**Town of Vienna**
**RFP No. 23-37**

# *ON-CALL CIVIL ENGINEERING SERVICES*

**June 16, 2023**

*WHITMAN, REQUARDT & ASSOCIATES, LLP*


WRA

ATTACHMENT 5

Whitman, Requardt & Associates, LLP
Engineers · Architects · Environmental Planners Est. 1915

June 16, 2023

Attn: Jerry Amacker, CPPB, VCO, VCA
Town of Vienna, Purchasing Office
127 Center Street S
Vienna, Virginia 22180

Re: RFP 23-37 On-Call Civil Engineering Services

**POINT OF CONTACT**
Dean Westman, PE, Associate
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Dear Mr. Amacker:

**Whitman, Requardt & Associates, LLP (WRA)** is pleased to submit our proposal to provide On-Call Civil Engineering Services to the Town of Vienna as requested in RFP 23-37.

WRA is a regional full service, multi-disciplinary professional engineering firm of over 750 personnel. For over 100 years, WRA has provided professional engineering services in the Mid-Atlantic region and for more than 70 years in Virginia to municipal clients and VDOT. Our unique partnership management structure enables WRA to provide a full range of quality multi-disciplinary services from our local offices that results in the efficient delivery of projects through design and construction. For over 10 years, WRA has supported the Town of Vienna with projects under On-call Civil Engineering Services contracts. WRA has completed 51 projects for Vienna since 2013, including projects that cover the full range of services requested in this RFP.

**WRA Team: Dean Westman, PE** will serve as the Project Manager and main project representative for the duration of this contract. Mr. Westman brings 42 years of management and design experience on all aspects of civil engineering projects throughout the Northern Virginia region. He has experience in the water and wastewater industry, including years of direct experience with the Town of Vienna through the On-Call Civil Engineering Services contracts. The WRA Team will be assisted by the same team of qualified subconsultants that are currently delivering projects for the Town including ***DMY Engineering Consultants, Inc. (DMY), LandDesign, Inc. (LandDesign), and NewGen Strategies & Solutions, LLC (NewGen).***

**Local Resources:** The WRA Project Team has experienced, multi-disciplinary personnel and resources in Virginia. Our Fairfax office includes over 50 professionals experienced in:

- Water and wastewater, structural, mechanical, electrical and civil engineering
- Construction management and inspection
- Transportation and roadway engineering
- Environmental science

Based on our qualifications and proven record, Whitman, Requardt & Associates, LLP respectfully requests the opportunity to provide the required on-call engineering services as set forth in this submittal.

Very truly yours,
Whitman, Requardt & Associates, LLP

Dennis J. Hasson, PE, BCEE
Partner

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# SECTION 1:
# Executive Summary

## EXECUTIVE SUMMARY

Whitman, Requardt and Associates, LLP (WRA) is a full service, civil engineering firm with an office in Fairfax, Virginia that serves the Town of Vienna and other municipalities, utility authorities, and state agencies in Northern Virginia. WRA is a partnership formed in 1915 to serve the civil public infrastructure needs of governments. Today, WRA is a regional full-service, multi-discipline professional engineering firm of over 750 personnel with offices in Virginia, Maryland, Delaware, and Pennsylvania. For more than 100 years, WRA has been providing professional civil engineering services in the Mid-Atlantic region.

The firm's full-service resources and wide range of experience allows us to respond to the needs of the Town of Vienna in an expedient and efficient manner. Our Fairfax based, in-house staff will handle all phases of each task order project from concept level through design, construction and facility commissioning, and startup. Our extensive in-house expertise includes:

- Building renovations and architecture
- Stormwater and drainage engineering
- Community and land use planning
- Construction management and inspection
- Electrical engineering
- Environmental studies
- Geotechnical engineering
- Mechanical engineering
- Instrumentation and SCADAMaintenance and public works facilities
- Traffic and transportation engineering
- Water and wastewater engineering
- Instrumentation and controls engineering
- Community involvement and information
- Structural engineering
- Safety and security systems
- Flood studies and flood protection
- Mapping and GIS
- Bridge inspection and rehabilitation
- Site development and permitting
- Surveying and easement acquisition

WRA will provide the services anticipated by the Town of Vienna under this on-call contract. Since 2013, we have been providing these services to the Town under Contract RFP 13-05 and we have also assisted the Town with numerous projects since 2003. Our full-service resources, knowledge and experience with the Town of Vienna, in addition to our innovative engineering approach to civil engineering projects, enable us to provide the necessary disciplines required for this On-Call Civil Engineering Services Contract RFP 23-37.

The enclosed submittal contains a description of our firm and team experience, engineering record, and professional references. We believe that the Town of Vienna should select the WRA Team to renew our current On-Call Civil Engineering Services contract for the following reasons:

**SECTION 2 – Experience with Public Works Type Projects:** WRA was founded over 100 years ago to provide water and wastewater engineering services to communities in the Chesapeake Bay region and has since been providing complete civil engineering services throughout the Mid-Atlantic region and beyond. We work for municipal, state and federal government departments, agencies, and authorities. Our focus is on publicly owned civil infrastructure works from planning through design and construction. WRA has extensive experience with the Town of Vienna and other Northern Virginia communities.

**SECTION 3 & SECTION 4 – Project Team Capabilities and Local Resources:** Dean Westman will manage the contract from our local Fairfax office with support from our offices in Virginia and our headquarters office in Baltimore. Our team can fulfill each requirement of the RFP and has anticipated several potential support services as indicated on the organizational chart. The Team is supported by multi-disciplinary resources of over 750 personnel in the Mid-Atlantic offices:

- The Project Team is local and can provide rapid response, if necessary.
- We can commit the local resources necessary to complete tasks assigned under this contract.
- Experienced technical staff will be very responsive to your needs and can respond in a timely manner to any situation.
- The project staff will be involved throughout the term of the work from project initiation through completion of construction.
- Our professional staff is nearby and is readily available to make on-site visits and to meet with the Town staff for regular progress meetings on any issue during any phase of this contract.

**SECTION 5 – Sub Consultants:** WRA has teamed with ***DMY Engineering Consultants, Inc. (DMY), LandDesign, Inc. (LandDesign), and NewGen Strategies & Solutions, LLC (NewGen)*** for this contract. DMY will provide geotechnical services, LandDesign will provide site plan preparation and reviews, landscape architecture, and surveying, and NewGen Strategies will provide management studies.

**SECTION 6 – Engineer's Record and Accomplishments:** We take pride in our commitment to client service and our ability to bring projects to completion. Section 6 provides information regarding several outstanding projects. Other key points are:

- Our clients are primarily municipal agencies with which we have long standing relationships.
- A good measure of our commitment and success in providing client services is that approximately 80% of our business is from repeat clients.
- We can function as an extension of your staff by providing the technical expertise necessary for you to successfully complete the projects anticipated under this contract.

**SECTION 7 – Quality Assurance:** Tracking project schedules and project costs is a very important component of a successful project. WRA has a continuing record of successfully monitoring these elements on our projects. This is due primarily to the following factors:

- Established QA/QC program
- Accurate cost estimating
- Assignment of senior staff
- Schedule compliance

**SECTION 8 – Professional References:** WRA has worked with all of Vienna's neighboring cities and towns, the Virginia Department of Transportation, Fairfax County, and Fairfax Water. We have completed outstanding civil projects with our clients. We are currently working with the engineers listed in Section 8 (Professional References) and the quality of our work validates our ability to provide the services envisioned under this contract.

# SECTION 2:
# Offeror's Experience with Public Work Type Projects

# OFFEROR'S EXPERIENCE WITH PUBLIC WORKS TYPE PROJECTS

## *PROJECT APPROACH TO TASK ORDER REQUESTS*

WRA has reviewed the RFP and we have prepared the following approach to delivering the various types of projects requested by the Town over the next 4 years. WRA knows that a wide range of services will be required and we have been providing many of these same services for the Town of Vienna for the past 10 years.

WRA has completed numerous projects for municipal clients under on-call projects similar to the work the Town of Vienna will conducting under the On-Call Civil Engineering Services contract. Many of our projects are short duration, specialized projects. Our Team typically provides studies, assessment designs, hydraulic modeling, structural engineering, bridge inspections, traffic studies and other work like Vienna will be needing in the next several years. Our ability to provide this wide range of services is directly related to our experience with the Town of Vienna and other municipal clients in Northern Virginia and throughout the Mid-Atlantic region.

### People Focused. Project Driven.

*"I have been working WRA for the past 10 years and it's been a real pleasure to work with the firm, specifically Dean Westman. Dean has been my main point of contact and he has been very responsive and available no matter what time/day. In case of an emergency, Dean has always been available. Every time I ran into an issue and needed help/input, I reach out to Dean and he always goes above and beyond to help and address Arlington County needs. Dean is organized and takes time to understand the criticality of each project and provide the proper resources needed. I have received professional support and great leadership throughout my experience working with WRA. Thanks a lot, to everyone for all the hard work and the support you gave Arlington County for the past 10 plus years."*

— Amani Eisa | Arlington County, VA
Water Program Manager

Our project approach demonstrates WRA's commitment to providing the requested services to the Town for the duration of the contract. Our project manager, Dean Westman, and task leaders are Registered Professional Engineers in the Commonwealth of Virginia and they will be responsible for conducting the tasks done during this contract under the direction of Mr. Westman.

## *Task Assignment*

Mr. Westman, our Project Manager, will work with the Town to develop a specific scope of work that will define the responsibilities, deliverables, and schedule for our services. At the onset of each task assignment, Mr. Westman will select an appropriate Task Leader for the work. When we are contacted about an assignment, Mr. Westman will discuss with the Town's representative the specific requirements to include the Scope of services,

- Deliverables,
- Schedule,
- Budget,
- Specific goals, information and data, and
- Special concerns of public officials, residents, businesses, or regulatory agencies.

*Structural repairs at the Tapawingo Water Storage*

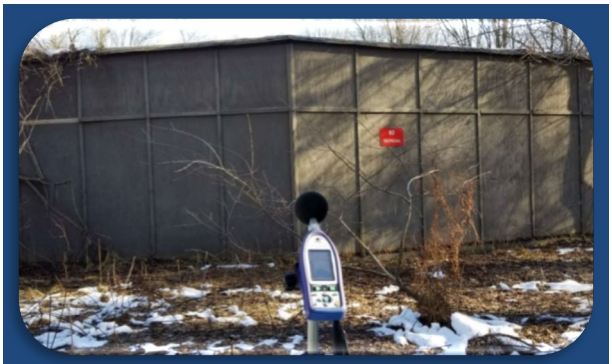
If needed, an initial meeting will be held on site to observe the location of the work, such as a structure or stormwater management facility. An initial meeting is usually helpful in further refining the scope of services and fees before submitting a draft of the proposal. The proposal will document the project objectives as outlined in the initial task meeting, as well as enumerate design or regulatory standards, project schedule, anticipated deliverables, invoicing procedures, appropriate contact person(s), and other special criteria that will be met. The proposal will also describe the role of any subconsultants that will work on the task. Stakeholders such as VDH, community groups, VDOT and other Commonwealth agencies, utility companies, and elected officials, may be identified.

WRA's reputation for establishing a well-defined scope and effective schedule for each project is evident in the record of our successfully completed projects. In determining the schedule and work plan for each task, we will:

- Review current plans, reports, and other documents,
- Visit and document information about the project site,
- Discuss project details with the Town's Project Manager,
- Consider regulatory requirements and other environmental documentation and permits,
- Determine the level of necessary coordination of Utilities within the project,
- Establish design criteria with the Town, and
- Review existing cost estimates and budget.

## *Resource Management*

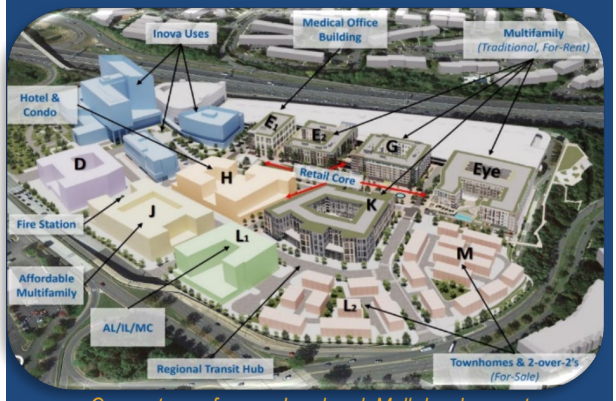
To provide the Town of Vienna with capacity and availability, WRA offers access to our firm-wide professional and technical staff. With more than 50 design professionals based in our Fairfax office – less than 15 minutes from the Town's offices, the resources of a 400-person design center in Baltimore, and 70+ staff in our Richmond office – both two (2) hours from the Town – the WRA Team has the resources necessary to serve Vienna. WRA's project team includes the engineering specialists likely to be required for future assignments. Specialists and production personnel can be added as needed from our overall resource pool.



*Noise monitoring at the Beulah Road Leaf Management Facility*

*Scotts Run Trail, Fairfax County, VA*

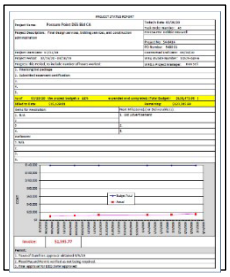
*WRA provided the needed expertise to assist the City with review of designer-builder submittals for the **West End Alexandria (Landmark Mall Development).** WRA provided hydraulic engineers, stormwater engineers, electrical engineers, construction specialists and other civil engineering specialists to supplement the City's reviewing and approval staff.*




*Concept map for new Landmark Mall development (image via City of Alexandria)*

## Schedule and Budget

As each Task Order is underway, Mr. Westman will report to the Town's Project Manager regularly on the progress of the work, potential changes to the schedule and budget, and means for resolving issues. A monthly report will be prepared and submitted with each Task Order invoice,



***Under WRA's On-Call Civil Engineering Services Contract RFP 19-01 with the Town of Vienna, WRA completed 36 projects on schedule and below budget or at budget. WRA developed task proposals and completed all work that the Town request our help on. These projects were as varied as acoustic studies, bridge inspections, SCADA designs and support, building structural studies, water and wastewater hydraulic analyses, water storage tank inspections, office renovations, and topographic surveys. WRA is proud to provide comprehensive civil engineering support to the Town of Vienna***

## Cost Estimating

WRA's engineers routinely develop construction cost estimates for all types of projects, from small utility improvements to large scale transportation enhancement projects and retrofits to municipal buildings and facilities. We are familiar with current cost and material delivery trends. WRA also has in-house cost estimators that are members of AACE International and who use AACE's Recommended Practices 17R-97 and 56R-08 in developing Engineering Opinions of Probable Construction Costs.

### People Focused. Project Driven.

***"The WRA team was very knowledgeable and made extra efforts to ensure that parkland was responsibly restored. I highly recommend WRA for the great services they provided to the Park Authority, and I believe they will do an outstanding job on similar projects."***
— Cynthia McNeal, PE | Fairfax County Park Authority – Planning and Development Division

### COST CONTROL & SCHEDULE MANAGEMENT

*"WRA planned, designed and assisted with the construction management of the 24-inch diameter Gravity One Water Main on Vacation Lane in Arlington. The project site is adjacent to Dorothy Hamm Middle School, with one of the largest populations of 6th to 8th grade students in the Commonwealth of Virginia. Arlington Public Schools imposed a very shortened schedule for the water main project on the Department of Environmental Services to accommodate reconstruction of the Dorothy Hamm School and repaving of Vacation Lane. All planning, design and construction services for the new water main were completed in less than 9 months, before the start of the 2017-2018 school year. The project construction cost came in at 33% less than WRA's estimate. "*

## Change Management

Engineering projects evolve as work progresses. WRA identifies changes to the project scope, budget, schedule, and reports to the Town's Project Manager regarding possible impacts and means to rectify any problems to set the project on a proper course.

## Risk Management

A key component of task assignments is minimizing the risk incurred by the Town and stakeholders on the project. Risks on a project can range from cost increases due to market volatility, impacts on existing infrastructure, extended delivery times for equipment, extended construction schedules, easements and property acquisition, and impacts to the general public during construction and constructability of the designs. The risk associated with each task can vary significantly from little or no risk to high risk and the risk management plan will identify the risks and importance of each risk to the overall success of the task assignment. To manage the risks, a risk registry can be developed that identifies the risks, scores the risk severity and probability, and mitigation procedures to minimize each risk. WRA will work closely with the Town and other stakeholders to regularly review the risk register and mitigation approach during the course of design and construction. Below is a risk register developed for the Accotink Gravity Sewer project.

**Accotink Gravity Sewer Improvements**
**Preliminary Engineering Phase**
**Services Project#WW-000032-007**
**Risk Register**

| Risk Identification | Qualitative Rating | | | | | Risk Response | | |
|---|---|---|---|---|---|---|---|---|
| Description | Probability (1-10) | Impact (1-10) | Risk Score | Risk Ranking | Risk Identification Date | Risk Mitigation | Trigger | Team Members |
| WCD delays in review of WRA submittals and delays in scheduling Workshops | 7 | 9 | 63 | 2 | | Early submittals and management of review responsiners | Schedule slippage. | Westman, Hwang |
| WRA delays in submitting documents and errors in submitted documents | 8 | 8 | 64 | 1 | | Communication QA/QC Controls | Redo of previously submitted documents | Westman, Gasiorki, Hwang |
| Changes in Scope of Work | 7 | 9 | 63 | 2 | 06/27/21 | Assess impacts to schedule and to budget | Schedule and budget slippage | Hwang, Fetah, Malik |
| Problems associated with hydraulic model | 2 | 8 | 16 | 5 | | QA/QC Modeling work | Modeling analysis delays and problems | Westman, Borkowski |
| Delays in TWPS FM and Difficult Run discharge point coordinaton | 3 | 1 | 3 | 6 | | Coordinate with Tysons West and Difficult Run project managers | Lack of communication and delay in TWPS decision process | Westman, Hwang |
| Alignment impacts to VDOT, I-66 Mobility Partners and WMATA (Metro) at I-66/Nutley cloverleaf intersection and Metro parking area | 7 | 9 | 63 | 2 | | Coordinate work with project Owners | Changes to project plans, schedule ad manage ment personnel | Westman, Hwang |
| Protected flora & fauna impact alignment selection and construction | 3 | 3 | 9 | 7 | | Site investigation | Field report indicates species of concern in project area | Westman, Hwang |
| Fairfax County Park Authority and Vienna Parks and Recreation may be opposed to Alignment Alternatives 3A and 3B | 5 | 6 | 30 | 4 | | Coordinate with FCPA and Vienna | Meeting | Westman, Hwang |
| Impacts at WMATA Metro Station parking lots | 5 | 8 | 40 | 3 | | Coordinate with WMATA and I-66 Mobility Partners | Meeting | Westman, Hwang |
| Private property owner concerns | 2 | 7 | 14 | 6 | | Coordiante with property owners / stakeholders - Continued outreach | Meeting | Westman, Hwang |
| | | | | | | | | |
| | | | 0 | | | | | |
| | | | 0 | | | | | |
| | | | 0 | | | | | |

Key Terms:
**Risk** : The risk stated in a complete sentence which states the cause of the risk, this risk, and the effect that the risk causes the project.
**Probability**: The likelihood that a risk or opportunity will occur (on a scale from 0 to 10 with 10 being the highest).
**Impact**: The impact of the risk on the project if the risk occurs ( scale from 0 to 10 with 10 being the highest).
**Risk Score**: Determined by multiplying probability and impact (scale 0 to 100)
**Risk Ranking**: A priority list which is determined by the relative ranking of the risks (by their score) within the project with the number one being the highest risk score.
**Risk Mitigation**: Actions that will lessen the risk.
**Trigger**: Something which indicates that a risk is about to occur or has already occurred.

*During construction of the Center Street Water Main, damage to the pavement out side of the trench areas developed because of the poor quality of the existing pavement. Working with the Town Civil Engineers, WRA is developing alternatives, cost estimates and sequencing for repairing the road with full depth curb-to-curb pavement replacement as either a change order for the water main contractor or as a new contract for a roadway paving firm.*

*Center Street Water Main Replacement, Town of Herndon*

*The PWCSA Possum Point Water Main in Dumfries is located in an area contaminated with coal ash from a coal-burning power plant that was in service for over 100 years. WRA evaluated soil conditions and helped the PWCSA select the best solution replacement water main material and corrosion protection system to minimize risk of pipe corrosion. Ductile iron pipe, with zinc and asphaltic coating and polyethylene encasement was selected as the lowest rick solution considering cost, constructability and longevity.*


*Possum Point Water Main, PWCSA*

## *Proposed Approach to Managing Subconsultants*

WRA utilizes a select group of subconsultants to assist in specialized Task Orders. WRA has long-standing relationships with these firms and two of our subconsultants have worked with WRA on Vienna projects.

Mr. Westman will be responsible for developing the scope of work and budgets for subconsultants and monitoring their work.

| Firm | DBE | SWaM | Role & Responsibilities | History with WRA |
|---|---|---|---|---|
| **DMY Engineering Consultants Inc.**<br>DBE # DB20259665<br>SWaM #684372 | ◣ | ◣ | **Subconsultant**<br>Geotechnical Engineering | **10 years** |
| **LandDesign, Inc.** | | | **Subconsultant**<br>Civil/Site, Landscape, and Surveying | **20 years** |
| **NewGen Strategies & Solutions, LLC** | | | **Subconsultant**<br>Management Studies | **20 years** |

## *Right of Way / Easement Acquisition:*

Although many of the projects that may be done under this on-call will be conducted on Town roadways or on publicly owned property, impacts outside of the public domain are sometimes unavoidable. Some projects may require the relocation of utilities and the acquisition of ROW and/or easements. WRA has provided utility coordination and relocation oversight (including a review of the utility company's relocation plans) on many projects and contracts. Most notably, WRA has held the VDOT Design of Utility Adjustment Plans & Associated Services Contract for Northern Virginia since 1998. WRA's subconsultant, LandDesign works with WRA to ascertain the extent of public land boundaries and to develop easement plats when needed for projects.


*WRA delineated wetlands for the Leesburg Exeter Water Main and Sewer Interceptor Project*

## *Environmental Permitting*

WRA has a team of environmental personnel with extensive experience providing a full range of environmental services including:

- Federal NEPA documentation,
- State and Local environmental documentation,
- Corps of Engineers Nationwide 58 permits for utility projects in the Waters of the US,
- Section 404/401 Clean Water Act permitting,
- Air and noise analysis,
- Traffic analysis,
- Hazardous materials investigations,
- Stream restoration/stabilization,
- Wetland creation/restoration,
- Threatened and endangered species surveys,
- Forestry studies,
- Wetland delineations and wetland functional assessment modeling,
- MS-4 permit compliance,
- TMDL action plans and compliance,
- Federal NEPA documentation,
- Nutrient management planning,
- Compensatory mitigation design,
- Section 4(f)/6(f) analysis,
- Section 106 coordination,
- Landscape planning and design,
- Chesapeake Bay Preservation Area determinations,
- Fauna and Flora inventories.

In addition to the above-mentioned services, WRA has provided design plans that included roadway, pedestrian and bicycle facilities design, traffic analysis and design, drainage and stormwater management design, structural design, geotechnical design, surveys and plat preparation, landscape design, and public involvement.

### *Projects Involving Designs for Public Bidding for Construction*

When a task for a more complex design is assigned, WRA will implement a project management plan that will verify that the Town's goals are identified, the budget is closely monitored, lines of communication are clear, and project requirements and constraints are understood. , Continually managing a project with the different stakeholders such as the Town's elected officials, citizens, utility companies and developers enables a project to proceed and avoid time consuming redesigns.

### *Project Development*

WRA will identify design criteria and plan requirements to identify potential design items within the project that could result in ambiguity and then establish the appropriate criteria.

If the task assignments involve federal funds, such as VDOT LAP/Revenue Sharing, WRA will assist the Town in identifying and completing the requirements included in the federal-aid and state-aid checklists provided in the VDOT LAP Manual. LAPs will follow the project development process outlined in the LAP manual which includes:

- Preliminary Design (30%)
- Public involvement and ROW authorization
- Intermediate Design (75%)
- Final Design (100%)
- Advertisement and pre-bid package

## *Preliminary Design*

As part of this phase of the work, data gathering will be conducted, including a review of old construction plans, developer plans, and utility plans. WRA will perform field surveys and mapping. The deliverable at the end of this phase will be 30% plans for review by the Town and other appropriate agencies. In addition, a geotechnical report will be provided, if necessary, a draft preliminary hydraulics report will be developed, and a cost estimate based on the preliminary plans will be submitted. The design will be evaluated to determine potential utility conflicts and relocation concepts. A cost for addressing potential utility impacts will be developed.

For the preliminary design submission, the reports and plans provided by WRA will be submitted to the Town for review and comment. A review meeting will be held to discuss the preliminary phase plans.

The preliminary design may indicate utility conflicts. Identifying conflicts early in the design process enables coordination with utility companies before the design is set.

## *Public Involvement and Town Council Involvement*

Preliminary plans provide the opportunity to inform the public of the project details and provide detailed information to the Vienna Town Council. Comments received by these stakeholders can be incorporated into the plan set. WRA will coordinate with the Town to determine the appropriate public involvement for a particular task.

**Preliminary Design**

- Preliminary field review
- Control surveys
- Field surveys and base mapping
- Property surveys
- Underground utility mapping
- Traffic analysis
- Review As-builts
- Hydraulic analysis
- Preliminary concept and design
- Constructability review
- Concept review meeting
- Identify permit requirements
- Preliminary hydraulic report
- Geotechnical report
- Develop preliminary cost estimate
- Submit plans and preliminary reports

*During the Pandemic, WRA used non-traditional methods to engage the public through by holding Public Information Meetings outside and a park near the project*

**Public Involvement, Right of Way Authorization and Easement Identification**

- Incorporate revisions based on preliminary design comments
- Establish right of way and easement locations
- Conduct public information meetings
- Provide brochures, handouts and comment sheets at public meetings
- Determine right of way, and easement impacts and costs
- Submit plan set for right of way authorization (LAP)

## *Intermediate Design*

Intermediate design phase plans generally include more detailed geotechnical and hydraulic analysis for a defined design that incorporates the comments from the preliminary design meeting. The construction cost estimate will be updated to reflect the intermediate design. Coordination with the utilities is also included during the intermediate design to identify conflicts and easement requirements. Specific items that would be addressed in greater detail in the intermediate design typically include wetland delineations, environmental impact assessments, and cultural resource determinations. If any of these are present, WRA will work with the Town to avoid and/or minimize impacts or take the appropriate actions if avoidance is not practical. This phase will also include a constructability review by our construction management and inspection (CMI) team to determine impediments to constructing the project. WRA will prepare construction permit applications for submittal by the Town. An intermediate cost estimate will also be prepared. Following a review of the construction documents by the Town, a meeting between the Town and WRA will be held to discuss the project.

**Intermediate Design**

- Incorporate revisions based on public comments
- Provide right of way and easement acquisition services
- Property plat developed
- Update design as necessary to satisfy the Town and other regulatory agency requirements
- Constructability review
- Update the Town with construction cost estimate
- Submit 50% plans and specifications
- Submit updated reports
- Draft easement plats (if necessary)

## *Final Design*

With the approval of the Town, final construction plans can be created. The purpose of the Final Design is to develop a set of final construction documents that will:

- Enable the Town to receive and compare competitive bids for construction.
- Provide the construction contractor with sufficient information and details required to bid and build the project in accordance with the Town's intentions for a safe and economical project.
- Provide design documents that are of sufficient completeness and accuracy to minimize the need for design changes and change orders during construction.

**Final Design**

- Negotiate final easements
- Finalize plans based on comments from the Town and regulatory agencies
- Submit 90% plans and specifications
- Prepare and submit final permit applications

The work under this phase includes modifying and finalizing the construction drawings for each project. The final design plans will be an enhanced version of the intermediate plans and will be in the Town construction plan preferred format. A final construction cost estimate is also provided.

## *Pre-Advertisement and Bidding*

WRA can assist the Town in the preparation of the bid documents and advertisement of the construction of the projects.

WRA can provide copies of the draft plans and bidding documents to the Town for review and for uploading to a preferred bid advertisement site such as the eVA platform. WRA can review contractor bids and make a recommendation to the Town for award.

## *Construction Administration*

For each infrastructure construction project, WRA can provide construction administration services during project construction. WRA will provide assistance with technical support, scope review meetings, design revisions, RFIs, etc. Any significant plan changes during construction can be documented by WRA on the plans. WRA typically utilizes the same engineers who worked on the planning and design of the project during construction administration. This provides continuity and knowledge about the project from start to finish.


**Pre-Advertisement and Bidding**

- Record plats
- Update design to meet all final comments including the Town's Finance Department
- Final constructability review
- Final construction cost estimate
- Acquire all final permits
- Submit final bid ready documents
- Submit final reports
- Assist the Town in preparing responses to bidder questions
- Review bids
- Provide the Town with recommendations for contract award

**Construction Administration**

- Attend pre-construction conference
- Review construction schedule and construction schedule updates
- Review shop drawings
- Prepare responses to Contractor Requests for Information
- Review Contractor payment requests
- Review Change Order requests
- Provide Inspection services
- Conduct monthly Progress Meetings
- Assist the Town in resolving Punch List items
- Provide Commissioning and Startup services
- Create the Record Drawings (As-builts)

## QUALITY ASSURANCE AND CONTROL

WRA has in place a well-established, Quality Assurance and Quality Control (QA/QC) Program. WRA will develop and implement a project specific QA/QC Process to be used by all team members on all phases of all task assignments under this contract. We believe successful project delivery includes delivering a project that meets the objectives as defined by the Town of Vienna in a timely manner and within established budgets for both design and construction. To achieve these goals, our QA/QC approach is based on the following principles:

1. Selection of qualified staff from each discipline, experienced in the type of work involved and that have worked on similar projects together.
2. Experience and knowledge of Project Managers and other senior staff.
3. Regularly scheduled meetings for coordination between disciplines.
4. Reliance upon all staff members for individual quality checks through interdisciplinary cross checking throughout the project and major submission milestones.
5. Close monitoring of project schedule and budget.
6. Direct project involvement and monitoring by the Principal-In-Charge (Dan Seli) to meet client requirements for schedules and budgets.

WRA's QA/QC Process is organized into four key components that include Project Management, Design Control, Construction Support, and Internal Surveillance. The Project Management component specifies the Quality Assurance and Quality Control (QA/QC) procedures to be followed and implemented by the Project Manager for

*Eisenhower Avenue Roadway Widening Project, Before (top), Construction (middle), CA/CI (bottom)*

management responsibilities including process controls, project schedule and budget review, team coordination, sub-consultant oversight and DBE utilization, and document control., A key first element of the Design Control component is to verify that the Design Team has a complete understanding of the project scope, and the resources required to complete the project and that senior engineers are engaged in each element of the design from day one. Our formal QC/QA program utilizes checklists such as the VDOT LD-436, but also includes WRA's own checklists that have been developed over the years. We strive to have plans that minimize the design and internal review of projects. We incorporate appropriate spreadsheet-type checklists, to check and control design related efforts including engineering calculations; plan preparation; construction cost estimate development; permits; construction specifications; report preparation; and other design related documents (e.g., testing, constructability review, etc.).

- QA/QC for construction support is implemented to verify that WRA is supporting the client's field construction personnel in a manner to verify conformance with the project requirements; timely reviews and responses to shop drawings, RFIs or other field-related issues; cost effective resolution of any unforeseen field changes or design issues; and open and efficient communication with the contractor in all progress meetings, partnering meetings or during conflict resolution.
- Lastly, Internal Surveillance is incorporated into the QA/QC Process as a separate check of the project management and design staff to verify that the appropriate QA/QC Process procedures are being properly followed by the management and design team for project aspects and provides for methods to address inadequacies in the completion of required QA/QC checks and confirmations. Record copies of QA/QC Process documents, including checklists and marked-up review documents, will be retained on file until the completion of work on the contract.

*King Street Metro Station*

**Quality Assurance / Quality Control (QA/QC)**

Develop Decision Registers and Risk Registers
Compile comments on plans and specifications and other submittals, prepare responses and document disposition
Conduct Value Engineering sessions
Provide internal reviews
Commissioning and startup
Support asset management activities

**Complete**

- Provide project closeout services
- Retain project documents
- Submit project for awards
- Ongoing support of operations and maintenance

- Individual Task Managers and their respective technical discipline leads are responsible for implementing the QA/QC Process procedures for Design Control and Construction Support. Each technical discipline will assign independent experienced technical staff not engaged in the project to perform independent reviews of documents for their project discipline.

