifies potential stormwater treatment measures to address water quality issues. Development tasks included: reviewing and updating RIDOT drainage infrastructure data in RIDOT-provided platform;

Ilana Ton *(continued)*
Environmental Services/MS4 Compliance

populating SCP data in the SCP GIS database; performing calculations following the methodology provided by RIDOT to estimate RIDOT reduction targets and existing and potential water quality treatment credits; and documenting calculations in the RIDOT provided SCP Calculator. Additional tasks included: implementing IDDE plan; identifying outfalls that may be exempt from the IDDE sampling; completing dry and wet weather sampling of all outfalls in the Ten Mile River watershed and record results in RIDOT-provided data collection system; and documenting any detection of potential illicit connections in RIDOT's asset management software and completing investigation needed memos to notify RIDOT of any potential illicit discharges and connections. Follow up work included assisting with the development of three watershed feasibility reports.

Aaron Jordan, PE

Engineering and Construction Management

Firm Name

WSP

Years of Experience

Industry: 17 (2007)

WSP: 9 (2015)

Education

MS, Environmental Engineering, University of Florida, 2007

BS, Natural Resources, University of Florida, 2003

Professional Registrations

Professional Engineer, Virginia, No. 0402053142

Professional Engineer, Maryland, No. 53660

Professional Engineer, DC, No. PE921425

Professional Memberships

American Society of Civil Engineers

Office Location

Herndon, Virginia

Career Summary

Aaron is an engineer with a broad base of civil, water resouces and geotechnical engineering experience. He has a decade plus in serving as a project engineer/ manager for industrial and municipal clients with an emphasis in stormwater and site civil design. More specifically, Aaron's experience includes municipal and industrial site civil stormwater and erosion control design. He also has a significant amount of liner and earth containment system design, landfill gas design, and work with several clients for the design and closure of landfills along with compliance monitoring activities and reporting. His municipal design experience includes stormwater best management design plans and supporting computations to obtain state and county construction approval permits. He interfaces with authority having jurisdiction as the client representative at the onset of the project and continues this role through construction phase of the project.

Aaron frequently develops site feasibility analyses to evaluate the potential of pursuing new stormwater retrofits for municipalities and power utilities. Typical site evaluation assessments he leads includes, overall hydrology analysis to identify natural drainage patterns and discharge locations, high level civil layouts and general array, estimate approximate civil and earthwork costs, wetland research, extreme topography, required setbacks, environmental concerns, and review regulatory guidance specific to the site location to assist in the decision making of a selecting a future stormwater management site.

Professional Experience

Town Branch Stream Restoration Project, Town of Leesburg, Virginia

Water Resources Project Manager responsible for managing the stream restoration construction documents and leading project progress meetings. Planning level cost estimates based on the type of restoration practice were prepared for each task according to the project scope. Managed challenging utility and easement adjustments during the course of the project and evaluated grading options to minimize potential impacts to landowner properties while holding the project objectives.

Yorktown Ct BMP Retrofit Weir Wall Design, Loudoun County, Virginia

Water Resources Engineer responsible for designing a concrete weir wall to replace the existing riser and barrel structure to avoid the need for confined entry safety training and access. The design assessed the existing hydrology and hydraulic conditions of the upstream watershed basin to size the appropriate attenuation structures to manage both stormwater quality and quantity criteria. Led as the engineer of record and project manager for this stormwater project. Provide construction oversight and asbuilt support to a successful stormwater control device that provided benefit to the municipality and better operation conditions.

Seven Bridges Solar Panel Substation and Switchyard Stormwater and Erosion and Sediment Control Plans and H&H Report, Longroad Energy, Mecklenburg County, Virginia

Served as the engineer of record for the civil design of the stormwater and erosion and sediment control design of a 2,000-acre site capable of generating 100 MW AC single axis with tracker module system. He provided engineering services in

Aaron Jordan, PE *(continued)*
Engineering and Construction Management

support of the design of the utility-scale photovoltaic (PV) solar field where the existing vegetation was a mix of forest, agricultural and wetlands. Design inputs consisted of geotechnical, topographical and delineated wetlands among other threatened and endangered sensitive species and historical and cultural surveys. Project components included over 600 acres of PV modules, a new substation and switchyard, a overhead gen-tie corridor ground-surface mounted medium voltage line, an overhead medium voltage line, new utility poles, a chain link fence for security purposes, more than 100 sediment basins and collection earth channels to control erosion and sediment discharge. The project included surveying, site investigations, engineering, and permitting in order to obtain a general construction permit that includes stormwater design and erosion and sediment control design approved plans by the Virginia Department of Environmental Quality and County of Mecklenburg ESC Permitting respectively. Engineering design plans included existing and proposed grading plans, hydrology and hydraulic calculation of all civil features, general array development, access road design, cabling routing, inverter/transformer pads placements, and stormwater analysis to assess the potential increase in stormwater runoff volume and rate due to the proposed development. Also included permitting multiple access points with Virginia Department of Transportation.

Troy Biggs, PE, PH, D.WRE

Engineering and Construction Management

Firm Name

WSP

Years of Experience

Industry: 24 (2000)

WSP: 18 (2006)

Education

MS, Hydrosystems Engineering, Virginia Tech

BS, Civil Engineering, Virginia Tech

Professional Registrations

Professional Engineer, WV, VA, DC

Professional Hydrologist-American Institute of Hydrology (AIH)

Water Resources Diplomate (D.WRE) American Academy of Water Resources Engineers (AAWRE)

Training and Certifications

HEC-RAS 2D Water Modelling Australian Water School

Rosgen Level I, II, III, & IV

NC State University Stream Assessment and Natural Channel Design Restoration

Natural Resource Conservation Service (NRCS) Stream Bank Stabilization and Restoration Workshop

NC State RC 302 - HEC-RAS for Stream Restoration

NC State RC 401 - Construction Practices for Stream Restoration

Office Location

Herndon, Virginia

Career Summary

Troy is a Senior Water Resources Engineer with 20 years of experience in stormwater management design, stream restoration, site grading, roadway design, erosion and sediment control, earthwork quantities, utility design, dam breach analysis, adequate outfall analysis, floodplain analysis and hydraulic/hydrologic watershed analysis. Troy has served as both a project manager and design engineer in preparation of construction documents for stormwater management facilities. He also has experience working with county agencies, private developers, and local citizens to aid and ultimately obtain plan approval.

Professional Experience

Town of Vienna, Piney Branch Stream Restoration Project, Vienna, Virginia

Engineer of Record for Piney Branch Stream Restoration, including a detailed geomorphic stream assessment, hydrologic comparison, detailed stream characterization, riparian buffer assessment, assessment of stable reaches, stakeholder engagement and public outreach, permitting, conceptual designs, and sanitary sewer re-route. WSP supported the Town in the development of successful Stormwater Local Assistance Fund (SLAF) grant applications which resulted in $600K of grant awards which helped fund the stream restoration project. Currently finished the final design drawings and will also provide construction oversight support and assistance during construction.

Town of Vienna, Hunters Branch Stream Restoration, Vienna, Virginia

Senior Technical Engineer providing on-going engineering design for the restoration of Hunters Branch in the Town of Vienna. Assisted WSP staff with the completion of geomorphic field assessment and stream characterization and the prepation of concecptual engineering design plans.

Town of Leesburg, Tuscarora Creek Flood Mitigation and Stream Restoration Project, Leesburg, Virginia

Engineer of Record for Tuscarora Creek Flood Mitigation and Stream Restoration, including a detailed geomorphic stream assessment, wetland delineation and jurisdictional determination, archeological and rare, threatened and endangered species, FEMA CLOMR/LOMR and conceptual and final stream restoration design and flood control for over 2,400 LF of Tuscarora Creek and Town Branch. WSP supported the Town in the development of successful Stormwater Local Assistance Fund (SLAF) grant applications which resulted in $1.6M of grant awards which helped fund the stream restoration project.

Fairfax County DPWES, Big Rocky Run Stream Restoration at Ox Hill Road, Fairfax, Virginia

Water Resources Engineer responsible for obtaining and reviewing historical maps and existing physical, biological, social, and chemical data. Developed a hydrologic model to the study site as well as developed hydraulic models to assess the existing velocities and depths in the stream. Assessed 2,500 linear feet of stream using fluvial geomorphic-based watershed assessment and natural channel design methods. Site assessment included watershed assessment, bank full determination, geomorphic mapping, detailed stream characterization, riparian buffer assessment, reference reach survey, stream stability condition, wetland determination, and

Troy Biggs, PE, PH, D.WRE *(continued)*
Engineering and Construction Management

archaeological and rare, threatened and endangered species determination. Identified and prioritized restoration needs and objectives and developed a conceptual restoration design of the impaired urban stream using natural channel design methodology. The design includes dimensionless hydraulic geometry ratios based on reference reach data, and a draft Stream Corridor Restoration Concept Development Report was prepared which contains background information on the analysis, watershed and topographic mapping, concept design plans for the preferred design alternative, construction cost estimate, and a narrative describing the methodology, results, and recommendations. After approval of the preferred restoration concept, the WSP team developed final construction drawings and provided full time construction oversight services which included daily field inspection and measurements, attendance of weekly meetings with the owner and contractor, and submittal of as-built survey along with recommendations and approvals.

Town of Vienna, Northside Property Yard Stormwater Design Improvements Conceptual Report, Vienna, Virginia
Senior Water Resources Engineer responsible for providing senior review of the conceptual stormwater control and general pollution prevention improvements at the Northside Property Yard. The project included the development of schematic conceptual design associated with salt loading and unloading activities, deicer/anti-icer storage, uncontrolled runoff from existing material stockpile, equipment and parts storage, and proposed vegetated buffer between the yard and Hunters Branch. A major design focus way to layout improvements to the property yard to reduce the potential for equipment and materials to become sources of pollution into Hunters Branch. The plan also included the integrating the buffer enhancement for potential restoration to Hunters Brach.

