Proposal Step 1

F. Wayne Hill Water Resources Center Biosolids Dryer Project

Gwinnett County Department of Water Resources

RFP No. RP003-23
April 20, 2023

COPY

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Engineering Design and Preconstruction and Construction of the F. Wayne Hill Water Resources Center Biosolids Dryer Project for the Gwinnett County Department of Water Resources RP003-23

Jacobs Engineering Group Inc.
10 Tenth Street, Suite 1400
Atlanta, GA 30309
www.Jacobs.com

April 19, 2023

Brittany Bryant, Purchasing Associate II
Department of Financial Services, Purchasing Division
Gwinnett County Department of Water Resources
75 Langley Drive
Lawrenceville, GA 30046-6935

RE: Engineering Design and Support during Preconstruction and Construction of the F. Wayne Hill Water Resources Center Biosolids Dryer Project/RP003-23

Greetings Ms. Bryant and Selection Committee Members:

The Jacobs team has heard your needs and goals for the F. Wayne Hill Water Resources Center (FWH WRC) Biosolids Dryer Project. Your top priorities for the project and the delivery team include:

- Execution by a design team who will seamlessly collaborate with GCDWR, the Owner's Agent, and the CMAR
- Deliver return on investment goals: save money on future landfill costs by avoiding project delays and streamlining design decisions
- Proactively manage schedule pressures to accelerate the design and utilize grant money funds within their obligatory timeframe
- Partner with Operations and Maintenance (O&M) staff to leverage their essential input during the design and to minimize impacts to operations during the project.

We have forged a team that completely addresses each of your priorities, will be fully available to GCDWR throughout the project, and will continue to meet your first-in-class expectations as we have with numerous facility design projects over the last 32 years.

We've successfully delivered nearly $1B of GCDWR's Critical Infrastructure over the last 30 years

Our plan for how we will deliver your priorities includes:

Trusted, local, collaborative design team. Our team has a long history of collaborative and efficient delivery of projects for GCDWR. Our proven track record of working onsite with GCDWR staff (engineering and operations) and the Contractor has **limited change orders, reduced schedule delays, and saved project costs**. We will build on this success by delivering the Dryer project with our trusted team, led by Project Manager Jay Horton and CMAR Subject Matter Expert Jim Grum. Jay and Jim have led your most critical water reclamation improvements over the last 30 years including FWH WRC, Crooked Creek WRF, and Yellow River WRF. No other team can match our experience at and understanding of FWH WRC and GCDWR's improvement, operations, and maintenance goals.

Project Manager Jay Horton, GA PE has been a full time Jacobs employee for 28 years and will be your single point of contact. Jay will lead the project team and oversee all aspects of the project. Available to you at any time, he will meet with you regularly. Jay's 20+ year history working with GCDWR engineering and O&M staff, as well as the Owner's Agent, helps him in promoting a collaborative approach to meet project goals.

CMAR Subject Matter Expert Jim Grum has led award-winning GCDWR projects: Crooked Creek WRF, Yellow River WRF, and FWH WRC, where he fostered cohesive project teams for CMAR and other delivery methods, and fast-tracked delivery.

The majority of our Key Lead Staff have delivered projects for GCDWR, including the FWH WRC, and we offer a premier Biosolids Dryer design team.

Meeting Return on Investment Goals. We have one of the longest resumes of design and construction for thermal drying process in the nation. We have completed 17 thermal drying facilities comprising more than 40 dryer trains worldwide and led dryer design, pre-selection, commissioning, and optimization for projects ranging from 2 dry tons/d to 455 dry tons/d. In addition, we have worked with nearly all the major dryer vendors and all three of the rotary drum manufacturers.

This experience allows us to develop efficient designs that strike a balance between reducing project costs and ensuring that the dryer system incorporates the needs of the O&M teams.

QA/QC Manager/Senior Residuals Technical Consultant Todd Williams, PE is experienced with the FWH WRC and brings a national perspective on biosolids and thermal drying technologies for cost-effective and operationally efficient and serviceable facilities.

Dryer SME Peter Burrowes, P Eng is a national dryer expert. He was part of the design team for UOSA and was a significant contributor to the PER for the WB Casey WRRF Biosolids Management Facilities project.

Drying System Integrator Brett Reistad, PE has 23 years of experience in wastewater residuals handling and integrating dryers. Brett was part of the design team for UOSA and was a large contributor to the PER for the WB Casey WRRF Biosolids Management Facilities project.

Product Utilization/Marketer Ron Alexander is experienced with Metro Atlanta and Georgia biosolids product markets, including Biosolids Market Studies for CCWA, the City of Atlanta, and a Market Study review for GCDWR.

Supporting Jay Horton is our national team of experts in biosolids and dryer systems. This team has successfully served clients across the globe with similar systems and is excited, invested and available to make sure GCDWR achieves the best possible outcome.

Managing schedule pressures. Our depth of knowledge and experience at the FWH WRC facility and with your O&M staff will allow us to rapidly deploy and quickly launch the project with a proficiency to set the trajectory for the rest of the design delivery effort. We have already begun conceptualizing and identifying potential project challenges, planning for their mitigation. **With a fast start, early identification of challenges, creative solutions and a culture of collaboration, we will drive the schedule and save GCDWR both time and money**.

Working Closely With O&M Staff. The FWH WRC O&M team has a reputation in the industry for excellence operating this highly complex facility and their input will be critical to the design of the Biosolids Dryer. Jay, Jim, and our construction oversight team led by Chris Whalen and Chris Warner have provided trusted support at the FWH WRC. We have a holistic view of FWH WRC and can leverage our knowledge for effective construction sequencing and integration of the dryer without delays and downtime, and with no permit violations. No one knows the FWH WRC better than Jay and Jim.

Reference Project Experience. We highlight our reference project experience in Table 1.1 below. The benefits to you of our reference projects include the following:

- ✓ Unmatched experience working with GCDWR to deliver facility design projects
- ✓ Extensive experience at FWH WRC that enables us to start the project efficiently
- ✓ Extensive biosolids experience to deliver cost effective/affordable solutions
- ✓ Collaborative delivery approach that effectively engages with a contractor for a CMAR delivery

Table 1.1 Jacobs Representative Experience

Project Name / Client	Relevance to GCDWR
1. Water Reclamation Plant Expansion & Solids Drying Facility, Upper Occoquan Sewage Authority (UOSA)	Dryer Experience (multiple dryer vendors), Large WRF
2. F Wayne Hill WRC/GCDWR	GCDWR Experience, Large WRF
3. W.B Casey WRRF Dryer Planning, Owner's Advisor, Pelletizer Design/CCWA	Alternative Delivery (PDB), Dryer Experience, Large WRF
4. Yellow River WRF/GCDWR	Alternative Delivery (CMAR), GCDWR Experience, Large WRF
5. Crooked Creek WRF/GCDWR	GCDWR Experience, Large WRF

We commit to the full availability of all key staff resources and to delivering within the project schedule. We commit to using and making fully available Project Manager Jay Horton and all key team leaders identified in our proposal. Subconsultants PPI, EDT, Willmer Engineering, and R. Alexander Associates commit to making fully available all key staff resources. We commit to completing all Project tasks within the project schedule.

We commit to the Gwinnett Standard. Jacobs has strived to demonstrate the Gwinnett Standard by providing reliability and value to ratepayers through excellent communication, coordination, and management of the schedule, scope, and quality commissioning of our work for you over the last 30 years. We proudly commit to continuing to uphold and promote the Gwinnett Standard on the delivery of the Biosolids Dryer Project.

Jacobs has a 30-year history of successfully executing contracts with GCDWR. Jacobs is prepared to accept the Agreement identified in the RFP and would like to discuss certain requirements, including insurance, upon award. Our full business address appears in our letterhead.

Thank you for the opportunity to provide our proposal for the FWH WRC Biosolids Dryer. GCDWR is an important client to us and we look forward to helping you meet your goals with the Biosolids Dryer project.

Please contact me at 404.606.1946 Bijoy.Ghosh@Jacobs.com or Jay at 404.667.8623 John.Horton@Jacobs.com with any questions you may have.

Sincerely,

Jacobs Engineering Group Inc.

S. Bijoy Ghosh, PE
Principal-in-Charge

Jay Horton, PE
Project Manager

Tab A

Prime Consultant Identification

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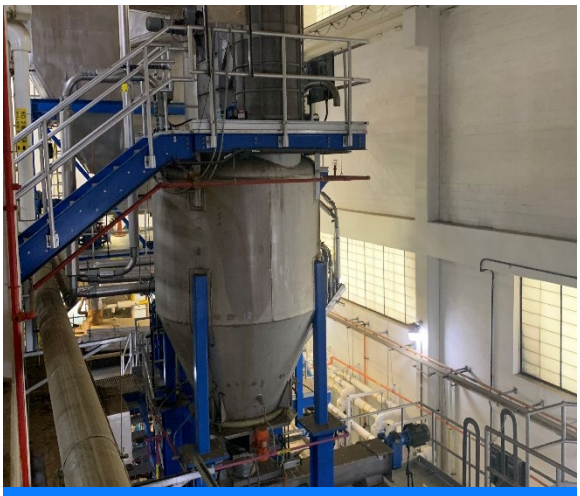
Value to GCDWR

- ✓ More than 30 years of experience supporting GCDWR
- ✓ Proven team that delivered FWH WRC, Crooked Creek WRF, Yellow River WRF on time/budget
- ✓ Knowledge of the FWH WRC mitigates schedule/cost risks and expedites delivery
- ✓ Teaming partners with a long history of delivering successful projects together

The Jacobs team consists of Jacobs Engineering Group Inc. (Jacobs), Precision Planning, Inc. (PPI), Engineering Design Technologies, Inc (EDT), Willmer Engineering, Inc. (Willmer), and R. Alexander Associates, Inc.

We have a 20+ year history working with our minor subconsultant partners. They have been chosen for their complementary capabilities, specialized expertise, and extensive knowledge of the GCDWR system. We enjoy well-established relationships for a technical shorthand and ease of communication for the highest productivity on this project.



Our dryer experience, including for the Solids Drying Facility for the Upper Occoquan Sewage Authority (UOSA) above, and our knowledge of the FWH WRC mitigates schedule and cost risks and expedites delivery of the Biosolids Dryer Project.

Jacobs Teamwork History/Reasons & Benefits of this Teaming to GCDWR.

Table A.1 below presents our team, roles on the project, our long history of working together, including when, where, the services provided, and the reasons and benefits to GCDWR of this teaming.

Table A.1 Jacobs Team & Role on this Project

Full Legal Name/DBE	Prin. Bus./ Local Office /Inside Or Outside Gc/ Total FTE	Project Role/ Services Provided	Jacobs' Past Working Relationships with Subconsultants	Benefits to GCDWR
Jacobs Engineering Group Inc. (Jacobs)	10 Tenth Street, NW, STE 1400, Atlanta, GA 30309 Outside Gwinnett County 500 FTE; 250 water FTE	Prime Consultant: project management, design, bid phase services, construction management, permitting, public involvement, training	• **20+ year history** working with PPI, EDT, Willmer • **18- year history** working with R. Alexander Associates • Complementary capabilities, specialized expertise, extensive GCDWR system knowledge	• **32 years** supporting GCDWR • Delivering your most critical projects • Most extensive knowledge of FWH WRC expedites dryer delivery • More local resources than any other team • People you know and like

Full Legal Name/DBE	Prin. Bus./ Local Office /Inside Or Outside Gc/ Total FTE	Project Role/ Services Provided	Jacobs' Past Working Relationships with Subconsultants	Benefits to GCDWR
Precision Planning, Inc. WBE	400 Pike Boulevard, Lawrenceville, GA 30046 Inside Gwinnett County 63 FTE	Minor Subconsultant: architectural & survey services	**20 Years of Teaming** • Crooked Creek WRF, 2014 • FWH WRC, 2011 • Yellow River WRF, 2006 • FWH WRC Design/ CM Phase II, 2002 Pressure Zones, 2020	• Long history delivering GCDWR projects; superb understanding of the system • Established communication channels • Long-term corporate relationships • Complementary skill sets • Nimble & responsive partnership
Engineering Design Technologies, Inc MBE	1705 Enterprise Way, Suite 200 Marietta, GA 30067 Outside Gwinnett County 103 FTE	Minor Subconsultant for fire protection, plumbing, CAD/Revit	**25 years of Teaming** • Joint Venture Partner, City of Atlanta A/E contract, 2010-Ongoing • Program Management, MARTA, 2019-Ongoing	• Long-term corporate relationships • Complementary skill sets • Nimble & responsive partnership
Willmer Engineering, Inc. WBE	3772 Pleasantdale Road, # 165, Atlanta, GA 30340 Outside Gwinnett County 33 FTE	Minor Subconsultant for geotechnical/ hazardous materials	**19 Years of Teaming Worked on more than 65 projects together since 2004** • Yellow River WRF Effluent Control Structure 2014	• Experience in Gwinnett County geology • Long-term corporate relationships • Nimble & responsive partnership
R. Alexander Associates, Inc.	1212 Eastham Dr. Apex, NC 27502 Outside Gwinnett County 2 FTE	Minor Subconsultant for product evaluation & market research	**18 Years of Teaming** • Clayton County (dried biosolids) 2021 • Oakland county (THP biosolids) 2019 • Encina (dried biosolids) 2020 Key West (biosolids compost) 2020	• Experience marketing product in Metro Atlanta/Georgia • Long-term corporate relationships • Nimble & responsive partnership

Jacobs Overview - Prime Firm

Range of Services, Capabilities, Strength of Jacobs' Local Office

Founded in 1958, our Metro Atlanta office and Jacobs' Design Center has been providing planning, engineering, and construction management for water and wastewater solutions to water utilities throughout the Georgia and across the Southeast. With 250 water staff—**the largest of any water business in Georgia**—we offer a powerful collection of global subject matter experts, project delivery professionals, and the same best-in-class talent who have served you for more than 30 years. Services provided from our local office include:

- Water and wastewater system planning
- Water and wastewater treatment / operations
- Reclaimed water
- Pipelines & pump stations
- Reservoirs & intakes
- Stormwater
- Water resources
- Tunnel design and construction
- Community involvement / communications

Long History Collaborating with GCDWR, Owner's Agent, Contractors. We have collaborated with you as designer and construction manager for your largest water reclamation facilities**.** We have excellent communication and trust between our team and your staff, as well as between our team members to resolve issues and move projects forward on schedule and within budget. **We actively seek out appropriate decision makers and work toward consensus on what is most important.**

We have a 15-year history working with your Owner's Rep, Hazen and Sawyer, including on the Crooked Creek WRF, the Yellow River WRF Improvements, and the WB Casey WRRF Biosolids Dryer for CCWA. **Jay has demonstrated a high degree of collaboration and trust with Hazen for less risk to delivery.**

We have a 20-year record of including O&M in our designs that deliver easy to operate and maintain facilities.

We have worked with all the major construction contractors in the region. **These existing relationships speed up project delivery, reduce cost, and provide operational efficiencies.**

Long Dryer Resume. We have completed 17 thermal drying facilities comprising more than 40 dryer trains worldwide and led dryer design, pre-selection, commissioning, and optimization for projects ranging from 2 dt/d to 455 dt/d. In addition, we have worked with nearly all the major dryer vendors and all three of the rotary drum manufacturers.

Singular Understanding of FWH WRC. We have a holistic view for effective construction sequencing and dryer tie-in. We have no learning curve and can complete the Dryer faster than any other team.

Corporate Ownership & History. Founded in 1947, Jacobs is an international construction and engineering company providing the full spectrum of professional and field services. We lead the water industry— delivering integrated water and wastewater solutions for a more connected, sustainable world.

The firm has evolved from a one-man engineering company to a publicly traded corporation on the New York Stock Exchange (NYSE: JEC). A Fortune 500 company with more than 55,000 personnel worldwide and annual revenues of $14B, we are incorporated in the State of Delaware.

We are a US-based corporation headquartered in Dallas, TX with more than 100 offices spanning 39 states and the District of Columbia. We have satellite offices in more than 30 countries. We are linked and networked with national and international water professionals, recognized as:

#1 Design Firm by Engineering News-Record

#1 World's Most Admired Company, Engineering, Construction by Fortune Magazine

Acquisitions and Mergers Within the Last 10 Years *(as related to Tab D)*

Our acquisition of Jordan Jones and Goulding (JJ&G) and CH2M HILL within the last ten years

has resulted in the largest local full-time staff of 250 water professionals.

Affiliates and Subsidiaries. Jacobs and its related companies form an organization that comprises more than 250 operating companies and affiliates, including the Jacobs Engineering Group Inc. (Jacobs), which will manage the Biosolids Dryer project.

Operating Philosophy. We're challenging today to reinvent tomorrow by solving the world's most critical problems. We turn abstract ideas into realities that transform the world for good. Our values are the fundamental tenets shared across our organization and the standards to which we hold ourselves.

- **We do things right.** We always act with integrity, focused on safety and sustainability. Safety is who we are. BeyondZero®, our Culture of Caring, is our program that aims far beyond the goal of an Incident and Injury-Free® workplace.
- **We challenge the accepted**. We know that to create a better future, we must ask difficult questions and are not afraid to try new things.
- **We aim higher.** We are always looking beyond to raise the bar and deliver with excellence.
- **We live inclusion**. We embrace all perspectives, collaborating to make a positive impact.

Contact Information. Future communications should be directed to: Jay Horton, 10 Tenth Street NW, STE 1400, Atlanta, GA, 30309, jay.horton@jacobs.com, 404.667.8623.

Ability to Mobilize. PPI has an office in Gwinnett County. Willmer is just over the line in DeKalb County. Jacobs' staff work mostly on site for GCDWR for the ability to quickly mobilize. The FWH WRC is approximately a 30-minute drive from Jacobs local office that has a total of 87 employees who call Gwinnett home. A list of Jacobs team staff who will be assigned to this Project and who live in Gwinnett County appears in Table A.2 below.

Table A.2 Jacobs Team Staff Who Will Be Assigned to this Project

Jacobs Team Staff	Reside in GC	Jacobs Team Staff	Reside in GC		Reside in GC
Jay Horton, PE	--	Scott Leveque, PE	--	Lorean Brinson	--
Bijoy Ghosh, PE	--	Tom Wynn, PE	✓	Chloe Cooper, PE	--
Chris Palmer, PE	✓	Bill Desing, PE	--	Partiban Raja, PE	--
Todd Williams, PE	--	Chip Bates	--	Tooraj Homayooni, PE	--
Jim Grum	✓	Dewayne Smith	--	Wayne Pogue	--
Peter Burrowes, PE	--	Chris Warner	✓	Marlin Hales	--
Ron Alexander	--	Eric Hancock	--	Ed Griggs	--
Rocco Koekemoer, SE	--	Rosa Lee-Eng, PE	--	Jarvis Miller	--
Brett Reistad, PE	--	Jeff Handwork, PE	--	Gary Messer	✓
Michelle Neumann, PE	--	Mike Adish, PE	--	Lawrence Broughton	--
David Bell, PWS	--	Richard Beohm, FPE	--	Adrian Romero, PE	--
Jeff Peterson, PE	--	Chris Whalen	✓	Christi Gallo, CCP	--
Liz Hudson, RA	--	Marci Davis	--	Charles Honorowski	--
Kirubel Beyene, SE	--	Paul Purcell, PE		Sujit Bhowmik, PhD, PE	✓
Jose Ramos, PE	--	Hiran de Mel, PE	--	Keith Kaylor, PE	--
Nathan Meade, PE	--	Tim Dodge, RA	--	Donny James	--
Abel Valiente, PE	--	Dave Everson, SE	--	Darren Magley, PE	--
Greg Yarberry, PE	--	David Oerke, PE	--	Marc Goslow, PE	--
				Gregg Gray, PE	--

Tab B

Major Subconsultant Identification

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Tab B: Major Subconsultant Identification

The Jacobs team has studied the Biosolids Dryer Project scope of work and will not require any major subconsultants. Our large, multi-disciplinary team has the capabilities and experience to deliver the Biosolids Dryer project with Minor Subconsultants.

Tab C

Minor Subconsultant Identification

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Value to GCDWR

- ✓ Complementary capabilities, specialized expertise, extensive knowledge of GCDWR system
- ✓ 20+ year history working with PPI, EDT, Willmer; 18 years with R. Alexander Associates
- ✓ All are exclusive to the Jacobs team.

Minor subconsultants on the Jacobs team consist of Precision Planning, Inc. (PPI), Engineering Design Technologies, Inc (EDT), Willmer Engineering, Inc. (Willmer), and R. Alexander Associates, Inc.

We enjoy well-established working relationships, and their work is of the highest quality.

Table C.1 below presents an overview of our minor subconsultants, including full legal name, principal and/or local office location, their role on the Biosolids Dryer project, and their DBE status.

Our partners have a long history on GCDWR projects, including for the FWH WRC above.

Table C.1 Jacobs Team & Role on this Project

Full Legal Name/DBE Status	Prin. Bus./Local Office/Inside or Outside Gwinnett County/Supporting Office	Project Role/ Services Provided	Firm Overview/Total FTE
Precision Planning, Inc. WBE	400 Pike Boulevard, Lawrenceville, GA 30046 Inside Gwinnett County	Minor sub for architectural and survey services	Founded in 1982, PPI is a woman-owned, multi-disciplined professional engineering, architecture and surveying firm. Services provided include water resources, land development, and transportation engineering; surveying; planning; architecture; and landscape architecture. **63 FTE**
Engineering Design Technologies, Inc. MBE	1705 Enterprise Way, STE 200 Marietta, GA 30067 Outside Gwinnett County	Minor sub for fire protection, plumbing, CAD/Revit	Founded in 1993, EDT is an MBE-certified firm providing water resources, process, civil/site, MEP, fire protection, structural, and design-build services. **120 FTE**
Willmer Engineering, Inc. WBE	3772 Pleasantdale Road, # 165, Atlanta, GA 30340 Outside Gwinnett County	Minor sub for geotechnical/ hazardous materials	Founded in 1982, Willmer has completed over 10,500 projects across the United States and Caribbean. Willmer maintains certifications that can satisfy supplier diversity needs. **33 FTE**
R. Alexander Associates, Inc. N/A	1212 Eastham Drive, Apex, NC 27502 Outside Gwinnett County	Minor sub for product evaluation & market research	Founded in 1998, R. Alexander Associates provides biosolids market development and product certifications for numerous utilities across the US. **2 FTE**

Tab D

Experience of Prime Consultant

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Value to GCDWR

- ✓ Extensive global Thermal Dryer experience
- ✓ Extensive experience with GCDWR facilities
- ✓ Demonstrated successful collaborative approach that supports CMAR-type delivery
- ✓ Unique understanding and background at the FWH WRC

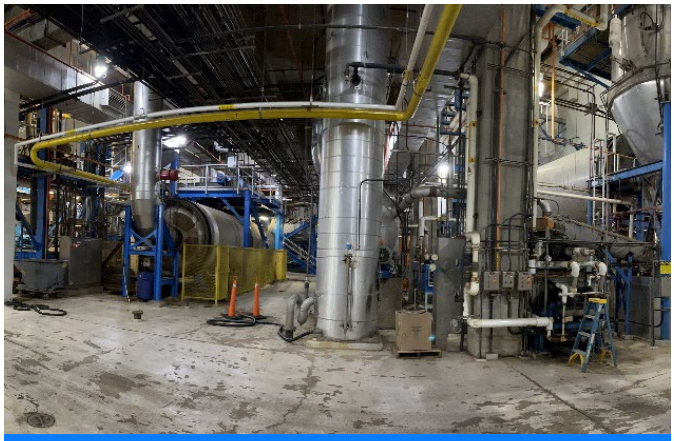
We have a 32 year history with GCDWR, delivering almost a billion dollars of capital projects with three of your largest and most successful projects: the FWH WRC, the Yellow River WRF, and the Crooked Creek WRF CP-4. Our team has experience directly relevant to the FWH WRC Biosolids Project. We offer two projects demonstrating our dryer experience, two demonstrating alternative delivery experience, three demonstrating experience with GCDWR, and five demonstrating experience on large water reclamation facilities.

Thermal Drying Experience

- ✓ Completed 17 thermal drying facilities comprising more than 40 dryer trains worldwide, as shown in Table D.2
- ✓ Led the design, pre-selection, commissioning, and optimization of dryers ranging from 2 dt/d to 455 dt/d
- ✓ Worked with nearly all major dryer vendors in developing pre-selection and prepurchase contracts and with all three rotary drum manufacturers

Collaborative Approach/Alternative Delivery

- ✓ Apply a partnering principles team approach that includes design and construction administration staff, GCDWR's on-site project manager, operations staff, and the CMAR/ contractor. We have received positive feedback from you on our collaborative/co-location approach on the Crooked Creek WRF CP-4
- ✓ Delivered the Yellow River WRF Improvements using CMAR delivery, in addition to other projects across the Southeast. The W.B. Casey Thermal Dryer is being delivered using Progressive Design Build.
- ✓ Have collaborated with you and your Owner's Agent on GCDWR projects for many years and with your Owner's Agent for various projects across Metro Atlanta.



The Jacobs team delivered the Solids Drying Facility for the Upper Occoquan Sewage Authority that includes many of the same concepts and technologies as those at the FWH WRC, including a rotary dryer.

Singular Understanding of FWH WRC

- ✓ Known and trusted by your staff.
- ✓ Able to look at the overall system, not just parts and pieces, and apply our knowledge for effective construction sequencing and integration of the dryer without delays and downtime.
- ✓ Experts at maintaining plant operations during construction and preventing unpermitted releases with extensive planning, scheduling, and coordination efforts between the CM, Operations and Contractors for all tie-ins, electrical outages, and shutdowns.

Staff Experience Solves Critical Issues

Twenty one Jacobs team staff have experience working on the five projects presented in this section and are ready to apply this experience to the Biosolids Dryer project.

We are confident you will receive positive confirmation from our reference clients.

REFERENCE 1

Water Reclamation Plant Expansion and Solids Drying Facility, Upper Occoquan Sewage Authority (UOSA) *Centreville, VA*

Jacobs led the design and construction of this facility expansion that included a new solids thermal rotary dryer and renovations and improvements to the existing dryer building. **This facility includes many of the same concepts and technologies as those implemented at Gwinnett County's FWH WRC.** UOSA's WRF has a design capacity rating of 54 mgd. Plant biosolids processes include waste sludge thickening (via dissolved air flotation thickeners and centrifuges), split stream anaerobic digestion, centrifuge dewatering, and rotary drying for final product reuse.

Benefits to GCDWR		Relevance to RFP Criteria
✓ Smooth-running project	✓ Easy to operate/maintain	1. Large water reclamation facility
✓ Cost effective/affordable	✓ Easily accessible for system maintenance	2. Dryer experience/ large rotary drum dryers
✓ Integrated rotary drum dryer	✓ Safe working environment	3. Proven ability to work collaboratively with Owner/Contractor
✓ Class A product	✓ Integration into existing facility	4. Similar in complexity: scope, delivery method, funding source
✓ Meets regulations	✓ Construction sequencing	5. Proven performance: budget, schedule, quality, client satisfaction
✓ Flexibility, reliability, redundancy, resiliency, sustainability	✓ Asset Management	
	✓ Made building look good	

Dryer for Class A Biosolids. Selected biosolids drying to address evolving environmental concerns and rotary dryers to generate the most uniform product (pellets) and give the most reuse options. The UOSA product is considered Class A EQ (Exceptional Quality), with limited constraints on its reuse and is currently used a soil supplement. **UOSA includes both Andritz and Berlie dryers that have been in operation for years. This provides an excellent comparison for GCDWR to make decisions on the dryer project.**

Treatment Processes. Delivered both dryers with two different vendors. Installed dryer system for system redundancy and included a 27 dry ton per day (dt/d) Andritz-Ruthner system in the same building as the existing dryer. Designed triple-pass dryer system (27 dt/d, 40,000 wet ton per year) with direct-fired furnace, induced draft fan, condenser, a venturi scrubber, cake conveyance, mixing, recycle, solids classification, cooling, and fugitive dust control. Included pneumatic product conveyance to produce storage silos and regenerative thermal oxidizer.

Reduced Risk. Used a pre-selection process that was transformed into pre-procurement of the dryer system. Early dryer vendor services included shop drawings and review of the building retrofit, allowing the final design to be optimized around the selected manufacturer's equipment. Provided stair access to system equipment in multiple places and modifying the vendor's standard layout to provide additional hoisting provisions. Early procurement helped keep the project on schedule and reduce change orders.

Compliance with Discharge Limit During Construction. Developed construction staging and sequencing plan to minimize impact on plant operations and shutdowns. Retrofitted the new dryer train in the original sludge drying building, optimized design and facility to accommodate sludge drying equipment and ancillary systems, accessed provisions and modifications to building utilities, HVAC and the dust collection system.

Jacobs has been an integral part of an asset management program designed to renew and replace UOSA's aging plant and delivery system infrastructure to ensure UOSA remains reliable, sustainable, and efficient well into the future.

—Charles P. Boepple, *Executive Director (Retired)*

Jacobs Project Highlights	
Delivery Method	Design-Bid-Build, with Design that incorporated the Pre-Procured Dryer System (purchase contract assigned to the construction contractor)
Funding Source	Upper Occoquan Sewage Authority
Size of Project	54 mgd; $11.5 m Dryer Project ($9.5 m construction [see budget below] + SDC + early procurement payments to Dryer Vendor)
Firm's Major Roles & Responsibilities	**Jacobs:** Planning, design, permitting, and services during construction (SDC) **Subs:** ECS Mid-Atlantic, LLC to perform inspections and testing to satisfy Fairfax county Special Inspections Program requirements.
Team Members Who Worked on Project	Jay Horton, Brett Reistad, Todd Williams, Peter Burrows
Initial & Final Budget	**Initial:** $9,387,000. Final: $9,471,000. Change order rate 0.9%
Initial & Final Schedule	2011 – 2014 2.5 years (no significant time extension)
Cost and/or Time Savings for Client	Negotiating scope and pricing for major equipment eliminated the potential for large change orders. Equipment procurement facilitated early delivery and project completion within schedule.
Reference Information	**Robert Angelotti**, Executive Director, 14631 Compton Road, Centreville, VA 20121, bob.angelotti@uosa.org, 703.830.2200

The projects presented in Table D.2 below are a sample of Jacobs national thermal dryer experience.

Table D.2: Jacobs Thermal Biosolids Dryer Experience

Location	Utility	Type of Dryer	Dryer MFr.	No. & Size (mt of evaporation)	Jacobs Role
Bonita Springs, FL	City of Bonita Springs	Rotary Drum	Andritz	1 @ 2 t/h H2O	Design-Build
Changi, Singapore	Public Utilities Board (PUB), Singapore	Rotary Drum	Andritz	5 @ 11t/h H2O	Design Engineer
Ocala, FL	City of Ocala	Dragon Dryer	Siemens	1 @ 0.5 t/h H2O	Design Engineer
Centreville, VA	Upper Occoquan Sewage Authority, VA	Rotary Drum	Unit 1: Berlie Unit 2: Andritz	1 @ 3.6 t/h H2O 1 @ 4.4 t/h H2O	Design Engineer
Hutt, New Zealand	Hutt Valley District	Rotary Drum	Haarslev (Flo-Dry)	1 @ 4 t/h H2O	Design-Build-Operate (DBO)
Leesburg, VA	City of Leesburg	Rotary Drum	Andritz	1 @ 2 t/h H2O	Design Engineer
Corona WWTP, CA	City of Corona	Rotary Drum	Siemens	1 @ 4t/h H2O	Design Engineer
St. Paul, MN	Metropolitan Council Envir. Services	Rotary Drum	NEFCO (Baker – Rullman)	1 @ 3 t/h H2O	Owner's Agent for Design-Build
Stamford, CT	City of Stamford	Rotary Drum	Andritz	1 @ 4t/h H2O	Design-Build
Milwaukee, WI	City of Milwaukee	Rotary Drum	Davenport	12 @ 4.5 t/h H2O	Design Engineer
Louisville, KY	Louisville & Jefferson Co	Rotary Drum	Andritz	4 @ 9 t/h H2O	Owner's Agent for Design-Build
Wilsonville, OR	City of Wilsonville	Twin-screw	ThermaFlite	1 @ 1.6 t/h H2O	DBO
Wilmington, DE	City of Wilmington	Twin-screw	ThermaFlite	1 @ 6 t/h H2O	Design Engineer for DBO
Buffalo, NY	Buffalo Sewer Authority	Disc	Stord	1 @ 1 t/h H2O	Process Engineer
Fayetteville, AR	City of Fayetteville	Solar Batch	Parkson Fenton	6 1	Operator
Honolulu, HI	City & County of Honolulu	Belt	Haarslev	2 @ 2t/h H2O	Design Engineer
Juneau, AK	City & Borough of Juneau	Belt	Kruger	1 @0.5 t/h H2O)	Master Planning Engineer
Green Bay, WI	NEW Water	Disc	Haarslev	1 @ 4.7 t/h H2O	Design Engineer

REFERENCE 2

F. Wayne Hill Water Resources Center Tertiary Treatment Upgrades

Gwinnett County Department of Water Resources, GA

Jacobs has provided planning, design, O&M services and construction support services for the F. Wayne Hill Water Resources Center (FWH WRC) since the initial planning of the facility in 1997. We recently expanded the chemical clarification and membrane filtration processes to produce a final effluent flow of 60 mgd on a maximum month basis, plus necessary recycle flows. **The project meets stringent effluent limits for discharge into Lake Lanier and reduces environmental footprint**.