## *SOFTWARE PROGRAMS*

The WRA Team is fully automated to serve the Town and VDOT with an extensive network of computer systems and software to accomplish the aspects of work in the requested services for the proposed project. Please note the following:

- **Roadway Design** – A range of programs are used for the design of roadways and includes coordinate geometry programs and roadway design programs such as OpenRoads Designer CONNECT and GEOPAK.

- **Structure & Bridge Design** – A range of programs for the design and load rating bridge structures. Programs include 3D FEM Software (LARSA 4D, MIDAS & STAAD), Structural Steel Design (MDX), Pre-stressed Concrete (Leap Bridge), Sub-Structure Design (Leap Bridge), Foundation Analysis (FB-MultiPier & L-pile); for load rating, AASHTOWare Bridge Rating (BrR) and DESCUS (when required) and custom MathCAD Worksheets.

- **Traffic Engineering** – Software for analysis of traffic flow, capacity, signal and other traffic control operations including Synchro, SimTraffic, SIDRA, CORSIM, VISSIM, VISUM, HCS, and HUBCAP.

- **Hydrology/Hydraulics Analysis** – Numerous programs for hydrologic and hydraulic drainage design including TR-20, TR-55, HEC-1, HEC-RAS, GEOPAK Drainage, OpenRoads Designer CONNECT (Drainage), WSPRO, HY-8, HY-9, PondPack, Scour, Basin, HydroCAD, PCSWMMM, InfoWorks, and others.

- **CADD Programs (Drafting and Design)** – MicroStation CE and MicroStation CONNECT are the latest Bentley-supplied Computer-Aided Design / Drafting (CADD) as well as AutoCAD and Civil3D design programs used by our Engineers. In addition, WRA is working on ProjectWise for


*Taylor Run Hydraulics & Hydrology*

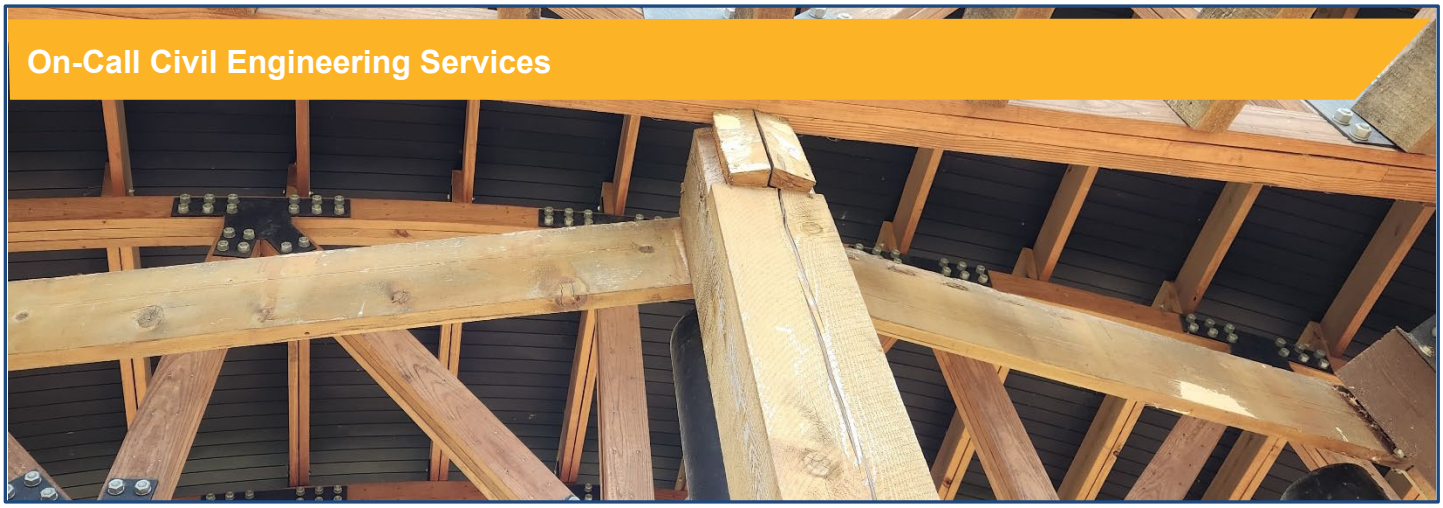


*WRA assesses stream morphology as part of the semi-annual bridge inspections in Vienna.US Merchant Marine Academy – Mallory Pier*

many VDOT projects. The combination of these two platforms provides a solid foundation for productivity by integrating modeling with engineering CADD and business applications.

- **UAS Drone Inspections** – Photographs provide one of the best records of job progress. Acquired consistently, photos allow managers to track jobs and judge if work is progressing on schedule, and they can also prove how well work was completed (claims mitigation tactic). Additionally, a review of a photographic record can demonstrate when progress was at its optimum, which helps stakeholders identify hang-ups and informs solutions for improving efficiency and design. Drones are powerful, reliable, and affordable imaging platforms that address these concerns. Drones can capture crisp images in places it might otherwise be difficult or impossible, such as close to the exteriors of high-rises or underneath spans and structures. In summary, drones are an affordable option for:
  - Report and forecast project status
  - Document progress over time
  - Plan and adjust transportation routes
  - Track efficiency of site layout
  - Monitor resource use and adjust allotment
  - Track and record contract work

At WRA, we have certified FAA UAS certified pilots, own our UAS equipment, and carry UAS-specific insurance policy. **Miscellaneous** – ESRI ArcGIS, PlanGrid/Autodesk Build, BlueBeam, Zoom, Primavera, MS Project, Deltek, Microsoft Office Suite MS Visio, Adobe Creative Suite), and PDF Exchange Editor.




**Project Details:**

| | | | |
|---|---|---|---|
| Project Owner: | Town of Vienna | Project Cost: | $929,600 (2018 to Present) |
| Project Reference: | Christine Horner, PE | Completion Date: | On-going |
| Contact Information: | (703) 319-8630; christine.horner@viennavava.gov | | |

## *Project Description*

For over a decade, WRA has provided services to the Town of Vienna for general civil engineering projects. Our work has included water and wastewater studies, hydraulic modeling, staff augmentation, water storage tank inspections, drainage studies and designs, bridge inspections and designs, structural inspections, reports and designs, transportation and pedestrian improvements, and assistance with the Town's supervisory control and data acquisition (SCADA) system. WRA also supports the Town with numerous other tasks such as management studies and acoustic studies.

**RELEVANCE TO VIENNA CIVIL ON-CALL**

- ✓ Structural and bridge inspections and design engineering
- ✓ Water and sewer studies
- ✓ Architectural/structural design
- ✓ Transportation system design
- ✓ Feasibility Studies
- ✓ Water storage tanks

## BRIDGE SAFETY INSPECTIONS:

WRA conducted bridge safety inspections of the Town's small culvert bridges for VDOT and Town roads in 2018 and 2020 and 2022. Inspections are conducted in accordance with VDOT and Federal Highway Administration requirements and reports are submitted to VDOT. Several bridges over Wolftrap Creek and other streams in Town are inspected and assessed for culvert channel scour condition, roadway deck and substructure condition, and condition of safety rails and guardrails. Photographs, sketches, field notes, and channel profiles are also provided in a report for each culvert. Biannual and other inspections of the culverts under roads in Town are a requirement of VDOT.



*Culvert Bridge on Maple Avenue*

## BRIDGE IMPROVEMENT ASSESSMENTS AND DESIGNS:

WRA conducted a structural analysis and design of repairs for the pedestrian bridge connecting the Park Department's Historic Freeman House Store and Museum that connects to the Washington and Old Dominion Trail. Construction of the new Freeman Store Bridge will be completed this summer. WRA will also be preparing designs for improvements to the safety rail system for the Echols Street bridge over Wolftrap Creek. The new safety rails will provide additional protection for pedestrians, bicyclists, and automobiles.

## SITE PLAN AND PLAT FOR THE TOWN HALL ANNEX BUILDING:

WRA conducted a topographic, utility, and boundary survey of the Town Hall Annex Building at 301 Center Street South with the assistance of our subconsultant, LandDesign. WRA and Land Design also developed an easement plat, suitable for filing in the County Courthouse along with the deed for the property. The Town Hall Annex site will be developed in some manner as determined by the Citizens of Vienna. The topographic survey will be utilized as the basis for future projects including drainage and parking area improvements, ADA infrastructure, and new recreational features.

## BOWMAN HOUSE ROOF REPAIR DESIGN:

The Bowman House was constructed in 1890 as a school for the Town and has been in continuous use since then. The building is now a meeting place and classroom for adult education. The roof system had been modified several times to create storage space by removing or changing roof support structural members. WRA conducted a structural analysis of the roof system and designed modifications to enhance structural integrity and meet building code requirements. WRA also provided engineering services during the construction of the roof system improvements.

## TREE LEAF DISPOSAL MANAGEMENT SYSTEM SUPPORT:

The Town collects fallen tree leaves from residential areas and mulches the leaves at the Beulah Road Maintenance Facility. Stored leaf mulch is distributed to residents and landscapers free of charge. The leaf

storage, mulching, and distribution system is a significant expense to the Town and the noise generated during leaf mulching has been a concern from a few residents. WRA assisted the Town in monitoring noise in the residential Beulah Road area in 2020. Our acoustic engineers confirmed that noise levels at the perimeter of the facility does not violate the Fairfax County Noise Ordinance. WRA, working with our subconsultant NewGen Strategies, analyzed the leaf mulching and disposal work as a management system and compared the Vienna system to leaf management systems operated by neighboring towns. The leaf management study and recommendations for improvements are under review by Town Council.

## SCADA SUPPORT:

WRA provides water storage tank inspections and evaluations, design of repairs and coating systems and bidding, construction administration, and inspection services for the rehabilitation of Herndon's 2 water storage tanks. WRA also provides support in reviewing design plans and calculations for cellular communication equipment on the water storage tanks. WRA provides inspection services for the installation and removal of cellular equipment following review and commentary on the plans by WRA.

## TOWN HALL ANNEX BUILDING CONDITION STUDIES:

WRA conducted an architectural and mechanical, electrical, and plumbing (MEP) inspection of the Town Hall Annex and provided an assessment of the building condition. The Town Hall Annex is a former church located at 301 Center Street South near Town Hall and Vienna's vibrant commercial district. The Annex building and site will be utilized in some way as determined in the future by the Citizens of Vienna. WRA's work included determining the current condition of the Annex relative to the Building Code and providing recommendations and cost estimates for bringing the Annex into compliance with the Building Code. WRA analyzed the partial demolition of the structure and provided planning level construction costs for the partial demolition of the building.

## INSPECTIONS OF WATER STORAGE TANK CELLULAR EQUIPMENT INSTALLATIONS:

WRA is providing inspections of cellular equipment at the Tapawingo water storage tank. Various cell phone providers including Verizon and T-Mobile are permitted to install cellular phone signal transmission equipment on the Tapawingo water storage tank and the Town's 2 other storage tanks. Plans, drawings, and data for cellular equipment installations developed by structural engineers working for the cell phone companies are reviewed by WRA in accordance with structural engineering standards of care conventions. WRA inspects the installation of new equipment and removal of old equipment. Damage or unauthorized modifications to the Tapawingo tank are recorded and reported by WRA, with directions to repair or replace damaged tank equipment made by the Town based on the recommendations in WRA's report to the Town.

## SCADA SUPPORT:

WRA provides Supervisory Control and Data Acquisition (SCADA) services for the Town of Vienna. WRA installed SCADA hardware and software for monitoring and controlling operations at the Town's 3 water storage tanks. Two of the tanks include water booster pumps. The SCADA system monitors tank water level and flow, pressure, pump speed, and other factors. WRA provides ongoing maintenance support for the SCADA system as well as troubleshooting services.

## HYDRAULIC MODELING AND ANALYSIS SUPPORT:

WRA provides hydraulic engineering services for the Vienna water distribution system utilizing the WaterGems hydraulic model. WRA recently helped the Town with analysis of fire flow capacity in the Courthouse Road area and we also provide regular updates and improvements to the hydraulic model. WRA developed the Town's WaterGems hydraulic model as a management tool for the water distribution and storage systems.WRA conducts analyses with Town staff for fire flow determinations and system capacity improvements. WRA is also using the hydraulic model to assist the Town in analyzing alternatives for increasing system capacity to support growth in the Town.

## STRUCTURAL AND ARCHITECTURAL ENGINEERING SUPPORT:

WRA assists the Town with professional structural and architectural services for the analysis of improvements and modifications to buildings and structures owned by the Town. WRA has assisted with assessing historic structures including the Bowman House and with improvements to the Town Hall Annex, and the Town's Community Center. WRA is also assisting with an analysis of the Trellis and Amphitheatre at the Town Green. WRA will provide recommendations for improvements to the staircase at the press box on Waters Field. The staircase at the press box is badly deteriorated and can no longer be used. At the Town Green, the work will include an assessment of the condition of the Trellis and Amphitheatre with recommendations for improvements.

## General Water and Sewer Engineering Services

**Project Details:**

| | | | |
|---|---|---|---|
| Project Owner: | Town of Herndon | Project Cost: | $1.82 Million (2017-Present) |
| Project Reference: | Michael Farr | Completion Date: | Ongoing |
| Contact Information: | (703) 435-6800; mike.farr@herndon-va.gov | | |

## HERNDON WATER AND SEWER UTILITY MASTER PLAN UPDATES:

WRA created the Town's master plan for the Town of Herndon water and wastewater utility in 2016. Since then, WRA has provided updates for the Master Plans to account for the tremendous and varied growth experienced by the Town. A shift from commercial to residential development and the demand for a new office, commercial and residential development associated with the new metro Silver Line Stations is generating increased demand for water and wastewater services throughout Town.

**RELEVANCE TO VIENNA CIVIL ON-CALL**

- ✓ Water and sewer system analysis and design
- ✓ Construction cost estimates, management and inspection
- ✓ Color renderings
- ✓ Preparation of drawings and specifications

The Town currently provides water service to approximately 5,800 accounts with an average billed water usage of 2.10 MGD. The Town receives all water supply from Fairfax Water through the Fairfax Water distribution system at 3 connection points to the Town's distribution system. The Town also has 2 elevated, one million gallon capacity water storage tanks and a half million gallon stand pipe which is not currently in service. The Town has over 68 miles of water distribution piping and a single pressure zone that is maintained within a range of 493 to 501 feet (38 psi to 41 psi).

The Town's wastewater collection system receives approximately 2.42 MGD of wastewater which is discharged to the Fairfax County sewage system via the Sugarland Run interceptor, Folly Lick Creek Interceptor, and the Horsepen Creek Interceptor. The Town includes over 61 miles of sewer pipelines ranging in size from 8-inches to 27-inches diameter. Wastewater flows into the Fairfax County system are metered through 3 billing meters.

WRA developed the Town's Innovyze InfoWater water distribution system model and Innovyze InfoSewer wastewater collection and transmission model used to analyze the 2 systems. Temporary sewer meters were installed throughout Town for model calibration.

WRA continues to provide updates to the water and sewer master planning services included hydraulic analysis utilizing the updated models to develop capital improvement recommendations, water distribution strategies, and wastewater collection and transmission strategies.

## WASTEWATER FLOW MONITORING SUPPORT:

WRA provides support to the Town of Herndon for monitoring wastewater flows in the Sugarland Run Interceptor and the Follow Lick Interceptor. Herndon is limited by agreement with Fairfax County as to the total flow and peak flow discharged from Herndon's 2 interceptors to the Potomac Interceptor. As part of that effort, Herndon is modifying the flow measuring system to be consistent with the flow monitoring conducted by Fairfax County. Working with a subconsultant, WRA is assisting Herndon with the selection and implementation of new flow monitoring systems. WRA is also assisting Herndon in consulting with Fairfax County regarding wastewater flows and in reducing peak rates of wastewater flowing into the County system.

## WASTEWATER CONVEYANCE ALTERNATIVES PLANNING:

WRA is assisting the Town in developing alternatives for discharging wastewater from the Town's 2 interceptors into the Fairfax County wastewater system and the Potomac Interceptor. WRA provided a preliminary engineering analysis for conveying wastewater flows into the Loudoun Water system via the Horsepen Run Interceptor. WRA also provided preliminary engineering services for a wastewater pumping system to convey flows out of the Sugarland Run Interceptor into the Difficult Run tributary area which discharges wastewater to the Noman Cole Water Pollution Control Plant. WRA's Sugarland Run Pump Station PER included hydraulic analysis, preliminary station and yard piping layout, environmental and regulatory permit analysis, and planning level cost estimate. The Town of Herndon is currently monitoring flows in the Sugarland Run system and monitoring the pace of development in the tributary area prior to proceeding with implementing the PER recommendations.

## FOLLY LICK INTERCEPTOR REPLACEMENT DESIGN:

WRA's planning work with the Town of Herndon identified future capacity deficiencies in downstream sections of the Folly Lick Interceptor. The Folly Lick Interceptor is one of 2 interceptors that convey Herndon's wastewater to the Potomac Interceptor in Fairfax County. WRA designed the replacement of approximately 1,000-feet of 18-inch diameter RCP sewer with a new 24-inch diameter PVC interceptor. The replacement sewer provides increased capacity for the most downstream segments of the Folly Lick Interceptor where the sewer discharges through a metering station into the Fairfax County interceptor system. Replacement in place was determined to be the most economical and practical way to upsize the interceptor. The Folly Lick Interceptor is in a Herndon town park at this location and environmental controls for minimizing impacts to the stream and the vegetation in the park will be implemented. WRA also created a traffic control plan for the multiuse path in the park to allow for continued use of the park by pedestrians and bicyclists during construction. WRA designed a bypass pumping system for maintaining wastewater flows during construction. The project required coordination with multiple agencies including the Town's Parks and Recreation Department, Fairfax County Park Authority, Fairfax County, and the Corps of Engineers for a Nationwide 58 permit. Construction of the project is pending as Herndon reviews new flow data from the new flow monitoring system implemented by WRA. Upsizing of this interceptor may not be needed for several more years.

## CENTER STREET TRANSMISSION MAIN DESIGN AND CONSTRUCTION MANAGEMENT SERVICES:

WRA designed the replacement of 1,500 feet of new 16-inch diameter ductile iron water main to replace the existing 8-inch main on Center Street. The new water main will serve as part of the new transmission system for Herndon that moves the primary water supply source from multiple connections to the Fairfax Water system to a 24-inch diameter Fairfax Water transmission main on the south side of Town. WRA conducted a topographic, boundary, and utility survey with our subconsultant, LandDesign, with the survey used as the basis for AutoCAD drawings depicting pipe plan and profile, sediment and erosion control, and temporary and final paving. An important aspect of the transmission main plan is the connection to multiple apartment complexes on Center Street. To connect the existing 8-inch mains that serve the apartments, WRA developed a plan that minimizes water service outage time and maintains service during construction. Insertion valves will be used to make the connection to the apartments to minimize water distribution outages during construction. WRA is currently providing construction management and inspection services for the Center Street project.

## WATER STORAGE TANK INSPECTION, RECOATING AND CELLULAR PHONE EQUIPMENT REVIEW AND INSPECTION SUPPORT:

WRA provides water storage tank inspections and evaluations, design of repairs and coating systems and bidding, construction administration, and inspection services for the rehabilitation of Herndon's 2 water storage tanks. WRA also provides support in reviewing design plans and calculations for cellular communication equipment on the water storage tanks. WRA provides inspection services for the installation and removal of cellular equipment following review and commentary on the plans by WRA.


*Recoating of the Third Street Tank*

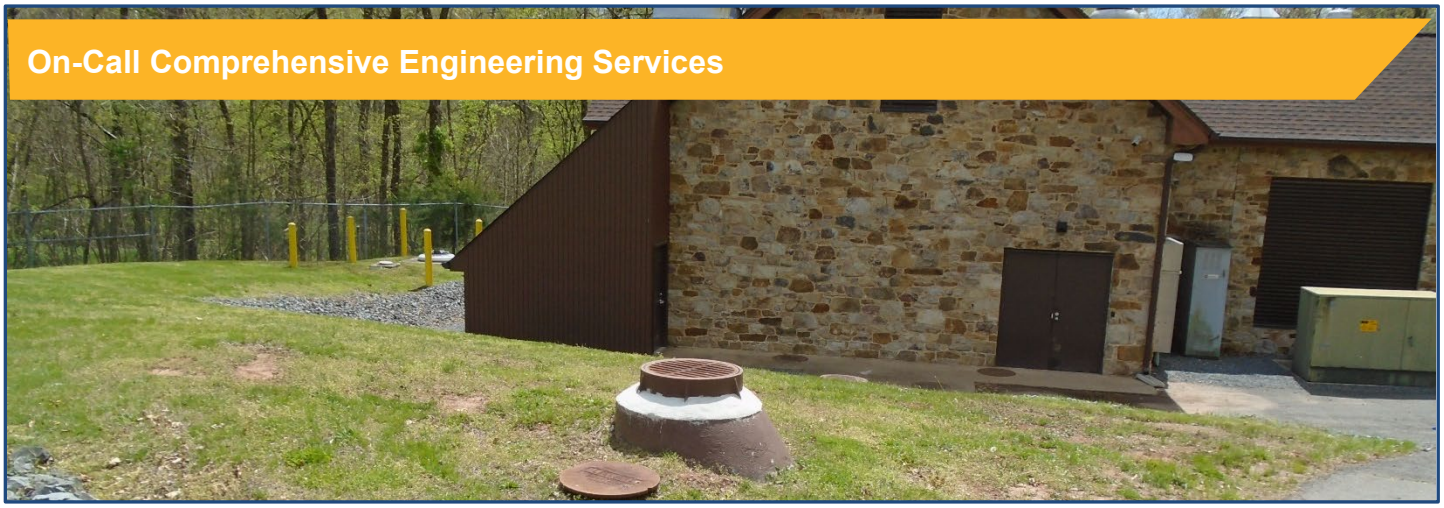
## SCADA SUPPORT:

WRA provides support for Herndon's supervisory control and data acquisition system (SCADA) that monitors and controls the water and wastewater infrastructure. WRA designed and implemented upgrades to the SCADA and we currently providing maintenance and troubleshooting services to the Town. WRA is also supporting the Town in the shift away from Parshall flumes for flow monitoring to a Lidar based depth and velocity measuring system.

## SUGARLAND RUN PUMP STATION RENDERINGS:

As part of the PER for the Sugarland Run Pumping Station, WRA developed renderings of the proposed station for use by Town officials at public meetings. The new pump station will be located in a public park that includes historic structures and other buildings. WRA provided 3 different types of facades along with landscaping into the renderings. The CAD based renderings can be presented at meetings through various formats including on posters, in PowerPoint presentations, and in small scale 3D mock-ups.

## On-Call Comprehensive Engineering Services



**Project Details:**

| | | | |
|---|---|---|---|
| Project Owner: | Town of Leesburg | Project Cost: | $540,000 (2020 to Present) |
| Project Reference: | Brian Stone | Completion Date: | Ongoing |
| Contact Information: | (703) 737-7120; bstone@leesburgva.gov | | |

### *Project Description*

WRA is currently under contract with the Town of Leesburg to provide a variety of on call services for water and wastewater system analysis, water distribution, wastewater collection, staff augmentation, and related professional engineering services. The scope of services includes planning, design, and services during construction including inspection. Summaries of the services performed under the on call engineering contract are listed below.

**RELEVANCE TO VIENNA CIVIL ON-CALL**

- ✓ Water and sewer system analysis and design
- ✓ Construction cost estimates, management and inspection
- ✓ Staff augmentation
- ✓ Preparation of drawings and specifications

### WATER MODEL CALIBRATION AND UPDATE:

WRA updated the Town of Leesburg hydraulic model including calibration and migrating the final model to Infowater Pro. The system wide model update, model calibration, and software update provide a tool for Town Staff to answer: “How is this development impacting the Town’s water system?” questions. The calibrated water model integrates field data (SCADA and actual fire flow testing) with system simulations for planning water system updates for this fast-growing Northern Virginia community.

### CATTAIL RUN PUMP STATION:

The pump station was built by a developer in 1996 and is now owned and operated by the Town. The station has undergone a series of upgrades to improve resiliency and reliability. Elevations noted on record drawings for the interceptors and pump station were found to be inconsistent; making analysis of the system difficult. The station force main is prone to breaks, creating sanitary sewer overflows (SSO) at manholes upstream of the station. WRA identified and confirmed critical station and manhole elevations and made recommendations for improving resiliency. Preliminary planning was started for the development of an in-line wastewater storage system volume that will provide Town staff operational flexibility during emergency shutdowns of the station.

## THE FIELDS WATER MAIN REPLACEMENT:

WRA prepared a Preliminary Engineering Report and Final Design for the replacement of watermains in the Fields apartment complex. The Fields apartment complex includes aging water mains serving multi-family apartment buildings with large water meter vaults and support facilities for each separate meter. The legacy water mains were not constructed to Town standards and are prone to breaking. WRA planned and designed a complete water system replacement with new interconnections to the Town system and adjacent apartment complexes. The legacy system was developed without the benefit of easements. WRA and LandDesign developed new easement plats for the water system for recordation in the County Courthouse.

## EXETER WATER AND SEWER MAIN REPLACEMENT:

WRA is assisting Leesburg with the replacement of the water transmission main and sanitary sewer interceptor in the Exeter neighborhood. The Exeter development includes a stormwater retention facility consisting of a water body impounded by an earthen dam. The water transmission main and sewer interceptor are within the earthen dam and this arrangement poses some risk to Town citizens in the event of a dam break. WRA is designing the relocation of the existing pipelines into proposed easements downstream of the retention facility. WRA is designing access roads to allow inspection and maintenance of the pipelines. WRA and LandDesign will develop the final easement plats for the pipelines and access roads. WRA is also preparing a permit submittal under the Virginia Marine Resources Commission's Joint Permit Application (JPA) process. WRA's wetlands delineations and environmental impact depictions will be incorporated into a Corps of Engineers Nationwide 58 Permit for waterline and sewer line work within the Waters of the United States.

## OAKLAWN WATER MAIN:

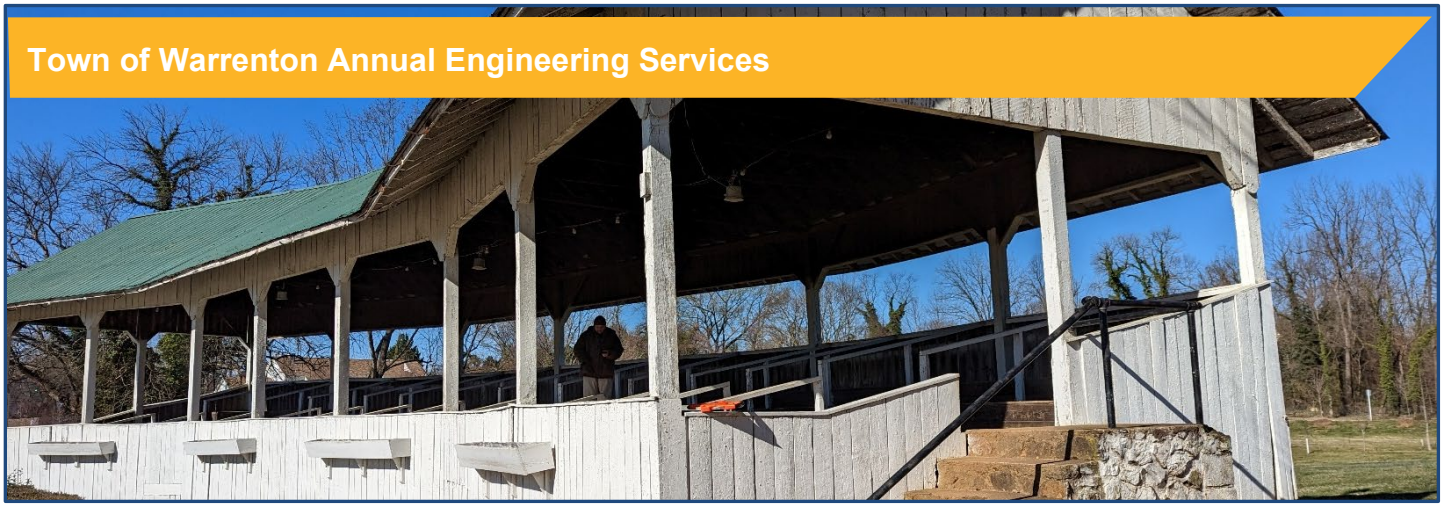
WRA is designing the final connection of 2 pressure zones within the Town's water distribution system with a new water transmission main and pressure reducing valve located on the Oaklawn property near the Leesburg Airport. The Oaklawn area is home to a growing number of data centers and other commercial/industrial facilities. The area's pressure zone currently terminates in an 8-inch water main. WRA is designing the replacement of the 8-inch water main with a new 24-inch transmission main that connects the Oaklawn pressure zone with an adjacent zone. WRA's design will include a new pressure reducing valve housed in a vault.

## STAFF AUGMENTATION:

WRA provides water storage tank inspections and evaluations, design of repairs and coating systems and bidding, construction administration, and inspection services for the rehabilitation of Herndon's 2 water storage tanks. WRA also provides support in reviewing design plans and calculations for cellular communication equipment on the water storage tanks. WRA provides inspection services for the iinstallationand removal of cellular equipment following review and commentary on the plans by WRA.

WRA provides professional construction management services including inspection for right-of-permits on infrastructure projects throughout Leesburg. WRA provides experienced construction management personnel under multiple task orders. WRA's inspectors are familiar with the maintenance of traffic, pavement restoration, and utility construction. WRA construction inspectors utilize the Town's construction management software to develop and upload daily reports and monitor the flow of construction administration information including materials testing reports and contractor payment application data. WRA's inspectors serve as staff augmentation for Leesburg staff that may be unavailable for assignment in infrastructure construction projects.

## Town of Warrenton Annual Engineering Services



**Project Details:**

| | | | |
|---|---|---|---|
| Project Owner: | Town of Warrenton | Project Cost: | $252,000 |
| Project Reference: | Paul Bernard, PE | Completion Date: | 2020 - Present |
| Contact Information: | (540) 347-1101 x244; pbernard@warrentonva.gov | | |

### *Project Description*

WRA has worked with the Town of Warrenton for over 20 years through Engineering Task Order Contracts on multiple projects associated with the water and wastewater pumping and conveyance systems, treatment systems, and the Town's civil infrastructure. Projects have included capacity studies, water and sewer rate studies, building improvements and designs, utility system and civil infrastructure ng, design, construction, operations and management. Project examples are highlighted below.

**RELEVANCE TO VIENNA CIVIL ON-CALL**

- ✓ Structural design for minor improvements
- ✓ Site plans, surveying and easement plats
- ✓ Water and sewer system analysis

### WARRENTON HORSE SHOW PROPERTY IMPROVEMENTS:

WRA is currently assisting the Town with Improvements to the Warrenton Horse Show property. The Warrenton Horse Show has featured equestrian events since 1900 in an open air, 10-acre parcel near the Warrenton town center. The site includes a viewing grandstand, horse rings, shelters for announcers judges, and stables. The Town is considering purchasing the Warrenton Horse Show property as a public park, retaining the equestrian events and equestrian focus of the site while adding public park amenities and other improvements. WRA is assisting the Town in evaluating and assessing the Warrenton Horse Show Property with a Phase I Environmental Site Assessment (ESA), site topographic and boundary survey, and assessment of the historic viewing grandstand. WRA will also analyze site drainage and provide recommendations for improvements to site drainage. The ESA will include reviews of databases and other

*Non-standard column-to-pier connections at the Warrenton Horse Show grandstand will be replaced with a new WRA design.*

records pertaining to the existing and past uses of the site. A site reconnaissance will also be conducted. The historic grandstand will be analyzed as to structural condition and recommendations for structural repairs will be made.

## SOLAR CONVERSION of PUBLIC SAFETY BUILDING:

WRA provided engineering support services for the addition of photovoltaic arrays and associated electric system improvements at the Town's Public Safety Building. The solar conversation work at the Public Safety Building was a Public Private Partnership project between the Town and the selected electric power engineering company. A public bidding process was held with performance-based specifications used for a proposed installation of solar collector panels and associated electrical equipment. WRA served as the Town's bridging engineer and provided engineering consulting services to the Town regarding the performance based specifications, the contract between the Town and the installer, and the process for selecting the most qualified installer. The new photovoltaic arrays were installed on the roof of the Public Safety Building in 2019 and are providing power for the operation of the building lighting, HVAC, and other systems. Excess electric power flows back into the grid under a sales agreement with Dominion Energy.

