



BEDFORD REGIONAL WATER AUTHORITY

Ivy Creek Interceptor Divisions 5 and 6

July 7, 2020

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Rhonda B. English, PE
Director of Engineering
Bedford Regional Water Authority
1723 Falling Creek Road
Bedford, Virginia 24523

RE: Ivy Creek Interceptor Divisions 5 and 6

Dear Ms. English and the Selection Committee:

The Ivy Creek Interceptor project for the Bedford Regional Water Authority (BRWA) includes approximately 18,500 linear feet of new sewer interceptor and a new 2.0 MGD water booster pump station. E. C. Pace and CHA Consulting, Inc. (CHA) have partnered together to prepare a proposal for this project to present a design-build team that brings a common sense and collaborative approach to completing the Ivy Creek Interceptor and Route 460 Pump Station projects on time and budget. As part of the proposal, the E. C. Pace and CHA team is prepared to provide design, permitting, easement acquisition, construction administration, and construction services, as required. Through the design-build team, BRWA will be provided with a single point of contact to provide smooth project communication, quality excellence in project delivery, adherence to established construction costs, and an efficient schedule.

Dedicated Design-Build Team: The Ivy Creek Interceptor project and BRWA customers will directly benefit from our dedicated water and wastewater construction and design team, who have worked on similar pump station projects and miles of pipelines in Southwestern Virginia. E. C. Pace and CHA have a long-standing positive and collaborative working relationship on many previous projects through the traditional design, bid, build process. E. C. Pace and CHA are excited to team together for this design-build opportunity to provide BRWA a successful project on every level. Our team is ready to plan, design, and construct the Ivy Creek Interceptor project and Route 460 Pump Station and any other water and wastewater project that the BRWA may anticipate in the future. We have worked in the Southwest Virginia area on numerous water and wastewater projects in the past, giving our professionals an extensive knowledge of construction and underground conditions for the service area, design standards, regulatory agency requirements, and the permitting process.

Team's History with BRWA: The Bedford Regional Water Authority (BRWA) and EC Pace's design partner, CHA, have built a valuable partnership since 2013 through past projects in Bedford, including the design of the Route 460 Pump Station and working as a design-build team to construct approximately 40,000 linear feet of waterline. E.C. Pace and CHA have established great working relationships with BRWA and the County, which means there is no learning curve on how to achieve successful results.

Ready to Serve the County: The E. C. Pace and CHA team is local. We have completed the design of the pump station part of the project, know all the stakeholders in the region, and understand regional design and construction challenges. We have demonstrated excellence in our technical quality and client service management work through the projects we have completed for BRWA. As we have worked with the BRWA before, our team looks forward to working with you on this upcoming project and responsibly improving the world we live in.

The E. C. Pace and CHA team will be available to discuss the project further. If you have any questions, please contact Patrick Wade, PE (PWade@ECPace.com, 540.314.8552) at E.C. Pace.

Sincerely,



PATRICK WADE, PE VICE PRESIDENT



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Our *water distribution system and sanitary sewer experience* brings a concrete skill set needed to provide you with successful results.

Part B | Project Team

This selectively chosen team of talented professionals *strives to elate our clients* with every project.

Part C | Project Experience

These project examples are a sampling of some of the similar project scopes that our team have worked on.

Part D | Project Characteristics

Your *overall project approach* for planning, evaluation, design and construction of projects is set up for success.

Part E | Funding

Appendix A | Ivy Creek Interceptor Drawings

Appendix B | Construction Schedule

Appendix C | Pump Station Plans (Select Sheets)

Appendix D | BRWA and City of Lynchburg Interceptor Map

Appendix E | E.C. Pace Bid Bond

Part A. Design-Build Team Qualifications

E. C. Pace Qualifications

E.C. Pace has been an industry leader in the installation of water and wastewater systems in Virginia since 1926. Based in Roanoke, Virginia, **we focus on building relationships and client satisfaction**. We work with many repeat clients both public and private. A small sample of repeat clients includes:

- Bedford Regional Water Authority
- Western Virginia Water Authority
- NRV Regional Water Authority
- Virginia Department of Transportation
- City of Roanoke
- Virginia Tech Corporate Research Center

Legal Structure

E.C. Pace is 100% owned by Mark Pace, who represents the 4th generation of family ownership. The company was incorporated in 1976 and has been licensed to conduct business in Virginia since 1926.

Ability to Self-Perform

E.C. Pace routinely self-performs 75% to 90% of the work on our projects, including installation of water, wastewater and gas pipelines as well as underground structures such as box culverts, retention systems, vaults and manholes. E.C. Pace also self-performs a wide variety of trenchless pipeline installations, including jack and bore, pipe bursting and tunneling. We also perform excavation, grading, road building, and restoration. To further enhance our ability to self-perform work, E.C. Pace also works closely with its sister company, Virginia Blasting Services, which performs rock drilling and blasting for both mass and trench line applications. Virginia Blasting Services specializes in close proximity blasting, which allows for safe rock excavation near structures and sensitive infrastructure.

Safety

Safety is part of our culture at E.C. Pace. All our personnel in supervisory roles are certified in OHSA Competent Person for Excavations and Confined Space Entry. In addition, we also provide training in VDOT basic and intermediate traffic control, First Aid and Safety and OSHA 10 Hour and 30 Hour Construction. To apply a holistic



Roanoke, VA Office



at a Glance

Established:

1926

Number of Personnel:

100

Contact:

Patrick Wade, PE
pwade@ECPace.com
(540)314-8552

Office Location:

1811 Hollins Rd Northeast
Roanoke, VA, 24012
(540)343-6816

Financial Responsibility

E.C. Pace has been in business since 1926, resulting in a strong financial position. Our combination of liquidity, bonding capacity and banking allows E.C. Pace to bid almost any water or wastewater project as a prime contractor. Mark Pace is 100% owner with no partners with an equity interest of 20% or greater. **(Copies of E.C. Pace's Audited Financial Statements are available upon request. We ask that they remain confidential).**

and real-world approach in the field, we employ a third-party safety company to oversee our safety program. Our third-party firm routinely conducts site visits and inspections to provide real-time guidance and feedback. By having a third party perform this function, we are able maintain an objective view of the safety concerns for both our employees and the public for each individual situation.

Construction Workload

E.C. Pace has the capacity to complete construction of the Ivy Creek Interceptor project while concurrent projects are occurring. E.C. Pace's project team will be completing construction of the project according to the provided construction schedule and as agreed upon with BRWA. [REDACTED]

[REDACTED] Reference Appendix E to view the bid bond.



Water and Wastewater Qualifications

We provide a full range of construction services that include everything from pipe and structure installation to testing and bypass pumping. We understand the unique characteristics of public projects that can include funding provisions, scheduling constraints, and planned public disruptions. Our planning and scheduling process attempts to identify a full range of issues as early in a project as possible so that delays are minimized. We routinely present value engineering proposals that can save time and money for owners.

Water



E.C. Pace offers a wide array of construction services for water infrastructure that include storage, pumping, transmission, distribution and service work. Our company has

completed hundreds of projects ranging from ¾" water services to 36" transmission mains. We have a proven track record of delivering high quality work that is on-time and on-budget.

Waste Water



E.C. Pace provides construction services for sewer installations that include collection, distribution, and transmission systems; both gravity flow and force main. We self-perform the vast majority of our work, including trenchless installations and temporary bypass pumping. Our staff has completed over one hundred projects ranging from 4" force main to 72" sewer interceptors. We specialize in rough terrain installations that include rock excavation.



Blacksburg, VA Office



CHA at a Glance

Established:

1952

Number of Personnel:

1,000

Contact:

Stephen Steele, PE
540-212-4368
ssteele@chacompanies.com

Office Location:

1341 Research Center Drive
Suite 2100
Blacksburg, VA 24060

CHA Qualifications

CHA is a highly diversified, full-service engineering and construction management firm working to *responsibly improve the world we live in*. Located throughout the United States and Canada, we provide a wide range of planning and design services to public, private, and institutional clients.

Our talented professionals *strive to elate our clients* in everything we do. CHA will work with EC Pace from start to finish, adapting teams, schedules, budgets, and services to each unique challenge.

CHA's team of highly trained engineers is supported by hundreds of other technical specialists available to provide a vast array of services to our clients.

Together with you, we design, study, manage, and build results that *enhance our world*.

We provide full service programming and design for:

- Alternative Delivery
- Architectural
- Asset Management
- Aviation Design & Planning
- Civil Engineering
- Construction Engineering
- Electrical
- Energy Solutions
- Environmental, Health and Safety
- Geospatial Innovation
- Geotechnical
- Health and Safety
- Land Development
- Life Safety and Security
- Mechanical
- Program Management
- Sports Planning and Architecture
- Structural
- Survey
- Sustainability
- Tank Rehabilitation
- Technology Solutions
- Transportation Engineering and Planning
- Water and Wastewater
- Wireless Communications

Design Quality Control Procedures

CHA will develop a project specific QA/QC Plan to maintain excellent professional standards for technical performance and the accuracy of all design drawings and specifications developed for the project. As the Design Project Manager, Lindsay Swain, will be responsible for scheduling the completion of required QA/QC reviews by the Quality Assurance/Quality Control (QA/QC) Manager, Doug Hudgins. Our multi-level review process typically works as follows:

- Each team member will be carefully chosen to make sure that all work is initially completed by individuals with the appropriate expertise, and these individuals will be required to review their own work.
- Lindsay will provide a second review for each work task or deliverable.
- Lindsay will subsequently forward her initial review and the project documents to the QA/QC Manager, Doug Hudgins, for an independent technical review including project constructability.
- Following independent review, the documents (with all comments) will be returned to the design team and corrected prior to a second review by Doug Hudgins to maintain compliance.
- Only documents that have been fully reviewed in accordance with these procedures will be issued to E.C. Pace and BRWA for final review and approval. Our quality control procedures for these sanitary sewer rehabilitation and replacements have proven to be effective in eliminating project surprises and change orders.

Handling of Design Errors and Omissions

CHA is a large professional engineering firm that performs thousands of projects each year. For a firm of its size and diversity, CHA's involvement in claims of errors or omissions is remarkably infrequent, due chiefly to its competent and well-trained staff and its rigorous and comprehensive Technical Excellence program. Inevitably, project issues can and sometimes do arise, and on those occasions, CHA's project manager and, where appropriate, senior management work with the client to find an acceptable resolution. Furthermore, for the protection of CHA and its clients, CHA always maintains a comprehensive insurance program, which includes professional liability, workers' compensation, comprehensive general liability, automobile and umbrella policies, with limits sufficient to cover the defense and payment of all outstanding claims against CHA.

Design Workload

CHA has the ability to complete the work on this project simultaneously with other client commitments. Our proposed project team has the availability to complete the proposed design project in accordance with the schedule outlined in our proposal. By submitting this proposal, CHA commits to meeting the milestones identified in our project schedule.



Water and Wastewater Qualifications

Our water and wastewater management offerings include full engineering and support services from initial planning through permitting, design, bidding, construction administration, start-up, certification, and ongoing operational assistance. We have provided creative and cost-effective solutions for municipalities and service authorities throughout Virginia.

Water



CHA provides comprehensive water services with a commitment to safety, reliability,

and affordability. Our highly qualified staff has developed thousands of water-related projects, including source of supply, distribution, storage, treatability evaluations, treatment plant design, operation & maintenance plans, and sludge dewatering projects. The staff in our Blacksburg office has completed numerous water projects in Virginia and is familiar with Virginia regulations and Virginia Department of Health (VDH) requirements.

Wastewater Qualifications



CHA is one of the leading collection system and wet weather flow engineering firms in Virginia. CHA has assisted its many clients in constructing new gravity sewer lines, pump stations, and force mains. Our experience includes modeling, sewer system evaluation surveys,

infiltration and inflow studies, sewer system rehabilitation, and equalization basin design. CHA has two Pipeline Assessment & Certification Program (PACP) and Manhole Assessment & Certification Program (MACP) certified technicians in our Blacksburg, Virginia office alone.

CHA Services

Water Distribution

- Booster Pump Station Design
- Construction Contract Administration and Resident Inspection
- Distribution System Design
- Storage Tank Design
- Supervisory Control and Data Acquisition (SCADA)
- Water Distribution System Modeling

Water Treatment

- Comprehensive Treatment Plant Design
- Contract Administration and Resident Inspection
- DBP Compliance
- Intake Design
- Project Funding and Permitting
- Solids Dewatering and Disposal
- SCADA
- Treatability Studies and Process Optimization

Wastewater Collection Systems

- Collection System and Pump Station Design
- Inflow and Infiltration (I&I) Studies
- Sanitary Sewer Evaluation Surveys (SSES)
- Sewer Rehabilitation
- System Mapping
- Hydraulic Modeling
- Capacity Management Operation and Maintenance Programs
- SCADA

Wastewater Treatment

- System Hydraulic Modeling
- Treatability Studies and Process Evaluation/Optimization
- Secondary and Tertiary Treatment System Design
- Biological Nutrient Reduction
- Enhanced Biological Nutrient Reduction
- Solids Handling, Treatment, and Disposal (SCADA)
- Contract Administration and Resident Inspection

Part B. Project Team

Project Team

The Right Team for your Projects

E.C. Pace as the Design-Builder and CHA as the Prime Engineer will provide a collaborative approach to deliver this project to BRWA with a team that brings local, practical experience. From the site-specific concerns about topography and environmental disruption to the time sensitive demand for this infrastructure, our team understands the challenges, knows the stakeholders, and will work together to make this project a success. The people involved in both team member organizations have worked together to deliver numerous successful projects.

E. C. Pace is an expert in construction and worked successfully with CHA on multiple projects. Our team is constructed of professionals who specialize in each facet of the project and bring a wide variety of education and perspectives. Together, our highly trained engineers and specialists have the technology, resources and expertise needed to deliver results to successfully complete your water distribution system and sanitary sewer system projects.



Meet the Team

The success of our firm is a reflection of the strength and experience of our staff. Our proposed team, highlighted in the biographies below, exceeds the qualifications needed to successfully complete the potential water distribution system and sanitary sewer projects. An organizational chart and individual resumes are also included in this section.

E. C. Pace Resumes



Patrick Wade, PE: Principal-in-Charge

Patrick has over 15 years of experience in the civil engineering and construction industry with a focus on construction project management and procurement. At E.C. Pace Company, Inc., Patrick serves as the Executive Vice President and is responsible for overseeing the day-to-day operations of a growing civil construction firm. Duties include estimating, bidding, construction project management, cost analysis, risk assessment and safety. His primary focus is the on-time, on-budget delivery of projects. Since taking the position, E.C. Pace has a 100% on-time delivery record with zero claims.

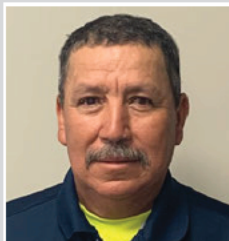


Freddy Spraker, Jr.: Quality Control Manager

Freddy Spraker has 36 years of experience in the construction industry. He started his career as a laborer and moved through all aspects of the field to equipment operator, crew leader, foreman, superintendent, and project manager. He served as President/CEO of his own construction firm for 17 years. He is experienced in all phases of heavy construction from layout, clearing, erosion and sediment control, water, sewer, storm drainage systems, mass excavation, grading, installation of curb and gutter, sidewalks, building pads, and road construction.

DESIGN-BUILD TEAM LEAD

BRWA | Ivy Creek Interceptor Proposal - Division 5 and 6



Simon Barron: Superintendent

Simon has worked for E.C. Pace for the past 22 years. He has held multiple positions, working his way up from laborer to superintendent. He has experience with a wide array of projects and site conditions from installing waterline in dense urban areas as well as installing sewer through rural mountainous terrain.



Austin Roberts: Superintendent

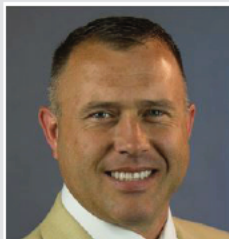
Austin has worked for E.C. Pace for the past 4 years and has been in the construction industry for the past 7. He has moved up from equipment operator to foreman to superintendent, excelling at each level. Austin specializes in difficult and rough terrain work.