Relevance to GCDWR		Relevance to RFP Criteria
✓ Smooth-running project ✓ Cost effective/affordable ✓ Reduce schedule risk/ meet schedule ✓ Meets regulations ✓ Flexibility, reliability, redundancy, resiliency, sustainability ✓ Easy to operate/maintain	✓ Easily accessible for system maintenance ✓ Safe working environment ✓ Integration into existing facility ✓ Construction sequencing ✓ Asset Management	1. Experience with GCDWR projects 2. Large water reclamation facility 3. Similar in complexity: scope, delivery method, funding source 4. Proven ability to work collaboratively with Owner/Contractor 5. Proven performance: budget, schedule, quality, client satisfaction

Tertiary Treatment Optimization

Assessed the physical condition and hydraulic and treatment capacity of the tertiary treatment unit processes. We constructed a detailed hydraulic model using a Replica digital twin software. We reviewed historical SCADA and operational data and maintenance records and conducted interviews with operations staff to develop the estimated treatment capacity of the existing unit processes. Provided potential improvement recommendations.

Developed the design criteria and hydraulic and process treatment performance to be used for the expansion and/or construction of alternative treatment options. Evaluated alternative technology options for chemical treatment for phosphorous removal, clarification technologies, screening options upstream of the membrane filtration system, and membrane filtration options necessary to meet the design criteria. Prepared a Basis of Design Report, developed the scope of work and a set of contract documents.

Membrane Building Upgrades

Provided design and permitting services and developed and conducted a six-month, onsite pilot test of membrane systems from six manufacturers, selecting immersed membranes operating in a tertiary mode. Established and incorporated the scope of their supply, cost, and delivery schedule into the bid/contract documents. Of the total 60 mgd, flow is split into two clarification and filtration treatment trains: an NPDES permit to discharge 20 mgd to a combined outfall with Gwinnett's Crooked Creek WRF into the Chattahoochee River and 40 mgd into Lake Lanier.

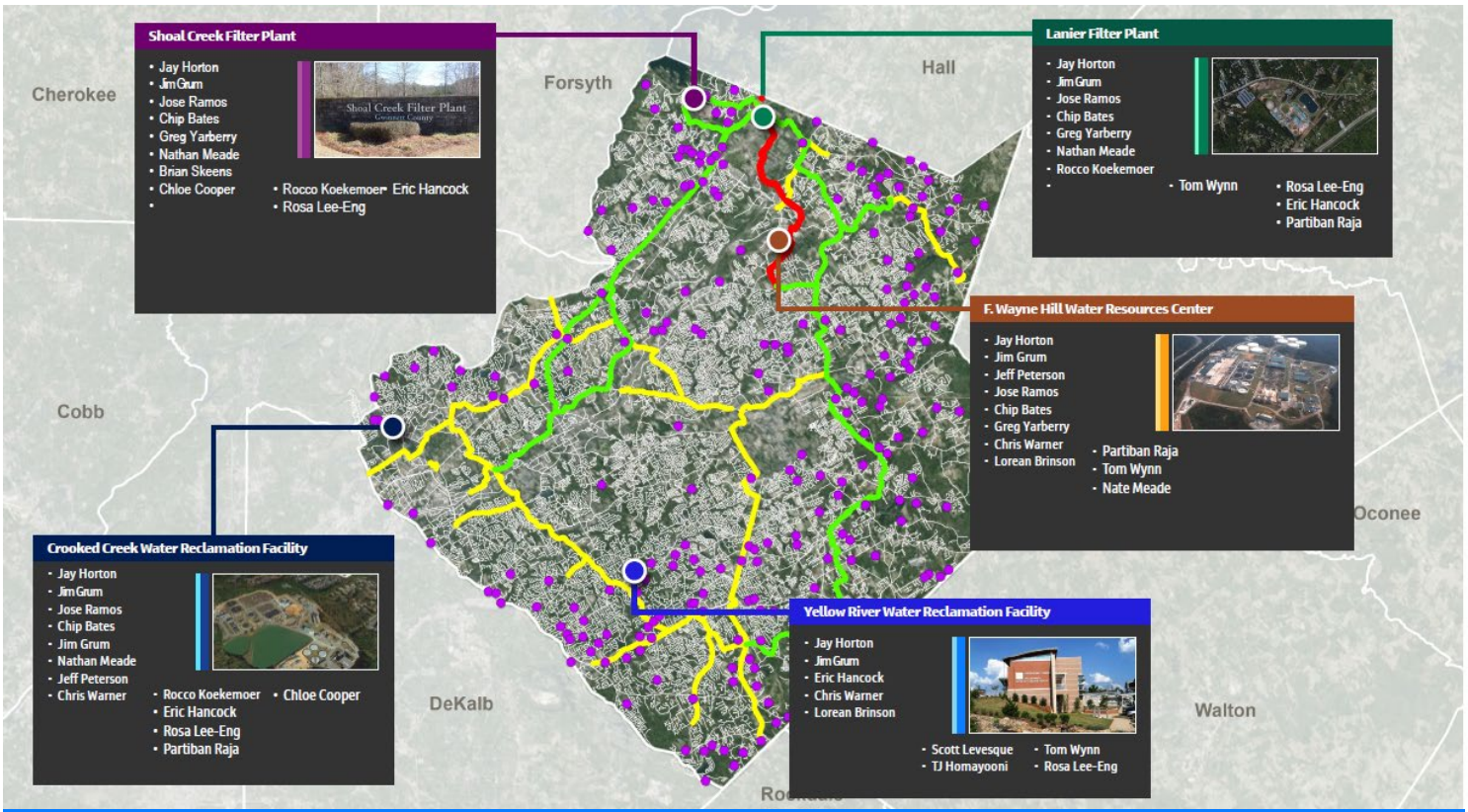
3D Modeling expedited schedule during design, optimized facility layouts, and helped with construction sequencing.

Made walk-though and fly-over presentations for plant staff to get their input on the design. Construction contractors used the 3D models to analyze construction sequencing issues. Worked closely with various pre-selected equipment suppliers to be able to incorporate their designs into the mode, facilitate the project schedule, and avoid conflicts with existing infrastructure.

Project Highlights	
Delivery Method	Design/Bid/Build
Funding Source	Gwinnett County
Size of Project	$22 m 60 mgd
Roles & Responsibilities	**Jacobs Lead:** Project Management, Project Design, Evaluation of Existing Facilities, Alternatives Development & Evaluation, Detailed Design, Bid Phase Support, Scheduling, Permitting. **PPI, Inc. Sub:** Survey
Cost and/or Time Savings for Client	Laser survey and 3-D models allowed more efficient design and provided GCDWR with a clear visualization of the improvements. Design finished under budget.
Initial & Final Budget	**Design Planned:** $1,342,750 **Final**: $1,164,056 Design delivered under budget Construction Planned $22 million Construction Final TBD schedule for 2024
Initial & Final Schedule	**Planned** 2024 **Estimated** February 2024
Staff Who Worked on Project	Jay Horton, Jim Grum, Rocco Koekemoer, Scott Levesque, Chloe Cooper, Abel Valiente, Kirubel Beyene, Chip Bates, Nathan Meade, Tom Wynn, Greg Yarberry, TJ Homayooni, Jeff Peterson, Dewayne Smith, Chris Whalen, Lorean Brinson
Reference Information	**Ray Williams**, Division Director; raymond.williams@gwinnettcounty.com; P : 678.376.7056; Karen Durden, Operations Technical Services; karen.durden@gwinnettcounty.com; P : 678.376.7150

PLC-Based SCADA System

Converted the existing Foxboro distributed control system (DCS) to an open architecture system using programmable logic controllers (PLCs) and Wonderware System Platform. **Designed the project specifically to maintain plant operations during construction. The project was completed under budget.**



Jacobs has worked on every GCDWR facility. We are experts at maintaining your plant operations during construction and preventing unpermitted releases with extensive planning, scheduling, and coordination efforts between the CM, Plant Operations and Contractors for all tie-ins, electrical outages, and shutdowns.

REFERENCE 3

W.B. Casey Water Resource Recovery Facility Improvements Thermal Dryer

Clayton County Water Authority, GA

Jacobs has been providing engineering and planning services to support the Clayton County Water Authority's (CCWA) integrated system since 1998. In addition to completing the original design and construction management of the W. B. Casey Water Resource Recovery Facility (WRRF) in 2005, we have completed numerous projects to support its continued operation. We wrote the preliminary engineering report and are currently serving as Owner's Agent for the Progressive Design/Build of a thermal dryer. An overview of this work highlighted below.

Benefits to GCDWR		Relevance to RFP Criteria
✓ Alternative Delivery (Progressive Design Build) ✓ Smooth-running project ✓ Cost effective/affordable ✓ Reduce schedule risk/ meet schedule ✓ **Integrated rotary drum dryer** ✓ **Pelletizer** ✓ **Class A product** ✓ Meets regulations ✓ Flexibility, reliability, redundancy, resiliency, sustainability	✓ Easy to operate/ maintain ✓ Easily accessible for system maintenance ✓ Safe working environment ✓ Integration into existing facility ✓ Construction sequencing ✓ Asset Management	1. Large water reclamation facility **2. Dryer experience (large rotary drum dryers)** 3. Progressive Design/Build project delivery method 4. Proven ability to work collaboratively with Owner/Contractor 5. Similar in complexity: scope, delivery method, funding source 6. Meeting reporting requirements for funding sources 7. Proven performance: budget, schedule, quality, client satisfaction

Capacity Analysis and Plant Expansion Evaluation. Evaluated biosolids management and secondary treatment technologies for expanding the plant from 24 to 32 mgd. We evaluated historical data to develop an influent design basis characterized wastewater and developed a calibrated simulation model.

Discussed treatment alternatives in a workshop setting and evaluated a subset of alternatives on a cost and non-cost basis. We provided the preliminary engineering report with the selected biosolids alternative: anaerobic digestion of primary sludge and a new biosolids drying facility.

W.B. Casey WRRF Biosolids Management Facilities Progressive Design-Build. Currently CCWA's Owner's Agent and Technical Advisor through the design and construction phases for the ongoing progressive design-build of new biosolids management facilities. Existing facilities are at capacity and at the end of their useful life. The new facility is based on 32 mgd treatment capacity.

Assisted with planning and executing the procurement phase of the design-build process and the design-builder selection process. Project includes modifications to existing waste activated sludge thickening, new primary sludge thickening, new anaerobic digestion, and new centrifuge dewatering. **Replacing the existing thermal dryer and pelletizing process is a key element of the project.** This is the only facility in Georgia that produces a Class A EQ biosolids product that is being distributed for beneficial use.

Serving as Owner's Agent for CCWA. Hazen is Progressive Design/Build Engineer of Record.

Jacobs Project Highlights	
Delivery Method	Progressive Design Build
Funding Source	GEFA
Size of Project	32 mgd $135m
Firm's Major Roles & Responsibilities	**Jacobs:** Owner's Agent, Facility Evaluations, Model, PER **Hazen:** Design Archer Western: Contractor:
Team Members Who Worked on Project	Jay Horton, Bijoy Ghosh, Todd Williams, Dave Oerke, Peter Burrowes, Brett Reistad, Dewayne Smith, Fabio Molina, Chip Bates, Rocco Koekemoer, Marlin Hales, Jeff Peterson, Scott Levesque, David Bell, Nate Meade, Tom Wynn, Marci Davis, Christi Gallo
Initial & Final Budget	**Initial:** $100 m **Final:** estimated $157 m (market conditions)
Initial & Final Schedule	**Initial:** 2026 **Final:** 2026
Cost and/or Time Savings for Client	Provided suggestion for the digestors and centrifuges for better, more reliable operating system.
Reference Information	**Kelly Taylor,** Manager, Program Management & Engineering 1600 Battle Creek Road, Morrow, GA 30260 kelly.taylor@ccwa.us, 678.422.2824

Additional work includes:

Biosolids Master Plan and Pellitization Facility

Evaluated capital upgrades required for solids processing and completed a follow up to W.B. Casey WRF Biosolids master plan (BMP) to further define improvements to the pelletizer facility. Conducted condition assessments and identified improvements to allow the pelletizer to treat projected solids through 2030. Began design of Selected Improvements for W.B. Casey Pelletization Facility for selected Architectural, Electrical, I&C, and Safety improvements. Supported construction and start-up of the improvements.

Phosphorus Polishing Plant and WAS Thickening Facility Project

Designed a tertiary treatment system (DensaDeg) for phosphorus removal to produce high quality effluent, enabling discharge to the Flint River. Designed a UV disinfection system, cascade aeration, a Flint River outfall, and a rotary drum thickening facility for waste activated and chemical sludge. Designed chemical storage and feed systems for function and economy using prefabricated buildings. Provided improvements to the W3 pump station to increase firm capacity.

W.B. Casey WRRF 2017 Improvements, Headworks and Clarifier Upgrades

Designed a new above-ground screening facility complete with a rotary drum screen, a bypass channel with manual screen, screenings dewatering equipment, and provisions for expanding the facility to double the capacity. Modified the piping configuration to bypass the primary clarifiers, provided concrete repairs to, and installation of, a corrosion protective barrier, provided grit chamber improvements and replaced equipment. Refurbished the existing mechanical screens as a value engineering measure. Added a fourth secondary clarifier, a new RAS pump, and modified the existing mixed liquor suspended solids splitter box.

Operations. Reduced O&M requirements of downstream processes and enabled CCWA to bypass the various headworks compartments for routine maintenance Worked directly with operations staff to develop design details, including chemical use, controls, equipment access, and performance reliability to ensure operational efficiency.

Compliance. Coordinated with GAEPD on behalf of CCWA throughout permitting and design.

Safety. Included non-slip surfaces, tempered water for eyewash and improved clean up at chemical facilities, double walled piping for chemical containment, and extra space surrounding motors and equipment requiring operator attention.

REFERENCE 4

Yellow River Water Resources Facility Improvements CMAR Delivery Method

Gwinnett County Department of Water Resources, GA

Jacobs served as Engineering Team Lead for the expansion from 14.5 to 22 mgd for the Yellow River Water Reclamation Facility Improvements CMAR Delivery project. We provided a more efficient and reliable membrane biological reactor wastewater treatment system to successfully meet long-term service area treatment needs, reduced operating costs by phasing out two existing facilities, achieved wastewater treatment levels that reduced pollutant mass loadings in the Ocmulgee Basin, and improved system reliability. **We delivered within extremely limited site conditions and complex construction sequencing needed to keep the existing facility operating. The new plant occupies less than half of the footprint of the old plant, leaving room for future expansion or other uses.**

Benefits to GCDWR	Relevance to RFP Criteria
✓ CMAR ✓ Smooth-running project ✓ Cost effective/affordable ✓ Reduce schedule risk/ meet schedule ✓ Site evaluation ✓ Meets regulations ✓ Flexibility, reliability, redundancy, resiliency, sustainability ✓ Easy to operate/maintain ✓ Easily accessible for system maintenance ✓ Safe working environment ✓ Integration into existing facility ✓ Construction sequencing ✓ Asset Management ✓ Made building look good	1. Experience with GCDWR projects 2. Large water reclamation facility **3. CMAR project delivery method** 4. Proven ability to work collaboratively with Owner/Contractor. 5. Similar in complexity: scope, delivery method, funding source 6. Proven performance: budget, schedule, quality, client satisfaction

Integrated Project Delivery Approach/Partnering. Assisted GCDWR with developing a cohesive project team that included the design and construction administration staff, County's on-site project manager and plant operations staff, and the CMAR (including major subcontractors). Project team members were located on site in a common design and construction office complex, sharing a common computer network with access to all project-related information such as 3-D computer models, drawings, specifications, submittals, contracts, cost estimates, and other project information. **This provided for faster, easier, and less costly project delivery.**

Compliance with Discharge Limit During Demolition. Provided for the sequential demolition of all existing plant facilities and construction of new advanced treatment facilities and systems on top of the confined old site, while maintaining uninterrupted plant operations. Operated three of the five trains during construction; the other two treatment trains were removed, making space for construction of the bioreactors and membrane building. Wastewater flow that would have been treated was diverted to one of GCDWR's other treatment plants.

Fast-tracked Project. Engineering and construction occurred simultaneously. The Guaranteed Maximum Price (GMP) was established by a series of additive GMP proposals based on construction packages released when engineering was 60 to 90 percent complete.

Treatment Processes. Designed influent pumping, first stage screening (5 mm), grit removal, primary sedimentation, emergency storage and equalization tanks, second stage screening (2 mm), biological nutrient removal, MBR, UV disinfection, and post aeration. The new facility replaced the existing 3-million-gallon open equalization basins with 40 million gallons of odor-controlled equalization tanks.

All process facilities are enclosed and tankage is covered, with odorous air directed to scrubbers. Treatment residuals are conveyed via force main to a regional processing facility where they are stabilized and the resultant off-gas is used to generate electricity and reduce GCDWR operating costs. Provided principal design of drum screens, vortex-type grit removal, bioreactors, submerged membranes and ancillary systems, and pump station improvements.

Awards: 2012 ENR Magazine "Best of the Best" list Civil Works/Infrastructure; 2012 ENR Southeast Best Project Award; 2011 Top Project by Water & Wastes Digest; 2012 CMAA Award for Excellence in Construction Management

3D Modeling expedited schedule during design, optimized facility layouts, and helped with construction sequencing. Used advanced laser scanning of the existing site to develop site drawings and produce the facilities design. The 3D models were used extensively by GCDWR, GAEPD, the Contractor, and construction administration staff for planning and execution.

Electronic Operations Guide. Provided multimedia document integration, developed SOP, management system, process controls, web-based training development, and staff training.

Safety. Provided ventilation, fire protection, emergency power and lighting, and monitoring and alarming devices. Eyewashes, safety showers, and personal protective equipment were furnished throughout and the staff was trained during facility commissioning in its use. Key safety considerations during construction included flammable and explosive wastewater vapors and the proper and safe containment and storage of bulk chemicals.

Project Highlights	
Delivery Method	CMAR
Funding Source	Gwinnett County
Size of Project	22 mgd $250 million
Roles & Responsibilities	**Jacobs Lead:** Project Manager, Technology Evaluation, Engineering Design, Permitting Assistance, Procurement/Construction Support Services, CMAR Selection Assistance, O&M manual **Precision Planning, Inc. Sub:** Design/Construction Administration **Willmer Engineering Sub:** Geotechnical **PC Construction, Inc:** CMAR
Cost and/or Time Savings for Client	Conducted partnering and team building sessions for faster, easier, and less costly project delivery. Engineering and construction occurred simultaneously.
Initial & Final Budget	Original construction budget (construction contract) - $250 million Change orders – -$5 million (a credit) Final construction contract amount – $238 million
Initial & Final Schedule	Initial 2013 Final Completion 2013
Staff Who Worked on Project	Jay Horton, Jim Grum, Chris Palmer, Tom Wynn, Scott Levesque, Eric Hancock, Rosa Lee-Eng, Chris Warner, Lorean Brinson, Marci Davis
Reference Information	**Ben Bagwell**, Superintendent, Ben.Bagwell@gwinnettcounty.com; P: 678.376.7171

REFERENCE 5

Crooked Creek Water Resources Facility Improvements, Construction Package 4

Gwinnett County Department of Water Resources, GA

Jacobs performed engineering and construction management services to upgrade the Crooked Creek WRF, referred to as Construction Package 4 (CP-4). We provided capacity to treat 16 mgd with space for expansion to a future 25 mgd, delivered a single operating plant versus two separate treatment trains, updated the facility's aging electrical system, and provided new robust odor control systems. **We delivered cost-efficient and reliable treatment upgrades to the liquid and solids systems, including onsite biosolids management. The design provides more robust redundancy and reliability for continued discharge to the Chattahoochee River.**

Benefits to GCDWR		Relevance to RFP Criteria
✓ Smooth-running project ✓ Cost effective/affordable ✓ Reduce schedule risk/ meet schedule ✓ Site evaluation ✓ Meets regulations ✓ Flexibility, reliability, redundancy, resiliency, sustainability ✓ Easy to operate/maintain	✓ Easily accessible for system maintenance ✓ Safe working environment ✓ Integration into existing facility ✓ Construction sequencing ✓ Asset Management ✓ Made building look good	1. Experience with GCDWR projects 2. Large water reclamation facility 3. Proven ability to work collaboratively with Owner/Contractor 4. Similar in complexity: scope, delivery method, funding source 5. Proven performance: budget, schedule, quality, client satisfaction

Integrated Project Delivery Approach/Partnering. Worked as partners on behalf of GCDWR, including holding multiple partnering sessions, co-locating the engineers, construction manager, owner, and contractor in a single construction office, and hosting monthly Leadership Team meetings. Maintained a risk management approach of making decisions based on what was best for the project and allocating costs and other impacts fairly. Involved the operators and maintenance staff in the design phase allowed the team to better understand the life-cycle costs when making equipment and process decisions and design for reliability, flexibility, redundancy, and overall efficiency.

Compliance with Discharge Limit During Construction. Conducted extensive utility-locate services during the design phase due to the complex site conditions where previous projects left conflicting or no as-built information. Extremely congested site required extensive construction sequencing constraints to assure constructability and continued operations of the plant. Complex subterranean structures constructed adjacent to existing environmental structures, buildings, and utilities that were to remain in service. Excavation support systems were installed, along with dewatering of groundwater within the excavations, and recharging the ground outside of the excavations to protect the existing facilities.

Treatment Processes. Provided all new biological and secondary process facilities with chemical, aeration, and RAS/WAS pumping systems, New UV disinfection, post aeration, and service water systems, and new solids handling and septage receiving facility with filtrate storage and pumping systems. Replaced electrical system and SCADA/ control system and designed new robust odor

control facilities and processes. Improved plant hydraulics, minimized noise and light pollution, improved physical and cyber security including a separate visitor's entrance, and delivered an Aesthetically pleasing architectural design of new facilities and plant entry.

3D Modeling expedited design, optimized facility layouts, and helped with construction sequencing. Used photographic and interior and exterior laser scanning to develop 3-D modeling to create all new facility designs and site work, including providing the contractor with the models to use during planning and scheduling of construction and to update for as-built records. 3-D model allowed for a detailed view of the congested site, resulting in no utility strikes during construction. At the completion of the project, the team turned over this model to GCDWR to be used by plant staff and for future design efforts.

Under the leadership of Jacobs, the CCWRF CP-4 project has been a huge success for GCDWR…the entire team is focused on the success of this project resulting in a collaborative mentality that is evident in all that they do.

— **Kris Campbell, *Deputy Director, GCDWR***

Operations Staff Training. Well-trained staff on process and equipment O&M.

Safety. Provision of a safe working environment for consultants, contractors, and GCDWR employees.

Good Neighbor. Delivered a facility that is flexible, reliable, and easy to operate and maintain, as well as a good neighbor in respect to noise, visual aesthetics, odor, and light.

Teamed with Owner's Agent (Hazen).

Awards: 2021 GA ASCE Project of Excellence for Water/ Wastewater

Jacobs Project Highlights	
Delivery Method	Design/bid/build
Funding Source	Gwinnett County
Size of Project	16 mgd $135m
Firm's Major Roles & Responsibilities	**Jacobs Lead:** Project Manager, Engineering Design, Permitting Assistance, Procurement/ Construction Support Services, O&M manual **Hazen Sub:** Design/Construction Administration **PPI Sub:** Survey **Alberici:** Contractor
Team Members Who Worked on Project	Jay Horton, Jim Grum, Bijoy Ghosh, Jeff Peterson, Chip Bates, Abel Valiente, Chris Whalen, Chris Warner, Lorean Brinson
Initial & Final Budget	**Initial Design/CM:** $17.6 m **Final Design/CM**: $17.6 m **Initial Construction**: $135 m **Final Construction:** $135 m
Initial & Final Schedule	**Initial:** 2023 **Final:** 2023 **Design and construction remained on schedule despite complex site constraints, unusual weather conditions experienced, and a worldwide pandemic.**
Cost and/or Time Savings for Client	Design and CM services remain at the lower end of industry standard as % of construction cost bringing value to GCDWR and resulting in good stewardship of ratepayers money. Project bid $3M below Engineer's estimate (a variance of 2%). Change orders were less than 3% of the $135M contracted construction value.
Reference Information	**Kris Campbell, PE**, Section Manager, kristopher.campbell@gwinnettcounty.com, 678.376.6751

Tab E

Key Staff Qualifications, Experience, and Location

Jacobs

Challenging today.
Reinventing tomorrow.

Tab E: Key Staff Qualifications, Experience, and Location

Value to GCDWR

- ✓ Proven Management Team in Jay Horton and Jim Grum
- ✓ National dryer experts with experience working in Metro Atlanta and on the FWH WRC
- ✓ History of collaborating with GCDWR staff, contractors, your owner's agent, and other parties
- ✓ Consistent, proven, GCDWR- focused design team

Jay, Jim, and the Lead Key Staff have experience on similar projects, including all five of our reference projects. Our thermal dryer team has worked together for the better part of 10 years, some working together for more than 18 years for all elements of the design as well as product marketing. The design team has been working on projects for GCDWR for the better part of 20 years. These working relationships provide a technical shorthand and ease of communication. Highlights of our staff include:

- **Project Manager Jay Horton, GA PE**
  - ✓ Wrote the preliminary engineering report (PER) for the WB Casey WRRF Biosolids Management Facilities project
  - ✓ Provided final QA/QC for UOSA project
  - ✓ Unique and detailed knowledge of FWH WRC's design, construction, and operation
  - ✓ One of the leading PMs in Georgia for large Capital Projects
  - ✓ Extensive background in CMAR delivery
  - ✓ Worked with all the major construction contractors in the region
  - ✓ 20 years of experience working with GCDWR and the FWH WRC
- **CMAR Subject Matter Expert Jim Grum**
  - ✓ Led three of the largest and most successful GCDWR projects—Crooked Creek WRF, Yellow River WRF, and FWH WRC
  - ✓ Fosters cohesive project teams for CMAR and other delivery methods
  - ✓ Fast- tracks delivery
- **QA/QC Manager/Senior Residuals Technical Consultant Todd Williams, PE**
  - ✓ Brings a national perspective on biosolids and thermal drying technologies
  - ✓ Part of the UOSA project design team
  - ✓ Significant contributor to the WB Casey WRRF Biosolids Management Facilities PER
  - ✓ Understands the FWH WRC

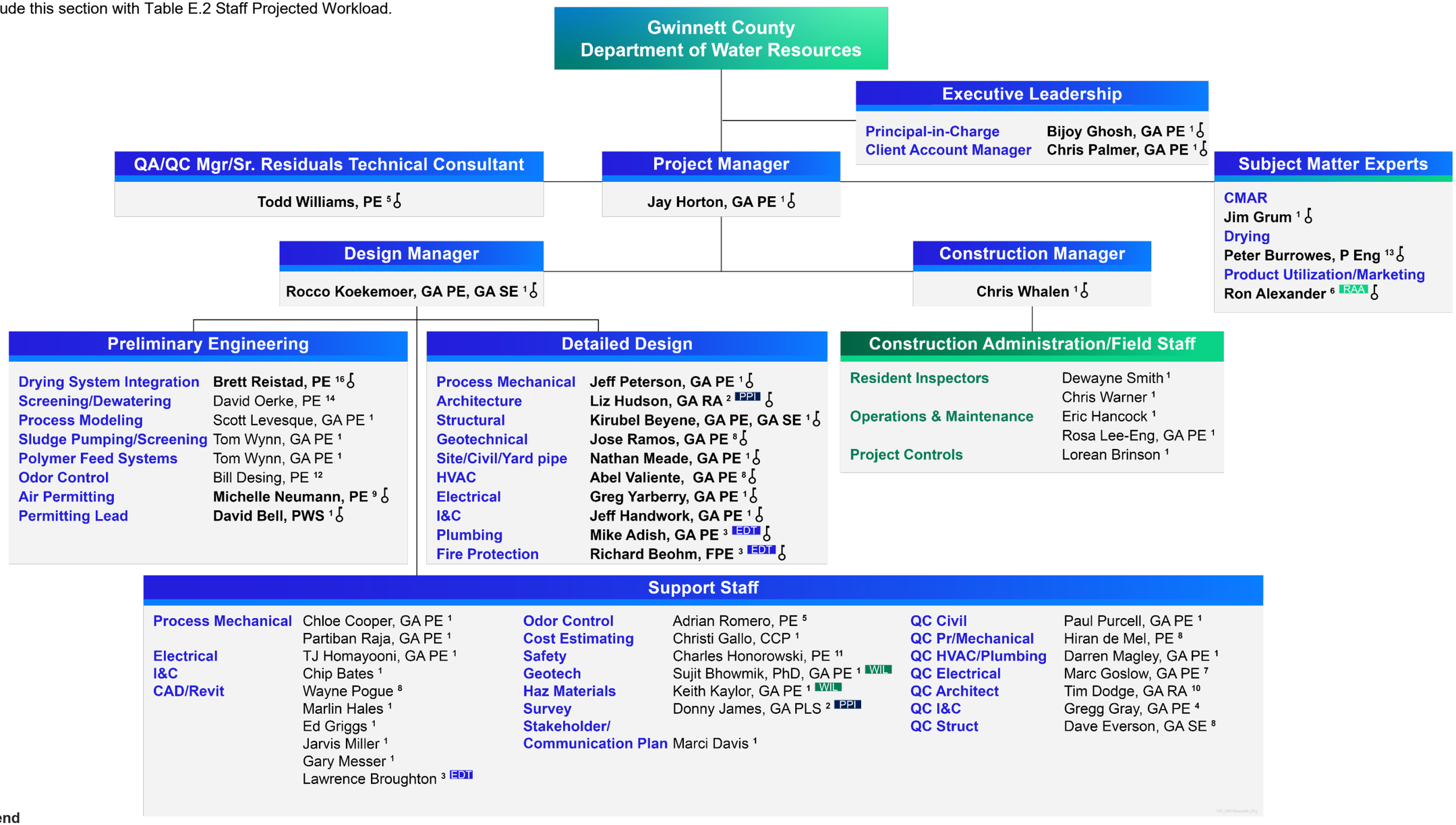
Our thermal dryer team has worked on a combined 17 dryer projects around the world. They offer the right combination of local Georgia and national experience to meet your goals for the FWH WRC.

- **Dryer SME Peter Burrowes, P Eng**
  - ✓ National thermal dryer expert
  - ✓ Part of the UOSA project design team
  - ✓ Significant contributor to the WB Casey WRRF Biosolids Management Facilities PER
- **Drying System Integrator Brett Reistad, PE**
  - ✓ 23 years of experience integrating dryers
  - ✓ Lead designer for the UOSA project
  - ✓ Significant contributor to the WB Casey WRRF Biosolids Management Facilities PER
- **Product Utilization/Marketer Ron Alexander**
  - ✓ Experienced with Georgia biosolids product markets
  - ✓ Provided Biosolids Market Studies for CCWA, the City of Atlanta, and a Market Study review for GCDWR

Our Project Manager and Key Lead Staff have applicable Georgia professional licenses, are largely local to Metro Atlanta, and have been selected for their historical experience working with GCDWR, technical credentials, and similar experience.

From our Metro Atlanta office, the team can be at your office in approximately 30 minutes, with some lead key staff already on site and/or able to reach the site in as quickly as 15 minutes. They are all available to begin work immediately at NTP.

Organization Chart. Our team is organized to be your full service partner, from preliminary engineering through construction. Jay has been a full time employee of Jacobs for 27 years and will be your single point of contact. Jay will lead the project team and oversee all aspects of the project. Available to you at any time, he will meet with you regularly with a primary focus on project efficiency and schedule and costs. Jim will support Jay on the CMAR delivery. Rocco Koekemoer, GA SE will lead the design team. Our staffing plan (three process engineers, for example) gets work done quickly. Table E.1 Project Manager and Key Team Leaders Summary is on the following page. We conclude this section with Table E.2 Staff Projected Workload.



Legend

All Jacobs employees except where marked by the following:

Key Staff =

Precision Planning, Inc. (PPI) PPI
Engineering Design Technologies, Inc. (EDT) EDT
Willmer Engineering, Inc. (WEI) WIL
R. Alexander Associates, Inc. (RAA) RAA

Locations:

Atlanta, GA [1]	Lawrenceville, GA [2]	Marietta, GA [3]	Birmingham, AL [4]
Charlotte, NC [5]	Apex, NC [6]	Jacksonville, FL [7]	Gainesville, FL [8]
Tampa, FL [9]	Orlando, FL [10]	Conshohocken, PA [11]	Milwaukee, WI [12]
Kitchener, Ontario [13]	Greenwood Village, CO [14]	Redding, CA [15]	Corvallis, OR [16]

The Jacobs team's Project Manager and Key Lead Staff all have applicable Georgia professional licenses, are largely local to Metro Atlanta, and have been selected for their historical experience working with GCDWR, technical credentials, and similar experience. They have experience on similar projects, including all five of our reference projects. An overview is provided in Table E.1 below.

