



Proposal for RFP #20260279

Design – Wetland Habitat Enhancement and Flooding Improvements Charlotte Harbor Flatwoods

Prepared for: Charlotte County

March 09, 2026

The contracting entity for RES in Florida is RES Florida Consulting, LLC. RES Florida Consulting, LLC is a wholly owned subsidiary of Resource Environmental Solutions, together with all its subsidiaries, is referred to as "RES."



March 9, 2026

Ms. Rhiannon Mills
Charlotte County Purchasing Division
18500 Murdock Circle, Suite 344
Port Charlotte, Florida 33948-1094

RE: Proposal for RFP #20260279, Design – Wetland Habitat Enhancement and Flooding Improvements Charlotte Harbor Flatwoods

Dear Ms. Mills,

RES, along with our team members Jacobs, Collective Water Resources, CivilSurv Design Group, and Schnabel, is pleased to submit this proposal in response to the Request for Proposal for the Yucca Pens Hydrologic Restoration Project within the Yucca Pens Unit State Wildlife Management Area. We sincerely appreciate the opportunity to support Charlotte County (County) in advancing this critical hydrologic restoration initiative to improve regional water resource resilience, restore ecological function, and enhance long-term watershed performance.

As the nation's largest nature-based solutions company, RES places significant emphasis on delivering resilient water resource infrastructure through science-led design, full delivery, and long-term performance stewardship. For Yucca Pens, we bring an integrated team uniquely qualified to refine hydrologic modeling, evaluate groundwater and surface water interactions and conditions, design restoration-driven infrastructure such as ditch blocks and seepage control measures, and advance the project through permitting and construction-ready design. Our approach considers not only hydraulic feasibility, but also ecological uplift, water quality improvement, regulatory defensibility, and long-term operational sustainability.

Our multidisciplinary team includes experienced project managers, professional engineers, hydrologic and hydraulic modelers (including MIKE SHE/MIKE 11 expertise), hydrogeologists, GIS specialists, wetland scientists, water quality experts, restoration ecologists, survey professionals, and geotechnical engineers. Together, this team will deliver coordinated data collection, modeling refinement, alternatives evaluation, engineering design, and permitting support to achieve the County's restoration objectives.

Our team has substantial experience managing complex hydrologic restoration initiatives throughout Florida. This includes addressing groundwater recharge and surface water storage, restoring floodplain connectivity, improving water quality, and coordinating with regulatory agencies and the South Florida Water Management District (SFWMD) ERP requirements. We have successfully obtained permits from the Florida Department of Environmental Protection (FDEP), various Water Management Districts, and the U.S. Army Corps of Engineers (USACE) for restoration-driven infrastructure and watershed-scale projects. Our familiarity with FDEP Quality Assurance requirements under Chapter 62-160, F.A.C., ensures that all environmental data collection and monitoring activities will meet applicable QA/QC standards.

RES and Jacobs are currently collaborating on the East Winter Haven Aquifer Recharge and Wetland Restoration Project, a large-scale, multi-nodal water resource initiative (that is part of the City's One Water Initiative, also called the Sapphire Necklace) involving aquifer recharge, wetland restoration, surface water storage, and regional hydrologic enhancement. This highly integrated watershed-scale project requires incorporation of modeling-driven design, regulatory coordination, stakeholder engagement, and a restoration-focused ecological engineering approach to provide multiple benefits. All of the elements from the Winter Haven project closely parallel the Yucca Pens Hydrologic Restoration effort. Through this collaboration, our team has demonstrated the ability to address complex groundwater/surface water interactions, improve hydrologic function at scale, and coordinate effectively with local governments and state agencies.

Collective Water Resources and Jacobs have extensive experience applying advanced DHI modeling tools to large, complex watershed systems in southwest Florida, including refining existing hydrologic models to support restoration decision-making. CivilSurv brings regional survey expertise and proven coordination on restoration projects, while Schnabel provides geotechnical support critical to evaluating seepage barriers, structural stability, and subsurface conditions influencing Charlotte County | RFP 20260279



hydraulic performance. Together, this highly experienced integrated team offers Charlotte County technical depth, regional familiarity, and coordinated delivery across all project phases.

Project management is a core strength of our organization. We have a proven track record of delivering technically rigorous projects on schedule and within budget through disciplined schedule control, earned-value cost tracking, and proactive risk management. Our structured approach ensures that modeling refinement, survey augmentation, geotechnical investigations, design development, stakeholder coordination, and permitting proceed in parallel and remain aligned with the County's objectives.

This proposal outlines in detail how we will refine the existing hydrologic model, develop and evaluate restoration alternatives, prepare preliminary and final engineering plans, advance permit applications, and deliver construction-ready documents. Our work plan is structured to ensure regulatory defensibility, technical accuracy, cost control, and readiness for phased implementation or future funding opportunities.

Water resource resilience and ecological restoration are at the core of our business. Our Florida-based team has decades of experience designing and implementing hydrologic restoration projects that improve water storage and conveyance, restore ecological function, reduce pollutant loading, and enhance long-term watershed health. We are confident that our integrated technical expertise, regulatory experience, and commitment to collaborative delivery uniquely position RES and our partners to advance the Yucca Pens Hydrologic Restoration Project successfully.

We appreciate your consideration and welcome the opportunity to further discuss our qualifications. Our team is committed to providing responsive, high-quality service and partnering with Charlotte County to deliver a resilient, science-driven hydrologic restoration solution for Yucca Pens.