Fairfax County, Unimproved Outfall Assessment and Engineering Guidelines, Fairfax, Virginia
Lead Water Resources Design Engineer/Project Manager responsible for developing an outfall assessment guideline and protocol to address unimproved urban headwater outfalls within Fairfax County, and developed of a geomorphic process and structure based protocol to rapidly assess outfalls and provide design solutions for step pool restoration efforts. Project included four pilot designs on degraded outfalls. Presentations and training with County Engineering and Maintenance Staff has led to program awareness and subsequent identification and treatment of eroded outfalls. Developed an alternative delivery system (quasi-design/build) in which WSP provided work order level designs which included standard details and templates. Provided construction oversight and guidance to Fairfax County Maintenance and Stormwater Management Division's staff during construction to ensure one of the pilot projects was built according to plan and with proper installation of structures and bed features.

Fairfax County Loftridge Step Pool Design, Fairfax, Virginia
Water Resources Engineer responsible for developing construction documents for a 208 foot long eroded ephemeral outfall located west of Ridge View Drive. Used HEC-HMS along with GIS data including stormnet in order to determine flood flows exiting the culvert and into the eroded headcut stream. Modeled the outfall reach using HEC-RAS as well as HY-8 in order to determine velocities exiting the culvert. Developed conceptual designs for both the stream outfall, and designed a step-pool system consisting of single step cross vanes at 9.8% grade to stabilize the severely head-cut system resulting in improved safety and water quality. Structure sizes and spacing for the step-pool system were determined using USACE practices, Rosgen techniques as well as NRCS methodologies. Provided final construction drawings including plan and profile, typical channel dimensions, limits of disturbance, construction access, plantings and erosion and sediment control. Provided full time construction oversight and inspection services during installation of the step pool system. Performed daily survey checks, daily field logs, and attended weekly meetings with the owner and contractor to ensure the project was being constructed as per the approved plan.

David Sarr, PE

Field, GIS, and Other Miscellaneous Services

Firm Name

WSP

Years of Experience

Industry: 34 (1990)

WSP: 24 (2000)

Education

MSEE, Environmental Engineering, University of North Carolina, Chapel Hill, 1993

BS, Civil Engineering, Massachusetts Institute of Technology, 1984

Professional Registrations

Professional Engineer, DW, CT, MD, MO, VA

Training and Certifications

OSHA Hazardous Waste Operations training

OSHA Hazardous Waste Site Supervisor Training

U.S. DOT Hazardous Materials Training

Office Location

Herndon, Virginia

Career Summary

David specializes in soil and groundwater investigation and remediation and managing contaminated soil and groundwater during brownfields redevelopment. David has 30 years of professional experience in industrial and hazardous waste investigation and remediation, and 4 years' experience in potable water supply, treatment, and distribution. His fields of technical expertise include environmental characterization, feasibility studies, soil and groundwater remediation, contaminant fate and transport, and hazardous building materials. He has designed and implemented remediation projects at Resource Conservation and Recovery Act (RCRA) facilities, Superfund sites, voluntary cleanup program sites, and underground storage tank sites for government and private clients.

Professional Experience

Forest City Washington/Brookfield Properties, The Yards, Washington, DC

Project manager for environmental aspects of the redevelopment of 44 acres formerly part of Washington Navy Yard under a RCRA Section 3013 Consent Order and a public-private partnership agreement. David has successfully managed integration of investigation and remediation into the redevelopment process. He has managed all aspects of this ongoing project, including site investigations, human health risk assessments, hydrogeologic studies, remedial design, remediation oversight, permitting, institutional controls, and asbestos and lead-based paint assessment and abatement for building renovation and demolition. David is responsible for overall project quality, budget, and schedule; quality of analytical data; compliance with federal, state, and local regulations; permitting; and subcontracting.

Confidential Client, Former Alco Controls Facility, Wytheville Virginia

David was responsible for site investigation, remedial investigation, remedial design, remediation and monitoring services for a closed industrial facility, leading to sale and redevelopment of the property. Completed investigation of soil, groundwater and indoor air and then conducted remediation of chlorinated solvents and gasoline in soil and groundwater, including concrete and soil removal and off-site disposal, and in situ groundwater treatment using zero valent iron and in situ chemical reduction. Obtained VRP certificate of satisfactory completion and later completed remediation under RCRA Correction Action.

Confidential Client, Ridgely Manor Park, Towson, Maryland

David was the professional engineer in responsible charge for installation of a groundwater recovery and treatment system at a new public park in Towson. The project converted 16 properties affected by contamination from a nearby gasoline station into a public park. This remediation and heavy construction project in a densely populated residential area required obtaining and managing permits for storm water, soil erosion and sediment control, demolition, and forest conservation. The park plan included the installation of a French drain groundwater collection system and a groundwater treatment system housed in a below-grade vault. David was responsible for design, permitting and construction oversight during the project.

Luke Clarke

Field, GIS, and Other Miscellaneous Services

Firm Name

WSP

Years of Experience

Industry: 21 (2003)

Education

BS, Earth Systems Science, Geology, George Mason University

Professional Registrations

Professional Geologist, VA, No. 1717

Virginia Certified Responsible Land Disturber, No. RLD01566

Training and Certifications

OSHA 40-hour HAZWOPER Work Site Hazardous Materials

OSHA 8-hour Refresher

OSHA 8-hour Supervisor Work Site Hazardous Materials

Office Location

Herndon, Virginia

Career Summary

Luke is a Senior Geologist with extensive experience performing remediation system operations and monitoring (O&M) and related soil and groundwater sampling activities. As an Environmental Scientist, he has become very familiar with U.S. Environmental Protection Agency (EPA) documentation and regulations. Luke is accomplished in soil survey and taxonomy, identifying soil profiles and describing soils according to USCS classification. He has gained valuable hands-on experience with remedial technologies including dual-phase extraction, soil vapor extraction, low-pressure bioventing, air sparging, bioremediation, enhanced fluid recovery (EFR), and excavation/removal. Luke has provided on-site management and performed all O&M activities at numerous remediation systems at Fort Belvoir and Joint Base Andrews for several years under USACE – Baltimore District contracts and is very knowledgeable about associated Virginia Department of Environmental Quality (DEQ) and Maryland Department of the Environment (MDE) requirements. He has also prepared site characterization reports (SCR) and quarterly corrective action monitoring reports.

Professional Experience

U.S. Army Corps of Engineers, Baltimore District IDIQ For Environmental Management Support Main Post, Fort Belvoir, Virginia

Environmental management support under a multi-year, indefinite delivery and indefinite quantity contract for sites at the U.S. Army Garrison. Oversaw O&M activities for nine remediation systems at Fort Belvoir and responsible for preparing the appropriate quarterly Corrective Action Plan Monitoring Reports. Remedial technologies used include dual phase extraction (DPE) pump and treat, soil vapor extraction (SVE), bioventing, and various chemical oxidation (chem-ox) studies. Responsible for recovery well and pump preservation, and remediation system maintenance to maximize contaminant recovery and optimize performance. Performed environmental investigations for solid waste management units (SWMUs), areas of potential concern, and petroleum storage areas at the Engineer Proving Ground at Fort Belvoir scheduled for redevelopment under Base Realignment and Closure legislation. Responsible for performing direct push and rotary auger soil sampling, monitoring well and extraction / recovery well installations, groundwater and surface water sampling, slug testing, and aquifer pump tests. Assisted in preparation of Site Characterization Reports and Corrective Action Plans.

U.S. Army Corps of Engineers, Baltimore District HTRW Contract; Engineer Proving Ground (EPG) and Main Post, Fort Belvoir, Virginia

Luke was a Project Geologist for RCRA environmental investigations (EIs) and long-term monitoring (groundwater sampling) at 13 RCRA Solid Waste Management Units and Installation Response Sites at Ft. Belvoir. Subsurface investigation activities were conducted with a Geoprobe and hand augers. Installed monitoring wells and collected groundwater samples utilizing low-flow procedures. Prepared long-term monitoring reports and other regulatory submittals.

Amtrak Environmental Compliance Services Contract, Washington, DC

Under nationwide environmental services and engineering contracts, Luke serves as project manager for several Amtrak facilities in the National Capital Region. He

Luke Clark *(continued)*

Field, GIS, and Other Miscellaneous Services

has managed projects for Amtrak involving environmental permitting, underground storage tank investigations, hydrogeologic surveys, Phase II contaminant investigations, underground storage tank closures, utility mapping and inspection programs, storm water pollution prevention plans (SWP3) and geotechnical investigations. Luke's project team supports Amtrak through developing compliance strategies, executing field programs, performing treatment system operation & monitoring and negotiating with regulatory agencies including several divisions of the District of Columbia Department of Energy and the Environment (DOEE).

U.S. Army Corps of Engineers, Baltimore District, ID / IQ for Environmental Management Support, Fort Belvoir, Virginia

Environmental management support and coordination under a multi-year, IDIQ contract for dozens of leaking UST (LUST) sites. Responsible for performing direct push and rotary auger soil sampling, monitoring well and extraction / recovery well installations, multi-media sampling and aquifer testing. Prepared SCRs and CAPs and negotiated with VDEQ for site closure of over 20 LUST sites.

U.S. Army Corps of Engineers - Omaha District, Andrews Air Force Base Environmental Monitoring and Non-CERCLA Remediation Action, Maryland

Long-term operation and monitoring of groundwater remediation systems, interim remedial actions on non-CERCLA sites, annual sampling and compliance reporting for two systems and 135 wells at 10 sites on base. Role/Duties Performed on Project: Responsible for performing analysis, peer review, and data reduction services for the Project Coordinator.

Joint Base Andrews Performance-Based Remediation Contract, Joint Base Andrews, Camp Springs, Maryland

Responsibilities include supporting the technical and management team in preparation of plans and reports, conducting field investigations, and coordinating field programs for seven sites under this contract. The scope of work for the PBR program includes conducting remedial investigations (RI) and preparing RI, feasibility study (FS), proposed plan (PP), and record of decision (ROD) documents. In addition, the remedial design and remedial action activities include preparing remedial work plans, technical memoranda documenting the completion of remedial activities, and preparing annual reports to determine the effectiveness of remedial actions.