Byron Craddock: Construction Manager

Byron has worked for E.C. Pace for the past 22 years. He has held a variety of positions, working his way up from laborer to project manager. He has experience with every facet of the work from pipe laying and boring to project scheduling and crew management.

CHA Resumes



Stevie Steele, PE: CHA Principal-in-Charge

Your projects will directly benefit from our experienced project manager and funding specialist, Stevie Steele, PE. Stevie is very familiar with working with the BRWA and has helped clients obtain funding. He is a highly skilled professional with more than 22 years of experience in both the technical and managerial aspects of the civil engineering consulting business. His primary focus is managing water utility projects for CHA and has recently managed large water distribution projects in Covington and Bland County.



Doug Hudgins, PE: Design Quality Control Manager

Doug has extensive wastewater project experience for numerous clients in Virginia, both as a project manager and as a design lead. This experience allows him to apply his knowledge, experience and "lessons learned" to seamlessly and successfully complete your projects. With more than 25 years of experience in planning, designing, and implementing wastewater collection, water supply, and treatment systems, Doug will provide the BRWA with management responsibility, project specific scopes, and quality feedback on the progress of the projects.

DESIGN-BUILD TEAM LEAD

BRWA | Ivy Creek Interceptor Proposal - Division 5 and 6



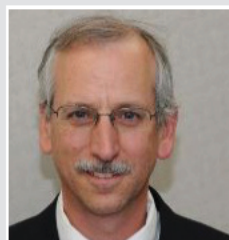
CHA **Lindsay Swain, PE: Design Project Manager**

Lindsay has more than 10 years of experience in water and wastewater civil engineering. Her expertise includes hydraulic analyses and modeling, design of water/wastewater infrastructure, water/wastewater process design, and utility design and relocation projects. Lindsay is one of the Project Managers responsible for oversight of engineering and design quality control for water and wastewater projects from the Southeast US region and is frequently involved in stakeholder coordination. She has also taken the lead for completing construction administration on large water and wastewater projects.



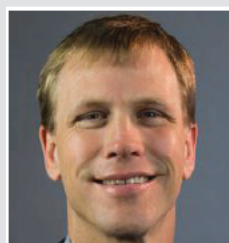
CHA **Earl Smith, PE: Senior Design Engineer**

Earl has more than 20 years of experience in wastewater engineering. His primary focus since 2006 has been sanitary sewer rehabilitation and replacement projects in Southwest Virginia, including numerous projects for the WVWA, Town of Blacksburg, Town of Front Royal, and the City of Salem.



CHA **R. Lawrence Hoffman: Environmental/Permitting**

Lawrence coordinates CHA's Environmental Services Program, including permitting and regulatory compliance. He has over 30 years of experience in conducting and participating in negotiations with regulatory agencies, managing the regulatory approval, and securing all regulatory permits on our projects.



CHA **Eric Anderson, PE: Senior Design Engineer**

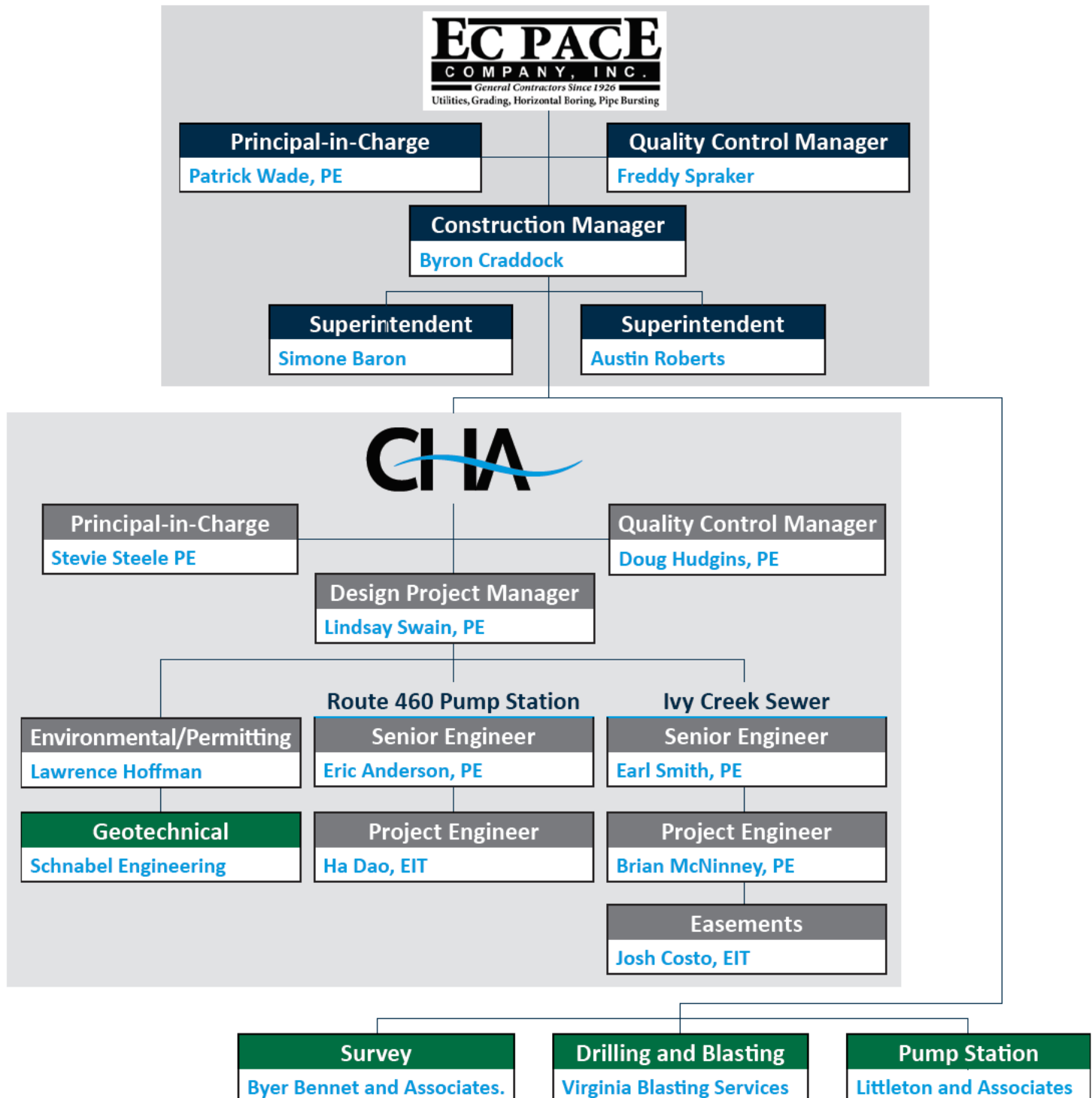
Eric has the knowledge and experience of developing both large and small water and sewer system models and design. This includes projects for New York City as well as towns in Southwest Virginia such as the Town of Abingdon, Town of Christiansburg, and the City of Covington. Eric also completed the design of the Route 460 Pump Station.



CHA **Brian McNinney, PE: Project Design Engineer**

Brian has nearly 20 years of experience in the design of water distribution systems, wastewater collection systems, water storage facilities, and water/wastewater pumping facilities. His responsibilities have included detailed hydraulic analyses, hydraulic model development, design calculations, design reports, plans, specifications, bid evaluations, shop drawing review, payment application review, QA/QC review, and design support on various projects.

Organizational Chart and Resumes





PATRICK WADE, PE

Principal-in-Charge

Patrick has over 15 years of experience in the civil engineering and construction industry with a focus on construction project management and procurement.

E.C. Pace Company, Inc. - Executive Vice President, May 2014 – Present. Responsible for overseeing the day-to-day operations of a growing civil construction firm. Duties include estimating, bidding, construction project management, cost analysis, risk assessment and safety. Primary focus is the on-time, on-budget delivery of projects. Since taking the position, E.C. Pace has a 100% on-time delivery record with zero claims.

DLB, Inc. - Vice President of Operations, January 2010 – May 2014. Oversaw estimating and project management of over 40 million dollars of work annually. Specialized in complex projects and dispute resolutions. Notable projects include the James River Interceptor Division 4 and Division 3B and the VDOT C-47 RTE -11/460 Widening Improvements in Roanoke County.

Virginia Department of Transportation – Residency Support Engineer, May 2005 – December 2009 (Bedford and Salem Residencies). Performed a wide variety of duties, including design of open-channel drainage structures, roadway design, project management, procurement, and coordination of revenue sharing/locally administered projects.

Education

Bachelor of Science, Civil Engineering 2005, Old Dominion University

Licensed Professional Engineer

Professional Development

Treasurer – National Utility Contractors Association (Central & Southwest Virginia)

TribusAllen Leadership Development Course at Duke University



Education

North Technical Education
Center Riviera Beach, FL
Machine Shop Training /
Certificate

New England Institute of
Technology Riviera Beach,
FL Specialized Associates
Degree in Engineering
Drafting and Design



Freddy Spraker, Jr.

Quality Control Manager

Freddy Spraker has 36 years of experience in the construction industry. He started his career as a laborer and moved through all aspects of the field as an equipment operator, crew leader, foreman, superintendent, and project manager. He served as President/CEO of his own construction firm for 17 years. He is experienced in all phases of heavy construction from layout, clearing, erosion and sediment control, water, sewer, storm drainage systems, mass excavation, grading, installation of curb and gutter, sidewalks, building pads and road construction. Projects have included highway/road construction, commercial/industrial sitework, residential subdivisions, golf courses, and sports field construction. Golf course work included the installation of all features (tees, green, and bunkers), irrigation systems, concrete/asphalt cart paths, and concrete all-weather tees.

Freddy has had the opportunity to work with owner/developers, golf course architects and engineers to take projects from the drawing board to reality. He takes a lot of pride in a job well done and bringing a project to completion, on time and on budget.

The River Course at Heron's Landing – Pulaski County, VA – 18 Hole new construction.

Designed by Ault, Clark & Assoc. Freddy was General Contractor responsible for clearing, earthmoving, shaping, drainage, irrigation, finish work, grassing. Top 25 Best New Courses of 2000 – Golf Magazine

Roanoke Country Club (Phase 1) – Roanoke, VA – Renovation. Designed by George Golf Design. Rebuild 3 golf holes and new irrigation lake. clearing, earthmoving, shaping, drainage, finish work, grassing.

Roanoke Country Club (Phase 2) – Roanoke, VA – Renovation. Designed by George Golf Design. This was a six-hole rebuild greens, bunkers and tees.

The River Course at Virginia Tech- Golf Team Practice Facility – Pulaski County, VA.

Designed by Steve Forrest at Art Hills/Steve Forrest and Associates. The project extended the existing Driving Range and add putting green, chipping green, bunkers, turf and all weather tees.

The Meadows Golf and Country Club (Multiple Phases) – Christiansburg, VA. Design/Build by Steve Crawford/Freddy Spraker. Reshaping of fairways and rebuilding greens, bunkers, tees and cart paths.

Lakeview Golf Club – Mountain View Course – Harrisonburg, VA. Designed by George Golf Design. 9 Hole New Construction. Freddy was General Contractor responsible for clearing, earthmoving, shaping, drainage, irrigation, finish work, grassing, concrete cart paths.

The First Tee of Hampton Roads – Virginia Beach, VA. Designed by Alice Dye – a nine-hole new construction



SIMON BARRON

Superintendent

Simon has worked for E.C. Pace for the past 22 years. He has held multiple positions, working his way up from laborer to superintendent. He has experience with a wide array of projects and site conditions from installing waterline in dense urban areas as well as installing sewer through rural mountainous terrain.

E.C. Pace Company, Inc. - Superintendent, May 2015 – Present. Supervision of crews and job sites. Responsible for ordering and managing materials, coordination with inspectors and subcontractors, as well as adherence to plans and specifications. Accountable for performance, safety and resolving project-related issues.

E.C. Pace Company, Inc. – Operator/Foreman, June 1999 – April 2015. Operated a variety of equipment, including excavators, loaders and directional drilling equipment. Installed water, sewer and storm drainage pipe.

Certifications

- First Aid and CPR
- VDOT Intermediate Traffic Control
- OSHA Competent Person
- VDOT Erosion & Sediment Control



AUSTIN ROBERTS

Superintendent

Austin has worked for E.C. Pace for the past 4 years and has been in the construction industry for the past 7. He has moved up from equipment operator to foreman to superintendent, excelling at each level. Austin specializes in difficult and rough terrain work.

E.C. Pace Company, Inc. - Superintendent, May 2016 – Present. Supervision of crews and jobsites. Responsible for ordering and managing materials, coordination with inspectors and subcontractors, as well as adherence to plans and specifications. Accountable for performance, safety and resolving project related issues.

DLB, Inc. – Laborer/Operator/ Foreman, June 2013 – May 2016. Operated a variety of equipment including excavators, loaders, dozers and tunneling equipment. He has Installed water, sewer and storm drainage pipe. He has also set up and maintained bypass pump systems.

Education

Central Virginia
 Community College
 Associates Degree,
 Criminal Justice
 Administration, 2015

Certifications

- First Aid and CPR
- VDOT Intermediate Traffic Control
- OSHA Competent Person
- VDOT Erosion & Sediment Control



Certifications

- First Aid and CPR
- VDOT Intermediate Traffic Control
- OSHA Competent Person
- Certified Welder
- VDOT Erosion & Sediment Control
- DEQ Responsible Land Disturber



BYRON CRADDOCK

Construction Manager

Byron has worked for E.C. Pace for the past 22 years. He has held a variety of positions, working his way up from laborer to project manager. He has experience with every facet of the work from pipe laying and boring to project scheduling and crew management.

E.C. Pace Company, Inc. - Project Manager, January 2015 – Present. Responsible for overseeing a variety of projects and verifying that they are safe, efficient, and completed on time. Coordination of labor, equipment and materials and other resources. Collaboration with project owners and engineers to resolve issues and facilitate good communication. Responsible for schedule updates and quantity tracking. Projects have included waterline sewer, grading, precast structures, tunneling and trenchless pipeline installations.

E.C. Pace Company, Inc. – Superintendent, January 2000 – December 2015. Supervision of crews and job sites. Responsible for ordering and managing materials, coordination with inspectors and subcontractors, as well as adherence to plans and specifications. Accountable for performance, safety and resolving project related issues.

E.C. Pace Company, Inc. – Laborer/Operator, June 1998 – December 2000. Operated a variety of equipment including excavators, loaders, dozers and boring machines. Installed water, sewer and storm drainage pipe as well as welded steel casings.



Stevie Steele, PE

Principal-in-Charge

Stevie is a highly-skilled professional with more than 22 years of experience in both the technical and managerial aspects of the civil engineering consulting business. His focus of expertise is developing and implementing projects from preliminary planning and funding through the design and project closeout processes. Representative project experience includes:

Smyth County, VA, Adwolfe Sewer PER. Project manager responsible for obtaining \$2.4M in grant dollars and \$2.0M in a low interest loan to fund the design and construction of 30,000 feet of gravity sewer, 8,500 feet of force main and 2 pump stations as well as 35 easements. The project was successfully completed under budget, which resulted in additional sewer line construction and the purchase of County equipment with grant dollars.

New River Regional Water Authority Plum Creek Transmission Main Project. Project Manager in charge of the preparation, submission, and approval of a Preliminary Engineering Report to the Virginia Department of Health that included a plan to provide redundant water supply to all Authority members. Facilitated design and construction administration of 28,000 linear feet of 20-inch water main and a booster pump station that is capable of serving existing and future demand needs. This project also included easement acquisition, environmental permitting, a railroad crossing, and disinfection by-products evaluation utilizing fluoride reverse tracer testing to calibrate the water model and determine how water age will impact water quality as demands change.

Bland County Service Authority Water System Improvements Project. Project Manager in charge of the preparation, submission and approval of a Preliminary Engineering Report to the Virginia Department of Health that included the upgrade of the existing water treatment plant to a membrane filtration system that allowed the Authority to reduce staffing and operation cost while increasing efficiency and finished water output. This project also included the replacement of 9,000 linear feet of 8-inch waterline, 4 pressure reducing stations, and assisting the Authority with obtaining 25 permanent and temporary easements.