## WATER AND SEWER CAPACIY UPDATE 2022:

The Town of Warrenton and adjacent sections of Fauquier County are served by the Town's water treatment and distribution system and the wastewater collection, pumping, and treatment system. WRA examined various growth scenarios for the Town to determine the ability of the Town's water and wastewater systems to meet future water and wastewater treatment requirements. WRA developed water demand and wastewater loading rates for residential, commercial, and educational facility developments currently under review by the Town or expected to be submitted to the Town's Community Development Department. WRA also estimated water demand rates and wastewater loading rates for undeveloped parcels in the Town's service area based on current zoning. Growth rates for water demand and wastewater loading at 1% (average 20 years) and 2.5% (robust growth) annual increase were evaluated and compared to the firm capacity of the water supply system and the wastewater treatment system. WRA also analyzed unaccounted for water (water produced vs. water billed) and extraneous water or infiltration and inflow entering the wastewater collection system. The data collected and analyzed by WRA is being used to develop the annual capital improvement plan for the Town's water and wastewater systems.

## FLOOD ANALYSIS, FLOOD PROOFING, AND DESIGN:

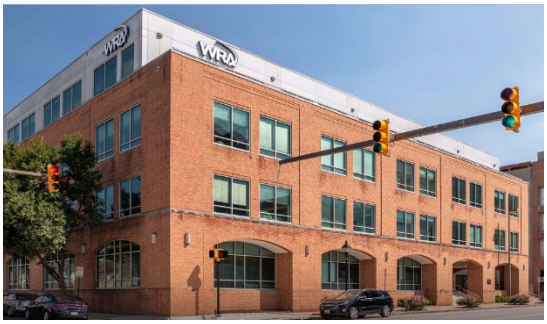
WRA assists the Town of Warrenton Town with the analysis of impacts from flooding in the Cedar Run watershed. Warrenton owns and operates two water reservoirs and associated dams with emergency overflow spillways. Our work includes certifying that the dams are in compliance with Virginia regulations. We utilize the Town's GIS and the HEC-1 and HEC-RAS hydraulic models to estimate potential flooding downstream and water surface elevations. Structures including buildings, bridges and roadways that may be impacted by flooding are identified. WRA also produces inundation maps with flood elevations to indicate areas of concern.

# SECTION 3:
# Team Identification and Organizational Chart

## TEAM IDENTIFICATION AND ORGANIZATIONAL CHART

**Whitman, Requardt and Associates, LLP (Limited Liability Partnership)**
**Local Office**

12700 Fair Lakes Circle, Suite 300
Fairfax, Virginia 22033
(p) 703-293-9717
(f) 703- 273-6773



**Whitman, Requardt and Associates, LLP (Limited Liability Partnership)**
**Headquarters**

801 South Caroline Street
Baltimore, Maryland, 21231
(p) 410-235-3450
(f) 410-243-5716

**DMY Engineering Consultants, Inc. (Corporation)**
**Local Office**

4170 Lafayette Center Drive, Suite 500
Chantilly, VA 20151
(p) 703-665-0586
(f) 301-768-4169

**Land Design, Inc. (Corporation)**
**Local Office**

200 South Peyton Street
Alexandria, VA 22314
(p) 703-549-7784
(f) 704-375-4138

**NewGen Strategies & Solutions, LLC (Limited Liability Corporation)**
**Local Office**

911-A Commerce Rd
Annapolis, Maryland 21401
(p) 410-266-9101

## *Project Manager and Task Manager*

This contract will be led from our local Fairfax office by Mr. Dean Westman, P.E. Mr. Westman brings 42 years of experience in the water and wastewater industry, including years of direct experience with the Town of Vienna through WRA's current On-Call Civil Engineering Services contract as well as numerous projects since 2003. He has extensive experience in the management of wastewater, potable water, stormwater, and transportation projects. Additionally, Mr. Westman has served as the Project Manager for numerous basic ordering agreements including the City of Alexandria, Prince William County Service Authority, Town of Herndon, and the Upper Occoquan Service Authority. He has also worked with Fairfax County, Fairfax Water, Loudoun Water, Fairfax City, and many municipalities and utility authorities in the Mid-Atlantic.

WRA has selected a team of multi-disciplinary engineers to support Mr. Westman for this contract. Below are our Task Leaders/Key Personnel:

| | |
|---|---|
| **DAN SELI, PE**<br>Principal-In-Charge<br>**Relevant Years of Experience**<br>35 total \| 35 with Firm | Experience \| Dan has design and project management experience for numerous water and wastewater annual services contracts in the Mid-Atlantic region. He specializes in the hydraulic analysis, rehabilitation, and design of water distribution systems, wastewater collection systems, and water and wastewater treatment facilities. His work has included master plans, pipelines, treatment plants, pump stations, tank, and force main gravity sewer designs, as well as feasibility studies for system improvements. He also is experienced in the management of annual services contracts with municipalities verifying hat quality services are provided, staff resources are assigned to tasks and client schedules and budgets are followed Through the years Dan has developed long term relationships with WRA clients; proof of the quality services that WRA provides, and the value felt in those relationships. |
| **ANDREW CASOLINI**<br>**QA/QC Manager**<br>**Relevant Years of Experience**<br>33 total \| 3 with Firm | Experience \| Andrew has 33 years of infrastructure project management experience. At WRA, he is working with a team who has a long history of success working with public and private sector clients from project design through project completion, specializing in the public works market for environmental solutions and facility upgrades. |
| **DARON DORAN, PE**<br>**Water & Wastewater Systems**<br>**Relevant Years of Experience**<br>23 total \| 5 with Firm | Experience \| Daron has over 23 years of experience in water and wastewater engineering including the planning and design of water mains, wastewater collection systems, and wastewater pump stations and force mains for Stafford County, Prince William County Service Authority, Town of Herndon, Fairfax County, Washington Suburban Sanitary Commission (WSSC), Fairfax Water, Loudoun Water, Baltimore County and various land development projects in Northern Virginia and Maryland. |
| **TYLER LONG, PE**<br>**Roadway/Pedestrian Improvements** | Experience \| Tyler has 24 years of civil engineering experience concentrating on highway design in both urban and rural areas. He has worked as a Project Manager, Task Leader, and Design Engineer on major highway projects for VDOT and numerous localities. Tyler's project experience includes intersection and interchange design, roadway realignments and reconstruction, parking layout |

| | |
|---|---|
| **Relevant Years of Experience**<br>24 total \| 19 with Firm | design, transit access design, ADA compliance, drainage design, erosion and sediment control design, and maintenance of traffic. |
| **BRIAN BARNA, LEED AP**<br>**Building Services**<br><br>**Relevant Years of Experience**<br>15 total \| 7 with Firm | Experience \| Brian has 15 years of experience and has taken a lead role in structural engineering analysis and design of several projects, from the beginning of schematic design through the completion of construction. He has wide-ranging experience in the structural design of new construction and renovation projects including governmental and military buildings, utilities, transportation facilities, construction, and tilt-up construction. |
| **JOHN THOMAS, PE**<br>**Master Planning/ Modeling**<br><br>**Relevant Years of Experience**<br>17 total \| 17 with Firm | Experience \| John Thomas, PE has over 17 years of experience in providing civil engineering and hydraulic modeling services for a wide range of civil and environmental engineering projects including planning and design of wastewater and water pipelines and pumping stations. He has also assisted in several modeling projects for the cities of Richmond, Lynchburg, Fairfax, and Chesterfield Counties. His experience includes GIS, geospatial data collection, and database management. |
| **CHRISTOPHER BRIGGS, PE**<br>**Storage Tank Inspection/ Rehabilitation**<br><br>**Relevant Years of Experience**<br>18 total \| 17 with Firm | Experience \| Mr. Briggs has 18 years of experience in water and wastewater design, construction inspection, and construction management. He has been involved with a variety of projects that include storage tank evaluations and rehabilitation, and utility work. He has provided similar services for localities such as Arlington County, Chesterfield County, Town of Herndon, Spotsylvania County, Rivanna Water and Sewer, and the Town of Orange |
| **ANDREW VAIL, PE**<br>**Civil/Site**<br><br>**Relevant Years of Experience**<br>18 total \| 4 with Firm | Experience \| Mr. Vail has 18 years of professional experience in civil/land development. He is experienced in master planning residential subdivisions that comprise of more than 700 units, numerous parks, and regional stormwater management facilities with a knowledge and understanding to avoid environmental sensitive areas. He has designed multiple community center parcels, tot lots, preteen lots, trail networks, and community gardens. His skills also include cost estimating, preparation of construction drawings, project scheduling, landscaping, grading, sediment control and utility design for storm drain, water, sewer, and stormwater management. |
| **Kristen Estocsin, PE**<br>**Stormwater Management/Drainage**<br><br>**Relevant Years of Experience**<br>11 total \| **11** with Firm | Experience \| Ms. Estocsin's experience includes open and closed drainage systems, erosion and sediment control design, outfall analyses, and stormwater management facilities design including manufactured BMPs design for numerous projects throughout the Northern Virginia region for VDOT as well as several municipalities throughout Virginia. She has worked on the Fairfax County Department of Transportation Multi-modal Transportation Improvement Projects BOA, VDOT Fairfax County Parkway Widening and Popes Head Road Interchange project. |
| **Bradley Riggleman, LS**<br>**Survey/Plats** | Experience \| Working with LandDesign, Bradley Riggleman is a Licensed Professional Land Surveyor in Virginia, Maryland and West Virginia. He is knowledgeable in all aspects of Land Surveying from ALTA/NSPS Boundary, Topographic, Bathymetric and As-Built surveys including land development |

| | |
|---|---|
| **Relevant Years of Experience**<br>30 total \| 30 with Firm | stakeout from commercial and residential construction to public and large scale industrial projects. Bradley is also experienced in the production of Subdivision, Easement, Street Dedication, Vacation and Abandonment Plats, Metes and Bounds Legal Descriptions, and Condominium Plats and Plans for recordation along with extensive experience training individuals in AutoCAD. He has been involved with such notable projects as Great Seneca Highway in Montgomery Co., Maryland, Baltimore Gas & Electric Right of Way Surveys and tunnel alignment layout for UOSA (Upper Occoquan Service Authority) projects. He is also LandDesign's administrator of two GPS RTK base stations which are part of the local KeyNetGPS Network. This network provides continuously operating |
| **GREG HORN, PE**<br>**SCADA**<br><br>**Relevant Years of Experience**<br>18 total \| 13 with Firm | Experience \| Mr. Horn has experience in designing and programming of industrial process control and SCADA systems for the water and wastewater facilities and infrastructure. Greg has experience in Industrial Control System (ICS) design, programming, integration and installation. Greg's professional design experience includes SCADA master planning, development control of system design documentation and specifications, operational control philosophies, cost estimating, system integration, and PLC and HMI programming using multiple software applications. Programming experience includes PLC and HMI programming, network configuration, alarm annunciation, customized reporting, and database development for water and wastewater plant control systems and wide area distribution and collection SCADA systems. |
| **MICHAEL HEARN, PE**<br>**Flood Proofing Design**<br><br>**Relevant Years of Experience**<br>13 total \| **3** with Firm | Experience \| Mr. Hearn has extensive experience in stormwater management (SWM) analysis and design for water and wastewater facility projects. He prepares construction documents and reports to obtain regulatory agency approvals. This experience includes; Environmental Site Design (ESD) methods of the recent supplements to the Maryland 2000 Stormwater Design Manual, design of Best Management Practices (BMPs), Chesapeake Bay Critical Area (CBCA) requirements, the use of computer programs (especially WinTR-55, TR-55, WinTR-20, TR-20, HEC-RAS and HEC-2), watershed studies, flood plain studies, stormwater management and sediment control (E&SC) projects. He also provides design support for civil and environmental engineering projects and the analysis of potential development sites. |
| **KATIE LYNCH, PE**<br>**Bridge Design/Inspections**<br><br>**Relevant Years of Experience**<br>13 total \| **3** with Firm | Experience \| Katie has over 13 years of structural design experience, ranging from the rehabilitation of existing structures to the design of new highway and transportation structures. Previous tasks have included inspection and report documentation, technical provision development, complex analysis of bridge superstructures, load ratings of existing and proposed structures, construction plan preparation, cost estimate development, specification preparation, and project management. In addition to a versatile technical portfolio, she has notable technical writing skills and is a mentor to developing engineers in the field. |
| **LEONARD COLEMAN, PE, CCM, LEED AP**<br>**Construction Services**<br><br>**Relevant Years of Experience**<br>18 total \| 8 with Firm | Experience \| Lenny has over 18 years of progressive experience in construction management and project management of major infrastructure projects in Virginia, leading teams of inspectors on roadway, utility, bridge and vertical construction projects, including VDOT, locally administered, and federally funded projects. He has extensive documentation and project controls experience, including biddability review, constructability review, cost estimating, CPM schedule review, claim analysis, and overseeing project record keeping systems. |

TOWN OF VIENNA since 1890

**PRINCIPAL IN CHARGE**
Daniel Seli, PE

**PROJECT MANAGER**
Dean Westman, PE

**QA/QC MANAGER**
Andrew Casolini Dal Bo, PE, ENV SP

**WATER & WASTEWATER SYSTEMS**
Daron Doran, PE
Charles Luck, PE

**MASTER PLANNING/ MODELING**
John Thomas, PE
Francis Bonkowski, PE

**STORAGE TANK INSPECTION /REHABILITATION**
Christopher Briggs, PE
Caleb Dillard

**CIVIL/SITE**
Andrew Vail, PE *(F)*
James Scanlon, PE, LS

**GEOTECHNICAL**
Jeffrey Basford, PE
Paul Zhang, PE

**LANDSCAPE**
Herb Palm, RLA
Susan England, PLA, LEED AP

**MANAGEMENT STUDIES**
Eric Callocchia

**COST ESTIMATES**
Michael Ruth, CCP VMA, LEED AP BD+A *(B)*

**ROADWAY/PEDESTRIAN IMPROVEMENTS**
Tyler Long, PE

**ADA COMPLIANCE**
Regina Herr, PE

**TRAFFIC ENGINEERING**
Dana Trone, PE, PTOE

**STORMWATER MANAGEMENT/DRAINAGE**
Kristen Estocsin, PE
Dave Gertz, PE

**ENVIRONMENTAL PERMITTING AND ANALYSIS**
Emily Drahos, PWS
Nick Nies, AICP

**SURVEY/PLATS**
Bradley Riggleman, LS

**SCADA**
Greg Horn, PE

**BUILDING RESILLIENCY**
Christa Decker, PE

**ELECTRICAL**
Il Kim, PE

**FLOOD PROOFING DESIGN**
Michael Hearn, PE
Clint Martin, PE

**BUILDING SERVICES**
Brian Barna, LEED AP
Craig Hossfeld, PE, LEED AP

**STRUCTURAL**
Brian Barna, PE, LEED AP
Robert Allison, PE

**ARCHITECTURE**
Erik Larsen
Kellie Hollenbeck, AIA, LEED AP BD+C

**BRIDGE DESIGN/INSPECTIONS**
Katie Lynch, PE
Timothy Beavers, PE

**CONSTRUCTION SERVICES**
Leonard Coleman, PE, CCM, LEED AP

**STAFF AUGMENTATION COORDINATOR**
Andrew Casolini Dal Bo, PE, ENV SP

**MECHANICAL**
Dave Chung, PE

**GIS**
Wendy Haubert

**LEGEND**
**Task Manager**

**SUBCONSULTANTS**
- DMY – DMY Engineering Consultants, Inc.
- LandDesign – Land Design, Inc.
- NewGen – NewGen Strategies & Solutions, LLC

# SECTION 4:
# Team Description, Experience, and Accomplishments

# TEAM DESCRIPTION, EXPERIENCE, AND ACCOMPLISHMENTS

## *Project Manager's Location & Capabilities*

This contract will be led from our local Fairfax office by Mr. Dean Westman, PE. Mr. Westman brings 42 years of experience in all aspects of civil engineering and engineering management, including numerous years of direct experience with the Town of Vienna, most recently as Project Manager for our current Town of Vienna On-Call Civil Engineering Services contract. Additionally, Mr. Westman has served as the Project Manager for numerous basic ordering agreements including Arlington County, the City of Alexandria, Prince William County Service Authority, the Towns of Herndon and Middleburg, and the Upper Occoquan Service Authority. He has also worked with Fairfax County, Fairfax Water, Loudoun Water, the City of Falls Church, Fairfax City, and many municipalities and utility authorities in the Mid-Atlantic Region. Mr. Westman's resume follows and includes his relevant project experience as Project and Contract Manager on similar on-call contracts. In addition, we have included resumes for all key personnel on the organizational chart provided in Section 3 and indicated their office locations.

WRA's Fairfax office is staffed with a team of multi-disciplinary engineers including water and wastewater, transportation, drainage, electrical, building design, architectural, civil/site, and structural, in addition to a specialized environmental team and an expansive construction management and inspection services department. When additional support is needed, Mr. Westman has the ability to call upon additional resources from WRA's headquarters or other Virginia offices.

## *Workload*

WRA is experienced in providing services under annual services contracts such as this one that is being procured by the Town of Vienna. With over 750 personnel, we have the staffing capacity to perform numerous projects simultaneously, as we have done for the Town throughout our current contract. Our Task Managers oversee several projects and are assigned adequate staffing for each one. WRA has the resources available to dedicate to this contract within our Fairfax office, with assistance from our Baltimore headquarters and other Virginia offices. We have staff immediately available to start and complete each project. We are committed to cost-effectively meeting the Town's schedules.

We understand that multiple tasks will be assigned under this contract and that the size and complexity of assignments will vary. We also recognize that assignments could consist of several individual tasks, all with different schedules, and may have short time frames. Therefore, the manpower requirements may fluctuate significantly depending on the number, size, and schedule of the individual Task Orders. Our staff is accustomed to performing several simultaneous assignments, including meeting accelerated schedules. WRA is prepared to begin work on assignments immediately. Our Project Manager, Dean Westman, PE, and the majority of the technical staff that will be assigned to this on-call contract are located in our Fairfax office, approximately a 20-minute drive from the Town of Vienna. This enables WRA to serve the Town in an efficient, productive, and responsive manner.

# DEAN WESTMAN, PE

*PROJECT MANAGER*

## PROJECT EXPERIENCE:

**Town of Vienna Professional Engineering Services Basic Order Agreement, Town of Vienna, VA:** **Project Manager** responsible for utility engineering projects including reviews of modifications to water storage tanks such as cellular equipment installations and removals, hydraulic analysis of the Town's water system, sanitary sewer system and stormwater drainage system, utility infrastructure design and construction projects and modernization of the Town's water and sewer utility Supervisory Control and Data Acquisition (SCADA) System. Mr. Westman also serves as WRA's point of contact with the Deputy Director of Public Works and the Water and Sewer Superintendent for administrative and contractual matters.

**Water and Wastewater Master Plans, Town of Vienna, VA:** **Project Manager** for the engineering team that developed water and wastewater mapping and hydraulic models. Utility system master plans were developed based on projected commercial and residential growth.

**Building Architectural and Structural Engineering Improvements, Town of Vienna, VA:** **Project Manager** for the evaluation, planning, design, and construction management of various improvements to Town buildings and structures including restoration of a wooden pedestrian bridge, reconstruction of a historical building's roof truss system, reconfiguring office space, and replacing a wastewater metering station with new facilities compatible with a complete upgrade to the metering system.

**Water Storage tank water booster system, Town of Vienna, VA:** **Project Manager** for the planning, design, and procurement of two skid mounted water booster pump stations that facilitate circulation of water at two of the Town's two water storage tanks. Provided training to Town personnel in the operation of the systems.

**Water and Sewer System Capacity Upgrades, Town of Herndon, VA:** **Project Manager** for planning upgrades of the Town's water and sewer infrastructure to accommodate new development near the Herndon Metro Silver line stop. The Town's water and sewer hydraulic models were upgraded and water/sewer demands developed by the Town's planning office were reviewed. Recommendations for infrastructure improvements were incorporated into the master plans.

**Professional Engineering Services, Water and Wastewater, Arlington County, VA:** **Project Manager** for task orders including planning, design, and construction management of water and wastewater facilities throughout the County. Projects include the Minor Hill Reservoir Improvements, electrical, SCADA and civil-pipeline projects, hydraulic modeling tasks, and design of replacement water mains. His projects include the Williamsburg Boulevard Transmission Main and the biennial evaluations of the 48-inch subaqueous water main at Chain Bridge. He has also engineered and managed storage water facility cleaning and rehabilitation projects. Mr. Westman manages staff augmentation needs for Arlington including construction inspectors and professional engineering staff.

**Fairfax Water Corbalis to Fox Mill Water Main, Fairfax County, VA:** **Project Manager** for the preliminary engineering, permit acquisition, final design, and construction management for 12,000 LF of 54-inch diameter water main including 8,500 LF installed in a deep rock tunnel. He was responsible for the acquisition of Fairfax County permits, the development of the construction contract plans and specifications, and the development of the project's public education and acceptance

### Education

MCE / Civil Engineering
BCE / Civil Engineering

### Registrations/Certifications

Professional Engineer/VA, DC, MD, WVA, MA
NASSCO PACP

### Years of Experience

42

### Office Location

Fairfax, VA

### Experience

Mr. Westman has worked with municipal clients on a wide range of civil engineering projects over the past 42 years. His career has encompassed planning, design and construction in all aspects of civil engineering including water and wastewater systems, roadways, bridges, buildings, stormwater systems, structures, environmental resources and geo-systems.

campaign including the development of newsletters, public meeting graphics, and development of materials for the 2232 application process.

**VDOT Walney Road Bridge Replacement and Road Widening Design Build, Fairfax County, VA: Project Engineer** that assisted the Project Manager in the planning, permitting, design, and construction of wet and dry utility relocations to accommodate the widening of a two lane roadway and structurally deficient bridge in a rapidly developing area of Fairfax County. Mr. Westman directed the initial field investigations and assessment of utilities in the construction corridor including Dominion Power, Verizon, County water and sewer pipelines, WGL, and numerous other telecommunication facilities. He assisted in identifying and contacting all dry utility operators including planning and coordinating utility relocations and obtaining permits.

**GMU Cross Campus Connector, Fairfax County, VA: Project Engineer** responsible for the planning, permitting, preliminary engineering, and final design of utility relocations associated with the new bridge connecting Braddock Road and Campus Drive at GMU. Mr. Westman conducted the initial planning, assessment, and relocation of construction cost estimates for utility relocation of electric power, traffic control, natural gas, sanitary sewer, and potable water facilities. The joint GMU/VDOT project required extensive coordination with utility owners in accordance with the VDOT Utility Manual of Instructions. Relocation of telecommunication facilities, including a Verizon ductbank became critical path items for this project. Mr. Westman also worked with Verizon to determine alternatives for relocation of a 16-way conduit ductbank.

**Water, Wastewater & I&I Engineering Services (On-Call Contract), Prince William County Service Authority, VA**: As **Project Manager**, Mr. Westman assembles and manages teams of engineers conducting work on a variety of projects. Current tasks include a pipeline and pump station design and replacement, water system planning and modeling, permitting, and construction phase services. He is responsible for reporting directly to PWCSA on project budgets and schedules and for the technical quality of the work.

**Sanitary Sewer Collection System Improvements, Town of Middleburg, VA**: For over 10 years, Mr. Westman has assisted the Town of Middleburg with analysis and improvements to the Town's wastewater collection system. Middleburg's collection system was constructed in the early 1950's using small diameter reinforced concrete pipe. The interior of the RCP sewers has been deteriorating because of corrosion from sulfuric acid formed when natural hydrogen gas in sewage combines with moisture on the pipe walls. WRA has conducted numerous inspections and evaluations of the sewers, in accordance with NASSCO standards for sewer assessments. Mr. Westman helped develop a prioritization program for sewer pipe lining. He also was the lead engineer for replacements and upsizing of sewer mains for annexation of land north of the Town.

**Water and Wastewater Basic Ordering Agreement, Town of Warrenton, VA: Client Manager/Design and Construction Manager** for improvements to the Town's water supply and wastewater management systems (2005-Present)

**Moving Bed Biological Reactors Design and Construction, Town of Warrenton, VA: Client Manager/Design and Construction Manager** for the planning, design, and construction management of a new MBBR system to replace the Town's legacy Rotating Bed Reactors. The project included site development, stormwater permitting and other regulatory permitting, structural, electrical, HVAC and mechanical engineering, and design of the MBBR process. WRA also provided shop drawing reviews, responded to RFI, and conducted progress meetings during construction.

**Rady Park Wastewater Pump Station Design and Construction, Town of Warrenton, VA: Client Manager/Design and Construction Manager** for the planning, design, and construction management for the replacement of a wastewater pump station serving a residential section of the Town. A new suction lift pump station with a polymer concrete wet well was selected to replace an existing "steel can" prefabricated wet pit/dry pit station that had operated well past its design life. Work included site engineering and a detailed plan for the maintenance of operations during construction. The pump station building was designed to blend into the residential neighborhood.

**Reservoir Dam Certifications, Town of Warrenton, VA: Client Manager/Design and Construction Manager** for the coordinated evaluation of dam spillway and downstream floodplain impacts for certification of the Town's two water supply impoundments in accordance with DCR standards and requirements. The reservoir dam certifications are conducted on a biennial basis.

**Well #3, Town of Warrenton, VA: Project manager** for recommissioning a public water supply well to provide additional supply to meet project population growth. Well #3 had been out of service for several years and required numerous improvements to the pumping facilities and well house. A new treatment system was designed for the removal of radionuclides in the groundwater and an extensive permitting effort was completed to document conformance with state regulations.

# DANIEL SELI, PE

*PRINCIPAL-IN-CHARGE*

## PROJECT EXPERIENCE:

**East Riverfront Transportation Improvements, City of Richmond, VA: Utility Engineer** for the oversight of utility design and sealing the utility plans of this high priority multi-modal streetscape project. Improvements included enhanced pedestrian and bicycle access along the East Main Street corridor, public parking accommodations, and necessary upgrades for the safe operation of the Pulse BRT system.

**Cannon Creek Trail Greenway Improvements - Phase 1, City of Richmond, VA:** Assisted in the coordination of CSO and Utility efforts for a 0.57-mile section of the trail. Improvements included establishing a 10-foot wide shared-use path along the Richmond Henrico Turnpike.

**Downtown Water Main Replacement Program, City of Lynchburg, VA: Project Director** for oversight of a multi-year phased program to replace the water mains, underground utilities, streetscape improvements, and drainage upgrades in the Central Business District of Lynchburg's downtown area.

**Newport News-Williamsburg International Airport Comprehensive Sewer System Rehabilitation Plan, City of Newport News, VA: Principal-in-Charge** for the evaluation and design of repairs to a gravity sewer system that extends through NNWIA and a decommissioned U.S. Army Base.

**Special Order by Consent Condition Assessment, City of Newport News, VA: Principal-in-Charge** for the planning and conducting field investigations, and evaluations for the central portion of the City, which included: 59 basins; 4,200 manholes; CCTV of 128,664 LF of sewer line; 766,179 LF of sewer smoke tested; 365 nighttime flow monitoring tests; and 50 dye tests.

**Water Distribution System Facilities Plan, Henrico County, VA: Project Manager** Utilized County's InfoWater hydraulic computer model to analyze the water distribution system and develop a CIP thru 2045. The project involved the conversion of the existing H2OMap model to InfoWater, development of demand distribution from billing records using the model's Demand Allocator module, development of design criteria, projection and distribution of future demand, system analysis, identification of system deficiencies, improvements, and phasing of improvements and associated costs.

**VDOT Utility Adjustments, NOVA, Culpeper and Staunton Districts, VA: Project Manager** for the design and management of utility adjustments for roadway construction projects in Northern Virginia District of VDOT. Projects include relocation and design of new wastewater and water facilities including pump stations, force mains, gravity lines, and service connections. Over 100 project assignments have been completed.

**Annual Water & Wastewater Annual Engineering Services Contract (1990 – Present), Chesterfield County, VA: Project Director** for the oversight of professional engineering services for the County's water and wastewater systems which contains over 1,200 miles of waterlines and over 1,300 miles of sewer lines along with one water treatment plant, two wastewater treatment plants, water and wastewater pumping stations, and water storage tanks.

**WTP Raw Water Pumping Station, City of Richmond, VA: Project Manager** responsible for the design and provided construction administration services for two 50 mgd pumping station.

### Education
BS / Civil Engineering

### Registrations/Certifications
Professional Engineer / VA, WVA, NC

### Years of Experience
35

### Office Location
Richmond, VA

### Experience
Mr. Seli has design and project management experience for numerous water and wastewater projects in the Mid-Atlantic region. He specializes in the hydraulic analysis, rehabilitation, and design of water distribution systems and wastewater collector systems design and coordination of utilities impacted by roadway improvement projects. His work has included master plans, pipeline, pump station, tank, force main gravity sewer designs, as well as feasibility studies for system improvements. He has provided Director and Principal in Charge services on numerous annual engineering contracts in Virginia.

# ANDREW CASOLINI SAL BO, PE, ENV SP

*QA/QC MANAGER/STAFF AUGMENTATION COORDINATOR*

## PROJECT EXPERIENCE:

**Rady Park Pump Station, Town of Warrenton, VA: Senior Project Engineer** coordinating construction activities for the replacement of an existing pump station. The new Rady Park Pump Station is a suction lift pump station that will replace a prefabricated steel pump station that has served a residential community near downtown Warrenton for nearly 30 years. The new pump station will have a design capacity of 227 gallons per minute and the suction left design places the pumps, most piping, and all other mechanical systems out of the wetwell, allowing for easy and safe maintenance of the system.

**Folly Lick Gravity Sewer, Town of Herndon, VA: QA/QC** the design and installation of gravity sewer replacement of sections of the Folly Lick Interceptor near Young Avenue. The works included an ROW survey, easements, design, and construction for 900 LF of 24-inch gravity sewer. The project will leverage bypass pumping to replace the existing 21-inch RCP gravity sewer with a new larger diameter PVC pipe.

**Sugarland Run Pump Station and Force Main PER, Town of Herndon, VA: Project Manager** for the planning of a new system to transfer wastewater flows from the Sugarland Run Interceptor to the Accotink Gravity Sewer (AGS). The new flow transfer system will reduce wastewater loads to the Potomac Interceptor through a new pump station and forcemain connection of the Sugarland Run interceptor to the AGS. The planning effort included analysis and selection of a pump station site and force main alignment. Pump station and pipeline hydraulics were also analyzed. The project is a joint Town and Fairfax County effort that will optimize regional wastewater conveyance resources.

**Landmark Mall West End Redevelopment, City of Alexandria, VA: Project Manager** for the review of Design-Build developer plans for wastewater and stormwater system improvements and dry utility improvements for a new mixed use residential/commercial development and medical center campus on the old Landmark Mall site on the City's West End. WRA served as the City's representative for ensuring that developer submitted plans and specifications followed the City's standards.

**Water System Hydraulic Model Improvements, Town of Leesburg, VA: Lead Project Manager** responsible for updating and validating the Town's water system model. New housing and commercial developments and elevated storage facilities were integrated into the model and the model was validated. Fire flow testing will be conducted to validate the updated model.

**Water Model Calibration and Update, Town of Leesburg, VA: Project Manager** responsible for the updates to the Town's water distribution system hydraulic model. The project included updating the water system infrastructure added to the system since the model was first created over a decade ago. The model was validated using existing and newly compiled fire flow data. The model is currently being used to plan water system updates for this fast-growing Northern Virginia community.

**Accotink Gravity Sewer Improvement Preliminary Engineering Report (PER), Fairfax County, VA: Senior Engineer** responsible for providing detailed alternatives analysis, regulatory permit requirement analysis, and design recommendations for improvements to the Accotink Gravity Sewer Hunters Branch. The PER will be the basis for the detailed design of improvements to accommodate existing tributary flows and future effluent from the proposed Tysons West Pump Station. The improvements include the crossing of I-66 limited access ROW, rehabilitation of the existing Accotink Gravity Sewer Hunters Branch, bypass pumping, 2232 reviews, and design of a new interceptor to accept future flows.

### Education
BS / Civil Engineering

### Registrations/Certifications
Professional Engineer / VA, DC, WVA, PA, NY, DC, SC, NC, CT, GA

### Years of Experience
33

### Office Location
Fairfax, VA

### Experience
Mr. Casolini has worked with clients to solve a broad range of infrastructure problems by focusing on the triple bottom line to ensure social, economic and environmental related issues were addressed for his clients. He is a Senior Engineering Executive with 30 years of water infrastructure project management experience leading teams and departments on behalf of clients.