Regards,

Renee Price, PhD, PWS, CE
Project Manager
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Justin Freedman
General Manager, Florida
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Table of Contents

Proposed Project Team	1
Team Firms	1
Project Team	4
Project Team References	8
Management Plan	10
Kick Off Meeting and Monthly Team Project Meetings	10
Topographic Data Review and Work	10
Geotechnical Work	10
Hydraulic and Hydrologic Modeling	11
Ecological Assessments	12
Archeological Investigation	13
Engineering and Design Plan Development	14
Permitting Applications and Pre-Application Meetings	16
Previous Team Experience	19
Project Control	20
Schedule	20
Cost	20
Recent, Current and Projects Workloads	21
Design Approach	22
Processes for Scheduling, Coordinating, and executing data collection, survey work, H&H Modeling and Other Analyses.	22
Processes for conducting project meetings, providing Written responses to stakeholder comments and providing notes as requested	23
Preparation of Preliminary and Final Design Plans for the Project as Well as Preparation of Permit Applications and Responses to Permitting Agencies Questions/clarification and or Modifications	24
Recent Similar Projects	25
Specialized Capabilities	31
Advanced H&H Modeling	33
Advanced GIS	33
Ecological Assessment	33
Shovel Ready Work	34
Permit Applications	34
Project Management	36
Volume of Work	38
Location	38
Litigation	38
Resumes	39
Required Forms	61



Proposed Project Team

Team Firms



As the nation’s largest nature-based solutions company, RES supports the public and private sectors with durable, resilient infrastructure for communities through solutions for environmental mitigation, stormwater and water quality, and climate and flooding resilience. RES has a unique operating model for

delivering ecological uplift, based on science-led design, full delivery, long-term stewardship, and guaranteed performance. From headwaters to coastal shores, RES designs, builds, and sustains sites that preserve the environmental balance, lifting impaired ecosystems into restored health and ultimately, self-sufficiency. These projects restore sensitive wetland, prairie, and species habitats as well as floodplains, streams, river valleys, and coastal and tidal systems. The result is nature-based systems that cleanse water, shelter wildlife, buffer storms, and sequester carbon from the atmosphere.

RES works closely and creatively with nonprofits, municipalities, developers, operators, landowners, and regulatory agencies to balance the needs of clients, communities, and resources. Our operating model is built around this approach. We employ teams covering the full project lifecycle, combining in-house analytics and technical expertise with implementational resources and capabilities.

We have helped clients successfully permit more than 3,900 projects, creating rich, high-functioning ecosystems as part of each permit. Our clients include local and state governments, large mining operators, energy production companies, energy transmission companies, Fortune 500 companies, departments of transportation, and other public-sector organizations. RES now employs 900+ dedicated staff in 47 operational hubs across the country, including regional offices in Baton Rouge and Lafayette.

RES delivers customized solutions tailored to our clients’ needs. RES’ internal resources include environmental, health, safety, and security (EHS&S) staff, land acquisition specialists, wildlife biologists, Rosgen IV certified stream designers, professional wetland scientists, engineers, hydrologists, ecologists, regulatory project managers, analysts, arborists, landscape architects, construction managers, superintendents, and field crew members as well as supporting project controls, government affairs, public relations, financial, legal and analytical staff.

RES’ experience includes:

- Restoration, enhancement, and preservation of 77,899 acres of wetlands
- Restoration of over 690 miles of streams
- Delivery of 20,000 acres of custom, turnkey mitigation solutions
- Planting of over 28,140,473 trees across all operating regions
- Restoration of over 431 miles of shorelines, terraces, and levees
- Restoration and protection of 20,700 acres of upland and prairie habitat
- Long-term protection and conservation of over 88,429 acres
- Currently conducting monitoring and maintenance (including invasive species management) for over 88,429 acres of mitigation and restoration habitat
- Design, permitting, management, and development of 197 wetland, stream, species, and conservation banks
- Design and construction of over 356 stormwater management facilities
- Rehabilitation, preservation, and/or management of over 20,401 acres of special-status species habitat, protecting 28 species
- Development and operation of nurseries in six states, including the largest coastal nursery in Louisiana
- Facilitation of compensatory mitigation and nutrient offsets for over 3,980 federal and state permits

We draw on our dedicated, in-house resources and deep experience across all phases of ecological restoration projects in defining our project approach, which seeks to balance performance and cost in the manner that is most beneficial to our clients.





Jacobs

Jacobs is a global leader in natural infrastructure and wetland restoration, with more than five decades of science-driven experience in delivering wetland restoration,

ecological engineering, and integrated water management solutions across Florida and the United States. We bring integrated teams of planners, ecologists, engineers, landscape architects, hydrologists, geomorphologists, hydrogeologists, soil scientists, economists, and regulatory specialists to provide coastal and freshwater restoration, regulatory compliance, and stakeholder engagement services to our clients. Our work with the USACEs' Engineering With Nature® Program, The Nature Conservancy (TNC), United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), Florida Water Management Districts, and state and local governments demonstrates our ability to pair engineering rigor with ecological insight to create systems that function more like natural wetlands and less like rigid engineered structures. From coastal resilience and wetland restoration at Tyndall Air Force Base, recipient of the 2024 Presidential Federal Sustainability Award, to the 4G Ranch Wetlands, honored by the 2017 International Green Apple Award for Environmental Best Practice, our award-winning portfolio reflects our commitment to innovation, technical excellence and resilient environmental restoration.

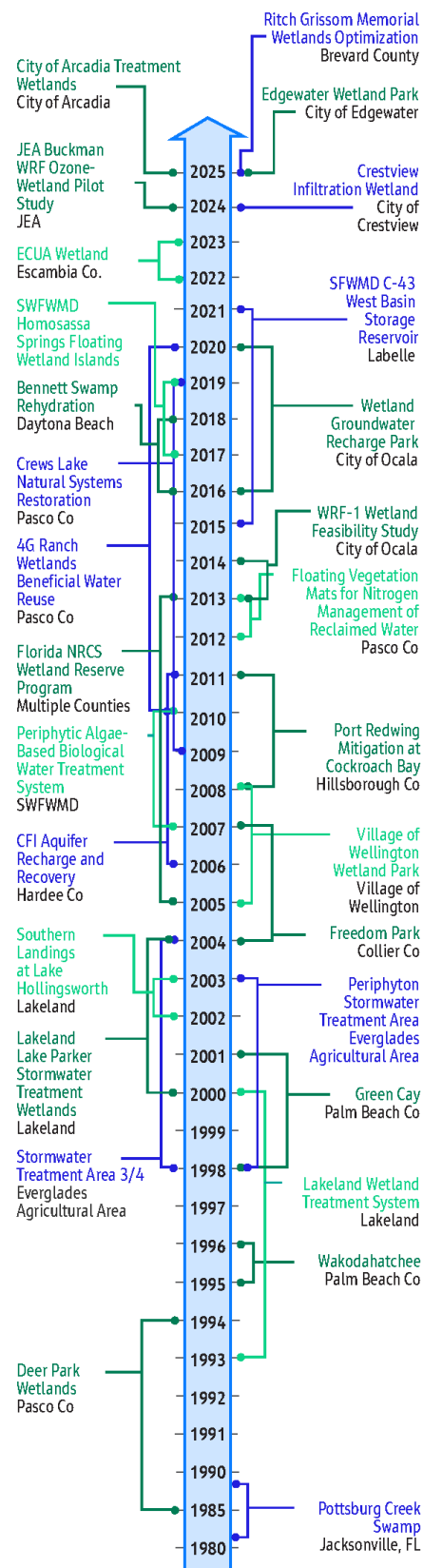
Local Presence, Regional Knowledge, National Expertise