Bedford Regional Water Authority, Lakes to Forest Waterline Project. Project manager responsible for hydraulic modeling, pipeline design, and WTP design that included mechanical, electrical, structural, architectural, and HVAC. The design was completed using a Progressive Design-Build process and included 27 miles of 18-inch waterline, a booster pump station, a water metering vault, and telemetry.

Town of Christiansburg, VA, Railroad Street Water System Improvements. Project manager responsible for preparing design plans and specifications for the construction of water system improvements that included a major highway crossing and the replacement of a temporary waterline that was temporarily providing service to multiple residents via a waterline running along the top of the ground.

City of Covington, Water System Improvements Project. Project manager responsible for financial planning, rate setting, hydraulic modeling, design, inspection, and project closeout for the construction of 20,000 feet of 8-inch waterline, three pressure reducing valve stations, and WTP upgrades. The WTP upgrades included SCADA, replacement of the raw and finish water pumps, intake improvements, and improvements to safety features within the WTP.

Education

*Emory & Henry College,
 VA, B.S. in Business
 Management, 1997*

*Bluefield State College,
 WV, B.S. in Architectural
 Engineering, 2001*

*Bluefield State College,
 WV, A.S. in Civil
 Engineering, 2001*

Registration & Certification

*Professional Engineer in
 VA, WV, NC*

Memberships & Affiliations

*Virginia Society of
 Professional Engineers*



CHA Doug Hudgins, PE Quality Control Manager

Mr. Hudgins has over 23 years of experience in planning, designing, and implementing wastewater collection, water supply, and treatment systems. Mr. Hudgins has dedicated the majority of his time assisting our clients with water and wastewater treatment upgrades and wet weather flow issues including the Town of Christiansburg, the Town of Purcellville, the BVPIA, the Town of Abingdon, and the WVWA to name a few. Specific engineering responsibilities include water and funded by the VDEQ through the VCWRLF program.

Education

Virginia Polytechnic Institute and State University, VA, B.S. in Mechanical Engineering

Virginia Polytechnic Institute and State University, VA, M.S. in Mechanical Engineering

Virginia Polytechnic Institute and State University, VA, M.S. in Environmental Engineering

Registration & Certification

Professional Engineer in VA, GA, WV

Memberships & Affiliations

American Water Works Association

Water Environment Federation

Town of Abingdon, VA, Wolf Creek Water Reclamation Facility Upgrade to 4.95 MGD.

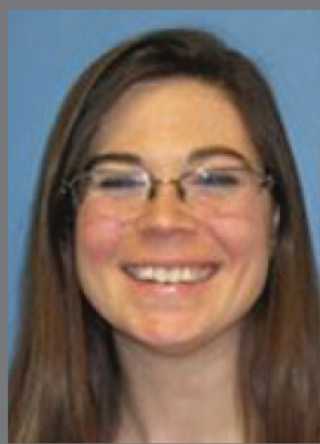
Project Manager. This project upgraded the existing secondary activated sludge plant to an advanced treatment facility with BNR. The liquid stream improvements include headworks and grit removal modifications to efficiently handle screening and grit disposal, modifications to the equalization facilities, conversion of the nitrification activated sludge process to the Modified Ludzack-Ettinger nitrification/denitrification process, two new secondary clarifiers, replacement of the existing chlorine gas disinfection system with ultraviolet disinfection and a new non-potable water system. Solids stream improvements include a new septage receiving station, improvements to the return activated sludge pump station, upgrades to the existing anaerobic digester and improve biosolids handling and treatment. As part of a Special Order by Consent with the VDEQ, CHA designed improvements to eliminate sanitary sewer overflows and enabled the WCWRF to handle peak wet weather flows. As part of the project, the main interceptor and facility headworks were modeled and a strategy to eliminate the SSOs while saving the Town \$4 million was developed and implemented. The project was funded by a 0% interest VCWRLF loan from VDEQ.

Town of Abingdon, VA, Process Optimization. Lead Process Design. Developed a BioWin model to aid in the design of improvements to maximize the nutrient removal in the existing aeration basin. Recommended improvements were incorporated in the final aeration system upgrades. Upon completion of the upgrades, the effluent quality was confirmed based upon operational data. The BioWin model is currently utilized periodically to aid the plant staff in implementing operation modifications.

Town of Abingdon, VA, Sanitary Sewer Model. Project Manager for the development of hydraulic sanitary sewer model for the Town's sanitary sewer system. This model enables the town to plan for capital improvements to its system.

Town of Abingdon, VA, West Interceptor Preliminary Engineering Report. Project Manager. Developed a detailed hydraulic sanitary sewer model for the entire system including both the east and west interceptor. Reviewed flow data collected by the Town as well as future flow projections. The PER recommended the upsizing of approximately a 5,500-linear foot section of the west interceptor to reduce infiltration and inflow and eliminate future sanitary sewer overflows based upon a 2-year recurrence interval.

Town of Abingdon, VA, West Interceptor Project. Project Manager for the replacement and rehabilitation of 5,500 linear feet of sanitary sewer interceptor.



CHA Lindsay Swain, PE

Design Project Manager

Lindsay has more than 10 years of experience in water and wastewater civil engineering. Her expertise includes hydraulic analyses and modeling, design of water/wastewater infrastructure, water/wastewater process design, and utility design and relocation management during transportation projects. Representative project experience includes:

Western Virginia Water Authority, Sunnybrook Waterline Replacement Project, Roanoke, VA. Senior engineer responsible for the design and specifications for 2 miles of new 8-inch and 12-inch waterline in a densely populated residential area.

Western Virginia Water Authority, Clubhouse Drive Sanitary Sewer, Roanoke, VA. Senior engineer responsible for design and specifications for new 30-inch sanitary sewer to mitigate frequent sewer surcharges.

New River Valley Regional Water Authority, Plum Creek Transmission Main Project, Radford, VA. Senior engineer responsible for completing the design and specifications for greater than 5 miles of new 12-inch and 20-inch transmission waterline and a 5.8 MGD in line pump station. The project included steady state hydraulic modeling of pressure pipe distribution networks using WaterGEMS. The Virginia Department of Health Hydraulic Modeling Analysis/Certification and Norfolk Southern railroad utility occupancy permit was completed. Provided construction administration.

New River Valley Regional Water Authority, Water Treatment Plant Modernization. Senior engineer for the planning and design of the raw water intake and 12 MGD water treatment plant (WTP) modernization project for NRV. This comprehensive modernization project will meet the long-term needs of NRV over a 30-year planning period and recommended upgrading this existing water filtration plant by combining the raw water intake and pumping into one structure to pump up to 11,200 gpm (16 MGD) to the plant.

Knoxville Utilities Board, Water Booster Station Replacement at the Beaumont Water Tank. Senior engineer for the design and GE for a duplex water booster station replacement at the Beaumont Water Tank.

Town of Blacksburg, VA, Cedar Run Sewer System Evaluation Survey and Pump Station Upgrades. Project engineer for an SSES and I&I study for the Cedar Run sewershed including a cost/benefit analysis. Additionally, the project included the upgrade of the existing pump station to handle the wet weather along with equalization storage. An accelerated schedule was required and met on the design of the pump station improvements.

City of Salem, VA-Pomeroy Road. Engineer responsible for the design of approximately 700 feet of 8-inch gravity sanitary sewer line that will be installed from Pomeroy Road to Hemlock Road and 160 feet of 8-inch sanitary sewer line that will be installed on private property along the property line on Hemlock Road. A prefabricated duplex grinder station will be installed along with approximately 160 feet 2-inch force main. It is anticipated that the installation of the new gravity line will require the installation of 6 pre-cast 4-foot diameter manholes and appurtenances, as needed, for a complete functioning system.

Education

Virginia Polytechnic Institute and State University, VA, B.S. in Biology, 2009

Virginia Polytechnic Institute and State University, VA, M.S. in Civil Engineering, 2016

Registration & Certification

Professional Engineer in VA

Memberships & Affiliations

American Water Works Association

American Society of Civil Engineers-Local Branch President and State Executive Board Member

Water Environment Federation



CHA Earl Smith, PE

Senior Engineer - Ivy Creek Sewer

Earl has more than 20 years of experience in wastewater engineering. His primary focus since 2006 has been sanitary sewer rehabilitation and replacement projects in Southwest Virginia, including numerous projects for the WVWA, Town of Blacksburg, Town of Front Royal, and the City of Salem. Representative experience includes:

Town of Christiansburg, VA, College Street Sanitary Sewer Replacement Project. Senior engineer providing construction contract administration for the replacement and upsizing of 3,800 feet of sanitary sewer near Mill Lane and along North Franklin Street. The work consists of a combination of open trench replacement and pipe bursting replacement.

Town of Appomattox, VA, TF Basin Sanitary Sewer Rehabilitation, Phase II. Senior engineer responsible for developing plans and specifications for 15,000 feet of CIPP lining, 40 manhole rehabilitations, 1,500 feet of pipe bursting and the replacement of 1,400 feet of pipe along Morton Lane. The project is part of a 100% grant from USDA Rural Development. All VDOT permits were prepared and secured prior to bid.

Town of Front Royal, VA, FR 6&7 Sanitary Sewer Rehabilitation. Senior engineer responsible for developing plans and specifications for just under 20,000 feet of sanitary sewer rehabilitation and replacement. Also developed plans and specifications for the rehabilitation of over 250 manholes. The work represents \$3M of "low hanging fruit" rehabilitation to reduce RDII in the collection system.

Town of Blacksburg, VA, Shenandoah Sewershed SSES and Rehabilitation, Professional Engineering Services for the Sanitary Sewer Evaluation Study. Senior engineer for this project that included MACP manhole inspections of over 170 manholes in the Town's sanitary sewer system as well as smoke testing and television inspection of the sewer lines. The results of these field investigations were analyzed to focus on manholes contributing I&I to the system. The manhole rehabilitation recommendations were compiled into a work list that was incorporated into the Town's CIP for future rehabilitation.

WVWA CIP Administrator, Trenchless Pipe Replacement/Rehabilitation:

- Develops and manages numerous trenchless water distribution pipe replacement projects and sanitary sewer pipe replacement/rehabilitation projects
- Manages various water main pipe bursting (static/hydraulic) projects, complete with complex burst sequencing, existing underground utility coordination, temporary water service systems, traffic control, etc.
- Manages various sanitary sewer pipe bursting (pneumatic) projects, complete with existing underground utility coordination, bypass pumping system coordination, traffic control, etc.
- Manages sanitary sewer pipe rehabilitations (cured-in-place lining) projects up to 24-inch diameter and sanitary sewer manhole rehabilitation (structural lining) projects
- Manages various water main and sanitary sewer replacement projects utilizing directional drilling and horizontal boring operations

Education

The Pennsylvania State University, University Park, PA, M.S. in Civil Engineering

The Pennsylvania State University, University Park, PA, B.S in Civil Engineering

Registration & Certification

Professional Engineer in VA, MD

Memberships & Affiliations

American Water Works Association



Education

Virginia Tech, VA, B.S. in
Mechanica I Engineering,
2003

Registration & Certification

Professional Engineer in VA

CHA Brian McNinney, PE Project Engineer - Ivy Creek Sewer

Brian has nearly 20 years of experience in the design of water distribution systems, wastewater collection systems, water storage facilities, and water/wastewater pumping facilities. His responsibilities have included detailed hydraulic analyses, hydraulic model development, design calculations, design reports, plans, specifications, bid evaluations, shop drawing review, payment application review, QA/QC review, and design support on various projects. Representative project experience includes:

Western Virginia Water Authority, Sunnybrook Waterline Replacement Project, Roanoke, VA. Project engineer responsible for the design and specifications for 2 miles of new 8-inch and 12-inch waterline in a densely populated residential area.

Town of Front Royal, VA, Water Distribution System Evaluation. Project engineer responsible for building and calibrating a hydraulic model of the current water distribution system.

New River Valley Regional Water Authority, Plum Creek Transmission Main Project, Radford, VA. Project engineer responsible for completing the design and specifications for greater than 5 miles of new 12-inch and 20-inch transmission waterline and a 5.8 MGD in line pump station. The project included steady state hydraulic modeling of pressure pipe distribution networks using WaterGEMS. The Virginia Department of Health Hydraulic Modeling Analysis/Certification and Norfolk Southern railroad utility occupancy permit was completed.

Town of Christiansburg, VA, College Street Sanitary Sewer and Rehabilitation and Replacement Project. Project engineer for the replacement and upsizing of 3,800 feet of sanitary sewer near Mill Lane and along North Franklin Street. The work consists of a combination of open trench replacement and pipe bursting replacement.

Bland County Water System Improvements Project. Project engineer responsible for funding procurement, Preliminary Engineering Report development and subsequent VDH approval, design of 10,000 linear feet of 10-inch waterline, two pressure reducing valve stations, three master metering vaults, and the replacement of the existing high rate filtration process at the WTP with a membrane filtration system.

Western Virginia Water Authority, Airport-Palm Valley Rd Sanitary Sewer , WVWA Airport Road Sanitary Sewer Phase I. Project included the replacement of approximately 4,200 feet of 12-inch gravity sanitary sewer line for the WVWA within the City of Roanoke and Roanoke County. The proposed alignment was offset from the existing sanitary sewer, which was installed above a 60-inch storm sewer for much of the alignment. Also included was the construction of approximately 2,000 feet of 4-inch, 8-inch and 12-inch water lines to replace existing water lines within the project area. The project area followed Maitland Avenue, Williamson Road, Hildebrand Road, Hollyhock Avenue, Vincent Avenue, and Florist Road to the WVWA's 30-inch interceptor along Carvin Creek.



Eric Anderson, PE

Project Engineer - Route 460 Pump Station

Eric has 20 years of experience in water and wastewater project engineering. He has experience in hydraulic water modeling in which he has developed models for small towns as well as systems for large cities. He has conducted treatability and pilot testing for several water treatment processes applications for both groundwater and surface water sources. He also has extensive experience in the evaluation and development of water distribution systems. Representative project experience includes:

Education

Virginia Polytechnic Institute and State University, VA, B.S. in Civil Engineering, 1997

Virginia Polytechnic Institute and State University, VA, M.S. in Civil Engineering, 1999

Registration & Certification

Professional Engineer in VA

Memberships & Affiliations

American Water Works Association

Water Environment Federation

City of Covington, VA, Water System Preliminary Engineering Report & Hydraulic Model.

Senior engineer for a comprehensive water system evaluation report for the City to address growing needs at both the treatment plant and in the distribution system. The work included the development of system mapping and a hydraulic model to identify recommended water distribution system improvements to correct problems with pressure, fire flow delivery, and regulation of the tanks and pressure zones. A comprehensive evaluation of the treatment plant was completed to address issues with the intake, solids management, filter controls, and automation.

Bedford Regional Water Authority, Lakes to Forest Waterline Project. Senior engineer responsible for hydraulic modeling, pipeline design, and booster pump station design that included mechanical, electrical, structural, architectural, and HVAC. The design was completed using a Progressive Design-Build process and included 27 miles of 18-inch waterline, a booster pump station, a water metering vault, and telemetry.

Town of Abingdon, VA, West Interceptor Sanitary Sewer Replacement. Project engineer responsible for developing a sanitary sewer hydraulic model that would help the Town assess flows throughout the collection system. A chief focus of the model was the West Interceptor, one of two main interceptors into the WCWRF. The modeling work indicated that the main line was adequately sized, but long portions of the interceptor had been laid at a shallow slope, resulting in a lower capacity than required by both current and projected peak flows.

City of Covington, VA, Sewer Collection System Modeling. Project manager for modeling effort that used as-built plans, data developed by CHA, and existing City mapping to construct a hydraulic model (using InfoWorks CS) of the main sewer collection system interceptor through the City. He analyzed flow data to determine existing storm-water derived inflow and reductions in this inflow as a result of new construction. He used the hydraulic model to evaluate the full capacity of the system and recommend improvements to the existing main interceptor system. The model was able to correctly identify hydraulically restricted areas.