# DARON DORAN, PE

*WATER & WASTEWATER SYSTEMS*

## PROJECT EXPERIENCE:

**Morven Park Water Main and Low Pressure Force Main to Sanitary Sewer relocations, Town of Leesburg, VA: Project Leader** for the relocation of 2,450 LF of 8" water main and abandonment of a 2.5" diameter low pressure force main with 285 LF of new 2.5" PVC force main and 200 LF of 8" gravity sanitary sewer to connect to an existing pump station associated with a Town of Leesburg Roadway Capital Improvement project.

**Old Courthouse Road water main relocation, Town of Vienna, VA: Project Leader** for the relocation of 1,370 LF of 8" diameter & 150 LF of 6" diameter water mains associated with the Fairfax County Dept of Transportation's Realignment of Old Courthouse Road project.

**Fields Apartments Water Main relocation, Town of Leesburg, VA: Project Leader** for the relocation of 2,400 LF of 8" & 240 LF of 6" diameter water mains and seven water meter replacements within an apartment building complex located within the Town of Leesburg. He is currently assisting the Town with the finalization of bid documents to advertise the project for construction.

**Occoquan Forest SPS 36 and Force Main, SPS 37 Upgrade and Nokesville SPS and Force Main Replacement, Prince William County Service Authority, VA: Task Leader** for the preparation of design documents and permit documents for the replacement of Occoquan Forest PS 36 and the Nokesville Pump Station and upgrades to SPS 37. The projects included the design of 6-inch DIP, 4-inch PVC, and 2-inch PVC force main systems. Work included coordination with electrical, mechanical, structural, and instrumentation disciplines related to building and project permitting. He is currently assisting the Service Authority with the construction management of the project.

**Sewer System Planning Projects, Town of Herndon, VA: Supervising and Coordinating Engineer** for the preliminary engineering of improvements to the Town's wastewater conveyance system. The Town will need to manage up to an additional 2 MGD of peak daily flow to accommodate future growth. The additional flow will be conveyed to Fairfax County or to Loudoun Water. Mr. Doran conducted alignment studies, pump station siting analyses, and cost estimating for various conveyance scenarios for diverting flows from the Sugarland Run Interceptor.

**Water and Sewer Design Projects, Town of Herndon, VA: Project Leader** for the design of new water mains relocations and sanitary sewer replacement in the Town of Herndon including the new Center Street/Wilshire Water Mains (1,500 LF – 16", 3,350 LF - 8", & 900 LF – 6") and Crestview Drive/Lisa Court Water Mains (2,060 LF - 12", 415 LF – 8", & 500 LF – 6") and replacement interceptors for the Spring Downs and Folly Lick Interceptor Systems. Mr. Doran prepared alignment studies, specifications, and cost estimates and coordinated easement acquisitions.

**I-495/I-270 Private/Public/Parnership (P3) - Maryland Dept of Transportation State Highway Association – Montgomery County, MD: Senior Design Engineer** for the preliminary & planning engineering and peer review and coordination related to water and sanitary sewer utility protection, rehabilitation, and relocations with Accelerate Maryland Partners (Design Builder). The planning included direct coordination with the Design Builder and DCWater (Potomac Interceptor), USACOE (Washington Aqueduct), WSSC (various watermains ranging from 6" thru 66" diameter and various sanitary sewers ranging from 6" thru 36" diameter and a 20" diameter sanitary force main), and City of Rockville (various small diameter water and sewer) regarding the water and sewer relocating and preliminary cost estimating.

### Education
BS / Civil Engineering

### Registrations/Certifications
Professional Engineer / VA, MD

### Years of Experience
24

### Office Location
Fairfax, VA

### Experience
Mr. Doran has over 24 years of experience in water and wastewater engineering including the planning and design of water mains, wastewater collection systems, and wastewater pump stations and force mains for the Town of Warrenton, PWCSA, Town of Herndon, WSSC, Fairfax Water, Loudoun Water and various land development projects in Northern Virginia.

# CHARLES LUCK, PE

*WATER & WASTEWATER SYSTEMS*

## PROJECT EXPERIENCE:

**Massaponax Gravity Sewer Interceptor Pipeline Replacement, Spotsylvania County, VA:** Preliminary evaluation of the existing Massaponax Interceptor for recommendations on pipeline sizes, phasing, and construction cost replacement. Present sewer ranges in size from 15 to 30-inches in diameter. Included evaluation of 10,000 LF of new gravity sewer.

**Massaponax Stream Bank Stabilization, Spotsylvania County, VA:** **Project Engineer** responsible for the design and permitting of the stream bank stabilization. As a component of the construction of the Massaponax Interceptor, several reaches of Massaponax Creek were stabilized.

**Madison Office Park Pump Station Replacement, Albemarle County Service Authority, Albemarle County, VA:** **Project Manager** for the evaluation phase and design of a 0.5 mgd wastewater suction lift station, associated gravity sewer extension, and abandonment of the existing pump station.

**Ashcroft Pump Station No. 1 Replacement, Albemarle County Service Authority, Albemarle County, VA:** **Project Manager** responsible for preparing plans and specifications and obtaining regulatory approval for the replacement of the 0.5 mgd Ashcroft Pump Station No. 1 with factory-built base mounted booster pump station.

**Stonewall Pump Station and Gravity Sewer and Force Main, Spotsylvania County, VA:** **Project Manager** responsible for the design of a new 3.4 mgd wastewater pumping station, 1,800 LF of 12-inch gravity sewer, and approximately 3,600 LF of 12-inch force main. The project involved the abandonment and consolidation of two existing wastewater pump stations.

**Woodlake Force Main Replacement, Chesterfield County, VA:** **Project Manager** responsible for the design of the existing 20-inch diameter force main replacement along Route 360 (Hull Street Road). The project involved the abandonment of the existing force and design of 2,500 LF of 20-inch diameter force main and approximately 500 LF of 21-inch PVC gravity sewer.

**Water Master Plan, City of Lynchburg:** **Project Manager** for the study and development of the City of Lynchburg's Water System Master Plan. The project involved the development of water system demand projections, capacity improvement evaluations, and prioritization of water main replacements. The final master plan included capacity and replacement Capital Improvement Plans through the planning year 2050.

**Upham Brook Trunk Sewer:** **Project Manager** for the study and design of approximately 15,000 LF of 48-inch diameter trunk sewer. The new trunk sewer is proposed to be installed parallel to the existing Upham Brook Trunk Sewer. The project extends from just east of Staples Mill Road to just east of Brook Road (Route 1). WRA's responsibilities are to perform preliminary and final design services, prepare contract documents for public bidding, and perform specific engineering services during the advertisement and construction of the parallel trunk sewer.

**Michie Tavern Water Main Replacement:** **Project Manager** for the project that involved the replacement of an aging 6-inch water main under Interstate 64 that serves the historic Michie Tavern and portions of property owned by the University of Virginia Foundation. The project included a review of water main replacement alternatives and trenchless crossing options for crossing Interstate 64 or Route 20. The project was constructed through a limited access water main crossing of Route 20 by horizontal directional drill (HDD).

### Education
BS / Civil Engineering

### Registrations/Certifications
Professional Engineer / VA

### Years of Experience
36

### Office Location
Richmond, VA

### Experience
Mr. Luck has extensive experience associated with design of water and wastewater facilities. Mr. Luck's responsibilities have included design of municipal facilities, water mains, treatment facilities, pump stations, sewer mains, and hydraulic structure design. Mr. Luck has experience in water transmission and distribution main design, water supply evaluations and distribution system modeling.

# JOHN THOMAS, PE

*MASTER PLANNING/MODELING/TASK LEAD*

## PROJECT EXPERIENCE:

**Water Model Update, Town of Leesburg, VA:** **Project Engineer** responsible for the updated existing model by adding in the newly constructed pipe, the updated demands based on water billing records, developed multiple scenarios for future improvements to the water system based on population growth estimates and provided recommendations based on model output. Model is in MWHSoft InfoWater.

**Water Model, Town of Leesburg, VA:** **Project Engineer** was responsible for the development of multiple scenarios for future improvements to the water system based on population growth estimates and provided recommendations based on model output.

**Rockett's Landing and 26th Street Interconnection, City of Richmond, VA:** **Project Engineer** responsible for the creation of a water model for the Rockett's Landing development to determine if the system is properly sized. He analyzed the system with and without an interconnection at 26th Street in the vicinity of Rockett's Landing. Model is in MWHSoft H20Map.

**Wilkinson Road Area Water Mains, Henrico County, VA:** **Project Engineer** for the design of 22,500 LF of 16-inch water mains including three HDPE horizontal directional drills and one jack and bore trenchless crossings.

**Water Master Plan, Chesterfield County, VA:** **Civil Engineer** was responsible for updating the existing water model using As-built information. He developed scenarios for existing conditions through system build-out and made recommendations on required system improvements. Developed Future demands based on population growth projections. Sized booster station and elevated water tower improvements for the system.

**Crystal Spring Pump Station Relocation, Western Virginia Water Authority, Roanoke, VA:** **Project Engineer** responsible for the development of a feasibility study for the relocation of the Crystal Spring Pump Station and associated water main piping due to the expansion of the Carilion Hospital. Mr. Thomas utilized the existing WVWA hydraulic model in Innovyze Infoworks WS Pro to ensure proper operation of the WVWA system with the proposed pumps.

**Term Contract for Professional Engineering Services (2019), Western Virginia Water Authority, VA:** **Senior Project Engineer** responsible for the hydraulic modeling for multiple task orders under an annual term contract providing water and wastewater engineering services on a task order basis, currently in Term 2.

**North Loop Water Model Evaluation, Western Virginia Water Authority, VA:** **Project Engineer** responsible for utilizing the existing WVWA hydraulic model in Innovyze Infoworks WS Pro to analyze multiple alignments of a proposed waterline in the I-81 corridor.

**Grassy Hill Water Model Evaluation, Western Virginia Water Authority, VA:** **Project Engineer** responsible for utilizing the existing WVWA hydraulic model in Innovyze Infoworks WS Pro to analyze the impacts of a proposed elevated storage tank on pressures and fire flow for a new waterline and industry connection.

**Downtown Lynchburg Corridor Improvements, Lynchburg, VA:** **Project Engineer** responsible for the developed water model and analyzed water age for the downtown Lynchburg corridor improvement and utility replacement project. Also performed CCTV review of the gravity sewer system and developed rehabilitation and replacement plans as necessary.

### Education
BS / Civil Engineering

### Registrations/Certifications
Professional Engineer / VA
NASSCO PACP, MACP, LACP Certified

### Years of Experience
18

### Office Location
Newport News, VA

### Experience
Mr. Thomas provides management, design and construction administration services for a wide range of civil and environmental engineering projects including planning and design of wastewater and water pipelines and pumping stations, and modeling. He also assists and oversees several modeling projects for the cities of Richmond and Lynchburg and for Chesterfield County. His experience includes GIS, geospatial data collection, and database management.

# FRANCIS BONKOWSKI, PE

*MASTER PLANNING/MODELING/TASK LEAD*

## PROJECT EXPERIENCE:

**Water and Sewer Utility Master Plans and Updates, Town of Herndon, VA:** **Project Engineer** for the Town's SewerCAD wastewater model that was updated to Innovyze InfoSewer. Temporary sewer meters were installed throughout Town for model calibration. Water and sewer master planning services included hydraulic analysis utilizing the updated models to develop capital improvement recommendations to ensure that wastewater and water system infrastructure will be in place to support new Metro driven development as well as natural commercial and residential growth through the year 2040. He was responsible for the continued assessments of infiltration and inflow (I&I) into the Town's sanitary sewer system. Sewer hydraulic metering and modeling conducted for the master planning project indicated excessive I&I in the system, particularly in the Folly Lick sewershed. WRA is assisting the Town with additional flow metering, hydraulic analysis, and model calibration. An analysis was conducted for diverting wastewater flows from the Sugarland Run system to an alternative location. Preliminary hydraulic engineering was conducted for a new WWPS to Fairfax County Noman Cole WWTP sewershed.

**Water and Sewer Facilities Plan, Chesterfield County, VA:** **Senior Project Engineer** where WRA developed the Facilities Plan for the County's water and wastewater systems. Population and demand distributions for the years 2015 to 2035 were calculated. The build-out demand conditions were developed from the County's 2012 Comprehensive Land Use Plan. The water system was modeled using InfoWater software and the sewer system was modeled using InfoSWMM software, both by Innovyze. The evaluation identified water and sewer piping, pumping, storage and treatment needs classifying as Growth-driven (developer funded), Capacity-driven (County-funded) and Reliability-driven (County funded) to be inserted in the County CIP.

**Master Plan Update, Town of Middleburg, VA:** **Project Engineer** for updating the Town's WaterCAD hydraulic model to incorporate significant new infrastructure improvements. The updated hydraulic model incorporated new GIS based mapping. The model was used to determine the Town's capacity to support existing and future growth.

**Wastewater Master Plan & Model, Town of Boonsboro, MD:** **Senior Project Engineer** where WRA developed a GIS-compatible sewer system hydraulic model for the Town. The model was built from the Town's existing utility system GIS mapping, record drawings, and manhole surveys. The model was calibrated with previous flow meter data, followed by performing a series of simulations of the collection systems. From the simulations, a CIP of required sewer collection system upgrades was developed for current through build-out conditions. A follow-on study reviewed future wastewater treatment upgrades required.

**Water & Sewer Master Plans, Howard County, MD:** **Project Engineer** was responsible for preparing updates to the County's Water & Sewer Master Plan on a 4-yr rotation for submittal to the Maryland Dept. of the Environment. WRA gathered GIS data in various formats, including tabular data. Final maps were produced to accompany the plan showing all current/planned facilities, pipes, tanks and pumping stations. On the latest update, WRA worked with County Planning & Zoning Dept. to obtain population projections, updated demands, ran the water and sewer models, and updated the CIP for water and sewer infrastructure.

### Education
BE / Environmental Engineering

### Registrations/Certifications
Professional Engineer / MD, DE

### Years of Experience
14

### Office Location
Georgetown, DE

### Experience
With 14 years of experience, Mr. Bonkowski has served as a Lead Civil Engineer on sanitary sewer and water planning and design projects. Francis has experience using Bentley and Innovzye modeling software to perform hydraulic flow analyses; Civil3D for generating plan and profile layouts; and ArcMap 10 for viewing, handling, and manipulating GIS based data.

# CHRIS BRIGGS, PE

*STORAGE TANK INSPECTION/REHABILITATION*

## PROJECT EXPERIENCE:

**Spring Knoll and Third Street Elevated Water Storage Tank Coating and Repairs, Town of Herndon, VA:** **Lead Engineer** providing design and inspection services for the repair and renovation of two 1 MG elevated water storage tanks. Design responsibilities included the design of tank structural steel repairs and appurtenances. Services during construction included shop drawing review and review of other contractor submittals.

**Lee Ground Storage Tank, Arlington County, VA:** **Project Engineer** performing design of repairs for two prestressed ground tanks that have been in continuous service since 1948. An initial inspection found the tanks to be in overall good condition but with exposed prestressing wires in various locations. The repair design includes removal of corroded wires, reestablishment of stress on the walls, and application of protective concrete coating.

**Pointer's Ridge Tank Evaluation, Washington Suburban Sanitary Commission**: **Project Manager** performing structural and coatings inspection of a 2.0 MG elevated water storage tank. Inspection included evaluation of coatings and structural conditions. Provided recommendations and engineer's construction cost estimate to repair tank components.

**Marshall Heights Standpipe and Storage Reservoir, Town of Orange, VA:** **Lead Engineer** responsible for providing engineering services and inspection to an existing 2 MG concrete ground storage tank and a 300,000-gallon riveted steel standpipe. Inspection duties included identifying needed repairs, evaluating, and preparing a preliminary engineering report with repair/replacement recommendations.

**Crozet Ground Tank, Crozet Waterball Repairs, and Stillhouse Ground Water Storage Tank, Rivanna Water & Sewer Authority, Albemarle, VA:** **Project Manager** responsible for providing periodic structural inspections during repairs to a 0.5 MG ground storage tank and a 50,000-gallon elevated water storage tank. Inspection duties included identifying needed repairs, weld inspection, and ensuring conformance to plans and specifications.

**Elkhardt 2.5 MG and 3 MG Ground Water Storage Tanks Repairs, Chesterfield County, VA:** **Design Engineer and Construction Administrator** during repair and renovation of a 2.5 MG and a 3 MG ground water storage tanks. Responsibilities included managing daily inspections, identifying needed repairs, quality measurement, ensuring conformance to plans and specifications, developing of record drawings, and conducting progress meetings.

**Mercury LaSalle 3 MG Ground Storage Tank and Langley View 0.5 MG Spheroid Tank, City of Newport News, VA:** **Project Manager providing** structural and coatings inspection of a 3 MG prestressed concrete ground storage tank and a 0.5 MG spheroid tank. Inspection included evaluation of previous failed repairs. Provided recommendations and engineer's construction cost estimate to repair tank components.

**Clover Hill 2 MG Elevated Water Storage Tank Repairs, Chesterfield County, VA:** **Lead Design Engineer and Construction Administrator** that provided design and inspection services during the rehabilitation of 2 MG elevated water storage tank. Responsibilities included identifying needed repairs, preparation of design documents, managing inspection, quality measurement, and ensuring conformance to plans and specifications.

### Education
BS / Civil Engineering

### Registrations/Certifications
Professional Engineer / VA, MD
Confined Space Training
OSHA 30-Hour
Mobile Elevated Work Platform Operator Training
VDOT Portable Nuclear Gauge Safety

### Years of Experience
18

### Office Location
Richmond, VA

### Experience
Mr. Briggs has 18 years of experience in water and wastewater design, construction inspection, and construction management. He has been involved with a variety of projects that include storage tank evaluations and rehabilitation, and utility work.

# CALEB DILLARD, PE

*STORAGE TANK INSPECTION/REHABILITATION*

## PROJECT EXPERIENCE:

**Review and Inspection of Cellular Antenna Installations on Tapawingo Tank, Vienna, VA:** Provided review of submittals as well as **inspection services** for the installation of cellular antennas on a multi-legged elevated water storage tank. Specific responsibilities included reviewing cellular engineer drawings and structural analyses, attending preconstruction meetings and preinstallation assessments, and conducting post-installation inspections on behalf of the town to ensure installations were installed in accordance with engineering documents and do not damage or impede access to the water tank.

**Repair of Lee Water Storage Reservoirs, Arlington County, VA:** Provided **construction administration** services for the repair and renovation of two 3.0 MG prestressed concrete ground storage tanks. Specific responsibilities included reviewing contractor shop drawing submittals as well as reviewing all manufacturer product data for each product that was submitted by the contractor for use in the rehabilitation.

**Robious 2 MG Elevated Water Storage Tank Emergency Repairs, Chesterfield County, VA:** Performed **structural and coatings inspection** for a 2 MG elevated water storage tank to address an immediate client concern regarding premature failure of the tank exterior coating. Specific responsibilities included inspecting and documenting, using photos, the areas in question.

**Bermuda 1 MG Elevated Water Storage Tank Inspection, Chesterfield County, VA:** Provided **inspection services** and compiled an inspection report for a 1 MG elevated water storage tank to assess the need for future rehabilitation. Specific responsibilities included initial coatings and structural inspection, identification of needed repairs, identification of upgrades needed for OSHA conformance, lead paint testing, and preparing the full inspection report to clearly convey the complete current condition, the needed repairs or upgrades, and the corresponding cost estimate for each of these items.

**Upper York 5 MG Ground Storage Tank Inspection, City of Newport News, VA:** **Structural and coatings inspection** of a 5 MG welded steel ground storage tank. Specific responsibilities included conducting interior and exterior inspection of the tank, documenting all findings in photos, identification of any needed repairs or upgrades needed for OSHA conformance, and compiling full inspection report to clearly convey the current condition and any needed repairs or upgrades to the client.

**Mill Creek Ground Storage Tanks, Washington County, VA:** Provided **structural and coatings inspection** of two 250,000-gallon bolted steel standpipes. These two standpipes were inspected in order to give Washington County their options in terms of addressing these two degrading tanks. These options included rehabilitating their current tanks as well as possible replacement options. Ultimately, a present cost analysis was conducted and presented in the to aid the county in choosing a single option going forward. Specific responsibilities included the interior and exterior inspection, the identification of needed repairs, the identification of needed upgrades for conformance with OSHA, documenting all findings with photos, and the compilation of the full inspection report to clearly convey the current condition of the tanks, any needed repairs or upgrades, as well as the present cost of each of the county's options to address the repair or replacement of the tanks.

### Education
BS / Civil Engineering
ME / Civil Engineering

### Registrations/Certifications
Professional Engineer / VA

### Years of Experience
4

### Office Location
Richmond, VA

### Experience
Mr. Dillard has 4 years of experience in structural engineering design, construction inspection, and construction management. He has been involved with a variety of projects that include storage tank evaluations and rehabilitation, utility work, and the design and maintenance of other structures.

# ANDREW VAIL, PE

*CIVIL/SITE ENGINEERING*

## PROJECT EXPERIENCE:

**Criminal Justice Academy Motorcycle Pad Upgrade, Chantilly, VA: Senior Project Engineer** where WRA designed the expansion of the motorcycle pad at the criminal justice academy that serves the Fairfax County Police Department, Fairfax County Sheriff's Office, and the towns of Herndon and Vienna Police Departments. The design included a topographic survey. The existing 140' x 140' pad was increased 15' on three sides, incorporated a VDOT similar median, and provided an access drive to a pedestrian bridge. As the project manager, Mr. Vail prepared construction documents in order to submit a minor site development plan. The site plan included stormwater management improvements and erosion and sediment control design. The contract also includes assistance during bidding, responding to RFI's, reviewing shop drawings, and reviewing change order requests from the Contractor.

**Herndon Harbor House Water Infiltration Repair Design, Herndon, VA: Senior Project Engineer** for the Herndon Harbor House has experienced water infiltration through a below grade wall. The design included a topographic survey, designing a storm drain network to connect existing downspouts, and regarding the 10' x 40' areaway in order for rainwater to sheet flow away from the building. The project also included excavation of the below grade wall to install new water proofing on the exterior surface. As the project manager, Mr. Vail coordinated with the architectural group and civil group to prepare the construction documents.

**Gartlan Center for Community Health Drainage Improvements, Fairfax County, VA: Senior Project Engineer** where WRA designed stormwater management and storm drain improvements for the community center. Water damage at the building entrances was an ongoing problem related to improperly located downspouts and insufficient slopes throughout the drainage area. Bioretention facilities and improved grading provided flooding relief at the main entrance and emergency exits.

**FBI Academy Parking Lot Stormwater Management Improvements, Quantico, VA: Senior Project Engineer** for the Design-Build Contract for paving, stormwater management improvements, and lighting at the FBI Complex. A total of nine micro-scale stormwater management devices were designed to remove approximately 30 lbs. Nitrogen and 3 lbs. of Phosphorus. The site improvements included multiple tree islands and walkways throughout the 5-acre parking lot. WRA also performed pavement design computations, an Arc Flash Hazard Analysis, and secured permits and approvals for site improvements including a Stormwater Pollution Prevention Plan.

**Fairfax County Historic Courthouse Wings Demolition, Fairfax County, VA: Senior Project Engineer** for the Historic Courthouse that was originally constructed in 1800 (Wing G) and underwent additions in 1930-31 (Wing A), 1951-53 (Wings B, C, D, & E), and 1991 (Wing F & Sky Bridge). The Historic Courthouse was placed on the U.S. National Register of Historic Places in 1974. The building is located on the Massey Judicial Complex site, and this project is part of Phase 1 of the Fairfax County Judicial Complex Master Plan, which plans to modernize and optimize the Judicial Complex over the next 20 years. The Wings Demolition project will demolish three outdated wings of the building (Wings C, E, F & Sky Bridge) while maintaining the operation and functionality of the remaining Historic Courthouse. The demolition will prepare the site for future renovations to create a new campus style main entrance to the Historic Courthouse. As site development lead, responsibilities included: demolition and construction phasing to provide safe and functional pedestrian and vehicle ingress/egress to the remaining courthouse building still in operation for the duration of the project and restoring and improving the pedestrian access and interconnectivity of the site.

### Education
BS / Civil Engineering

### Registrations/Certifications
Professional Engineer / VA, MD, DE

### Years of Experience
18

### Office Location
Fairfax, VA

### Experience
Drew has over 18 years of professional experience in civil/land development. He is experienced in master planning residential subdivisions that comprise of more than 700 units, numerous parks, and regional stormwater management facilities with a knowledge and understanding to avoid environmental sensitive areas. He has designed multiple community center parcels, tot lots, preteen lots, trail networks, and community gardens. His skills also include cost estimating, preparation of construction drawings, project scheduling, landscaping, grading, sediment control and utility design for storm drain, water, sewer, and stormwater management.

# JAMES H. SCANLON

LS, PE, DPE, LEED AP, DIRECTOR
LANDDESIGN | WASHINGTON DC

Jim Scanlon is LandDesign's Northern Virginia Director of Engineering and is both a registered Land Surveyor and Professional Engineer with over 40 years of a broad range of public and private development experience. His background includes field surveying, civil engineering, construction administration, and trial expert testimony cases involving condemnation. He is responsible for the design and preparation of all civil site improvements on commercial and residential developments and public works projects. He has experience working with all elements of land development projects, including streets and highways, site grading, public utilities, and stormwater management.

**EDUCATION**
Bachelors of Science, Civil Engineering, Virginia Polytechnic Institute and State University

**LICENSING**
Registered Professional Engineer: VA

Licensed Land Surveyor: VA

Designated Plans Examiner, Fairfax County, VA

**AFFILIATIONS**
Northern Virginia Building Industry Association's (NVBIA)

Virginia Association of Surveyors

**COMMUNITY INVOLVEMENT**
Chairman, Advisory Plans Examiners Board

Member, Affordable Dwelling Unit Advisory Board

**Metrowest**
Fairfax County, VA | Director of Engineering

**Kingstowne**
Alexandria, VA | Director of Engineering

**Brightview Projects**
Fairfax County, VA | Director of Engineering

**Overlook Ridge**
Lorton, VA | Director of Engineering

**Centene East Coast Headquarters**
Charlotte, NC | Director of Engineering

**Sunset Hills Road—Sallie Mae/Plaza America**
Reston, VA | Director of Engineering

**Old Reston Avenue—Sallie Mae**
Reston, VA | Director of Engineering

**Reston Section 61, Block 3**
Reston, VA | Director of Engineering

**Sunrise Technology Park**
Reston, VA | Director of Engineering

# JEFF BASFORD, PE

*GEOTECHNICAL*

## Education

MS / Civil Engineering UMCP
BS / Civil Engineering UMCP

## Registrations/Certifications

Professional Engineer / VA, MD, DE, TN, NC, PA, District of Columbia
Confined Space Training
CSX Roadway Worker Protection

## Years of Experience

23

## Office Location

Baltimore, MD

## Experience

Jeff has over 23 years of geotechnical design experience on projects in NOVA. His expertise ranges from bridge foundations (drilled shafts, piles and spread), to retaining and slope design, to utility trenching and tunnel design. He is currently designing the Accotink Gravity Sewer which travers through Vienna. He has a strong background in dealing with urgent construction-related issues and is known for developing innovative foundation solutions suited to projects with unique constraints.

## PROJECT EXPERIENCE:

**Mount Vernon Memorial Highway Trail and Bridge (Fairfax Co.):** **Lead Geotechnical Engineer** who oversaw and performed QC checks for the exploration, design, and detailing for a 6-span pedestrian bridge crossing a tidal river and adjoining several thousand feet of proposed shared use path. Special attention was made during the subsurface exploration to accommodate an adjacent property owner's concern along with ensuring that the borings did not damage a deep tunneled-in sewer line which could only be located through plan research. The bridge is designed to be supported by lightly loaded timber piles matching the existing paralleling Mount Vernon Memorial Highway Bridge. The pile design incorporates Pile Driving Analyzer (PDA) testing to maximize the usable pile capacity. Lateral analysis was performed using GROUP software to assess the bridge stability under a scour event. The project also includes an approximately 300-feet retaining wall for which global stability and bearing capacity analyses were performed. Loose soils were encountered at subgrade elevations, therefore an undercut and select backfill was prescribed and detailed. The adjoining shared use path subgrade was assessed using hand driven Dynamic Cone Penetrometer (DCP) probe which indicated the at-grade conditions were suitable for shared use path construction without remediation.

**Lee Chapel Road Sidewalk (Fairfax Co.):** **Lead Geotechnical Engineer** responsible for the analysis of the most appropriate type of retaining wall for minimizing impacts to the backyards of adjacent private properties and design of a proposed 450-foot long, 10-foot-high wall. A top down soldier pile and lagging wall system was details which could be constructed from the County ROW. Special consideration was given to evaluate constructability and verify that the soldier piles could be driven to the required depth and would not require drilled hole which would have required access to the top of wall area.

**Burgundy Community Center, (Fairfax Co.):** **Lead Geotechnical Engineer** responsible for the evaluation and remediation of the Burgundy Community Center foundation and basement floor slab. The building had experienced some settlement and cracking in the basement floor. A GPR survey was performed to identify any voids below the slab. Coring and DCP probes were performed inside and outside of the building to assess subsurface conditions which revealed roughly 6 feet of loose fill supporting the building. Test pits were excavated at the building perimeter to determine the building's foundation system being that plans did not exist for this structure. Several remedial options were presented to the County. Although a do-nothing option was presented the County opted for a compaction grouting solution to arrest further movement. Grouting specifications were created. He oversaw the full time WRA inspector and evaluated the completed grouting program for acceptability.

**FUpham Brook Gravity Trunk Sewer (Henrico Co.):** **Geotechnical Engineer** responsible for a 3 mile 60" sewer project. Developed subsurface investigation with rock coring. Developed laboratory testing program which included CERCHAR Abrasion Tests, Petrographic Analyses, and Unconfined Compressive Strength tests for the rock tunnel. He prepared a geotechnical report for five tunnels including a crossing underneath Route 1 (Brook Rd) which will extend approximately 650 feet within granite bedrock, which has compressive strengths up to 6,400psi. Microtunneling machines were specified for two of the tunnels crossing CSX and Route 1. He prepared project specifications and reviewed submittals during the construction phase of the project. He oversaw the construction of the tunnels with up to two engineers performing inspection and reporting to him daily.

# Peng "Paul" Zhang, PE

***Principal Geotechnical Engineer***

## Education

MSCE / Geotechnical Engineering / Purdue University / 2003

MS / Structural Engineering / Beijing University of Technologies / 2001

BS / Hydraulic Engineering / Fuzhou University / 1995

## Certifications

Virginia PE / 0402048994 / 2011

Maryland PE / 40303 / 2011

Ohio PE / 70538 / 2005

Georgia PE / 032521 / 2007

Mr. Paul Zhang serves as Vice President and Director of Geotechnical Engineering at DMY. Mr. Zhang has more than 18 years of experience in geotechnical engineering, construction materials testing, and inspection and construction management. He has extensive experience in the public sector, and is currently working on geotechnical engineering tasks under several on-call contracts throughout Northern Virginia. These include contracts with the Fairfax County Park Authority, Loudoun County Public Schools, Town of Purcellville, Town of Herndon, and the VDOT Northern Region.

**Ayr Hill Avenue, Vienna, VA** – Served as ***Principal Engineer.*** The project involved roadway improvements along both the eastbound and westbound lanes of Ayr Hill Avenue from Lawyers Road to Dominion Road. The total length of the roadway to be improved was approximately 750 feet. Proposed improvements included the widening the existing eastbound and westbound lanes of Ayr Hill Avenue with new pavement along both the eastbound and westbound lanes. The project also included new curb and gutter Mr. Zhang oversaw the geotechnical investigations that included site reconnaissance, drilling, pavement coring, and laboratory testing.

**Marshall Road SW, Vienna, VA** – Served as ***Principal Engineer.*** The project consisted of improving approximately 800 lineal feet of Marshall Road SW, beginning approximately 400 feet east of the intersection with Pickett Place SW and extending approximately 400 feet west of the same intersection. The existing roadway was realigned slightly east of Pickett Place SW. Roadway features included a new sidewalk and new curb and gutter along the south side of the roadway alignment, as well as new driveways for six (6) existing residences. Mr. Zhang oversaw the geotechnical investigations that included field investigation, drilling, and laboratory testing.