Table E.1: Jacobs' Team Project Manager & Key Lead Staff Overview

KEY LEAD STAFF	VALUE TO GCDWR
Jay Horton, GA PE  **Level of Responsibility:** Project Manager **Years of Experience:** 32 **Years with Firm:** 27 **Education:** ME, Mechanical Eng., University of Florida; BME, Mechanical Eng., Georgia Institute of Technology **Registrations:** PE GA #PE028415 **Location:** Atlanta, GA	**Wrote the PER for the WB Casey WRRF Biosolids Management Facilities project. Provided final QA/QC for UOSA project. Unique and detailed knowledge of FWH WRC's design, construction, and operation for correct construction sequencing and ease of project tie-in. Is one of the leading PMs in Georgia for large Capital Projects. Extensive background in the CMAR delivery method. Has worked with all the major construction contractors in the region, which speeds up project delivery, reduces cost, provides operational efficiencies, reduces contractor risk, requires less project contingency in bid prices, improves the construction schedule to best support the contractor in a CMAR delivery, and creates a construction RFP that is clear and easy to understand. Jay has spent 20 years working with GCDWR.** Jay has 32 years of experience in the evaluation, planning, permitting, regulatory coordination, design, construction, testing, start up, and operation of treatment facilities.
Bijoy Ghosh, GA PE **Level of Responsibility:** Principal-in-Charge **Years of Experience:** 25+ **Years with Firm:** 9 **Education:** MS, Environmental Engineering, Georgia Institute of Technology; MS, Civil Engineering, Indian Institute of Technology; BE, Civil Engineering, Birla Institute of Technology and Science **Registrations:** PE GA #19333 **Location:** Atlanta, GA	**Serving GCDWR for more than 25 years, ensuring applicable resources are available, GCDWR's satisfaction with our work, and providing executive leadership to the team.** Bijoy has more than 25 years of experience as a water and infrastructure executive providing technical and management solutions.
Chris Palmer, GA PE **Level of Responsibility:** Client Account Manager **Years of Experience:** 19 **Years with Firm:** 15 **Education:** BS, Civil Engineering, Michigan Technological University **Registrations:** PE GA #34670 **Location:** Atlanta, GA	**Serves as Client Account Manager for GCDWR ensuring project goals are established and met.** Chris has 19 years of experience in civil engineering, facility planning, and municipal water and wastewater treatment facilities. Chris delivers both traditional delivery and alternative delivery.
Jim Grum **Level of Responsibility:** CMAR Technical Advisor **Years of Experience:** 47 **Years with Firm:** 38 **Education:** MS, Mechanical Engineering, Michigan State University **Registrations:** N/A **Location:** Atlanta, GA	**Led three of the largest and most successful GCDWR projects: Crooked Creek WRF, Yellow River WRF, and FWH WRC. Jim has spent 20 years working with GCDWR.** Jim has 47 years of experience developing and constructing wastewater treatment facilities.
Todd Williams, PE **Level of Responsibility:** QA/QC Manager/Senior Residuals Technical Consultant **Years of Experience:** 42 **Years with Firm:** 9 **Education:** BS, Civil Engineering Technology, Virginia Polytechnic and State University **Registrations:** PE VA #017784; Iowa #12940 **Location:** Charlotte, NC	**National perspective on biosolids digestion, dewatering and thermal drying technologies. Experienced with FWH WRC. Part of UOSA project design team. Significant contributor to the PER for the WB Casey WRRF Biosolids Management Facilities project.** Todd has 42 years of experience and is a recognized biosolids management expert.
Peter Burrows, P Eng **Level of Responsibility:** Dryer SME/Technical Advisor **Years of Experience:** 43 **Years with Firm:** 43 **Education:** B.Eng. (Mechanical Engineering), University of Sheffield, U.K. **Registrations:** PE Ontario #06225015 **Location:** Kitchener, ON	**National perspective and expertise. Part of UOSA project design team. Significant contributor to the PER for the WB Casey WRRF Biosolids Management Facilities project.** Peter has 43 years in dewatering, thermal drying, energy recovery, odor management, air pollution control.

KEY LEAD STAFF	VALUE TO GCDWR
Ron Alexander **Level of Responsibility:** Product Utilization/Marketing **Years of Experience:** 38 **Years with Firm:** 25 **Education:** BS, Horticulture, Delaware Valley College of Science and Agriculture **Registrations:** N/A **Location:** Apex, NC	**Experienced with Georgia biosolids product markets. Provided Biosolids Market Studies for CCWA and the City of Atlanta, and a Biosolids Market Study review for GCDWR.** Ron has 38 years of experience in biosolids-based product manufacturing, marketing/distribution, and utilization.
Rocco Koekemoer, GA PE **Level of Responsibility:** Design Manager **Years of Experience:** 15 **Years with Firm:** 14 **Education:** BS, Civil and Environmental Engineering, University of Washington **Registrations:** PE GA #040793 **Location:** Atlanta, GA	**Proven GCDWR and FWH WRC design manager and structural designer. Manages to budget/schedule.** Rocco has 15 years of experience as design manager and lead structural engineer for multi-discipline teams for water and wastewater treatment facilities.
Brett Reistad, PE **Level of Responsibility:** Drying System Integration **Years of Experience:** 26 **Years with Firm:** 22 **Education:** BS, Mechanical Engineering, Oregon State University **Registrations:** PE CA, OR **Location:** Corvallis, OR	**Lead designer for the UOSA Project. Significant contributor to the PER for the WB Casey WRRF Biosolids Management Facilities project.** Brett has 26 years of experience in wastewater residuals handling and integrating dryers.
Michelle Neumann, PE **Level of Responsibility:** Air Permitting **Years of Experience:** 13 **Years with Firm:** 11 **Education:** BS, Civil Engineering, University of Washington **Registrations:** PE WA #53760 **Location:** Tampa, FL	**Experienced with GCDWR facilities.** Michelle has 13 years of experience in air dispersion modeling, air emission inventories, air permit applications, and health risk assessments for multiple clients, industries, and sectors including secondary aluminum and other manufacturing projects.
David Bell, PWS **Level of Responsibility:** Permitting Lead **Years of Experience:** 17 **Years with Firm:** 17 **Education:** BS, Environmental Studies, University of North Carolina at Asheville **Registrations:** PWS #2595 **Location:** Atlanta, GA	**Experienced with GCDWR facilities.** David has 17 years of experience. He has extensive experience with Federal, State, and local regulatory agencies to navigate and implement complex water quality and environmental permitting requirements.
Jeff Peterson, GA PE **Level of Responsibility:** Process Mechanical **Years of Experience:** 17 **Years with Firm:** 17 **Education:** BS, Environmental Studies, University of North Carolina at Asheville **Registrations:** PE GA #PE036667 **Location:** Atlanta, GA	**Experienced with GCDWR facilities.** Jeff has 17 years of experience in process mechanical design for municipal treatment facilities. This includes open channel hydraulic modeling, modeling/sizing of pumped systems, equipment sizing, facility layouts, cross discipline coordination, drawing development, and engineer of record services during construction.
Elizabeth Hudson, GA RA, LEED AP BD+C (PPI) **Level of Responsibility:** Architecture **Years of Experience:** 33 **Years with Firm:** 29 **Education:** MA, Georgia Institute of Technology; BA, Agnes Scott College **Registrations:** RA GA #9348 **Location:** Lawrenceville, GA	**Experienced with GCDWR facilities.** Liz has 33 years of experience on a variety of building projects. She has managed feasibility studies, design, production of contract documents and construction administration.
Kirubel Beyene, GA PE, GA SE **Level of Responsibility:** Structural **Years of Experience:** 19 **Years with Firm:** 2 **Education:** MSc, Civil Engineering, Georgia Institute of Technology; BSc, Civil Engineering, University of Notre Dame **Registrations:** PE GA #PE035013 **Location:** Atlanta, GA	**Experienced with FWH WRC and other GCDWR facilities.** Kirubel has 19 years of experience in structural engineering. He performs a wide range of civil and structural engineering tasks that require coordination with multi-disciplined team members.

KEY LEAD STAFF	VALUE TO GCDWR
Jose Ramos, GA PE **Level of Responsibility:** Geotechnical **Years of Experience:** 24 **Years with Firm:** 22 **Education:** ME, Civil Eng., University of Florida; BS, Civil Engineering, University of Puerto Rico **Registrations:** PE GA #31830 **Location:** Gainesville, FL	**Experienced with GCDWR facilities.** José has 24 years of engineering experience for water projects. Jose's experience includes site development, site grading and drainage, stormwater management, utilities and force mains, erosion and sediment control, and treatment plants.
Nathan Meade, GA PE **Level of Responsibility:** Site/Civil/Yard Pipe **Years of Experience:** 12 **Years with Firm:** 12 **Education:** BS, Civil Eng., Georgia Institute of Technology **Registrations:** PE GA #PE04153 **Location:** Atlanta, GA	**Experienced with GCDWR facilities.** Nate has 12 years of experience in civil engineering and CAD support in site development, site grading and drainage, stormwater management, site utilities, erosion and sediment control, and treatment plants. He provides services during construction.
Abel Valiente, GA PE **Level of Responsibility:** HVAC **Years of Experience:** 20 **Years with Firm:** 12 **Education:** BS Mechanical Eng., University of Havana; MS, University of Havana; Plumbing Design, University of New York; HVAC Concepts of Design, University of New York **Registrations:** PE GA #039147 **Location:** Gainesville, FL	**Experienced with Metro Atlanta facilities.** Abel has 20 years of experience in extensive building services design work for water and wastewater treatment facilities. He is experienced in modeling hydraulic systems and HVAC systems using computer tools as Pipe-Flow, Energy Gauge, Trace 700 and HourlyAP.
Greg Yarberry, GA PE **Level of Responsibility:** Electrical **Years of Experience:** 30 **Years with Firm:** 28 **Education:** BS, Electrical Engineering, University of Florida **Registrations:** PE GA #28825 **Location:** Atlanta, GA	**Experienced with GCDWR facilities. Manages projects to budget/schedule.** Greg has 30 years of experience in the design of electrical power distribution systems, standby power generation facilities, and I&C systems for treatment plants.
Jeff Handwork, GA PE **Level of Responsibility:** I&C **Years of Experience:** 33 **Years with Firm:** 14 **Education:** BS, Electrical Engineering, Georgia Institute of Technology **Registrations:** PE GA #PE21727 **Location:** Atlanta, GA	**Experienced with GCDWR facilities.** Jeff has 33 years of experience in project management and engineering for control systems, including I&C and SCADA. He has worked on large and complex EPC power plants, primarily focused on process safety, functional safety, HAZOP, I&C, and electrical.
Mike Adish, GA PE (EDT) **Level of Responsibility:** Plumbing **Years of Experience:** 40 **Years with Firm:** 20 **Education:** BS, Mechanical Engineering, University of Texas at Arlington **Registrations:** PE GA #17025 **Location:** Marietta, GA	**Experienced with plumbing needs of infrastructure facilities.** Mike has 40 years of experience, including HVAC design, fire protection design, plumbing and project management. He is the Mechanical Engineer of Record for a number of design projects in the military, federal, state and local government sectors.
Richard Beohm, GA FPE (EDT) **Level of Responsibility:** Fire Protection **Years of Experience:** 45 **Years with Firm:** 10 **Education:** BS, Electronics Engineering, DeVry Institute of Technology **Registrations:** FPE GA #018412 **Location:** Marietta, GA	**Experienced with fire protection needs of infrastructure facilities.** Richard has 45 years of experience in the design of fire protection systems, sprinkler layout and design, fire and safety alarm systems and other related systems.
Chris Whalen **Level of Responsibility:** Construction Manager **Years of Experience:** 34 **Years with Firm:**18 **Education:** Electrical Master, Journeymen, DeKalb Technical College **Registrations:** N/A **Location:** Atlanta, GA	**Knowledge of FWH WRC and other GCDWR facilities.** Chris has 30 years of experience in the construction management of water and wastewater treatment plant expansions, renovations, upgrades, and new plant projects.

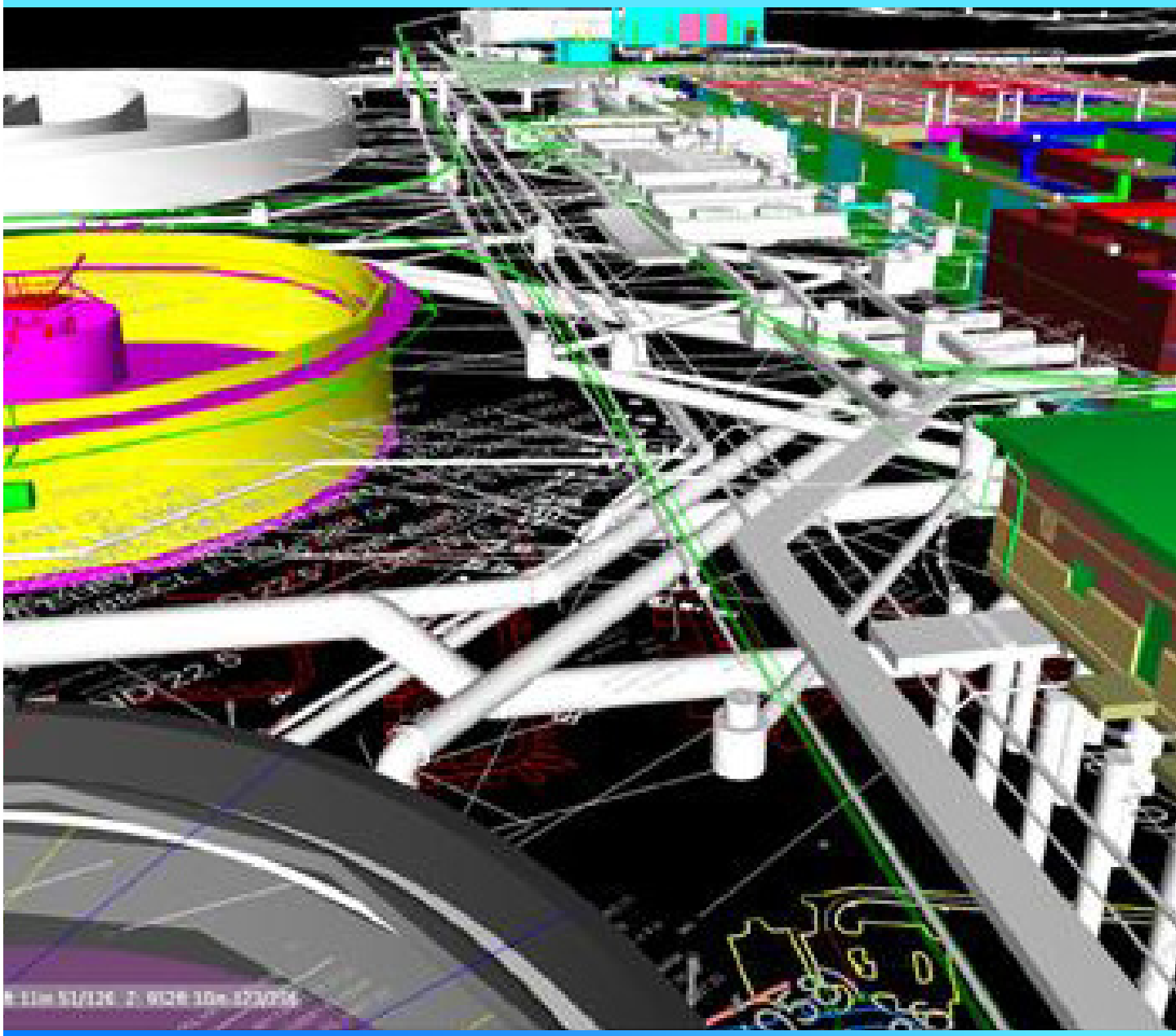
We forecast workload on a quarterly basis. We have listed the commitments we are aware of to the best of our knowledge and belief in Table E.2 below. We summarize the key lead staff anticipated to be assigned, the monthly time (on average for the duration of the project) they will spend on to the Biosolids Dryer Project, as well as their projected hours for other projects, assuming a start date of 8/14/2023.
The Biosolids Dryer is our priority for our team and staff will be made available as needed.

E.2 Jacobs Team Staff Workload

Jacobs Team Staff	Monthly Time Commit to Dryer (Hrs)	Project/Client Name/Location	Staff Role	Project Description	Current Status	Completion Date	Monthly Time Commitment (Hrs)
Jay Horton, PE Project Manager	80	Hard Labor Creek WTF/ WCWSA/GA PM	Project Manager	Design/construction of new WTF	Prelim Design	8/30/2027	28 hours
		Bear Creek WTP/UOBWA/ GA	QA/QC	Design/construction of WTF expansion	Design	3/2024	4 hours
		Lanier Intake/Forsyth County/GA	QA/QC	Design/construction of new water intake	Design	1/31/2025	4 hours
		Raw Water System Improvements/GCDWR/GA	QA/QC	Master Plan	Plan	3/2024	4 hours
		FWHWRC Membranes Improvements, GCDWR/GA	Project Manager	Design/construction admin.	Construction	2/15/2024	24 hours
Bijoy Ghosh, PE Principal-in-Charge	4	Bear Creek WTP/UOBWA/GA	Project Executive	Design/construction of WTF expansion	Design	3/2024	4 hours
Chris Palmer, PE Client Account Manager	8	GCDWR Solar Analysis/ GCDWR/GA	Project Manager	GCDWR solar analysis	Planning	12/1/2023	2 hours
		E2I2 PDB/City of Chattanooga/TN	QA/QC	Wet weather storage	Planning/Design/Build	9/1/2025	2 hours
		MBEC EQ & Blower Improv/City of Chattanooga/TN	QA/QC	Wastewater equalization improvements	Construction	6/1/2024	2 hours
Jim Grum CMAR Advisor	80	FWHWRC Membranes Improvements, GCDWR/GA	Project Manager	Design/construction administration	Construction	2/15/2024	40 hours
Todd Williams, PE QA/QC Manager/ Senior Residuals Technical Consultant	16	Owner's Agent W.B. Casey WRRF Biosolids Management Facilities/ CCWA/GA	Residuals Consultant	Owner's agent of new biosolids management facility	Design	Est. 12/1/2026	40 hours
Peter Burrowes, P Eng Drying Advisor	32	Owner's Agent, W.B. Casey WRRF Biosolids Management Facilities/ CCWA/GA	Drying Advisor	Owner's agent of new biosolids management facility	Design	Est. 12/1/2026	2 hours
Ron Alexander Product Utilization/Marketing	8	Miscellaneous	Pellet Marketer	Pellet marketing	--	2027	40 hours
Rocco Koekemoer, PE Design Manager	80	Bear Creek WTP/UOBWA/ GA	Design Manager	Design/construction of WTF expansion	Design	3/2024	48 hours
		Raw Water System Improvements/GCDWR/GA	Project Manager	Master Plan	Plan	3/2024	16 hours
Brett Reistad, PE Drying System Integration	40	Owner's Agent, W.B. Casey WRRF Biosolids Management Facilities/ CCWA/GA	Drying Integration	Owner's agent of new biosolids management facility	Design	Est.12/1/2026	32 hours
		Blue Lake Dryer Expansion / Metropolitan Council of Environmental Svcs. / MN	Drying Integration	Rotary dryer system procurement & new dryer building	Design	2025	40 hours
		Digester Addition / Clean Water Svcs. / Portland, OR	Digester Lead	Digester expansion project, adding a 3rd digester to existing digestion complex	Design	2025	40 hours
Michelle Neumann, PE Air Permitting Lead	8	Various	Air Permitting	Various	N/A	2027	40 hours
David Bell, PWS Permitting Lead	12	Hard Labor Creek WTF/ WCWSA/GA	Permitting	Design/construction of new WTF	Prelim Design	8/30/2027	1 hour
Jeff Peterson, PE Process Mechanical Lead	90	Bear Creek WTP/UOBWA/ GA	Process Mechanical	Design/construction of WTF expansion	Design	3/2024	40 hours
		Lanier Intake/Forsyth County/GA	Process Mechanical	Design/construction of new water intake	Finishing Design	12/2023	16 hours

Jacobs Team Staff	Monthly Time Commit to Dryer (Hrs)	Project/Client Name/Location	Staff Role	Project Description	Current Status	Completion Date	Monthly Time Commitment (Hrs)
Liz Hudson, RA Architecture Lead	**40**	Various Gwinnett County Projects	Architecture	Architectural design	Design	Ongoing	16 hours
Kirubel Beyene, PE, SE Structural Lead	**70**	Hard Labor Creek WTF/ WCWSA/GA	Structural	Design/construction of new WTF	Prelim Design	8/30/2027	16 hours
Jose Ramos, PE Geotechnical Lead	**8**	Hard Labor Creek WTF/ WCWSA/GA	Civil & Geotech	Design/construction of new WTF	Prelim Design	8/30/2027	4 hours
		Bear Creek WTP/UOBWA/GA	Civil & Geotech	Design/construction of WTF expansion	Design	3/2024	8 hours
		Lanier Intake/Forsyth County/GA	Civil & Geotech	Design/construction of new water intake	Finishing Design	12/2023	8 hours
		PRASA Puerto Nuevo WWTP Grit	Civil & Geotech	Design/construction of new grit removal	Design	2/2024	40 hours
Nathan Meade, PE Site/Civil/Yard Pipe Lead	**50**	Hard Labor Creek WTF/ WCWSA/GA	Civil	Design/construction of new WTF	Prelim Design	8/30/2027	20 hours
		Bear Creek WTP/UOBWA/GA	Civil	Design/construction of WTF expansion	Design	3/2024	8 hours
		Lanier Intake/Forsyth County/GA	Civil	Design/construction of new water intake	Finishing Design	12/2023	16 hours
Abel Valiente, PE HVAC	**50**	Hard Labor Creek WTF/ WCWSA/GA	HVAC/ Plumbing	Design/construction of new WTF	Prelim Design	8/30/2027	12 hours
		Bear Creek WTP/UOBWA/GA	HVAC/ Plumbing	Design/construction of WTF expansion	Design	3/2024	28 hours
		Lanier Intake/Forsyth County/GA	HVAC/ Plumbing	Design/construction of new water intake	Finishing Design	12/2023	8 hours
Greg Yarberry, PE Electrical Lead	**50**	Hard Labor Creek WTF/ WCWSA/GA	Electrical	Design/construction of new WTF	Prelim Design	8/30/2027	16 hours
		Bear Creek WTP/UOBWA/GA	Electrical	Design/construction of WTF expansion	Design	3/2024	36 hours
		SJC SR207 WRF/St. Augustine, FL	Electrical	Design/construction of new wastewater treatment facility	Construction		16 hours
		Lanier Intake/Forsyth County/GA	Electrical	Design/construction of new water intake	Finishing Design	12/2023	12 hours
		Raw Water System Improvements/GCDWR/GA	Electrical	Master Plan	Plan	3/2024	4 hours
Jeff Handwork, PE I&C Lead	**40**	Hard Labor Creek WTF/ WCWSA/GA	I&C	Design/construction of new WTF	Prelim Design	8/30/2027	4 hours
		Bear Creek WTP/UOBWA/GA	I&C	Design/construction of WTF expansion	Design	3/2024	4 hours
Mike Adish, PE Plumbing Lead	**20**	Tyndall Silver Flag	Mechanical Eng.	Technical Training Classroom	Under Construction	2024	18 hours
		Tyndall AFB Child Dev Ctr	Mechanical Eng.	Child Development Center.	Under Construction	2023	17 hours
		LIV Madison Apartments-ATL	Mechanical Eng.	Living Apartments	Under Construction	2024	2 hours
		Barracks 633 Ft Stewart D/B	Mechanical Eng.	Volar Barracks Bldgs Repair	Under Construction	2024	9 hours
		Alabama A&M HVAC Action	Mechanical Eng.	Living Apartments	Under Construction	2024	18 hours
		Jeff Davis Ath Field Hs(M)-ATL	Mechanical Eng.	Vehicle Maintenance	Under Construction	2024	32 hours
		Ft Stewart Volar Barracks	Mechanical Eng.	Volar Barracks Bldgs Repair	Under Construction	2023	13 hours
		Ft. Gordon TBUP Bldg 25703	Mechanical Eng.	TBUP Barracks Bldg Repair	Under Construction	2023	7 hours
		Deep Creek Pump Station Rehab	Mechanical Eng.	Pump Station Upgrade	30% Bridging Doc	2024	4 hours
		Repair Chiller Pipping B1903	Mechanical Eng.	Replace of existing Chilled Water Lines	Under Construction	2023	3 hours
		Ft. Gordon TBUP Bldg 25703	Fire Protection | Life Safety	TBUP Barracks Bldg Repair	Under Construction	2023	15 hours
Richard Beohm, FPE Fire Protection	**16**	Various	Plumbing	Various	Design	Ongoing	35 hours
Chris Whalen Construction Manager	**160**	FWHWRC Membranes Improvements, GCDWR/GA	Construction Management	Design/construction administration	Construction	2/15/2024	160 hours

Client name abbreviations: Clayton County Water Authority (CCWA), Gwinnett County Department of Watershed Management (GCDWR), St. Johns County (SJC), Upper Oconee Basin Water Authority (UOBWA), Walton County Water & Sewerage Authority (WCWSA)



Tab F

Resumes of Individuals

Jacobs

Challenging today.
Reinventing tomorrow.

Jay Horton, PE | *Project Manager*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Unique and detailed knowledge of FWH WRC's design, construction, and operation for correct construction sequencing and ease of project tie-in. Is one of the leading PMs in Georgia for large Capital Projects. Extensive background in the CMAR delivery method. Has spent his entire career providing engineering services to GCDWR. Jay Horton has 32 years of experience in the evaluation, planning, permitting, regulatory coordination, design, construction, testing, start up, and operation of treatment facilities. He has led the delivery of design projects ranging from a $2.5M raw water intake to a $130M wastewater treatment plant improvements with capacities ranging from less than 1 mgd to 200 mgd.

REPRESENTATIVE PROJECTS

Water Reclamation Plant Expansion and Solids Drying Facility | Upper Occoquan Sewage Authority (UOSA)

Centreville, VA | QA/QC

Provided final QA/QC. This project included a new solids thermal rotary dryer and renovations and improvements to the existing dryer building. UOSA's RAWRF has a design capacity rating of 54 mgd. Plant biosolids processes include waste sludge thickening (via dissolved air flotation thickeners and centrifuges), split stream anaerobic digestion, centrifuge dewatering, and rotary drying for final product reuse.

F. Wayne Hill WRC Tertiary Treatment Upgrades

Buford, GA | Project Manager

Assessed the physical condition and hydraulic and treatment capacity of the tertiary treatment unit processes. Constructed a detailed hydraulic model using a Replica digital twin software. Reviewed historical SCADA and operational data and maintenance records and conducted interviews with operations staff to develop the estimated treatment capacity of the existing unit processes and provided potential improvement recommendations. Developed the design criteria and hydraulic and process treatment performance to be used for the expansion and/or construction of alternative treatment options. Evaluated alternative technology options for chemical treatment for phosphorous removal, clarification technologies, screening options upstream of the membrane filtration system, and membrane filtration options necessary to meet the design criteria. We prepared a Basis of Design Report, developed the scope of work and a set of contract documents. Provided design and permitting services and developed and conducted a six-month, onsite pilot test of membrane systems from six manufacturers, selecting immersed membranes operating in a tertiary mode. Established and incorporated the scope of their supply, cost, and delivery schedule into the bid/contract documents. Of the total 60 mgd, the flow is split into two clarification and filtration treatment trains: an NPDES permit to discharge 20 mgd to a combined outfall with Gwinnett's Crooked Creek WRF into the Chattahoochee River and 40 mgd into Lake Lanier.

WB Casey WRRF Biosolids Management Planning and DB Owners Engineer | CCWA

Jonesboro, GA | Design Manager

Managed the preliminary engineering design at this 32 mgd wastewater facility. Options reviewed included anaerobic digestion, thermal hydrolysis and thermal drying in various combinations to update the Authority's 40-year-old thermal drying facility. The outcome of the study was a selected digestion of primary solids only followed by thermal drying expansion and the resultant preliminary engineering report.

Years of Experience
32

Years with Firm
27

Education
ME, Mechanical Engineering, University of Florida

BME, Mechanical Engineering, Georgia Institute of Technology

Registrations
Professional Engineer: GA, No. PE028415

Professional Affiliations
Georgia Association of Water Professionals

Office Location
Atlanta, GA

Crooked Creek WRF Improvements Project, Construction Package 4 | GCDWR

Lawrenceville, GA | Design Manager

Performed engineering and construction management services to upgrade the Crooked Creek WRF, referred to as Construction Package 4 (CP-4). Provided capacity to treat 16 mgd with space for expansion to a future 25 mgd, delivered a single operating plant versus two separate treatment trains, updated the facility's aging electrical system, and provided new robust odor control systems. We delivered cost-efficient and reliable treatment upgrades to the liquid and solids systems, including onsite biosolids management. The design provides more robust redundancy and reliability for continued discharge to the Chattahoochee River.

F. Wayne Hill WRC Phase 2 Expansion | GCDWR

Buford, GA | Multiple Leadership Roles

Served multiple roles during the expansion of the WRF from 20 to 60 mgd, which included four separate construction projects. He coordinated the planning and scheduling of construction activities that would affect plant operations, worked daily with operations staff and contractors to minimize the effects of construction on day-to-day plant operations, and led the mechanical design for expanding the effluent pump stations. As task lead for the software configuration of the plant's Foxboro I/A DCS, Jay supervised the activities of team programmers with a total labor budget of $2.9M. He supervised start-up and testing activities across the four construction contracts, coordinated scheduling and staffing for witnessed equipment testing, and field-tested control system software.

Crooked Creek WRF Facility Plan | GCDWR

Lawrenceville, GA | Process/Mechanical Engineering Lead

Planning-level project to identify additional upgrades to Crooked Creek WRF beyond CP-1 and CP-2. The goal was to enhance facility sustainability and ensure the capacity to meet future effluent limits. Jay developed site and unit process layout options and developed cost estimates for evaluation of alternatives.

Yellow River WRF Improvements | GCDWR

Lawrenceville, GA | Lead Process/Mechanical Engineer

Jay led the new headworks design and developed plans and specifications for a screening and grit treatment system, including two 5-millimeter drum screens and new Eutek Headcell grit tanks. This $238M complex project required upgrading a 14-mgd secondary WWTP to a 22-mgd MBR plant within its existing footprint while keeping it in service. Pumping systems design included the grit pumps and the primary sludge pumps.

Hard Labor Creek WTP | Walton County Water & Sewerage Authority

Loganville, GA | Project Manager

Providing professional engineering services for the design, permitting, and construction support of the new Hard Labor Creek Water Treatment Facility (WTF). This conventional gravity filtration WTF will treat a peak capacity of 16 mgd and be expandable to a future peak capacity of 64 mgd.

Hugh A. Wyckoff WTP Improvements | Cobb County-Marietta Water Authority (CCMWA)

Marietta, GA | Project Manager

The project included a $72M upgrade to the WTP. New construction focused on operational and regulatory improvements to provide improved reliability and redundancy to the plant. One portion of the project consisted of converting the raw water pump station from a 2,300V to a more commonplace 4,160V electrical system. Pump station design also included the addition of a 2-MW emergency generator.

Hard Labor Creek Raw Water Intake/Pump Station and WTP | Walton County Water & Sewerage Authority (WCWSA)

Loganville, GA | Lead Mechanical Engineer

Jay led the mechanical design for a 70-mgd capacity raw water intake for a future WTP. Design allowed the pump station to start at 9 mgd and expand to 70 mgd. Intake design was delivered to the client in two construction packages. Phase 1 included site development and the intake tower. Phase 2 included equipment and electrical facilities.

Bijoy Ghosh, PE | *Principal-In-Charge*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Serving GCDWR for more than 25 years, ensuring applicable resources are available, GCDWR's satisfaction with our work, and providing executive leadership to the team. Bijoy Ghosh has more than 25 years of experience as a water and infrastructure executive providing technical and management solutions. His experience includes delivery of professional services of for master planning, design and construction management of very large water reclamation facilities improvements and expansions using alternative delivery. Bijoy also has experience delivering water transmission and wastewater conveyance projects and program/ construction management (P/CM) for water and sewer. He has taught advanced project management sessions to project managers in engineering and construction management and has developed and delivered online training modules on business/project management.

REPRESENTATIVE PROJECTS

Crooked Creek WRF Improvements, CP4 | GCDWR
Gwinnett County, GA | Principal-in-Charge
Principal-in-Charge on the delivery of the Crooked Creek WRF Improvements CP-4 project.

W.B. Casey Water Resource Recovery Facility Improvements Thermal Dryer | CCWA
Clayton County, GA | Principal-in-Charge
Principal-in-Charge for preliminary engineering and owner's representative Design/Build project.

Consultant Professional Demand Services Contract for Category A, F, G, I: Water and Water Reclamation Facilities | GCDWR
Gwinnett County, GA | Principal-in-Charge
Overseeing development and delivery of multiple Task Orders for multiple categories.

Consultant Professional Demand Services Contract for Category A, F, I: Water and Water Reclamation Facilities | GCDWR
Gwinnett County, GA | Principal-in-Charge
Overseeing development and delivery of multiple Task Orders.

Consultant Professional Demand Services Contract for Category I: Water and Water Reclamation Facilities | GCDWR
Gwinnett County, GA | Principal-in-Charge
Overseeing development and delivery of more than 15 Task Orders.

Consultant Professional Demand Services Contracts for Water and Water Reclamation Facilities, and Planning Support Services | GCDWR
Gwinnett County, GA | Principal-in-Charge
Oversaw development and delivery of more than 30 Task Orders.

2030 Master Plan for Water & Sewer | GCDWR
Gwinnett County, GA | Principal-in-Charge
Oversaw delivery of the 2030 Water & Sewer Master Plan. Selected the Project Manager and the Technical Advisor for the project and was responsible for providing resources to complete the delivery of the project.

Years of Experience
25+

Years with Firm
9

Education
MS, Environmental Engineering, Georgia Institute of Technology

MS, Civil Engineering, Indian Institute of Technology (IIT)

BE, Civil Engineering, Birla Institute of Technology and Science (BITS)

Registrations
Professional Engineer: GA, No. 19333

Professional Affiliations
American Water Works Association (AWWA)

Water Environment Federation (WEF)

Georgia Association of Water Professionals (GAWP)

Office Location
Atlanta, GA

Chris Palmer, PE | *Client Account Manager*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Serves as Client Account Manager for GCDWR ensuring project goals are established and met. Chris Palmer has 19 years of experience in civil engineering, facility planning, and municipal water and wastewater treatment facilities. Chris delivers both traditional delivery and collaborative delivery. Chris' expertise includes pipelines, water and wastewater treatment facilities, pump stations, hydrology and stormwater management design, road design, and general land development (residential, commercial, and general for projects ranging from 1 to 200+ acres). He currently serves as a Client Service Leader, and as Project Manager and Master Planning Technician on a wide variety of projects.