New River Valley Regional Water Authority, WTP Modernization Water Treatment Plant Modernization Preliminary Engineering Report. Principal designer responsible for the development of a modernization plan for the existing NRRWA 12.4 MGD water filtration plant. The plan included evaluation of the intake, filtration process, mechanical systems, electrical components, and SCADA system.

Henry County Public Service Authority, DBP Evaluation. Project engineer for the evaluation of the DBP production for the Philpott WTP and the Route 58 distribution system. This project included DBP kinetic formation treatability testing for the finished waters.



CHA Lawrence Hoffman

Environmental/Permitting

Lawrence coordinates CHA's Environmental Services Program, including permitting and regulatory compliance. He has over 30 years of experience. He conducts and participates in negotiations with regulatory agencies; manages the design, regulatory approval, and performance of advanced or specialized environmental studies; and negotiates permits and enforcement actions. Representative project experience includes:

Education

*University of Louisville,
M.S. in Biology, 1987*

*Virginia Polytechnic
Institute and State
University, B.S. in Biology,
Chemistry Minor, 1984*

Memberships & Affiliations

*Member, Clean Metals
Implementation
Subcommittee, VDEQ*

*Member, Toxics
Management Program
Technical Advisory
Committee, VDEQ*

*Member, PCB Monitoring
Workgroup, VAMWA*

City of Covington, VA, Collection System Improvements, Permitting. Project manager responsible for preparing a JPA for the rehabilitation of existing sewer lines and interceptor, the rehabilitation of pump station, and the replacement of a force main. Project included evaluation of endangered species, identification of archaeological and historic resources, preparation of the joint permit application, and acquisition of Corps of Engineers, Department of Environmental Quality and Virginia Marine Resources Commission permits for multiple stream crossings and work in Jackson River and its tributaries.

City of War, West Virginia, Water System Improvements, Permitting. Project manager for the preparation of a comprehensive environmental assessment to fulfill NEPA requirements for federal and state funding programs. Evaluated potential impact of the preferred project and alternatives on endangered and threatened species, archaeological and historic resources, air quality, water quality, and other environmental concerns associated with the rehabilitation and improvement of a municipal water distribution system.

Bedford Regional Water Authority, VA, Lakes to Forest Water Line Permitting Bedford, VA. Project manager for the preparation of a JPA for installation of 27 miles of a new water distribution system with construction in three wetland areas, three major river crossings, and more than streams 20 crossings.

County of Bland, VA, Water System and Wastewater System Improvements Environmental Assessment Bland, VA. Project manager for the preparation of a comprehensive environmental assessment to fulfill NEPA requirements for federal funding programs. He evaluated the potential impact of preferred project and alternatives on specific environmental concerns associated with the rehabilitation of a municipal water treatment plant, the expansion of the water distribution system, and wastewater treatment plant improvements.

Western Virginia Water Authority, VA, Mudlick Creek Interceptor Improvements. Project manager responsible for preparing a categorical exclusion request and obtained the requested categorical exclusion for NEPA compliance. Prepared a Joint Permit Application (JPA) for rehabilitation of an existing sewer interceptor to correct chronic overflow problems. The project included the evaluation of endangered and threatened species, identification of archaeological and historic resources, preparation of the joint permit application and acquisition of Corps of Engineers, Department of Environmental Quality, and Virginia Marine Resources permits for multiple stream crossings and work in Mudlick Creek.

Part C. Project Experience

Project Experience



E. C. Pace and CHA Common Project Experience



Examples of the collaborative efforts and strong working relationship between E.C. Pace and CHA are listed throughout the following pages.



Project Experience

VDOT Order I43 – 10th Street Improvements



Roanoke, Virginia

Original Contract Price: \$11,994,818.00

Final Contract Price: \$12,761,118.40

Project Duration: 5/2016 to 4/2018

Reference: Virginia Dept. of Transportation – Mr. Sid Scott (540) 387-5492
Mattern & Craig Inc. – Mr. Bradley Craig (540) 345-9342

Description of Work: Upgrade to all underground utilities followed by rebuilding the road. Utility work included 24" sanitary sewer interceptor and bypass pumping. The project also included two underground retention structures as well as a precast arch bridge and close proximity blasting for utilities. The team finished project early and received the full contractor incentive.



Project Experience

Prices Fork Pump Station & Water Transmission Main



Montgomery County, Virginia

Original Contract Price: \$4,137,663.00

Final Contract Price: \$4,102,785.00

Project Duration: 10/2017 to 10/2018

Reference:

New River Valley Water Authority – Mr. Caleb Taylor (540) 639-2575 Whitman, Requardt & Associates – Mr. Gary Fern (540) 951-3727

Description of Work: Installed 16-inch water main and installed pump station. Project included a major creek crossing, jack and bore installation under roadway, rock excavation, and rough terrain open cut waterline installations.



Project Experience

Trout Run Drainage Structure



Roanoke, Virginia

Original Contract Price: \$2,067,750.00

Final Contract Price: \$2,037,750.00

Project Duration: 2/2015 to 6/2015

Reference: City of Roanoke – Engineering Office (540) 853-2731

Description of Work: Installed liner plates in the existing arch tunnel and grouted the annular space for the Amtrak Rail Platform. Extended 70 laterals into the new liner plates.



Project Experience

SFRR to RMR 36-inch Raw Water Main: Birdwood Golf Course



Charlottesville, Virginia

Original Contract Price: \$2,571,264.00

Final Contract Price: \$2,479,359.21

Project Duration: 12/2018 to 9/2019

Reference: Rivanna Water & Sewer Authority –
Ms. Michelle Simpson (434) 977-2970 ext. 202
Michael Baker International – Mr. Pasquale Arcese (703) 334-4918

Description of Work: Installed 6,069 linear feet of 36-inch ductile iron water main through the Birdwood Golf Course. Significant close proximity blasting. Completed the project well ahead of schedule.



Project Experience

Clubhouse Drive Sanitary Sewer Replacement



Roanoke, Virginia

Original Contract Price: \$452,836.00

Final Contract Price: \$481,922.60

Project Duration: 1/2019 to 9/2019

Reference: Western Virginia Water Authority –
Mr. Will Bulloss, P.E. (540) 283-2939

Description of Work: Installed 900 feet of 30-inch sewer line, extensive bypass pumping and rock excavation.



Project Experience

Huntington Boulevard Water & Sewer Main Replacement



Roanoke, Virginia

Original Contract Price: \$1,630,359.00

Final Contract Price: \$1,528,072.00

Project Duration: 10/2018 to 6/2019

Reference: Western Virginia Water Authority – Mr. Scott Kroll (540) 283-8232

Description of Work: Installed 1,384 feet of 8-inch sewer main and 2,559 feet of 8-inch water main. Replaced majority of the sewer in the same trench, extensive bypass pumping, and multiple lateral connections.



Project Experience

VDOT Order E36 – Route 220 Emergency Bore



Franklin County, Virginia

Original Contract Price: \$637,533.39

Final Contract Price: \$678,264.75

Project Duration: 10/2019 to 12/2019

Reference: Virginia Dept. of Transportation – Tony Handy, P.E. (540) 352-9050

Description of Work: Emergency bore under Route 220 to repair storm drain. The project installed 200 feet of 48-inch casing. The bore pit was 30 feet deep, so the team installed 4-foot diameter drilled shaft liner plate shoring system immediately adjacent to RTE 200.



Project Experience

Salem Turnpike Sanitary Sewer



Roanoke, Virginia

Original Contract Price: \$1,657,788.00

Final Contract Price: \$1,657,788.00

Project Duration: 5/2019 to 6/2020

Reference: Western Virginia Water Authority – Mr. Scott Kroll (540) 283-8232

Description of Work: Installed 18-inch sewer main along Salem Turnpike and through intersection with Peters Creek Road, including a hand-mined tunnel under the roadway intersection. Extensive rock excavation and bypass pumping were required.



Contact:

Brian Key, PE,
Executive Director
(540) 586-7679
b.key@brwa.org

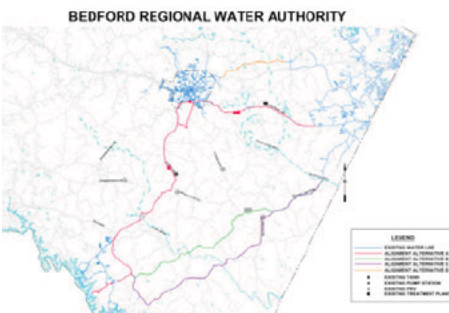
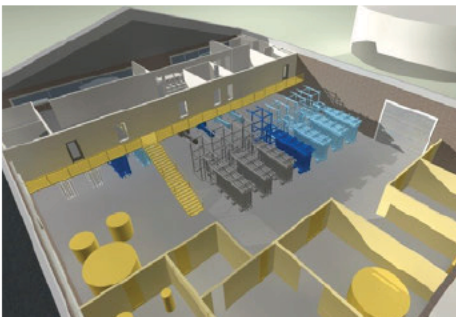
CHA Project Experience

Bedford Regional Water Authority

Smith Mountain Lake Water Treatment Plant and Lakes to Forest Water Line Extension

CHA provided design and engineering consulting services as part of the Progressive Design-Build (PDB) delivery of the Smith Mountain Lake Water Treatment Plant and the Lakes to Forest Water Line Extension projects. The project provided detailed preliminary evaluations of major project elements and development of final design plans to allow for Guaranteed Maximum Price (GMP) to be completed. Scope of work included technical evaluations, field investigations, and planning/design services to define the water system improvements that meet the Bedford Regional Water Authority's immediate and future system needs. Specific project elements included:

- **Raw Water Transmission Pipeline:** Alignment and hydraulic evaluation of approximately 14,000 linear feet of 18-inch to 24-inch raw water force main from the existing raw water intake location to the proposed Camp 24 water treatment plant site. Development of final plan and profile drawings including horizontal alignment, profile details at critical crossing areas, and existing utility conflicts based on available GIS mapping/field investigations.
- **Finished Water Transmission Pipeline:** Alignment and hydraulic evaluation of approximately 130,000 linear feet of 18-inch to 24-inch transmission main from the proposed Camp 24 water treatment plant location north along Route 122 and east along Route 460 to the existing Forest water distribution system. Development of final plan and profile drawings including horizontal alignment, profile details at critical crossing areas, and existing utility conflicts based on available GIS mapping/field investigations. Preparation of an environmental assessment and acquisition of all environmental and construction permits.
- **Membrane Water Treatment Plant:** Building services for architectural, structural, HVAC, electrical, and fire protection for development of 30 percent design drawings of a new membrane water treatment plant located at the Camp 24 site. Facility designs were completed using building information modeling technology (REVIT by Autodesk).



This project enabled the BRWA to provide water service in all areas of Bedford County, including the Lakes community, the Town of Bedford, and the Forest community.



Contact:

*Caleb Taylor, PE,
Executive Director
3515 Peppers Ferry Road
Radford, VA 24141
(540) 639-2575
ctaylor@nrwater.org*



**CHA/E.C. Pace
Successful Project
Resolutions**

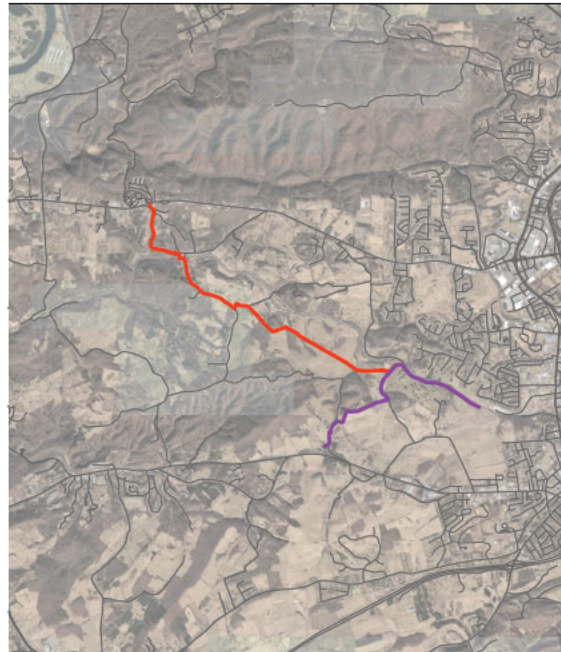
- E. C. Pace presented value engineering opportunity to save the Owner \$95,000. CHA and E. C. Pace cooperated to obtain VDOT approval for the change and implement field adjustments.
- Due to a change in the funding source after project award, AIS certified pipe and materials were no longer needed. E. C. Pace successfully renegotiated prices with suppliers to credit the Owner a \$150,000 savings in material costs.
- E. C. Pace proposed a realignment for 500 feet of waterline due to a communications line being located incorrectly. CHA and E. C. Pace completed a field visit and corrected the issue at that time with a field change. No additional cost was placed on the Owner.



Project Experience

NRV Regional Water Authority and Chrisman Mill Pump Station

Plum Creek Waterline Transmission Main



CHA provided a Preliminary Engineering Report, final design, construction contract administration, and inspection services for this project. Services included:

- Coordination with all five Authority members, including the client, two towns, the county, and a major university
- Preparation, submission and approval of a Preliminary Engineering Report to the Virginia Department of Health that met all regional stakeholder future water needs
- System hydraulic model and analysis
- Final technical design services for the 28,000 linear feet of 12 and 20-inch water transmission main to serve as a redundant feed line that will serve all the stakeholders
- Final design services for a booster pump station that includes provisions for expansion in the future to all for both immediate and long terms needs
- Surveying coordination and fields services
- Geotechnical coordination and field services
- Environmental review and permitting services
- Virginia Department of Transportation permitting
- Railroad permitting
- Bidding, construction contract administration, and inspection services



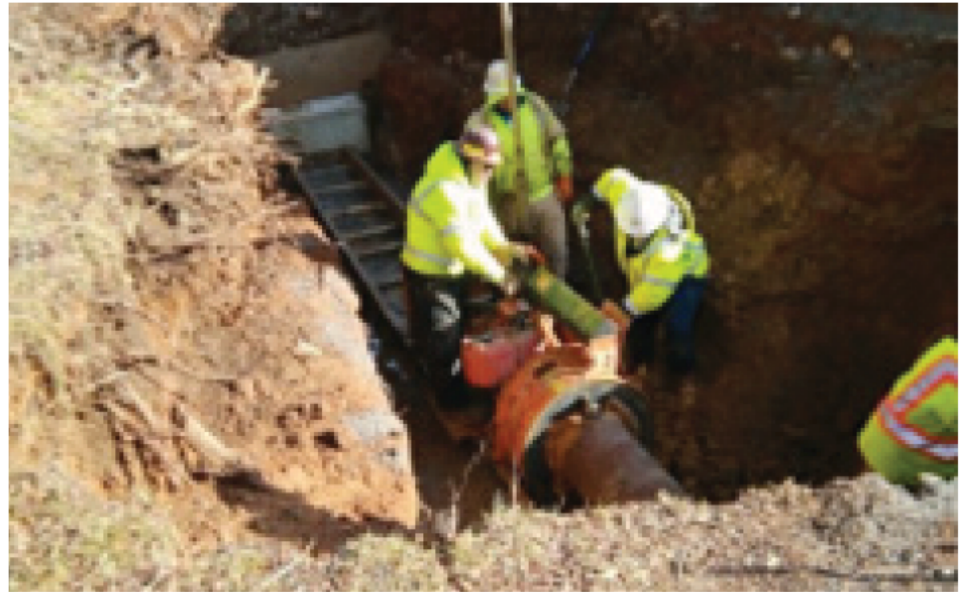
Contact:

*Eric Workman,
Bland County Administrator
612 Main Street, Suite 201
Bland, VA 24345
(276) 688-4622
eworkman@bland.org*

CHA Project Experience

Bland County Public Service Authority

Water Treatment Plant and Water System Improvements Project



The BCSA owns and operates two water distribution systems: one serves the community of Bland, and the other serves the communities of Bastian and Rocky Gap. There are no redundant sources for either water system. The Bland water system serves approximately 150 residential and 27 commercial customers from a groundwater well source treated via a high-rate filtration packaged WTP. The Bastian/Rocky Gap water system serves approximately 345 residential and 21 commercial customers with water purchased from the Bluefield Valley Water Works Company (BVWW). The Bland WTP was constructed in 1992 with many components nearing the end of their service life and required significant upgrades.