**Mill Street, Vienna, VA** – Served as ***Principal Engineer.*** The project involved improving approximately 1,100 lineal feet of Mill Street, beginning at the projected intersection with Albea Court NE and extending east to approximately 100 feet beyond the intersection with Ayr Hill Avenue. The roadway improvements also included stormwater drainage improvements. Mr. Zhang oversaw the geotechnical investigations for a potential retaining wall that included field investigation, drilling, and laboratory testing.

**Town of Purcellville North Hatcher Avenue Pedestrian Bridge, Purcellville, VA** – Served as ***Geotechnical Engineer***. This project constructed a sidewalk connection and a bridge/culvert over South Fork Catoctin Creek along North Hatcher Avenue between E. Skyline Drive and Hirst Road in Purcellville. Mr. Zhang managed all geotechnical engineering services, which included borings, soil test drilling and sampling, laboratory testing, and development of a geotechnical report. This project was completed in 2018.

**Traffic Signal Design – Clubhouse Drive & South King Street, Leesburg, VA** – Served as ***Geotechnical Engineer*** for the geotechnical analysis prior to the design and construction of a replacement traffic signal at Clubhouse Drive and South King Street in the Town Leesburg. Mr. Zhang oversaw the geotechnical analysis, which included Standard Penetration Test borings, geotechnical analysis that included axial capacity and lateral capacity analysis for the drilled shaft supporting the signal structure, a geotechnical analysis for an alternative foundation design, and a final geotechnical report. This project was completed in 2018.

**Town of Purcellville Task Order Contract, Purcellville, VA** - Serving as ***Geotechnical Engineer***. The geotechnical projects performed under this task order contract with the Town of Purcellville, Virginia. DMY holds this contract as the prime consultant, and provides both geotechnical and construction services under the terms of the contract. Typical projects involve geotechnical design for water/wastewater, transportation, park, trail, and public buildings projects in the Town. Mr. Zhang oversees all work on geotechnical tasks given under this contract.

**Town of Herndon Task Order Contract, Herndon, VA** - Serving as ***Geotechnical Engineer***. The geotechnical projects performed under this task order contract with the Town of Herndon, Virginia. DMY holds this contract as the prime consultant, and provides both geotechnical and construction services under the terms of the contract. Typical projects involve geotechnical design for transportation, park, trail, and public buildings projects in the Town. Mr. Zhang oversees all work on geotechnical tasks given under this contract.

**Loudoun County Public Schools On-Call Contract, Loudoun County, VA** - Serving as ***Principal Engineer.*** DMY was awarded an on-call contract to provide geotechnical and material testing & inspection services for the Loudoun County Public Schools. Mr. Zhang will be responsible for managing all geotechnical engineering services for school projects, which may include pavement coring, soil test drilling and sampling, infiltration testing, traffic control, laboratory testing, and analyses and recommendations for roadway embankments, pavements, SWM ponds, drainage structures and earth retaining structures, and slope stability.

**Fairfax County Park Authority Task Order Contract, Fairfax County, VA** - Serving as ***Geotechnical Engineer***. The geotechnical projects performed under this task order contract with the Fairfax County Park Authority. DMY holds this contract as the prime consultant, and provides both geotechnical and construction services under the terms of the contract. Typical projects involve geotechnical design for both new construction and renovations of park facilities managed by the Fairfax County Park Authority. Mr. Zhang oversees all work on geotechnical tasks given under this contract.

**Fairfax County Department of Transportation Task Order Contract for Transportation Improvement Projects, Fairfax County, VA** - Served as ***Project Manager.*** This Task Order contract issued by Fairfax County for the design of various types of transportation improvement projects throughout the County. DMY worked with prime engineering firm to provide geotechnical drilling, field and laboratory testing, and engineering design and report for retaining walls, pavement, stormwater management facilities, and other facilities on an as-needed, project-specific basis.

**Town of Herndon Task Order Contract- Historic Herndon Phase III, Herndon, VA** - Served as **Geotechnical Engineer**: The installation of new brick paver sidewalks along Elden St. from the Station St. intersection to near the Center St. intersection. Telecommunication conduits and electrical conduits for lighting shall be installed along the length of the project. Work shall include associated site work and grading, temporary traffic control, drainage, various streetscape amenities, and the installation of traffic signage. DMY was responsible for the quality assurance/control during construction. As such, we are responsible for adherence to VDOT and Town of Herndon requirements and specifications. DMY is providing onsite inspection and testing services of materials for foundation inspection, soils and aggregate, reinforcing steel, concrete, asphalt and pavement marking and installation of traffic signs. DMY is also responsible for maintaining the materials notebook in accordance with VDOT requirements.

**Town of Herndon Task Order Contract- Elden & Monroe Street Intersection, Herndon, VA** - Served as **Geotechnical Engineer** for the reconstruction of the existing intersection of Elden Street and Monroe Street. The improvements include a new traffic signal, brick crosswalk with ADA compliant curb ramps, brick sidewalks and revised curb return in the southeast quadrant of the intersection. The project also includes installation of concrete encased PVC conduits for Cox, Verizon, Zayo and Dominion Power.

**Town of Purcellville North Hatcher Avenue Pedestrian Bridge, Purcellville, VA** - Served as **Geotechnical Engineer**: This project constructed a sidewalk connection and a bridge/culvert over South Fork Catoctin Creek along North Hatcher Avenue between E. Skyline Drive and Hirst Road in Purcellville.. Mr. Zhang managed all geotechnical engineering services, which will includes borings, soil test drilling and sampling, laboratory testing, and development of a geotechnical report. This project was completed in 2018.

**Scotts Run Trail, Fairfax, VA** - Served as a **Principal Engineer.** This project consists of the design and construction of a half-mile long, 8-foot wide asph alt trail connecting Magarity Road to Chain Bridge Road (previously Colshire Meadow Drive) and provides the residential communities safe access to the McLean Metro Station. The project includes two (2) pedestrian bridges (50 feet and 90 feet long) over Scotts Run, storm drainage, asphalt paving, trail lighting, handrail, pavement markings and related signage.

# HERBERT PALM, RLA

*LANDSCAPE ARCHITECT*

## Education

BS / Landscape Architecture

## Registrations/Certifications

Registered Landscape Architect / VA, MD, , DE

## Years of Experience

42

## Office Location

York, PA

## Experience

Mr. Palm has experience in all aspects of landscape design including planting and hardscaping design. He also has extensive experience in highway design, erosion and sediment pollution control, land development, landscaping of MDE stormwater micro-scale devices, streetscaping and sidewalk retrofit design for ADA compliance.

## PROJECT EXPERIENCE:

**Route 50 Pedestrian Initiatives, Fairfax County, VA:** **Landscape Architect** responsible for the landscape design of the median area between the adjacent frontage road and mainline Route 50 along the westbound side. The landscape design used a No-Mow Fescue Mix behind the sidewalk to the limit of the disturbance line and a Native / Wildflower Mix at the entrances to the frontage road using plants that don't grow above 24" for sight distance requirements. Daffodils were also planted in this area using different colored daffodils and early, mid, and late spring blooming times.

**Moving Bed Biological Reactor (MBBR) Installation, Wastewater Treatment Plant, Town of Warrenton, VA:** **Landscape Architect** responsible for the landscape screening design around the new MBBR Treatment units to screen them from the adjacent Warrenton Aquatic and Recreation Facility and Fauquier High School and the preparation of specifications.

**Beverley Park Renovations, City of Alexandria, VA:** **Landscape Architect** responsible for the renovation of the existing park. He was responsible for overseeing the redesign of the park to include landscaping, ADA accessibility, new play equipment, playground safety surfacing and seeding/sodding, and a meadow seed mix for a designated meadow area.

**Landmark Mall Redevelopment, City of Alexandria, VA:** **Landscape Architect** responsible for reviewing the landscape and hardscape design of the preliminary and final site plan submittals of the Landmark Mall Redevelopment for a Medical / Hospital campus.

**Phase I Cub Run Gravity Delivery System Improvements, Fairfax County, VA:** **Landscape Architect** responsible for the upgrading of a sanitary sewer main for approximately 5 miles. He was responsible for the preparation of construction and contract drawings and specifications for the replacement-in-kind of trees and shrubs and the restoration of grass areas on the Chantilly National Golf and Country Club and adjacent upscale residential lots.

**Huguenot Pump Station Water Transmission Main, Chesterfield County, VA:** **Landscape Architect** responsible for the landscape design of the First Community Bank property by providing a hedge using a native, low maintenance, and drought tolerant shrub to screen the property from Mall Drive and to replace the five existing trees that were being removed or the installation of the 24" water transmission main.

**Suffolk Public Utilities Operations Center, City of Suffolk, VA:** **Landscape Architect** responsible for the landscape design around the exterior of the renovated Public Utilities OPS building, parking lot interior and perimeter landscaping, tree canopy calculations, bufferyard landscaping, specifications, and a cost estimate. The total parcel area was 18.51 acres.

**I-81, Exit 118 Park & Ride (VDOT), Christiansburg, VA:** **Landscape Architect** responsible for the landscape design of a wet pond, 3 micro-bioretention facilities, evergreen screening buffers on the south and east sides, a native meadow and steep slope seed mix to use on all non-mowed areas and site furniture placement and details (bike racks, bike lockers, trash receptacles, and bus shelters), landscape special provisions and a cost estimate for a 262 space park and ride facility.

**25th Street, M Street and Jefferson Avenue Intersection Improvements, City of Richmond, VA:** **Landscape Architect** responsible for the landscape design of the roundabout and splitter islands using drought tolerant trees, shrubs, and perennials.

# SUSAN ENGLAND

PLA, LEED AP, SENIOR ASSOCIATE, STUDIO LEADER
LANDDESIGN | WASHINGTON DC

Susan is a Senior Associate in LandDesign's Washington DC office who works hard to immerse herself in the communities she works with and lives in. She engages in local organizations to remain informed and be a positive influence in shaping places people will use. She enjoys everything creative and specializes in childrens playgrounds and outdoor learning environments. Her dog is also featured as the resident office entertainment. Susan is responsible for the design, project management, and construction oversight for a variety of projects, and preparing submission documents and construction detailing, with expertise in planting design.

**EDUCATION**
Bachelor of Landscape Architecture,
Clemson University

**LICENSING**
Professional Landscape Architect - MD: 3409

LEED AP

**AFFILIATIONS**
American Society of Landscape Architecture (ASLA)

American Horticultural Society (AHS)

National Recreation + Parks Association (NRPA)

**SPEAKING ENGAGEMENTS**
Brownbag Lunch + Learn: "Simon Playground Renovation: Integrating Stormwater Into an Educational Landscape", District Department of Environment, Washington, DC (May 2013)

Presenter: "Big Impact, Small Footprint", National Children & Youth Garden Symposium, Austin, TX (2015)

Presenter: "Building and Teaching Community Values in Gardens and Playscapes", National Children & Youth Garden Symposium, Ithica, NY (2018)

Presenter: "Case Study: Implementation and Use of Leckie Outdoor Teaching Kitchen", National Children & Youth Garden Symposium, Ithica, NY (2018)

**Leckie Elementary School Outdoor Classroom**
Washington DC | Project Manager + Lead Designer

**Capitol Hill Day School Playscape**
Washington DC | Project Manager + Lead Designer

**Sherwood Recreation Center**
Washington DC | Project Manager + Lead Designer

**Simon Elementary School Playground**
Washington DC | Project Manager + Lead Designer

**Ross Elementary School**
Washington DC | Landscape Architect

**Maury Elementary School Playground**
Alexandria, VA | Project Manager + Lead Designer

**Hillcrest Recreation Center**
Washington DC | Project Manager + Lead Designer

**King Greenleaf Recreation Center**
Washington DC | Project Manager + Lead Designer

**Ketchum Elementary School Playground**
Washington DC | Project Manager + Lead Designer

**Lafayette Recreation Center**
Washington DC | Project Manager + Lead Designer

**Nalle Elementary School Playground**
Washington DC | Project Manager + Lead Designer

**Congregation Beth El Playspace**
Bethesda, MD | Project Manager + Lead Designer

# Eric CALLOCCHIA

PARTNER

Mr. Eric Callocchia has over eleven years of cost of service and financial consulting experience. His expertise involves a broad range of industry issues, including revenue stability, customer affordability, cost of service rate making, and public engagement and education. His expertise in cost of service is rooted in his exceptional analytic skills and broad experience, which ensure that the recommendations he develops are understandable and withstand legal scrutiny.


## CONTACT

911-A Commerce Rd
Annapolis, MD 21401
Email: ecallocchia@newgenstrategies.net
Website: www.newgenstrategies.net


## EDUCATION

Bachelor of Arts in Economics and Mathematics, Johns Hopkins University

## PROFESSIONAL REGISTRATIONS/ CERTIFICATIONS/ AWARDS

American Water Works Association – Active member of the AWWA Rates and Charges Committee and Cost of Service Subcommittee

Government Finance Officers Association

Water Environment Federation

## KEY EXPERTISE

Cash Flow Sensitivity Analysis

Econometrics

Economic Impact Analysis

Financial Modeling

Public Finance

Utility Management

Utility Rate and Fee Design

Water and Wastewater Cost of Service Analyses

NewGen Strategies & Solutions

## RELEVANT EXPERIENCE

### Water/Sewer/Stormwater Rate Studies

Mr. Callocchia provides water, wastewater, and stormwater industry expertise and policy guidance to NewGen's clients. His rate study approach involves the development of customized financial models that focus on the policy issues, cash needs, revenue requirements, and key performance indicators of each client. His models equip clients with the necessary information to make critical capital financing decisions and rate adjustments to fully finance their system's operation, asset maintenance, and replacement needs while maintaining fund balance policies based on industry best practices. The models also have the capability of scenario analysis and can be incorporated with operating and capital expense and revenue projects. Mr. Callocchia develops and recommends alternative rate structures and assists with implementing phased-in rate plans that address client issues and maintain the financial health of utility funds. Mr. Callocchia also provides expert guidance on managing water, sewer, and stormwater utilities, including developing policies and procedures related to customer service, organizational communication, and public outreach.

Clients that Mr. Callocchia has provided these services to include:

- Albemarle County, VA
- Anne Arundel County, MD
- Bloomington and Normal Water Reclamation District, IL
- City of Annapolis, MD
- City of Brea, CA
- City of Charlottesville, VA
- City of Concord, CA
- City of Dover, DE
- City of Falls Church, VA
- City of Frederick, MD
- City of Fredericksburg, VA
- City of Hagerstown, MD
- City of Hampton, VA
- City of Naperville, IL
- City of North Kingstown, RI
- City of Park Ridge, IL
- City of Portsmouth, VA
- City of Prospect Heights, IL
- City of Richmond, VA
- City of Rockville, MD
- City of Salisbury, MD
- City of Westminster, MD
- Coachella Valley Water District, CA
- Delaware County Regional Water Quality Control Authority (DELCROA), PA
- Frederick County, MD
- Jericho Water District, NY
- Jurupa Community Services District, CA
- King George County Service Authority, VA

# Eric CALLOCCHIA

PARTNER

- Loudoun Water, VA
- Rivanna Water and Sewer Authority, VA
- Somerset County Sanitary District, MD
- Town of Barnstable, MA
- Town of Colonial Beach, VA
- Township of East Brunswick, NJ
- Town of Elkton, MD
- Town of Fairfield WPCA, CT
- Town of Herndon, VA
- Town of Lovettsville, VA
- Town of Middleburg, VA
- Town of Pound, VA
- Town of Purcellville, VA
- Town of Wallingford, CT
- Town of Vienna, VA
- Village of Addison, IL
- Village of Fox Lake, IL
- Village of Libertyville, IL
- Village of Lindenhurst, IL
- Village of Lombard, IL
- Village of Orland Park, IL
- Village of Westchester, IL
- Washington Suburban Sanitary Commission, MD
- Wise County Public Service Authority, VA

## Stormwater Feasibility and Fee Studies

### Libertyville, IL

In 2019, the Village engaged NewGen to complete a feasibility study to project the costs of implementing a Master Stormwater Management Plan (MSM) and to determine the appropriate methodology to charge Village citizens the fees for the MSM planned projects. The Village also tasked NewGen with developing credit policies and manuals, appeal procedures, and an appropriate Stormwater Ordinance. Mr. Callocchia developed a financial model that projected the twenty-year cost of the Village's MSM and the various impervious area-based cost allocation methods the Village could adopt as a funding mechanism. Mr. Callocchia's feasibility study allowed Village staff and elected officials to evaluate the various stormwater funding alternatives and implement industry best practices for the administration of its stormwater management program. Mr. Callocchia finalized the impervious area and utility billing databases and coordinated with Village staff to develop an interactive online fee lookup tool that allowed Village citizens to see their potential stormwater fee before it became effective. Mr. Callocchia also worked with Village staff to conduct two Town Hall style public information sessions before the fee became effective.

### Westminster, MD

The City of Westminster serves as the County Seat. It is in the center of Carroll County, conveniently located near Maryland's largest cities, two state capitals, Annapolis and Harrisburg, and the nation's Capital. The City had historically faced challenges when funding stormwater operating and capital costs. In the past, the City had not accounted in a detailed fashion for the actual stormwater management costs, with most of the costs absorbed by the City's streets and road maintenance accounted for in the General Fund. The City engaged NewGen in 2019 to complete a feasibility study with several tasks:

- Identify and isolate the actual cost of stormwater maintenance.
- Develop and recommend a ten-year stormwater CIP given the City's asset listing and future stormwater needs.
- Recommend policies regarding stormwater fees and credits.
- Engage in a public information campaign to educate the City's citizens on the need for additional resources for stormwater management.
- Assist in implementing a Stormwater Utility that properly accounts for the City's stormwater costs.

Mr. Callocchia developed a financial model detailing the City's stormwater costs and helped the City implement a stormwater fee tied to the account information of City sewer users.

# Eric CALLOCCHIA

PARTNER

### Frederick County, MD

Frederick County, Maryland, was anticipating the issuance of a Municipal Separate Storm Sewer System (MS4) Permit from the Maryland Department of the Environment (MDE) that would place a particular cost burden on the County's 48,000 stormwater fee payers. Mr. Callocchia developed a financial model that determined the Maximum Extent Practicable (MEP) level the County could reasonably fund given current funding levels, median household income, and the County's procurement limitations. Mr. Callocchia's financial model allowed for a sensitivity analysis to determine the increase in funding that would be possible given several factors. The County used Mr. Callocchia's analysis to appeal the permit requirements and reduce the financial impact on the County's customers by reducing the mandated spending related to the permit and lengthening the required implementation timeframe.

### Geneva, IL

The City of Geneva was actively involved in developing the Kane county Stormwater Management Ordinance dating back to 1998. Geneva became a "certified community" in 2001 with the adoption of the final version of the City's stormwater ordinance. The Lake County Stormwater Management Commission provided a template that was the basis of the City's Stormwater Management Program Plan (SMPP). The plan's purpose was to meet the minimum standards required by the U.S. Environmental Protection Agency (EPA) under the National Pollutant Discharge Elimination System (NPDES) Phase II program.

Mr. Callocchia led a team that conducted a financial analysis as a part of a Citywide Watershed Study. The City supported the drainage and stormwater-related costs through its General Fund. His role in the Watershed Study was to support and participate in the initial City staff meeting to establish a City Vision document. Mr. Callcocchia also identified current grants and funding sources and developed funding strategies to facilitate the City's Public Works Department's capital and operational needs related to their drainage infrastructure responsibilities. He recommended funding gap strategies associated with an annual program and budget and participated in and supported a City Council strategic planning workshop topic related to the Citywide Stormwater Report and financial perspectives.

## Water and Sewer Revenue Bond Feasibility Study

Mr. Callocchia developed a water and sewer rate model for the City of Annapolis, Maryland, that projected various debt scenarios, including bond coverage calculations and cash-on-hand target projections. The City was able to generate ratings of AA-, Aa3, and AA- from the three major rating agencies and issue the revenue bonds in the amount of $30,755,000 on schedule, thanks to the feasibility report generated by Mr. Callocchia's team.

## Litigation Support

### Utility Billing Dispute

Silgan Plastics is the leading manufacturer of metal containers in North America and Europe and the largest manufacturer of metal food containers in North America, with a volume of approximately half the market share in the United States of America. They are also a leading worldwide manufacturer of metal, composite and plastic closures for food and beverage products. Mr. Callocchia led a team to evaluate the utility rates charges to a selection of Silgan's manufacturing plants and assist Silgan in settling rate disputes with local utility providers. Mr. Callocchia's detailed evaluations and expert analysis resulted in a settlement agreement for more than $500,000 above the amount previously offered to Silgan before Mr. Callocchia's involvement.

# Eric CALLOCCHIA

PARTNER

### Water Rate Litigation

The San Diego County Water Authority (SDCWA) and The Metropolitan Water District of California (MWD) were engaged in litigation regarding the water rates charged to SDCWA by MWD. Mr. Callocchia developed a report on MWD's rate setting methodology and how it relates to the principles and industry standard practices detailed in the American Water Works Association (AWWA) Manual M1 - Principles of Water Rates, Fees, and Charges. Mr. Callocchia's evaluation assisted SDCWA in its efforts to show the illegality of MWD's rates based on their non-conformity to both AWWA standards and California Law (Proposition 26). Mr. Callocchia's work involved cost-of-service analysis and knowledgeable explanation of industry standards to the Superior Courts of California. After Mr. Callocchia's report, a judge ruled in favor of the Water Authority, saying MWD's rates for 2011-2014 were illegal, and awarded SDCWA $235 million. Upon appeal, the appellate court ruled in favor of MWD on one of twelve issues. The California Supreme Court denied a petition by SDCWA to review the appellate court ruling. The results of the dispute in which Mr. Callocchia was involved as an expert were:

- MWD must pay the Water Authority approximately $51 million for the so-called "Water Stewardship" charges that MWD added to the transportation rates it charged the Water Authority from 2011-2014. The decision prevents MWD from imposing more than $20 million in illegal charges annually in the future. By 2047, those unlawful charges would have amounted to approximately $1.1 billion.
- MWD unlawfully under-calculated the Water Authority's statutory water right to MWD's water supply.
- A contract clause MWD used to disqualify local water supply projects in San Diego County from receiving funding from MWD was unconstitutional.
- Engage in a public information campaign to educate the City's citizens on the need for additional resources for stormwater management.
- Assist in implementing a Stormwater Utility that properly accounts for the City's stormwater costs.

### Benefit Assessment Dispute

The City of Westminster, Maryland, was sued by a new customer who alleged that the methodology used by the City to calculate its water and sewer benefit assessments, commonly known in the utility industry as System Development Charges, was unlawful. Mr. Callocchia served as an expert witness detailing the industry standard methodologies used to calculate these fees and provided the Court with the rationale and basis for the City's fees. The Court ultimately found that the City's fees were not illegally calculated based on the City's testimony, which included Mr. Callocchia's expert witness statements.

## PRESENTATIONS AND PUBLICATIONS

***WEF Manual 27, Financing and Charges for Wastewater Systems***, Contributing Author

***Setting Water and Sewer Rates in New York State While Addressing the Challenges of 2020***
New York State GFOA 2020 Northeast Holiday Seminar, 2020

***Setting Water and Sewer Rates***
New York State GFOA 38th Annual Conference, 2017

***A World without Crystal Balls: Attempting to Forecast Operating Expenses***
Tri-Association Conference, 2016

***Enhanced General Fund Reimbursement by Enterprise Funds***
Brown Edwards Conference, 2014

# MICHAEL RUTH, CCP, VMA, LEED AP BD+C

*COST ESTIMATES*

## PROJECT EXPERIENCE:

**78" CSO Pipeline from Mill Race to CSO Storage Facility, Cumberland, MD:** **Cost Estimator** responsible for 100% estimated construction document design for a 14,083 LF sanitary sewer utility pipe installation. He also estimated the current 90% drawings for 14,000 LF of 78" pipeline to include tunneling, 20 manholes, and other structures at an average depth of 25' - 28'.

**Anderson Pump Station, Chesterfield County, VA:** **Cost Estimator** responsible for the estimated costs of the replacement (demo and new) of four (4) 12' control pumps with fittings and piping.

**Occoquan Forest Pump Stations, PWCSA, Woodbridge, VA:** **Cost Estimator** who assisted with the analysis of pump station change orders including the addition of HVAC equipment and other building additions. Contractor submitted prices was compared to WRA's construction cost estimate and negotiations with the contractor were initiated to determine a final, fair, best price for the change order.

**Dulles Metrorail Phase 2, Fairfax, VA:** **Cost Estimator** responsible for providing the mechanical, plumbing, and site utilities cost estimate portion of this project. The design-build delivery of Phase 2 of the project, consisted of six (6) new heavy rail stations, track work, roadway improvements, surface and garage parking facilities, relocation of existing utilities, stormwater management, traction power sub-stations, station platforms, kiss and ride stations, pedestrian bridges, at grade and elevated guideways, and support infrastructure. Also included are a new rail and train maintenance yard, new tracks for rail-car storage, a service and inspection facility, a paint shop, and an operations building. The total construction value was $3.3 billion.

**DC Water LEED Platinum Headquarters, Washington, DC:** **Cost Estimator** responsible for providing independent cost estimates (ICEs) on change orders for the Owner. Provided limited negotiations on large deltas between these ICEs and the contractor.

**Thornton Gap Wastewater Treatment Plant Renovations and Restoration, Big Meadows Offices, Loft Mountain Campground H-loop (2020), National Park Service (WRA) Crozet, VA:** **Cost Estimator** who was involved in eight sub-projects, prior to bid date during the 100% CD stage of design, Mike discovered mathematical errors with the A/E cost estimate resulting in a $100K variance. This project involving utilities, restoration of vegetation areas, and other relevant pertinent factors has a $3.8M construction cost.

**Big Springs Utilities at Ozark National Scenic Riverways (2019), National Park Service (WRA), Ozark National Scenic Riverways, Van Buren, MO:** **Cost Estimator** At the PD/SD/CD stages of design, reviewed the A/E cost estimate for all trade disciplines, which included utility. There were discrepancies discovered with the excavation quantities, water lines, and sewer main posted lengths. The construction cost of $32M.

**General Construction Phase, Renovation of Building 250 Water Treatment Plant, Aberdeen, MD:** **Cost Estimator** responsible for the completion of the renovation and new infrastructure such as site grading, erosion control, three new production discharge pumps with piping, new underground yard piping new wells with a central metering station.

### Education

MS / Computer Science
BS / Applied Mathematics

### Registrations/Certifications

Certified Cost Professional
LEED Accredited Professional BD+C
Value Methodology Associate

### Years of Experience

33

### Office Location

Baltimore, MD

### Experience

As a Certified Cost Professional (CCP) through AACE International, Mike has experience in commercial and industrial construction cost estimating fields. Mr. Ruth has an exceptional technical background in the provision of detailed cost estimating reports utilizing RS Means Costworks, OnCenter Onscreen Takeoff, BlueBeam, and RS Means Online

# TYLER LONG, PE

*ROADWAY/PEDESTRIAN IMPROVEMENTS*

## PROJECT EXPERIENCE:

**On-Call Drainage Studies and Design (2003-ongoing), Town of Vienna, VA:** **Project Engineer** for open end engineering services for the Town since 2003. The projects have included a variety of studies and designs for Capital Improvement projects.

**Blair Road Storm Drain Extension, Town of Vienna, VA:** **Design Engineer** responsible for the development of construction plans for the extension of an existing storm drainage pipe from Blair Road to an outfall on a tributary of Piney Run.

**Center Street Improvements, Town of Vienna, VA:** **Design Engineer** responsible for hydraulic analysis and preparation of construction drawings for the reconstruction of approximately 1,000 feet of roadway. The improvements include a new storm drainage system, curb and gutter, and sidewalk.

**Knoll Street Improvements, Town of Vienna, VA:** **Design Engineer** responsible for hydraulic analysis and preparation of construction drawings for the reconstruction of approximately 300 feet of roadway. The improvements include a new storm drainage system, curb and gutter, and sidewalk.

**Talahi Road Improvements, Town of Vienna, VA:** **Design Engineer** responsible for hydraulic analysis and preparation of construction drawings for the reconstruction of approximately 400 feet of roadway. The improvements include a new storm drainage system, curb and gutter, and sidewalk.

**Westbriar Court Drainage Improvements, Town of Vienna, VA:** **Design Engineer** responsible for the development of drawings for replacing an existing concrete-lined drainage ditch with a storm sewer system serving a residential area in northeast Vienna.

**Town of Vienna On-Call Engineering Services for Federal/State Projects, Vienna, VA:** **Contract Manager** for on-call design services on State and Federally funded locally administered (LAP) transportation improvement projects.

**Routes 123 and 234 Traffic Signal Upgrades, Town of Vienna, VA:** **Contract Manager** for the assessment and cost estimating for upgrading the traffic signals along Routes 123 and 234 ultimately to the McCain Adaptive system. The tasks include establishing the current signal equipment inventory, assessment of the current signal traffic management system, providing a recommendation and implementation plan, and construction cost estimating.

**Park Street NE Improvements, Town of Vienna, VA:** **Contract Manager** for the design of a new sidewalk along Park Street NE between Ayr Hill Avenue and Albea Court. The tasks include roadway and sidewalk design, maintenance of traffic design, cost estimating, coordination through the VDOT LAP process, and public involvement.

**Historic Freeman Store Pedestrian Bridge Replacement, Town of Vienna, VA:** **Contract Manager** for the design of a new timber pedestrian bridge connecting the W&OD Trail with the Historic Freeman Store structure. The tasks include structure design, maintenance of bicycle and pedestrian traffic design, and coordination with NOVA Parks and through the VDOT LAP process.

**Nutley Street SW Shared Use Path, Town of Vienna, VA:** **Contract Manager** for the design of a new shared use path along Nutley Street between Tapawingo Road and Virginia Center Parkway. The tasks include shared use path design, maintenance of traffic design, HEC-RAS analysis, quantity takeoff, cost estimating, and coordination with VDOT LAP division and adjacent Town Stream Restoration Project.

### Education
BS / Civil Engineering

### Registrations/Certifications
Professional Engineer / VA
Advanced Work Zone Traffic Control Training

### Years of Experience
24

### Office Location
Fairfax, VA

### Experience
Tyler has 24 years of civil engineering experience concentrating on highway design in both urban and rural areas. He has worked as a Project Manager, Task Leader and Design Engineer on major highway projects for VDOT and numerous localities. His project experience includes intersection and interchange design, roadway realignments and reconstruction, parking layout design, transit access design, ADA compliance, drainage design, erosion and sediment control design and maintenance of traffic.

# REGINA HERR, PE

*ADA COMPLIANCE*

## PROJECT EXPERIENCE:

**Fairfax County On-Call Transportation Improvements Projects, Fairfax County Department of Transportation, Fairfax County, VA:** **Project Manager** responsible for the design of over 70 transportation improvement projects including Locally Administered Projects (LAP) and Land Use Permit (LUP) projects. Projects have encompassed intersection improvements, pedestrian and bicycle facilities studies and design, bus stop safety and accessibility improvements, and feasibility studies for transportation improvements.

**Scotts Run Trail, Fairfax County, VA:** **Project Manager** responsible for the development of design alternatives study and final design for a federally-funded asphalt walkway project through a stream valley park. Design services included pedestrian and bicycle facilities design, HHA of Scotts Run, drainage design and stormwater management, geotechnical investigation, bridge design for the use of prefabricated pedestrian bridges, scour analysis, lighting design, wetland delineation and environmental permitting, NEPA documentation preparation, coordination with FCPA, VDOT, and community. The project went through the LAP process and LDS submission and approval as a public improvement plan. WRA is currently performing engineering services during construction including shop drawing review for the bridges and responding to RFIs.

**Route 50 Pedestrian Initiatives, Fairfax County, VA:** **Project Manager** responsible for the development of construction plans for the design of over 7,000 LF of sidewalk along Route 50 in the Falls Church area of the County as five separate projects. Design services for this federally funded program included: pedestrian and roadway design, traffic signal modifications, landscape design, drainage design tying into an aged storm drain system, stormwater management, maintenance of traffic, and public involvement.

**Cinder Bed Road Bikeway, Fairfax County, VA:** **Project Manager** for a federally-funded (TAP) 2-mile bicycle facility providing a connection from an existing shared use path along Newington Road to the Franconia-Springfield Metrorail Station. WRA performed an alternatives analysis study prior to design. The proposed improvements include the installation of a curb, gutter, and a 10-foot shared use path along Cinder Bed Road, an upgrade to an existing FCPA trail, a new trail alignment through private HOA property, 3 new pedestrian bridges, drainage, and lighting. The project is a LAP project and a Fairfax County LDS Public Improvement (P.I.) plan.