Jacobs has been part of Florida's engineering and ecology community since the 1970s. More than 4,000 of our engineers, scientists, planners, and technical staff live and work in Florida, including a strong presence in Southwest Florida. We understand the hydrologic, ecological, and regulatory conditions that shape Charlotte County's restoration priorities, from increasing fresh surface water and groundwater availability to improving water quality and habitat enhancement for fish and wildlife species of concern. Our long-standing relationships with FDEP, Southwest Water Management District (SWFWMD), SFWMD, National Oceanic and Atmospheric Administration (NOAA), Florida Fish and Wildlife Conservation Commission (FWC) and USACE streamline permitting and coordination from concept through construction. Jacobs' regional and national team includes, and has access to, globally recognized experts in environmental restoration. We are also ranked as the No. 1 Engineering Firm for Pure Designers and are consistently listed among the top three environmental firms in environmental science and engineering and design by Engineering News-Record.

Collaborative Delivery with Stakeholder-Driven Engagement

Jacobs is committed to transparent, inclusive stakeholder engagement that builds trust and long-term stewardship. We know that the most successful restoration stories are shaped not only by technical excellence but by the stakeholders who know the site best. That's why our approach to stakeholder engagement is built on high engagement and high-value collaboration. We have facilitated participatory design workshops, community outreach, and stakeholder coordination for restoration projects across Florida and the Southeast. Notably, Jacobs offers the advantage of a fully integrated, in-house public involvement team, streamlining collaboration and elevating project delivery. Our teams also help clients identify new opportunities and funding pathways, including federal resilience programs, state grants, and partnerships with water-stewardship organizations.

JACOBS HAS MORE THAN 40 YEARS OF WETLANDS EXPERIENCE IN FLORIDA





Collective Water Resources (Collective) was founded in 2012 to serve Florida’s public agencies with customized and holistic solutions to water resources challenges through the effective application of science and technology. They employ eleven water resources experts (nine of whom are Florida-licensed Professional Engineers). They have

worked throughout the state on over 130 projects for cities, counties, and water management districts on many of their most challenging resilience, modeling, GIS, conceptual design, watershed, water quality, ecology and planning projects. Collective is a niche firm that focuses on the specific skillsets required to provide high-quality analyses and modeling to government clients – all within schedule and budget. They believe that this specialization is critical in a time of limited resources for our clients throughout the State of Florida.

Their staff has worked extensively in southwest Florida for over 20 years. Through Dr. Maria Loinaz and her team, in concert with Jacobs, they can provide the County with perhaps the most experienced and largest DHI modeling teams in Florida. In fact, Dr. Loinaz and her team have worked on several large and complex models throughout southwest Florida, including the model for this very project. Collective and Jacobs recently completed significant DHI modeling efforts together as part of the Corkscrew Watershed Initiative. Together, with RES, they can provide unparalleled speed and depth to Charlotte County at key points during this important project.



CivilSurv Design Group, Inc. is the successor and continuation of several Florida firms that were established in 1980 with project records dating back through five decades. They have provided Engineering and Land Surveying & Mapping services as CivilSurv from their headquarters office in Lakeland, Florida since 2010. Their “Tradition of Innovative Engineering” is provided from offices in Lakeland, Port St. Lucie, Vero

Beach, and Sebring. Their clientele includes city and county governments, state agencies, utility companies, commercial and industrial firms, architects, and contractors. CivilSurv is a Water Management District and City of St. Petersburg Certified Small Business Enterprise. Their specific services include: stormwater engineering and planning; water and wastewater engineering and planning; civil / site engineering; transportation engineering; construction services; regional/site, urban and policy planning; surveying and mapping; and subsurface utility engineering for both designates and verified vertical and horizontal (aka VVH or vacuum excavation) locates. For this project, CivilSurv will be providing survey services.



Schnabel brings more than 60 years of geotechnical and geotechnical engineering expertise to the Yucca Pens Hydrologic Restoration project, with significant experience in inland wetlands, floodplains, and Florida flatwoods systems characterized by shallow groundwater and highly organic soils. Their services include detailed subsurface investigations, laboratory testing, seepage and groundwater evaluation, slope stability analysis, earth