CHA evaluated alternatives to address the needs of the water system. The recommendation for improvements included an upgrade to the existing Bland WTP and multiple improvements to the distribution system. The WTP upgrade proposed replacement of the existing high-rate filtration modules with membrane filtration modules, that would allow the BCSA to reduce the operation and maintenance costs for the WTP while also increasing the service life of the plant. The WTP will remain at the current capacity (172,800 gpd), with the option to expand in the future by adding more membrane modules. The water distribution recommended improvements includes replacement of approximately 9,000 feet of 8-inch waterline, construction of 4 pressure reducing/metering stations, and upgrade of the existing metering system from touch-read to radio-read.



CHA Project Experience

Plant Modernization PER, Planning & Design

New River Valley Regional Water Authority



CHA assisted the NRV Regional Water Authority (Authority) in the planning and design of the raw water intake and 12.4 MGD WTP modernization project for the Authority.

The comprehensive Preliminary Engineering Report (PER) was developed to upgrade and modernize the Authority's 12.4 MGD conventional water filtration plant. The raw water intakes and water filtration plant had not been through a major renovation since the late 1970s and the Authority requested an independent review of all unit processes and ancillary facilities. The proposed improvements include:

- Raw water intake and pump facilities updated to 16 MGD
- Raw water pretreatment and disinfection byproducts control
- New coagulation/flocculation tanks
- Plate settlers in the sedimentation basins
- Rehabilitation of the 6 filters
- Connecting WTP to new gravity sewer



CHA/E.C. Pace Successful Project Resolutions

- Due to a discrepancy in topographic information, sewer manhole rims were not initially placed at the correct elevation. E. C. Pace and CHA worked together to verify that manhole rim elevations were corrected for the future parking lot elevation. at no additional cost to the Authority

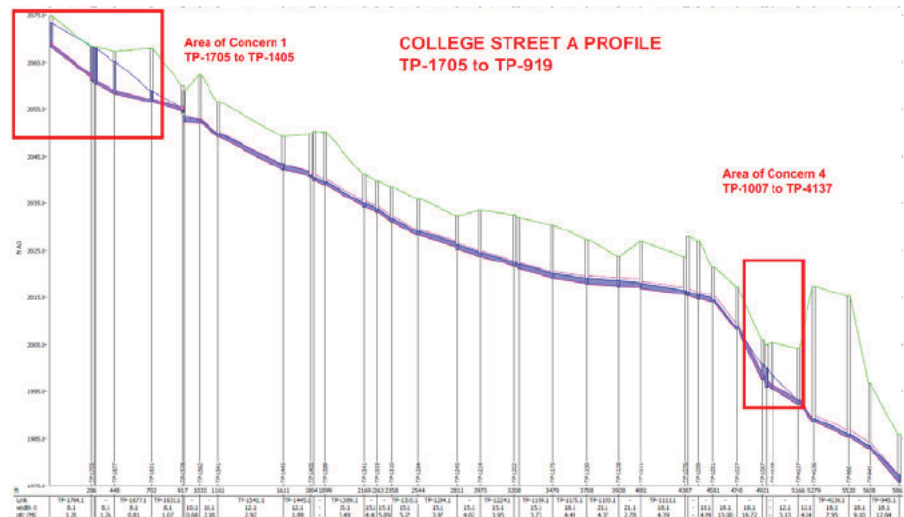
This comprehensive modernization project will meet the long-term needs of the Authority over a 30-year planning period and recommended upgrading this existing water filtration plant by combining the raw water intake and pumping into one structure to pump up to 11,200 gpm (16 MGD) to the plant. New plate settlers would be added to the existing sedimentation basins to enhance clarification. The treatment capacity would be increased to an instantaneous rate of 16 MGD by refurbishing the filters to a filtration rate of 5.2 gpm/ft². This would enable the Authority to reduce to 16 hours of operation to provide redundancy and operational flexibility. A new chlorine contact tank and finished water pumping facility would be constructed to provide storage and to enable new electrical service and standby generator facilities to be constructed. New office, maintenance, laboratory, and locker room facilities were designed as well. The chemical storage and feed facilities were replaced and renovated to provide a safer working environment.



CHA Project Experience

Town of Christiansburg, VA

College Street Sanitary Sewer Evaluation and Replacement



The College Street sanitary sewer basin has a history of sanitary sewer overflows. The Town hired CHA initially to evaluate the cause of the SSOs and propose alternatives to remedy the sanitary sewer overflows in this basin in 2012. Additional flow monitoring was conducted in 2015 and the sanitary sewer model was updated in 2016.

The College Street sanitary sewer basin consists of approximately 1,100 manholes and 40 miles of sanitary sewer ranging in size from 6-21 inches in diameter. During periods of heavy rainfall, there are several SSO locations along College Street and along Hickok Street. As part of this evaluation, CHA analyzed flow data, developed a dynamic sanitary sewer model, predicted future flows from undeveloped lots in the basin, and evaluated alternatives. CHA developed future flow projections over a 30-year planning period and routed these future flows along with the 2-year recurrence interval flows through the system utilizing the model. Alternatives that were evaluated included collection system storage, conveyance improvements, and I&I abatement. The selected alternative included a combination of I&I abatement that targeted a 30 percent removal of the peak wet weather flows and four sections of sewer upsizing by replacement. The cost of the I&I abatement program is estimated to be \$930K, and the combined cost of the sewer replacements is estimated to be \$1.9M.

CHA recently designed the replacement and upsizing of 3,800 linear feet of sanitary sewer near Mill Lane and along North Franklin Street. The project will relieve wet weather-related SSOs at Hickok Street. The pipe replacement consists of a stream crossing, a railroad crossing and Mill Lane crossing.



CHA Project Experience

Western Virginia Water Authority

Mudlick Creek Interceptor



As part of the Western Virginia Water Authority's Special Order by Consent with the VDEQ, CHA was selected to evaluate the Mudlick Creek sewer shed. The existing sewer shed suffers from sanitary sewer overflows during periods of heavy rainfall due to infiltration and inflow. The sewer shed encompasses approximately 12 square miles and includes approximately 15,000 residents. This analysis included the following:

- Field Survey and Condition Assessment of over 500 Manholes
- Flow Monitoring
- GIS Geodatabase Development
- Design Storm Development
- Hydraulic Modeling
- Existing System Assessment
- Sewer System Evaluation Survey and I&I Study
- Alternatives Evaluation
- Preliminary Engineering Report
- Design of 9,600 Linear Feet of 36-Inch Sanitary Sewer
- Design Plans and Specifications
- Environmental Permitting including Stream Crossings
- Bidding Services
- Construction Phase Services
- Resident Project Representation



CHA oversaw the installation of six flow monitors in the study area and developed a hydraulic model from the manhole inspections and survey. Results of the hydraulic modeling and the evaluation recommended construction of a new 2-mile, 36-inch diameter interceptor along Mudlick Creek to remedy the sanitary overflow sewers based upon a 2-year design storm. Other alternatives that were considered included collection system storage and upstream infiltration and inflow abatement. Due to the sensitivity of the location of the overflows in Garst Mill Park, the Authority selected the conveyance alternative to remedy the overflows in the park.



CHA Project Experience

Pump Station Upgrades

City of Covington, VA



The City of Covington owns and operates three wastewater pump stations within the collection system. Each pump station consists of a bypass manhole, wet well, and two suction lift centrifugal pumps. The pumps are in below ground water-tight vaults within the 100-year flood plain of the Jackson River, which is classified as perennial surface water with a 303d impaired listing. The pump station equipment was nearing the end of its service life.

CHA assisted the City in securing VDEQ CWRLF funding for the upgrade project that included new pumps, motors, valves, pump controls, site security, and mobile generator. Funding required updates to the Operations and Maintenance (O&M) manual and preparation of a fiscal sustainability plan. CHA also specified a cellular-based remote communication unit with web-based monitoring, alarm callouts, and reporting.

The new communication system replaced a land-line autodialer and provided pump station monitoring and reporting without the higher cost investment in radio telemetry or SCADA upgrades. Electrical and control equipment was placed on an elevated structural platform to lift the equipment above the 100-year flood levels.



CHA Project Experience

Water Infrastructure Project

Covington, VA



The City of Covington operates a 6 MGD conventional water treatment plant with water withdrawal from the Jackson River and a water distribution system that contains approximately 50 miles of pipeline with six water storage tanks and three pump stations in seven pressure zones. In 2010, CHA completed a comprehensive water system evaluation report for the City to address growing needs at both the treatment plant and in the distribution system.

The work included development of system mapping and a hydraulic model to identify recommended water distribution system improvements to correct problems with pressure, fire flow delivery, and regulation of the tanks and pressure zones. A comprehensive evaluation of the treatment plant was completed to address issues with the intake, solids management, filter controls, and automation.

Design of the system improvements and construction were completed in early 2015. The new water treatment plant facilities included a new intake screen, new filter controls, a continuous sludge withdrawal system, a plant and system-wide SCADA system to automate operations and improve control. Distribution system improvements included over 40,000-feet of new water transmission and distribution piping throughout the City, new pressure regulating stations, and a new water booster pump station.



CHA/E.C. Pace Successful Project Resolutions

- None of the utilities were marked correctly during construction.
- Hydrants had to be installed on lines where materials and sizes were not identified correctly. CHA and E. C. Pace worked together to facilitate E. C. Pace's procurement of correct fittings, couplings, and relocation of utilities as necessary.
- Worked through all field issues to complete project ahead of schedule.



CHA Project Experience

Western Virginia Water Authority

Old Roanoke River Interceptor Improvements

CHA was retained to implement the recommendations in the 2004 report "Roanoke River Interceptor CCTV Inspection." That report concluded that the Old Roanoke River Interceptor was in relatively good condition for its age. With this information in hand, the Authority began considering rehabilitation and potential reactivation of the Old Roanoke River Interceptor to provide additional conveyance capacity.

To assess the Old Roanoke River Interceptor's conveyance capacity, CHA developed a dynamic hydraulic model that used the base mapping provided by the Authority and the predicted 2-year, 24-hour storm flows from the Mudlick Creek Interceptor, developed for a separate project. The hydraulic model was built using MIKE URBAN, a GIS-based modeling software from the Danish Hydraulic Institute. This software utilizes the MOUSE hydraulic engine for solving hydraulic equations in collection networks. The model indicated that additional conveyance capacity for the Roanoke River Interceptor system would be required if the Authority desires to convey the 2-year, 24-hour storm to the WPCP. Based upon the modeling effort to date, these future conditions could be met by reinstating the Old Roanoke River Interceptor and maintaining the new Roanoke River Interceptor.

The first phase of interceptor rehabilitation before reactivation was focused on manholes as recommended by B&V. 34 manhole frames and covers were replaced, 17 vents were installed, and incidental repairs were made at several structures. An unrelated cured-in-place lining project was included with the project to increase the scope with the intent of lowering costs due to increased bidder interest.

While preparing bidding documents for the second phase of rehabilitation, CHA determined that the report had understated the structural deterioration of the interceptor. The report focused on active infiltration and largely ignored several indications of significant sulfide attack. Rather than continue to follow the recommendations from the initial report, it was decided that the better course of action would be to complete rehabilitation efforts on the manhole walls, perform targeted grouting to directly reduce system flows, and re-inspect the interceptor. Bids were solicited in January 2012, the CCTV inspections were performed, and the interceptor joint grouting was completed as well as the rehabilitation of approximately 75 manholes.

After this first construction project, the Authority authorized CHA to evaluate the 45,000 feet of interceptor and develop a revised preliminary engineering report and capital improvements plan to continue the rehabilitation efforts. This preliminary engineering report was completed in 2013.





CHA Project Experience

I&I Study and Sanitary Sewer Rehabilitation Plan

Covington, Virginia



As part of a Letter of Agreement with the VDEQ, CHA was hired to develop an I&I Study and Sanitary Sewer Rehabilitation Plan. The City's wastewater treatment plant experiences excessive flows during periods of high-intensity rainfall. These high flows result in bypasses at the wastewater treatment plant. Since very little I&I investigative work had been performed on the sanitary sewer system to date, the VDEQ requested the City to initially perform a system-wide evaluation of I&I. The results of the initial work would then enable the City to focus on a specific sewer shed that had the most significant contribution to I&I and a resulting project would be implemented.

The I&I Study and Sanitary Sewer Rehabilitation Plan summarized the SSES work as well as presented a Phase I sewer separation project for construction. As part of the SSES, flows were monitored at the City's three pump stations and four flow meters were installed on the gravity sewer sheds for over 12 weeks. CHA assisted the City in purchasing these meters for future I&I work. As a result of the initial flow monitoring step, CHA inspected approximately 150 manholes throughout the system, which aided in developing a more accurate map. CHA performed smoke testing in the downtown area that revealed areas of combined sewers with multiple roof leaders and storm inlet connections.

The results of the field activities were compiled in a GIS database and a phased rehabilitation plan was developed. This report was submitted to the VDEQ for review and approval and was utilized to secure funding for I&I abatement and storm sewer separation projects throughout the City.



CHA Project Experience

Shenandoah Pump Station Preliminary Engineering Report

Blacksburg, VA



The Town is actively evaluating their sanitary sewer system to update and modernize pump stations, reduce infiltration and inflow, and manage these assets.

CHA has provided engineering services to support this effort, including an Infiltration and Inflow study in the Cedar Run sewer shed, and developing a comprehensive Capacity Management Operations and Maintenance program for the Town. The Shenandoah I Pump Station PER was another project to support the Town's effort to prevent sanitary sewer overflows. The Shenandoah I Pump Station has provided reliable service for the last 25 years.

During extreme wet weather events, sanitary sewer overflows have been observed at the pump station and in the gravity sewer just downstream of the force main discharge. These overflows were observed in 2004 during an excessive wet period. Due to its age, the pump station requires refurbishment and modernization as part of the Town's proactive asset management program.

The Preliminary Engineering Report was completed to confirm adequate sewer system capacity for a defined planning period for the pumps stations sewer shed and to update/modernize the Shenandoah I Pump Station.