REPRESENTATIVE PROJECTS

Yellow River Water Reclamation Facility Improvements | GCDWR

Buford, GA | Civil Design Engineer

Work consisted of site layout, site utility piping, and grading and drainage for this $250M plant replacement. Project included engineering design, 3D CAD design, construction management services, pre-purchase equipment package, start-up assistance and community involvement in the expansion of the plant to 22 mgd. Project featured perforated-plate drum screens, stacked-tray grit separators, and the sequential demolition of all existing plant facilities and the construction of new facilities and systems on top of the old site while maintaining uninterrupted plant operations. Treatment processes included influent pumping, first stage screening (5 millimeters [mm] drums), stacked-tray type grit removal units, primary sedimentation, emergency storage and equalization tanks, second stage screening (2 mm), biological nutrient removal, membrane biological reactors (mbr), ultraviolet (uv) disinfection, and post aeration.

Equalization Basin and Blower Replacement Improvements

Chattanooga, TN | Project Manager

Project includes major efficiency upgrades to the Equalization Basins and blower building to reduce operations and maintenance costs. The project includes a new blower building with high efficiency blowers; equalization basin segmentation; new diffusers and floating aerators and associated piping and appurtenances. Responsibilities include project management, planning, design, and bidding and construction phases.

Consent Decree Program, including Facility Planning | City of Chattanooga

Chattanooga, TN | Deputy Program Manager

Leads the City's wastewater management master planning effort and wet weather system management, including Facility Planning, for more than $150M of SRF loan improvements, had heavy involvement in developing the CMOM program, including the Inter-Jurisdictional Agreement Program, produced the City's Sanitary Sewer Evaluation Survey (SSES) workplan, managed the development of the CD Program's technical standards and several of the continuing management processes, and is responsible for tracking project and program progress. The City of Chattanooga Waste Resources Division manages influent wastewater flows ranging from 40 mgd to 230+ mgd. The wet weather CD program consists of more than 50 projects estimated to cost more than $250M. Responsibilities include management of project contracts and consultants throughout planning, procurement, design, and construction.

Years of Experience
19

Years with Firm
15

Education
BS, Civil Engineering, Michigan Technological University

Registrations
Professional Engineer: GA, No. 34670

Professional Affiliations
GAWP, WEF, AWWA,

Office Location
Atlanta, GA

Jim Grum | *CMAR*

VALUE TO FWHRC BIOSOLIDS PROJECT

Led three of the largest and most successful GCDWR projects: Crooked Creek WRF, Yellow River WRF, and FWH WRC. Jim has spent 20 years working with GCDWR. Jim Grum has 47 years of experience developing and constructing wastewater treatment facilities. He has managed all aspects of project development, including construction supervision, contract negotiations and administration, constructability reviews, budgeting, preparation of proformas, financial control and forecasting, change/claims management, value engineering, permitting, design, estimating, and scheduling. Jim brings unparalleled expertise and familiarity with Gwinnett County, having led three of the largest and most successful Gwinnett County Department of Water Resources (GCDWR) projects as a project manager for the design and construction management teams: Crooked Creek Water Reclamation Facility (WRF), Yellow River WRF, and F. Wayne Hill Water Resources Center (WRC).

REPRESENTATIVE PROJECTS

Crooked Creek WRF Improvements CP-4 | GCDWR

Gwinnett County, GA | Project Manager

Providing project management for the design and construction phases for this project. The 16-mgd facility is being rehabilitated and upgraded in several key process areas while keeping the majority of the existing plant in operation and meeting permit limits. The existing oxidation ditches are being replaced with deep biological reactor basins (BRBs) that will allow the plant to continuously meet metro discharge limits in the future. Process air for the new BRBs is being provided by high efficiency single-stage blowers that are located in a new Process Building that also provides chemical storage and feed, as well as a new waste activated sludge (WAS) pumping and metering system. Secondary clarifiers are being replaced with larger more efficient units and bottlenecks/reliability issues in process flow are being resolved. The existing in-pipe UV system is being replaced by an open-channel system in the new disinfection facility that also provides for post aeration and a new more reliable service water system. The aging solids dewatering and septage receiving systems are being replaced by a new solids storage and handling facility, with its own odor control system. The BRBs have covered portions to capture odors which are removed by a new main odor control system. Finally, the entire plant electrical system is being upgraded and replaced with a more reliable dual-feed system throughout the facility, eliminating multiple single points of failure. Construction cost is estimated to be in the range of $130M.

Yellow River WRF Improvements | GCDWR

Gwinnett County, GA | Project Manager

Provided project management for both the design and construction phases of this project. The aging 14.5-mgd facility was replaced with a 22-mgd membrane bioreactor process, 40M gallons of equalization storage capacity, new influent pumps, screenings, grit removal, primary clarification, and UV disinfection facilities. The project was complicated by a very restrictive site and a sequence of construction that replaced critically needed processes early. The facility remained in operation during the project, which utilized a progressive construction manager (CM)-at-risk delivery method with a maximum contract value of $238M. Managed an integrated project delivery team with the owner, CM-at-risk, engineers/designers, and construction administration personnel co-located at the project site, which was established at the onset of the project.

Years of Experience
47

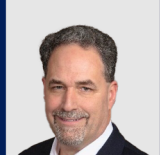
Years with Firm
38

Education
MS, Mechanical Engineering, Michigan State University

Registration
N/A

Professional Affiliations
N/A

Office Location
Atlanta, GA



Todd Williams, PE | *QA/QC Mgr. | Sr. Residuals Technical Consultant*

VALUE TO FWHRC BIOSOLIDS PROJECT:

National perspective on biosolids digestion, dewatering and thermal drying technologies. Experienced with FWHRC. UOSA project design team. Significant contributor to the PER for the WB Casey WRRF Biosolids Management Facilities project. Todd Williams has 42 years of experience in the development of the most cost-effective and operationally efficient and serviceable thermal drying facilities. Todd has worked on various projects in support of the FWH WRC and is familiar with the site but also advances in biosolids digestion, dewatering and thermal drying technologies in the past 10 years. He understands the regulatory and product disposition challenges and will provide the GCDWR with timely insights and ongoing guidance in the development of this project.

REPRESENTATIVE PROJECTS

F. Wayne Hill Water Resources Center Biosolids Digester Upgrade Evaluation | GCDWR

Gwinnett County, GA | Senior Advisor

Performed a comprehensive evaluation of different solids management technologies in conjunction with digester upgrade options for the FWH WRC. Options evaluated included solids pre-conditioning, advanced digestion options, and post-dewatering options for product management, including mechanical drying, solar drying, composting, and incineration with energy recovery and landfilling. Assisted in the composting, incineration, and drying option evaluation and provided input on the overall evaluation methodology.

WB Casey WRRF Biosolids Management Planning and DB Owners Engineer | CCWA

Jonesboro, GA | Senior Technology Consultant

Served on project team to lead the evaluation and review of multiple technology options for biosolids management program at this 32 mgd wastewater facility. Options reviewed included anaerobic digestion, thermal hydrolysis and thermal drying in various combinations to update the Authority's 40-year-old thermal drying facility. The outcome of the study was a selected digestion of primary solids only followed by thermal drying expansion and the resultant preliminary engineering report. Currently serving as subject matter expert as owner's agent for progressive design build (PDB) project to build new thickening, anaerobic digestion, dewatering and thermal drying facilities to manage solids produced at this 24 mgd plant expandable to 32 mgd. Facility design is ongoing in 2023 with construction completion scheduled for 2025.

Biosolids Management Planning Study | City of Fayetteville

Fayetteville, AK | Senior Technology Consultant

Served as project manager and senior technologist on project team to lead the evaluation and review of multiple technology options for biosolids management program for the two water resource recovery facilities and the biosolids management site that processes an average of 11 dry tons per day of 19% solids. Options reviewed included anaerobic digestion, thermal hydrolysis with anaerobic digestion, solar and thermal drying and pyrolysis in various combinations to provide needed expansion capacity, improve sustainability and reduce energy consumption of existing solids handling processes of solar and thermal drying.

Years of Experience
42

Years with Firm
17

Education
BS, Civil Engineering Technology, Virginia Polytechnic and State University

Registrations
Professional Engineer: VA, No. 017784; Iowa, No. 12940

Professional Affiliations
Member of International Water Association Sludge Management Specialist Group

Office Location
Charlotte, NC

Biosolids Master Planning Study | Metropolitan Service District

Louisville, KY | Senior Technology Consultant

Served as senior technology consultant on project team to lead the evaluation and review of multiple technology options for biosolids management program to establish concept level design and cost estimates for management of biosolids produced from the Morris Forman Water Quality Treatment Center (WQTC) four other WQTC's owned and operated by MSD and planning for the management of solids from two adjacent counties. Led the effort of this large work group to establish evaluation criteria and then review various biosolids management options including anaerobic digestion, chemical thermal hydrolysis, thermal drying, composting and carbonization. Led development of benefit-cost scores for short-listed technology options and guided decision-making process for determining appropriate phasing of project development and capital expenditures for the approved recommended plan to provide added reliability and resiliency for the biosolids management for this the largest wastewater utility in Kentucky.

Biosolids Master Plan Update | Encina Wastewater Authority

Carlsbad, CA | Senior Technology Consultant

Served as senior technology consultant on project team to conduct the evaluation and review of multiple technology options for biosolids management program to establish concept level design and cost estimates for management of biosolids produced from the EWA wastewater treatment facility. The effort included evaluation of digestion, thickening, dewatering and thermal drying technology options with a focus to enhance reliability and marketability of Class B cake and Class A thermally dried biosolids. Directed the dried product marketing effort including the development of more robust granule marketing program with product use nearer the WWTP. Assisted in development of a Biosolids Market Broker Request for Proposals (RFP) to evaluate potential brokers, obtain a 5-year contract with a broker to increase local use of Class A biosolids, and gain insights on product marketability.

Biosolids Thermal Drying Product Market Analysis | Metro Vancouver

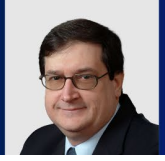
Vancouver, BC | Senior Technology Consultant

Served as the senior technology consultant to evaluate the feasibility of dried biosolids product markets in the greater Vancouver region. Analysis included established and emerging markets and SWOT analysis of various options for the planned biosolids drying facility.

Composting Facility Design | County of Spotsylvania

Spotsylvania, VA | Project Manager/Lead Process Engineer

Responsible for design, permitting and construction of a covered aerated static pile composting facility designed to process 80 tons per day (29,000 tons per year) of dewatered wastewater residuals cake. Directed all odor control testing, modeling, and design, as well as permitting and process design for the entire operation. Odor control biofiltration system includes four variable speed fans, humidification controls, and four biofilter zones with in-ground aeration ducting for easy media change-out. Facility was awarded 2012 Solid Waste Association of North America's Composting Systems Gold Excellence Award.



Peter Burrowes, P Eng | *Drying*

VALUE TO FWHRC BIOSOLIDS PROJECT:

National perspective and expertise. UOSA project design team. Significant contributor to the PER for the WB Casey WRRF Biosolids Management Facilities project. Peter Burrowes has 50 years of project management and engineering experience in the fields of wastewater, biosolids management, including digestion, digestion pre-treatment, dewatering, thermal drying, gasification/pyrolysis, hydrothermal carbonization/liquefaction, combustion, incineration, energy recovery, odor management, air pollution control, biogas management and solid waste management. Serving in key positions on assignments throughout Canada, the United States and internationally, Peter has been responsible for coordinating and supervising the planning, permitting and design of several major installations as design engineer, project manager, senior project manager and senior technical consultant. He has made presentations to clients, environmental boards, and public meetings.

REPRESENTATIVE PROJECTS

ABTP Pelletizer Facility | City of Toronto Galt WWTPs

Toronto, ON | Technical Manager

The City of Toronto own and operate the 216 mgd Ashbridges Bay Treatment Plant (ABTP), which is a conventional activated sludge plant. Combined primary and thickened waste activated solids are anaerobically digested, dewatered by centrifuges and 50% is pelletized and 50% is trucked to land application. The City retained Jacobs to engineer a replacement for the existing pelletizer, with capacity to process solids into the future. The Pelletizer Facility will include two rotary drum dryer systems, each with an evaporation capacity of 13.200 lb/hr and two storage silos with truck loading, providing 5 days storage. The facility will have a capacity to process 121,000 wet tons per year. Peter is leading technical components of the pre-design of the facility and the prepurchase of the pelletizer and storage equipment. The facility is expected to begin operations in 2031.

Honouliuli WWTP Secondary Upgrade | City and County of Honouliuli

Oahu, HI | Senior Technology Consultant (Solids)

The City and County of Honolulu (CCH) own and operate the Honouliuli WWTP, which has an average primary treatment capacity of 38 mgd (144 MLD) and a secondary treatment capacity of 13 mgd (49 MLD) using the trickling filter solids contact process. Solids are anaerobically digested and dewatered. Due to a consent decree and growing population, CCH retained RM Towill and Jacobs to engineer upgrades to the WWTP, including full secondary treatment. The liquid train will consist of an AB treatment system, with an A-stage high rate biological contactor with dissolved air flotation and B stage bioreactors and clarifiers. The solids treatment train will include thermal hydrolysis, anaerobic digestion, dewatering and thermal drying. Solids will be imported from other WWTPs and treated in the solids train. The project will be constructed in phases, with the Phase 1A that includes thermal drying, using two belt dryers, each with an evaporation capacity of 4,400 lb/hr began construction in 2018. Peter led the solids pre-design and provided senior technical advice for the thermal dryers and is providing senior technical advice during the design of the thermal hydrolysis and the biogas cogeneration (combined heat and power) plant. He is the senior technology consultant for the solids processing component on the expansion.

Years of Experience

50

Years with Firm

43

Education

B.Eng., Mechanical Engineering, University of Sheffield, UK

Registration

Professional Engineer: ON, No. 06225015

Professional Affiliations

Water Environment Association of Ontario – Serves on the Biosolids Committee

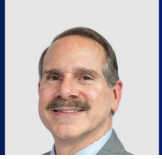
Air & Waste Management Association – Held several positions as an Officer of the Ontario Section, including Secretary, Vice Chair, Chair and Past Chair, as well as served on the Board of Directors

Water Environment Federation – Served on Biosolids and Residuals Committee, Specialty Conference Committee

Air & Waste Management Association – Served on Marketing Committee, Membership Committee, Municipal Waste Committee

Office Location

Kitchener, ON



Ron Alexander | *Product Utilization/Marketing*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Experienced with Georgia biosolids product markets. Provided Biosolids Market Studies for CCWA and the City of Atlanta, and a Biosolids Market Study review for GCDWR. Ron Alexander has 38 years of experience in biosolids-based product manufacturing, marketing/distribution, and utilization. Ron is experienced with Georgia biosolids product markets, having completed dried/granulated biosolids market planning and assessment projects, and possessing a variety of sales (purchaser) connections in Georgia. He is experienced in product development, labeling, registration, and certification; registering various biosolids and recycled organic products for sale in Georgia. Ron has marketed biosolids compost from seven composting facilities; one of which also produced a granulated fertilizer product. Ron has completed more than 500 organic recycled product manufacturing, marketing, utilization, and quality evaluation/assurance related consulting projects worldwide, and has completed projects for organizations of varying size. He has extensive experience working with granulated biosolids, drawing from 30 years of experience and completion of more than 50 granulated biosolids projects.

REPRESENTATIVE PROJECTS

Biosolids Fertilizer Market Research and Planning Study | CCWA

Clayton County, GA | Biosolids Marketing Consultant

Analyzed regional markets for granulated biosolids for facility rebuild, completing demographic research, as well as telephone and face-to-face market research within fertilizer broker, horticultural/ turf and agricultural sectors. Identified overall long-term marketability and product value, relevant markets, end users, and potential marketing partners.

Biosolids Fertilizer Market Research and Planning Study Review| GCDWR

Gwinnett County, GA | Biosolids Marketing Consultant

Provided review of this study performed by another firm.

Biosolids Market Research Study | City of Atlanta Department of Watershed Management

Atlanta, GA | Biosolids Marketing Consultant

The City of Atlanta generates over 100 dry tons per day of Class A and Class B biosolids, with the majority of it being managed through landfilling. With access to landfills shrinking and the cost of biosolids management increasing, Atlanta was interested in evaluating other Class A and B processing and management options, for a new and possibly regional biosolids processing facility. To accomplish this, Atlanta directed the Program Management Services Team (PMST) to assist them in determining which biosolids processing technologies and techniques can best be employed. It determined that viable options for processing biosolids at a new facility included thermal hydrolysis/anaerobic digestion, anaerobic digestion/thermal drying or composting along with the City's yard trimmings. As part of these efforts, the marketability or end use of the resultant products was also considered, as was their market value or cost to distribute. R. Alexander Associates, Inc. completed this study. Markets for these Class A products were evaluated, as were secondary processes required to generate marketable products. Efforts evaluated Atlanta's biosolids product and market development options, as well as evaluated product value(s) and overall marketability (distribution).

Years of Experience
38

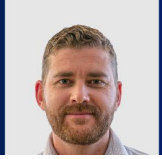
Years with Firm
25

Education
BS, Horticulture, Delaware Valley College of Science and Agriculture

Registrations
N/A

Professional Affiliations
N/A

Office Location
Apex, NC



Rocco Koekemoer, PE, SE | *Design Manager*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Proven GCDWR design manager and structural designer. Manages to budget/schedule. Rocco Koekemoer has 15 years of experience as design manager and lead structural engineer for multi-discipline teams for water and wastewater treatment facilities. Rocco's experience includes multi-discipline teams for water and wastewater treatment facilities, hydraulic/water-holding structures, below-grade structures, water intake facilities, earth-retaining structures, facilities/buildings, and structural assessment/ rehabilitation of existing structures. Our clients and contractors value his accuracy and recommendations for design systems when he provides support services during the construction phase of projects.

REPRESENTATIVE PROJECTS

F. Wayne Hill WRC Tertiary Treatment Upgrades

Buford, GA | Design Manager

Prepared a Basis of Design Report, developed the scope of work and a set of contract documents. Provided design and permitting services and developed and conducted a six-month, onsite pilot test of membrane systems from six manufacturers, selecting immersed membranes operating in a tertiary mode. Established and incorporated the scope of their supply, cost, and delivery schedule into the bid/contract documents

WB Casey WRRF Biosolids Management Planning and DB Owners Engineer | CCWA

Jonesboro, GA | Design Engineer

Assisted with the preliminary engineering design at this 32 mgd wastewater facility. Options reviewed included anaerobic digestion, thermal hydrolysis and thermal drying in various combinations to update the Authority's 40-year-old thermal drying facility.

LFP Raw Water Reservoir Bypass Line and Rehabilitation, GCDWR

Gwinnett County, GA | Project Manager/Lead Structural Engineer

Responsibilities include managing the design and leading the structural design for installation of reservoir bypass piping and implementing reservoir modifications to operate as a redundant raw water supply without a single point of failure. The project also includes modification of the partition wall and overflow chamber, construction of a new overflow chamber, removal of sediment within the reservoir, addressing seepage observed on the downstream slopes, and reconstructing the dam crest road.

LFP/SCFP High Service In-line Ultrasonic Flow Meters, GCDWR

Gwinnett County, GA | Project Manager/Lead Structural Engineer

Responsibilities include managing the design and leading the structural design for the installation of three ultrasonic flow meters and corresponding vaults.

Fowler Water Reclamation Facility Expansion, Forsyth County

Forsyth County, GA | Lead Structural Engineer

Lead structural engineer responsible for the design of multistory Headworks facility, Bioreactor basins and Membrane Tanks, Aerated Sludge Storage Tanks, Membrane/UV Mechanical and Electrical Building, Main Electrical Building, Blower Building expansion, and retrofitting existing Dewatering and Chemical Storage area.

Years of Experience
15

Years with Firm
14

Education
BS, Civil and Environmental Engineering, University of Washington

Registrations
Professional Engineer: GA, No. 040793; FL; CA

Professional Structural Engineer: GA, No. 001018

Professional Affiliations
N/A

Office Location
Atlanta, GA

Emergency Response Plan and Tabletop Exercise | City of Atlanta Department of Watershed Management

Atlanta, GA | Senior Project Technologist

Developed an up-to-date, concise, and user-friendly ERP and Pocket Guide for the Office of Safety and Security, DWM. In addition, facilitated the development and implementation of a water system Tabletop Exercise for DWM.

Wastewater & Industrial Wastewater Plant Evaluation | NAVFAC Southeast

Corpus Christi, TX | Structural Engineer

Assessed the performance of more than 25 tanks and structures and evaluated the ability of each to provide integrity, reliable performance in conformance with UFC requirements, and remaining useful life. Identified three structural improvements to ensure life-safety, environmental compliance, and sustainability. Developed NPV economic analysis to among alternatives and performed ECONPAK analysis. Very Good CPARS ratings in all categories.

Northwest Water Reclamation Facility Coarse Screen Project

St. Petersburg, FL | Design Manager/Lead Structural Engineer

Design manager and lead structural engineer responsible for the design of new below grade coarse screen structure, odor control system, and associated yard piping and site improvements.

Green Meadows Water Treatment Expansion Project

Lee County, FL | Lead Structural Engineer

Lead structural engineer responsible for the design of above grade clearwell supporting degasifier units and associated structural elements.

Georges Creek Water Resource Recovery Facility Improvements

Greenville, SC | Design Manager

Design Manager for detailed design of facility improvement including new aerobic digester, evaluating existing and adding additional positive displacement aeration blower, replacement of existing fine-bubble diffusers in existing digesters, replacement of the polymer system, renovation of Chemical facility, and related improvements.

White House Wastewater Treatment Plant Improvements

White House, TN | Design Manager

Design Manager for detailed design of WWTP improvement to increase plant capacity to 2 mgd. Improvements included grit removal facility, two parallel 1.0 mgd five-stage Bardenpho process Bioreactors, positive displacement Re-aeration Blowers, Secondary Clarifiers, modification to the existing RAS/WAS Pump Station, two Effluent Filters, single channel UV Disinfection system, Alum Storage and Feed System with metering pumps and bulk storage tank, Electrical Building and standby generator, and Operations and Control Building including laboratory space.

Three Mile Creek SWAT Project

Mobile, AL | Design Manager/Lead Structural Engineer

Design Manager and Lead Structural engineer responsible for managing detailed design and specification of two new 12-million gallon prestressed concrete storage tanks, diversion structure, lift station and valve vault, electrical building, standby generator, and related facilities.

P-1043 Hadnot Point WTP Replacement

Camp Lejeune, NC | Lead Structural Engineer/Facility Lead

Facility Lead for multiple facilities with responsibility for coordinating design between all disciplines. Developed concepts for the charrette and prepared full final structural design of all facilities.

Brett Reistad, PE | *Drying System Integration*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Drying facility design expert. Design Manager for UOSA Project. Significant contributor to the PER for the WB Casey WRRF Biosolids Management Facilities project. Brett Reistad has 26 years of experience in wastewater residuals handling and integrating dryers. His experience includes design of anaerobic digesters, biogas treatment and cogeneration systems, and sludge mixing systems; polymer storage, makedown, and feed systems; solids thickening and dewatering systems; biosolids drying systems; dewatered and dried biosolids conveyance, storage, and loadout systems. Brett also has general mechanical experience that includes the design and selection of piping systems and components and pumping.

REPRESENTATIVE PROJECTS

Drying Facility Expansion and 2nd Rotary Dryer System Project | Upper Occoquan Service Authority

Centreville, VA | Design Manager and Dryer System Lead

Brett managed final design of a major retrofit within an operational facility that included the addition of a rotary dryer system into an existing building as part of an overall $60M upgrade at the 54-mgd Regional WRP. The scope of work included the $11.5M installation of a rotary drum dryer system for drying and pelletizing sludge, including dried sludge classification and recycle systems, pneumatic conveyance, dust control system, safety systems, and regenerative thermal oxidizer. Work included modifications to the existing building including utilities, HVAC and the dust collection system.

Brett was responsible for developing the request for proposal and equipment pre-selection documents, coordinating design review meetings with the selected dryer system vendor, and finalizing the procurement contract scope. The final design included building retrofits and installing the pre-selected rotary dryer system equipment. Brett was response for coordinating process and discipline leads, client deliverables, and securing construction and air permit applications. The sludge drying system included a wet material bin with four live bottom screws, two progressing cavity type cake pumps, and pipeline lubrication pumps.

Columbia Boulevard WWTP Secondary Treatment Expansion Project | Bureau of Environmental Services, City of Portland, OR

Portland, OR | Facility Lead

Brett was responsible for developing final design for a combined thickening and dewatering solids processing facility. As facility lead, Brett was responsible for overall layout and design of the facility, process sizing and equipment selection, hoisting equipment design, and coordination of discipline design leads. Building design includes eight 3-meter gravity belt thickeners, five 30-inch diameter dewatering centrifuges, dry polymer makedown and pumping systems, biofilter odor control system, filtrate and centrate tanks and pumping systems, and a two-lane cake storage and loadout facility. Cake storage includes four 230-cubic yard cylindrical silos with live bottom discharge assemblies. Design fits new solids facility surrounded on three sides by existing facilities, with all utilities coordinated to allow continued operation of the existing sludge processing building throughout construction. Two enclosures for the gravity belt thickeners provide high rate ventilation with minimal flow rate to the odor control system.

Years of Experience
26

Years with Firm
22

Education
BS, Mechanical Engineering, Oregon State University

Registration
Professional Engineer: CA; OR

Professional Affiliations
N/A

Office Location
Corvallis, OR

Solids Dewatering Facility | CCWRD

Las Vegas, NV | Facility and Centrifuge Lead

A project to develop final design for solids handling improvements to dewater 180 dry tons of solids per day. Facilities include sludge transfer pump station, conveyance pipelines, centrifuge feed tanks, dewatering building, and foul air biofilters. As facility lead, Brett was responsible for development of specifications, including the legal procurement portions, for the procurement of centrifuges and cake conveyance, storage, and loadout system. Centrifuge procurement package included eight 30-inch dewatering centrifuges, centrifuge automation and optimization system, and a centrifuge servicing and maintenance agreement. Centrifuge procurement was executed ahead of facility development, and centrifuge supplier shop drawing information was used to finalize facility contract documents. Brett was also responsible for the sizing, selection, and specification of progressive cavity centrifuge feed pumps, primary sludge screens, screening hoppers and gates, and facility bridge cranes, monorails, and hoists.

Southeast Plant Biosolids Digestion Facilities Project | San Francisco Public Utilities Commission

San Francisco, CA | Design Manager and Lead

Brett was responsible for developing final design for a biosolids dewatering and loadout facility. Building design includes four dewatering belt filter presses, biosolids conveyance storage and loadout system with four silos/two enclosed truck loading bays with in-ground truck scales, filter press feed pumps, dry polymer makedown and feed systems, filtrate and spent washwater return pumping systems, and belt cleaning system. As design manager was responsible for overall layout and design of the facility, including coordinating process and discipline leads.

Sludge Dewatering and Loadout Facility, Regional Water Quality Control Plant | City of Palo Alto

Palo Alto, CA | Design Manager and Lead

Brett was responsible for final design for a sludge dewatering and loadout facility and associated retrofit of adjacent sludge pumping facilities. The $21M project inlcuded four dewatering belt filter presses, cake conveyance storage and loadout system with enclosed truck drive-through, dry polymer makedown and feed systems, scum concentrator system, odor control system, and hot water flushing system. Project expanded the plant electrical supply loop, including backup diesel engine generator system. Responsible for developing final design for a Responsible for all process-mechanical equipment, coordinating all discipline leads, client deliverables, and construction and air permit applications. Design included features to maintain existing dewatering and incinerator operation until the new facility was fully commissioned.

Digester Complex and Interim Biosolids Facilities Project | Tres Rios Water Reclamation Facility (WRF), Pima County Regional Wastewater Reclamation Department,

Tucson, AZ | Design Manager and Lead

Brett was responsible for final design for a new digester complex providing solids handling capacity equivalent to 80 mgd. The $18M project included design and construction phase services. New facilities include two anaerobic digesters and digester control building as well as a temporarily installed gravity belt thickener for biosolids. The design included provisions to allow construction of the facilities coordinated with construction of adjacent overall Upgrade Project facilities and two future digesters. As design manager was responsible for coordinating process and discipline leads, client deliverables, and construction permit applications

Michelle Neumann, PE | *Air Permitting*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Experienced with GCDWR facilities. Michelle Neumann has 13 years of experience in air permitting. Michelle's Her project experience and training include air dispersion modeling, air emission inventories, air permit applications, and health risk assessments for multiple clients, industries, and sectors including secondary aluminum and other manufacturing projects. Michelle has experience in various roles such as technical support and technical lead.

REPRESENTATIVE PROJECTS

Air Permit and Modeling Support, King County Pilot Compost Facility

King County, WA | Project Engineer

Supported in the Notice of Construction air permit from Puget Sound Clean Air Agency for the newly proposed pilot plant. Reviewed the air qualities analyses and conducted an air dispersion modeling for odor to support in the air permit application. Review included the evaluation of Washington State air toxics and determining potential odor impacts due to the project.

Air Permit and Modeling Support, Salmon Creek Wastewater Treatment Plant | Clark County Public Works

Clark County, NV | Task Lead

Supported Clark County Public Works and the Jacobs design team to apply for a Notice of Construction for an expansion at Salmon Creek Wastewater Treatment Plant. Conducted emission estimate evaluations and dispersion modeling and created the permit application package to submit to the Southwest Air Agency to permit the planned expansion. In negotiations it was determined that the agency required an additional analysis to evaluate compliance with the National Ambient Air Quality Standards (NAAQS). Air dispersion modeling was conducted to evaluate the NAAQS. During this analysis, and through iterative analyses, certain areas of concerns were identified material to air quality. The concerns were communicated to the client to evaluate mitigation. The mitigation will be included to re-evaluate the NAAQS analysis.

Kaiser Aluminum Permitting Support on Multiple Projects | Various Clients

Spokane, WA | Task Lead and Project Engineer

Led and supported notice of construction permits for multiple Kaiser Aluminium projects. Compiled and drafted air permit applications which included a regulatory review, air emissions inventory, and air dispersion modeling for the proposed project for Kaiser Aluminium a secondary aluminium manufacturer. Permits surrounded the construction of aluminium smelting and associated pollution control devices, ingot processing and casting, and treating emission sources. Supported sales efforts to increase follow-on with this existing client. We expanded into new markets such as EHS-IM. Consistent approach and understanding client imperatives lead to consistent high-quality project delivery in timely approved permit applications.

Years of Experience
13

Years with Firm
11

Education
BS, Civil Engineering, University of Washington

Registrations
Professional Engineer: WA, No 53760

Professional Affiliations
N/A

Office Location
Tampa, FL

Air Permit Limit Support | Chehalis Regional Water Reclamation Facility

Project Manager, Task Lead

Supported Chehalis in developing a strategy for them to meet their air permit limits. Evaluated the basis of the air permit and developed a strategy for establishing new permit limits. Strategy included air dispersion modeling to meet Southwest Clean Air Agency rules, air sampling to refine emission assumptions, and working with the client to determine any potential updates to the facility material to the air quality permit. Worked closely with the Southwest Air Agency to negotiate and evaluate solutions.

Comments on EPA Guidelines | EPRI

Technical Support

Supported EPRI in developing comments on EPA's Effluent Limitation Guidelines and Standards for the Team Electric Power Generating Proposed Rule. Duties included data management, data analysis, and technical writing. Data analysis included evaluating data relevance and evaluating best practices in calculating effluent pollutant removal for various treatment technologies including chemical/physical treatment and biological treatment. Also assisted EPRI in additional power plant specific permit pollutant removal commenting.

Tool Development for Water Quality Analyses | EPRI

Technical Support

Provided streamlined data entry and data analysis, various tools were developed using MS applications such as Access and Excel. Worked with the software developers to create an Access database and Excel based tool to organize existing data and develop reports following specific analysis requirements in evaluating coal fired power plant water quality data. This included testing the Access and Excel tools for analysis accuracy and user friendliness.

SR 710 Environmental Documentation and Conformity Analysis | Los Angeles County Metropolitan Transportation Authority

Engineer Team Modeler

Supported air analyses and transportation conformity analysis. Supported the air quality analysis for the SR-710 North Study project that covered multiple cities with a study area of over 100 square miles in central Los Angeles, California. Build alternatives of the project included Transportation System Management/ Transportation Demand Management (TSM/TDM), the Bus Rapid Transit (BRT), the Light Rail Transit (LRT), and a unique 5-mile freeway tunnel alternative to provide a corridor that accommodate regional and local travel demands in the study area. Air analysis were performed under CEQA and NEPA and included construction and operation emissions evaluation, particulate matter hot spot analysis for project level transportation conformity determination, and human health risk assessment for vehicle emissions.

David Bell, PWS | *Permitting Lead*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Experienced with GCDWR facilities. David Bell has 17 years of experience with Federal, State, and local regulatory agencies to navigate and implement complex water quality and environmental permitting requirements. His experience includes water resources planning, engineering, and strategy for public and private sectors clients. David has a breadth of experience planning green infrastructure and low impact development strategies to achieve improved watershed and community health.

REPRESENTATIVE PROJECTS

Lake Lanier Water Quality Monitoring | GCDWR
Gwinnett County, GA | Project Scientist
Conducted water quality sampling at five locations on Lake Lanier to monitor effects of NPDES discharge outfall from the F. Wayne Hill WWTP. Data was used to generate water quality profiles through the water column of Lake Lanier. Parameters measured included DO, temperature, conductivity, pH and chlorophyll A.

Hard Labor Creek WTP Permitting | Walton County Water & Sewerage Authority
Loganville, GA | Permitting
Provided permitting services for the design, permitting, and construction support of the new Hard Labor Creek Water Treatment.

Bear Creek WTP Permitting | Upper Oconee Water Basin Authority
Athens, GA | Permitting
Provided permitting services for the design, permitting, and construction support of the expansion of the Bear Creek Water Treatment.

Shakerag WRF Discharge Project NPDES Permitting | Forsyth County
Forsyth County, GA | Permitting
Support Forsyth County with preparation of NPDES supporting documents such as environmental information document (EID), antidegradation analysis, temperature modeling and NPDES application for the expansion of the Fowler and Shakerag WRFs. The project included coordination with GAEPD and other stakeholders.