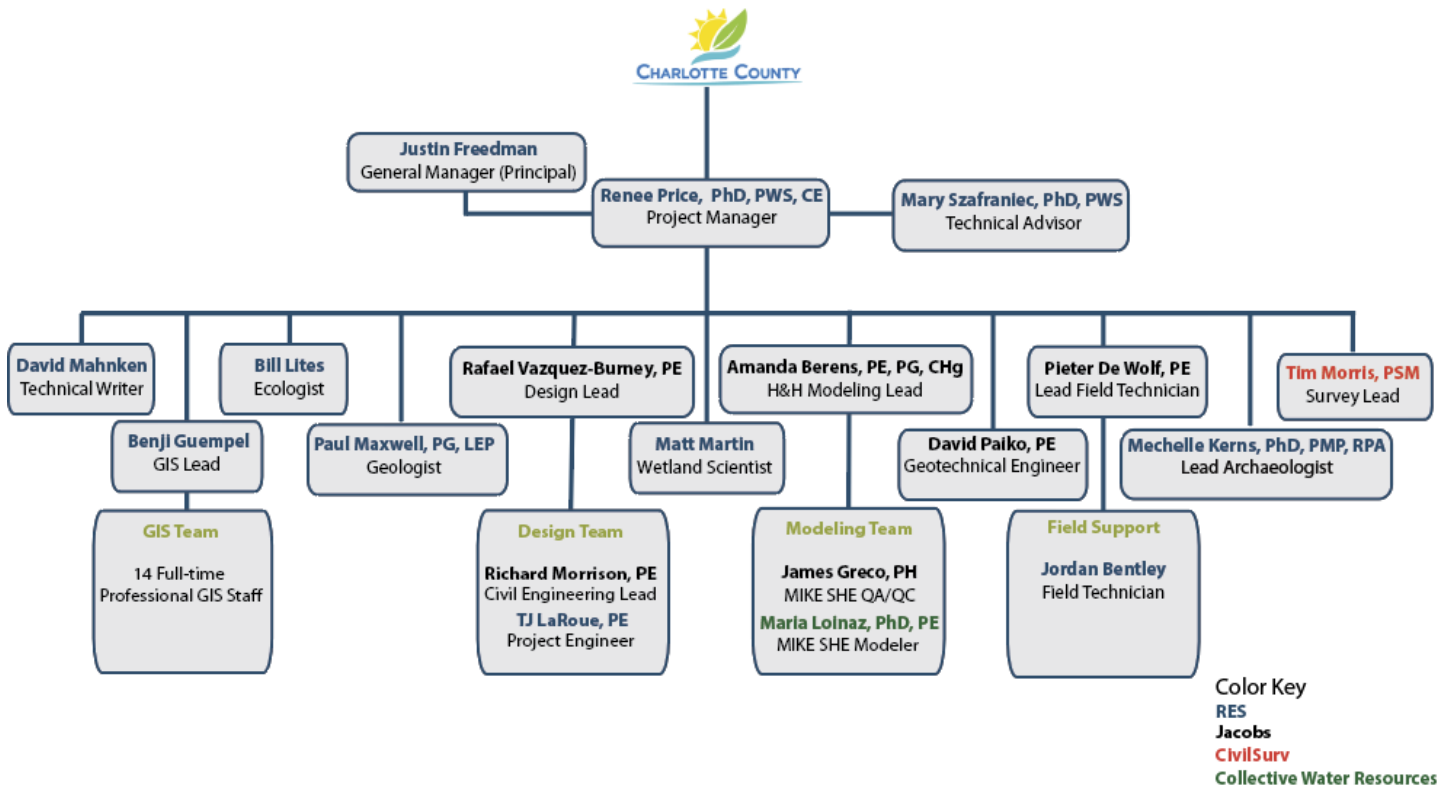
retention systems, and specialized foundation design. These capabilities directly support restoration features anticipated at Yucca Pens, including ditch blocks, low-water crossings, berm modifications, and potential seepage barrier systems.




Schnabel’s geoprofessionals integrate geotechnical exploration with hydrogeologic analysis to evaluate permeability, confining layers, settlement potential, and soil-structure interaction under fluctuating hydraulic conditions. Their experience in soft, compressible soils common to flatwoods and wetland environments ensures that restoration-driven infrastructure is both constructible and durable. By combining seepage analysis, embankment stability evaluation, and groundwater management strategies, Schnabel provides technically sound and cost-effective subsurface solutions that support long-term hydrologic performance and ecological restoration objectives.









Project Team

Identified personnel will not be substituted without the express permission of the County. Resumes for identified staff are provided in the Resumes section at the end of this proposal.




Proposed Personnel and Role	Qualifications Summary
 <p>Justin Freedman General Manager</p>	<p>Justin has 24 years of professional environmental experience serving public and private clients throughout Florida. He is the RES' General Manger in charge of all Florida. He provides expertise in diverse service areas including urban forestry, environmental permitting services, and manages complex, multidisciplinary projects that include a variety of environmental and engineering related tasks. Justin has had a significant role in urban forestry in Florida for many years. He serves on the Executive Committee of the Florida Urban Forestry Council and on the Board of Directors for the Florida Chapter of the International Society of Arboriculture (ISA).</p>
 <p>Renee Price, PhD, PWS, CE Project Manager</p>	<p>Dr. Renee Price is an ecologist and project manager with over 14 years of experience leading complex environmental and ecological restoration projects for public- and private-sector clients. Her technical focus is on wetlands, including water quality and quantity evaluations, delineations, and restoration. Additionally, Renee's recent dissertation focused on hydrologic and vegetation trajectories of reference and restored wetlands in central Florida. Renee has successfully managed large multidisciplinary teams from initial site evaluation through design, permitting, and implementation while maintaining schedule and budget control.</p>
 <p>Rafael Vazquez-Burney, PE Design Lead</p>	<p>Rafael is a Global Principal with 20+ years of experience in ecological engineering, specializing in the design of wetland restoration and creation projects. He has led a wide range of efforts to improve water quality, restore habitat, and strengthen the function of wetland systems. His work includes developing hydrologic, geomorphic, and ecological design frameworks and preparing detailed engineering plans that are shovel ready and practical to build. Rafael leads teams that focus on producing implementation-ready project designs that provide cost certainty and clear, well-coordinated construction documents that are easy for contractors to interpret.</p>