**VDOT NOVA District On-Call Design Services:** **Task Manager** for multiple task assignments for the NOVA District. Tasks included roadway widening, intersection improvements, pedestrian and bicycle facilities design, traffic signal design, drainage design, hydrologic and hydraulic analysis, stormwater management, signing and marking, transportation management plans, and public involvement. Sample projects have included:

**VDOT Route 234 Shared Use Path, Prince William County:** **Project Manager** for the design of a 1,200-foot-long shared use path along Dumfries Road in Prince William County. The project was requested by the County to provide an off-road facility for bicyclists and pedestrians connecting to the existing shared use path and the community of Montclair. The project also included updating an existing signal with pedestrian signals.

### Education
BS / Civil Engineering

### Registrations/Certifications
Professional Engineer / VA, MD
VDOT Advanced Work Zone Traffic Control Training
VDOT Concurrent Engineering Process Training
FHWA/Americans with Disabilities Act Training

### Years of Experience
31

### Office Location
Fairfax, VA

### Experience
Ms. Herr's experience includes planning and design of a wide variety of transportation facilities including pedestrian sidewalks, bicycle trails, as well as new roadways, roadway widening, traffic calming, streetscaping, and transit facilities. Responsibilities include all aspects of project planning and development, design, and preparation of final contract documents. Her design experience also includes preparation of design plans for the retrofit of transportation facilities to meet ADA Accessibility Guidelines Compliance. major transportation projects.

# DANA TRONE, PE, PTOE

*TRAFFIC ENGINEERING*

## PROJECT EXPERIENCE:

**On-Call Engineering Services for Federal/State Projects, Town of Vienna, VA:** **Lead Traffic Engineer** for on-call design services on State and Federally funded locally administered (LAP) transportation improvement projects.

**Routes 123 and 234 Traffic Signal Upgrades, Town of Vienna, VA:** **Lead Traffic Engineer** for the design of improvements to the traffic signals to interconnect the Town's traffic signals along Maple Avenue and Nutley Street through a combination of fiber optic and 5.8 GHz wireless broadband radio system using the McCain, Inc Transparity Management System (TMS). The tasks include establishing the current signal equipment inventory, assessment of the current signal traffic management system, providing a recommendation and implementation plan, and construction cost estimating.

**On-Call Transportation Improvements Projects (Multiple Contracts), Fairfax County, VA:** **Lead Traffic Engineer** responsible for a contract that includes the design of locally administered (LAP) transportation improvement projects. Over 50 tasks were assigned, including intersection improvements, pedestrian and bicycle facilities studies and design, bus stop safety and accessibility improvements, and feasibility studies for transportation improvements.

**Route 50 Pedestrian Initiatives, Fairfax County, VA:** **Lead Traffic Engineer** for the design and plan development 7,000 LF of pedestrian improvements between Westcott Street and Annandale Road along Route 50 in Falls Church, VA. The improvements included walkway design including curb ramps, bus stop facilities access, crosswalks, and drainage devices. She was responsible for signing and pavement marking plans and traffic signal modification plans to accommodate modifications to the proposed pedestrian signals. Prepared traffic signal timing plans for submission and approval by VDOT including yellow and all red clearance intervals.

**W&OD Trail Overpass over Wiehle Avenue, Fairfax County, VA:** **Lead Traffic Engineer** responsible for managing the preparation of signal modifications plans to the intersection of Sunrise Valley Drive and Wiehle Avenue to accommodate the widening of Wiehle Avenue for the installation of bike lanes. She was responsible for the preparation of signing and pavement marking plans.

**Scotts Run Trail, Fairfax County, VA:** **Lead Traffic Engineer** who managed the preparation of a Crosswalk Justification Study for VDOT for a mid-block crossing that evaluated and documented the applicability of a marked crosswalk based on whether or not the warrants for a marked crosswalk.

**Kirby Road Sidewalks, Fairfax County, VA:** **Lead Traffic Engineer** for a project that includes the design of six segments of sidewalk along Kirby Road. She was responsible for the preparation of signing and pavement marking plans and the preparation of a Crosswalk Justification Study in conjunction with the proposed sidewalk upgrades.

**Mount Vernon Memorial Highway Trail Project, Fairfax County, VA:** **Lead Traffic Engineer** responsible for the signing and pavement marking plans and modifications to the Mount Vernon Memorial Highway and Old Mill Road/Ferry Landing Road traffic signal. She prepared a Crosswalk Study for five crossings of Mount Vernon Memorial Highway. Also prepared a traffic study to justify the removal of the right-turn lane from Mount Vernon Memorial Highway to Peartree Landing Road to minimize right of way impacts associated with the construction of the trail project.

### Education

BS / Civil Engineering

### Registrations/Certifications

Professional Engineer / VA, MD, WV, NC
Professional Traffic Operations Engineer (PTOE)
VDOT Advanced Work Zone Traffic Control Training

### Years of Experience

27

### Office Location

Richmond, VA

### Experience

Dana has 27 years of traffic engineering experience and is the leader of WRA's Traffic Engineering group in Virginia, specializing in traffic operations, analysis, and safety studies. She has spent her entire career at WRA and has a proven record of leading high-profile and accelerated projects efficiently and effectively including traffic forecasting and analysis for numerous intersection and interchange improvements. She has substantial experience managing tasks for traffic open-end/on-call contracts for VDOT including the Central Region Operations Traffic Engineering Term Contract, the Southwest Region Traffic Engineering Term Contract, Strategically Targeted Affordable Roadway Solutions (STARS) contract, and the Statewide Travel Demand Modeling contract, and serves as the lead traffic engineer for WRA's Statewide On-Call Environmental Contract that has included numerous studies involving both forecasting and analysis of major transportation projects.

# DAVID GERTZ, PE

## *STORMWATER MANAGEMENT/DRAINAGE*

### PROJECT EXPERIENCE:

**On-Call Transportation Improvements Projects (Multiple Contracts), FDOT, Fairfax County, VA: Senior Drainage Engineer** responsible for the drainage and stormwater management design of transportation improvement projects including over 70 assigned tasks. Projects have encompassed intersection improvements, pedestrian and bicycle facilities studies and design, bus stop safety and accessibility improvements, and feasibility studies for transportation improvements.

**Route 50 Pedestrian Initiatives, FDOT, Fairfax County, VA: Senior Drainage Engineer** responsible for the drainage and stormwater management for five segments of new sidewalk along Route 50 in the Falls Church area of the County with aged, under-capacity storm sewer systems. Providing hydraulic analysis of these existing storm sewer systems and upgrades where feasible within the project impact area.

**Kirby Road Walkway, FDOT, Fairfax County, VA: Various Segments (Halsey Road, Chesterbrook Elementary, Mori Street): Senior Drainage Engineer** responsible for oversight of the design of on-site detention using oversized storm sewer pipes as an underground storage detention chamber. The modified rational method with stage-storage routing spreadsheet was used to analyze the proposed detention system. The detention pipes were designed to attenuate the developed 2-year and 10-year peak flow rates to pre-developed forested site conditions.

**Scotts Run Trail, FDOT, Fairfax County, VA: Senior Drainage Engineer** responsible for SWM design, H&H analysis, and scour analysis and counter-scour measures design for a 2,500-foot long asphalt walkway through a stream valley park in McLean. The project was a LAP project and a Public Improvement plan project submitted and approved by both VDOT and LDS.

**Cinder Bed Road Bikeway, FDOT, Fairfax County, VA: Senior Drainage Engineer** responsible for overall analysis and design for drainage, stormwater management and hydrologic and hydraulic modeling of bridges for this two mile long, 10' wide shared use path in the Newington area. The proposed path is parallel to Cinder Bed Road and directly adjacent to Long Branch which is a perennial stream in a FEMA Floodplain (County USGS Study). Three new pedestrian bridges are planned to cross Long Branch as well as modifications to one box culvert on the stream. HEC-RAS modeling was performed for the entire Long Branch reach along the path for continuity in modeling each of the bridges spaced along the stream. County and FEMA floodplain regulations were addressed, and scour analyses and countermeasure designs were developed at each bridge crossing. Several bridge design options were considered for approval to meet both regulatory and aesthetic requirements.

**VDOT Fairfax County Parkway and Fair Lakes Parkway Interchange and Widening, Fairfax County, VA: Senior Drainage Engineer** for managing H&H analysis and design of highway drainage structures (inlets, storm drains, culverts, ditches) and SWM/BMP facilities. Included special evaluation of existing regional SWM ponds for retrofitting purposes to handle increased highway impervious areas. The existing SWM ponds required dam breach analysis. The design of drainage structures required accommodation of construction sequencing to assure constructability.

**VDOT Lee Road Culvert Extension, Fairfax County, VA: Lead Hydraulic/Drainage Engineer** responsible for managing and providing expertise on H&H analysis of existing and proposed conditions of Lee Road crossing over Schneider Branch. Hydrologic analysis was performed using VDOT methodologies reconciled with USGS floodplain studies. Included HEC-HMS modeling to account for regional SWM basins in the watershed to reduce the overtopping design storm. HEC-RAS modeling was used to analyze the culvert.

### Education
BS / Civil Engineering

### Registrations/Certifications
Professional Engineer / VA, MD, NC

### Years of Experience
44

### Office Location
Richmond, VA

### Experience
David has over 44 years of experience specializing in hydrology/hydraulics for streets, roadways and highway projects. His project experience includes hydrologic and hydraulic computer modeling using TR-55, TR-20, HEC-1, HEC-2, and HEC-RAS. He has routinely prepared construction documents and specifications for streets, roadways and highway related drainage work including erosion and sediment control plans and stormwater management. As a river mechanics specialist, he has analyzed numerous waterway crossings for new and replacement bridges or culverts, which have included investigations of velocity effects on the structure foundation and surrounding natural stream conditions. He has worked with the recent FHWA Publications HEC-18 and HEC-20. David is also experienced in floodplain modeling and coordination with FEMA regarding regulatory floodplains and floodways.

# EMILY DRAHOS, PWD, PWS, CE

*ENVIRONMENTAL*

## PROJECT EXPERIENCE:

**VDOT I-64 Hampton Roads Bridge-Tunnel Improvements, Hampton and Norfolk, VA: Assistant Permitting Advisor** to Hampton Roads Connector Partners for the $3.8 billion I-64 Hampton Roads Bridge Tunnel Project, conducting independent review and oversight of all aspects of environmental permitting including Section 404/401, Section 408, USCG bridge permitting, VMRC permitting, Section 7 Incidental Take Statements, Marine Mammal Protection Act Incidental Take Authorizations, VPDES permitting, cultural resources management plan, EFH consultation package, habitat condition assessments, bird hazing plans, CZM, artificial reef placement plan, and material disposal options. Drafted the tunnel construction plan, severe weather plan, and communications plan for the Section 408 application. Facilitated coordination between regulatory agencies and the design build team by creating and managing a permit compliance notebook, tracking action items, and managing RFI and public notice responses. Presented information to regulatory agencies, secured air permits, conducted environmental site reconnaissance for ancillary sites, and developed compensatory mitigation plans for tidal and nontidal wetlands, SAV, fish, and subaqueous bottom.

**VDOT I-64 GAP Preliminary Investigations, Henrico, New Kent, and James City Counties, VA: Field and Technical Lead** responsible for delineation of an approximately 1,932-AC study area consisting of 45.21 AC of wetlands, 46,884 LF of streams, and 7,209 LF of jurisdictional ditches. Oversaw field staff, report production and conducted report QAQC. Additional tasks included a technical review of threatened and endangered species survey reports for small whorled pogonia, New Jersey rush, and yellow pondlily; preparation of RP-11 permits (including VDOTCEDAR data entry) for geotechnical investigations; and supervising and providing technical input and review of natural resources components of the NEPA CE (including the Natural Resources Technical Memorandum, Indirect and Cumulative Effects Memorandum, and the CE).

**Fairfax County Innovation Station North Neighborhood Access, Fairfax, VA: Project Environmental Scientist** for a new alignment pedestrian trail connecting the Innovation Center Metro Station to surrounding neighborhoods. Responsible for the delineation of an approximate 13.93-acre area, consisting of 2.26 acres of wetlands and 1,595 linear feet of streams. Also performed USM evaluations, conducted perennial flow determinations, delineated RPA boundaries, and conducted Section 404/401 permitting. Oversaw tree inventory field investigation and data compilation necessary for County-mandated mitigation requirements.

**Lake Hampton Final Design, Hampton, VA: Project Environmental Scientist** responsible for wetland delineation, Section 404/401 permitting, and RPA determination for a City stormwater resiliency project. The project would increase the storage capacity of Lake Hampton by raising the height of an existing dam, replacing a broken weir, and installing a check valve to prevent tidal backflow into the lake. The Project also includes the construction of small detention basins, wetland plantings, a recreational trail, a raised berm, a bird island, and a wetland safety bench.

**Route 10 Waterline Extension Phase II, Isle of Wight, VA: Environmental Scientist** responsible for wetland delineation within an approximately 12.1-acre study area in support of the Route 10 Waterline Extension Phase II project. Approximately 28 linear feet of stream and 0.66 acres of wetland were identified. Additional tasks included threatened and endangered species database reviews, cultural resource database reviews, Section 404/401 permitting, and post-construction inspections.

### Education

MNR / Natural Resources
BS / Environmental Science

### Registrations/Certifications

VA Professional Wetland Delineator
Professional Wetland Scientist
Ecological Society of America
Certified Ecologist
Virginia DEQ Dual Inspector (Erosion and Sediment Control and Stormwater)

### Years of Experience

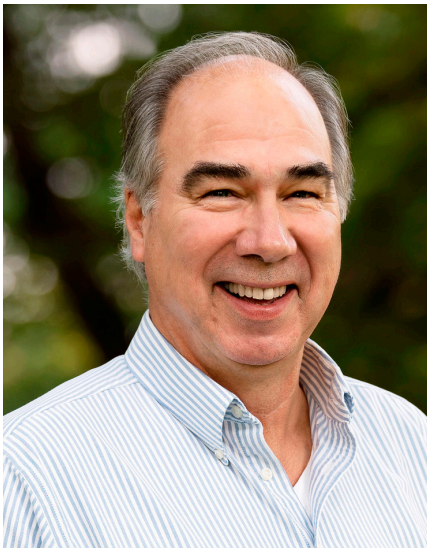
10

### Office Location

Richmond, VA

### Experience

Emily has over 10 years of experience in natural resources consulting and has been involved in all aspects of environmental reviews to secure state and federal approvals as well as ensure regulatory compliance throughout the project development process. Emily provides technical expertise to a variety of projects, including but not limited to transportation, utilities, stormwater, and resiliency projects. Emily routinely conducts field delineations, USACE jurisdictional determination site visits, T&E habitat assessments, project permitting (including USACE Section 404/10, DEQ Section 401, VMRC subaqueous bottom, USACE Section 408, USCG Bridge Permitting), and writes natural resources sections of National Environmental Policy Act of 1969 (NEPA) documents.



# BRADLEY RIGGLEMAN

LS, ASSOCIATE + LAND SURVEY MANAGER
LANDDESIGN | WASHINGTON DC

**EDUCATION**
Bachelor of Science, Mining Engineering, West Virginia University

Associate of Applied Sciences, Potomac State College

**LICENSING**
Licensed Land Surveyor: VA, MD, WV

**AFFILIATIONS**
Northern Virginia Building Industry Association (NVBIA)

Bradley Riggleman is a Licensed Professional Land Surveyor in Virginia, Maryland and West Virginia. He is highly knowledgeable in all aspects of Land Surveying from ALTA/NSPS Boundary, Topographic, Bathymetric and As-Built surveys including land development stakeout from commercial and residential construction to public and large scale industrial projects. Bradley is also experienced in the production of Subdivision, Easement, Street Dedication, Vacation and Abandonment Plats, Metes and Bounds Legal Descriptions, and Condominium Plats and Plans for recordation along with extensive experience training individuals in AutoCAD. He has been involved with such notable projects as Great Seneca Highway in Montgomery Co., Maryland, Baltimore Gas & Electric Right of Way Surveys and tunnel alignment layout for UOSA (Upper Occoquan Service Authority) projects. He is also LandDesign's administrator of two GPS RTK base stations which are part of the local KeyNetGPS Network. This network provides continuously operating GPS reference stations linked together using Trimble GPSNet software.

**Brightview Projects**
Fairfax County, VA | Surveying Associate

**Heights at Groveton**
Fairfax County, VA | Surveying Associate

**MetroWest**
Fairfax County, VA | Surveying Associate

**Wakeland Manor**
Frederick County, VA | Surveying Associate

**The Calvert**
Alexandria, VA | Surveying Associate

**Little Hunting Creek Force Main**
Fairfax, VA | Surveying Associate

**Accountink Gravity Sewer Project**
Fairfax, VA | Surveying Associate

# GREG HORN, PE

*SCADA*

## Education

BS / Mechanical Engineering

## Registrations/Certifications

Professional Engineer / VA, MD, DE, PA, TX

## Years of Experience

18

## Office Location

York, PA

## Experience

Mr. Horn has experience in designing and programming of industrial process control and SCADA systems for the water and wastewater facilities and infrastructure. Greg has experience in Industrial Control System (ICS) design, programming, integration and installation. Greg's professional design experience includes SCADA master planning, development control of system design documentation and specifications, operational control philosophies, cost estimating, system integration, and PLC and HMI programming using multiple software applications. Greg is also experienced with design and construction of industrial communication networks using various protocols. including the integration of PLC's, HMI's, VFD's, and network hardware, including network switches, routers, wireless radios, and cellular modems. Programming experience includes PLC and HMI programming, network configuration, alarm annunciation, customized reporting, and database development for water and wastewater plant control systems and wide area distribution and collection SCADA systems.

## PROJECT EXPERIENCE:

**Water Distribution SCADA Upgrade, Arlington County, VA: Project Engineer** responsible for the upgrade of the County's water distribution system SCADA HMI hardware. Responsible for developing upgraded SCADA Client/Server system architecture, the configuration of new SCADA system network communications, and migration of existing RS View HMI application to the latest version of the software. Performed programming updates to the PLC and HMI applications, conducted Client witnessed system demonstration and field implementation of new, expanded HMI components.

**SCADA System, ACSA Albemarle County, VA: Project Engineer** for the preliminary design and evaluation of the installation and integration of a new county-wide water and wastewater SCADA control system utilizing various communications methods including wireless Ethernet, network design, and dial-up telephone communications. Control system sites included elevated storage tanks, control and metering vaults, and pumping stations.

**SCADA Master Plan, ACSA Albemarle County, VA: Project Engineer** for the evaluation and design of a SCADA Master Plan for a new county-wide water and wastewater system. Provided recommendations for communications, network design, and SCADA system HMI platform configuration and functionality. The new SCADA system included sites such as elevated storage tanks, control and metering vaults, and pumping stations.

**Proctors Creek WWTP Influent Pump Station, Chesterfield County, VA: Project Engineer Lead I&C Engineer** for the design of new motor control centers and plant control system upgrades for the control of the influent pumps in accordance with the County's standards.

**Wastewater Distribution Standards Design and Implementation, City of Suffolk, VA: Project Engineer** responsible for the design, programming, and implementation of a City-wide standardization of wastewater pumping stations. Responsible for the design of pumping station controls, PLC and HMI communications, and the development of functional PLC logic for the pump control system, graphic displays, and interface to the existing SCADA system.

**Proctors Creek WWTP Influent Pump Station, Chesterfield County, VA: Lead Instrumentation & Controls Engineer** for the design of new motor control centers and plant control system pumps in accordance with the County's hardware standards. Design work included developing motor controls and the interface of new RTU panels with existing plant control systems.

**Proctors Creek WWTP Disinfection Upgrades, Chesterfield County, VA: Project Engineer** for the design of new chemical feed systems, including the integration of the new facilities into the existing process control system and development of electrical control diagrams.

**Johnson Creek Pump Station, Chesterfield County, VA: Engineer** for the design of a new pump station control system in accordance with the County's hardware standard for the existing SCADA system.

**Pumping Station No. 210 and Force Main Improvements, Sussex County, DE: Project Engineer** for I&C design for the designated improvements to the existing pumping station. Improvements include modifying the wet well to install a mechanical screen with a washer/ compactor, a new wet well ventilation fan, replacement of grit removal equipment, additional SCADA equipment, related electrical work, and all ancillary devices.

# CHRISTA DECKER, PE, ASIS

*SECURITY*

## PROJECT EXPERIENCE:

**America's Water Infrastructure Act of 2018 Risk and Resilience Assessment and Emergency Response Plan Update, Appomattox River Water Authority, VA:** **Lead Security Engineer** responsible for the Risk and Resilience Assessment and Emergency Response Plan Update in compliance with the AWIA of 2018. The RRA requirements identify the objectives/mission of, the threats to, and the critical assets of the ARWA systems. Once the objectives were identified, evaluated the current effectiveness of existing physical protection systems and security policies for critical assets. Risk potential based on current effectiveness was developed. The results of the assessment were used to develop prioritized recommendations for improving the effectiveness of the physical protection systems, as well as for modifying the system facilities and/or operational procedures to achieve maximum resiliency for the most reasonable cost. These recommendations are to help reduce risks to the water system and are part of a final report for use and implementation by ARWA. The Emergency Response Plan portion incorporated findings from the RRA.

**Ocean City Campus Master Plan, Maryland Transit Authority, Town of Ocean City, MD:** **Protective Design Engineer** for the development of perimeter security strategies and Electronic Security Systems (ESS) for a new Public Works and Transit complex. Includes a security perimeter around the entire site, including active vehicle gates and a bullet-resistant guard booth at the main entrance. ESS systems will include access control, CCTV, and intrusion detection systems for an administration building, parking garage, and the site perimeter.

**20th Support Command Headquarters, Aberdeen Proving Grounds, MD:** **Protective Design Engineer** for renovation and upgrade of two training facilities totaling 295,000 SF to provide a new command headquarters. Worked with the design team to locate site roadways and parking and to provide compliant blast-resistant glazing, windows, and the supporting structure for appropriate standoff distances on a constrained site. Also implemented infrastructure for required electronic security components such as access control systems, CCTV, and intrusion detection systems.

**Building 633 Complex Security Upgrades, NAVFAC, Philadelphia, PA:** **Protective Design Engineer** for the comprehensive evaluation and design of security improvements for a DoD testing facility site. The project identified and applied Navy AT/FP, security criteria, and design guidance to develop a compliant AT/FP and security strategy. Improvements included locating a new security perimeter around the facility, and incorporating ornamental, functional, and crash-rated fencing, along with vehicle barriers and pedestrian turnstiles. The design effort also required special physical security upgrades for the building envelope, including heavy-duty doors, upgraded door hardware, window modifications, and securing the building envelope from forced entry. The design package was coordinated with the Naval Electronic Security Systems sub-contractor and other stakeholders.

**Naval Foundry and Propeller Center Operational Master Plan, Philadelphia Navy Yard, Philadelphia, PA:** **Protective Design Engineer** for a comprehensive evaluation of a military manufacturing site facility. Identified and reviewed applicable Navy AT/FP and security criteria and design guidance. Developed a compliant AT/FP and security strategy for the location of the security perimeter, new buildings, laydown and site storage areas, access roadways, vehicle gates, and pedestrian turnstiles. Made recommendations for special physical security features for the envelope of the new building. Recommended the location and implementation of electronic security systems including access control, intrusion detection, and CCTV systems.

### Education

MS / Civil Engineering
BS / Civil Engineering

### Registrations/Certifications

Professional Engineer / MD
ASIS International
NAVFAC ATFP Training
SD DCTEA Entry Control Facility Training
DHS Training Certificate/IED Search Procedures

### Years of Experience

35

### Office Location

Baltimore, MD

### Experience

With more than 35 years of experience, Christa has designed security enhancements at government installations, including the evaluation of public facilities and DoD/federal campuses based on documented threats and vulnerabilities. Projects have included ballistic-rated interior guard posts in lobbies; selection and specification of active and passive vehicle barriers, perimeter fences, perimeter intrusion detection systems; new CCTV systems; and building modifications for mechanical turnstiles for personnel access control. Christa is also responsible for physical security related to municipal water treatment facilities and systems including clients in Maryland, Virginia, and Pennsylvania.

# Il KIM, PE, LEED AP

*ELECTRICAL ENGINEERING*

## PROJECT EXPERIENCE:

**Four Mile Run Pumping Station, Arlington County, VA:** **Senior Electrical Engineer** to replace the existing switchboards and motor control centers (MCC). The existing switchboards will be replaced one at a time to minimize power outages. New switchboards will be 1600 amp, 480/277V, 3-phase, 4-wire, with main-tie-main interlocks to provide redundant electrical service to the existing pumping station.

**Occoquan Forest Pump Station, Prince William County Service Authority, VA:** **Lead Electrical Engineer** for the planning design, and construction of a new wastewater pumping station to replace the aging Occoquan Forest WWTP. The pump station includes a transformer and electric company connection and conductors/conduits, indoor and outdoor lighting with motion detectors, a stand-by power generator and dual 50-hp motors, air blower and sewage grinder motors, panel boards, and a lightning protection system.

**General Engineering & Surveying Services, Augusta County Service Authority, Augusta County, VA:** **Lead Electrical Engineer** for services at the Middle River Wastewater Treatment Plant related to the replacement of switchgear and switchboard for the Middle River WWTP and the Verona Sewage Pumping Station respectively. WRA reviewed and made recommendations to the Authority's Request for Quotes; prepared permit drawings for the switchgear and switchboard for submittal to the Augusta County Building Official; reviewed quotes and drawings submitted by Square D and made recommendations for a complete project; provided pre-construction assistance to the Authority; and reviewed submittals from the contractor. Record Drawings will be prepared based on red-line as-builts from the contractor.

**Water Treatment Facility Short Circuit, Coordination and Arc Flash Study, Henrico County, VA:** **Lead Electrical Engineer** to survey the existing electrical distribution system including the 34.5/13.2 KV outdoor substation, 13.2./4.16 KV indoor substation and all downstream electrical equipment to perform a comprehensive electrical study. The study made recommendations for the circuit breaker settings and arc flash incident energy levels at all equipment. The study identified all deficiencies and recommendations to address all deficiencies with associated rough order of magnitude (ROM) cost estimates.

**Rockwood Park Pumping Station, Chesterfield County, VA:** **Lead Electrical Engineer** to design the electrical power and lighting distribution system for the new pumping station. The existing electrical feed from Dominion Virginia Power was upgraded to accommodate increased pumping capacity. The existing transformer was upgraded to a 1,000 kVA, 34.5 kV to 480/277 volt, 3 phase, 4 wire transformer which in turn served a 1,200 amp main switchboard. The output of the switchboard was connected to a 1,600 amp automatic transfer switch to serve a distribution switchboard. The distribution switchboard served 3-200 HP pumps, a lighting panel, and a 15 KVA 480-208/120 volt, 3 phase, 4 wire step down dry type transformer for the miscellaneous loads. The emergency power was provided by a 500 KW emergency standby generator. A tier 2 rated diesel engine generator set was installed outdoors in a weather-protective and sound attenuated metal enclosure. The 3-200 horsepower motors were served from the 18 pulse VFDs conform to IEEE 519 for current and voltage harmonics and reduced voltage soft starters (RVSS). The requirement for noise control was 75 dBA at the property line.

### Education

BS / Electrical Engineering

### Registrations/Certifications

Professional Engineer / VA, MD, PA, WV, DC, KY, NC, CT, TX, LA, NJ, OK, DE, MA, NY, VT, CA, FL, RI,

### Years of Experience

37

### Office Location

Baltimore, MD

### Experience

Mr. Kim's technical knowledge and hands-on experience with electrical systems specific to the water/wastewater industry provides in-depth planning and design criteria for a successful project. His experience also provides an insight to the initial construction cost to long term operation and maintenance costs. Mr. Kim is responsible for coordination of the electrical systems with other disciplines and systems. His experiences include energy conservation measures (ECM) analyses and design of renewable energy projects for the government agencies including the construction documentation, construction administration and commissioning.

# MICHAEL HEARN, PE

*FLOOD PROOFING DESIGN*

## PROJECT EXPERIENCE:

**Blackwater and Lake Prince Raw Water Pumping Stations Flood Protection Study, Nottoway, VA:** **Design Engineer** established a design flood protection elevation for future floods above FEMA criteria due to recent higher floods. Performed analysis of existing data, including the effective FEMA Flood Insurance Study, USGS stream gage records, the Chowan River Basin Comprehensive Watershed Study, the US Army CoE navigation project records, local flood measurements of the extreme floods, and discussion with local officials. Regulatory requirements for construction in the floodplain were included.

**Lake Barcroft, Fairfax, Virginia:** **Design Engineer** responsible for the ongoing engineering and inspection services for a privately owned recreation reservoir. Tasks included; hydraulic analysis of overflow gates, analysis of options to raise the spillway crest to provide additional storage, preparation of information about the new VDEQ regulations, PMF data and modeling approaches, and preparation of hydrologic and hydraulic requirements for meeting State regulations.

**Warrenton Dam, Fauquier County, Virginia:** **Design Engineer** for a dam breach analysis, hazard class analysis (Class II - medium hazard), inundation map for the Emergency Action Plan and report for a 26 feet high concrete slab on buttress water supply reservoir dam with a 12 square mile drainage area and 414 acre feet of storage. Used HMR 51/52 and HEC-1 to compute breach hydrographs for the Sunny Day, Probable Maximum Flood (PMF), and ½ PMF. These hydrographs were routed to produce an inundation map extending 3 ½ miles downstream. Prepared report for review by Virginia DCR in support of permit renewal.

**Maryland Port Administration Resiliency Flood Mapping, Baltimore, Maryland:** **Design Engineer** responsible for mapping potential floodplain inundation of six port facilities for several climate change and sea level rise scenarios. These are used for MPA's long range planning for resiliency improvements. Base flood elevation increases were computed using NOAA's sea level rise statistics. Used recent LiDAR generated topographic mapping for the delineation. Scenario graphics were prepared for MPA's planning and analysis.

**1760 Union Avenue LOMR Analysis and Application, Baltimore, Maryland:** **Design Engineer** responsible for the preparation of a LOMR request and HEC-RAS analysis to FEMA to re-delineate a floodway for a historic mill building in the Jones Falls flood plain. The existing building was incorrectly mapped within the floodway, which prevented its reconstruction in a more flood resistant manner. Submissions to the City of Baltimore and MDE.

**Lake Roland Dam Improvements, Baltimore City, Maryland:** **Design Engineer** responsible for the spillway hydraulics for a 40 feet high masonry filled historic dam. Rehabilitation of the structure was necessitated by flood damage and by new spillway capacity requirements. Simulation of original marble block on the rehabilitated overflow spillway using textured concrete. Maintained historic marble exterior of original registered gatehouse using the interior floodproofing wall. Computed 100-year flows for the design of the repairs.

**Eutaw Property Enterprises, LLC, Meadow Mill Flood Study, Baltimore, Maryland:** **Design Engineer** for the existing parking lot has flooding problems. Flood study using HEC-RAS modification of the existing FEMA study to determine the feasibility of constructing a low flood wall. Several iterations of potential design solutions were analyzed. Examined removal of existing access and bridge to reduce stream flood elevations. Submissions to the City of Baltimore and MDE.

### Education

MS / Environmental Engineering
BS / Environmental Engineering

### Registrations/Certifications

**Registered Architect / MD**
**Professio**nal Hydrologist

### Years of Experience

43

### Office Location

Baltimore, MD

### Experience

Mr. Hearn has extensive experience in stormwater management (SWM) analysis and design for water and wastewater facility projects. He prepares construction documents and reports to obtain regulatory agency approvals. This experience includes; Environmental Site Design (ESD) methods of the recent supplements to the Maryland 2000 Stormwater Design Manual, design of Best Management Practices (BMPs), Chesapeake Bay Critical Area (CBCA) requirements, the use of computer programs (especially WinTR-55, TR-55, WinTR-20, TR-20, HEC-RAS and HEC-2), watershed studies, flood plain studies, stormwater management and sediment control (E&SC) projects. He also provides design support for civil and environmental engineering projects and the analysis of potential development sites.

# CLINTON MARTIN, PE

*FLOOD PROOFING DESIGN*

## PROJECT EXPERIENCE:

**Study Services for Warrenton Dam, Town of Warrenton, VA:** **H&H Engineer** who performed a Dam Break Inundation Study and submitted it to the Virginia Department of Conservation and Recreation (DCR) as part of the Town of Warrenton's Operation and Maintenance Certificate renewal.