Kendeda Living Building Challenge | Georgia Institute of Technology
Atlanta, GA | Permitting
Supported Georgia Tech to acquire a new public water supply (PWS) permit for the first rainwater to potable public water source in the southeast. Requirements for this project also fell under the guidance of the Living Building Challenge which is managed by the International Living Future Institute (ILFI).

Mosquito Hole, VoH, Greensferry | City of Atlanta
Atlanta, GA | Permitting
Prepared USACE NWP and GAEPD SBV permitting.

Upper North Oconee 2B | Athens Clarke County
Atlanta, GA | Permitting
Prepared USACE NWP and GAEPD SBV permitting.

Water-Effect Ratio Study Plan | City of Atlanta Department of Watershed Management
Atlanta, GA | Permitting
Supported the City by preparing a Study Plan to comply with NPDES permit and Consent Order requirements for the City's permitted combined sewer facilities. The Study Plan outlined methods to conduct site specific metal toxicity analysis to help determine if there was a reasonable potential of exceeds within the respective receiving waters downstream of the permitted discharges.

Years of Experience
17

Years with Firm
17

Education
BS, Environmental Studies, University of North Carolina at Asheville

Registrations
Professional Wetland Scientist (PWS): No. 2595

GSWCC Level 1A Erosion Control Certified Personnel: No. 0000073684

Professional Affiliations
N/A

Office Location
Atlanta, GA

Beaver Ruin Wetlands Project Baseline Conditions Assessment | GCDWR
Gwinnett County, GA | Lead Field Scientist and Permitting
Coordinated field work to collect baseline data for a site suitability report for the proposed Beaver Ruin Wetlands Project. Coordinated with GC DWR staff and GC Parks to assess potential for development of a large wetland park with potential interpretive features. Performed fish and benthic macroinvertebrate collections, avian surveys, wetland delineation, wet and dry weather water quality sampling, geomorphic surveys and stream determinations, groundwater monitoring well installations and wetland functional assessments using the Hydrogeomorphic (HGM) and Wetland Rapid Assessment Protocol (WRAP).

Gwinnett County Watershed Protection Plan Biological and Stream Bank Erosion Monitoring | GCDWR
Gwinnett County, GA | Project Manager and Field Team Leader
Conducted fish, benthic macroinvertebrate and detailed stream bank erosion surveys at 34 locations across Gwinnett County. Bank erosion surveys include installing and measuring bank pins, surveying bank profiles and channel cross sections as well as using qualitative techniques developed by Dave Rosgen. Data are used to estimate bank erosion rates which were correlated to long-term biological scores, land use changes, development metrics and water quality parameters (in coordination with USGS). In 2011 and 2016 delivered more expanded report on long-term trends (since 2004) of biological scores and development metrics to DWR using multivariable statistical analyses to assess the benefits of the Watershed Improvement Program. Data were used to support compliance for NPDES permit and Watershed Protection Plan requirements.

Allenhurst II Stream Restoration Project | GCDWR
Gwinnett County, GA | Design Lead, Permitting Lead and Public Involvement Lead
Over 2000 linear feet of priority 1, 2 and 3 stream restoration and stormwater BMP installation. Project addressed over widened channel conditions due to alter hydrology and hydraulic in the watershed. Coordinated construction with 20 individual homeowners. Roles included: coordinating public involvement, design, USACE and GAEPD permitting, bid services, and construction management.

Bromolow Creek Mitigation Bank | GCDWR
Gwinnett County, GA | Project Manager
Developed monitoring plan and conducted Year 1 monitoring in compliance with current USACE guidelines and approve Banking Instrument. Monitoring included, aquatic biological community, physical habitat, vegetation, channel stability. Prepared monitoring reports and coordinated with USACE.

Sweetwater Creek Mitigation Bank | GCDWR
Gwinnett County, GA | Project Manager and Monitoring Lead
Conducted As-built and Year 1 - 6 monitoring in compliance with current USACE guidelines and approve Banking Instrument. Monitoring included, aquatic biological community, physical habitat, vegetation, channel stability, as well as wetland hydrology. Prepared monitoring reports and coordinated with USACE.

McDaniel Farm Mitigation Bank | GCDWR
Gwinnett County, GA | Project Manager and Monitoring Lead
Conducted Year 4 – 7 monitoring in compliance with current USACE guidelines and approve Banking Instrument. Monitoring included, aquatic biological community, vegetation, physical habitat and channel stability. Prepared monitoring reports and coordinated with USACE.

Jeff Peterson, PE | *Process Mechanical*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Experienced with GCDWR facilities. Jeff Peterson has 17 years of experience in process mechanical design for municipal treatment facilities. This includes open channel hydraulic modeling, modeling/sizing of pumped systems, equipment sizing, facility layouts, cross discipline coordination, drawing development, and engineer of record services during construction. Additional roles on projects have included Process Mechanical Lead, Facility Lead, Design Manager, and Project Manager. Proficient in the use of 3D modeling software for purposes of team collaboration and as client presentation tool.

REPRESENTATIVE PROJECTS

WB Casey Water Reclamation Facility Polishing Plant and WAS Thickening Upgrades | CCWA

Clayton County, GA | Facility Lead/Process Mechanical Engineer

Addition of a new effluent discharge point for an existing site and the facilities needed to treat the effluent to meet the permit and the addition of a new sludge thickening facility. Performed the hydraulic profile analysis and provided general process mechanical oversight and coordination of design performed by junior engineers. Facilities include a WAS/Scum Pump Station, WAS Thickening, Effluent Splitter Box and Flow Control, Phosphorus Polishing, UV Disinfection, Effluent Flume, Cascade Aerator, and Chemical Storage and Feed. Also included an analysis of the existing W3 system to address low pressure issues occurring on site. Performing services during construction.

Crooked Creek Water Reclamation Facility Construction Package 4 | GCDWR

Gwinnett County, GA | Process Mechanical Lead/Facility Lead

Improvements, additions, and expansion to an existing site as a joint design with other engineering firms. Performed as Process Mechanical Lead for our team of engineers and Facility Lead for Solids Handling Building design team. Solids Handling Building includes solids storage tanks with top mounted mixing and coarse bubble aeration using positive displacement blowers; belt filter press system with associated progressive cavity feed pumps, polymer storage and feed system, and screw conveyors to truck distribution; septage receiving room. Performed 3D tours with the client during design. Performing services during construction associated with design content done by our firm.

F. Wayne Hill Water Resources Center Biological Reactor Basins Mixer and NRCY Pump Replacement | GCDWR

Gwinnett County, GA | Design Manager/Process Mechanical Lead

Design replaced submersible mixers with top mounted mixer and replaced existing NRCY submersible axial flow pumps with pumps of the same technology but of a smaller size. Performed services during construction.

South Gwinnett Facility Plan & Pump Station and Force Main Improvements Phase II | GCDWR

Gwinnett County, GA | Process Mechanical Engineer

Supported initial planning, including a Business Case Evaluation, and subsequent design and hydraulic sizing of multiple new pump stations and their associated force mains.

Years of Experience
17

Years with Firm
17

Education
BS, Mechanical Engineering, University of Florida

Registrations
Professional Engineer: GA, No. PE036667

Professional Affiliations
N/A

Office Location
Atlanta, GA

F. Wayne Hill Water Resources Center On-Call Support | GCDWR
Gwinnett County, GA | Project Manager
Reoccurring contract to provide On-Call or Emergency services at this site. Includes investigation and analysis of identified issues, small design tasks, generation of contractor scope of work, and management of construction efforts by the Contractor.

F. Wayne Hill Water Resources Center Construction Management Assistance | GCDWR
Gwinnett County, GA | Project Manager
Team managed the construction and provided field inspection of multiple simultaneous projects on site, some of which were designed by our firm and some by other firms.

Gwinnett County Support Services | GCDWR
Gwinnett County, GA | Project and Program Manager
Provided project and program management services for client projects as a member of the client's team. This included management of the Water Reclamation Facility Rehabilitation and Biosolids Master Plan Programs and various water main and wastewater facility projects. Helped improve client's standard documents and tools used by their team.

Liz Hudson, RA | *Architecture*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Experienced with GCDWR facilities. Liz Hudson has 33 years of experience on a variety of building projects. She has managed feasibility studies, design, production of contract documents and construction administration. Since 1994, Liz has played a key management role in architecture at Precision Planning. Liz has developed a specialty in pre-design services and master planning. Liz has managed the Architecture Department at Precision Planning and served as Principal in Charge for more than 15 years. She will provide resource allocation and oversight of the PPI design team.

REPRESENTATIVE PROJECTS

Gwinnett County Standby Services Annual Contract
Gwinnett County, GA | Architect
Provides architectural design for a variety of GCDWR projects.

Gwinnett County DWR Category I, Demand Services Contract
Gwinnett County, GA | Architect
Provides architectural design for a variety of GCDWR projects.

Gwinnett County DWR Category K, Demand Services Contract
Gwinnett County, GA | Architect
Provided architectural design for a variety of GCDWR projects.

Gwinnett County Fire Station Annual Contract
Gwinnett County, GA | Architect
Provided architectural design for a variety of GCDWR projects.

Gwinnett County Yellow River Water Reclamation Facility Operations Building
Gwinnett County, GA | Architect
Provided architectural design.

Gwinnett County Medical Examiner's Office & Morgue
Gwinnett County, GA | Architect
Provided architectural design.

Gwinnett County Lilburn Branch Library & Lilburn City Hall
Gwinnett County, GA | Architect
Provided architectural design.

Gwinnett County Five Forks Branch Library Renovation
Gwinnett County, GA | Architect
Provided architectural design.

Gwinnett County Hamilton Branch Mill Library
Gwinnett County, GA | Architect
Provided architectural design.

Sugar Hill Standby Services Contract
Sugar Hill, GA | Architect
Provided architectural design.

Sugar Hill City Hall and City Center
Sugar Hill, GA | Architect
Provided architectural design.

Sugar Hill E-Center Mixed Use Development and Recreation Center
Sugar Hill, GA | Architect
Provided architectural design.

Years of Experience
33

Years with Firm
29

Education
MArch, Georgia Institute of Technology

BA, Agnes Scott College

Registrations
Registered Architect: GA, No.9348; SC, No.8074

Professional Affiliations
National Council of Architectural Registration Boards

U.S Green Building Council, LEED Accredited Professional

BD+C Specialty

Office Location
Lawrenceville, GA

Habersham County Administration Building
Habersham, GA | Architect
Provided architectural design.

Gwinnett County Fire Station No. 13
Gwinnett County, GA | Architect
Provided architectural design.

Gwinnett County Bay Creek Police Precinct/911 Center
Gwinnett County, GA | Architect
Provided architectural design.

Gwinnett County Fire Station No. 15
Gwinnett County, GA | Architect
Provided architectural design.

Gwinnett County Fire Station No. 32 Master Plan
Gwinnett County, GA | Architect
Provided architectural design.

Gwinnett County Police Headquarters Renovation
Gwinnett County, GA | Architect
Provided architectural design.

Gwinnett County Fire Stations (8 New Facilities)
Gwinnett County, GA | Architect
Provided architectural design.

Gwinnett County Central Police Precinct and Crime Prevention Unit
Gwinnett County, GA | Architect
Provided architectural design.

Kirubel Beyene, PE, SE | *Structural*

VALUE TO FWHWRC BIOSOLIDS PROJECT:

Experienced with FWHWRC and other GCDWR facilities. Kirubel Beyene has 19 years of experience in structural engineering. He performs a wide range of civil and structural engineering tasks that require coordination with multi-disciplined team members.

REPRESENTATIVE PROJECTS

F Wayne Hill WRC, Tertiary Treatment Optimization and Expansion | GCDWR

Gwinnett County, GA | Senior Structural Engineer

Performed structural design in support of improvements to the membrane treatment facility and associated screening, pumping and chemical systems.

F Wayne Hill WRC | GCDWR

Gwinnett County, GA | Senior Structural Engineer

Tasks for the FWHWRC include a GMF Building Walkway, an MV ATS Project, Digester Gas Support Repairs, and Bio Tank #8 - Slide Gate concrete separation evaluation/assessment.

Crooked Creek WRF Improvements Construction Package 4 (CP-4) | GCDWR

Gwinnett County, GA | Senior Structural Engineer

Performed structural design in support of a $131M in improvements to an aging wastewater treatment facility, including Sampling Point Access Stairs.

On Call | GCDWR

Gwinnett County, GA | Senior Structural Engineer

Responsibilities include developing structural design concepts, completing the analysis and design, and working with other engineers and designers to get the structural requirements communicated on paper and in the model. With a commitment to quality assurance, performing services during construction, including reviewing submittals, responding to contractor requests for information (RFIs), and performing site visits to the construction site as needed to help resolve construction issues.

Cobb County Water System

Cobb County, GA | Senior Structural Engineer

Responsibilities include developing structural design concepts, completing the analysis and design, and working with other engineers and designers to get the structural requirements communicated on paper and in the model. With a commitment to quality assurance, performing services during construction, including reviewing submittals, responding to contractor requests for information (RFIs), and performing site visits to the construction site as needed to help resolve construction issues.

Fulton County Department of Public Works

Fulton County, GA | Senior Structural Engineer

Responsibilities include developing structural design concepts, completing the analysis and design, and working with other engineers and designers to get the structural requirements communicated on paper and in the model. With a commitment to quality assurance, performing services during construction, including reviewing submittals, responding to contractor requests for information (RFIs), and performing site visits to the construction site as needed to help resolve construction issues.

Years of Experience

19

Years with Firm

2

Education

BS, Civil Engineering, University of Notre Dame, South Bend, IN

MS, Civil Engineering, Georgia Institute of Technology, Atlanta, GA

Registrations

Professional Engineer: GA, No. PE035013; TN, No. 120893

Structural Engineer: GA, No. SE001323

Professional Affiliations

N/A

Office Location

Atlanta, GA

Sewerage and Water | Board of New Orleans

New Orleans, LA | Senior Structural Engineer

Responsibilities include developing structural design concepts, completing the analysis and design, and working with other engineers and designers to get the structural requirements communicated on paper and in the model. With a commitment to quality assurance, performing services during construction, including reviewing submittals, responding to contractor requests for information (RFIs), and performing site visits to the construction site as needed to help resolve construction issues.

Nuclear Design Projects in Nevada and Idaho

NV, OH | Senior Civil/Structural Engineer

The projects focused on providing modifications and upgrades to an existing containment structure for proposed use of microreactor tests that remain subcritical. Responsibilities included preparing drawings for high density concrete shield wall during conceptual design. Coordination with other engineers and designers to complete the tasks, writing alternative evaluations for containment system design and modification, writing specification for geotechnical engineering services, overseeing and checking structural design and analysis and coordination and interface with subcontractors, vendors and clients to support deliverables on projects.

Pacificorp Energy Lake Side 2 Plant

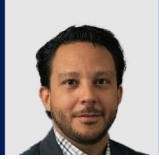
Vineyard, UT

A 600 MW combined cycle power plant and switchyard EPC project at an existing PacifiCorp operating plant. Responsible for civil/structural designs and drawing productions. Worked with geotechnical engineer in developing drawings for surcharge and structural fill for site ground improvement. Provided field support (resident engineer at site for 3 months) early during construction phase working with subcontractors and answering field questions. Coordinated the structural design effort, involving the preparation of drawings, calculations, cost estimates, reports, specifications, and other contract documents.

Gainesville Regional Utilities (GRU)

Alachua County, FL

Responsible for structural engineering and design of a 180-ft high elevator attached to a baghouse at the Deerhaven Generating Station Unit 2 using STAAD.Pro, RAM Advanse and modeling in Frameworks. Responsible for grading and drainage plans, rough grading, site plan preparation, storm water drainage design, erosion and sediment control plans and support during the EPC process. Responsible for civil and structural 3D modeling and 2D drawings production using AutoCAD, Civil 3D, Microstation, InRoads and PDS Frameworks. Responsible for reviewing shop drawings and coordination on civil and structural drawings.



Jose Ramos, PE | *Geotechnical*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Experienced with GCDWR facilities. José Ramos has 24 years of engineering experience for water projects. Jose's experience includes site development, site grading and drainage, stormwater management, utilities and force mains, erosion and sediment control, and treatment plants. He has geotechnical engineering experience planning and supervising geotechnical explorations, development of soil testing programs, geotechnical analysis and design, foundation analysis and design, and geotechnical report preparation. Jose also has experience in the preparation of construction drawings and specifications, construction observation, request for proposals reports, and services during construction. José is a Level II Certified Design Professional by the GSWCC and has worked in multiple sediment and erosion control plans preparation and inspections for traditional construction sites, lineal projects, and stream restoration projects.

REPRESENTATIVE PROJECTS

F. Wayne Hill WRC Effluent Header Stabilization Project | GCDWR

Gwinnett County, GA | Design/Project Manager

The project consisted of providing project management, producing biddable documents, providing bid phase support services, and providing construction management and inspection services for the installation of helical piers underneath the footers supporting two 48" effluent header pipes and process water pumps and header pipe and connecting valves and appurtenances to prevent further differential settlement.

F. Wayne Hill Water Resources Center (WRC) Effluent Header Stabilization Project | GCDWR

Gwinnett County, GA | Project/Design Manager

Project manager and design leader for the design and construction of helical piles and concrete pedestals to stabilize from settlement existing effluent headers and valves at F. Wayne Hill WRC.

Yellow River Park Stream Restoration Project | GCDWR

Gwinnett County, GA | Erosion and Sediment Control Designer

Designer of erosion and sediment control plans and BMPs for the construction of the stream restoration and bank stabilization practices at Yellow River.

Northeast Wastewater Treatment Plant Expansion Project | CCWA

Morrow, GA | Lead Geotechnical Engineer

Performed geotechnical investigation, analyses and design for wastewater plant expansions. Performed construction inspections of deep foundation construction.

Shakerag WRF | Forsyth County Water and Sewer Department

Forsyth County, GA | Lead Geotechnical Engineer

Geotechnical lead for this 1.25 mgd biological nutrient removal wastewater treatment facility with membrane separation. Services provided included preliminary engineering, design drawing and contract document preparation, bid phase services, construction management and inspection services, surveying, and field investigations, and permitting services.

Forsyth County Raw Water Pipeline Phase 1 | Forsyth County Water and Sewer Department

Forsyth County, GA | Lead Civil/Geotechnical Engineer

Site civil, piping, and geotechnical design and analysis for new 2-mile long, 48-inch raw water pipeline that conveys raw water from Lake Lanier to the Forsyth County WTP.

Years of Experience
24

Years with Firm
22

Education
ME, Civil Engineering, University of Florida

BS, Civil Engineering, University of Puerto Rico

Registrations
Professional Engineer: GA, No. 31830; AL, No. 29953; FL, No. 63120; PR, No. 24637; WV, No. 019849

Professional Affiliations
N/A

Office Location
Gainesville, FL

20-MG Raw Water Ground Storage Tank | Forsyth County Water and Sewer Department
Forsyth County, GA | Lead Geotechnical Engineer
Geotechnical design and analyses for the design and construction of a new 20-MG raw water ground storage tank built within the Forsyth County Water Treatment Plant.

North Oconee Water Reclamation Facility | Athens-Clarke County PUD
Athens-Clarke County, GA | Lead Civil/Geotechnical Engineer
Site civil design and analysis for new wastewater treatment plant. Responsibilities included three-dimensional (3-D) site design, sediment control design, stormwater management system design and permitting, utilities and yard piping design, erosion and geotechnical design and analyses.

Upper North Oconee Phase 2B Trunk Replacement | Athens-Clarke County PUD
Athens, GA | Civil Engineer Design Lead
Civil engineer lead and manager in charge of the design of approximately 1,800 linear feet of new 36-inch sewer trunk inside a 60-inch diameter tunnel. Scope of work included preliminary design, detailed design and contract document production.

Wyckoff WTP Filter Building Rehabilitation and Electrical Improvements | Cobb County-Marietta Water Authority
Cobb County, GA | Site Civil/Geotechnical Design Lead Engineer
Site civil lead and geotechnical lead designer and engineer of record in charge of designing site improvements, underground utilities, grading and drainage, stormwater management facilities, micro-pile foundations, retaining walls, and erosion control for improvements to existing WTP.

Wyckoff WTP Filter Building Rehabilitation and Electrical Improvements | Cobb County-Marietta Water Authority
Cobb County, GA | Site Civil Design Lead
Site Civil Lead designer and engineer of record in charge of designing site improvements, underground utilities, grading and drainage, and erosion control for improvements to existing WTP.

Nathan Meade, PE | *Site/Civil/Yard Pipe*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Experienced with FWH WRC and other GCDWR facilities. Nathan Meade has 12 years of experience in civil engineering and CAD support in site development, site grading and drainage, stormwater management, site utilities, erosion and sediment control, and treatment plants. He provides services in preparing construction and permitting drawings and specifications, construction observation, stormwater reports, and services during construction. Nathan's Georgia-based projects include work in Clayton, Forsyth, Gwinnett, Walton, and Cobb Counties. He has also worked further afield in Alabama, Brazil, Florida, Oklahoma, Puerto Rico, Texas, and West Virginia.

REPRESENTATIVE PROJECTS

F. Wayne Hill Water Resources Center, Tertiary Treatment Optimization and Expansion | GCDWR

Gwinnett County, GA | Civil Design/3D Model

Provided civil design for the improvements to the membrane treatment facility and associated screening, pumping and chemical systems. Utilized laser survey in combination with 3-D models to develop the design drawings. Design was completed in April 2021 and is in the process of being advertised for construction.

Program Management and Engineering Department | CCWA

Clayton County, GA | Staff Augmentation Engineering Project Manager

Facilitated project delivery for numerous ongoing engineering task orders with CCWA. Reviewed engineering documents and reports. Provided engineering support and guidance for CCWA.

W.B. Casey Water Reclamation Facility Improvements, Clarifier Upgrades | CCWA

Clayton County, GA | Lead Civil Engineer

Designed the site improvements, grading, stormwater management, erosion control, and yard piping for the site. Designed the effluent outfall at the Flint River and the stream restoration details.

Water Treatment Plant Phase II Expansion | Forsyth County Water and Sewer Department

Forsyth County, GA | Lead Civil Engineer

Designed and produced the civil portion of the contract drawings and specifications. Designed the site improvements, grading, stormwater management, erosion control, and yard piping for the site. Organized the site permitting effort. Produced the stormwater calculations and report. Provided ongoing services during construction.

Fowler Water Reclamation Facility Expansion | Forsyth County Water and Sewer Department

Forsyth County, GA | Assistant Civil Engineer

Produced the civil and yard piping design documents for this expansion to an existing WRF.

Shakerag Water Reclamation Facility | Forsyth Water and Sewer Department

Forsyth County, GA | Assistant Civil Engineer

Greenfield design of a new WRF next to the Chattahoochee River. Assisted in design of all civil drawings (erosion control, grading, staking). Coordinated with civil engineer and county reviewers to obtain land disturbance permits.

Years of Experience
12

Years with Firm
12

Education
BS, Civil Engineering, Georgia Institute of Technology

Registrations
Professional Engineer: GA, No. PE04153; AL, No. 37231

Professional Affiliations
N/A

Office Location
Atlanta, GA

Forsyth County Support Services
Forsyth County, GA | Engineering Support
Reviewed stormwater management reports submitted to the county.

Cleveland Road Aerial Sewer Replacement and Creek Bank Stabilization
Athens-Clarke County, GA | Assistant Civil Engineer
Produced markups for CAD technicians. Produced erosion control plans.

Crosstown WTP Improvements | Fayette County Water System
Fayette County, GA | Lead Civil Engineer
Designed site improvements, including grading and staking plans, erosion control, and yard piping.

Aquifer Storage Recovery Demonstration Project | Georgia Environmental Finance Authority
Atlanta, GA | Assistant Civil Engineer
Produced grading and erosion control drawings. Performed erosion control 7-day inspection.

Hugh A. Wyckoff WTP Filter Building Rehabilitation and Electrical Improvements | Cobb County-Marietta Water Authority
Cobb County, GA | Lead Civil Engineer
Designed the site improvements for this project, including grading and drainage, erosion control, and site utilities. Calculated stormwater runoff and produced a stormwater management report to deliver to the county reviewers. Organized the site permitting effort and received approval for the site design.

Abel Valiente, PE | *HVAC*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Experienced with GCDWR and other Metro Atlanta facilities. Abel Valiente has 20 years of experience in extensive building services design work for water and wastewater treatment facilities. He is experienced in modeling hydraulic systems and HVAC systems using computer tools as Pipe-Flow, Energy Gauge, Trace 700 and HourlyAP. He has co-authored a presented paper regarding controlled environments for air making machines and served as senior reviewer for quality control on several projects.

REPRESENTATIVE PROJECTS

Crooked Creek WRF Improvements | GCDWR

Gwinnett County, GA | Lead HVAC/Mechanical Engineer

Designed HVAC and Odor Control systems serving dewatering building. Design included load calculations, duct sizing, equipment selection, and interface with plant SCADA system complying with NFPA 820, local codes, standards, and regulations.

Wyckoff WTP Filter Building Rehabilitation and Electrical Improvements | CCMWA

GA | Lead HVAC/Mechanical Engineer

Designing HVAC systems; performing load calculation, duct sizing, and equipment selection complying with codes, standards, and regulations; and developing control strategy based on centralized DDC system and prepare the specifications.

Fowler WRF

Forsyth County, GA | Lead HVAC/Mechanical Engineer

Designed HVAC systems serving headwork and electrical buildings. Design included load calculations, duct sizing, equipment selection, and interface with plant SCADA system complying with NFPA 820, local codes, standards, and regulations.

MCAS Cherry Point WTP | NAVFAC

NC | Lead HVAC/Mechanical Engineer

Developed design criteria and requirements for HVAC systems; and design HVAC systems providing heating, cooling, and ventilation for treatment area, by-pass building, electrical spaces, and administrative area. Design included load calculations, duct sizing and equipment selection making sure of following NFPA 820, local codes, standards, and regulations. Designed the HVAC systems for wet and analysis laboratories, including fume hoods and other chemical exhaust. Developed control design based on DDC control system connected to base network. Prepared technical specifications.

HWPCF Wet Weather Expansion Project Master Plan and Design | Metropolitan District Hartford Connecticut

CT | Mechanical Engineer

Reviewed master plan project definition report developed by Malcolm Pirnie. Developed design of HVAC systems, including air conditioning, heating and ventilation complying with requirements driven by NFPA 820 code for classified spaces. Design ductwork system for odor control system in coordination with odor control specialists.

Years of Experience
20

Years with Firm
12

Education
BS,
Mechanical Engineering,
University of Havana

MS, Mechanical Engineering,
University of Havana

Plumbing Design,
University of New York

HVAC Concepts of Design,
University of New York

Registrations
Professional Engineer:
GA, No.039147

Professional Affiliations
N/A

Office Location
Gainesville, FL

Kanapaha WRF and Main Street WRF Dewatering Project | Gainesville Regional Utilities
FL | Lead HVAC/Mechanical Engineer.
Designed HVAC systems serving dewatering building. Design included load calculations, duct sizing, equipment selection, and interface with plant SCADA system complying with NFPA 820, local codes, standards, and regulations.

Wilson Creek Regional WWTP | North Texas Municipal Water District
TX | Mechanical Engineer
Designed HVAC systems, load calculation, duct sizing, and equipment selection complying with codes, standards, and regulations. Reviewed submittals to assure that equipment installed by contractor complied with design requirements.

Standby Emergency Generator Building | Passaic Valley Water Commission
Passaic County, NJ | Lead HVAC/Mechanical Engineer
Designed air conditioning system serving electrical space serving generators and ventilation and heating systems for generator building housing four generators of 3 MW each. Design of system included high requirements of acoustic parameters. Prepared the HVAC specifications.

Dyal WTP LOX Conversion | City of Cocoa
Cocoa, FL | Lead HVAC/Mechanical Engineer
Converted ozone generation room to controlled environment utilizing existing water chiller capacity. Designed new HVAC system, load calculations, equipment selections, chilled water piping, and ductwork selection complying with codes and standards. Prepared specification packages and drawings.

Duck Pond Outfall (Stormwater Pump Station) | City of Tampa
Tampa, FL | Mechanical Engineer
Designed HVAC systems serving stormwater pump station. Performed load calculation, duct sizing, and equipment selection complying with codes, standards, and regulations.

Energy Survey | Camp Lejeune, Marines Corp Base
Jacksonville, NC | Mechanical Engineer
Conducted energy surveys to assess current mechanical condition of 75 building in Marines Corp Base. Survey involved central air conditioning, heating, climate control, and plumbing systems and purpose was proposing possible measures to improve energy consumption.

Greg Yarberry, PE | *Electrical*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Experienced with GCDWR facilities. Manages projects to budget/schedule. Greg Yarberry has 30 years of experience in the design of electrical power distribution systems, standby power generation facilities, and I&C systems for treatment plants. Greg has extensive experience in the design and commissioning of standby power facilities operating in closed parallel and open transition with local utilities. He prepares technical specifications and construction documents and provides technical support for contractors during the construction phase of projects. He prepares and manages budgets for electrical and instrumentation staff required to complete a specified project.

REPRESENTATIVE PROJECTS

F. Wayne Hill Water Resources Center | GCDWR

Gwinnett County, GA | Lead Electrical Engineer

Led electrical engineering for the expansion and upgrade to an existing wastewater treatment facility from 75 to 227 ML/and a 12.47-kV electrical distribution system with a capacity of 37.5 MVA. Designed the electrical distribution system for closed-transition paralleling operations with the local utility to minimize the operational impacts on the facility from any power outages.

Lanier Filter Plant and Shoal Creek Filter Plant Standby Power Project | GCDWR

Gwinnett County, GA | Electrical Engineer

Project included three (3) 2,500 KW standby rated 4.16 KV units with provisions for two additional units to be added in the future at the Shoal Creek Filter Plant. Project also included three (3) 2,000 KW standby rated 4.16 KV units with provisions for two additional units to be added in the future at the Lanier Filter Plant. Each unit at the Shoal Creek Filter Plant included a 4,200-gallon sub-base fuel storage tank and a sound attenuated enclosure rated at 65 dB at 25 feet. Each unit at the Lanier Filter Plant included a 3,500-gallon sub-base fuel storage tank and a sound attenuated enclosure rated at 65 dB at 25 feet. All units at both facilities include the ability to operate on a 70/30 mix of natural gas and diesel fuel (Bi-fuel). Project is currently under construction and is a Design Build Project.

F. Wayne Hill Water Resources Center | GCDWR

Gwinnett County, GA | Electrical Engineer

Project included installation of a 2,398 KW Jenbacher biogas generator. The unit generates power at 12.47 KV is in parallel with the utility when it is in operation. Project is a Design Build Project.

Lanier Filter Plant and Shoal Creek Filter Plant | GCDWR

Gwinnett County, GA | Project Manager/Lead Electrical Engineer

Responsible for the plant-wide 25kV electrical distribution system at both of these facilities as well as the new generation system installed at both of these facilities. Three (3) 2.0MW 4.16kV diesel generators were installed at the Lanier Filter Plant while three (3) 2.5MW 4.16kV diesel generators were installed at the Shoal Creek Filter Plant. Each of the six (6) diesel generators were installed within a dedicated walk-in type, sound attenuated enclosure with an integral diesel fuel sub-base storage tank. The electrical distribution systems at both of these plants were designed for closed-transition paralleling operations between the on-site generation system and the local utility to minimize the operational impacts on the facility from any power outages or periodic generator testing.

Years of Experience
30

Years with Firm
28

Education
BS, Electrical Engineering, University of Florida

Registrations
Professional Engineer: GA, No. 28825 ; FL, No. 58818; NC, No. 32994; AL, No. 28982; CT, No. 27197

Professional Affiliations
N/A

Office Location
Atlanta, GA

F. Wayne Hill Water Resources Center | GCDWR

Gwinnett County, GA | Electrical Engineer

Project involved the expansion and upgrade of an existing wastewater treatment facility from 20-mgd to 60-mgd. Responsible for the plant-wide 12.47kV electrical distribution system and a new standby generation system. The new standby generation system consisted of five (5) new 2,000-kW 12.47kV diesel generators and two (2) retrofitted 1,825-kW, 12.47kV diesel generators. The electrical distribution system was designed for closed-transition paralleling operations between the standby generation system and the local utility to minimize the operational impacts on the facility from any power outages or periodic generator testing.

Shakerag WRF | Forsyth County Water and Sewer Department

Forsyth County, GA | Lead Electrical Engineer

Lead electrical engineer for this 1.25 mgd biological nutrient removal wastewater treatment facility with membrane separation. Services provided included preliminary engineering, design drawing and contract document preparation, bid phase services, construction management and inspection services, surveying, and field investigations, and permitting services.

Forsyth County Water Treatment Plant

Forsyth County, GA | Lead Electrical Engineer

Led electrical engineering for an upgrade and expansion of this facility. The modifications implemented as part of this project included the addition of two new membrane trains, installing a new surge tank, installing a new high service pump station, retrofitting the existing high service pump station, installing a chlorine dioxide system, and installing a new gravity thickener. The process modifications outlined above required extensive modifications to the plants existing 12.47kV and 480V electrical distribution systems.

North Oconee Water Reclamation Facility and Standby Power Systems | Unified Government of Athens Clarke County

Athens, GA | Lead Electrical Engineer

Designed the plant-wide electrical distribution system with a capacity of 25 MVA along with the onsite power generation of 6.75 MW via three 2,250-kW, 12.47 kV diesel generators. Optimized design of the electrical distribution system for closed-transition paralleling operations with the local utility which minimized the operational impacts on the facility from any power outages. The facility consisted of an onsite influent pump station, preliminary treatment facility, biological reactors, secondary clarifiers, return activated sludge/waste activated sludge pumps, UV disinfection facility, chemical feed systems, aerobic sludge storage facility, dewatering facility, odor control facility, and administration and maintenance building.