Proposed Personnel and Role	Qualifications Summary
 <p>Mary Szafraniec, PhD, PWS Technical Advisor</p>	<p>Dr. Mary Szafraniec's is the National Director of Water Solutions with 23 years of extensive ecological assessment and restoration experience including design and implementation of marine and freshwater ecological monitoring and assessments, watershed pollutant evaluation and restoration, and within-system ecological restoration such as sediment removal or inactivation, hydrologic alteration, invasive vegetation or algae removal, and native vegetation planting. She has led multi-disciplinary teams to implement large hydrologic and water quality restoration projects across Florida.</p>
 <p>David Menhken Technical Writer</p>	<p>David is a senior scientist with more than 30 years of technical and professional experience as an environmental scientist in both the private and public sectors. His broad range of experience includes all aspects of local, state, and federal environmental resource permitting including Florida Statewide Environmental Resource Permitting (SWERP), USACE and FDEP Section 404 Dredge and Fill permitting, NEPA and PD&E studies, jurisdictional wetland delineations, mitigation design, threatened and endangered species surveys, wildlife habitat evaluations, and GIS analysis of environmental data.</p>
 <p>Amanda Berens, PE, PG, CHg H&H Modeling Lead</p>	<p>Amanda is an accomplished water resources engineer and hydrogeologist with 26+ years leading multidisciplinary teams across the Southeast region. Proven record delivering innovative groundwater and surface water solutions for utilities, industrial clients, and public agencies. Expert in groundwater/surface water modeling, regional program management, permitting strategy, and stakeholder engagement. Known for mentoring talent, elevating technical standards, and aligning projects with organizational priorities.</p>
 <p>Benji Guempel GIS Lead</p>	<p>Benji joined RES in 2015 and has over 18 years of extensive GIS experience in the environmental consulting field providing GIS analysis, database development, spatial analysis, imagery analysis, cartographic design, litigation support, 3d modeling, data management, field data collection/integration, map automation, internet mapping applications, and report production for research, planning, impact assessment, and land acquisition projects. Benjamin currently manages the enterprise GIS system, Geospatial Solutions Group at RES, and drone operations.</p>
 <p>Matt Martin Wetland Scientist</p>	<p>Matt is a senior scientist with 24 years of experience. His experience includes environmental resource permitting, threatened and endangered species surveys and monitoring, wetland delineation, monitoring, and restoration, wetland mitigation site planning, monitoring, and reporting, dune and coastal habitat monitoring and restoration, NEPA studies, lake management and aquatic restoration. Matt also provides support for Contaminated Sites Evaluation Reports (CSERs) and has extensive experience using geographic information systems (GIS) and remote sensing technologies to support environmental planning and assessment projects.</p>
 <p>Bill Lites Ecologist</p>	<p>With over 37 years of experience in ecological consulting and environmental planning and permitting across Florida, Bill brings a deep understanding of the state's diverse ecosystems and regulatory landscape. As Environmental Director, Project Manager, and Field Ecologist, he has led and supported a wide range of projects involving environmental planning and design, listed species surveys, wetland delineations and functional assessments, habitat management planning, mitigation design (upland and wetland creation, enhancement and restoration) and permitting wetlands and listed species.</p>



Proposed Personnel and Role	Qualifications Summary
 <p data-bbox="107 407 386 470">Paul Maxwell, PG, LEP Geologist</p>	<p data-bbox="513 176 1515 558">Paul has 15 years of experience providing strategic environmental solutions for clients across various industries. He has managed and executed a wide variety of multi-faceted environmental projects including groundwater monitoring, water well permitting and abandonment, stormwater pollution prevention plans, and sinkhole investigations and evaluations. Paul is passionate about applying geological knowledge to contribute to environmental sustainability and resource management initiatives. He is familiar with analysis and interpretation of geological data using GPS/GIS software and other analytical tools and collaborated with cross-functional teams to integrate geological findings into project designs and development plans. He has assisted clients in navigating environmental regulations and permitting requirements at the federal, state, and local levels.</p>
 <p data-bbox="107 827 472 890">David Paiko, PE Geotechnical Engineering Lead</p>	<p data-bbox="513 602 1515 919">David is a geotechnical engineer with 18 years of experience including engineering design, project management, quality management, and services during construction (SDC) for large-scale wetland, reservoir, and hydrologic restoration projects across Florida. Background includes geotechnical design lead, subsurface investigations, seepage and stability analyses, services during construction (SDC), and dam safety programs/inspections for large reservoir facilities. Notable wetland projects include the award-winning 4G Ranch Wetlands and the Ocala Groundwater Recharge Park. Those projects were supported by investigation, geotechnical design, permitting compliance, and full-time construction management.</p>
 <p data-bbox="107 1199 383 1262">Maria Loinaz, PhD, PE MIKE SHE Modeler</p>	<p data-bbox="513 947 1515 1297">Maria has her PE licensure in the state of Florida and has 25 years of experience in MIKE SHE/HYDRO/11 modeling. Maria regularly interfaces with permitting and design teams related to model set-up and model results to ensure models are representative of proposed restoration design features and to communicate model results so that the design reflects the modeling appropriately. Not only is Maria an expert in MIKE SHE, MIKE 11 and MIKE Hydro models, but she is also a professional engineer in the State of Florida which enables her to integrate seamlessly with design teams for successful projects from conception through construction-ready plans. She specializes in modeling of hydraulics/hydrology, groundwater systems, and water quality, with an emphasis on surface water and groundwater interactions.</p>
 <p data-bbox="107 1577 318 1640">James Greco, PH MIKE SHE QA/QC</p>	<p data-bbox="513 1325 1515 1675">James is a professional hydrologist with over 20 years of experience in hydrologic and hydraulic modeling, data collection, field planning, project studies, specifications preparation, environmental permitting, inspections, and mapping. He has completed integrated surface water/groundwater modeling with MIKE SHE and MIKE 11 and conducted other hydrology and hydraulics modeling with HEC-RAS, HEC-HMS, EPA SWMM, HSPF, and ICPR. Simulations assessed open channel flow, pipe hydraulics, runoff, groundwater levels, evapotranspiration, rainfall, and soil moisture. Additional modeling in support of design/alternatives analysis has been undertaken by James for BMP optimization and control structure operations in support of wetland/environmental restoration, flood control and water quality assessments.</p>
 <p data-bbox="107 1913 375 1976">Richard Morrison, PE Civil Engineering Lead</p>	<p data-bbox="513 1703 1515 1843">Rich Morrison is a civil design lead specializing in hydrologic restoration and nature-based water infrastructure. He develops grading, hydraulic structures, conveyance systems, and seepage-control designs informed by survey data and H&H modeling, delivering constructible, permit-ready wetland solutions.</p>