**Study Services for Airlie Reservoir Dam (Cedar Run #3), Town of Warrenton, VA:** **H&H Engineer** who performed a Dam Break Inundation Study and submitted it to the Virginia Department of Conservation and Recreation (DCR) as part of the Town of Warrenton's Operation and Maintenance Certificate renewal.

**Codorus Creek Floodwall Replacement, U.S. Army Corps of Engineers, York, PA:** **Site/Civil Engineer** who developed site, grading, utility, and erosion and sediment control plans and specifications for the replacement of a portion of the Codorus Creek Floodwall and associated channel improvements in York, PA. Prepared and submitted permit applications to York County Conservation District for review and approval. Provided construction administration services.

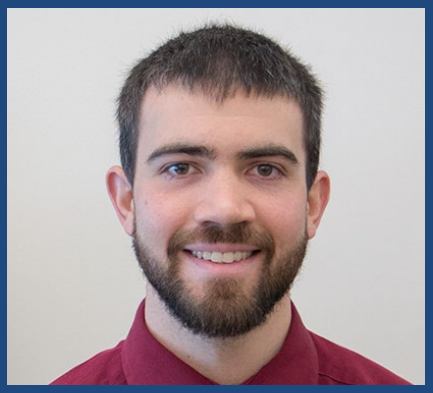
**1760 Union Ave, Multiple Clients, Baltimore, MD:** **H&H Engineer** who was tasked with correcting FEMA's Floodway delineation along the Jones Falls to allow for redevelopment of a dilapidated pre-FIRM building. The Floodway had been drawn through the pre-FIRM building when FEMA defined the Floodway as being unobstructed. Obtained a Letter of Map Revision (LOMR) from FEMA that revised the Floodway and associated hydraulic models, thereby removing the building from the Floodway. Prepared a Joint Permit Application to the state of Maryland including additional hydraulic analyses to demonstrate that the redevelopment activity would not adversely affect the floodplain.

**Jones Falls Mill Corridor Floodplain Analyses, Himmelrich, Baltimore, MD:** **H&H Engineer** who performed hydrologic and hydraulic analyses for multiple properties along the Jones Falls in Baltimore, MD to determine the feasibility and benefit of flood protection systems and other site improvements.

**Norfolk Naval Shipyard Industrial Waste Treatment Plant Replacement, Naval Facilities Engineering Command (NAVFAC), Portsmouth, VA:** **Site/Civil Engineer** who developed site, grading, utility, stormwater management, and erosion and sediment control plans and specifications for the replacement of the Norfolk Naval Shipyard Industrial Waste Treatment Plant. Prepared and submitted permit applications to the Virginia Department of Environmental Quality (VA DEQ) for review and approval. Provided construction administration services.

**Dundalk Marine Terminal Berth 3 Reconstruction, Maryland Port Administration, Baltimore, MD:** **Site/Civil Engineer** who developed site, grading, utility, and erosion and sediment control for the reconstruction of Dundalk Marine Terminal's Berth 3. Prepared submissions for and obtained SWM/ESC and NPDES permits from the Maryland Department of the Environment (MDE). Prepared submissions for and obtained permits from the U.S. Army Corps of Engineers (USACE) and the Chesapeake Bay Critical Area Commission. Provided construction administration services.

**Headworks Facility Improvements at the Patapsco Wastewater Treatment Plant, City of Baltimore, MD:** **Site/Civil Engineer** who designed stormwater management and erosion and sediment control and submitted for permitting for the proposed headworks screening building at the Patapsco Wastewater Treatment Plant.



### Education

MS / Civil Engineering / Virginia Tech
BS / Civil Engineering / Virginia Tech

### Registrations/Certifications

Professional Engineer / MD

### Years of Experience

6

### Office Location

Baltimore, MD

### Experience

Mr. Martin has over 6 years of engineering experience with private, municipal, county, state, and federal clients on public works, industrial, residential, and institutional projects. Mr. Martin has experience performing site/civil design and stormwater management/erosion and sediment control permitting on a wide range of projects throughout the mid-Atlantic region. Mr. Martin has also performed studies and analyses involving flood plains, Chesapeake Bay Critical Area, and other jurisdictional waters. Mr. Martin is published in the Journal of the American Water Resources Association (JAWRA) and is a Director of the American Society of Civil Engineers (ASCE) Maryland Section.

# BRIAN BARNA, PE, LEED AP

*BUILDING SERVICES TASK MANAGER/STRUCTURAL*

## PROJECT EXPERIENCE:

**BOA Contract - Various Projects, Arlington County, VA:** **Structural engineer and Project Management Services** in support of a Basic Ordering Agreement contract for Architectural, Structural/Civil/Geotechnical, and MEP services for Arlington County. Overall project manager for all Structural/Civil/Geotechnical task orders. Completed work for 8 task orders under this contract and its predecessor, including a generator replacement and construction of maintenance platforms for chillers at the Arlington Courthouse, and multiple tasks at the Water Pollution Control Plant in support of MEP renovations and repairs at the plant.

**Facilities Management Department BOA Contract - Various Projects, Fairfax County, VA:** **Structural Engineer and Project Management** services for several existing buildings as part of a Basic Ordering Agreement contract with Fairfax County. Completed work for over 30 task orders for County-owned structures, generally consisting of feasibility studies, field observations, structural analysis, and preparation of construction documents for repairs or detailed reports summarizing the findings of our studies. Project manager for a multi-disciplinary team for a renovation project at the Fairfax County Historic Courthouse which includes demolition of ahistorical wings and restoration of masonry of the entire building exterior, designed to meet historic preservation criteria. Experienced in obtaining Fairfax County building permits.

**Ocean City Department of Public Works, Ocean City, MD:** **Structural Engineering Services** for a new public works campus in Ocean City, MD. This project included concurrent design of seven buildings, including an administration building, a bus storage building, a vehicle maintenance bay, a public safety support building, and a service building with fuel islands. 2022 APWA Mid-Atlantic Project of the Year Award for Structures $25-$75 million.

**Freedom Readiness Center, Eldersburg, MD:** **Lead Structural Project Engineer** for a readiness center for the Maryland National Guard. This project consists of a 64,000 SF, two-story main building with a steel frame and load-bearing CMU perimeter walls; a 6,500 SF PEMB storage structure; a 400,000 SF MOV secure military vehicle parking area; and a PEMB vehicle wash bay and a PEMB waste handling building. This facility was designed to meet Department of Defense (DoD) anti-terrorism/force protection criteria.

**U.S. Coast Guard Station, Port Aransas, TX:** **Lead Structural Project Engineer** for a new Coast Guard Station building. This project consists of a 33,000 SF, three-story main building with a cast-in-place concrete structure and precast concrete cladding. There is an attached one-story boat maintenance bay with a bridge crane, as well as a detached Boathouse and waterfront restoration work. This building was designed to withstand hurricane-force winds, 500-year floods, and maintain operations during these design-level events. This building was also designed to meet DoD anti-terrorism/force protection and Risk Category IV progressive collapse criteria.

**Wheaton Revitalization Project, Wheaton, MD:** **Peer Design Review Services** on behalf of the Montgomery County Department of Transportation during design and construction. WRA also provided value engineering and independent cost estimates during design. This trophy-class office building consists of 14 elevated stories (308,000 SF) on 4 underground parking levels (397 parking spaces). This was the first LEED Platinum government building constructed in Maryland. Approximate construction cost = $179 million.

### Education

MAE / Architectural Engineering
BAE / Architectural Engineering

### Registrations/Certifications

Professional Engineer / VA, MD, DC
LEED Accredited Professional

### Years of Experience

16

### Office Location

Fairfax, VA

### Experience

Mr. Barna has taken a lead role in structural engineering analysis and design of several projects, from the beginning of schematic design through the completion of construction. He has wide-ranging experience in the structural design of new construction and renovation projects including governmental and military buildings, water treatment facilities, transportation facilities, industrial facilities, commercial real estate, mid-rise and high-rise construction, sports facilities, warehouses, and tilt-up construction. He is the Past President of the National Capital Section of the American Society of Civil Engineers (ASCE).

# CRAIG HOSSFELD, PE, LEED AP

*BUILDING SERVICES*

## PROJECT EXPERIENCE:

**USGA Logistics Warehouse Programming & Site Planning Study, Northern VA:** **Mechanical Engineer** for the comprehensive programming and planning study for the relocation of a 600,000 SF warehouse/ operations and secure office complex on a 70 acre site in support of the government's Strategic Space Plan. Identified and developed mechanical equipment requirements and criteria and developed conceptual drawings to address cooling needs. From the initial programming activities, proposed building blocks were developed to determine the magnitude of space required for the new compound. WRA's study determined that a new 800,000 SF facility on a 130-acre site will be required.

**Fairfax County Water Authority Centralized Laboratory and Visitor Education Center, Fairfax County, VA:** **Mechanical Engineer** for a new 24,000 SF centralized water quality laboratory facility and visitor center. Comprising organics, microbiology, inorganics, and metals laboratories, the design provides a modern environment to monitor systemwide water quality while incorporating infrastructure flexibility in response to changing EPA requirements.

**Lewis F. Powell, Office of Staff Counsel, Richmond, VA:** **Mechanical Engineer** for 13,000 SF tenant improvement within a historic federal courthouse. Mechanical design was coordinated with the HVAC upgrades project and allowed for future mechanical upgrades.

**AEGIS Combat Center, Wallops Island, VA:** **Mechanical Engineer** for a four story building that is to be constructed adjacent to the existing AEGIS Combat System deckhouse, to support new generation SPY-1D(V) AEGIS Radar. The new facility will be a shore-based at sea operational environment used for training missions. Some of the specialized mechanical systems included low temp and high temp distilled water for process cooling, rotary air compressors with desiccant air dryers, and four pipe FCUs with local humidification for space temperature control.

**Operations Building, King George County, VA:** **Mechanical Engineer** for the design of this facility, which consists of high bay spaces for the repair of county owned vehicles, including busses, trucks, and sedans, as well as bays for storage and repair of county public works property. The mechanical design included underfloor hydronic radiant heating, dedicated ventilation systems with energy recovery, and energy efficient DX air conditioning systems. Dedicated vehicle tailpipe exhausts were provided for the maintenance bays.

**Public Utility Operations Center, Suffolk, VA:** **Mechanical Engineer** for a new 52,500 SF operations facility that will house shops, warehouse operations, administration space, and crew areas. The complex includes a new structure that will store vehicles, equipment, and materials. The site will also include a fueling station and a truck wash.

**Harry S. Truman Building, DOS, Washington, DC:** **Mechanical Engineer** for renovations of office suites in the Harry S. Truman (Main State) Building and other government-owned and leased facilities. He provides cooling load calculations showing CFM requirements per room, office, and area and plans for adequate air returns back to the building system. He designed renovations to address requirements based on office equipment and computer loads, staff densities, and conference rooms.

### Education

BS / Mechanical Engineering

### Registrations/Certifications

Professional Engineer / VA, MD, DC, PA, DE, CT, NJ, UT, TX, FL
LEED Accredited Professional

### Years of Experience

31

### Office Location

Baltimore, MD

### Experience

Mr. Hossfeld has over 31 years of expertise in HVAC system design and assessment, project management, energy and life cycle cost analysis, controls, code review, plumbing, and specialized systems such as energy recovery, fluids dispensing, fuels, and vehicle and shop exhaust. He has extensive experience designing transit and rail facilities including stations, maintenance buildings, and multiuse facilities containing administrative, shop, and vehicle storage functions. One of his areas of focus is phased renovations of critical facilities that must remain operational throughout construction. As a LEED AP, Mr. Hossfeld possesses a detailed understanding of sustainable and energy efficient design. His knowledge of industry standards such as ASHRAE and NFPA is coupled with specialized understanding of DOT facility mechanical systems..

# ROBERT ALLISON, PE

*STRUCTURES*

## PROJECT EXPERIENCE:

**Fairfax Water Corbalis to Fox Mill Water Main, Valve Vault Modification, Fairfax Water, VA:** **Structural Engineer** responsible for completing the design and review during construction of modifications for a pre-cast vault housing a 42-inch diameter check valve. Minor changes to the pipe alignment required changes to the previously approved and delivered pre-cast vault. Working with the pre-caster's design and calculations, Mr. Allison designed modifications to the vault including a new top slab with modified access hatch locations. The vault modifications were designed so as to allow easy construction in the field.

**Burgundy Community Center, Fairfax County Structural Condition Assessments, Fairfax County, VA:** **Structural Engineer** responsible for verifying whether the roof structure was adequate to support a planned roof replacement. A detailed site survey was performed to confirm the size and configuration of structural elements to determine the capacity relative to the proposed additional loads. The second study consisted of the investigation of the cause of foundation settlement and cracking issues with the concrete floor slab on grade and recommendations for repair. Construction documents were then prepared for grout injection of the supporting soil and replacement of the damaged concrete slab.

**Edsall Road Fire Station, Fire Damage Assessment and Roof Repair, Fairfax County, VA:** **Structural Engineer** for the investigation of the roof collapse resulting from a fire in the apparatus bay of the building. Prepared repair documents to demolish the damaged portion of the building and to brace an existing masonry wall which became unstable after the demolition.

**Fairfax County Government Center, Garage Beam Repair, Fairfax County, VA:** **Structural Engineer** for the design of new steel support brackets within the existing lower parking levels of the Government Center building. Structural cracks had appeared in existing concrete beams where they were supported on brackets constructed integrally with the columns across an existing building expansion joint. Complicated geometry and the need to maintain the expansion joint movement resulted in uniquely configured steel framing designed to re-support the damaged structure.

**Arlington County Water Pollution Control Plant, Chilled/Hot Water Pipe Supports, Arlington County, VA:** **Structural Engineer** for the design of pipe support structures for twin water lines running from the new maintenance building to the nearby Preliminary Treatment Building. Pipes had to span over 40 ft across an existing roadway with 18 ft clearance below the structure as well as attach along the face of the PTB building resulting is several unique support conditions.

**Beverly Park Retaining Wall, City of Alexandria, VA:** **Structural Engineer** for the design of a neighborhood park renovation/restoration, including the regrading to prevent continued slope erosion as well as reconfiguration of the picnic and play area. The structural work includes reinforcing two timber cantilevered retaining walls and replacing a third wall.

**Occoquan Forest Pump Station #36, Prince William County Service Authority, VA:** **Structural Engineer** for the replacement of the existing pump station and wet well including the concrete pump house building and wet well foundations which were designed to resist buoyancy in the event of flood conditions.

### Education

MS / Structural Engineering
BS / Civil Engineering

### Registrations/Certifications

Professional Engineer / VA, MD, DC

### Years of Experience

35

### Office Location

Fairfax, VA

### Experience

Mr. Allison has 35 years of experience and specializes in structural engineering design and project management for water and wastewater infrastructure projects and building projects of diverse sizes and natures. His work includes new building design as well as expansion, restoration and renovation of existing facilities. These range from feasibility studies to complete design.

# ERIK LARSEN, AIA

*ARCHITECTURE*

## PROJECT EXPERIENCE:

**Vienna Projects Town Hall Annex, Town of Vienna, VA: Lead Architect** for the analysis of the condition of the legacy building in accordance with the Virginia Uniform Statewide Building Code. He also led the team of structural engineers that assessed the structural condition of the building and developed recommendations for proposed modifications to the structure.

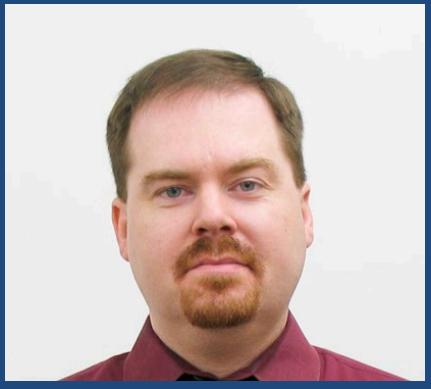
**Vienna Community Center, Town of Vienna, VA: Lead Architect** for the evaluation of alternatives for repairs to the Community Center. The building has suffered several problems since a reconstruction and space addition was completed. Mr. Larsen conducted an analysis of leaks from window frames and provided recommendations for remediation.

**Berryville Wastewater Treatment Plant, Berryville, VA: Lead Architect** for the design of a new treatment plant including a Headworks Building for influent pumps and screens, a Process Building for membrane filter pumps and chemical feed as well as administrative offices, a Sludge Processing Building for dewatering equipment, as well as other membrane filter, biological reactor, and other tank structures.

**Operations Building, King George County, VA: Project Architect** for the design of high bay spaces for repair of county owned vehicles, including busses, trucks, and sedans, as well as bays for storage and repair of county public works property. The building also houses support spaces for maintenance activities including administrative offices, conference and planning rooms, break rooms, toilet, showers, and locker rooms. Site amenities include visitor, employee, and fleet vehicle parking and a fuel dispensing station.

**Back River Wastewater Treatment Plant Improvements, Baltimore, MD**: **Project Architect** for major plant improvements related to an Enhanced Nutrient Removal program. The project included the construction of a 52-filter denitrification facility, a 300 mgd pumping station, chemical storage buildings, a backwash treatment facility, and miscellaneous support buildings and structures. As the architectural lead on the project, Mr. Larsen was the lead design architect for some facilities and oversaw subconsultant architects working on other facilities, as well as providing construction phase architectural services.

**MDOT-SHA Easton Maintenance Facility: Project Architect / Project Manager** for the renovation and rehabilitation of the existing 10,000 SF Materials Lab Building for conversion to an Office Building including facility administrative offices, break room, training room, and parts storage, and a new 10,000 SF Vehicle Maintenance Facility with (5) service garage bays, machine shops, and additional storage. WRA provided civil, site utility, landscape, architectural, structural, mechanical, plumbing, fire protection, electrical, and telecom/data services for building design in conformance with local, state, and federal codes and standards. Provided facility equipment design and selection including vehicle lifts, storage units, machine shop equipment, and backup generator. Provided site layout and design services including grading and drainage, traffic flow, lighting, signing, and traffic markings, and ADA pedestrian walkways and access. Coordinated utility improvements and upgrades with Easton Utilities Commission and stormwater management and erosion and sediment control design with PRD and HHD for permitting. Prepared final plans, specifications, cost estimates, and construction documents for advertisement.



### Education
BA / Architecture

### Registrations/Certifications
Registered Architect / MD, DE

### Years of Experience
26

### Office Location
Baltimore, MD

### Experience
Mr. Larsen has worked on a broad range of projects and has experience in municipal, commercial, industrial and residential design, and ADA compliance. He has worked on new construction as well as renovation, and has experience in preparation of construction documents, specifications, cost estimating, and construction administration.

# KELLIE HOLLENBECK, AIA, LEED AP BD+C

*ARCHITECTURE*

## PROJECT EXPERIENCE:

**New Administrative Facility (Park Cetner 2), Chantilly, VA:** **Architect** for a 160,000 SF tenant fit out of a five story core and shell building. The project scope included initial programming with the tenant and coordination with the landlord to minimize impacts to the new core and shell facility through permitting with Fairfax County and Construction Administration. Project spaces include offices, meeting spaces, and a small conference center. Sustainability tasks include the organization of the project team, including the design team, developer, and tenant, and guidance throughout the design and construction to meet the project sustainability goals. The project is designed to achieve a LEED Silver certification under LEED for Commercial Interiors version 3.

**Lewis F. Powell Courthouse, City of Richmond, VA:** **Architect** for the renovation of 21,000 SF of space on the third floor of the courthouse and annex to accommodate a challenging program for the Office of Staff Counsel. WRA's renovation project achieves GSA's mission objectives to relocate federal employees from leased space to government-owned space. One of the more challenging aspects of the project involved space planning in two different buildings for a hierarchy of offices of different sizes to fit within the building footprint. WRA was also able to meet GSA's functional and image objectives by protecting and preserving historic finishes and materials.

**Falling Creek Wastewater Treatment Plant Digester No2 Conversion, Chesterfield County, VA:** **Architect** for Chesterfield County's expansion to the existing Digester No 2 facility. The project included an addition to the existing building to accommodate a new heat exchanger and modifications to the existing building for infrastructure upgrades. Project under the Chesterfield County Annual Water and Wastewater Engineering Services contract. Facilities included the replacement of twenty (20) primary sludge pumps, four (4) 80-foot diameter gravity thickener tanks, sludge screening equipment, and various pumps, piping, and equipment for the conveyance and handling of thickened primary sludge.

**Northeast Water Pollution Control Plant Preliminary Treatment Facility, Chesterfield County, VA:** **Architect** for the design of a 300 MGD CSO preliminary treatment facility including a flow metering facility, mechanical influent screening facility, grit removal facility including secondary and tertiary grit washing, and screenings/grit handling. Sustainable initiatives included the utilization of durable recycled materials and the design of an intensive green roof.

**Northeast Water Pollution Control Plant Preliminary Treatment Facility, Chesterfield County, VA:** **Architect** for the design of a 300 MGD CSO preliminary treatment facility including a flow metering facility, mechanical influent screening facility, grit removal facility including secondary and tertiary grit washing, and screenings/grit handling. Sustainable initiatives included the utilization of durable recycled materials and the design of an intensive green roof.

**Annual Engineering Services Contract, Henrico County, VA:** **Architect** for Henrico County's Water Treatment Plant as part of an annual services contract, including water treatment facility improvements such as a new generator, filtered media (GAC) replacement, a water treatment facility condition assessment, alum pump evaluation, fluoride evaluation, and PLC replacement.

**North Fork PS, Charlottesville, VA:** **Architect** for a masonry pump station. The exterior was designed to integrate with the historic setting of Charlottesville, Virginia. Preliminary design completed in BIM to assist with visualization.

### Education

BARCH / Architecture

### Registrations/Certifications

Registered Architect / VA, MD
LEED Accredited Professional BD+C
Safety Assessment Program Evaluator Governor's Office of Emergency Services, State of California (CAL OES SAP) 84698

### Years of Experience

15

### Office Location

Baltimore, MD

### Experience

Ms. Hollenbeck has 15 years of experience with architectural and sustainable design covering academic and practical knowledge, throughout the design and construction of multiple projects including water / wastewater management, public works facilities, fleet maintenance, community centers and office facilities from program verification through construction. Many of the projects have achieved specific LEED designation. She has provided guidance and current information about the various LEED rating systems and developing staff education programs for sustainable design. She has also been involved in internal and external Building Information Modeling (BIM) committees to standardize implementation for different projects and clients.

# KATIE LYNCH, PE

*BRIDGE DESIGN/INSPECTIONS TASK LEADER*

## PROJECT EXPERIENCE:

**NBIS Inspections for the Department of Public Works, Town of Vienna, VA: Team Leader/Inspector** responsible for the inspection of six (6) culverts carrying roads maintained by the Town of Vienna. Ms. Lynch's responsibilities included preparing for and performing the hands-on inspection of the culverts, documenting defects, and preparing inspection reports.

**VDOT Richmond Highway Corridor Improvements, Fairfax County, VA: Structures Engineer** responsible for the Stage 1 design of three (3) dual structures (six (6) bridge total) to be constructed as part of the corridor improvements project. In addition to the structural design for the superstructure and substructure of each bridge, Ms. Lynch prepared reports documenting the design as well as preliminary construction plans and cost estimates. Extensive coordination with disciplines other than structural was required, as well as regular client meetings with VDOT and County officials. The project is currently still under design.

**VDOT Route 1 over Accotink Creek, Fairfax County, VA: Structures Engineer** completed the superstructure design of dual prestressed concrete bulb tee bridges carrying Route 1 over Accotink Creek near Fort Belvoir in Fairfax County, VA. The project was part of a corridor widening project completed as a design-build effort. In addition to designing and detailing the superstructures, Ms. Lynch also completed the load rating of the new structures and provided construction support services to the design-build team, such as responding to RFIs and reviewing shop drawings.

**VDOT Load Rating, Statewide, VA: Structures Engineer** managed the load rating contract as a subconsultant to two (2) firms holding statewide load rating contracts with VDOT for two (2) contract cycles. In addition to ensuring that rating assignments were completed on time and within the budgeted time, Ms. Lynch performed quality control for hundreds of load rating reports. Ms. Lynch also performed the rating of many structures, using VDOT's required software, including AASHTOWare Br|R, DESCUS, and LARSA programs.

**11th Street Bridge Replacement, District Department of Transportation, Washington DC: Structures Engineer** assisted with the design of structural details and the shop drawing review for several of the bridges that are part of the 11th Street Bridge Replacement design-build project. Ms. Lynch worked with lead structural designers to prepare calculations and plan details.

**210 Interchange Improvements, Maryland Department of Transportation State Highway Administration Prince George's County, MD: Structures Engineer** for the MD 210 (Indian Head Highway) Interchange Improvement project created a grade separated interchange at Livingston Road, requiring several bridges and retaining walls. Ms. Lynch performed structural design tasks, including developing calculations and checking computations completed by others and developed plan details for drainage structures, sign supports, retaining walls, moment slabs, and abutments for new structures to be constructed as part of the improvement along the MD 210 corridor in Prince Georges County, MD.

### Education

MS / Civil Engineering
BS / Civil Engineering

### Registrations/Certifications

Professional Engineer / VA, DC, MD
Bridge Inspection Refresher Training
Fracture Critical Inspection Techniques for Steel Bridges

### Years of Experience

13

### Office Location

Fairfax, VA

### Experience

Katie has over 13 years of structural design experience, ranging from rehabilitation of existing structures to design of new highway and transportation structures. Previous tasks have included inspection and report documentation, technical provision development, complex analysis of bridge superstructures, load ratings of existing and proposed structures, construction plan preparation, cost estimate development, specification preparation, and project management. In addition to a versatile technical portfolio, she has notable technical writing skills and is a mentor to developing engineers in the field.

# TIM BEAVERS, PE

*BRIDGE DESIGN/INSPECTIONS*

## PROJECT EXPERIENCE:

**Northside Park Connector Trail, Town of Vienna, VA: Project Engineer** responsible for the design of approximately 100 LF of a 6' wide elevated timber pedestrian structure. Designed timber spans, piers, handrails, connections, timber abutments and retaining walls, and other details to accommodate changes in horizontal and vertical alignments.

**Historic Freeman Store Pedestrian Bridge Replacement, Town of Vienna, VA: Structural Engineer** for the design of a new timber pedestrian bridge connecting the W&OD Trail with the Historic Freeman Store structure. The tasks include structure design, maintenance of bicycle and pedestrian traffic design, and coordination with NOVA Parks and through the VDOT LAP process.

**Nutley Street SW Shared Use Path, Town of Vienna, VA: Structural Engineer** for the design of a retaining wall adjacent to the new shared use path along Nutley Street between Tapawingo Road and Virginia Center Parkway at the crossing with the triple-box culvert. The length of the retaining wall and construction limits are in coordination with the adjacent Town Stream Restoration Project.

**Washington Boulevard Trail Phases I & II Retaining Walls, Arlington County, VA: Bridge Design Engineer** of various structural elements relating to this 10-foot-wide multi-use trail in Arlington County extending from Route 50 to near Columbia Pike (0.8-mile). Extensive structural designs were addressed, including both mortar rubble and soldier pile walls, which limited right-of-way impacts. Other structural elements included 1,400 LF of a special design barrier wall to separate the elevated trail from the Washington Boulevard travel lanes and a new 100-foot-long multi-use trail bridge over an existing stream.

**FCDOT On-Call Transportation Improvements Projects (Multiple Contracts), Fairfax County, VA: Structural Engineer** responsible for the contract that includes the design of locally administered (LAP) transportation improvement projects. Over 50 tasks were assigned, including intersection improvements, pedestrian and bicycle facilities studies and design, bus stop safety and accessibility improvements, and feasibility studies for transportation improvements.

**Scotts Run Trail, Fairfax County, VA: Structural Engineer** responsible for the preparation of plans for two prefabricated steel pedestrian bridges (one spanning Scotts Run and one spanning a tributary to Scotts Run) for a proposed shared use path in a FCPA stream valley park. The project will provide access to the newly constructed McLean Metrorail Station and the project was managed by FCPA.

**Cinder Bed Road Bikeway, Fairfax County, VA: Structural Engineer of Record** responsible for the development of preliminary concepts through final construction plans for a box culvert modification, two prefabricated streel truss spans and one custom bridge along Cinder Bed Road and Long Branch. Bridges are sited to support the proposed Cinder Bed Trail connection requiring heavy coordination with the environmental and hydrologic disciplines.

**Kirby Road Sidewalks, Fairfax County, VA: Structural Engineer of Record** responsible for the design and development of construction plans for several special design drainage structures. The project includes the design of six segments of the sidewalk along Kirby Road. During the process of the roadway and drainage design, several unique drainage solutions necessitated the use of special design detention structures with weirs, holding chambers, and introducing a new drainage connection to an existing 1932 era box culvert.

### Education
MS / Civil Engineering
BS / Civil Engineering

### Registrations/Certifications
Professional Engineer / VA, WV

### Years of Experience
26

### Office Location
Richmond, VA

### Experience
Mr. Beavers is a Structural Engineer with more than 26 years of experience and is responsible for the design and preparation of plans for highway, railway bridges and retaining walls. He assists in the inspection, evaluation and rating of bridges and structures, and participates in design of repairs and rehabilitation plans.

# LEONARD COLEMAN, PE, CCM, LEED AP

*CONSTRUCTION SERVICES TASK LEADER*

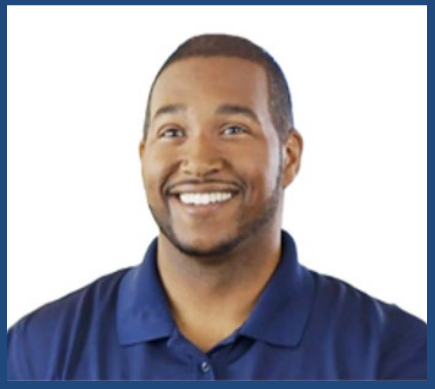
## PROJECT EXPERIENCE:

**Local Government Construction Inspection Coordinator, Fairfax & Fredericksburg, VA: Construction Inspection Coordinator/Project Manager /Responsible Charge Engineer** for local government prime contracts to provide CEI services on federal, state, and locally funded LAP projects for localities in the NOVA, Staunton, Culpeper, and Fredericksburg VDOT Districts, on a task-order basis during pre-construction, construction, and close-out phases. Coordinated with local government clients to determine staffing needs to meet quality and compliance standards and assign staff to meet these needs. Responsible for managing, training, and developing a staff of inspectors, construction managers, schedulers, specialty inspectors, and engineering support staff to meet local client needs, and manage/track CEI budgets and schedules. As a direct supervisor, track availability and capabilities, and assign the best staff resource for each client assignment. He oversees inspection and engineering support services, ensuring compliance with all LAP Manual requirements. He assigned 65 different WRA staff on 17 different locality contracts valued at $110 M in the last 5 years, including 10 separate localities on 15 individual contracts in 2022. He prepared invoices suitable for the VDOT audit.

**Construction Management & Inspection Support, Arlington County, VA: Project Manager/Consultant Inspector Coordinator** for task order based contract for multiple locally administered and funded transportation projects throughout Arlington County. Responsible for recommending engineering solutions to field problems. Also, for receiving task order requests, proposing candidates for full time and part time assignments, coordinating inspection schedules, and invoicing. Mr. Coleman provides technical and administrative support to inspectors once placed, ensures the overall quality of services performed, and meets frequently with County Construction Managers to ensure client satisfaction. Mr. Coleman has provided services on 19 separate tasks ranging in construction value from $0.3M to $3M and utilizing eight separate inspectors.

**Holmes Run Bike Trail, City of Alexandria, VA: Project Manager** on the $3.5M federally funded LAP project to remove the Holmes Run existing fair weather crossing, construct a pedestrian bridge, realign and reconstruct trail heads and portions of the pedestrian trail, including retaining walls, stream restoration of Holmes Run, drilled shaft foundations, minor culvert repairs, upgrading existing accessible curb ramps, signing and pavement markings. Mr. Coleman provides technical advice and support for the construction management and inspection services team and coordinates design reviews for shop drawings and requests for information.

**Marshall Streetscape Improvement Project, Fauquier County, Marshall, VA: Project Manager and Responsible Charge Engineer** responsible for this $6M LAP involves streetscape improvements for approximately 0.25 miles of Main Street (Route 55) in between Winchester Road (Route 17)/Rectortown Road and Frost Street. Key project elements include the construction of ductbanks for electric and communication utilities, removal/off-site remediation of contaminated material, upgrading ADA facilities, retaining wall construction, multi-phased MOT plan, drainage improvements, milling and overlay, pavement marking, and landscaping. Mr. Coleman is responsible for assuring WRA's Pre-Construction and Construction services are delivered in accordance with Contract requirements. Pre-construction Services performed by WRA included preparing special provisions, cost estimates, and bid documents for advertisement. Construction phase services include facilitating the pre-construction meeting, full-time construction inspection, oversight of Contractor E&S and MOT compliance, documentation management, and coordination with the County, VDOT, and impacted businesses.