Part D. Project Characteristics



Project Characteristics

[REDACTED]

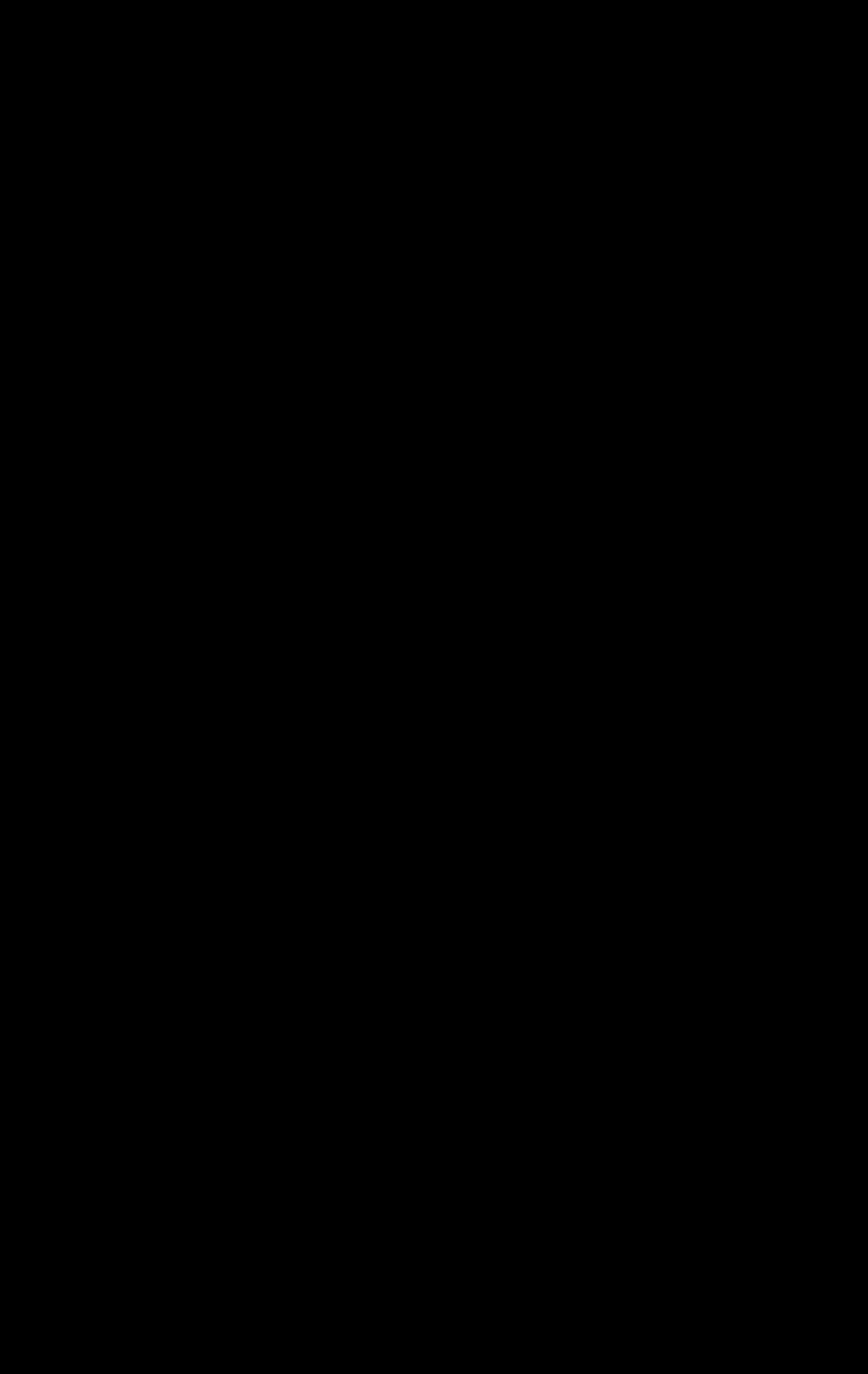
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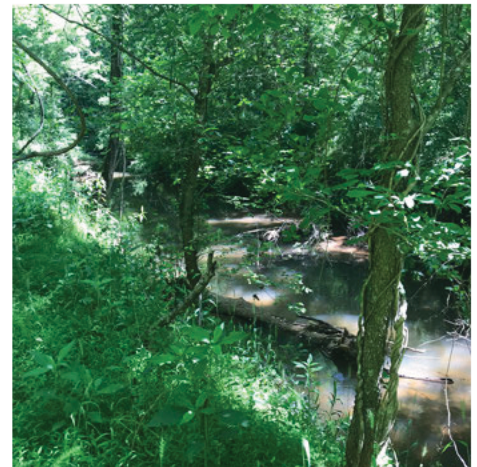
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Ivy Creek Interceptor

Project Understanding



Site Plan/Sewer Layout



Authority Responsibilities

The work to be performed by BRWA includes:

- Project funding from DEQ to include construction, design, permitting, construction administration, the cost for permanent and temporary easement, and land acquisition.
[REDACTED]
- Construction inspection. E. C. Pace will provide an hourly cost for inspection services for BRWA to consider, if needed.
- Independent geotechnical or special inspections during construction.
- Provision of water (potable or non-potable depending on application) for construction testing.

E. C. Pace and CHA Responsibilities

The work to be performed by the E. C. Pace and CHA team, above and beyond expected design and construction services, includes:

- Coordination of project kickoff and progress meetings with BRWA
- [REDACTED]
- [REDACTED]
- Facilitate permanent and temporary easements for construction.
- Preparation of easement agreements and plats.
- Coordination of permanent electrical service and SCADA integration for flume station.
- Environmental and cultural resource assessments.
- As-built drawings at project closeout
- Compliance with all DEQ funding construction and administration requirements

Public Support or Opposition

Public support, with no opposition, is anticipated for this project. This project allows for economic development in the area and for the elimination of pump station maintenance at the LVPS.

Project Benefit and Compatibility

The Ivy Creek Interceptor project allows economic development in the Forest, New London and Bedford areas by providing enhanced sewer service to existing customers and providing new sewer service for developing parcels.



Environmental and Permitting

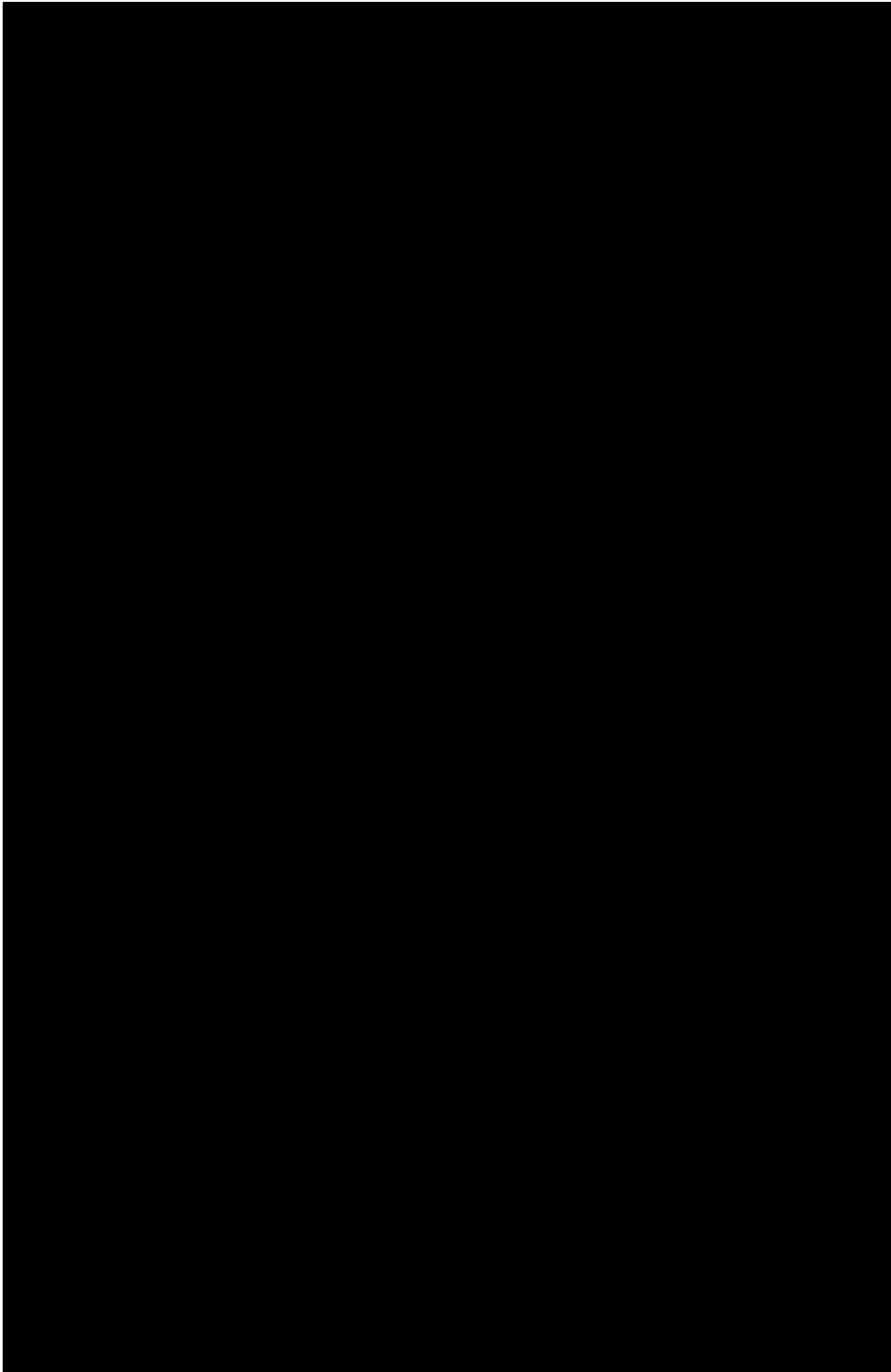
The Design-Build team will acquire the following permits:

- DEQ Certificate to Construct
- DEQ Certificate to Operate
- Joint Permit Application (USACE Nationwide 12 and VMRC)
- VSMP Permit
- VDOT Land Use Permit
- Land Disturbance Permit – Bedford County and City of Lynchburg
- Blasting Permit – Bedford County and City of Lynchburg

Environmental items for consideration or of note for the Ivy Creek Interceptor project include:

- Evaluating multiple stream crossings that will require USACE/VMRC permitting through a JPA
- Wetlands were not evident on NWI mapping beyond the stream crossings, but a site walk and wetland delineation would be needed
- Bat species, mussel species, and the Roanoke Logperch were located in a three-mile radius of the central project area. Habitat assessments and/or surveys for these species will need to be completed. Various time-of-year restrictions for in-stream work and tree clearing work may be required.

Women and Minority Business Enterprises



Route 460 Pump Station

Project Understanding

CHA has already provided design services for the construction of a 2.0 MGD water distribution booster pump station. The pump station's purpose is to boost flow from and to the outer portions of the BRWA's water distribution system. As a means of increasing the distribution system reliability, the pump station was designed with the unique ability to allow pumped flow to run in any of three different directions. The pump station is primarily designed to move water from the Lakes Water Treatment Plant (WTP) into the community of Forest, potentially supplementing flow into the City of Bedford. In the case of a pipe break or other emergency, however, the pump station will have the ability to reverse flow and use the normally downstream system as a source for the other portions.

Site Plan/Pump Station Layout

The final pump station drawings, completed by CHA and provided in the PPEA, have select drawing sheets included in Appendix C.

Authority Responsibilities

The work to be performed by BRWA includes:

- Cash funding to include construction, design, permitting, construction administration, the cost for permanent and temporary easement, and land acquisition.

- Construction inspection. E.C. Pace will provide an hourly cost for inspection services for BRWA to consider, if needed.
- Independent geotechnical or special inspections during construction.
- Provision of water (potable or non-potable depending on application) for construction testing.

E. C. Pace and CHA Responsibilities

The work to be performed by the E. C. Pace and CHA team, above and beyond expected design and construction services, includes:

- [REDACTED]
- Coordination of project kickoff and progress meetings with BRWA
- As-built drawings at the end of the project
- Environmental and cultural resource assessments.
- Coordination with the BRWA and the SCADA contractor for system integration

Environmental and Permitting

The E. C. Pace and CHA team will acquire the following permits:

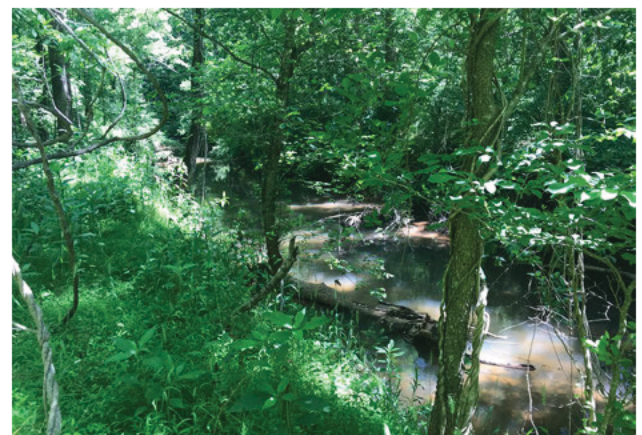
- VDH Construction Permit
- VSMP Permit
- Blasting Permit - Bedford County
- Building Permit – Bedford County

Public Support or Opposition

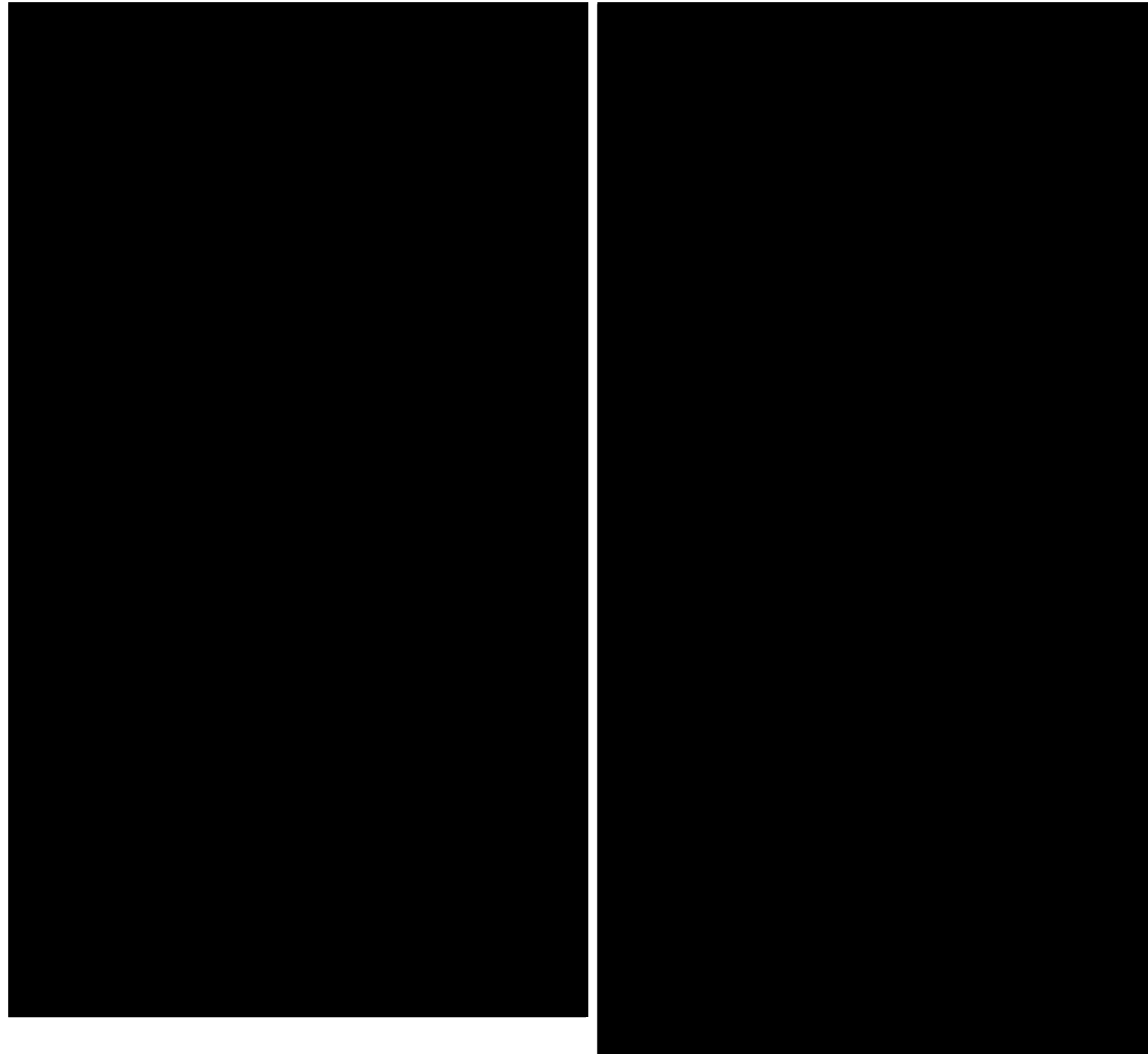
Public support, is anticipated for this project. This project allows for distribution system reliability and flexibility, pumping water from the water treatment plant to several areas of Forest and, potentially, the City of Bedford.

Project Benefit and Compatibility

The Route 460 Pump Station project allows for the provision of water to further economic development and increase reliability in the Forest and City of Bedford areas. The Route 460 Pump Station will also allow for operational flexibility due to the potential for the reversal of water flow in case of a waterline breakage.