Proposed Personnel and Role	Qualifications Summary
 <p>Tim Morris, PSM Survey Lead</p>	<p>Tim has 25 years of experience surveying, 20 years in responsible charge of accuracy and completeness of boundary surveys, A.L.T.A./A.C.S.M. surveys, topographic surveys, jurisdictional wetland delineation surveys, construction staking / layouts, as-built surveys, record platting, bridge deformation monitoring, Florida Department of Transportation right of way control surveys, right of way maps, and design surveys. He currently is charged with the operation of our Subsurface Utility Services, and Unmanned Aerial Systems mapping including the project planning and production of deliverables.</p>
 <p>Mechelle Kerns, PhD, PMP, RPA Lead Archaeologist</p>	<p>Dr. Kerns has 25 years of experience as a professional archaeologist specializing in cultural resource management. She has directed cultural resources surveys for all phases of investigation at historic and prehistoric sites in the eastern United States, working with both private and public sector clients. Her project experience includes working for the USACE, the National Park Service (NPS), the U.S. Army, the Florida Department of Transportation (FDOT), Miami-Dade County, and the City of Annapolis, Maryland.</p>
 <p>TJ LaRoue, PE Project Engineer</p>	<p>TJ's 12 years of professional engineering design experience primarily includes natural system restoration (i.e., wetlands and lakes), water quality improvement/retrofit projects, water quality sampling, drainage improvement projects, and remediation. His experience includes project management, engineering design and modeling, groundwater and soil sampling, and construction supervision.</p>
 <p>Pieter De Wolf, PE Lead Field Technician</p>	<p>Pieter is an environmental engineer specializing in the design, construction, and monitoring of constructed wetlands and other natural treatment systems for water treatment and purification. Project experience includes in situ water quality monitoring, quality assurance oversight of construction, design-build of natural treatment systems, and post-construction monitoring of constructed treatment systems. Pieter became an FAA certified remote pilot-in-command to operate small unmanned aerial systems (drones) for geophysical surveys, photography, and videography. With experience as a licensed pilot and extensive recreational drone experience, Pieter brings a unique perspective using his knowledge of natural systems to provide construction progress updates and aerial surveys.</p>
 <p>Jordan Bentley Lead Field Technician</p>	<p>Jordan is a highly motivated Environmental Professional with eight years of progressive experience in stormwater management, regulatory compliance, & water quality sampling. Proven ability to conduct specialized technical lab & field work, including FDEP-certified inspections & sampling to ensure compliance with federal & local environmental codes.</p>



Project Team References

Client Contact Information	Project Description Summary
<p>RES Company Reference Tabitha Beihl Land & Water Natural Areas Manager Polk County Parks & Natural Resources Division 863.534.7377 TabithaBiehl@polk-county.net</p>	<p>At the Wilson Ranch Reserve, RES developed a concept plan for a turnkey stream/wetland hydrologic restoration project that includes, stream, wetland, and floodplain restoration to improve water quality, conservation, water supply and recharge opportunities, and enhance and preserve the natural system and improve resiliency and sustainability for the region.</p>
<p>RES Company Reference Karen Johnson Director of Stream and Wetland Mitigation Program The Nature Conservancy 804.249.3416 karen_johnson@tnc.org</p>	<p>RES is providing TNC with a full delivery wetland mitigation project at the Willowdale Tidal Wetland Mitigation Site. Activities included land searches and land acquisition services, existing conditions surveys, design services, permit submittals and approvals, site construction, establishment of necessary long-term maintenance and stewardship endowments, and site success monitoring until final credit releases at Year 10.</p>
<p>Jacobs Company Reference Kira Barrera Special Projects Coordinator City of St Petersburg Water Resources Department 727.892.5604 Kira.barrera@stpete.org</p>	<p>Jacobs is assisting the City of St. Petersburg in developing a comprehensive Wastewater Impact Evaluation and monitoring program to improve the bacterial health of eight key urban waterbodies. The project includes data analysis, field assessments, site prioritization, and the development of site-specific implementation plans, as well as a standardized bacterial source tracking program to support long-term water quality improvements, public health protection, and recreational use. Many of the recommended alternatives incorporate nature-based design approaches to enhance resilience within the surrounding urban waterbodies.</p>
<p>Collective Water Resources Reference Laura Layman Lead Project Manager South Florida Water Management District Planning and Project Management Section Everglades and Estuaries Protection Bureau 239.338.2929, ext. 7725 llayman@sfwmd.gov</p>	<p>The objective of the Corkscrew Watershed Initiative Project is to develop a comprehensive strategy to achieve ecological restoration of the Corkscrew Watershed by improving wetland hydroperiods and natural flows, while reducing flood risk in nearby flood-prone areas without adversely impacting the water supply and water management needs of the Corkscrew Watershed. Collective has completed a refinement of the MIKE SHE/MIKE HYDRO Big Cypress Basin Model and an existing conditions simulation. Collective is currently working on the future baseline and will then proceed with alternative conditions modeling efforts.</p>
<p>Lead Designer Reference Katie Konchar Coastal Resilience Projects Manager The Nature Conservancy, Gulf of Mexico Whole System katie.konchar@tnc.org, 850.296.7910</p>	<p>Jacobs is partnering with The Nature Conservancy and Tyndall Air Force Base to design and implement nature-based coastal resilience pilot projects including living shorelines, oyster reefs, and seagrass restoration to enhance storm protection, support ecosystem health, and strengthen long term operational resilience at Tyndall AFB. The work includes coastal engineering design, modeling, permitting, stakeholder engagement, and support for securing project funding.</p>