Alexandria Hunt

Field, GIS, and Other Miscellaneous Services

Firm Name
WSP

Years of Experience
Industry: 10 (2014)

WSP: 5 (2019)

Education
MS, Environmental Management, Water Resources, Duke University 2015

BS, Environmental Management & Technology, North Carolina State University, 2013

Office Location
Herndon, Virginia

Career Summary

Alexandria is a water resources engineering professional with ten years of experience concentrated in hydrologic and hydraulic modeling. She has supported Federal Emergency Management Agency's (FEMA) flood risk assessment and mapping program at the Federal, State, and Local level. Ms. Hunt experience includes flood hazard studies, rainfall/runoff modeling, stormwater management modeling, GIS analysis, and computer programming.

Professional Experience

Town of Vienna, Floodplain Reviews, Vienna, Virginia

Assistant project manager for multiple floodplain study reviews and a Preliminary Special Flood Hazard Area (SFHA) assessment for Town of Vienna. The Preliminary SFHA assessment included reviewing the Changes to Special Flood Hazard Areas and creating a listed of recommended request to the Mapping Partner based on concerns with the Preliminary Study. The floodplain study reviews include auditing floodplain submission against federal and local requirements, hydrology and hydraulic review, generating comment responses, and meeting with local staff to discuss the results.

Loudoun County, Floodplain Reviews, Loudoun County, Virginia

Assistant project manager for multiple floodplain study and alterations reviews for Loudoun County. The floodplain study reviews include auditing floodplain submission against federal and local requirements, hydrology and hydraulic review, generating comment responses, and meeting with local staff to discuss the results.

Town of Leesburg MT-2 Application for the Tuscarora Creek Flood Mitigation and Stream Restoration Project, Leesburg, Virginia

Project Engineer for developing an approved MT-2 Application for the Tuscarora Creek Flood Mitigation and Stream Restoration Project. The application included modifying the previously FEMA-approved HEC-RAS hydraulic model with the as-built survey data from the stream restoration project. The MT-2 Application included a narrative, completed MT-2 application forms; hydraulic analysis; certified topographic work map/as-built plans, annotated FIRMs, and individual property owner notifications.

City of Hagerstown, Evaluation of the City Park Outfall Drainage System, Hagerstown, Maryland

Project Engineer to develop a single combined 1-dimensional and 2-dimensional rainfall runoff PCSWMM model for the Maggie's Hole sewershed area for current and future climate conditions. The study identifies areas currently at risk of flooding and areas at future risk of flooding or worsening flood risk due to climate change. Also, the model was developed to identify insufficient capacity within the storm sewer system.

CTP Floodplain Mapping Program, West Virginia

Engineering Project Manager for Berkeley, Hampshire, and Jefferson Counties Risk MAP countywide studies. These studies included the development of updated enhanced approximate and detailed flood hazard analyses. The studies across

Alexandria Hunt

Field, GIS, and Other Miscellaneous Services

West Virginia had numerous complexities including regulation, karst impact, and significant urbanization. The regulation impact required coordination with the Bluestone Dam Operator (USACE) and referencing the operations manual. The karst impact resulted in the development of an alternative hydrology approach based on coordination with FEMA, USGS, WV DOH and local government officials. She developed a HEC-HMS model for an urban area where regression results were inconsistent with more detailed effective hydrology (rainfall runoff) because of the impact of significant urbanization since the effective.

Maryland CTP State-wide Flood Hazard Mapping Program, Maryland

Hydraulic task manager for St. Mary's County. The countywide Risk MAP study included approximate, limited detail and detail modeling and floodplain mapping products in compliance with FEMA's Guidance and Specification. The study had numerous complexities, including a regulated reach, and performing coastal tie-ins. For the regulated reach, a HEC-HMS model was created and incorporated into hydraulic model to capture the regulation impact. To achieve proper mapping of inland and coastal flooding, a combined probability analysis was performed for areas that overlapped between coastal and riverine influence.

FEMA Production and Technical Services (PTS) Contract, FEMA Region III

Engineering Project Manager for countywide 1-dimensional and 2-dimensional RiskMap studies in Virginia, Delaware, and West Virginia. She provides guides project staff to perform studies in compliance with FEMA's guidance and standards and performs quality reviews. Also, she participates and leads engineering portions of kick-off meetings and Flood Risk Review (FRR) meetings, and she discusses potential concern areas with floodplain administrators.

Jason Beeler, PWS, CPESC, CESSWI, CISEC, ISA Certified Arborist MA-5442A, TRAQ

Surveying, Permitting, BMP Maintenance

Firm Name
WSSI

Years of Experience
Industry: 20 (2004)

WSP: 20 (2004)

Education
B. Tech, Wildlife Management, State University of New York

AAS, Fisheries and Wildlife Technology, State University of New York

Professional Registrations
ISA Certified Arborist MA-5442A

ISA Tree Risk Assessment Qualification (TRAQ)

Professional Wetland Scientist

VA DEQ Inspector - SWM

VA DEQ Combined Administrator - ESC

Commercial Pesticide Applicator - Aquatic Pest Control-General (5A), Ornamental Control (3-A), Right of Way (6), VA

National Green Infrastructure Certification

Certified Confined Space Training

CPESC

CESSWI

CISEC

Rosgen Levels I-II

HAZWOPER

Office Location
Gainesville, Virginia

Career Summary

Jason is responsible for overseeing stream and wetland restoration projects and low impact development (LID) projects. He handles oversight and reporting on construction activities, coordination with contractors, scheduling, and communication with project team members and other stakeholders. His work includes quality assurance/quality control for ecosystem restoration construction; accurately reporting daily construction activities to the client and construction team through written reports; recognizing and formulating a plan of action for discrepancies between the approved plan and actual field conditions; and responding to technical questions from contractors. Jason is a member of the board of directors for the Mid Atlantic Chapter of the International Erosion Control Association.

Jason has supported WSP in the Town of Herndon and Town of Leesburg contracts for services similar to what our team proposes to provide for the Town of Vienna.

Professional Experience

Town of Leesburg, SWM BMP Maintenance and Inspections, Leesburg, Virginia

Jason has supported WSP's work with the Town of Leesburg through consecutive open-end contracts providing stormwater facility maintenance operations. For Greenway Farm Pond, Fox Ridge Pond, Tuscarora Creek, and Stratford Pond, WSSI performed comprehensive site assessments to identify additional maintenance items required, cleared any debris from the low flow orifice and picked up trash and debris throughout the sites, removed and offsite disposal of cattail seed heads, and provided a written maintenance report with recommendations for future project needs. He also oversaw the annual SWM facility inspections in accordance with the standards set by the Virginia Department of Environmental Quality. When invasive species management was needed at multiple BMP and SWM facilities, Jason led WSSI's ecosystem restoration specialists providing chemical control. WSSI staff also cleared trash and debris at each facility to leave it in best working order.

Town of Herndon, SWM Management Program Services, Herndon, Virginia

Jason has supported WSP's work with the Town of Herndon through stormwater pond inspection, maintenance and reporting. His activities include visual inspection of each pond including inlets, outfalls, embankments, and spillways, as well as sediment accumulation on the pond floor. He recommends and provides maintenance for pond improvements, including minor stabilization of embankments; vegetative control of native and non-native species at inlets outfalls and spillways; removal of sediment in inlets; and vegetative maintenance along embankments and dams. Upon completion of maintenance activities, Jason provides maintenance activity reports to WSP, who provides them to the Town of Herndon as evidence for facility compliance with local, state, and federal regulations.

Prince William County, Stormwater Pond 5487, Prince William County, Virginia

Jason has been involved in the inspection, maintenance and reporting of the private stormwater pond for several years. His activities include visual inspection of the pond including inlets, outfalls, embankments, spillways and sediment accumulation monitoring on the pond floor. Jason has provided recommended maintenance to include minor stabilization of embankments, vegetative control of native and

Jason Beeler, PWS, CPESC, CESSWI, CISEC, ISA Certified Arborist MA-5442A, TRAQ *(continued)*

Surveying, Permitting, BMP Maintenance

Professional Experience *(continued)*

non-native species at inlets outfalls and spillways, removal of sediment in inlets and vegetative maintenance along embankment and dam. Upon completion of maintenance activities, Jason completed and submitted maintenance activity reports to the client for review and subsequently to Prince William County to demonstrate facility compliance with local state and federal regulations.

Fairfax County, Wakefield Park South Stream Restoration, Fairfax County, Virginia

Jason conducted construction oversight quality assurance/control of 3,600 linear feet of stream restoration on behalf of Fairfax County. His responsibilities included oversight of correct installation of approved natural channel design and reporting field activities to County staff, ensuring correct subgrade elevation excavations, completing field sketches of each structure, checking preliminary final grade elevations and overseeing permanent stabilization and landscaping installation. Jason was responsible for answering technical questions and coordinating with the design engineer on discrepancies between field conditions and approved plans. He led and documented project meetings and weekly construction inspections, which were disseminated to project team members and included in project records.

Chad Laskaris, LS

Surveying, Permitting, BMP Maintenance

Firm Name
WSSI

Years of Experience
Industry: 23 (2001)

WSP: 23 (2001)

Education
B.Tech, Wildlife Management, State University of New York

AAS, Environmental Conservation, Finger Lakes Community College

Professional Registrations
Licensed Surveyor, VA, DC, MD, PA

UAS Remote Pilot Certification

Certified Confined Space Training

Rosgen Levels I-II

Office Location
Gainesville, Virginia

Career Summary

As WSSI's Chief of Survey, Chad leads boundary, topographic, bathymetric, wetland, stream, and construction surveys and preparation of the associated plats and site plans, providing essential location and feature data for stream and wetland restoration design as well as avoidance of sensitive environmental and cultural resources. He and his staff provide as-built surveys as well as annual survey-based monitoring for stream and wetland restoration projects, and they are proficient in conventional and modern survey instruments and technology, including state-of-the-art total station and GPS instruments and Autodesk Civil3D software. Chad completed formal stream restoration training with Dave Rosgen, PhD (Levels I and II).