BRWA PPEA Technical Approach





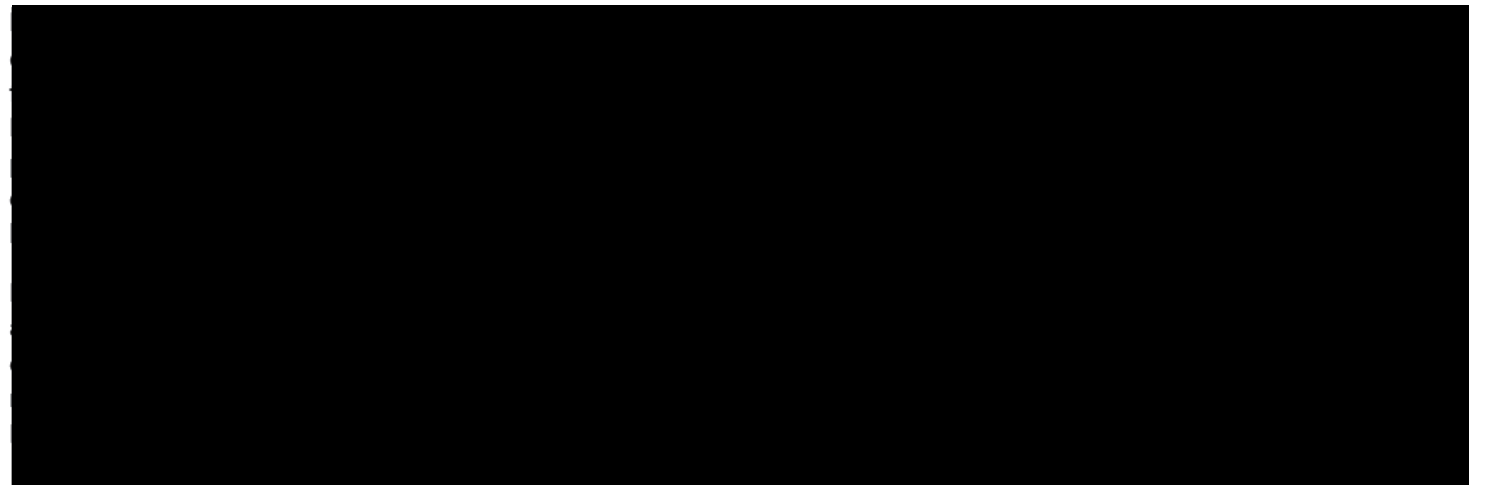
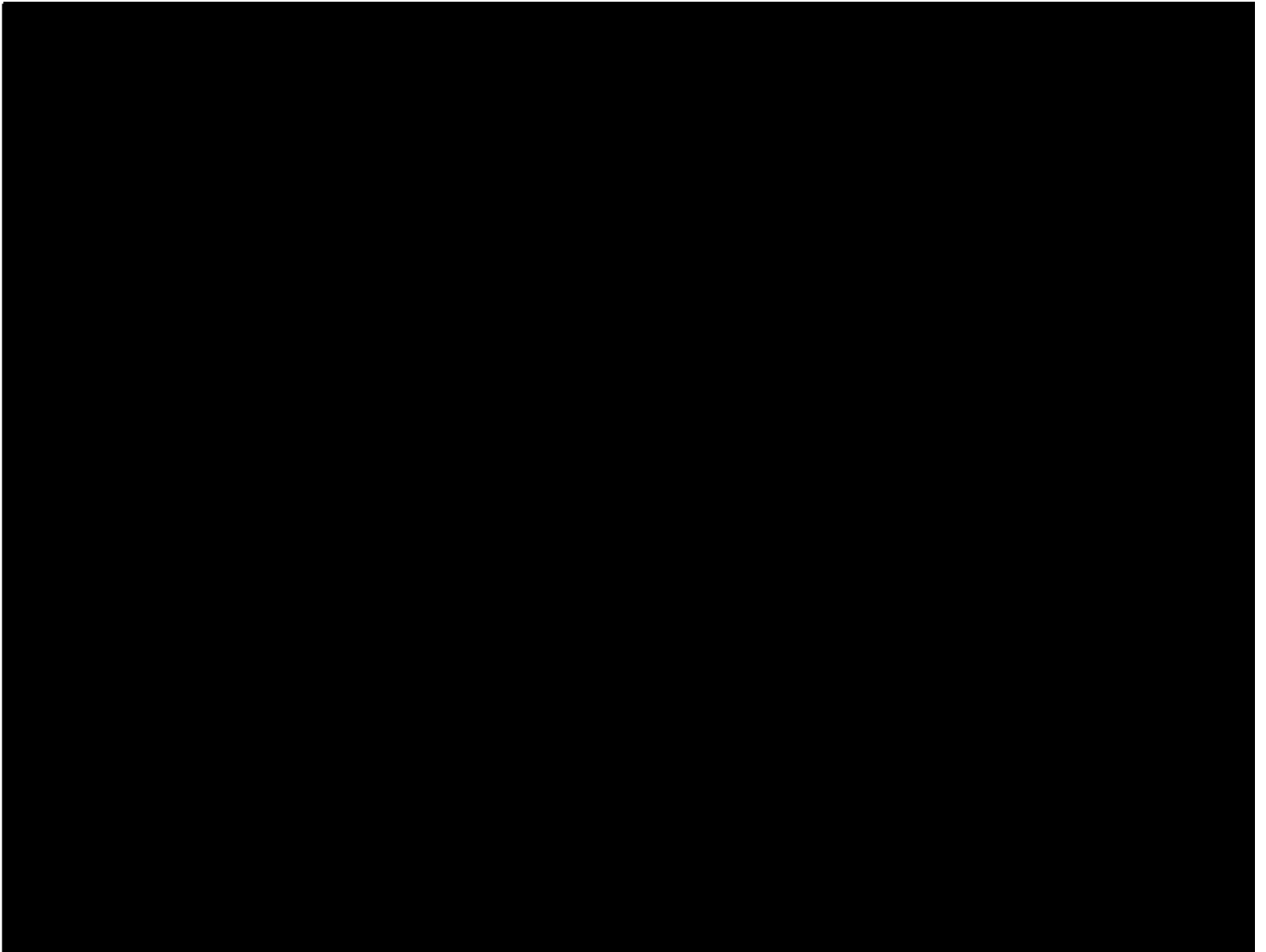
Ivy Creek Near Interceptor Location



Lake Vista Pump Station

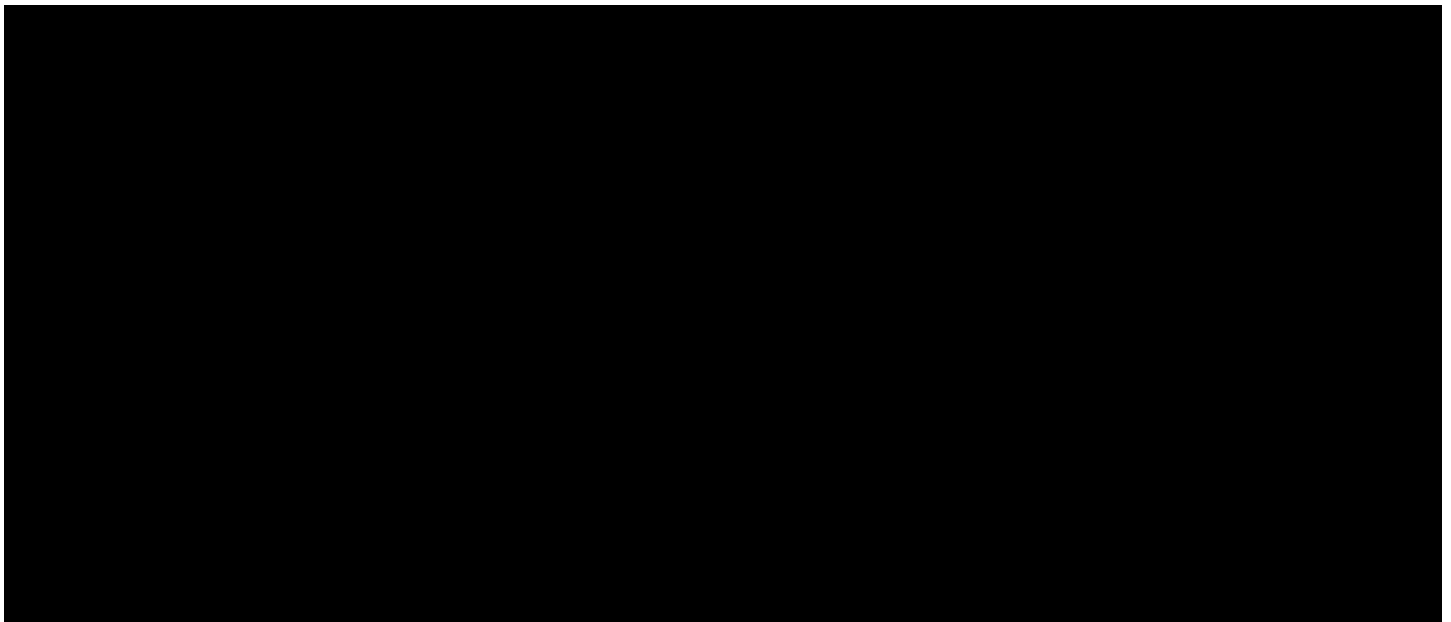
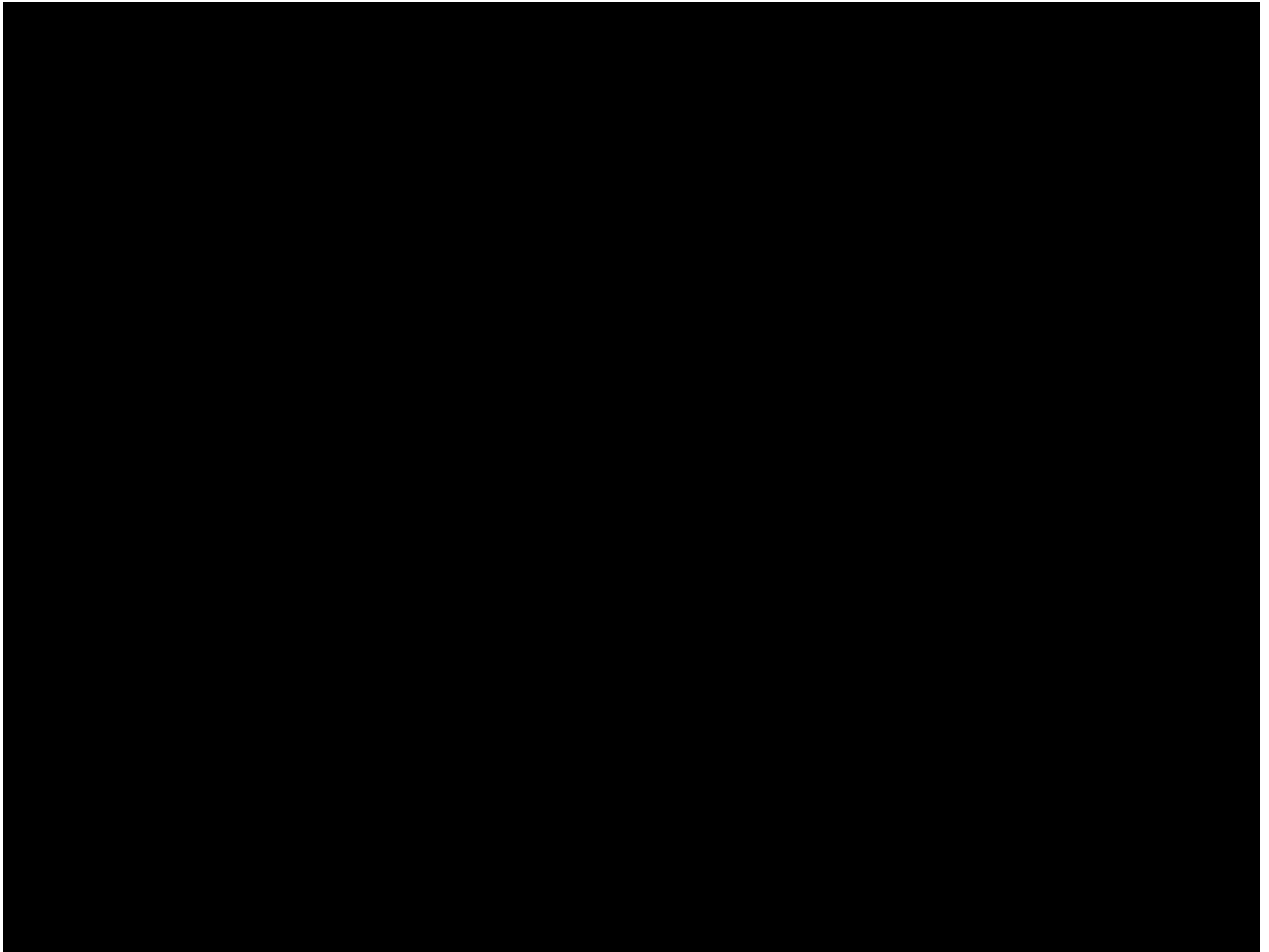
DESIGN-BUILD TEAM LEAD

BRWA | Ivy Creek Interceptor Proposal - Division 5 and 6



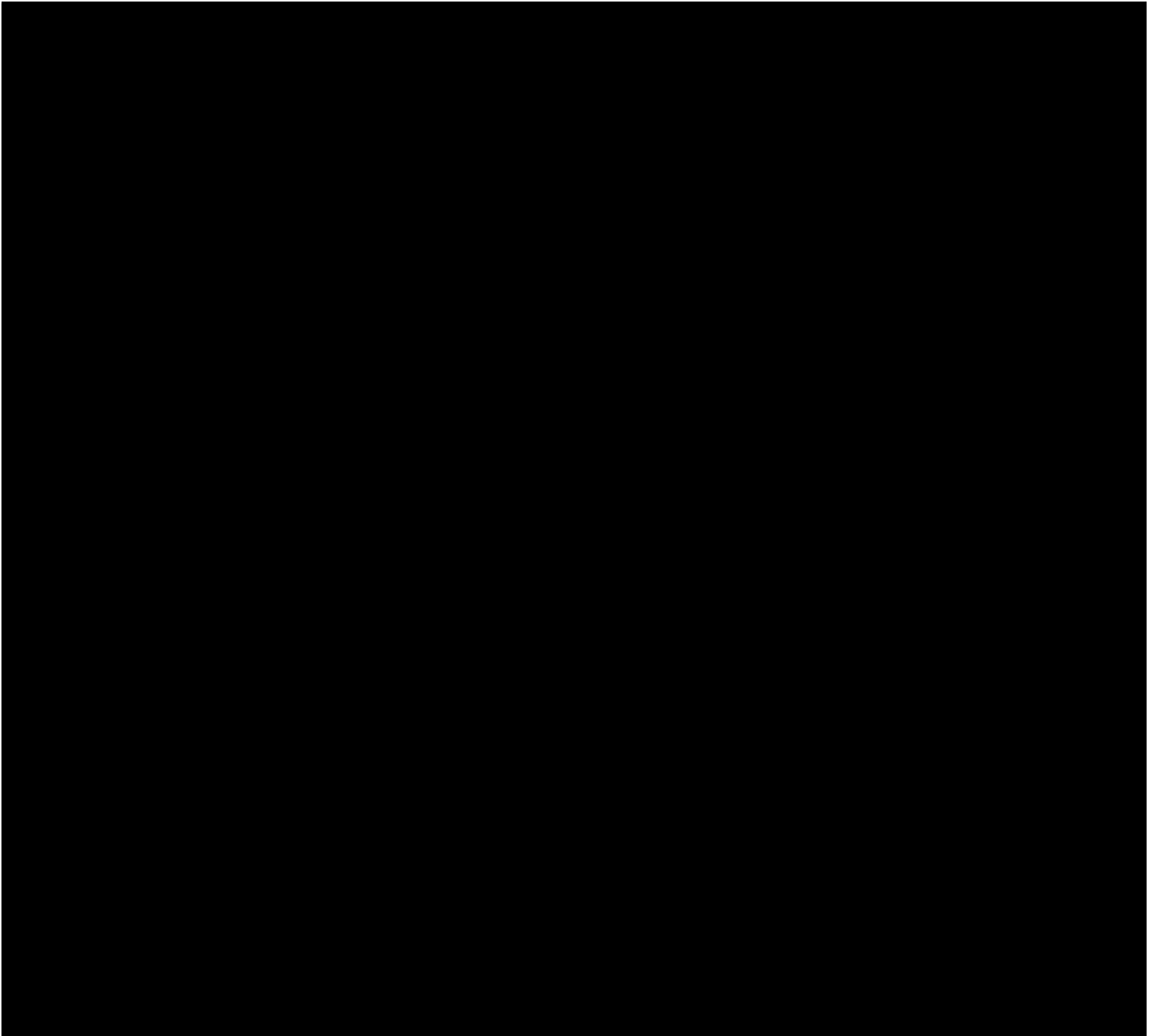
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BRWA | Ivy Creek Interceptor Proposal - Division 5 and 6