Client Contact Information	Project Description Summary
<p>Lead Designer Reference Ernie Cox President Family Lands Remembered ernie@familylandsremembered.biz 561.762.2282</p>	<p>Jacobs is supporting the Deering Park Stewardship District and the City of Edgewater in delivering an innovative infiltration wetland system that redirects reclaimed water away from the nutrient sensitive Indian River Lagoon and into a sustainable groundwater recharge solution. Designed to mimic natural depressional wetlands, the system uses groundwater connected deep zones, graded bottoms, and concentric vegetation to remain functional across highly variable seasonal flows. This nature based, design build project improves water quality, enhances ecological function, and strengthens long term resilience for one of North America’s most biodiverse estuaries. Jacobs has secured permits for this project and is providing final design during the Spring of 2026.</p>
<p>Lead Designer Reference Jeff Harris Organizational Performance Advisor Pasco County jharris@pascocountyfl.net 305.336.7042</p>	<p>Jacobs supported Pasco County Utilities in advancing beneficial reuse of reclaimed water through the development, planning, and design of two major natural treatment and restoration projects: the 4G Ranch Wetlands and the Crews Lake Natural Systems Restoration. The 4G Ranch Wetlands project features 176 acres of constructed infiltration wetland cells designed to manage up to 5 MGD of surplus reclaimed water. The Crews Lake initiative proposed applying reclaimed water to a dry lakebed in northern Pasco County to restore lake levels and enhance habitat. Although the Crews Lake project was not ultimately constructed, it demonstrates Jacobs’ robust capabilities and innovative design approach for large scale ecological restoration and natural systems projects.</p>
<p>Lead Designer Reference Beth Carsten City Administrator City of Arcadia ecarsten@arcadia-fl.gov 863.494.4114 ext. 1309</p>	<p>Jacobs partnered with the City of Arcadia to develop an intensified treatment marsh that provides a rapid, cost-effective solution for ammonia reduction at the William Tyson WWTP. The project retrofits existing ponds into a super oxygenated wetland system using a Speece Cone recirculation process, enabling nitrification and reducing ammonia from as high as 28.9 mg/L to less than 1.3 mg/L to meet regulatory limits. Selected for its low cost, quick implementation, and long-term ecological value, the intensified marsh will support permit compliance and later serve as a passive polishing wetland and potential ecological education space. Jacobs provided design and permitting services and will support construction services starting in Spring 2026.</p>





Management Plan

Kick Off Meeting and Monthly Team Project Meetings

Immediately upon Notice to Proceed, our team will conduct a formal kickoff meeting with the County and key stakeholders to confirm project objectives, communication protocols, decision-making procedures, and technical priorities. This meeting will include a site visit to observe existing hydrologic conditions, including drainage features, spoil mounds, canal interfaces, and areas anticipated for ditch block placement, low-water ford crossings, flow way reconnection, and potential seepage barrier evaluation along Gator Slough Canal.



During the kickoff meeting, the team will ask questions regarding the current MIKE SHE/MIKE 11 modeling framework, confirm available datasets, identify known data gaps, and will discuss field access logistics. We will also finalize the baseline critical path method (CPM) schedule, confirm document control procedures, and establish expectations for reporting, invoicing, and coordination with regulatory agencies. The objective of the kickoff meeting is to ensure alignment among all parties before fieldwork and modeling refinement begins.

Following project initiation, structured bi-weekly team meetings will serve as the primary coordination mechanism for providing updates on technical progress, schedule management, and budget oversight. These meetings will provide updates on survey augmentation, geotechnical investigations, model refinement, and design development progress. We will also review budget performance relative to task completion, discuss emerging technical findings, and coordinate upcoming field or agency engagement activities. Agendas will be distributed in advance to focus discussion on decision points and technical milestones. Detailed meeting notes, including action items with assigned responsibilities and due dates, will be provided within one week to maintain accountability and project continuity. If needed, additional technical work sessions will be scheduled between meetings to address time-sensitive modeling or permitting issues without delaying overall progress.

Topographic Data Review and Work

Accurate topographic information is fundamental to hydrologic modeling accuracy and restoration design reliability. At project initiation, our team will perform a comprehensive review of all available elevation data, including LiDAR-derived digital elevation models, previously collected survey control, mapped drainage features, and any existing cross-sections within the Yucca Pens system. This evaluation will assess datum consistency, horizontal and vertical accuracy, spatial resolution, and representation of hydrologically significant features such as ditches, berms, spoil mounds, and canal interfaces.

Particular attention will be given to the accuracy of features influencing surface water conveyance and groundwater interaction, including drainage pathways, canal tie-ins, and areas adjacent to Gator Slough Canal. The modeling refinement effort will incorporate a localized variable grid resolution (targeting approximately 100-foot grid spacing in priority areas), and we will assess whether existing data supports that level of refinement or if supplemental survey is required.

Based on this analysis, we will prepare and implement a targeted survey augmentation plan focused on proposed ditch block and weir locations, low-water ford crossings, seepage barrier alignment zones, and areas critical to flow way reconnection. Survey work will be sequenced to directly support modeling updates and preliminary grading development. All collected data will undergo QA/QC review prior to integration into the geodatabase and modeling platform. The refined topographic dataset will support both calibration improvements to the existing conditions model and accurate grading and structure elevation development during the engineering design phases.

Geotechnical Work

Geotechnical investigations will be strategically integrated with modeling refinement and design development to ensure that proposed restoration features are both hydraulically effective and constructible. Given the anticipated incorporation of ditch blocks, low-water fords, and evaluation of a groundwater seepage barrier along Gator Slough Canal, subsurface characterization is essential to confirm soil stratigraphy, hydraulic conductivity, and structural stability.

Early in the project, we will develop a Geotechnical Investigation Plan identifying boring locations based on preliminary modeling sensitivity analyses and the anticipated footprint of proposed structures. Investigation areas will include ditch



block locations, embankment modification zones, low-water crossing alignments, and the proposed seepage barrier corridor. Fieldwork will consist of soil borings advanced to depths sufficient to characterize confining layers and assess vertical hydraulic gradients, along with groundwater observations and laboratory testing of relevant parameters.