Professional Experience

Town of Vienna, Hunters Branch Stream Restoration, Vienna, Virginia

Chad supervised the establishment of horizontal and vertical control network for the stream restoration project. He coordinated aerial photogrammetry and conventional topographic surveys. Created storm drainage easement plats for county recordation. Chad also supervised stream profiles and cross-section surveys to assess current conditions. The survey also included locating exposed existing utilities and sewers. Post construction duties included the preparation of a required as-built survey.

Town of Leesburg, SWM BMP Maintenance and Inspections, Leesburg, Virginia

Chad has supported WSP's work with the Town of Leesburg through consecutive open-end contracts providing stormwater maintenance facility operations. Example projects include: Tuscarora Creek: Supervised survey tasks required to produce a survey depicting existing conditions of a portion of Tuscarora Creek and adjacent tributary. Supervision of specific tasks included utilizing DGPS technology to recover and establish additional horizontal and vertical control, wetland delineation location, topographic data collection, and locations of utilities and other improvements Greenway Farm Pond: Performed the computation of requisite points and preparation of field drawings to be used for stake out of the Limits of Disturbance and extent of wetlands and other jurisdictional waters. He also supervised field crew installation and flagging of the aforementioned limits.

Prince William and Fairfax Counties, Lower Occoquan Dam Bathymetric Survey, Virginia

Chad performed a Bathymetric Survey of a 3.1-acre area of the Occoquan River/ Reservoir adjacent to and upstream of the Lower Occoquan Dam in Prince William and Fairfax County, Virginia. Depth measurements and elevations were determined utilizing DGPS and Single Beam Echo Sounding Equipment (ODOM ECHOTRAC CVM) in deep water and conventional survey/sounding pole for areas of shallow depth. The Bathymetric Survey was performed in accordance with U.S. Army Corps of Engineers standards using WSSI personnel, watercraft, and equipment. Office tasks included preparation of a finished bathymetric drawing using AutoCad Civil 3D Land Desktop Companion.

Fairfax County, Northern Virginia Stream Restoration Bank, Fairfax County, Virginia

Established horizontal and vertical control network for approximately 14 miles for stream restoration. Coordinated aerial photogrammetry and conventional topographic surveys. Conducted stream profiles and cross-section surveys to assess

Chad Laskaris, LS *(continued)*
Surveying, Permitting, BMP Maintenance

current conditions. The survey also included locating existing utilities and sewers. Limits of easements that were required were determined and plats with deeds were prepared and recorded. Easement plats adhered to established state and local rules and regulations. Construction stake out was performed in house. Post-construction duties included the preparation of all required as-built surveys and the preparation of yearly monitoring surveys of restored streams.

City of Alexandria, Taylor Run Stream Restoration, Alexandria, Virginia
Chad managed WSSI's survey field and office efforts to obtain topographic and existing conditions for this ~2,000 linear foot, SLAF-funded, urban stream restoration project. WSSI's work has also included permitting, detailed design, and stakeholder education and outreach. Survey location of existing mature trees, storm and sewer lines, manholes, stream profiles and other adjacent infrastructure contributed to the design and supports WSSI's focus on providing the best solutions for the ecosystem. WSSI's survey efforts were used to minimize disturbance and maximize channel improvements in this constrained site.

Sect on 4
Subconsultants

Subconsultants

WSP will be receiving additional technical expertise from our subcontractor – Wetland Studies and Solutions, Inc. (WSSI). Wetland Studies and Solutions, Inc. (WSSI), a Davey Tree Company, is one of the Mid-Atlantic region's leading environmental and cultural resource consulting firms. They have grown from a one-person wetland consulting firm in 1991 to more than 240 staff, and along the way have earned an excellent reputation in the industry, with regulators, and with clients, including state agencies and local governments. WSSI provides expertise and experience for public and private sector clients to obtain the environmental approvals needed to create the built environment. Their services include:

- ✓ Environmental Science, including delineation of wetlands and other Waters of the U.S. (WOTUS)
- ✓ §404/401 Clean Water Act Permitting and Compliance
- ✓ NEPA Studies and Documents
- ✓ Civil, Stormwater, and Water Resources Engineering
- ✓ Environmental Compliance
- ✓ Stream & Wetland Restoration & Mitigation
- ✓ Ecosystem Restoration and Management
- ✓ Cultural Resource Investigations
- ✓ Land and Bathymetric Surveying
- ✓ Forest Conservation, Urban Forestry Planning, & Specialized Tree Preservation
- ✓ GIS/Mapping Services
- ✓ Environmental Site Assessments and Hazardous Materials Investigations
- ✓ Air Quality Studies and Permitting
- ✓ Chesapeake Bay Act Studies, Permitting, and Compliance
- ✓ §303e Clean Water Act Total Maximum Daily Load (TMDL) Projects
- ✓ Reality Capture, LiDAR, and UAV Services

WSSI is headquartered in Gainesville, Virginia, and has regional offices in central Virginia, Hampton Roads, southwest Virginia, and Maryland. Their experience is extensive: since 1991 WSSI has worked on ±10,000 projects across ±400,000 acres. They also have created and restored over 1,000 acres of wetlands and designed more than 75 miles of stream restoration. WSSI's experience includes several public and private sector projects for and within the Town of Vienna, including restoration of Hunters Branch and Wolftrap Creek. WSSI also was previously selected to serve the Town as a subconsultant on the on-call civil engineering contract. WSSI currently provides arborist staff augmentation for the Town of Vienna.

WSSI's Experience with WSP

WSP and WSSI have a long-standing collaborative relationship that has resulted in the delivery of quality products for our clients. WSP's Project Manager, David Bulova, and WSSI's founder, Mike Rolband (now Director of DEQ), served together on Virginia's Citizens' Wetlands Advisory Committee in 1999. More recently, WSP and WSSI have collaborated closely on several projects for the Town of Leesburg and the Town of Herndon. Examples include:

Tuscarora Creek Stream Restoration and Town of Leesburg

WSSI surveyed Tuscarora Creek, conducted a WOTUS delineation, and obtained the U.S. Army Corps of Engineers' (COE) Jurisdictional Determination. WSSI staff then submitted the Nationwide Permit #27 Pre-Construction Notification to the COE and obtained the needed permit for impacts to State-owned subaqueous

bottomlands from the Virginia Marine Resources Commission. Currently, as a subconsultant to WSP, WSSI conducts annual inspections and routine maintenance of the Tuscarora Creek stream restoration.

Stowers and Stratford Ponds, Town of Leesburg

WSSI delineated and survey-located wetlands and other WOTUS within these stormwater management ponds and obtained a Jurisdictional Determination for the proposed pond retrofit projects. Currently, as a subconsultant to WSP, WSSI is providing maintenance and inspection services for these ponds as well as one additional pond. This includes annual site inspections by a DEQ Certified Stormwater Inspector, clearance of debris, removal of excess sediment build-up in the forebay, removal and disposal of invasive plant species, and submittal of written maintenance reports.

Nutrient Management Plans, Town of Leesburg

WSSI, as a subcontractor to WSP, recently completed a comprehensive update of the Town's consolidated nutrient management plan for four Town parks/recreational facilities. The plan was approved by the Department of Conservation and Recreation in March 2024.

Town Shop Pond Maintenance, Town of Herndon

WSSI, as a subcontractor, to WSP, is currently assisting with the maintenance of a stormwater management pond at the Town Public Works Complex. The project includes removal of biomass from the facility, application of herbicides to control invasive plant species, erosion control and stabilization, and a sediment accumulations study.

Other teaming experiences include:

- ✓ Fairfax County, VA – Design for Multi-Modal Transportation Improvements
- ✓ Loudoun County, VA – On-call Roadway/Transportation Design Services
- ✓ City of Chesapeake, VA – Annual General Civil Engineering Services Contract
- ✓ City of Norfolk, VA – Indefinite Quantity Contract Transportation Design Services
- ✓ City of Virginia Beach, VA – Annual Services Contract for General Civil Engineering
- ✓ City of Virginia Beach, VA – Annual Services Contract for General Stormwater Engineering
- ✓ Virginia Department of Transportation – Statewide Planning and Design under STARS Environmental Services

Section 5
Engineer's Record and Accomplishments

Engineer's Record and Accomplishments

WSP has successfully supported the Town's Environmental Professional Services contract since 2011. In addition, WSP has provided similar services to numerous other local municipalities. The following pages highlights our record of accomplishments. Each project includes the information requested in the RFP.

Town of Vienna Environmental Professional Services

Vienna, Virginia

WSP has been privileged to work with the Town since 2011 to meet its compliance and environmental stewardship needs.

WSP has successfully supported the Town with the following projects under the current contract:

MS4 Permit Support

- **MS4 Program Plan:** WSP prepared/updated the Town's MS4 Program Plans.
- **Standard Operating Procedures:** WSP developed good housekeeping SOPs for municipal operations and illicit discharge protocols.
- **Training:** WSP provided annual pollution prevention training and developed a video to train the police staff in spill response.
- **MS4 Service Area Mapping:** WSP delineated the Town's MS4 service area, which is used to establish the regulatory extent of the MS4 permit. WSP assists with annual map and outfall data table updates.
- **SWPPP:** WSP developed the SWPPP for the Northside Property Yard and the Nutley Street Maintenance Yard.
- **Inspection Support:** WSP assisted Town staff in preparation for two audits and provided support during the inspections.
- **Annual Reporting:** Each year, WSP assists with preparation of the MS4 annual report.
- **Ordinance Updates:** WSP updated the Town Code Chapter 23, Article 3 "Stormwater Management" to meet VSMP requirements.

Mobil app for dry weather outfall screening

TMDL Action Plans

- **Chesapeake Bay TMDL Action Plan:** WSP prepared Phase I, Phase II, and draft Phase III Chesapeake Bay TMDL Action Plans.
- **Local TMDL Action Plans:** WSP prepared a PCB TMDL action plan, action plans for bacteria and sediment for Difficult Run and Accotink Creek, and a chloride TMDL action plan for Accotink Creek.