Jeff Handwork, PE | *I&C*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Experienced with GCDWR facilities. Jeff Handwork has 33 years of experience in project management and engineering for control systems, including I&C and SCADA. He has worked on large and complex EPC power plants, primarily focused on process safety, functional safety, HAZOP, I&C, and electrical. Jeff managed a staff of 100 engineers designing turbine control systems and served as a PM on control system retrofits and engineering services contracts. His industrial controls experience includes paralleled, multi-megawatt, fossil fuel powered generators and both design and modification of medium-voltage substations.

REPRESENTATIVE PROJECTS

Lanier Filter Plant | GCDWR

Gwinnett County, GA | I&C Lead Engineer

Electrical design for power cabling for a couple of small HVAC additions. Projects involved power cabling to replacement fans and dampers and power to small mini split HVAC system.

University of Florida Central Utilities and Energy Strategic Development Plan and Design | University of Florida

Gainesville, FL | Industrial Controls/Automation Engineer

Planning, designed, and provided construction administration support of new utility infrastructure, including a new energy plant, to provide reliable thermal and electrical service to develop a reliable looped system.

Provided design, specifications, cabinet drawings, network architecture drawings for an electrical SCADA package, chiller plant, thermal system improvements and a combined heat and power plant.

Buckley AFB Aerospace Data Facility – Colorado (ADF-C) Electrical Infrastructure Master Plan Design | USACE Baltimore

Aurora, CO | I&C Lead

Prepared full DBB construction documents for the generation plant, distribution infrastructure, and site controls system. Responsible for checking instrumentation and control deliverables including specifications, concept of operations, cabinet drawings and network architecture drawings.

West Power Complex Turbine 7 Addition | Sewerage and Water Board of New Orleans

New Orleans, LA | I&C Lead

Responsible for control system design on an 18 MW simple cycle combustion turbine addition. Project involves design and specifications of control system wiring and components.

Boiler Replacement | University of Texas at Austin

Austin, TX | I&C Lead

Responsible for control system design on two water tube boiler replacements at the University of Texas. Project involves design and specifications of control system wiring and components.

Control System | Kaolin Processing Facility

GA | I&C Lead

Project engineer on a 1000 I/O control system utilizing Modicon PLC's and Wonderware graphics software for a facility making proppants.

Years of Experience
33

Years in Firm
15

Education
BS, Electrical Engineering, Georgia Institute of Technology

Registrations
Professional Engineer: GA, No. PE21727

Professional Affiliations
Instrument Society of America, Member

Project Management Institute, Member

Office Location
Atlanta, GA

Control System | Cottonseed Oil Mill
National | I&C Lead
Project engineer for a 750 I/O control system utilizing Siemens 505 PLCs.

Control System Wiring, Shingle Manufacturing Plant
Pennsylvania, PA | Lead Engineer
Lead engineer for control system wiring on a Shingle manufacturing plant.

Control System and Instrumentation Upgrades, Pulp and Paper Facilities
Confidential | I&C Lead
Performed multiple small control system and instrumentation upgrades in pulp and paper facilities

Siemens Power Generation
National | I&C Lead
Manager of Project Execution. Responsible for leading a team consisting of project management, engineering, assembly, purchasing, and commissioning (85 People).

- Design/build control systems for combustion turbines, steam turbines, and boilers
- Manage cost center budgets
- Manage execution of projects

Manager of Technical Resources. Managed a staff of 100 engineers/technicians Stopped cost center under-recovery by realigning staff requirements to meet business volume and new product mix. Improved training program to upgrade staff to meet new market conditions.

Project Manager BOP/Modernization. Led a team of six project engineers. Provided marketing support for modernization proposals.

Project Engineer.

- Project Engineer for $8M control system on a 2x1 combined cycle repowering project in Missouri.
- Project Engineer for a $1M control system on a new unit 2x1 combined cycle in Florida
- Project Engineer for a $1M control system on a new unit 1x1 combined cycle in Texas
- Project Engineer for a $3M control system on a three-unit 1x1 combined cycle in New York
- Project Engineer for a $.5M control system ST retrofit in Minnesota

FEED, Integrated Gasification Combined Cycle/Polygen Plant | Summit
Project Engineer
Owner's Engineer FEED work of an Integrated Gasification Combined Cycle/Polygen plant, designed to produce 400 MW of power, ammonia and urea, sulfuric acid and capture CO_2 for use in enhanced oil recovery. Work included review of owner specifications, water treatment, study and preliminary engineering coordination.

Engineering Package | Solidaris LLC
Venezuela | Project Engineer/Manager
$1.3M engineering contract for multi-site basic engineering packages. The sites consisted of a 2 unit GE LM6000 site and a single unit GE LMS100 site in Venezuela. Responsible for managing a multi-discipline team, meeting cost and schedule objectives, maintaining technical quality and performing HAZOPs. The sites were simple cycle and dual fuel. The basic engineering packages consisted of P&ID's, system design descriptions, equipment and instrumentation bid packages and design of balance of plant control systems. Additionally, for the LMS100, we provided a conceptual turbine foundation design.

Mike Adish, PE | *Plumbing*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Experienced with plumbing needs of infrastructure facilities. Mike Adish has 40 years of experience, including HVAC design, fire protection design, plumbing and project management. Mike is the Mechanical Engineer of Record for a number of design projects in the military, federal, state and local government sectors. He has managed a variety of projects, interfacing with clients regarding design issues, scheduling and construction administration.

REPRESENTATIVE PROJECTS

Adamsville Pump Station

Atlanta, GA | Plumbing and Mechanical Engineer

Developed contract documents for the addition of a fourth pump (Pump #4) bringing the firm pumping capacity of the station to 45 MGD (70 MGD total for all four pumps). Improvements made at the pump station ensured that the required firm pumping capacity could be delivered after Pump No. 4 was successfully installed and to improve overall reliability, address operational deficiencies and reduce hydraulic bottlenecks with Pump Nos. 1, 2 and 3. Pump No. 4 is now an in-dependent pump with its own suction and discharge pipes, backup power generator and controls—essentially making this a parallel pump station for constructability and operational flexibility.

Cobb County Courthouse

Marietta, GA | Lead Plumbing/Mechanical Engineer

EDT provided the Structural, Electrical, Plumbing and Mechanical engineering on the 27,000 SF renovation of the Cobb County Magistrate Courts (2nd and 3rd floors). The building is structural steel and concrete construction. The renovation has brought a much needed facelift as well as modernizing the HVAC and plumbing systems to comply with the current codes and regulations.

Atlantic Station Condominium Apartment/Chilled Water Replacement

Atlanta, GA | Senior Plumbing/Mechanical Engineer

Mike provided mechanical and plumbing design engineering services for six buildings in the Atlantic Station Condominiums. In this project the owner decided each building would have its own independent chilled water system and break away from the existing central chiller plant. The project consisted of roof-mounted pump-packaged air-cooled chiller(s) for each building with proper selection, per ASHRAE standards and cooling capacities to handle the existing building cooling load. New chilled water lines from the new and high-efficiency chiller(s) were connected to the existing chilled water risers in the building, replacing the existing chilled water lines of the central chiller facility. The approximate total building area served by this project was 185,000 square feet.

TBUP Barracks Repair, Building 25703

Fort Gordon, GA | Lead Plumbing/Mechanical Engineer

EDT provided engineering design services for the 61,000 SF De-sign-Build TBUP Barracks Project. Project consisted of the renovation of a 3-story barracks buildings, along with associated site improvements. Project included the integration of new structural balconies, anti-terrorism force protection, progressive collapse reinforcement, mechanical, electrical, plumbing, civ-il/site work, structural design, all new HVAC, LEED® Silver sustainable design, with base-wide systems and controls. EDT self-performed design services, construction administration, construction permitting, as built and product closeout.

Years of Experience

40

Education

BS, Mechanical Engineering, University of Texas at Arlington

Registrations

Professional Engineer:
GA 17025
AL 17995
AR 15515
FL 54406
LA 30777
MD 17604
MI E-024070
NC 029009
SC 22877
MS 20521
VA 0402055680

Professional Affiliations

N/A

Office Location

Marietta, GA

TBUP Barracks Renovations FY 14 - Bldg 25718 & 25721

Fort Gordon, GA | Senior Plumbing/Mechanical Engineer

Design-Build Renovation Barracks Rehab for the integration of new structural balconies, anti-terrorism force protection, progressive collapse reinforcement, all new HVAC, plumbing, electrical, civil/site work, LEED® Silver sustainable design, with base-wide systems and controls. Each building is 61,000 square feet. The total area renovated is 122,000 square feet.

Ft. Eustis AFB

Fort Eustis, VA | Sr. Plumbing and Mechanical Engineer

Renovation of existing building 705 with approximately 140,000 square feet one and two-story buildings. Plumbing and mechanical renovation consisted of replacement of the existing cooling tower, water source heat-pump, chilled water and hot water systems loop piping. Designed new water source heat pump units to serve renovated spaces for cooling and heating and upgrading the temperature control system. The HVAC systems selected with high-efficiency for facility energy conservation and in compliance with ASHRAE 90.1-2004 Energy Conservation and in compliance with LEED® for existing building.

The Phoenix at Eagle Point, Senior Living Facility, Birmingham

Shelby County, AL | Senior Plumbing/Mechanical Engineer

Provided mechanical, plumbing and fire protection engineering for a 150,000 square foot senior living facility, which includes administrative offices, dining areas, maintenance storage areas, independent living apartments and assisted living.

TBUP Barracks Renovations FY13 – Bldg 25715 & 25716

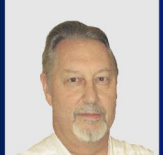
Fort Gordon, GA | Senior Plumbing/Mechanical Engineer

Design-Build Renovation Barracks Rehab for the integration of new structural balconies, anti-terrorism force protection, progressive collapse reinforcement, all new HVAC, plumbing, electrical, civil/site work, LEED® Silver sustainable design, with base-wide systems and controls. Each building is 61,000 square feet. The total area renovated is 122,000 square feet.

SOF Group Headquarters MISOC

Ft. Bragg, NC | Senior Plumbing/Mechanical Engineer

Provided mechanical engineering services for a 81,000 SF group headquarters building. Project was Design-Build with the HVAC systems consisting of hybrid geothermal dedicated heat recovery chillers that generated chilled water & hot water and a closed circuit cooling tower with associated pumps (chilled & hot water, source/sink water loop, condenser water loop and geothermal water loop). The chilled & hot water loop pumps serve the heating & cooling coils which now provide with variable speed drive energy conservation in conjunction with variable air volume central station air handling units with as-sociated VAV terminal units for space cooling and heating. Project was designed in compliance with ASHRAE Standard 90.1 for energy conservation and met the government mandatory requirement of EPACT 2005. In addition the building & MEP Systems were designed and installed to achieve energy savings of 50% better than ASHRAE Standard 90.1-2007 Baseline Building. The mechanical system selected and installed for this project was one of the most highly efficient and energy saving system in the HVAC Industry. The building was constructed to obtain LEED® Silver.



Richard Beohm, FPE | *Fire Protection*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Experienced with fire protection needs of infrastructure facilities.
Richard Beohm has 45 years of experience in the design of fire protection systems, sprinkler layout and design, fire and safety alarm systems and other related systems. Richard maintains a number of board certifications and licensing in several states. He is qualified as both a designer and a licensed inspector.

REPRESENTATIVE PROJECTS

EPA Athens Environmental Lifespan Center
Athens, GA | Lead Fire Protection Engineer
Project consists of the design and renovation of an existing 7,000 GSF Lifespan building to provide modern work environments and collaboration spaces to support the mission and operations of the EPA Athens, Georgia facility. Scope of work includes demolition of interior construction and systems, construction of new interior spaces with new finishes, new engineering support systems including emergency generator and a new server room, site improvements around building for accessibility, building commissioning, operation and maintenance documentation and training.

Sandra Moon Community Center
Huntsville, AL | Fire Protection Engineer
A/E Design Services for the demolition of a school to an active community center. 108,560 SF demolition and renovation of the old Grissom High School was converted into a active community center (approximately 110,600 SF). The new community center will consist of a stand-alone library and a auditorium utilized by ARTS Huntsville, while the remaining is for the city's parks and recreation department.

The Phoenix at James Creek, Senior Living Facility
Cumming, GA | Fire Protection Engineer
Design-Build of a 78,000 square foot senior living facility, which includes administrative offices, dining areas, maintenance storage areas, independent living apartments and assisted living.

VA Austell Primary Care Clinic
Austell, GA | Fire Protection Engineer
Design-Build of VA Clinic where EDT performed the site-civil, architectural, MEP and structural design. The 14,500 SF facility is located within a 2.73-acre property.

TBUP Barracks Renovations FY11 – Bldg 29702 & 25720
Ft. Gordon, GA | Fire Protection Engineer
For this Design-Build Ren-ovation Barracks Rehab for the integration of new structural balconies, anti-terrorism force protection, progressive collapse reinforcement, all new HVAC, plumbing, electrical, civil/site work, LEED® Silver sustainable design, with base-wide systems and controls. Each building is 61,000 SF. The total area renovated is 122,000 SF.

TBUP Barracks Renovations FY12 – Bldg 25718 & 25721
Ft. Gordon, GA | Fire Protection Engineer
For this Design-Build Ren-ovation Barracks Rehab for the integration of new structural balconies, anti-terrorism force protection, progressive collapse reinforcement, all new HVAC, plumbing, electrical, civil/site work, LEED® Silver sustainable design, with base-wide systems and controls. Each building is 61,000 SF. The total area renovated is 122,000 SF.

Years of Experience
45

Education
Bachelors of Electronics Engineering Technology, DeVry Institute of Technology

Registrations
PE, Fire Protection: GA 018412 (Engineer/Land Surveyor)

FL 52263 (PE)

MD 47149 (PE)

MA 36987 (Safety Engineer)

NC 039660 (PE)

Licensed Sprinkler Designer: GA DL 000234

Certified Safety Professional (CSP) in Engineering, Management

Board Certified Building Inspection Engineer

Associate in Risk Management (ARM)

Lead Fire Protection Engineer

Professional Affiliations
N/A

Office Location
Marietta, GA

TBUP Barracks Repair, Building 25703

Fort Gordon, GA | Lead Fire Protection Engineer

EDT provided engineering design services for the 61,000 SF Design-Build TBUP Barracks Project. Project consisted of the renovation of a 3-story barracks buildings, along with associated site improvements. Project included the integration of new structural balconies, anti-terrorism force protection, progressive collapse reinforcement, mechanical, electrical, plumbing, civil/site work, structural design, all new HVAC, LEED® Silver sustainable design, with base-wide systems and controls. EDT self-performed design services, construction administration, construction permitting, as-built and product closeout.

TF-34 Engine Shop

Moody Air Force Base, GA | Fire Protection Engineer of Record

For the design-build for the Battalion Headquarters. Construction of a new office facility with classrooms. New HVAC system consisting on VAV Custom Air Handling Units coupled with outdoor condensing units. Building requires complying with LEED® Silver Certification and EPACT 2005.

Lawrenceville Senior Living

Lawrenceville, GA | Fire Protection Engineer

Design-Build for 175,000 SF Senior Living Facility accommodating 195 units of Assisted living, Independent Living and Memory Care. Amenities include dining and kitchen spaces, fitness center and salon.

Battalion Headquarters Building

Fort Bragg, NC | Fire Protection Engineer of Record

Involved in the design-build for Battalion Headquarters. Construction of new office facility with classrooms. New HVAC system consists of VAV Custom Air Handling Units coupled with outdoor condensing units. Building requires complying with LEED® Silver Certification and EPACT 2005.

Reception Station Dining Facility

Ft. Benning, GA | Fire Protection Engineer of Record

Involved in the design-build of a 62,000-square-foot dining facility serving 2,600 soldiers at each meal. The facility includes kitchen and support facilities, serving lines, feeding stations and two large dining areas with total 1092 military personnel seating capacity. The project also encompassed associated improvements on the 6.5 acre site. This facility is being designed to meet LEED® Silver Certification.

Special Operations Forces (SOF) Group Head-quarters

Ft. Bragg, NC | Fire Protection Engineer

The project is to house the Headquarters for the MISOC(A) general officer commander, command elements of 2 MISO Group and a language lab and includes training classrooms, administrative work areas, conference rooms, sensitive compartmented information facility (SCIF), team rooms, latrines with showers and break rooms. Building systems include anti-terrorism force protection, progressive collapse structural reinforcement, fire detection and suppression, energy management controls, unclassified and classified communications networks, intrusion detection, surveillance, electronic access control, HVAC, plumbing, electrical, civil/site work, LEED® Silver sustainable design, furniture installation and AV installations.

Chris Whalen | *Construction Manager*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Knowledge of FWH WRC and other GCDWR facilities. Chris Whalen has 34 years of experience in the construction management of water and wastewater treatment plant expansions, renovations, upgrades, and new plant projects. Chris' experience also includes the construction of electrical and instrumentation systems, construction management and quality assurance for plants, pump stations and related structures and buildings, equipment start-up and testing experience, SCADA testing and commissioning, and plant start-up, and detailed inspection of building architectural trades, including block and masonry work, painting, wallcovering, carpentry work, doors and window, built-up and metal roofing, waterproofing, insulation, audiovisual and telecom installation, security system, HVAC systems and controls, elevators, fire alarm, laboratory space and equipment. His provides senior-level construction contract administration management and supervises the inspection of major municipal water and wastewater treatment plant expansions, renovations, upgrades, and new plant projects.

REPRESENTATIVE PROJECTS

F. Wayne Hill Water Reclamation Center Tertiary Treatment Upgrades | GCDWR

Gwinnett County, GA | Construction Manager

Project included design and construction of a chemical clarification and membrane filtration processes/building to produce a final effluent flow of 60 mgd on a maximum month basis, plus necessary recycle flows. The project meets stringent effluent limits for discharge into Lake Lanier and reduces environmental footprint. Of the total 60 mgd, the flow is split into two clarification and filtration treatment trains: an NPDES permit to discharge 20 mgd to a combined outfall with Gwinnett's Crooked Creek WRF into the Chattahoochee River and 40 mgd into Lake Lanier.

Crooked Creek WRF Improvements | GCDWR

Gwinnett County, GA | Estimator

Project includes construction of new biological nutrient reactors, clarifiers, UV disinfection, chemical systems, odor control, site and electrical improvements. Electrical work includes replacing existing systems with new transformers, new Main Electrical Building and gear, new power distribution duct banks, and two emergency back-up generators. OPCC at 90-percent design stage.

General Services Maintenance Building | CCWA

Clayton County, GA | Estimator

Project includes site work and new 17,000+ square foot building with three workshop areas, an administrative area with offices, a break room, restrooms, and building systems rooms. Electrical systems include power distribution, grounding, lighting, security, door card readers, data connections. OPCC at 30, 60, 90, and 100-percent design stage.

General Services Maintenance Building | City of Gainesville

Gainesville, GA | Senior Project Representative/Quality Control

Senior Project Representative/Quality Control. Responsible for the onsite management and inspection of the project. Supervised inspectors and performed direct inspection of all project work. Conducted punch list inspections, and project closeout. Coordinated with engineers and architect concerning quality issues, inspections, and occupancy reviews and certification for this $54M project.

Years of Experience
34

Years with Firm
18

Education
Electrical Master, Journeymen, DeKalb Technical College

Registrations
N/A

Professional Affiliations
N/A

Office Location
Atlanta, GA

Harpeth Valley Water Treatment Plant Expansion
Harpeth Valley, TN | Special Inspector
Duties included periodic inspection and reporting of the project work. Inspected all divisions of the contract work, responded to RFI's and assisted in resolution of quality issues and rejected work for this $48M project.

Tilly Mill and North Shallowford Pump Stations
DeKalb County, GA | Project Representative/Quality Control
Responsible for inspection of all divisions of contract work, and day-to-day construction management of the project, Conducted punch list inspections and project closeout for this $4M project.

Bulk Hypochlorite Building and Chlorine System Removal | Atlanta-Fulton County WTP
GA | Special Project Inspector
Responsible for monthly inspections and auditing of the project staff performance and adherence to inspection and adherence to quality requirements. Performed final inspection and punch list reviews for this $8M project.

Johns Creek Environmental Campus WWTP (Design-Build)
Fulton County, GA | Project Coordinator/Quality Control
Conducted periodic inspections and punch lists reviews for all aspects of the work. $126M.

Atlanta-Fulton County WTP-Phase 2.5 | Atlanta-Fulton Water Resources Commission
GA | Senior Resident Inspector
Conducted inspection and coordination of electrical and instrumentation work, including the change out of the entire instrumentation system. Conducted all building architectural inspections for this $67M project.

David Oerke, PE | *Screening/Dewatering*

VALUE TO FWHRC BIOSOLIDS PROJECT:

David Oerke has 44 years of experience in wastewater treatment and biosolids project master planning, design, and construction management and odor control. David is a solids processing specialist experienced in in the evaluation and design of more than 50 headworks and primary clarifier facilities, dissolved air flotation and rotary drum thickening, aerobic and anaerobic digestion, cogeneration, centrifuge, belt filter press, screw press dewatering, truck loading, Class A lime stabilization, compost, thermal drying, and air-drying facilities. His experience includes design projects with more than 120 centrifuge and belt filter press units, as well as biosolids management studies and design for more than 100 municipalities.

REPRESENTATIVE PROJECTS

Solids Dewatering Optimization Study

Gresham, OR | Senior Technical Specialist

Evaluation of using ferric chloride, potassium chloride and sodium chloride addition prior to the belt filter presses through bench-scale testing (Bucknell University) to increase solids cake concentration and reduce overall annual costs. Evaluation also includes using C. Bescii thermophilic bacteria addition to anaerobic digestion to reduce solids generated and increase solids cake concentration.

Solids Management Facility Plan and Design of Thickening, Dewatering, Cake Pumping/Incineration Facilities - Resource Recovery and Electrical Energy (R2E2) NEW Water

Green Bay, WI | Senior Technology Specialist

Detailed evaluation of centrifuges, belt filter presses, and hydraulic piston presses, dry polymer, scalping rotary dryers and cake storage facilities for dewatering anaerobically digested biosolids with high dairy and industrial waste and fats, oil and grease (FOG) content. Prepared technical memos, cost estimates, design drawings/specifications for procurement.

Dewatering Equipment Evaluation and Design, Douglas Smith WWTP

Johnson County, Overland Park, KS | Senior Technology Specialist

Senior technology specialist for the detailed evaluation of centrifuge for recuperative thickening, and belt filter presses, screw presses and rotary presses for dewatering anaerobic digested biosolids with high FOG content. Prepared construction sequencing plan for demolition and removal of two existing BFPs and installation of three new BFPs, technical memo, design drawings and specifications for procurement and assistance in startup and training.

Class A Biosolids Management Study and Anaerobic Digester Boiler/Heat Exchanger Project | Dry Creek Water Reclamation Facility, Board of Public Utilities

Cheyenne, WY | Senior Technical Consultant

Senior Technical Consultant for the evaluation of air-drying, thermal belt drying and solar drying facilities for the Dry Creek WRF. Evaluated use of digester gas for providing 40 percent of the fuel for the thermal belt dryer. Evaluated centrifuges and screw presses for dewatering anaerobically digested biosolids. Project Manager for final design and construction administration services for 2008 anaerobic digester facilities. The facilities included new combination boiler/tube-in-tube heat exchanger, gas safety and handling equipment and piping, HVAC and electrical systems.

Years of Experience
44

Years with Firm
14

Education
MS, Environmental Engineering, Marquette University

BS, Civil/Environmental Engineering, University of Cincinnati

Registrations
Professional Engineer: CO

Professional Affiliations
N/A

Office Location
Greenwood Village, CO

Scott Levesque, PE | *Process Modeling*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Scott Levesque has 31 years of experience in biological nutrient removal (BNR), membrane bioreactor (MBR) processes, and biological process simulation. Scott has an expertise in a wide range of treatment technologies and process equipment for wastewater, potable water, residuals, and biogas. He has worked extensively with municipal and industrial clients on projects dealing with liquid and solid stream treatment processes for both wastewater and potable water. Scott has assisted clients with their develop and compare process alternatives, resulting in selection and implementation of efficient, cost-effective solutions. His work has included design, evaluation, and troubleshooting of full-scale treatment facilities as well as bench- and pilot-scale studies to evaluate process alternatives and develop design criteria for new and expanded facilities.

REPRESENTATIVE PROJECTS

Yellow River Water Reclamation Facility On-Call Process Support | GCDWR

Gwinnett County, GA | Lead Process Engineer

Worked with GCDWR staff to address operational issues at the plant, including its MBR process. Reviewed and analyzed data to investigate occasional episodes of increased effluent ammonia. Developed strategies to maximize biological phosphorus removal, thereby minimizing the expense of chemical phosphorus removal. Updated the plant's Operations Model.

Crooked Creek Water Reclamation Facility Biogas Utilization | GCDWR

Gwinnett County, GA | Lead Process Engineer

Performed a business case evaluation for beneficial use of biogas from a proposed anaerobic digestion process. An engine generator set could be used for electrical power generation. Heat output from boilers or engines could be used for digester heating, building heating, and building cooling. The evaluation considered startup and design conditions with and without co-digestion of fats, oils, and grease (FOG).

Yellow River Water Reclamation Facility Expansion | GCDWR

Gwinnett County, GA | Lead Process Engineer

As part of expansion of the County's Yellow River Water Reclamation Facility from 14- to 22-mgd capacity, compared an MBR process to a conventional activated sludge process followed by granular media filters, demonstrating that the MBR process would have lower lifecycle cost. Performed BioWin simulation modeling to develop the project mass balance. Evaluated the capacity of existing treatment facilities with and without aeration improvements in order to develop a plan for construction sequencing. Prepared a request for proposals to pre-select and procure a membrane system for the MBR process. Evaluated potential for beneficial use of biogas from proposed egg-shaped anaerobic digesters.

F. Wayne Hill Water Resources Center Biogas Utilization Feasibility Study | GCDWR

Gwinnett County, GA | Lead Process Engineer

Evaluated potential for beneficial use of biogas produced by egg-shaped anaerobic digesters at the County's FWHWRC. In addition to digester heating, the following alternatives were considered: 1) building heating, 2) engine-driven aeration blowers, and 3) microturbines for electrical power generation.

Years of Experience

31

Years with Firm

10

Education

MS, Environmental Engineering, Georgia Institute of Technology

BS, Environmental Engineering, University of Florida

Registration

Professional Engineer: GA, No. 026706

Memberships/ Affiliations

Water Environment Federation (WEF)

Georgia Association of Water Professionals (GAWP)

Georgia Water Environment Federation (GWEF)

Office Location

Atlanta, GA

Tom Wynn, PE | *Sludge Pumping/Screening | Polymer Feed Systems*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Tom Wynn has 33 years of experience in municipal water and wastewater design projects involving civil and environmental engineering. Tom has designed water distribution systems, wastewater collection and pumping systems, and water and wastewater treatment systems. He has served as design engineer for consulting engineering firms located in Georgia and Louisiana. Tom also served as Assistant Regional Engineer with the Louisiana Department of Health and Human Resources, where he implemented state environmental programs, including the Safe Drinking Water Act.

REPRESENTATIVE PROJECTS

W. B Casey Water Reclamation Facility Improvements | CCWA

Clayton County, GA | Process Mechanical Engineer

Design included a new Screening Structure consisting of one gravity fed rotary drum screen (5mm aperture), a bypass channel with manual screen, screenings dewatering equipment and roll-off container, and provisions for second screen structure.

Yellow River Water Reclamation Facility Improvements | GCDWR

Gwinnett County, GA | Process Engineer

This was a $250M plant expansion for converting a 22-mgd activated sludge plant to an MBR process using submerged membranes with a design capacity of 29 mgd. Responsibilities included design of improvements to the influent pumping station, lime/fine screening facility, biological reactors, process air systems and waste solids pumping station. Project was a 3D design project.

Responsible for the following tasks as lead process engineer:

- Directed CAD staff in the preparation of CAD 3D models and contract drawings for the IPS, L/FS, biological reactors, process air systems and waste sludge pumping system.
- Development of detailed contract specifications for process equipment in areas described above.
- All calculations needed to size process tank volumes and process equipment.
- Population of BIM database for process equipment.
- Development of process equipment lists.
- Coordination with structural, building mechanical, site civil, architectural, plumbing, electrical and instrumentation engineers.
- Process equipment evaluation and selection.
- Coordination with equipment vendors on equipment capabilities.
- Review of process equipment capabilities with client.
- Assisted in the development of process equipment pre-purchase document drawings, P&IDs and specifications.

Consultant Demand Services on an Annual Contract Category A, Water and Wastewater Facilities and Pump Station Service, Category I, Specialized Technical Support Services | GCDWR

Gwinnett County, GA | Process Mechanical Engineer.

Provided process engineering for this contract.

Years of Experience

33

Years with Firm

33

Education

BS, Civil Engineering, Louisiana Tech University

Registration

Professional Engineer: GA, No. PE016993 (Civil); LA, No. 0022629; TN, No. 112319

Memberships/ Affiliations

American Society of Civil Engineers, Member

Office Location

Atlanta, GA

Bill Desing, PE | *Odor Control*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Bill Desing has over 37 years of experience in wastewater planning, design, and operations, with significant, recent experience in managing odor control study, planning, and design projects. As Jacobs' Global Leader for Odor Control, Bill manages a group of 20 technologists in North America, Australia, Europe, and Asia who are responsible for developing tools and practices for designing odor control systems for wastewater utilities worldwide. He has significant experience in odor management and wastewater planning, design, and operation, and has assisted more than 35 municipal WWTPs address odor issues, including odor control master planning, odor control system conceptual and final design, and capital and operation and maintenance cost development.

REPRESENTATIVE PROJECTS

Odor Control Project | Thames CSO Tunnel

London, England | Study Lead Engineer and Design Oversight

Led a study to estimate odor emissions and odor control mitigation alternatives for the $6.4-billion Thames CSO Tunnel. The study included development of dynamic and steady state models to estimate odor generation, stripping, emissions and impacts on the population along a 34-km tunnel route.

East to West Trunk Diversion Sewer Project | Region of Peel

Peel Regin, ON | WATS Modelling QA/QC

Will be using Jacobs' INTERCEPTOR powered by WATS model to determine odor control requirements for a new sanitary trunk sewer in the Region of Peel. Provided quality review of odor modelling work on a new large sewer interconnect between the Region's two main north to south trunk sewers. Field sampling was completed in order to properly define inlet conditions using Jacobs' WATS model. The sampling data, along with sewer geometry and hydraulic data, was used to predict H2S generation rates and outgassing locations.

GE Booth WWTP Odor Study | Region of Peel

Peel Region, ON | Odor Control QA/QC

Provided senior input for odor study that included interim and long-term recommendations for odor control improvements at the G.E. Booth Wastewater Treatment Facility.

Collection System Odor Studies | Green Bay Metropolitan Sewerage District

Green Bay, WI | Senior Reviewer

Used Jacobs' INTERCEPTOR/WATS model to predict the generation, transport, and fate of H2S in several interceptor sewers. Vapour phase H2S sampling data from the interceptors were used to calibrate the model. Used INTERCEPTOR/WATS to determine chemical dosing requirements to prevent nuisance odors, worker safety issues and sulfide toxicity from occurring in the facility's aeration basins.

Tunnel Odor Control for the Western Regional Conveyance Tunnel | Northern Kentucky Sanitary District

Fort Wright, KY | Senior Reviewer

Senior review for all phases of design of odor control systems for a 16 km-long, 3-m-diameter tunnel used to store and convey wet weather and sanitary wastewater flow. The design included development of customized odor computer models to estimate odorous emissions from vortex drop shafts and tunnel access shafts.

Years of Experience
37

Years with Firm
37

Education
MS, Environmental Engineering, Marquette University

BS, Civil Engineering, Marquette University

Registration
Professional Engineer: WI, No. E-26276

Office Location
Milwaukee, WI

Chip Bates | *I&C*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Chip Bates has 33 years of experience in process instrumentation, control strategy development, control software configuration, and control systems including DCS, PLC, and SCADA. Chip leads the management of Instrumentation and Control System department, design and maintenance of instrumentation and control panels, and the design, configuration, and start-up of PLCs and distributed control systems for municipal and industrial applications. He has served clients with needs in water treatment, wastewater treatment, chemicals, food & beverage, pulp & paper, and general manufacturing. His projects have involved upgrades to filter plants, including the replacement of pneumatic actuators with motorized actuators, replacement of surface wash with air scour blowers, and upgrade of relay-based filter consoles with PLC-based consoles networked into SCADA systems.

REPRESENTATIVE PROJECTS

F. Wayne Hill WRC Tertiary Treatment Upgrades

Buford, GA | Lead I&C System Engineer

Prepared process and instrumentation drawings (P&IDs) and developed specifications to prepare the I&C portion of their design-build proposals. Worked with representatives of the SCADA group within the County's GCDWR to define the control strategies and interface requirements for the County's SCADA system.

WB Casey WRRF Biosolids Management Planning/DB Owners Engineer | CCWA

Jonesboro, GA | Lead I&C System Engineer

Served as lead I&C engineer for the preliminary engineering report for this 32 MGD wastewater facility.

Crooked Creek WRF Improvements, Construction Package 4 | GCDWR

Lawrenceville, GA | Lead I&C System Engineer

Prepared process and instrumentation drawings (P&IDs) and developed specifications to prepare the I&C portion of their design-build proposals. Worked with representatives of the SCADA group within the County's GCDWR to define the control strategies and interface requirements for the County's SCADA system.

F. Wayne Hill WRC Phase 2 Expansion | GCDWR

Buford, GA | Lead I&C System Engineer

Served as lead I&C engineer to develop the I&C construction documents for the project.

Lanier Filter Plant Backwash Pump Water Pump Relocation | GCDWR

Gwinnett County, GA | Lead I&C System Engineer

Added new backwash pumps and piped to the filters. Added ancillary functions and/or relocated to the plant's control system. Served as the lead I&C engineer to develop the I&C construction documents for the project. The existing PLC cabinet in the area where the new pumps were added was demolished and replaced with a new PLC and network communication equipment. This allowed the new PLC to be placed on the plant's Ethernet communication ring and into the SCADA system.