### Education

BCE / Civil Engineering

### Registrations/Certifications

Professional Engineer / VA
Certified Construction Manager
LEED Accredited Professional

### Years of Experience

19

### Office Location

Fairfax, VA

### Experience

Mr. Coleman has over 19 years of progressive experience in construction management and project management of major infrastructure projects in Virginia, leading teams of inspectors on roadway, utility, bridge and vertical construction projects, including locally administered and VDOT and federally funded projects. Prior to joining Whitman, Requardt & Associates, LLP, he worked for the Prince William County Department of Transportation as a Construction Manager where he was responsible for roadway construction, utility relocation, and right-of-way budgets for projects of $30-$70 million in size. Mr. Coleman also has extensive documentation and project controls experience, including constructability review, cost estimating, CPM schedule review, claim analysis, and overseeing project record keeping systems.

# DAVID CHUNG, PE

*MECHANICAL ENGINEERING*

## PROJECT EXPERIENCE:

**Four Mile Run Pumping Station, Arlington County, VA:** **Senior Electrical Engineer** to replace the existing switchboards and motor control centers (MCC). The existing switchboards will be replaced one at a time to minimize power outages. New switchboards will be 1600 amp, 480/277V, 3-phase, 4-wire, with main-tie-main interlocks to provide redundant electrical service to the existing pumping station.

**Water Treatment Plant Improvements, Town of Warrenton, VA:** **Engineer** for the planning and design of improvements to the surface water treatment plant including modifications to the reservoir intake system and various mechanical and electrical systems for the filters and coagulation system, process monitoring and instrumentation and site improvements. His work included planning for a new chemical storage building.

**Chain Bridge Pumping Station Modifications (45 mgd), City of Falls Church, VA:** **Mechanical Engineer** responsible for the design of the addition of two new 700 Hp pumps with variable speed motors and modification of two existing pumps with two speed motors and revised control of pumps to be maintained by tank level.

**Moores Bridges Water Treatment Plant Miscellaneous Upgrades Preliminary Engineering Report (108 mgd), City of Norfolk, VA:** **Mechanical Engineer** responsible for performing detailed engineering evaluations to identify and address the existing plant deficiencies to the greatest benefit to the city in quality, affordability, and in compliance with safe drinking water act standards of present and possible future requirements.

**Moores Bridges Water Treatment Plant High Trim PS and Misc. Upgrades (108 mgd), City of Norfolk, VA:** **Mechanical Engineer** who designed the relocation of a VFD and ventilation upgrades modifications at the HS Trim PS; modifications at Chemical Building included new water supply piping, new electrical feeder, new chemical hopper dust collectors, new ventilation and heating, polymer feeder and replace new solids pumps at the Solids Transfer Station No. 3.

**Harwood's Mill Manganese Removal (48 mgd), City of Newport News, VA:** **Mechanical Engineer** who designed a 1.0 MGD capacity pressure filtration system to remove manganese from filter backwash supernatant prior to returning back to the raw water reservoir. The design included a new influent collection tank with transfer pumps, a pressure filtration system, sodium hypochlorite, and dichlorination feed systems.

**Korah Pumping Station No.1 Upgrades, City of Richmond, VA:** **Mechanical Engineer** who performed a comprehensive Preliminary Engineering Report and the preliminary design to replace the two existing pumping units to maximize the potential hydraulic capacity, improve the reliability of the station, and implemented miscellaneous upgrades.

**Four Mile Creek Wastewater Pumping Station (7.5 mgd), Henrico County, VA:** **Mechanical Engineer** who designed a new regional sewage pumping station included hydraulic analysis, the influent channel with split wet wells, dry-pit submersible pumps sizing, standby generator system, odor control system, HVAC systems, and instrumentation and control strategies.

**Ben's Branch Sewage Pumping Station (5.1 mgd), Frederick County, MD:** **Mechanical Engineer** who designed a new regional sewage pumping station included hydraulic analysis, the influent channel with split wetwells, dry-pit submersible pumps sizing, standby generator system, odor control system, HVAC systems and instrumentation and control strategies.

### Education
BS / Mechanical Engineering

### Registrations/Certifications
Professional Engineer / VA, MD, DE, TX

### Years of Experience
35

### Office Location
Baltimore, MD

### Experience
Mr. Chung has extensive experience in the planning, design and provision of construction services for numerous projects in the region. He specializes in the planning and design of water and wastewater treatment processes, establishing plans of improvement to meet system demands and development of control strategies for process, instrumentation and equipment based on system performance requirements. In addition, he has design experience in the mechanical aspect of water and wastewater facilities including pumping stations, compressed air systems, heating ventilation and air conditioning and process chemical feed systems.

# WENDY HAUBERT, GISP

*GIS*

## Education

MA / Geography
BS / Geography

## Registrations/Certifications

## Years of Experience

33

## Office Location

Richmond, VA

## Experience

Ms. Haubert is a GIS analyst with over 33 years of experience in GIS database management for utilities, public works and transportation projects. Her experience includes designing, creating and maintaining GIS databases for analysis and asset management, including support programming.

## PROJECT EXPERIENCE:

**Utility System Updates, Town of Herndon, VA: Sr. GIS Specialist** that provided GIS support for updating the Towns GIS database to include new housing and commercial developments. Infrastructure features including manhole covers, valve box tops, storm inlets, water meters, and other observable features were located via Global Positioning System (GPS) firmware, and the data was converted into the format required by the Herndon GIS Department.

**Water/Wastewater Master Plan, Town of Middleburg, VA: Sr. GIS Specialist** Converted AutoCAD based water and sewer system mapping to GIS based mapping as part of the Town's Utility System Master Plan. The GIS mapping was calibrated via field verification of visible features utilizing Global Positioning System (GPS) instrumentation. The GIS mapping was exported into the Town's WaterCAD hydraulic modeling software.

**Water and Wastewater System GIS Update, City of Aberdeen, MD: Sr. GIS Specialist** responsible for updating the water and wastewater database from field survey data, contract drawing review, and field notes in preparation for capital improvement plan analysis. Synchronized GIS edits between the local disconnected database and the production database.

**Water/Wastewater Master Plan, Howard County, MD: Sr. GIS Specialist** provided GIS mapping support for forecasting plan. Compiled data from system models, contract revision documents, and other documents to create poster-sized maps depicting the current systems and highlighting planned improvements.

**VDOT Route 460 Project Southeast Virginia SEIS/Joint Permit Application, Southeastern VA: Sr. GIS Specialist** created and administered an ArcGIS Online site for use by wetland delineation field crews. Provided timely posting to the site of data updates, including geotagged field photos and property access permits, to ensure field crews had access to current, relevant data. Enabled field input of data on mobile devices during the on-site review. Managed synchronization between field input and desktop maintenance of data. Calculated potential impacts of roadway corridor on environmental resources. Produced map graphics for the final report, public outreach, public notification, and permit application.

**Water Master Plan, Department of Public Works, Lynchburg, VA: Sr. GIS Specialist** identified and prioritized areas for water pipe capital improvement repair/replacement projects based on pipe condition, age, material, and size. Created large-scale maps for each individual project for use by contractors.

**Lead Service Line Inventory, Department of Public Works, Richmond, VA: Sr. GIS Specialist** determined potential areas of lead service lines by identification of parcel building date, location within disadvantaged areas, and proximity to hazardous facilities.

**Tysons East Conveyance System Modifications, Public Works Department, Fairfax County, VA: Sr. GIS Specialist** created maps of potential pump station locations to depict sites in relation to environmental concerns such as floodplains, wetlands, parks, and protected areas.

**Water Master Plan, Public Works Department, Dover, DE: Sr. GIS Specialist** using ArcGIS, geocoded locations of service water meters for inclusion in a modeling program. The process included reformatting of raw data and analysis of anomalies.

# SECTION 5:
# Subconsultants

## SUBCONSULTANTS

| Firm | DBE | SWaM | Role & Responsibilities | History w/ Town of Vienna | History with WRA |
|---|---|---|---|---|---|
| **DMY Engineering Consultants Inc.**<br>Chantilly, VA<br>DBE # DB20259665<br>SWaM #684372 | ◣ | ◣ | **Subconsultant**<br>Geotechnical Engineering | Yes | 10 years |
| **LandDesign, Inc.**<br>Washington, DC | | | **Subconsultant**<br>Civil/Site, Landscape, and Surveying | Yes | 20 years |
| **NewGen Strategies & Solutions, LLC**<br>Annapolis, MD | | | **Subconsultant**<br>Management Studies | Yes | 20 years |

**DMY Engineering Consultants Inc. (DMY)** will assist WRA with **geotechnical services**. DMY was founded in 2009 with the mission to provide cost effective engineering solutions to clients throughout the Mid-Atlantic region. DMY is a minority-owned firm (Certified DBE under the Virginia Unified Certification Program - #DB20259665) and is a Virginia SWaM enterprise - #684372. DMY's expertise lies in providing geotechnical site investigation, drilling, instrumentation, geotechnical design and analysis, laboratory testing, construction materials testing/inspection, facilities and building enclosure services, environmental services, and construction management. DMY currently has eleven (11) professional engineers, and their staff is experienced in managing and delivering complex geotechnical and construction testing/inspection projects on time and within budget constraints. Their , staff uses a proprietary, web-based electronic management and report delivery system, DMY Manager®, to efficiently manage construction projects. DMY has an in-house drilling division that owns and operates its own drilling rigs, allowing the firm to be on project sites quickly, and to meet the demands of projects with tight deadlines. DMY also has in-house AASHTO-certified soil and concrete laboratory.

DMY will assist WRA on tasks for this project to verify that appropriate levels of attention are established, the work is performed properly and milestones are met. DMY's Geotechnical Project Manager, Paul Zhang, PE will communicate directly with WRA to understand the limits of the proposed engineering design improvements. He will assemble the members of the DMY team to provide any type of geotechnical service. Paul has complete control to assign DMY's staff resources and he will track the ongoing work and completion of the project by the established milestones agreed upon by the Town of Vienna and WRA. The team will maintain a degree of responsiveness to assist this project in a cost-effective and expedient manner.

**DMY History in the Town of Vienna**

- Mill Street NE Reconstruction
- Marshall Road SW Improvements
- Ayr Hill Avenue Improvements
- Lakewood Estate Pump Station
- Fairfax County Accotink Gravity Sewer Improvements
- Nottoway Park Shelter Replacement
- Nottoway Park Tennis Courts
- Nottoway Park Lighting
- Wolf Trails Tennis Court Lighting
- 101 Harmony Drive SW
- Nutley Street Repaving Project

**DMY History of Working With Local Governments**

- Town of Herndon On-Call Contract for Geotech and Materials Testing (Prime Contract Holder)
- Loudoun County Public Schools On-Call Contract for Geotech and Materials Testing (Prime )
- Fairfax County Park Authority On-Call Contract for Geotech and Materials Testing (Prime)
- VDOT Geotechnical Engineering On-Call Contract (Western Region)
- VDOT Geotechnical Drilling Services On-Call for NOVA District
- Town of Leesburg On-Call Contract
- Stafford County Roadway Projects On-Call Contract
- Fairfax County Civil Engineering On-Call Contract
- Fairfax County Department of Transportation Task Order Contract
- George Mason University Tern Contract for Civil, Surveying, and Landscape Architecture Services
- Town of Dumfries, Virginia Transportation Projects On-Call Contract
- Washington DC Department of General Services On-Call Contract for Materials Testing
- Washington DC Department of General Services On-Call Contract for Third Party Inspections
- MWAA On-Call Contract
- City of Richmond Engineering Services On-Call Contract

LandDesign. CREATING PLACES THAT MATTER.

**LandDesign, Inc. (LandDesign)** is a multi-disciplinary, award-winning firm with expertise in landscape architecture, civil engineering, planning, survey, and urban design. LandDesign has over 250 designers in five offices including Washington DC. With over 40 years of experience, LandDesign has worked with WRA on several projects providing civil engineering and land surveying services. Tasks have included boundary surveys, planimetric and topographic surveys, tree locations and utility location surveys, preparing right-of-way, and easement plats.

LandDesign will assist WRA on tasks for this project to verify that appropriate levels of attention are established, and the work is performed properly and milestones are met. LandDesign's Project Manager, James Scanlon, PE, LS will communicate directly with WRA to understand the limits of the proposed engineering design improvements. He will assemble the members of the LandDesign team to provide any type of **civil/site, landscape, and surveying services**.

**LandDesign History of Working With Local Governments**

- Berryville Wastewater Outfall
- Salamander Middleburg Resort
- Cow Branch Topographic Survey + Easement Plats
- Fitzwater Drive Pump Station
- Occoquan Forest Drive Extension + Pump Stations 36/37 + Wells
- Manassas Northside Interceptor
- Town of Herndon Sanitary
- Arlington North Rhodes / Queen Street
- Stafford County Water Main Survey + Plats
- Leesburg Field Apartments Waterline
- Accotink Gravity Sewer

LandDesign has worked with WRA on projects of a similar size and scope to the Town of Vienna RFP, providing world-class services in civil engineering and land surveying to their team.

NewGen Strategies & Solutions

**NewGen Strategies & Solutions, LLC (NewGen)** will lead **management services** for the WRA team. NewGen is a management and economic consulting firm serving the utility industry and market. Established as a Limited Liability Corporation in August 2012, NewGen primarily serves public sector utilities and provides nationally recognized expertise in utility cost of service and rate design studies, financial feasibility studies, municipalization efforts, depreciation and appraisal studies, litigation support for state and federal regulatory proceedings, utility financial planning, and stakeholder engagement for water, wastewater, stormwater, solid waste, electric and natural gas utilities.

NewGen will lead tasks for this project to verify that appropriate levels of attention are established and the work is performed properly and milestones are met. NewGen's Project Manager, Eric Callocchia will communicate directly with the lead consultant to understand the limits of the proposed engineering design improvements. He will assemble the members of the NewGen team to provide any type of **management services**.

They recognize the need for strategic intent behind their clients' actions by applying the latest market insights, technologies, and tactics to support our recommendations. Their results empower decision-makers to implement sound public policy, incorporating community input, market direction, and regulatory mandates.

Understanding communities, organizations, and data are the three essential elements to developing actionable strategies to maximize the future. NewGen believes that strategy dictates everything. Their approach utilizes data, markets, and communities to provide an integrated view designed to confidently make long-term decisions. They leverage their modeling technology and market expertise in water, wastewater, stormwater, solid waste, and energy to solve their clients most complicated issues. Through proactive collaboration, they upgrade or design strategies to verify they are responsive, transparent, and reliable while paving the way for successful buy-in across all stakeholders. Their approach has three important features:

1. **Client/Stakeholder Communications:** NewGen simplifies complex concepts by combining visual tools and their training expertise to verify that clients understand how the issues and underlying data drive their recommendations. This directly impacts the evaluation of the scenarios they present, streamlines decision-making, and successfully obtains buy-in from elected officials, customers, regulatory bodies, and senior management.

2. **Operational Insights:** NewGen makes data operational, resulting in actionable decisions with defensible results. They harness existing and untapped data to optimize operations, develop demand management strategies, estimate the impacts of distributed generation, and identify the

rational nexus underlying pricing decisions. They help their clients recover costs, improve service delivery, and respond to changing market conditions.

3. **Trusted Expertise:** They have served as expert witnesses in over 200 regulatory and civil proceedings and employ 26% of the ASA-accredited public utility appraisers in the United States. Unlike other firms, NewGen integrates the insights of nationally recognized experts into their models, both of which have been pressure tested through regulatory and civil processes.

**NewGen History in the Town of Vienna**

- Leaf Collection Program Evaluation
- Water and Wastewater Cost of Service Study

# SECTION 6:
# Engineering Record and Accomplishments

## Engineering Record and Accomplishments

| Contract/Project (Location) | Contact Person | Scope of Work | Cost Estimate | Bid Amount | Firm's Contract Amount | Cost Over-run/ Under-run |
|---|---|---|---|---|---|---|
| Town of Vienna On-Call Civil Engineering Services (Vienna, VA) 2018-2023 | Christine Horner, 319 Center Street South Vienna, VA 22180 (703) 255-6380 | water & wastewater engineering, surveying, architectural and structural engineering, thaffic studies and engineering and stormwater engineering | N/A | N/A | $ 930,000.00 | Ongoing |
| Town of Warrenton BOA Water & Sewer Capacity Update 2022 | Paul Bernard. P.E. 21 Main Street, PO Drawer 341, Warrenton, VA 29186 540-347-1101 | Analysis of the capacity of the Town's water supply and distribution system, and wastewater collection, pumping and treatment sysytem to accommodate new residential, commerical and institutional development through Year 2040. | N/A | N/A | $ 45,615.00 | Under by $8,445 |
| Arlington County Basic Ordering Agreement | Amani Eisa, Department of Environmental Services 4200 28th Street S, Arlington, VA 703-228-6495 | Various Engineering Task Orders including hydraulic modeling, water main and sewer main designs, pipeline condition assessments and inspections, SCADA upgrades, construction management and inspection services, pedestrian and bicycle trail design, pump station engineering, water storage tank inspections and repair design, tank cellular inspection reviews. | N/A | N/A | $3,300,000.00 | N/A |
| City of Alexandria Engineer of Record | Tafesse Gyes, City of Alexandria Department of Project Implementation 703-746-4051 | Various civil engineering projects including wastewater modeling and planning, stormwater engineering and design, site plan reviews | N/A | N/A | $3,339,500.00 | N/A |
| Prince William County Serive Authority Basic Ordering Agreement | Debbie Maxwell 4 County Complex Court Woodbridge, VA 22192 (703) 335-8924 | Various engineering tasks including planning, design and constrction management of water and sewer piplines and pumping stations, hydraulic modeling, building architecture and structural reviews, corrosion control engineering, trenchless | N/A | N/A | $1,650,000.00 | N/A |
| Accotink Gravity Sewer | Thomas P. Grala, Fairfax County Wastewater Design and Construction Division, 1200 Government Centr Parkway, Suite 463, Fairfax. VA 22035 703-324-5815 | Planning and Design of additional capacity for the Accotink Gavity Sewer, Hunters Branch, from Vienna to South of Route 50 parallel to Nutley Street, 16,000 LF of 42-inch diameter PVC Sewer. Design underway | $37M | N/A | $3,700,000.00 | Ongoing |
| Stafford County Water Main 342-06 | Scott Powell 2128 Jefferson Davis Hwy Stafford, VA 22555 (703) 658-8631 | WRA planned, designed and assisted with bidding of over 8,000 feet of new 24-inch diameter ductile iron water transmission main. The new main will serve future development in rapidly suburbanizing Stafford County. The project included an | $ 7,306,162.00 | $ 5,208,430.00 | $ 618,780.00 | Under by $750 |

## Engineering Record and Accomplishments

| | | | | | | |
|---|---|---|---|---|---|---|
| Vienna Sidewalks | Need info from Taylor | The project included the design of approximately 3,300 feet of new sidewalks on Follin Lane and Branch Road. The sidewalk design and construction was funded by money from the Robinson Trust as a gift to the citizens of Vienna | N/A | N/A | $ 128,400.00 | Under by $2,000 |
| Alexandria Landmark Mall Redevelopment Site Plan Review | Tafesse Gyes, City of Alexandria Department of Project Implementation 703-746-4051 | WRA served as the reviewer, on behalf of the City of Alexandria, of developer plans for the replacement of the old Landmark Shopping Mall on King Street into a new mixed use community including a hospital and medical campus and residential housing and commerical development. WRA reviewed plans for sewer, water, stormwater, electric power and telecommunication systems. WRA served as an extension of the City's engineering staff, reviewing plans for concurrance with City, State and Federal Standards and providing commentary and corrections to the developer's documents. | N/A | N/A | $ 112,951.00 | Under by $87,943 |
| Town of Vienna Old Courthouse Road Water Main Relocation | Christine Horner, 319 Center Street South Vienna, VA 22180 (703) 255-6380 | The project included the design of the relocation of a Town 8-inch diameter water main in the Old Courthouse Road neighborhood to accommodate construction of a new fairfax County DOT bridge over Wolftrap Creek. | N/A | N/A | $ 54,291.00 | On-budget |
| Town of Middleburg Utility System Master Plan | Danny Davis 10 West Marshall Street PO Box 187, Middleburg, VA 20118 | The project included updating the Town's 2003 water and wastewater system and analyzing the operation of the water and wastewater utility and associated infrastructure. Recommendations for additions to the Capital Improvement Plan (CIP) were developed. | N/A | N/A | $ 104,000.00 | On-budget |
| Arlington County BDG BOA | Need info from Brian Barna | WRA conducts varioys civil, electrical, SCADA, mechanical and plumbing engieering tasks for County owned facilities, | $ 839,876.00 | $ 909,074.00 | $ 120,000.00 | N/A |

## Engineering Record and Accomplishments

| | | | | | | |
|---|---|---|---|---|---|---|
| Fairfax County Manhole 198 | Andrew Casolini to provide info | WRA conducted an analysis and preliminary engineering design for the replacement/repair of County Manole 198 along the George Washington Parkway in the Mount Vernon area of Fairfax County. The exisitng manhole and associated 8-inch diameter pipeing, located on a steep slope above the parkway was badly deteriorated and near failure. WRA developed an engineering approach, including planning level cost estimate for replacing the manhole and sections of piping while maintaining wastewater flow during construction. | N/A | N/A | $ 19,160.00 | On-budget |
| Town of Vienna Water and Watewater Cost of Service (NewGen Strategies) | Marion Serfass, Director of Finance 127 Center Street S, Vienna, VA 22180 703-255-6322 | NewGen Strategies determined the cost of distributing water and collecting wastewater from the Town's residences, businesses and institutional establishments. A usage rate and fee schedule for a 5 year period was developed. | N/A | N/A | $ 35,300.00 | On-budget, cost includes 2018 Study and 2020 update. |
| Fairfax County Performance Measurement Program (NewGen Strategies) | Junaid Malik, Fairfax County Wastewater Collection Division 703-239-8490 | NewGen Strategies developed a discrete set of strategic and operational performace indicators to readily compare adjacent, comparable wastewater collection system | N/A | N/A | $ 127,400.00 | On-budget |

# SECTION 7:
# Quality Assurances

## QUALITY ASSURANCE

WRA will develop and implement a project specific Quality Management Plan (QMP) to be used by team members on every phase of each task assignment under this contract. This QMP will provide oversight guidance as well as procedures to foster an environment where the goal for quality design and construction is expected, planned for, and implemented. This will be achieved by actively communicating with the Town of Vienna engineers, project managers, and project stakeholders such as utility companies and regulators including Fairfax County, VDOT, DEQ, and VDH. WRA will communicate with residents and Town elected officials as directed by the Town's project managers. Managing communications is essential to the delivery of a successful project that is constructible, durable and maintainable, acceptable to the project stakeholders, and follows the requirements set forth by the Town.

WRA's QMP is organized into four key components that include Project Management, Design Control, Construction Support, and Internal Surveillance. The QMP is designed to integrate multidiscipline projects. In addition, the QMP can be scaled to establish processes for small to large projects.

The Project Management component specifies the Quality Assurance and Quality Control (QA/QC) procedures to be followed and implemented by the Project Manager for management responsibilities including process controls, project schedule and budget, team coordination, sub-consultant oversight and DBE utilization, document control, and work conformance.

The Design Control component incorporates appropriate spreadsheet-type checklists, such as VDOT's LD-436 Checklist, to check and control design related efforts including: engineering calculations; plan preparation; construction cost estimate development; construction specifications; report preparation; and other design related documents (e.g., testing, constructability review, etc.). It also includes tracking spreadsheets for permits, utility coordination, and other outside agency coordination.

QA/QC for construction support is implemented to verify that WRA is supporting the client's field construction personnel in a manner that: checks conformance with the project requirements; provides timely reviews and responses to shop drawings RFIs or other field-related issues; cost effective resolution of any unforeseen field changes or design issues; and open and efficient communication with the contractor in progress meetings, partnering meetings or during conflict resolution. Mr. Leonard "Lenny" Coleman, PE, CMIT, LEED AP (WRA, Construction Manager) will lead the team's QA/QC efforts for Construction Support.

Of great importance is the Internal Surveillance incorporated into the QMP as a separate check of the project management and design staff to verify that the appropriate QMP procedures are being properly followed by the management and design team for project aspects and provides for methods to address inadequacies in the completion of required QA/QC checks and confirmations. Record copies of QMP documents, including checklists and marked-up review documents, will be retained on file until work is completed on the contract.

The QMP for this contract will be implemented and supervised by Andrew Casolini Dal Bo, PE, ENV SP. Mr. Casolini Dal Bo is a Vice President at WRA and brings multidiscipline experience to both horizontal and vertical type projects. Mr. Casolini will be responsible for Internal Surveillance to verify that the QMP is being properly followed throughout each project by the Project Manager and project team. Dean Westman (Project Manager)

will follow and be responsible for implementing the QMP procedures for the overall contract. Individual Task Managers and their respective technical discipline leads will follow and be responsible for implementing the QMP procedures for Design Control and Construction Support. Each technical discipline will assign independent experienced technical staff not engaged in the project to perform independent reviews of documents for their project discipline. This staff will remain on the project from beginning to end.

WRA has developed project specific QA/QC procedures customized to the level of design. Beyond the development of these QA/QC procedures, WRA uses proper implementation to provide an efficient approach as we manage tasks/assignments simultaneously. The QMP Managers and Project Manager will accomplish this by performing a joint review of each contract and the assigned tasks. WRA takes a proactive approach to initiating reviews and conducting reviews of our deliverables, including our subconsultants. Through this approach, we can resolve problems and issues early, and verify that our work follows the scope and contract requirements. The following Tables outline the responsibilities of key team members assigned to this on-call contact if approved.

## *Ability to Meet Schedule and Budget*

WRA has a strong track record of meeting BOA Task Order budgets and schedules. The Project Manager will be directly responsible for organizing, managing, monitoring, and reporting on the progress, performance, and budget for each Task Order under this BOA. Mr. Westman will also be responsible for the overall quality of the work and the resolution of any issues that may arise during the work. As Project Manager, Mr. Westman will organize the team for each task and oversee the task budget and schedule.

A weekly progress meeting will be held between the Project Manager and each Task Manager to discuss the progress of the work, including schedule, budget, and other issues. The WRA Project Manager conducts the weekly meetings in person, with key staff. Whenever necessary, more frequent meetings will be held with Task Managers. The Project Manager will assist Task Managers by bringing additional resources into the project to meet schedules or resolve issues. The Project Manager will also review all deliverables before they are sent to the Town of Vienna.

Monthly project invoicing will serve as a vehicle for maintaining communication between the Town and the Project Manager. The Project Manager and Task Managers will develop a Monthly Progress Report that will be submitted with each invoice. The Monthly Progress Report will document essential information including the following:

- Progress during the invoicing period
- Budget information in numerical and graphical format
- Items requiring resolution
- Additions and/or deletions from project scope
- Next month milestones
- Project schedule and budget updates
- Status of project regulatory permits

WRA recommends that periodically, a meeting be held between the Project Manager and the Town to discuss the status of all active Task Orders. The Task Order status review meetings would be held not less than

quarterly. Monthly reporting, submitted with each invoice will also describe variances in scope and the impact of variances on project schedule and budget.

Table 1 below outlines the responsibilities for key staff that will have management oversight and quality assurance roles for this contract.

**Table 1. Project Quality Roles and Responsibilities**

| Position | Roles and Responsibilities |
|---|---|
| **Principal Oversight**<br><br>Daniel Seli, PE | Authority to negotiate on behalf of WRA and point of contact for contractual matters. |
| | Overseeing contractual matters to confirm both Vienna and WRA requirements are met. |
| **Project Manager**<br><br>Dean Westman, PE | Overall management of the contract to confirm that both Vienna and WRA requirements are met, including budget and schedule compliance. |
| | Receives requests from Vienna for specific tasks, prepares associated task order documents for execution, and assigns qualified key staff to the project. |
| | Confirms the requirements of the Project Quality Plan are implemented. |
| | Prepares a schedule for each deliverable that includes time for QA/QC reviews and provides it to the Technical Advisor and key staff. |
| **Quality Assurance/Quality Control**<br><br>Andrew Casolini Dal Bo, PE | Overall responsibility for overseeing the quality of the work performed for Vienna. |
| | Performs or delegates review of submittal documents, including those documents prepared by subconsultants. |
| | Manages and monitors disciplines and subconsultants quality of work. |
| | Arranges for qualified staff to perform quality assurance reviews of documents needed. |
| **Task Managers**<br><br>Daron Doran, PE<br>Tyler Long, PE<br>Brian Barna, LEED AP<br>John Thomas, PE<br>Christopher Briggs, PE<br>Andrew Vail, PE<br>Kristen Estocsin, PE<br>Bradley Riggleman, LS (LandDesign)<br>Greg Horn, PE<br>Michael Hearn, PE<br>Katie Lynch,PE<br>Leonard Coleman, PE, CCM, LEED AP | Leads the work effort of the discipline or subconsultant. |
| | Performs or delegates discipline or subconsultant review of the documents. |
| | Performs or delegates interdisciplinary review of interfacing disciplines and subconsultants. |

Table 2 below indicates the levels of internal review to be provided on each submittal prior to release to Fairfax Water. Discipline reviews and interdisciplinary reviews will be performed on reports, calculations, technical memoranda, and each milestone deliverable as identified in the task scope of services.

| Table 2. Internal QA/QC Review Levels | |
|---|---|
| **Review** | **Descriptions** |
| **Discipline Review** | Detailed "line by line" checking of a document by a qualified individual in the same discipline who was not involved in originating the document. |
| **Prime Review of Subconsultant** | Review by a qualified individual(s) from WRA of engineering documents generated by a subconsultant. This includes an independent review by a discipline expert as well as a coordination review of documents. |
| **Interdisciplinary Review** | Review of interfaces between technical disciplines. |

An important element of the Project Quality Plan is having the original reviewer back-check that the comments were appropriately addressed in the client deliverable. Documentation is in the form of scanning-in physical markups or editing pdf files that have been highlighted by the original reviewer acknowledging the comment was resolved. These scanned-in images and edited pdf files are then saved so that they can be used for an independent QA audit verifying that the specified procedures were followed.

# SECTION 8:
# Professional References

## PROFESSIONAL REFERENCES

WRA enjoys a well-earned reputation for providing quality services to our clients. As requested, we have provided references from projects similar to the services the Town is requesting in this RFP. We encourage you to contact the references provided in our proposal and those that follow to discuss our past performance managerial and technical skills.

### Mike Farr

**Contact Information**
Town of Herndon
777 Lynn Street
Herndon, VA 20170
703-435-6800 x2153
Mike.Farr@herndon-va.go

**Contract Term:**
2001 – Ongoing

**Work Performed**
**General Water and Sanitary Sewer Engineering Services Contract** – includes planning, design and management of the construction of water main, sanitary sewers, and associated infrastructure. Work includes hydraulic modeling, SCADA, GIS, design, and services during construction including inspection.

### Ms. Amani Eisa

**Contact Information**
Arlington County
4200 28th Street S.,
Arlington, VA 22206
703-228-6495
aeisa@arlingtonva.us

**Contract Term:**
1996 – 2022

**Work Performed**
**Agreement No. 358-08-5 for Professional Engineering Services (On-Call)** – includes design and planning projects for Capital Improvement Projects, water quality improvements, hydraulic analysis, SCADA upgrades, water storage tank inspections and repair designs, structural, mechanical and electrical improvements at water treatment and wastewater facilities.

### Paul Benard, PE

**Contact Information**
Town of Warrenton
21 Main Street
Warrenton, VA 20186
540-347-1101 x244
pbernard@warrentonva.gov

**Contract Term:**
2000 – Ongoing

**Work Performed**
**Open A/E Services Contract** – includes planning, design, surveying and services during construction for water, sanitary sewer, structural and general civil engineering services.

### Tafesse Gyes, PE, CCM

**Contact Information**
City of Alexandria
301 King Street,
Alexandria, VA 22314
703-746-4051
Tafesse.Gyes@alexandriava.gov

**Contract Term:**
2006 – Ongoing

**Work Performed**
**Engineer of Record Services for Various Infrastructure Projects** – includes planning, design and services during construction and inspection, hydraulic modeling, Civil Engineering and Transportation Engineering