Stormwater Monitoring

- **Dry Weather Screening:** WSP conducts annual dry weather screening of at least 50 outfalls annually.

Firm/Responsibility:
WSP

Client/Owner:
Vienna Dept of Public Works

Client Contact:
Alan Chen, PE

Water Resources Engineer

703-319-8610

Project Cost:
- Cost estimate: varies by task order
- Bid amount: $1.6M
- Contract amount: $1.3M since 2011
- Number of change orders: 0 in past 3 years

Revelevance to Scope:
- MS4 Program Support
- Stormwater Monitoring Support
- TMDL Planning
- Mapping and Data Management
- Engineering Services

Key Personnel:
- David Bulova, Project Manager
- Troy Biggs, Senior Engineer
- Ilana Ton, MS4/ Monitoring Support
- Lynne Mowery, Senior Reviewer
- Alexandria Hunt, Floodplain Review

Town of Vienna (continued)

Engineering Services

- **Concept Design for the North Side Property Yard:** This design was prepared to incorporate additional pollution prevention measures at the site.
- **Piney Branch Stream Restoration:** Approximately 1,150 linear feet of restored reach which included a detailed geomorphic stream assessment, riparian buffer assessment, stakeholder engagement, permitting, design, and sanitary sewer re-route. WSP supported the Town in the development of a successful SLAF grant
- **Application that resulted in an award of $825K.** WSP provided construction oversight support and assistance during 10 months of construction and assisted the Town with the as-built and project closeout processes.
- **Bear Branch Stream Restoration:** Providing on-going engineering design for the restoration of approximately 2,000 linear feet of Bear Branch. Completed the geomorphic field assessment, stream characterization, and the preparation of conceptual design plans. Presented the concept plans to the public in an online forum due to COVID restrictions. WSP supported the development of a successful SLAF grant application that resulted in an award of $1.02M.
- **Hunters Branch Stream Restoration:** Providing on-going engineering design for the restoration of approximately 1,700 linear feet of Hunters Branch. Assisted with the completion of geomorphic field assessment, stream characterization, and the preparation of conceptual engineering design plans.

Piney Branch Resource Protection Area delineation

Town of Herndon Stormwater Management Services

Herndon, Virginia

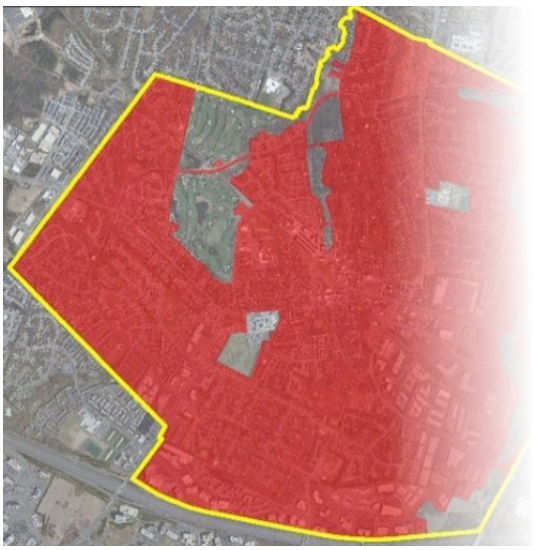
WSP has provided a wide variety of support for the Town's stormwater program since 2002 under four consecutive stormwater services contracts.

MS4 Permit Services

- **MS4 Program Implementation/Annual Report:** WSP has provided the full range of MS4 compliance services to the Town. We prepared the Town's initial MS4 registration statement in 2003 and the MS4 program plan and permit renewal documents in 2008, 2013, 2018, and 2023. We provided an assessment of the Town's industrial facilities and prepared a SWPPP for the Public Works Complex. WSP has provided ongoing support for the MS4 program, including presentations to the Town Council and annual pollution prevention training for Town staff, and has assisted with preparation of MS4 annual reports. WSP supported the Town during audits of its MS4 program in 2018 and 2023and provides annual dry weather screening services.
- **Stormwater BMP Database/Application/Assessments:** WSP developed a geodatabase of over 200 stormwater BMPs in the Town by digitizing information obtained from design plans. WSP staff developed a BMP inspection mobile application and conducted field assessments of the facilities to document conditions, generate initial data for the geodatabase, and to identify urgent maintenance needs. WSP trained staff on the inspection application, developed a user manual, and worked with Town staff to integrate the application into the Town's IT system.

TMDL Action Plans/Ordinances

- **Chesapeake Bay TMDL Action Plan:** Developed Phase I, Phase II, and draft Phase III TMDL Action Plans. WSP prepares annual updates of the Chesapeake Bay compliance ledger tracking constructed practices and development credits, and coordinates with Fairfax County on shared credit projects.
- **Sugarland Run Bacteria Action Plan:** WSP prepared this action plan for the Town in 2020 and supported annual MS4 reporting related to the action plan.
- **Stormwater Management Ordinance Update:** In 2014, WSP worked with the Town to update Chapter 26, Article VIII "Stormwater Management" of the Town Code to implement the requirements of new VSMP regulations. Once adopted, we put together a reference chart for the development community comparing the Town's ordinance with the Fairfax County ordinance.



MS4 service area may for the Chesapeake Bay TMDL Action Plan

Firm/Responsibility:
WSP

Client/Owner:
Town of Herndon Public Works

Client Contact:
Larence Latour, PE

Water Resources Engineer Town of Herndon

703-435-6800

Project Cost:
- Cost estimate: varies by task order
- Bid amount: $964K
- Contract amount: $1.2M since 2010
- Number of change orders: 0 in past 3 years

Revelance to Scope:
- MS4 Program Support
- Stormwater BMP Database
- TMDL Planning
- Engineering Services

Key Personnel:
- David Bulova, Project Manager
- Ilana Ton, MS4/ Inspection Support
- Christina Davis, MS4 Mapping and Data Management
- Lynne Mowery, Senior Reviewer
- Troy Biggs, Senior Engineer

Town of Herndon (continued)

Stormwater Monitoring Services/Pollution Prevention Plans

- **Dry Weather Screening:** WSP performs MS4 compliance dry weather screening at 50 outfalls annually for the Town.
- **Town Public Works Complex SWPPP:** WSP developed the SWPPP for the Town Public Works Complex and updates the plan as needed. WSP performs annual inspections of the site and provides staff training.
- **Spill Prevention, Control, and Countermeasures (SPCC) Plans:** The Town requested that WSP develop SPCC plans for the Herndon Centennial Golf
- **Course and the Public Works Complex:** We used the Tier 1 Qualified Facility SPCC Plan Template to allow self-certification under the SPCC rules. This saved time in the plan development process and will result in more efficient implementation over time.

Stormwater Design and Construction Services

- **Herndon Centennial Golf Course Stormwater Pond Retrofit:** WSP prepared conceptual design of various pond options and final design documents for the pond retrofit, including a Joint Permit Application.
- **Sugarland Run Stream Restoration:** WSP design and provided construction oversight for 1,300 LF of stream restoration which was completed in the Spring of 2023. The project was conducted in partnership with Fairfax County. WSP is now working with the Town on the design and installation of interpretive education signage.

Site map for Golf Course SPCC plan

Fairfax County MS4 and Stormwater Monitoring and Program Support Services

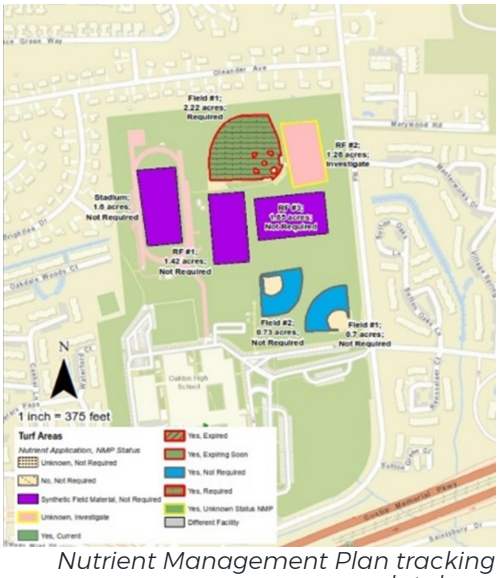
Fairfax County, Virginia

WSP has provided a wide variety of services over the past twenty-one years including MS4 program support, watershed planning, public meeting facilitation, stormwater monitoring, stormwater and stream restoration design, TMDL planning and data management, and program preparation. WSP has been selected for four consecutive MS4 and Monitoring Support contracts for the County.

The following highlights key permit support services provided to the County:

MS4 Permit Support

- **MS4 Program Plan/Annual Report:** WSP has supported the County since 2006 on development and updates of its MS4 program plan and annual reporting. Prepared the 2020 resubmittal program plan.
- **MS4 Service Area Mapping:** WSP identifies regulated MS4 outfalls, delineates drainage areas to each outfall point using an automated process, and updates the service area annually. WSP developed a tool to evaluate MS4 service area metrics to assist with system management.
- **MS4 Training:** WSP developed two training modules (Illicit Discharge and Pollution Prevention/Good Housekeeping) for the County's online Employee University. The training was also deployed onto the Fairfax County Public Schools online employee training platform. WSP prepared a training video for Operation Stream Shield on invasive vegetation removal.
- **Public Education and Outreach:** Developed the County's MS4 Public Education and Participation Plan.
- **Stormwater Business Plan:** Facilitated development of a stormwater business plan in 2017 that included facilitating three County workgroups, financial analyses, and documentation of program needs and goals.
- **Nutrient Management Plans (NMPs):** Prepared NMPs for six County maintained dams and updated NMPs for the Greendale and Pinecrest golf courses. WSP prepared a geodatabase and online dashboard to track nutrient management plans and county properties where nutrients are applied that includes over 650 separate playing fields.