J.W. Smith WPP Improvements | CCWA

Clayton County, GA | Lead I&C System Engineer

Served as the lead I&C engineer on the project to design and develop the P&IDs, construction specifications, and integration plan.

Years of Experience
33

Years in Firm
33

Education
BS, Electrical Engineering, Auburn University

Registration
N/A

Memberships/ Affiliations
Instrumentation, Systems, and Automation (ISA) Society, Member

Instrument Society of America

Office Location
Atlanta, GA

Partiban Raja, PE | *Process Mechanical*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Partiban Raja has 8 years of experience in municipal wastewater treatment projects. Partiban's software experience includes: BioWIN, ASIM, Fathom, Hach WIMS, Expression Web 4, Visual MINTEQ, SAS, Microsoft Office, and MS Project. His laboratory experience includes bench scale tests, solid and liquid phase extraction, lab-scale bioreactors, analyzing water quality parameters and using analytical equipment like GC-ECD, GC-MS/MS, TOC analyzer, IC etc.

REPRESENTATIVE PROJECTS

Electronic Operations Manual Phase I | F. Wayne Hill WRC, GCDWR

Atlanta, GA | Process Engineer

Developed Electronic Operations Manual (EOM) for unit processes like Rotating Drum Thickeners, Anaerobic Digestion, Granular Activated Carbon, etc.

Electronic Operations Manual Phase II | F. Wayne Hill WRC

Atlanta, GA | Process Engineer

Developed Electronic Operations Manual (EOM) for unit processes – Granular Activated Carbon and Effluent Pump Station.

Electronic Operations Manual Phase III | F. Wayne Hill WRC, GCDWR

Atlanta GA | Process Engineer

Developing Electronic Operations Manual (EOM) for unit processes – Plant Drain System and Chemical Buildings.

WB Casey Facility Improvements | Clayton County Water Authority

Atlanta, GA | Process Engineer

Reviewed Work Change Directives, compared them with the contract requirements. Helped the owner save about $20,000 by finding anomalies in them.

Water Production Facilities Master Plan | GCDWR

Atlanta, GA | Process Engineer

Performed unit process evaluations, tracer tests to the existing treatment facilities, which includes ozone system, pre-treatment, dual-media filters and chlorine disinfection.

FOG Characterization for F. Wayne Hill WRC, GCDWR

Atlanta, GA | Process Engineer

Collected and sampled High Strength Wastes, and Fats, Oil and Grease (FOG) for waste characterization. Tested FOG viscosity at different temperatures to solve the clogging issue.

LFP and SCFP Finished Water Ultrasonic Flowmeters | GCDWR

Atlanta, GA | Process Engineer

Detail design project involving the installation of ultrasonic flowmeters. Responsibilities include coordinating with various discipline on design activities.

Hach WIMS | GCDWR

Atlanta, GA | Process Engineer

Created variables, bench sheets and reports on Hach WIMS for Shoal Creek and Lanier Filter Plants.

Years of Experience

8

Years in Firm

7

Education

MS, Environmental Engineering and Science, Clemson University

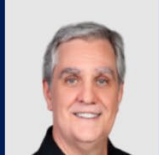
BS, Civil Engineering, Veermata Jijabai Technological Institute (VJTI), Mumbai, India

Registration

Professional Engineer: GA, No. PE047810; SC, No. 37064

Office Location

Atlanta, GA



Marlin Hales | *CAD/Revit*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Marlin Hales has 44 years of experience as a design technician and CAD specialist. Marlin is experienced in 3D piping and equipment modeling, multi-discipline coordination with local and dispersed teammates, clash detection and avoidance, visualization and collaboration tools, iModel and site georeferencing. He has a strong awareness of drawing and work sharing best practices, consistent and efficient project workflows, and life cycle continuity for downstream users. Project types include water and wastewater treatment facilities, pump stations, subsurface utilities.

Years of Experience
44

Years with Firm
44

Education
Diploma, Technical Drafting, Northwest Kansas Technical School

Registrations
N/A

Professional Affiliations
N/A

Office Location
Atlanta, GA

REPRESENTATIVE PROJECTS

F. Wayne Hill Water Resources Center, Membrane Building Improvements | GCDWR

Gwinnett County, GA | CAD Specialist

3D process piping and equipment modeling, lead technician. Improvements in the Membrane and East Chemical Buildings included membrane cassettes, permeate and backpulse pumps and piping, drum screens, chemical tanks and pumps. 3D AutoPlant models from original 2002 design were processed for use in OpenPlant and AECOsim V8i SS6. A 3D laser scan was used to update existing conditions of piping and supports for accurate connections and routing of piping and cable trays. The combined legacy models, reality mesh, and proposed models improved client's ability to visualize improvements and discuss construction sequencing. OpenPlant Modeler, AECOsim dynamic views, MicroStation, AutoPlant iModel Composer, ProjectWise.

W.B. Casey WRF, Polishing Plant and WAS Thickening Upgrades | CCWA

Clayton County, GA | CAD Specialist

3D process piping, yard piping, and equipment modeling for 14 MGD phosphorus polishing plant, WAS thickening, coagulant and polymer storage and feed systems. Approximately 6,800 linear feet of 3-inch to 60-inch yard piping. OpenPlant Modeler, AECOsim dynamic views, MicroStation, ProjectWise.

Crooked Creek Water Reclamation Facility Improvements | GCDWR

Gwinnett County, GA | CAD Specialist

3D process piping and equipment modeling for Solids Handling Building with belt filter presses, septage receiving, sludge storage, chemical storage, mixing and transfer, feed pumps, and distribution conveyors. OpenPlant Modeler, AECOsim dynamic views, MicroStation, ProjectWise.

Fowler Water Reclamation Facility Expansion | Forsyth County Water and Sewer Department

Forsyth County, GA | CAD Specialist

3D process and yard piping, equipment modeling for expansion to 5 MGD. Headworks, bioreactor basins, membrane tanks and UV disinfection through schematic phase, approximately 16,200 linear feet of 2-inch to 30-inch yard piping through bid phase. Microstation, PlantSpace, ProjectWise.

On-site Sodium Hypochlorite Generation Systems, Lanier and Shoal Creek Filter Plants | GCDWR

Gwinnett County, GA | CAD Specialist

CAD Specialist. 3D process piping and equipment for new chemical systems in existing facilities. Tagged assets of importance for BIM output. Model fly-through at 60% and 90% client workshops. PlantSpace, ProjectWise, Navigator.

Jarvis Miller | *CAD/Revit*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Jarvis Miller has 32 years of experience in civil and environmental design and drafting. Jarvis is experienced in GIS, Autodesk Civil 3D 2004 – 2017, Microstation V8i, Bentley Inroads, Autodesk Revit and Knowledgeable of Storm Water Hydrology as it pertains to site design. He is familiar with using Hydraflow, Autodesk Storm and Sanitary Analysis, TR-55, and Carlson SurvCADD. Jarvis is experienced in generating Architectural and Site Development plans for diverse construction and environmental activities and his familiar with the use of Total Station Survey equipment.

REPRESENTATIVE PROJECTS

F. Wayne Hill Water Resources Center | GCDWR

Gwinnett County, GA | Civil Designer

Responsible for the creation of site development plans. Used Autocad Civil 3D 2015 and Bentley Inroads. These drawings consist of all proposed grading, yard piping and drainage as well as erosion and sediment control plans alone with all necessary details. Also, knowledgeable on the design of Stream Restoration Projects, using Civil 3D and Inroads. Experienced in surveying existing site and converting data to be used in Natural Stream Design. Also created Watershed delineation maps with the use of ArcGIS as well as Autocad Map 3D.

Crooked Creek Wastewater Treatment Plant | GCDWR

Gwinnett County, GA | Civil Designer

Responsible for the creation of site development plans. Used Autocad Civil 3D 2015 and Bentley Inroads. These drawings consist of all proposed grading, yard piping and drainage as well as erosion and sediment control plans alone with all necessary details. Also, knowledgeable on the design of Stream Restoration Projects, using Civil 3D and Inroads. Experienced in surveying existing site and converting data to be used in Natural Stream Design. Also created Watershed delineation maps with the use of ArcGIS as well as Autocad Map 3D.

Wyckoff Wastewater Treatment Plant | Cobb-Marietta Water Authority

Cobb County, GA | Civil Designer

Responsible for the creation of site development plans. Used Autocad Civil 3D 2015 and Bentley Inroads. These drawings consist of all proposed grading, yard piping and drainage as well as erosion and sediment control plans alone with all necessary details. Also, knowledgeable on the design of Stream Restoration Projects, using Civil 3D and Inroads. Experienced in surveying existing site and converting data to be used in Natural Stream Design. Also created Watershed delineation maps with the use of ArcGIS as well as Autocad Map 3D.

Sapelo Creek Stream Restoration | GCDWR

Gwinnett County, GA | Civil Designer

Responsible for the creation of site development plans. Used Autocad Civil 3D 2015 and Bentley Inroads. These drawings consist of all proposed grading, yard piping and drainage as well as erosion and sediment control plans alone with all necessary details. Also, knowledgeable on the design of Stream Restoration Projects, using Civil 3D and Inroads. Experienced in surveying existing site and converting data to be used in Natural Stream Design. Also created Watershed delineation maps with the use of ArcGIS as well as Autocad Map 3D.

Years of Experience
32

Years with Firm
6

Education
Associate, Civil/Architectural Design and Drafting, Balin Institute of Technology

Registrations
Professional Engineer: GA, No.26296; TN, No.112996

Professional Affiliations
N/A

Office Location
Atlanta, GA

Adrian Romero, PE | *Odor Control*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Adrian Romero has 15 years of experience. Adrian's expertise includes wastewater treatment processes and technologies, odor control technology, the stabilization, managing and marketing of biosolids products, and nutrient and energy recovery from wastewater. His experience includes leading studies, master planning, preliminary and full design, and equipment commissioning, start-up and optimization. Adrian continues to be engaged ad part of multidisciplinary research teams looking for the next generation of solutions for resource recovery facilities.

REPRESENTATIVE PROJECTS

Hoover Area Pump Station Odor and Corrosion Control Study | City of Birmingham

Birmingham, AL | Senior QC,

Developed and used a sewer process model for the Hoover area currently under public pressure due to odor complains. In addition, sever corrosion is reported in several assets. The model will support the determination of priority areas for H2S and odor control and to screen alternatives.

Odor and Corrosion Control Master Plan | Austin Water Collection System

Austin, TX | Lead Wastewater Process Engineer

Developed and used of a sewer process model for the complex network draining to two different treatment facilities to support the determination of priority areas for H2S and odor control and to screen alternatives.

H2S and Odor Mitigation Planning Study | Milwaukee Metropolitan Sewerage District

Milwaukee, WI | Lead Wastewater Process Engineer

Development and use of a sewer process model for the complex network to support the determination of priority areas for H2S and odor control and to screen alternatives. The project is currently in the alternatives evaluation phase comparing liquid-phase and vapor-phase alternatives.

Waterbury WWTP Plant-wide Odor Study | City of Waterbury

Waterbury, CT | Lead Process Engineer.

Led field sampling and data collection and analysis to identify main odor sources within the plant. Evaluated impacts of odor sources on neighboring communities through air dispersion modeling and of the alternatives for odor control to achieve new standards set by the City. Results were communicated to the City and the public and implemented at the plant considerably reducing odor complaints.

Oakland-Macomb Interceptor Odor and Corrosion Control Master Plan

Detroit, MI | Lead Wastewater Process Engineer

Developed alternatives for odor and corrosion control in the major interceptors. The project included set-up, calibration and use of a sewer process model for the screening and refinement of the alternatives. A new model to simulate in-line wastewater storage was implemented as part of the alternatives evaluation. Conducted a pressure test throughout the area of study to locate and size odor control equipment. The project delivered a set of alternatives aiming to enhance asset management in the collection system.

Regional Biosolids Management Study | Louisville Metropolitan Sewer District

Louisville and Jefferson County, KY | Lead Project Engineer

Evaluated technical, social and economical variables to meet biosolids management goals for 2042 for MSD facilities.

Years of Experience

15

Years with Firm

6

Education

Ph.D., Civil and Environmental Engineering, University of Maryland, College Park

MS, Environmental Engineering, Monterrey Institute of Technology, Mexico

BS, Chemistry, UANL, Mexico

Registrations

Professional Engineer

Professional Affiliations

N/A

Office Location

Charlotte, NC

Sujit Bhowmik, PhD, PE | *Geotech*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Sujit Bhowmik has more than 31 years of extensive experience in managing, directing, and executing geotechnical engineering projects throughout the South and Midwest. His skills range from geotechnical research to complex engineering solutions applied to geotechnical design and construction methods, including water/wastewater treatment facilities, tunnels, stormwater facilities, aviation infrastructure, transportation infrastructure (roads, walls, bridges), commercial and industrial buildings, educational facilities, dams and reservoirs, landfills, and power plants.

REPRESENTATIVE PROJECTS

Crooked Creek Water Reclamation Facility Improvements | GCDWR
Gwinnett County, GA | Lead Geotech
Provided geotechnical services.

F. Wayne Hill Water Reclamation Center (WRC) Nutrient Recovery | GCDWR
Gwinnett County, GA | Lead Geotech
Provided geotechnical services.

Crooked Creek Water Storage Tank | GCDWR
Gwinnett County, GA | Lead Geotech
Provided geotechnical services.

F. Wayne Hill WRC Thickener Rehabilitation | GCDWR
Gwinnett County, GA | Lead Geotech
Provided geotechnical services.

Yellow River Water Reclamation Facility Improvements | GCDWR
Gwinnett County, GA | Lead Geotech
Provided geotechnical services.

Years of Experience
31

Education
PhD, Geotechnical Engineering, University of Illinois

MS, Geotechnical Engineering, University of Illinois

M Tech, Geotechnical Engineering, Indian Institute of Technology

BE, Civil Engineering, University of North Bengal (India)

Registrations
Professional Engineer: GA, No. 029802; FL, No. 47680

Professional Affiliations
N/A

Office Location
Atlanta, GA

Donny James | *Survey*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Donny James has more than 24 years of experience in land and construction surveying and has been responsible for the reductions and interpretations of field data and computations for as-built, topographic, and boundary surveys. His responsibilities have included surveying and construction staking duties for subdivision streets, roadway alignment, and sewer and water line staking for all residential, commercial, and industrial projects. He is experienced in residential, commercial, and municipal development projects in respect to water and wastewater systems. Donny's other responsibilities are upkeep of PPI's Conventional and Robotic Total Stations, Real Time Kinematic GPS Rovers as well as management of Survey and Data Collection Software.

REPRESENTATIVE PROJECTS

F. Wayne Hill Water Resource Center | GCDWR
Gwinnett County, GA | Lead Survey
Provided surveying services.

Yellow River Water Reclamation Facility System Modification | GCDWR
Gwinnett County, GA | Lead Survey
Provided surveying services.

Crooked Creek Water Reclamation Facility Expansion | GCDWR
Gwinnett County, GA | Lead Survey
Provided surveying services.

Water Re-Use Line | GCDWR
Gwinnett County, GA | Lead Survey
Provided surveying services.

Standby Services Annual Contract | GCDWR
Gwinnett County, GA | Lead Survey
Provided surveying services.

Bramlett Road Pump Station System | GCDWR
Gwinnett County, GA | Lead Survey
Provided surveying services.

Great River Pump Station | GCDWR
Gwinnett County, GA | Lead Survey
Provided surveying services.

Little Ivey Creek Sewer Interceptor | GCDWR
Gwinnett County, GA | Lead Survey
Provided surveying services.

Jones Phillips Road Pump Station | GCDWR
Gwinnett County, GA
Provided surveying services.

Bold Springs Pump Stations ("A" & "B") | GCDWR
Gwinnett County, GA | Lead Survey
Provided surveying services.

Years of Experience
24

Years with Firm
24

Education
Land Surveying Certificate, Middle Georgia College

Registrations
Professional Land Surveyor, GA #3450

Professional Affiliations
Surveying & Mapping Society of Georgia (SAMSOG

Office Location
Lawrenceville, GA

Paul Purcell, PE | *QC Civil*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Paul Purcell has 40 years of experience in initial planning, site design, client coordination, project control, technical and quality control for site design projects. Paul has significant experience in site design of office buildings, municipal, judicial, commercial and industrial properties as well as recreational parks and greenways systems. Paul has experience in the site design for water and wastewater treatment facilities, office buildings, municipal, judicial, commercial and industrial properties as well as recreational parks and greenways systems. He served as an environmental engineer and resident site construction engineer for an Atlanta consulting engineering firm, where he served as an onsite resident construction engineer for the upgrade of two large water treatment plant expansions for the Cobb County-Marietta Water Authority, as well as a major sewer outfall in southwest Cobb County, Georgia.

REPRESENTATIVE PROJECTS

WB Casey Water Resource Recovery Improvements | CCWA

Clayton County, GA | Senior Civil Engineer

Led the civil site design to support plant improvements, specifically a new headworks structure and new chemical pipe feed piping for the plant. The design effort included plan and profile design, grading, drainage, and erosion control.

General Services Maintenance Building | CCWA

Clayton County, GA | Senior Civil Engineer

In charge of the civil site design of a new 17,000 SF maintenance facility including offices and service bays. The design effort included grading, drainage, erosion control, stormwater management and utility design in coordination with the project contractor. Land disturbance permit coordination through Clayton County is currently being provided.

Lake Lanier Raw Water Intake Maintenance | GCDWR

Gwinnett County, GA | Senior Civil Engineer

In charge of the design of the existing intake pipe replacement. The design effort includes grading, drainage (above grade and underwater), erosion control, pavement resurfacing and the extension of a construction access road to the lake front.

James E Quarles WTP Emergency Backup Generator Project | Cobb County-Marietta Water Authority

Cobb County, GA | Senior Civil Engineer

In charge of the site design and permitting for the installation of backup generators and powerhouses at the James E Quarles WTP and Raw Water Pump Station. The site design included site layout, grading and drainage, roads, stormwater management and erosion control.

James E. Quarles WTP Expansion Program, Residuals Efficiency | Cobb County-Marietta Water Authority

Cobb County, GA | Senior Civil Engineer

Provided civil engineering for the $80 million multi-phase expansion and upgrade of a 64-MGD surface water treatment plant. Included development of a long-term expansion plan for an ultimate capacity of 120 MGD.

Architectural, Engineering, and Design Services Contract | City of Atlanta Department of Watershed Management

Atlanta, GA | Civil Designer

As part of the Atlanta Services Group Joint Venture (ASG), provides civil design for this Architectural, Engineering and Design Services (A&E) contract. Task orders have included the Loch Lomond Evaluation and Concept Design.

Years of Experience
40

Years with Firm
35

Education
BS, Civil Engineering, Southern College of Technology

Registrations
Professional Engineer: GA, AL and TX

Certified Professional in Erosion and Sediment Control (CPESC)

Level II Design Professional, Georgia Soil and Water Conservation Commission

Professional Affiliations
N/A

Office Location
Atlanta, GA

Hiran de Mel | *QC Pr/Mechanical*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Hiran de Mel has 37 years of experience as a senior project manager and principal technologist. Hiran has experience in water and wastewater treatment, condition assessment, process facility design, construction, startup, troubleshooting, testing, and optimizing large mechanical and electrical systems with complex controls. He has worked as a program/project manager, design manager, senior consultant, quality control (QC) reviewer, and technology specialist.

REPRESENTATIVE PROJECTS

SDWWTP Oxygen Cryogenic and Air Compressor Facility Improvements – Capital Improvement Consent Decree Project 1.2 | Miami-Dade WASD

Miami, FL | Design Manager

Decommissioned two 80-ton compressors, installed a new 125-ton compressor and upgraded an existing 100-ton compressor to 125-tons to meet plant capacity demands and provide for redundancy. Upgraded the instrumentation and controls, large electrical feeders, switchgear and transformers to power the 2,100 HP compressors. Prepared pre-purchase/negotiation procurement documents for the direct pre-purchase of the air compressors and construction bid documents (specifications and drawings) and provided services during construction.

Condition Assessment Evaluation of the South District Wastewater Treatment Plant | Miami-Dade Water and Sewer Department

Miami-Dade, FL | Team Lead and Manager

Performed an expedited condition assessment evaluation of the SDWWTP. The objective of the fast-track condition assessment was to identify capital improvement projects that may be required under the Consent Decree from the U.S. Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (FDEP). Hiran assessed the needs, mobilized a team and led the field assessment of the SDWWTP. Following which, a comprehensive condition assessment report was prepared of the SDWWTP.

Zone 5 Groundwater Remediation Treatment Plant | Kelly Air Force Base

Austin, TX | Design Manager

As the design manager, was responsible for providing direction and technical guidance to project staff, planning and coordinating work assignments, budgets, assessing progress and schedules, and coordinating with team members, management and the client.

Years of Experience
37

Years with Firm
37

Education
BS, Mechanical Engineering, Georgia Institute of Technology

Registrations
Professional Engineer: FL, No. 63764; VA, No. 0402029830; TX, No. 104281

Professional Affiliations
N/A

Office Location
Gainesville, FL

VALUE TO FWHRC BIOSOLIDS PROJECT:

Darren Magley has more than 27 years of experience in airside and utilities engineering design experience related to commercial, industrial, public and government facilities.

REPRESENTATIVE PROJECTS

HVAC Design and Construction Support | Lockheed-Martin

Marietta, GA | Lead Mechanical Engineer

Lead Mechanical Engineer for ongoing projects since 2000s. HVAC design and construction support of a 24,000 square feet data center, as well as upgrade and modification to the existing data centers. Additionally, provided design and construction support for avionic labs, radar buildings, break rooms, PBX rooms, office buildings and trim shop.

HVAC Replacement | Mobile Army Corps of Engineers

Warner Robbins, GA | Mechanical Lead Engineer

Mechanical lead engineer for the replacement of the outdated HVAC system in an aircraft refurbishing facility at Robins AFB. New secondary chilled water pumps were installed to serve new constant and variable-volume, modular air handling units. The existing high pressure steam system was used to serve a new hot water heating system, and self-contained steam generating humidifiers were provided for the main factory floor. The existing pneumatic control system was replaced by anew DDC control system with the capability to communicate with the existing base management system.

HVAC Renovation | Lockheed-Martin

Fort Worth, TX | Mechanical Group Leader

Mechanical group leader for the renovation of a 37,000 square foot facility consisting of laboratories, office space, simulator rooms and a hydraulic piping system for test stands.

HVAC Design | Lockheed-Martin

Orlando, FL | HVAC Lead

Undertook 12-month field assignment to perform HVAC design and construction support for a $26 million fast track renovation of a missile systems and microelectronics production facility; served as the sole HVAC representative on site for the final three months of the assignment.

Mechanical Design | 360 NETWORKS

Salt Lake City, UT | Project Engineer

Project engineer responsible for the mechanical design of a 16,000 square foot telecommunications facility. Mechanical design consisted of computer room air conditioning units, rooftop mounted cry coolers, variable speed pumps and closed cooling water system.

Years of Experience

27

Years with Firm

21

Education

BSc, Mechanical Engineering, University of Florida

Registrations

Professional Engineer: GA, SC and TX

Professional Affiliations

Member of the American Society of Heating, Refrigeration and Air Conditioning Engineers

Council Record with the National council of Examiners for Engineering and Surveying

Office Location

Atlanta, GA

Marc Goslow, PE | *QC Electrical*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Marc Goslow has 43 years of experience performing engineering, design, construction supervision, and inspection services for the electrical component of a variety of infrastructure projects. Areas of expertise include providing forensic investigation of electrical events; functioning as a subject matter expert (SME) and expert witness for specific clients; performing hands-on investigation of existing installations and troubleshooting during project startup.

REPRESENTATIVE PROJECTS

4G Ranch Wetlands/Central Pasco Beneficial Water Reuse | Pasco County

Pasco County, FL | Lead Electrical Engineer

Performed engineering, design, equipment specification, submittal review, construction supervision, site inspection, and project startup for the 4G Ranch Wetlands project. The project required regulating water levels and flow to 15 individual locations across a 400-acre groundwater recharge wetland site. Electrical elements included lightning protection, DC solar power, and AC power for lighting, control valves, and other I&C equipment.

Boyette Road Reclaimed Water Reservoir | Pasco County

Pasco County, FL | Lead Electrical Engineer

Engineering, design and equipment specification to convert pump station design from 100 HP submersible pumps to 500 HP vertical turbine pumps. Provided services during construction to include client interface, submittal review and approval, site coordination with contractor, site inspection, and project startup.

JEA North Field Supply Well Rehabilitation Project | City of Jacksonville

Jacksonville, FL | Lead Electrical/I&C Engineer

Engineering, design, equipment specification, submittal review, construction supervision, site inspection and project startup for replacement wellheads of multiple JEA supply wells. Providing direct client interface and consultation. Ongoing project.

JEA Main Street #13 Supply Well | City of Jacksonville

Jacksonville, FL | Lead Electrical/I&C Engineer

Engineering, design, equipment specification, submittal review, construction supervision, site inspection and project startup for new VFD controlled JEA supply well. Providing direct client interface and consultation. Ongoing project.

JEA Greenland Energy Center | City of Jacksonville

Jacksonville, FL | Lead Electrical Engineer

Services during construction for the well field wellhead development for a greenfield water treatment plant. Provided direct client interface and consultation, review and approval of submittals, site coordination with contractor, and site inspection, and project startup.

Position of Seniority
QC Electrical

Years of Experience
43

Years with Firm
16

Education
BS, Electrical Engineering/Nuclear Engineering

Registrations
Professional Engineer: FL, No.41733; GA; LA; NC; SC; TX; 22 others

Professional Affiliations
N/A

Office Location
Jacksonville, FL

Tim Dodge | *QC Architect*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Tim Dodge has 32 years of architectural design experience on a variety of projects including new, retrofit, renovation and expansion of existing industrial, office, educational, and water treatment facilities. Tim is responsible for comprehensive building design tasks and developing presentation drawings and construction documents for bidding purposes. He also has extensive experience with construction administration duties including analyzing and responding to requests for information, reviewing contractor submittals, and developing substantial completion punch lists.

REPRESENTATIVE PROJECTS

Crooked Creek WRF Improvement Project CP-4 | GCDWR

Gwinnett County, GA | Architect

Served as the lead architect for this upgrade that provided capacity to treat 16 mgd with space for expansion to a future 25 mgd.

Lanier and Shoal Creek Filter Plants On-Site Sodium Hypochlorite Generation Systems | GCDWR

Gwinnett County, GA | Lead Architect

Served as the lead architect.

Advanced Disinfection Facilities at Three Surface Water Production Plants (WPP) | Clayton County Water Authority (CCWA)

Clayton County, GA | Design and CA

Design and CA of a 10,100-square-foot, $18M ultraviolet (UV) light advanced water disinfection facility. As the architectural lead, Tim's design responsibilities included directing team members in producing plans and details for buildings of masonry, concrete, high-slope standing seam metal roofing, and low-slope membrane roofing construction and editing specifications. CA duties included reviewing submittals. The design for UV disinfection facilities at these three WPPs (20-million gallons per day [mgd] W.J. Hooper, 12-mgd J.W. Smith, and 12-mgd (Freeman Road) received the 2003 Grand Award for Engineering Excellence from American Council of Engineering Companies of Georgia.

South County Water Reclamation Facility (WRF) Expansion | Hole Montes & Associates, Inc.

Collier County, FL | Design and CA

Design and CA of multiple buildings equaling 5,200 square feet for a 16-mgd, $20.5M WRF expansion. Design responsibilities included leading team members in laying out masonry construction and low-slope membrane roofing building plans and details and editing specifications. CA duties included reviewing submittals.

Reverse Osmosis (RO) Water Treatment Plant (WTP)

Town of Highland Beach, FL | Design and CA

Design and CA of an 18,000-square-foot $8.3M WTP. As the architectural design lead, Tim was responsible for directing team members in producing plans and details for masonry and concrete building with high-slope standing seam metal roof and low-slope membrane roofing and editing specifications. CA duties included reviewing submittals.

Years of Experience
32

Years with Firm
22

Education
MA. Architecture, University of Florida

BS, Design, University of Florida

Registration
Registered Architect: FL; WV; GA; OH; TN; TX; NB; NM

Office Location
Orlando, FL

Gregg Gray, PE | *QC I&C*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Gregg Gray has 34 years of I&C experience on water/wastewater projects. Gregg develops hardware and software standards for SCADA master plans, develops P&ID design drawings and specifications, and reviews project submittals to ensure that the implementation meets the client's needs. He also provides on-site engineering and programming support to augment municipal water treatment plant staff.

REPRESENTATIVE PROJECTS

Cahaba WWTP, Trussville WWTP, Al Seier Pump Plant Upgrades Station | Jefferson County ESD

Jefferson County, AL | Engineering Director

This project involved retrofitting PLCs and instrumentation at the Cahaba WWTP, Trussville WWTP, and Al Seier Pump Station. Also responsible for converting older Bristol Babcock PLCs to Schneider PLCs, as well as integrating the new Schneider PLCs into Citect SCADA software. Directly responsible for instrument selection and PLC control panel replacement designs and transition planning. Helped gather user requirements and provided direction to the PLC and SCADA programming engineers. Provided field support during the panel conversions.

Five Mile Creek WWTP | Jefferson County ESD

Jefferson County, AL | Lead Engineer and Project Manager

This project consisted of implementation of a new Influent Pump Station PLC control panel at the Five Mile Creek WWTP. The PLC was a redundant Schneider PLC that interfaced to the plant's Citect SCADA software. Responsibilities included selecting instrumentation, designing the control panel, and programming the PLC controller. Worked closely with the SCADA programmer and provided on-site programming support during commissioning of the station.

Telemetry Project | City of Franklin

Franklin, TN | Lead Engineer

This project consisted of replacement and additions to the City water and wastewater remote locations. The approximately 50 sites included water tanks, booster stations, meter pits, and lift stations. The system used licensed radio signals and cellular signals to communicate information to the SCADA system at City headquarters. Responsible for overall system architecture design, control panel design, control panel retrofit supervision, instrument selection and start-up, PLC programming, and VTSCADA programming.

C.T. Perry Water Treatment Plant | Montgomery Water Works and Sanitary Sewer Boar

Cullman, AL | Lead Engineer and Project Manager

This project consisted of upgrading eight filters at the water treatment plant. For the instrumentation and control aspects, designed new filter consoles with PLC controllers, selected instrumentation, programmed the filter controls in the PLC, programmed the filter OIT touchscreens, and integrated the new filters into the existing iFix SCADA and Historian software. Also provided field support to commission filter and chemical instrumentation.

Years of Experience

34

Years with Firm

4

Education

BS, Electrical Engineering, Auburn University

Registration

Professional Engineer: AL; GA; LA; NC; SC; TN; TX; VA

Certified Project Management Professional (PMP)

Office Location

Birmingham, AL

Dave Everson, SE | *QC Structural*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Dave Everson is a structural engineer skilled in all phases of engineering operations. Dave's experience includes wastewater and waste treatment plants, design-build projects in the U.S. and internationally, and working for both private and public projects.

REPRESENTATIVE PROJECTS,

Crooked Creek WRF Improvements | GCDWR

Gwinnett County, GA | Structural Engineer

Developed structural design new solids handling tank supported by auger cast piles and adjacent odor control area. Design included supports for FRP odor control ducts.

McCroskey Island WWTP Expansion | City of Sevierville

Sevierville, TN | Lead Structural Engineer

Project included a 4.4 MGD expansion to the existing treatment plant. Project included additions to existing headworks facility and new facilities including: Biological train splitter and aeration basin, biological train pump station, biological train, clarifier splitter box, secondary clarifiers, RAS/WAS pump station, electrical buildings, and effluent facility.

Turkey Creek Wastewater Treatment Plant 2019 Improvements | First Utility District of Knox County

Knox County, TN | Lead Structural Engineer

Project included cast in place junction boxes, modifications and additions to existing headworks structure, UV disinfection facility with canopy structure, utility water pump structure, sludge dewatering building, modification to existing sludge bin facility including support for new conveyors

Ebenezer Basin Improvements | First Utility District of Knox County

Knox County, TN | Lead Structural Engineer

Project included a new 5.8 MGD below grade wastewater pump station, 1 MG wastewater Equalization Tank, Electrical Buildings, Generator foundation, Surge Tank foundation

Oak Ridge Water Treatment Plant | City of Oak Ridge

Oak Ridge, TN | Lead Structural Engineer

Project included a new 16 MGD water treatment plant at the existing raw water intake site. New water treatment building consisted of a partially buried foundation and second floor office and mezzanine area constructed of cast in place concrete utilizing pan formed concrete joists. The building superstructure consisted of a steel framed building including an exterior tank farm under canopy. Other structures included dual cell concrete flocculation basins, 1 MG clearwell tank, and Residual tanks.

Wastewater Treatment Plant Naval Air Station Corpus Christi

Corpus Christi, TX | Lead Structural Engineer

Project was a major upgrade to the existing facility. Major portions of facility were demolished. New construction included the addition of five AWWA D110 precast concrete tank, including one "donut" package plant. New cast in place structures included, splitter box, screening facility, geomembrane area. Renovations made to existing chemical, influent screening, and lab buildings.

Years of Experience
24

Years with Firm
7

Education
BS, Civil Engineering, University of Wisconsin

Registration
Professional Engineer: WI; MI; OH; SD; FL; TN

Structural Engineer: IL; GA

Office Location
Gainesville, FL

Dewayne Smith | *Resident Engineer*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Dewayne Smith has 37 years of experience in construction management. Dewayne interfaces between engineering, contractors, and client, bringing resolutions to construction and design problems related to all trades. He regularly reviews contract documents and drawings to ensure project adherence to scope and specifications, monitors contractor compliance to specifications, drawings, design changes, and quality assurance, and reviews field change orders and payment applications for fairness and accuracy, negotiating discrepancies as required. Dewayne monitors for accuracy and maintains as-built drawings, generates daily and monthly progress reports, assures disciplines are maintaining schedule requirements and contracts are within budget parameters, and assists with recover scenarios and negotiates costs as necessary. He assists in subcontracts procurement by reviewing/editing/writing process for scopes of work, unity pricing, and price breakdowns. Dewayne reviews subcontract bids, performs bid tabulations, makes selection recommendations, and generates service and subcontracts requisitions as part of RFP efforts.