DESIGN-BUILD TEAM LEAD

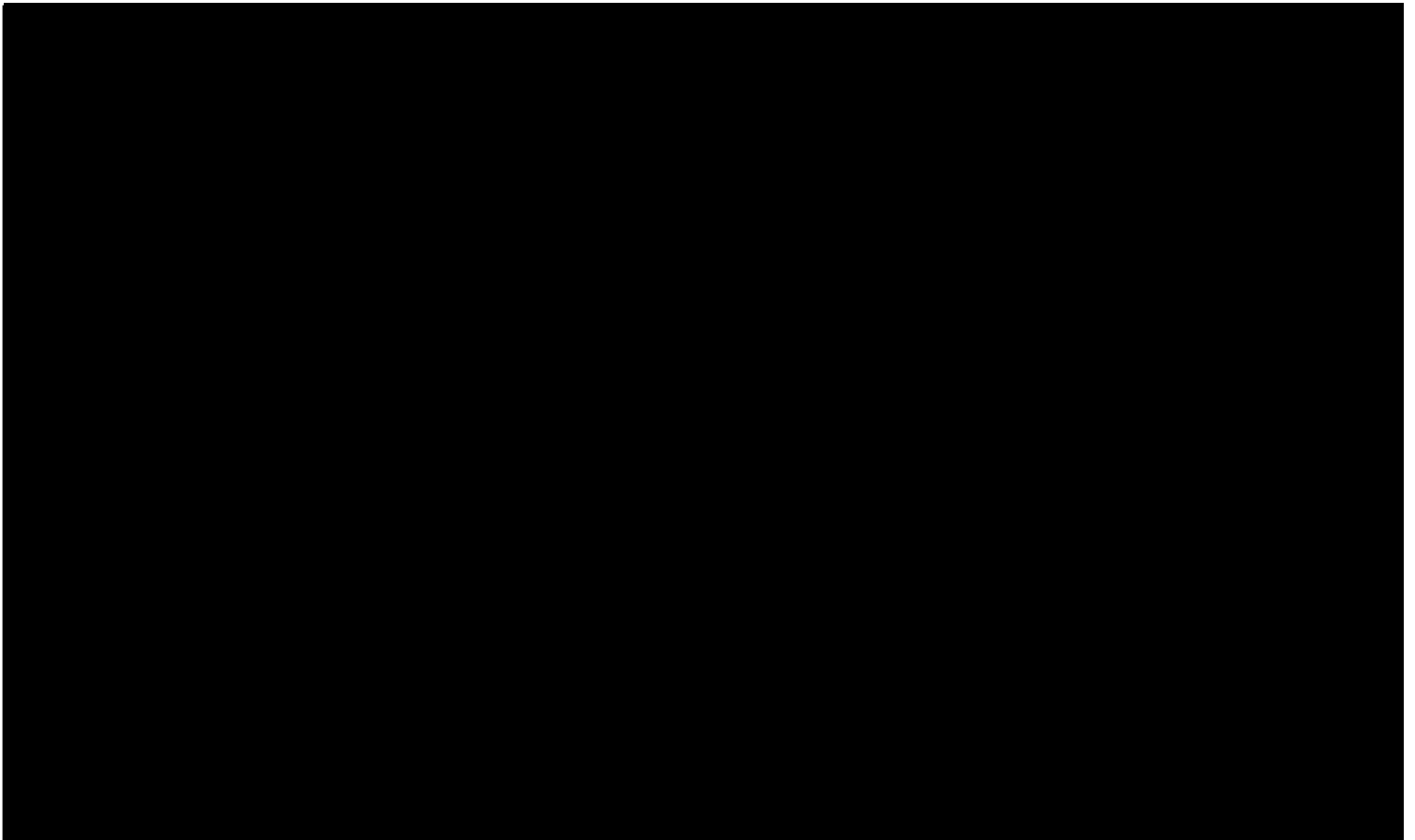
BRWA | Ivy Creek Interceptor Proposal - Division 5 and 6



Part E. Smart Funding

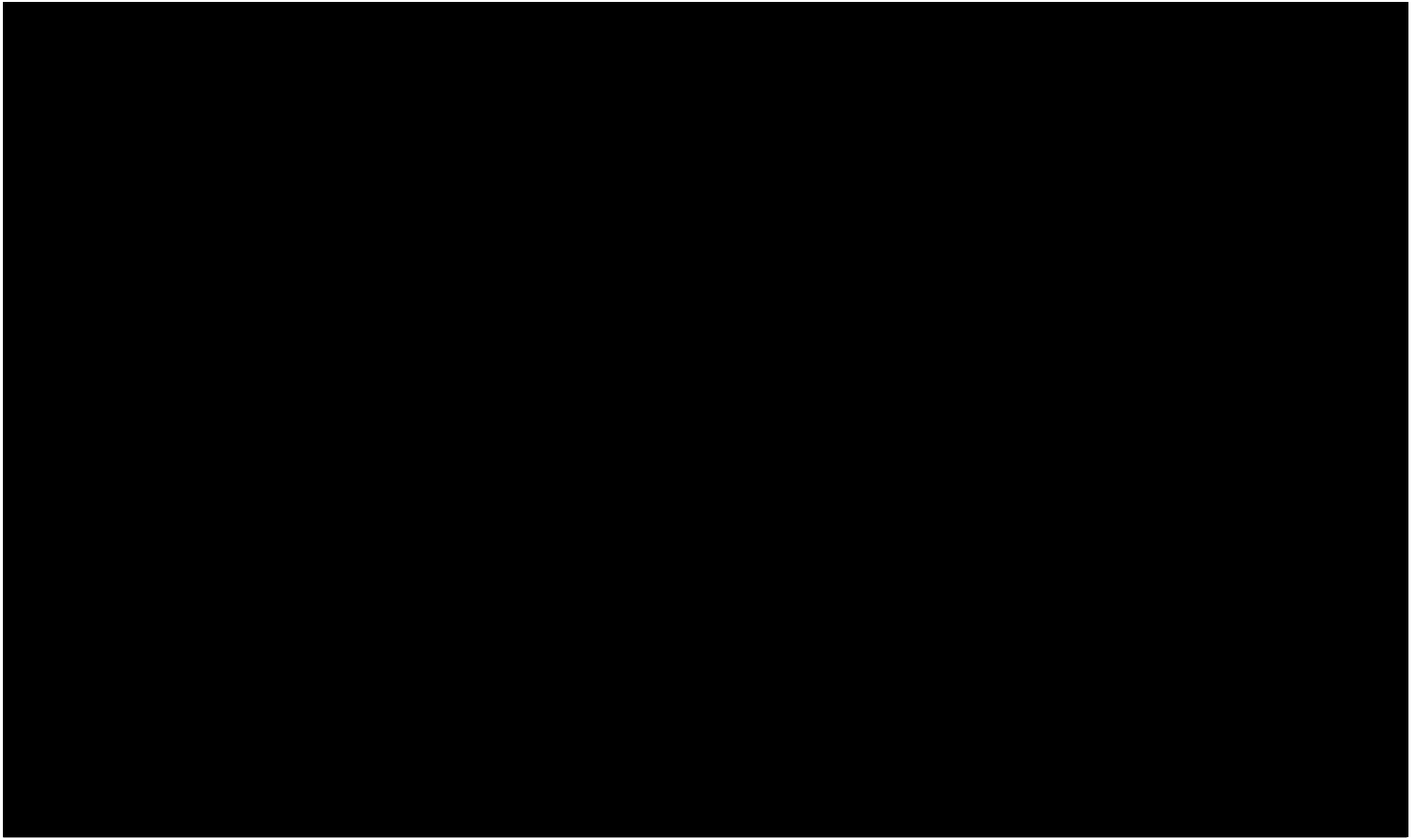


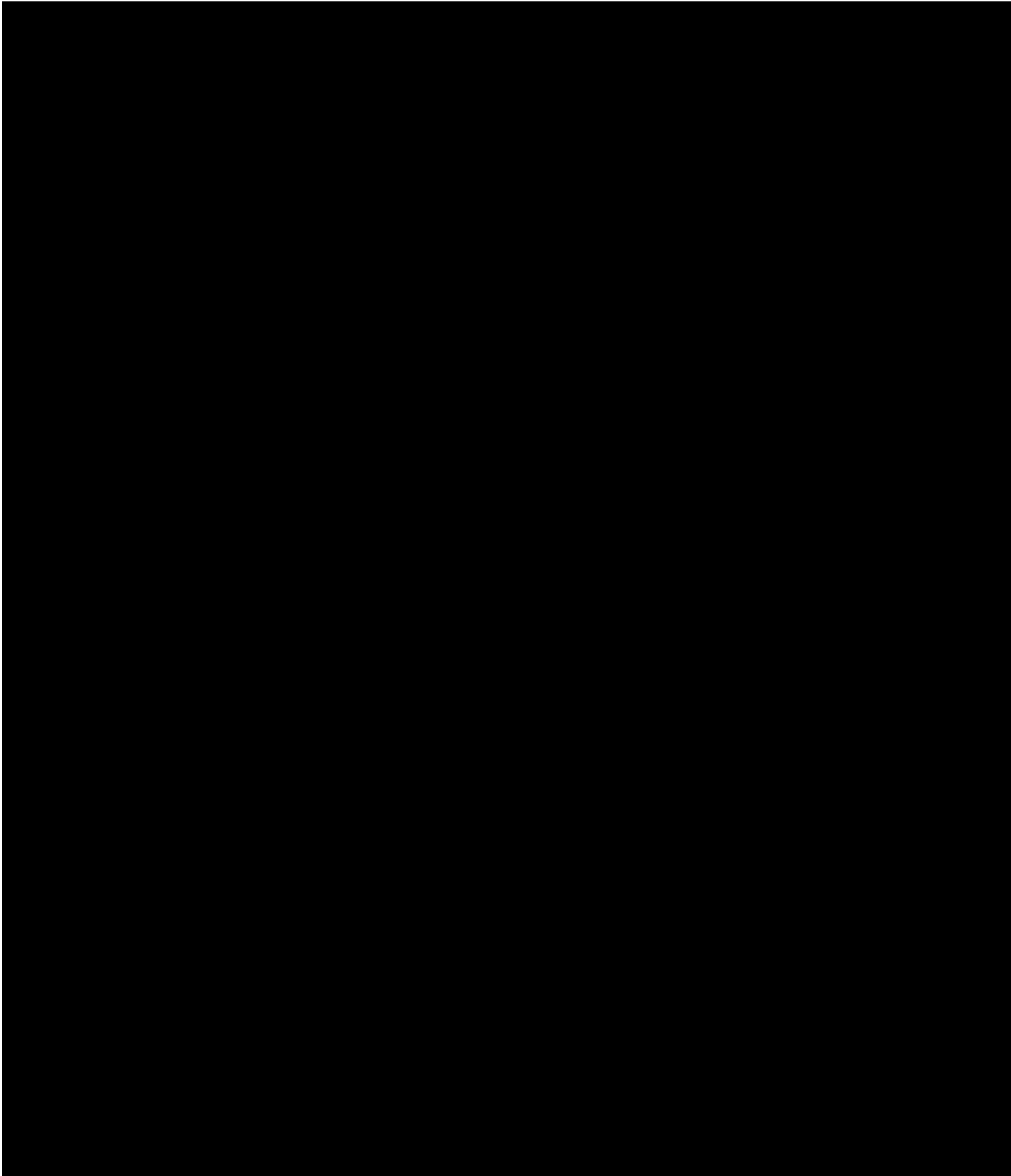
Funding Solutions



DESIGN-BUILD TEAM LEAD

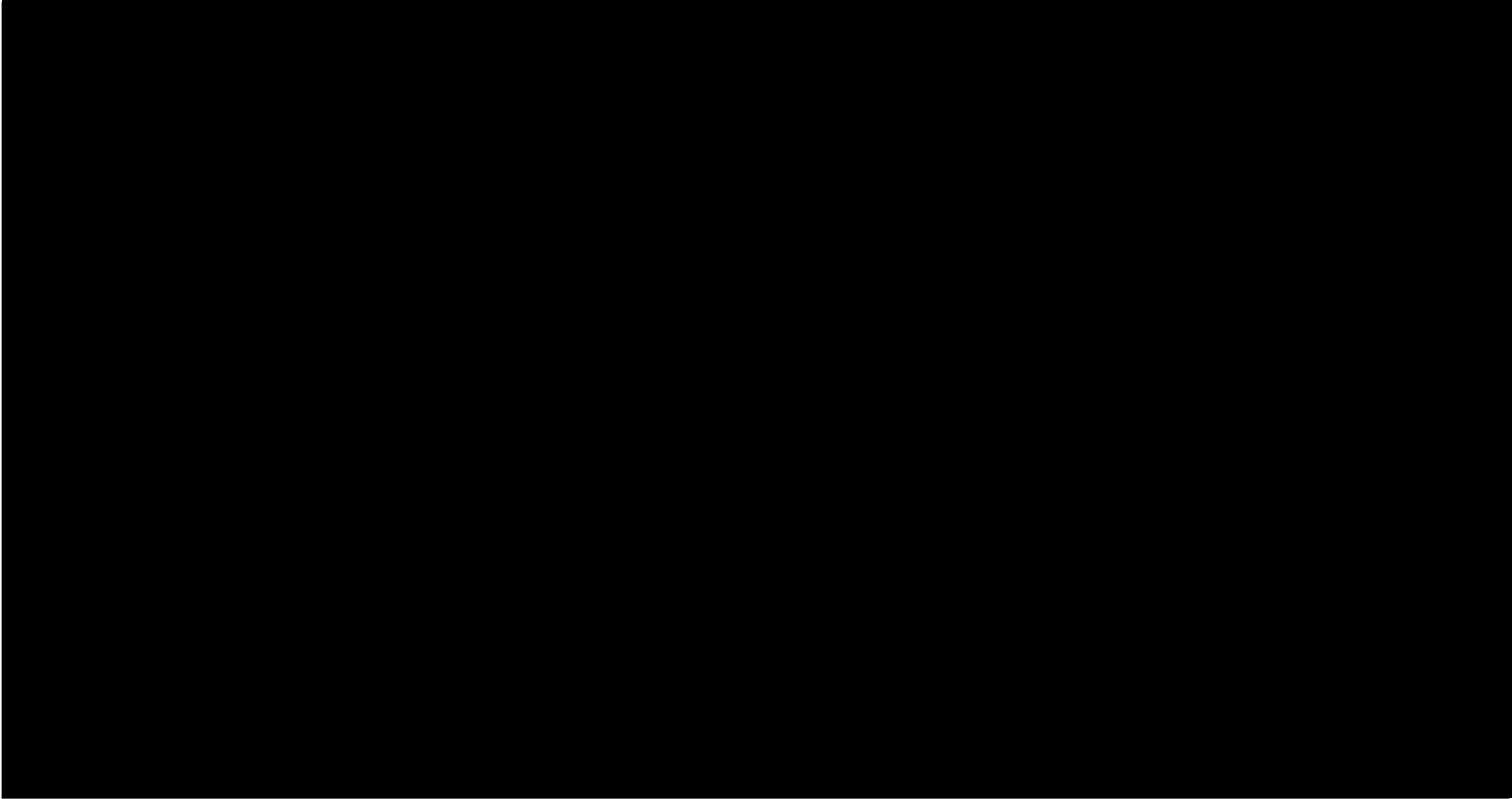
BRWA | Ivy Creek Interceptor Proposal - Division 5 and 6





DESIGN-BUILD TEAM LEAD

BRWA | Ivy Creek Interceptor Proposal - Division 5 and 6



Appendix A.

Ivy Creek Interceptor Drawings

Appendix B. Construction Schedule

Appendix C. Pump Station Plans (Select Sheets)

Appendix D.

BRWA and City of Lynchburg Interceptor Map

Appendix E.

E.C. Pace Bid Bond