Nutrient Management Plan tracking geodatabase

Firm/Responsibility:
WSP

Client/Owner:
Fairfax County Department of Public Works and Environmental Services

Client Contact:
Martin Hurd

571-635-6189

Project Cost:
- Cost estimate: varies by task order
- Bid amount: not applicable (no design)
- Contract amount: $8M since 2010
- Number of change orders: 0 in past five years

Relevance to Scope:
- MS4 Program Support
- Stormwater Monitoring Support
- TMDL Planning
- Mapping and Data Management

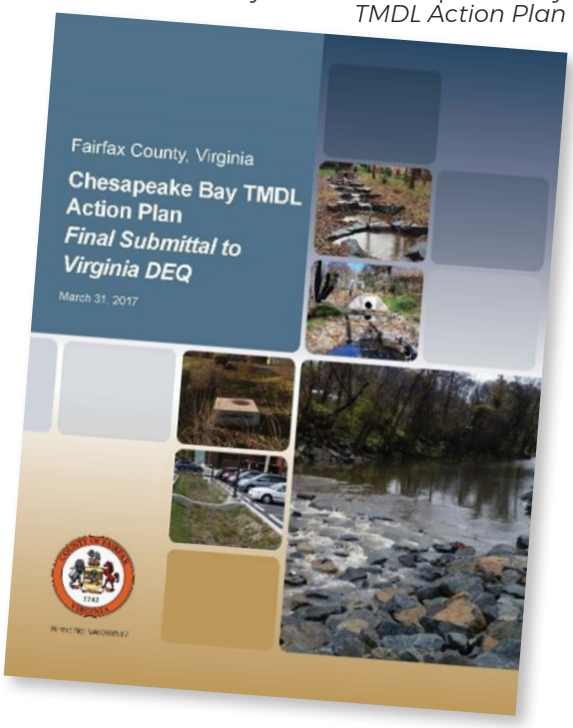
Key Personnel:
- Lynne Mowery, Project Manager
- David Bulova, MS4 Support
- Christina Davis, MS4 Support
- Ilana Ton, MS4 and Monitoring Support
- Anna Allie, Vegetation Assessments

Fairfax County (continued)

TMDL Action Plans

- **Chesapeake Bay TMDL Action Plan:** In coordination with the County, developed Phase I TMDL Action Plan and draft Phase II TMDL Action Plan. Participated in a County workgroup to discuss and recommend options for pollutant control practices, credit opportunities, and methodologies to track TMDL compliance. WSP prepares annual updates of the Chesapeake Bay compliance ledger tracking constructed practices and development credits. WSP facilitated development of a Memorandum of Understanding between the County and Towns on TMDL credit sharing.
- **Bacteria, Sediment, Chloride and PCB Action Plans:** WSP prepared draft and final action plans in 2017 and supports annual MS4 reporting related to the action plans. WSP is currently preparing updates to the local TMDL action plans and a new chloride TMDL action plan.

Fairfax County Phase I Chesapeake Bay TMDL Action Plan



Stormwater Monitoring Support

- **Biological Sample Processing:** The WSP team supports the County in biological sample processing annually.
- **Wet Weather Monitoring:** WSP is conducting quarterly wet weather monitoring at two sites in the County and developed a GIS tool to select potential monitoring sites.
- **Midge Identification Study:** The WSP team is supporting the County in a midge study to evaluate need for index recalibration and a cost-benefit analysis to inform decision making.

Engineering, Surveying, and Ancillary Services

- The WSP team has supported: Vegetation Assessments, Sustainable Urban Headwaters, Loft Ridge Stream Stabilization, and the Big Rock Run Stream Restoration.

Prince William County MS4 Program Support Services

Prince William County, VA

WSP has provided support to Prince William County on its MS4 program since 2015 and was reselected to continue providing support in 2021.

The following highlights key permit support services provided to the County:

MS4 Permit Support

- **MS4 Service Area Mapping:** WSP identified the County's regulated MS4 outfalls and delineated drainage areas to each outfall point using a hydrologically enforced DEM. WSP mapped forest areas and developed a GIS layer reflecting impervious area in 2009 per the permit.
- **MS4 Inspection Support:** In 2017, WSP supported the County in preparation for an inspection of its MS4 program. This support included review of document submittals and facilitation of mock audits to prepare staff for the types of questions to expect. Conducting mock audits allows localities to identify and address potential deficiencies before they become compliance issues.
- **Historical BMP Evaluation:** WSP supported the County in 2015 with evaluation of areas draining to historical BMPs under a very tight submission schedule in order to obtain Chesapeake Bay TMDL credit for these facilities.
- **MS4 Program Plan:** WSP reviewed the County's MS4 program plan and provided recommendations to minimize compliance risks.

TMDL Action Plans

- **Chesapeake Bay TMDL Action Plan:** WSP provided review and comment on the County's Phase I Chesapeake Bay TMDL Action Plan. WSP recommended including credit for historical BMPs which greatly increased credit.
- **Bacteria, Sediment, and PCB Action Plans:** WSP prepared draft and final action plans in 2016.

Firm/Responsibility:
WSP

Client/Owner:
Prince William County Public Works, Environmental Services

Client Contact:
Madan Mohan

703-792-6851

Project Cost:
- Cost estimate: varies by task order
- Bid amount: not applicable (no design)
- Contract amount: $1M since 2015
- Number of change orders: 0 in past five years

Relevance to Scope:
- MS4 Program Support
- Stormwater Monitoring Support
- TMDL Planning
- Mapping and Data Management

Key Personnel:
- Lynne Mowery, Project Manager
- David Bulova, MS4 Support
- Christina Davis, MS4 Support
- Ilana Ton, Monitoring Support
- Anna Allie, Monitoring Support

Prince William County (continued)

Stormwater Monitoring Support

- **Biological Monitoring:** WSP performs biological monitoring at five sites twice per year (spring and fall) in compliance with the County's MS4 permit. During the monitoring WSP staff collect benthic macroinvertebrates, measure instream parameters, collect water quality grab samples and conduct habitat assessments using the EPA's Rapid Bioassessment Protocols. WSP's biological laboratory processes the benthic macroinvertebrate samples, conducts taxonomic identification, and determines Virginia Stream Classification Index (VASCI) metrics. WSP provides semi-annual and annual reports of the sampling results.
- **Wet Weather Monitoring:** WSP currently performs wet weather monitoring at two sites, quarterly. WSP has been working with the County on the development of a procedure to evaluate new outfalls for this monitoring program based on industrial activities, impervious area, roadways, and managed turf. WSP supported the County in preparation of its wet weather screening protocols and has conducted the monitoring program since 2016, which includes deployment and maintenance of the County's ISCO samplers. The two sites being monitored are in Dale City and Manassas. WSP provides event reports of sampling results.

Isco sampler deployed at Manassas site

Prince William County Consulting Services Related to Environmental Monitoring, Sampling, and Regulatory Compliance

Prince William County, VA

WSP has provided Prince William County, Virginia with consulting services related to environmental monitoring, sampling, and regulatory compliance required at Prince William County Landfill for the past 12 years. The services provided by WSP have included.

Monitoring and consultation activities related to groundwater stormwater, to include:

- Sampling, statistical analysis, report preparation and submission
- Conducting annual training and facility inspections
- Preparing and updating regulatory-required reports, plans and permits, including Corrective Action Plan, Stormwater Pollution Prevention Plan (SWPPP), Spill Prevention Control and Countermeasure Plan (SPCC), Land Disturbance Permit, Virginia Pollution Discharge Elimination System (VPDES)
- Contracting directly with a qualified laboratory to perform analytical work
- Assisting in preparing invitations for bids (IFB) to select an analytical laboratory
- Recommending optimal steps to delineate and protect wetlands
- Inspecting wetland mitigation area (separate contract)
- Regulatory compliance, documentation and coordination
- Feasibility and planning studies
- Providing oversight and submitting recommendations to maintain and improve regulatory compliance and facility operating efficiency
- Providing other environmentally-related engineering tasks as requested.

Firm/Responsibility:

WSP

Client/Owner:

Prince William County Public Works

Client Contact:

Trent Magill, PE

703-792-5701

Project Cost:

- Cost estimate: Varies by task order
- Bid amount: Not applicable (no design)
- Contract amount: Approximately $110,000 per year
- Number of change orders: None in past five years

Relevance to Scope:

- Environmental Monitoring and Sampling

Key Personnel:

- Peter Nash, Project Manager
- David Sarr, Task Manager

National Park Service Chesapeake Bay Stormwater BMPs and Watershed Implementation Plans

DC, Maryland, Pennsylvania, Virginia, West Virginia

WSP is currently supporting NPS in documentation and implementation of Phase III Watershed Implementation Plans (WIPs) for compliance with the Chesapeake Bay TMDL. We assisted the NPS in development of a geospatial database to track stormwater projects in the National Capital and Northeast Regions and update and enhance the database as needed. WSP also supported MS4 compliance activities in Virginia and Maryland. WSP was awarded a second task order to continue these support services in 2021.

Bay TMDL Compliance Support

- **Chesapeake Bay TMDL Watershed Implementation Planning:** WSP worked with NPS to prepare WIP III compliance summaries for DC and the states of PA, VA, and MD. These summaries documented existing and potential BMPs to meet pollutant reduction goals as well as descriptions of NPS lands and regulated properties. In order to prepare these summaries, WSP developed questionnaires that were distributed to NPS park staff to collect data on BMPs installed on park properties. We conducted a training on the Chesapeake Bay Program and data needs for park superintendents. WSP evaluated and compiled this information and input scenarios into the Chesapeake Assessment Scenario Tool (CAST) to evaluate pollutant reduction scenarios for existing and potential BMPs.
- **Chesapeake Bay BMP Tracking Tool:** WSP developed a geospatial database of stormwater features for tracking and reporting purposes. The geodatabase documents required information on BMP type, size, location, operational status, and inspection status. The geodatabase allows park staff throughout the Northeast and National Capital regions to enter and update stormwater BMP data using ArcGIS Online. WSP staff facilitated an online training workshop with park staff on the use of the tool.
- **Assessment of BMP Opportunities at Selected Parks:** WSP conducted assessments at six parks in Virginia, Maryland, and Pennsylvania to identify potential BMP opportunities to reduce pollutant loads to the Chesapeake Bay and prepared a summary report of findings.