REPRESENTATIVE PROJECTS

W.B. Casey Water Resource Recovery Facility Improvements | CCWA

Clayton County, GA | Construction Manager/Resident Project Representative

Provided construction management and inspection services for two construction projects with a combined value of $15 million inside an operating 24 mgd facility. Performed construction administration, inspection and acceptance of work, QA/QC, schedule review and delay analysis, negotiation of change orders, approving progress payments, and managing RFI and submittal process. The project included construction of a new phosphorus polishing plant with UV disinfection system and large cascade Aerator. Project included installation of 1300lf of buried 36” wastewater line. A new waste activated sludge (WAS) thickening facility with two RDTs to replace the existing WAS thickening facility was also constructed in the solids handling plant. Buried piping also included approximately 5000lf of sludge and waste piping. Coordinated work and shutdowns with plant Operations staff and Owner’s engineering staff.

F. Wayne Hill WRC PLC-Based SCADA System

Buford, GA | Construction Manager

Converted the existing Foxboro distributed control system (DCS) to an open architecture system using programmable logic controllers (PLCs) and Wonderware System Platform. We designed the project specifically to maintain plant operations during construction. The project was completed under budget.

Bay Park Sewage Treatment Plant

East Rockaway, NY | Resident Engineer

Provided construction management services for two construction contracts with a combined value of $120M inside an operating 50 MGD Facility. Supervised a team of field inspectors, office engineers, schedulers, and cost estimators. Performed construction administration, inspection and acceptance of work, QA/QC, schedule review and delay analysis, negotiation of change orders, approving progress payments, and managing RFI and submittal process. The project includes construction of a new main substation with 13.2 kV utility feed, a network of 2.4 kV underground duct banks distributing power throughout the facility, and one of four new unit substations. With multiple other construction contracts simultaneously active at the plant site, coordinating work with Program Management, other CM firms, and plant operations.

Years of Experience
37

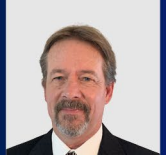
Years in Firm
18

Education
Plumbers & Pipefitters Local #72, Four-year Apprenticeship

Registration
Georgia State Class II Unrestricted Master Plumbing License

Georgia State Journeyman Plumbing License

Office Location
Atlanta, GA



Chris Warner | *Resident Inspector*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Chris Warner brings 35 years of construction experience. He provides a client with a well-rounded construction inspector/construction manager who understands how to obtain required results. Chris has spent the last 15 years on Water and Wastewater Treatment Construction projects with duties ranging from managing an inspection team of five on an award- winning project to coating inspections across the country. He has also served as a field superintendent of a General Contractor with responsibilities that included distribution of work force, quality of work completed, interaction with client and monitoring of work calendar. Mr. Warner works well with clients, contractors and field personnel.

REPRESENTATIVE PROJECTS

Crooked Creek WRF Improvements | GCDWR

Gwinnett County, GA | Resident Project Representative/Quality Manager

Responsible for day to day activities of the onsite Quality Control staff. Schedule third party inspections provided by two different material testing firms. Perform Special Inspections and provide documentation for various disciplines when required. Monitor daily reporting and progress photos. Manage required project documentation for distribution various parties. Monitor required NPDES documentation and perform onsite inspections.

F. Wayne Hill WRC BRB Mixer & NRCY Pump Replacement | GCDWR

Gwinnett County, GA | Senior Construction Engineer

Responsible for Construction Management and Inspection services. Provide day to day inspections and monitor project progress. Schedule required third party inspections. Process pay applications and other relevant project documentation.

F. Wayne Hill WRC On Call Services | GCDWR

Gwinnett County, GA | Construction Manager

Site wide facility maintenance and upgrades of a 60 MGD Water Resource Center. Responsible for monitoring of daily activities for multiple contractors providing onsite services. Process monthly contractor invoicing. Produce scope of work, TM's and other relevant documents. Inform plant staff of process interruption.

Yellow River Water Reclamation Facility (WRF) | GCDWR

Gwinnett County, GA | QA/QC Manager

Responsible for monitoring of daily reports and progress photos, maintaining current as-builts, scheduling/ monitoring all materials testing, informing proper parties of needed special inspections, coordinating and scheduling day to day movements of DWR inspectors, and managing site-wide punch lists.

Years of Experience

35

Years with Firm

17

Education

Completion of Apprenticeship Program, Carpenters Local 225

Registration

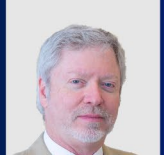
National Association of Corrosion Engineers (NACE) Certified Coating Inspector Level 3 Cert. No.34742

Professional Affiliations

American Concrete Institute Concrete Construction Special Inspector

Office Location

Atlanta, GA



Eric Hancock | *Operations & Maintenance*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Eric Hancock has 40 years of experience in water and wastewater facility management, operations and maintenance, project management, as well as management of privatized and contract-operated treatment facilities. Eric has 30 years of experience with asset management systems related to water and wastewater and has worked directly with a majority of the market share Enterprise Asset Management (EAM) systems. He has prepared and conducted operations training programs, developed and implemented computerized operations and maintenance management programs, written O&M manuals, and provided a wide variety of operations and maintenance assistance for numerous municipal treatment facilities throughout the southeast including equipment condition assessments, criticality ranking, staffing assessments, and reliability centered maintenance training. Having worked on both the consulting and the owner sides of the business, Eric brings a unique perspective on operations to design.

REPRESENTATIVE PROJECTS

Contract Coordination for Water and Sewerage System Operations, Monitoring and Technical Assistance

Plaquemines Parish, LA | Lead

Provided Maintenance and Repair Contract. Responsibilities included a review of contractor compliance with contract documents requiring the implementation and use of a state-of-the-art Computerized Maintenance Management System (CMMS).

Operational Data Management System Implementation and Enhancement | GCDWR

Gwinnett County, GA |Lead

Implementation Hach WIMS software for two water treatment facilities and significant enhancements for three wastewater treatment facilities. Project consisted of development of plant SCADA connection to software, creation of more than 5000 operational variables, development of numerous custom data entry forms and end user training.

Implementation of Operational Data Management System | Athens-Clarke County Public Utilities Department

Athens, GA | Lead

Project consisted of creation of more than 3300 operational variables, development of numerous custom data entry forms and end user training. Provided turnkey Hach WIMS implementation for one water treatment and three wastewater treatment facilities provided a crucial decision making tool for operations staff.

Water Reclamation GCDWR

Gwinnett County, GA |Section Manager

Responsible for the day to day successful operation of three major water reclamation facilities; F. Wayne Hill (60-mgd), Yellow River (2-mgd) and Crooked Creek (16-mgd). Managed assets in excess of $1B and operating budgets of over $20M annually. Provided oversight and project management for $300,000 operational data management system implementation for five Water Resource facilities. Fostered cooperative spirit between facilities, addressed critical attrition issues and balanced experience staff across all plants for future long term success. Led efforts to develop and implement operations improvements and Standard Operating Procedures.

Years of Experience

40

Years in Firm

15

Education

Biology, Georgia Perimeter College

Commercial and Residential HVAC Technology, DeKalb Technical College

Registration

Water Sector Incident Command System (ICS-IS 100) and National Incident Management System (NIMS-IS 700) Certified

Certified Wastewater Operator in Georgia, WW1-009826

Office Location

Atlanta, GA

Rosa Lee-Eng, PE | *Operations & Maintenance*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Rosa Lee-Eng has 29 years of experience in all phases of the design and construction of water and wastewater plants, including process selection, equipment sizing, submittals review, construction management and startup assistance, and preparation of operations and maintenance tools. These include Electronic Operations Guides (EOGs), data management systems, and computerized maintenance management systems (CMMS).

REPRESENTATIVE PROJECTS

EOG Development and Technical Review, F. Wayne Hill Water Resources Center | GCDWR

Gwinnett County, GA | Technical and Quality Reviewer

Prepared the effluent pumping, granular media filtration, high lime/recarbonation, and chemical clarification sections of the EOG.

Local Limits Update | GCDWR

Gwinnett County, GA | Project Engineer

Conducted re-evaluation of technically-based numerical local limits for Industrial Pretreatment Program. Updated the pollutants of concern based on plant priority pollutant scans and industrial user self- and compliance monitoring data. Used a combination of site-specific and literature data to calculate the allowable headworks loadings for three water reclamation facilities. Proposed revisions were made to Pretreatment and Fats, Oils, and Grease sections of GCDWR' Sewer Use Ordinance.

Hach WIMS Update and Development | GCDWR

Gwinnett County, GA | Project Engineer

Updated and development of Hach Water Information Management Solution (WIMS) variables, entry forms, and reports for three wastewater plants and its extension to two water plants for regulatory reporting, process monitoring, and process control calculations.

Septage Receiving and Hauling Program and Enforcement Response Plan | Newton County Water and Sewerage Authority

Newton County, GA | Project Engineer

Prepared procedures for regulating the handling and disposal of septage: application, manifest, permitting, receiving, sampling, and records management. Proposed revisions were made to county's Sewer Use Resolution to include requirements of Septage Management and Commercial Waste Rule Rules. Prepared ERP, including an enforcement response guide, to provide a framework for determining an appropriate and timely response to a violation.

Implementation of Maintenance Connection | Athens-Clarke County Public Utilities Department

Athens, GA | Project Engineer

Developed the asset hierarchies, asset databases, asset naming conventions, unique asset identifiers, and preventive maintenance tasks used to populate the CMMS database for one water treatment plant and three water reclamation facilities.

Years of Experience
29

Years with Firm
23

Education
BS, Civil Environmental Engineering, Cornell University

Registrations
Professional Engineer: GA, No. 025827 Civil

Professional Affiliations
N/A

Office Location
Atlanta, GA

Lorean Brinson | *Project Controls*

VALUE TO FWHRC BIOSOLIDS PROJECT:

Lorean Brinson has 23 years of experience in Document Controls and in construction project administration and document control procedures. Lorean manages multiple projects and teams simultaneously, interprets, implements and communicates complex project management information, and works independently as well as part of a functional team participant.

REPRESENTATIVE PROJECTS

Crooked Creek Water Reclamation Facility CP-4 Project | GCDWR

Gwinnett County, GA | Document Control Manager

This four-year project called for an increase in the plant's treatment capacity from 14.5 MGD to 22 MGD. Responsibilities include maintaining the Prolog (Document Control System) project database and document tracking logs related to construction team activities; enters data, verifies information for accuracy and completeness; updating the database as needed; printing reports; maintaining hard copies and as well as electronic files and submitting documents/reports to appropriate project team member and construction discipline director. Additional tasks include reviewing payment requisitions, tracking and coordination of the shop drawing submittal review process, distribution of project documents, updating progress reports, and coordination with discipline engineers and managers as well as performing periodic audits of construction projects for documentation status and project team performance.

F. Wayne Hill Water Resources Center, Phase II Upgrades and On-Call Maintenance Projects | GCDWR

Gwinnett County, GA | Project Administrator/Document Control Specialist

A $350M multiple-construction contract was staged to deliver a fully operational facility within the 5-year period where the capacity was increased from 20 MGD to 60 MGD. Responsibilities included storing, managing and tracking documents while adhering to company procedures and project timeline; training and assisting new employees and monitoring document control database for proper usage and performing updates and maintenance.

Yellow River Water Reclamation Facility Improvements | GCDWR

Gwinnett County, GA | Document Control Manager

This $275M, six-year project called for an increase in the plant's treatment capacity from 14.5 MGD to 22 MGD. Responsibilities included coordinating, facilitating, and supporting the daily construction and project management activities, and reviewing contractors and subcontractors' monthly payment applications.

Years of Experience
23

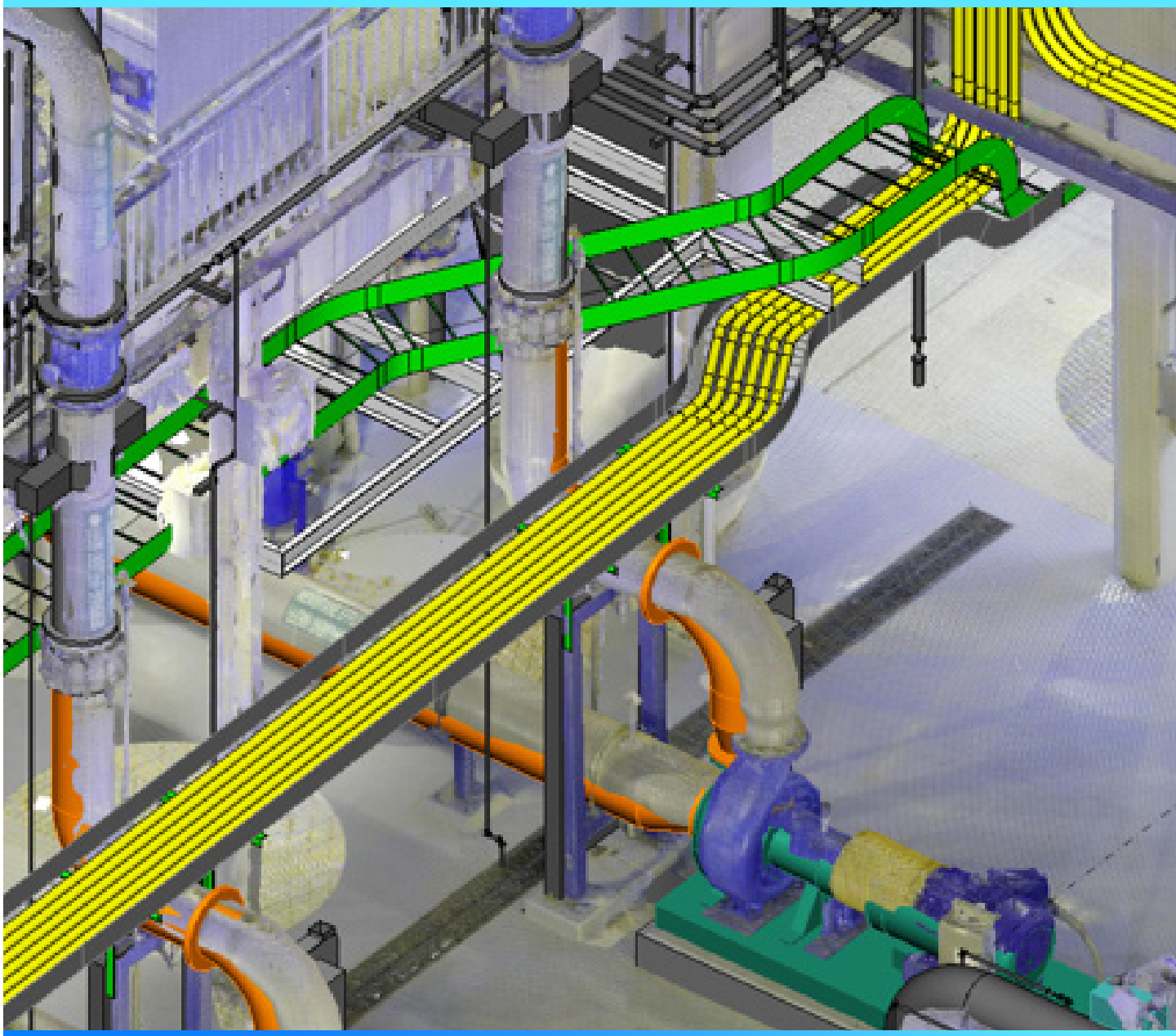
Years with Firm
23

Education
AAS Degree, Commercial Construction Management, Gwinnett Tech College

Registrations
Certified Construction Document Technologist

Professional Affiliations
N/A

Office Location
Atlanta, GA



Appendix

Required Forms

Jacobs

Challenging today.
Reinventing tomorrow.

GWINNETT COUNTY
DEPARTMENT OF FINANCIAL SERVICES
PURCHASING DIVISION

75 Langley Drive | Lawrenceville, GA 30046-6935
O: 770.822.8720 | F: 770.822.8735
GwinnettCounty.com

Solicitation Name & No. RP003-23- Engineering Design and Support during Preconstruction and Construction of the F. Wayne Hill Water Resources Center Biosolids Dryer Project

CONTRACTOR AFFIDAVIT AND AGREEMENT
(THIS FORM SHOULD BE FULLY COMPLETED AND RETURNED WITH YOUR SUBMITTAL)

By executing this affidavit, the undersigned contractor verifies its compliance with The Illegal Immigration Reform Enhancements for 2013, stating affirmatively that the individual, firm, or corporation which is contracting with the Gwinnett County Board of Commissioners has registered with and is participating in a federal work authorization program* [any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security] to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act, in accordance with the applicability provisions and deadlines established therein.

The undersigned further agrees that, should it employ or contract with any subcontractor(s) in connection with the physical performance of services or the performance of labor pursuant to this contract with the Gwinnett County Board of Commissioners, contractor will secure from such subcontractor(s) similar verification of compliance with the Illegal Immigration Reform and Enforcement Act on the Subcontractor Affidavit provided in Rule 300-10-01-.08 or a substantially similar form. Contractor further agrees to maintain records of such compliance and provide a copy of each such verification to the Gwinnett County Board of Commissioners at the time the subcontractor(s) is retained to perform such service.

11557 — E-Verify * User Identification Number

June 19, 2015 — Date Registered

Jacobs Engineering Group Inc.
Legal Company Name

10 Tenth Street, Suite 1400
Street Address

Atlanta, GA 30309
City/State/Zip Code

BY: Authorized Officer or Agent (Contractor Signature)

4/19/2023
Date

Vice President
Title of Authorized Officer or Agent of Contractor

S. Bijoy Ghosh, PE
Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN
BEFORE ME ON THIS THE
19th DAY OF April, 2023

Notary Public
My Commission Expires: 11/17/2025

ANNISSA ELLIOTT
Notary Public, Georgia
Fulton County
My Commission Expires
November 17, 2025

For Gwinnett County Use Only:

Document ID #_____

Issue Date: _____

Initials: _____

* As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is "E-Verify" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).

GWINNETT COUNTY
DEPARTMENT OF FINANCIAL SERVICES
PURCHASING DIVISION

75 Langley Drive | Lawrenceville, GA 30046-6935
O: 770.822.8720 | F: 770.822.8735
GwinnettCounty.com

Solicitation Name & No. RP003-23- Engineering Design and Support during Preconstruction and Construction of the F. Wayne Hill Water Resources Center Biosolids Dryer Project

CODE OF ETHICS AFFIDAVIT

(THIS FORM SHOULD BE FULLY COMPLETED AND RETURNED WITH YOUR SUBMITTAL AND WILL BE REQUIRED PRIOR TO EVALUATION)

In accordance with Section 54-33 of the Gwinnett County Code of Ordinances the undersigned bidder/proposer makes the following full and complete disclosure under oath, to the best of his/her knowledge, of the name(s) of all elected officials whom it employs or who have a direct or indirect pecuniary interest in or with the bidder/proposer, its affiliates or its subcontractors:

1. **Jacobs Engineering Group Inc.**
(Company Submitting Bid/Proposal)

2. (Please check ☑ **one** box below)

☒ No information to disclose *(complete only section 4 below)*

☐ Disclosed information below *(complete section 3 & section 4 below)*

3. (if additional space is required, please attach list)

Gwinnett County Elected Official Name _____ Gwinnett County Elected Official Name _____

Gwinnett County Elected Official Name _____ Gwinnett County Elected Official Name _____

4.

BY: _____
Authorized Officer or Agent Signature

S. Bijoy Ghosh, PE
Printed Name of Authorized Officer or Agent

Vice President
Title of Authorized Officer or Agent of Contractor

Sworn to and subscribed before me this

19th day of April, 2023

_____
Notary Public

ANNISSA ELLIOTT
Notary Public, Georgia
Fulton County
My Commission Expires
November 17, 2025
(seal)

Note: See Gwinnett County Code of Ethics Ordinance EO2011, Sec. 54-33. The ordinance will be available to view in its' entirety at www.gwinnettcounty.com

Failure to return this page as part of your proposal document may result in rejection of proposal.

FIRM INFORMATION

Please include this page as part of the Step I proposal document and again resubmit updated as part of Step II proposal document.

The undersigned acknowledges receipt of the following addenda, listed by number and date appearing on each:

Addendum No. #	Date
1	April 14, 2023
2	April 17, 2023

Certification Of Non-Collusion in Proposal Preparation S. Bijoy Ghosh 04/17/23
(Signature) (Date)

The County requires that all who enter into a contract for the physical performance of services with the County must satisfy O.C.G.A. § 13-10-91 and Rule 300-10-1-.02, in all manner, and such are conditions of the contract. In compliance with the attached specifications, the undersigned offers and agrees, if this quote is accepted by the Board of Commissioners within one-hundred-fifty (150) days of the date of proposal opening, to furnish any or all of the items upon which prices are quoted, at the price set opposite each item, delivered to the designated point(s) within the time specified in the quote schedule. By submission of this proposal, I understand that Gwinnett County uses Electronic Payments for remittance of goods and services. Firms should select their preferred method of electronic payment upon notice of award. For more information on electronic payments, please refer to the Electronic Payment information in the instructions to proposers.

Legal Business Name **Jacobs Engineering Group Inc.**
(If your company is an LLC, you must identify all principals to include addresses and phone numbers in your submittal)

Federal Tax ID [redacted]

Address **10 Tenth Street, Suite 1400, Atlanta, GA 30309**

Does your company currently have a location within Gwinnett County? Yes ☐ No ☒

Representative Signature S. Bijoy Ghosh

Print Authorized Representative's Name **S. Bijoy Ghosh, PE - Vice President**

Telephone Number **404.606.1946** Fax Number **404.978.7660**

E-Mail Address **bijoy.ghosh@jacobs.com**

REQUIRED CONTRACT PROVISIONS FOR NON-FEDERAL ENTITY CONTRACTS UNDER FEDERAL AWARDS – APPENDIX II TO 2 CFR PART 200

The following provisions are required and apply when federal funds are expended for any contract resulting from this procurement process.

(A) Contracts for more than the simplified acquisition threshold currently set at $150,000, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.

Pursuant to Federal Rule (A) above, when federal funds are expended, Gwinnett County reserves all rights and privileges under the applicable laws and regulations with respect to this procurement in the event of breach of contract by either party.

Does vendor agree? YES  Initials of Authorized Representative of vendor

(B) Termination for cause and for convenience by the grantee or subgrantee including the manner by which it will be effected and the basis for settlement. (All contracts in excess of $10,000).

Pursuant to Federal Rule (B) above, when federal funds are expended, Gwinnett County reserves the right to immediately terminate any agreement in excess of $10,000 resulting from this procurement process in the event of a breach or default of the agreement by Vendor, in the event vendor fails to: (1) meet schedules, deadlines, and/or delivery dates within the time specified in the procurement solicitation, contract, and/or a purchase order; (2) make any payments owed; or (3) otherwise perform in accordance with the contract and/or the procurement solicitation. Gwinnett County also reserves the right to terminate the contract immediately, with written notice to vendor, for convenience, if Gwinnett County believes, in its sole discretion that it is in the best interest of Gwinnett County to do so. The vendor will be compensated for work performed and accepted and goods accepted by Gwinnett County as of the termination date if the contract is terminated for convenience of Gwinnett County. Any award under this procurement process is not exclusive and Gwinnett County reserves the right to purchase goods and services from other vendors when it is in the best interest of Gwinnett County.

(C) Equal Employment Opportunity. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60- 1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and

implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

Pursuant to Federal Rule (C) above, when federal funds are expended by Gwinnett County on any federally assisted construction contract, the equal opportunity clause is incorporated by reference herein.

Does vendor agree to abide by the above?

YES _____ Initials of Authorized Representative of vendor

(D) Davis-Bacon Act, as amended (40 U.S.C. 3141-3148). When required by Federal program legislation, all prime construction contracts in excess of $2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146- 3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The nonfederal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.

Pursuant to Federal Rule (D) above, when federal funds are expended by Gwinnett County, during the term of an award for all contracts and subgrants for construction or repair, the vendor will be in compliance with all applicable Davis-Bacon Act provisions.

Does vendor agree? YES _____ Initials of Authorized Representative of vendor

(E) Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708). Where applicable, all contracts awarded by the non-Federal entity in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the

standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

Pursuant to Federal Rule (E) above, when federal funds are expended by Gwinnett County, the vendor certifies that during the term of an award for all contracts by Gwinnett County resulting from this procurement process, the vendor will be in compliance with all applicable provisions of the Contract Work Hours and Safety Standards Act.

Does vendor agree? YES  Initials of Authorized Representative of vendor

(F) Rights to Inventions Made Under a Contract or Agreement. If the Federal award meets the definition of "funding agreement" under 37 CFR §401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

Pursuant to Federal Rule (F) above, when federal funds are expended by Gwinnett County, the vendor certifies that during the term of an award for all contracts by Gwinnett County resulting from this procurement process, the vendor agrees to comply with all applicable requirements as referenced in Federal Rule (F) above.

Does vendor agree? YES  Initials of Authorized Representative of vendor

(G) Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended—Contracts and subgrants of amounts in excess of $150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251- 1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

Pursuant to Federal Rule (G) above, when federal funds are expended by Gwinnett County, the vendor certifies that during the term of an award for all contracts by Gwinnett County resulting from this procurement process, the vendor agrees to comply with all applicable requirements as referenced in Federal Rule (G) above.

Does vendor agree? YES ___ Initials of Authorized Representative of vendor

(H) Debarment and Suspension (Executive Orders 12549 and 12689)—A contract award (see 2 CFR 180.220) must not be made to parties listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

Pursuant to Federal Rule (H) above, when federal funds are expended by Gwinnett County, the vendor certifies that during the term of an award for all contracts by Gwinnett County resulting from this procurement process, the vendor certifies that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation by any federal department or agency.

Does vendor agree? YES ___ Initials of Authorized Representative of vendor

(I) Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)—Contractors that apply or bid for an award exceeding $100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the nonfederal award.

Pursuant to Federal Rule (I) above, when federal funds are expended by Gwinnett, the vendor certifies that during the term and after the awarded term of an award for all contracts by Gwinnett County resulting from this procurement process, the vendor certifies that it is in compliance with all applicable provisions of the Byrd Anti-Lobbying Amendment (31 U.S.C. 1352). The undersigned further certifies that:

(1) No Federal appropriated funds have been paid or will be paid for on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of congress, or an employee of a Member of Congress in connection with the awarding of a Federal contract, the making of a Federal grant, the making of a Federal loan, the entering into a cooperative agreement, and the extension, continuation, renewal, amendment, or modification of a Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any

agency, a Member of Congress, an officer or employee of congress, or an employee of a Member of Congress in connection with this Federal grant or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all covered sub-awards exceeding $100,000 in Federal funds at all appropriate tiers and that all subrecipients shall certify and disclose accordingly.

Does vendor agree? YES SBG Initials of Authorized Representative of vendor

(J) The Buy America regulation at 49 C.F.R. § 661.13 requires notification of the Buy America requirements in a recipients' bid or request for proposal for federally funded contracts. Recipients can draw on the following language for inclusion in their federally funded procurements. Note that recipients are responsible for including the correct Buy America certification based on what they are acquiring. Recipients should not include both the rolling stock and steel, iron, or manufactured products certificates in the documents unless acquiring both in the same procurement. The contractor agrees to comply with 49 U.S.C. 5323(j) and 49 C.F.R. part 661, which provide that Federal funds may not be obligated unless all steel, iron, and manufactured products used in federally funded projects are produced in the United States, unless a waiver has been granted by the funding agency or the product is subject to a general waiver. General waivers are listed in 49 C.F.R. § 661.7. Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. § 661.11.

The [bidder or offeror] must submit to [Recipient] the appropriate Buy America certification below with its [bid or offer]. Bids or offers that are not accompanied by a completed Buy America certification will be rejected as nonresponsive.

In accordance with 49 C.F.R. § 661.6, for the procurement of steel, iron or manufactured products, use the certifications below.

Certificate of Compliance with Buy America Requirements

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(1), and the applicable regulations in 49 C.F.R. part 661.

Date: **April 19, 2023**

Signature: S Ghosh

Company: **Jacobs Engineering Group Inc.**

Name: **S. Bijoy Ghosh, PE**

Title: **Vice President**

(K) The Cargo Preference Act of 1954 at 46 U.S.C. § 55305 and 46 C.F.R. part 381 requirements applies to all contracts involving equipment, materials, or commodities that may be transported by ocean vessels.

The contractor agrees to:

a. to use privately owned United States-Flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to the underlying contract to the extent such vessels are available at fair and reasonable rates for United States-Flag commercial vessels;
b. to furnish within 20 working days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of-lading in English for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the funding recipient (through the contractor in the case of a subcontractor's bill-of-lading.); and
c. to include these requirements in all subcontracts issued pursuant to this contract when the subcontract may involve the transport of equipment, material, or commodities by ocean vessel.

Does vendor agree? YES  Initials of Authorized Representative of vendor

(L) Huawei Technology Ban - Section 889 of the 2019 National Defense Authorization Act ("NDAA")

- 889(a)(1)(A): directs that agencies may not "procure or obtain . . . any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system." This limitation was implemented by an amendment to the Federal Acquisition Regulation ("FAR") published on August 13, 2019.

- 889(a)(1)(B) directs that agencies may not "enter into a contract (or extend or renew a contract) with an entity that uses any equipment, system, or services that uses covered telecommunications equipment or services as a substantial or essential component of any system." This limitation was implemented by an amendment to the FAR in July 2019, with an effective date of August 13, 2020.
    - Covered telecommunications equipment or services" falls into four categories:
        - Telecommunications equipment produced by Huawei Technologies Company, ZTE Corporation, or any subsidiary or affiliate of either.
        - When to be used for public safety, government facility security, security of critical infrastructure, or other national security purposes, "video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, . . . Dahua Technology Company" or any subsidiary or affiliate of the aforementioned.

- Telecommunications or video surveillance services provided by any of the aforementioned entities.
- Telecommunications or video surveillance equipment produced by or provided by an entity the Secretary of Defense 'reasonably believes' to be an entity connected to the government of the People's Republic of China

- 889(a)(1)(B) directs that agencies may not "enter into a contract (or extend or renew a contract) with an entity that uses any equipment, system, or services that uses covered telecommunications equipment or services as a substantial or essential component of any system." This limitation was implemented by an amendment to the FAR in July 2019, with an effective date of August 13, 2020.

The Contractor agrees to participate in AGENCY's ban established in compliance with Section 889 of the 2019 National Defense Authorization Act.

Does vendor agree? YES _____ Initials of Authorized Representative of vendor

RECORD RETENTION REQUIREMENTS FOR CONTRACTS PAID FOR WITH FEDERAL FUNDS – 2 CFR § 200.333

When federal funds are expended for any contract resulting from this procurement process, the vendor certifies that it will comply with the record retention requirements detailed in 2 CFR § 200.333. The vendor further certifies that vendor will retain all records as required by 2 CFR § 200.333 for a period of three years after grantees or subgrantees submit final expenditure reports or quarterly or annual financial reports, as applicable, and all other pending matters are closed.

Does vendor agree? YES _____ Initials of Authorized Representative of vendor

CERTIFICATION OF COMPLIANCE WITH COMPLIANCE WITH EPA REGULATIONS APPLICABLE TO GRANTS, SUBGRANTS, COOPERATIVE AGREEMENTS, AND CONTRACTS IN EXCESS OF $100,000 OF FEDERAL FUNDS

When federal funds are expended for any contract resulting from this procurement process in excess of $100,000, the vendor certifies that the vendor is in compliance with all applicable standards, orders, regulations, and/or requirements issued pursuant to the Clean Air Act of 1970, as amended (42 U.S.C. 1857(h)), Section 508 of the Clean Water Act, as amended (33 U.S.C. 1368), Executive Order 117389 and Environmental Protection Agency Regulation, 40 CFR Part 15.

Does vendor agree? YES _____ Initials of Authorized Representative of vendor

CERTIFICATION OF COMPLIANCE WITH BUY AMERICA PROVISIONS

Vendor certifies that vendor is in compliance with all applicable provisions of the Buy America Act. Purchases made in accordance with the Buy America Act must still follow the applicable procurement rules calling for free and open competition.

Does vendor agree? YES SSG Initials of Authorized Representative of vendor

CERTIFICATION OF NON-COLLUSION STATEMENT

Vendor certifies under penalty of perjury that its response to this procurement solicitation is in all respects bona fide, fair, and made without collusion or fraud with any person, joint venture, partnership, corporation or other business or legal entity.

Does vendor agree? YES SSG Initials of Authorized Representative of vendor

Vendor agrees to comply with all federal, state, and local laws, rules, regulations and ordinances, as applicable. It is further acknowledged that vendor certifies compliance with all provisions, laws, acts, regulations, etc. as specifically noted above.

Vendor's Name/Company Name: **Jacobs Engineering Group Inc.**

Address, City, State, and Zip Code: **10 Tenth Street, Suite 1400, Atlanta, GA 30309**

Phone Number: ~~**404.751.2149**~~ 606.1946 SSG Fax Number: **404.978.7660**

Printed Name and Title of Authorized Representative: **S. Bijoy Ghosh, PE - Vice President**

Email Address: **bijoy.ghosh@jacobs.com**

Signature of Authorized Representative: S Ghosh

Date: **April 19, 2023** Federal Tax ID #_____

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CAGE Code (5 Digits): **3T810** Expiration Date: **09/23/2023**

Jay Horton

10 Tenth Street NW STE 1400
Atlanta, GA 30309
jay.horton@jacobs.com

Jacobs

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