Firm/Responsibility:
WSP

Client/Owner:
National Capital Area, National Park Service

Client Contact:
René Senos
202-619-7078

Project Cost:
- Cost estimate: varies by task order
- Bid amount: not applicable (no design)
- Contract amount: $1M since 2015
- Number of change orders: 0 in past five years

Relevance to Scope:
- MS4 Program Support
- TMDL Compliance
- Mapping and Data Management

Key Personnel:
- Lynne Mowery, Project Manager
- David Bulova, MS4 Support
- Ilana Ton, MS4 and Bay Compliance Support
- Christina Davis, Data Management Support

National Park Service (continued)

MS4 Permit Support (under a separate task order)

- **MS4 Compliance Support:** NPS has 4 park units with MS4 permits in Virginia and Maryland: George Washington Memorial Parkway, Clara Barton Parkway, Suitland Parkway, and Baltimore-Washington Parkway. WSP supported the NPS with MS4 annual report preparation in 2020 and compliance support such as preparation of educational and training materials. WSP prepared training presentations for park staff on good housekeeping and pollution prevention and created a YouTube training video that could be viewed remotely during the COVID-19 pandemic.
- **MS4 Service Area Mapping:** WSP evaluated the available MS4 system data for the George Washington Memorial Parkway, created an outfall information table, and removed park areas outside of the census urbanized area, reducing the Park's pollutant reduction requirements for Chesapeake Bay and local TMDLs.
- **Virginia TMDL Action Plans:** WSP prepared the Phase II Chesapeake TMDL Action Plan for the George Washington Memorial Parkway. We compiled data on stormwater BMPs and evaluated pollutant reductions for a shoreline management project at Dyke Marsh. WSP prepared a Consolidated TMDL Action Plan for bacteria and PCB TMDL wasteload allocations assigned to the George Washington Memorial Parkway.

Gettysburg National Military Park

Loudoun County Engineering Services for Stormwater Management Program

Loudoun County, Virginia

WSP has provided comprehensive stormwater management services to Loudoun County since 2018. This has included a full range of stormwater design, floodplain engineering support, MS4 permit services, stormwater pond sediment management and sampling and dam monitoring services through the execution of 28 different task orders. WSP was recently successful in helping the County to secure $366K in Stormwater Local Assistance Fund (SLAF) grant funds for a constructed wetland retrofit project. WSP was reselected for this contract in 2021.

Representative projects include:

MS4 Permit Support

- **MS4 Service Area Mapping:** WSP evaluated potential expansion of the MS4 due to estimated increases in urbanized area.
- **TMDL Action Plans**
- **Chesapeake Bay TMDL Action Plan:** WSP developed the County's final Phase II and draft Phase III Chesapeake Bay TMDL Action Plan which included a detailed compliance analysis to track and report progress toward meeting Bay TMDL pollutant reduction targets. This effort included refining the County's regulated MS4 service area and a County-wide review of septic system disconnects using GIS and an analysis of land records.
- **Comprehensive Local TMDL Action Plan:** WSP prepared a comprehensive TMDL action plan for sediment TMDLs for Goose Creek and Bull Run and bacteria TMDLs for Bull Run and Sugarland Run.

Engineering Services

- **Local Resilience Plan:** WSP prepared a resilience plan for the County in accordance with the Virginia Community Flood Preparedness Fund. The plan was approved by DCR in April 2022. The plan was also prepared to fulfill the requirement for a comprehensive flood mitigation and protection plan should the County choose to adopt a local Stormwater Management Fund.
- **Selma Estates Floodplain Analysis and Mitigation Alternatives Assessment:** WSP conducted a detailed flood study and mitigation alternatives assessment which included a HEC-RAS 2D hydraulic model to better simulate the multidirectional flooding of the existing condition and allow for investigation of mitigation alternatives. WSP delivered comprehensive technical report and presented results to the County Board of Supervisors and impacted homeowners.

Firm/Responsibility:
WSP

Client/Owner:
Loudoun County General Services

Client Contact:
Chris Stone

571-258-3542

Project Cost:
- Cost estimate: varies by task order
- Bid amount: $500K (other jobs pending construction)
- Contract amount: $1.7M since 2018
- Number of change orders: 0 in past 3 years

Revelance to Scope:
- MS4 Program Support
- TMDL Planning
- Mapping and Data Management
- Engineering Services

Key Personnel:
- Troy Biggs, Client Account Manager
- Aaron Jordan, Project Manager
- David Bulova, MS4 and TMDL Support
- Lynne Mowery, Senior Reviewer

Loudoun County (continued)

- **Ridings – Pond Embankment Repair:** WSP provided design and construction quality assurance (CQA) services for repair of a pond embankment that was damaged due to beaver activity.
- **Moorefield Dam Monitoring:** WSP has been serving as the observer for Stage 1 conditions for the Moorefield Station East Pond High Hazard dam per the dam's Emergency Action Plan (EAP) since July 2019.
- **Yorktown Court BMP Retrofit:** The Yorktown Court BMP Retrofit is a work order level design to replace an existing catch basin and culvert with a concrete weir wall and extended detention.

Ridings – Pond Embankment Repair

- **Floodplain Alteration and Floodplain Study Review Support:** WSP is supporting the Department of Building and Development as an on-call service. The review support includes site plan review; field visit; review of hydrology, hydraulics, and mapping; comment summaries; and meetings with County staff and the applicants.

Ridings – Pond Embankment required repair due to beaver activity

Town of Leesburg Comprehensive Civil Engineering Services

Leesburg, Virginia

WSP has provided comprehensive stormwater management services to the Town of Leesburg since 2003. This has included a full range of stormwater design, stream restoration, flood control, industrial stormwater, and MS4 permit services through the execution of 34 different task orders.

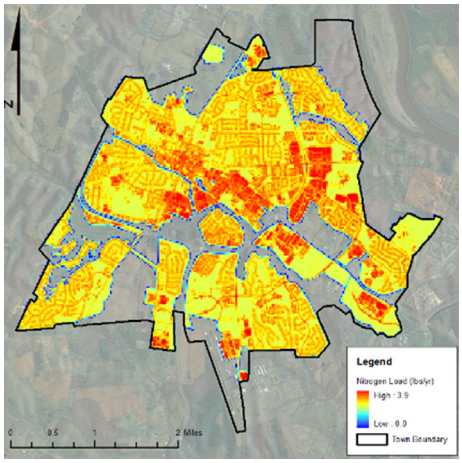
Representative projects include:

MS4 Permit Support

- **MS4 Program Plan:** Prepared the Town's initial MS4 Program Plan in 2003 and updated the plan for new permit cycles in 2008, 2013, and 2018.
- **Illicit Discharge Plan/Dry Weather Screening:** Assisted with the development of the Town's Illicit Discharge Detection and Elimination (IDDE) in 2007, 2014, and 2019. Conducting dry weather screening in 2024.
- **Public Education and Outreach Plan:** Developed the Town's initial Public Education and Outreach Plan to identify strategies for reducing pollutants.
- **MS4 Service Area Mapping/Inspection Applications:** WSP assists with annual MS4 map and outfall data table updates. Currently reviewing and updating Town stormwater infrastructure data and developing BMP and outfall inspection applications.
- **SWPPPs:** Developed the SWPPP for the Central Maintenance Facility. The most recent update incorporates the Utilities Maintenance Facility.
- **Nutrient Management Plans:** Developed a consolidated nutrient management plan for Town parks in 2021.
- **Annual Reporting:** Each year, WSP assists with preparation of the MS4 annual report with TMDL compliance updates.

TMDL Action Plans

- **Chesapeake Bay TMDL Action Plan:** Worked with the Town to analyze potential compliance scenarios for the Chesapeake Bay TMDL. Stormwater retrofits were identified, evaluated, and ranked. WSP has since prepared the Town's Phase I, Phase II, and draft Phase III Chesapeake Bay TMDL Action Plans.
- **Goose Creek Benthic TMDL Action Plan:** WSP developed the initial plan in 2015 and updated the plan in 2020.



Leesburg Chesapeake Bay TMDL compliance analysis

Firm/Responsibility:
WSP

Client/Owner:
Leesburg Dept of Public Works & Capital Projects

Client Contact:
Chad Minnick, MPA

Stormwater and Environmental Manager

703-737-7129

Project Cost:
- Cost estimate: varies by task order
- Bid amount: $5M
- Contract amount: $1.2M since 2010
- Number of change orders: 2 in past 3 years

Relevance to Scope:
- MS4 Program Support
- Stormwater Monitoring Support
- TMDL Planning
- Mapping and Data Management
- Engineering Services

Key Personnel:
- Aaron Jordan, Client Account Manager
- Troy Biggs, Project Manager
- David Bulova, MS4 Support
- Ilana Ton, MS4/ Monitoring Support
- Christina Davis, MS4 Mapping and Data Management
- Lynne Mowery, Senior Review

Town of Leesburg (continued)

Industrial Stormwater and Stormwater Monitoring

- **Leesburg Airport:** WSP conducts quarterly site evaluations, semi-annual stormwater quality sampling, and annual staff training. Assisted the Town through two DEQ site compliance visits.
- **Water Pollution Control Facility:** Developed the SWPPP in 2004 and updated it in 2009 and 2014. In 2019, WSP successfully guided the Town through the process of obtaining a certificate of no-exposure from Virginia DEQ. As a result, the permit was terminated in 2020.

Engineering Services

- **Tuscarora Creek Flood Mitigation and Stream Restoration Project:** This integrated flood mitigation and stream restoration design project covers more than 2,300 feet of stream reach. In addition to assessment and design, we provided office and field engineering and inspection services to ensure conformance with the plans through 18 months of construction and assisted the Town with the as-built and project closeout processes.
- **Chesapeake Bay TMDL Compliance Analysis/SLAF Grant Funding:** WSP collaborated with the Town to develop scenarios for achieving compliance. Over 40 projects were identified and analyzed for nutrient and sediment reductions. Projects were then ranked based on their pollutant removal cost efficiency ($ per lb/yr removed). WSP was then successful in helping the Town to secure $1.6M in SLAF grant funds for retrofit projects.

Greenway Farm constructed stormwater wetland retrofit two months after completion

City of Hagerstown
City Park Outfall Drainage Study
Hagerstown, Maryland

The City of Hagerstown contracted WSP Environment and Infrastructure Solution, Inc (WSP) to complete a drainage study for the City Park Outfall drainage system, also referenced as Maggie's Hole.

The study was intended to identify areas currently at risk of flooding and areas at future risk of flooding or worsening flood risk due to climate change. A single combined 1-dimensional and 2-dimensional rainfall runoff PCSWMM model was developed to identify insufficient capacity within the storm sewer system. The 1-dimensional model routes the precipitation runoff through the storm sewer network to compute the capacity of the pipes and junctions. This provides information about where the storm sewer capacity is sufficient or exceeded. However, the 1-dimenstional model is unable to route the volume exceeded from the storm sewer at the surface level. Coupling the analysis with a 2-dimensional model allowed for the simulation of the overland flooding, capturing the volume that is unable to enter the storm sewer network due to capacity limitations and routing it over the land surface. Also, both short duration/high intensity and long duration/low rainfall events were modeled.

The contributing area to the City Park Outfall, located on the western side of downtown Hagerstown, was modeled for this study. The drainage area was manually delineated based on the drainage system and the terrain, resulting in a 720-acre drainage area that contributes to the City Park Outfall. The contributing drainage area to City Park Outfall was modeled as a 1D model in PCSWMM. A detailed 2D modeling domain was developed for a 65-acre area portion between the City Park Outfall to Washington Street to approximate flood inundation depths.

Twelve model simulations were performed for Mid-Century 2-hour and 24-hour design scenarios with return periods of 5, 10 and 25 years.

Firm/Responsibility:
WSP

Client/Owner:
City of Hagerstown Department of Public Works

Client Contact:
Jim Bender

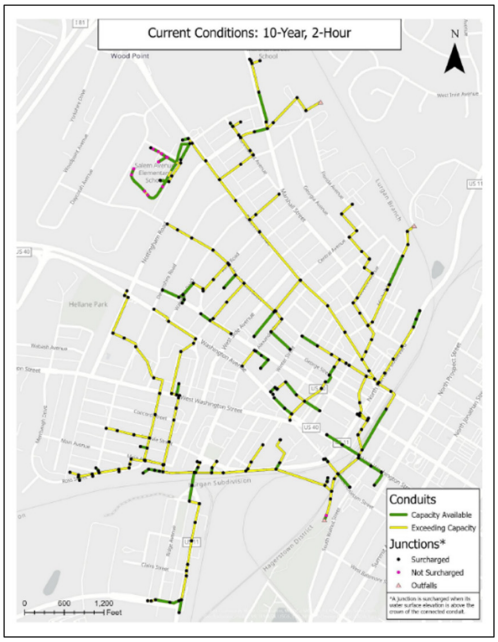
City Engineer

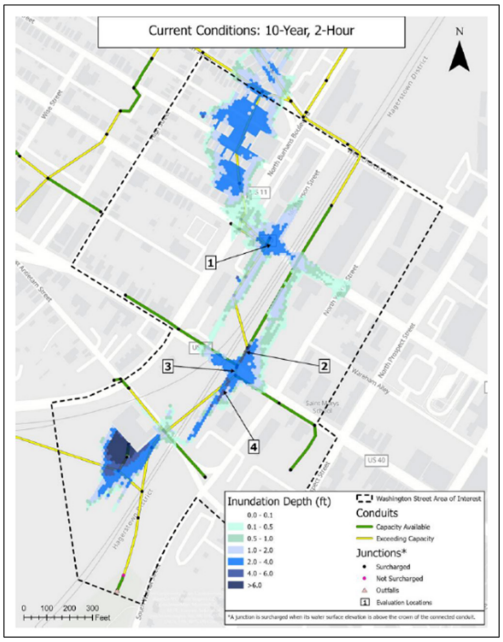
301-739-8577

Project Cost:
- Cost estimate: $73,000 (task order cost)
- Bid amount: Not applicable (no design)
- Contract amount: $73K
- Number of change orders: 0

Relevance to Scope:
Floodplain Study

Key Personnel:
- Lynne Mowery, Project Manager
- Alexandria Hunt, Senior Engineer
- Diyar Rashid, Engineer





System Capacity and Inundation Depth Maps

Section 6
Quality Assurance

Quality Assurance

WSP understands that a successful QA/QC plan begins with collaborative conversations, improvements on projected problems, and informed implementation. However, we believe that commitment to quality is more than just a plan and checklist. Quality means understanding key design elements unique to the project environment and client specifications. WSP understands the importance of documenting decisions made regarding items such as quantity tabulations, bidding and contract administration, and the value of documenting design decisions. These details are what will form a strong working relationship between the client and WSP. Partnerships determine success. Our leadership team is dedicated to creating a QA/QC plan that furthers that goal.

The following are the primary components of the QA/QC program:

- ***Project Review Policy:*** For this project, Elizabeth Treadway and Matt Breen will provide peer review or assign review to other qualified WSP senior managers depending on the nature of the task being reviewed.
- ***Safety Policy:*** All members of the WSP project team take part in monthly safety training meetings. Any and all field work requires the development of a Health and Safety Plan (HASP) prior to engagement in the work.
- ***Project Planning:*** WSP understands how important it is to meet time and budget constraints and that the key to success is to develop a thorough project plan, including a realistic schedule. WSP will work closely with the Town to establish clear, achievable expectations at the outset of the project planning process. While there are always unforeseen circumstances, a well-crafted project management plan will ensure that these circumstances can be dealt with quickly and that the project remains on time and on budget. David Bulova, as the Project Manager, will identify the resources needed for each project task and establish a work plan in concert with the Town.

Quality Assurance/Quality Control

For WSP, project excellence means consistently delivering high-performing, technically excellent, and well-managed projects for our clients across all end markets. It's about keeping a level of engagement and support to ensure our vision remains laser focused.

By demonstrating the value and efficiency that can be achieved, we build a collaborative and innovative environment for our teams to thrive. It is WSP's policy to provide high-quality professional services and project deliverables to its clients, consistent with the scope of services. WSP's Quality Management System (QMS) is followed to assure the control of quality during the development of all projects. Specifically, each project is required to implement a project QA/QC plan.

To ensure quality and consistency in our project delivery, WSP developed a companywide QMS that defines the responsibilities of management and the processes that control the way we conduct our business and manage our projects. WSP's QMS Manual (QMS-100) provides and supports a framework for risk management, work product review, methods for continual improvement, and a consistency of approach. The QMS is comprehensive, iterative and standards-based, as discussed below.

- ***Comprehensive:*** The QMS is structured around the Plan, Do, Check and Act, and Review framework. Our QMS contains policies and procedures which address organizational structure; roles and responsibilities; planning; legal requirements; risk management; improvement; employee competence, training, and awareness; and document control.
- ***Iterative:*** The QMS also incorporates internal auditing, management review, and technical community feedback for continuous improvement to help WSP's project teams assess project technical and financial performance. Performance is measured and monitored on a regular basis and includes qualitative, quantitative, leading, and lagging indicators in addition to progress against goals and objectives, as well as preventative and corrective actions. The internal audits, which cover safety, account and deliverable management, and conflict of interest management and resolution, are a source of pride within WSP and a

driver for ever higher standards for our operations and project delivery.

- ***Standards-Based:*** WSP's QMS is based on ISO 9001 and has been externally certified in select offices in the United States.

We have developed a culture of thorough engineering evaluations that are subject to a consistent process of checking and reviewing by experienced professionals. Every document produced by WSP is checked for accuracy and reviewed by qualified personnel prior to delivery to the client. We have developed a standard set of processes in which all project managers are trained to mitigate risk and ensure project success. Additionally, projects are regularly audited on both financials and overall hygiene of peer and senior reviews at the office level on an annual basis to ensure that our standards are consistently met.

Schedule Control

As part of each project or task order, WSP creates a work plan that includes a detailed schedule. For more complex projects, WSP will use project management software (Microsoft Project®). As the project progresses, the schedule will be continuously monitored to ensure the work is being performed within the established timeframes and critical path items are tracked closely.

Cost Control

WSP uses the Horizon program as its primary cost control system. Horizon is a fully integrated project management and accounting system that allows the company to manage its services on a client project basis. Projects are set up in Horizon with specific client information, project/task descriptions, hour and dollar budgets, billing rates, invoice formats, and other project-specific information. Horizon tracks all detail charges by project and compares the actual hours and dollars to the budgets.

Project personnel maintain time sheet records that are submitted weekly to WSP's accounting department. On a weekly basis, or at the request of the WSP's Project Manager, the accounting department will generate statistical information with regard to project costs, both incurred and foreseen (as initially planned). David Bulova, as the Project Manager, is responsible for reviewing the reports to assess the status of the project in terms of budgetary and scheduling considerations and including applicable information in monthly client reports.

Section 7
Professional References

Professional References

Martin Hurd

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Chris Stone

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Email: chris.stone@loudoun.gov

Chad Minnick, MPA

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Lawrence Latour, PE

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wsp.com

As one of the world's leading professional service firms, WSP brings clarity and vision to complex challenges by working with and advising governments and private-sector clients on key aspects of earth sciences and environmental sustainability. With the recent acquisitions of the Environment & Infrastructure business (E&I) of John Wood plc. and Golder, we have built the largest environmental practice in the world. Our over 23,000 environmental professionals provide specialized services to clients in some of the most highly regulated industries, including mining, oil and gas, energy, industrial, property and buildings, water and transportation. They advise on matters ranging from clean air, water and land, to biodiversity, green energy solutions, climate change and Environmental, Social and Governance ("ESG") issues. From design, permitting, planning and operations, to decommissioning and asset remediation, our environmental professionals are ready to support you through the entire lifecycle of your projects.