Laboratory analyses will focus on soil classification, permeability, strength characteristics, and other properties necessary to evaluate bearing capacity, seepage behavior, and structural integrity. For seepage barrier evaluation, subsurface data will be used to determine the feasibility of cutoff walls, grout curtains, or other control measures by confirming the depth and continuity of low-permeability strata. Findings will directly inform both the hydrologic model parameterization and engineering design calculations supporting the 60% and 90% submittals.

A comprehensive Geotechnical Report will document field procedures, laboratory results, interpreted soil profiles, groundwater observations, and design recommendations. By integrating geotechnical analysis with hydraulic modeling and preliminary design, we reduce uncertainty, improve constructability, and minimize the potential for costly changes during later design stages or construction.

Hydraulic and Hydrologic Modeling

Updates to the Existing Conditions MIKE SHE Model

The Charlotte Harbor North Tidal Cocohatchee River Basin (CH-NCRB) MIKE SHE Model has a long history of evolution, as summarized in the Charlotte Harbor Flatwoods Initiative Hydrological Model Project and Planning Tool report. There are several versions of the CH-NCRB MIKE SHE model that have been used over the last two decades with different purposes. The RES project team has worked extensively on

the model over many years and is knowledgeable of the evolution. We propose a review of the latest model updates that are relevant to the project to be incorporated. For example, updates in the northern Cape Coral system, which impacts the water levels in Gator Slough are relevant to represent interactions between Yucca Pens and Cape Coral. Recommendations provided in the Charlotte Harbor Flatwoods Initiative Hydrological Model Project and Planning Tool report will be incorporated into the refined model, which include: review and updates of the model topography with survey information, incorporation of additional 1D channels, review and update of the hydrogeology, and extension of the simulation time period to incorporate the latest monitoring data and to be representative of various climatic conditions. Additional considerations should also include review of land use and stormwater drainage representation that may impact the areas of interest, as well as the representation of the wetland flow barriers in the model.

The model will be calibrated to include the extended period of time in which more recent data is available with a focus on the Babcock Webb and the Yucca Pens wildlife management areas (WMAs) and Gator Slough, and stations in the western portions of North Fort Myers basins will also be checked to ensure groundwater flow directions are well represented. The calibration period and approach will be coordinated with the project team.

MIKE Zero software, the user interface and umbrella for the MIKE models executables, have been extensively updated in the recent years. To take advantage of improvements to MIKE Zero, the model input files will be updated from the 2020 version used in the previous modeling to a more recent version. This benefits the project because it increases processing efficiency, makes the model compatible with the DHI supported versions, and makes future updates to the model more seamless and efficient. There are two options for updating the model version.

- MIKE Zero 2023 – latest update that supports MIKE 11. If the project team prefers to keep MIKE 11 as the 1D model, then the version of the model can be updated to the 2023 version.
- MIKE Zero 2026 – does not support MIKE 11. MIKE 11 has been discontinued since the 2024 version. This requires the update of the MIKE 11 model to the new 1D model platform, MIKE+. The advantages of the new platform are several, including new features in the graphical interphase, GIS capabilities, and DHI support. In general, the update is simple and automatic, except for the coding of control structure operations, which involves a more manual manipulation. However, since the operations in the previous model are relatively simple, this process is not anticipated to take long to do (~ one day). Thus, this option would be the RES team recommendation and if the project team opts to update the model to the MIKE Zero 2026 version, this can be efficiently conducted as a part of the modeling effort.



THE RES PROJECT TEAM HAS WORKED EXTENSIVELY ON THE MIKE SHE MODEL OVER MANY YEARS AND IS KNOWLEDGEABLE OF ITS EVOLUTION.



Data collection for the model refinement will include:

- Latest LiDAR topography and surveys
- Surface and groundwater levels
- Surface water flows
- Cape Coral operation data
- Latest hydrogeologic studies and data
- Latest SWFWMD and SFWMD land use
- ERP documents for relevant developments

Development of Local Scale Models

The process of extraction of local scale models for the North Tidal Cocohatchee River Basin can be challenging due to the connectivity of the large wetland systems within the basin (Babcock Webb WMA, Gator Slough basin, Yucca Pens, Prairie Pines Preserve and western basins in North Ft. Myers), and in those locations it can be difficult to determine clear sub-basin divides. Moreover, increasing the model resolution requires adjustments of model components to properly represent surface and groundwater exchanges at the higher resolutions, which could be time consuming. However, boundary conditions can be extracted from the calibrated CH-NCRB model that is a part of this effort to a local scale for the scenarios where more detailed resolution of the model topography is needed. Groundwater flow results will be analyzed to determine the appropriate local scale boundary that covers and extends out from the area of interest. The resolution of the local scale models will be assessed based on model run times and the tradeoff between resolution and loss of information that makes a significant difference in the scenario predictions.

Scenario Development

In order to quantify the relative benefits of the scenarios, performance measures and targets will be defined in coordination with the project team. These may include, for example, magnitude, timing and duration of discharges and stages in the Yucca Pens streams, as well as changes in hydroperiod and groundwater levels. These results will be presented in relation to the vegetation types and ecosystem information to be collected.

Models for the three scenarios described in the RFP and potentially a fourth scenario that includes the addition of culverts under the FPL will be developed with the updated model. A potential strategy to move between local and watershed scales for the scenario evaluation is to upscale the effect of the high-resolution local model in the large model via parameter adjustment (e.g., conductivities, leakage coefficients, etc.). The RES team has previous experience in this kind of effort using MIKE SHE models at various resolutions for seepage analyses across a subsurface flow barrier (or cutoff wall). For example, by adjusting the hydraulic conductivities along the cutoff wall with different values at various resolutions, the seepage flow simulated at very fine resolutions can be approximated at the lower resolutions. This upscaling approach is useful to see the impact of the scenarios at various scales.

The scenario results will include maps and plots at key locations and comparison between scenarios and baseline conditions. These will present the changes in performance measures and targets. Automatic tools that evaluate these types of metrics have been developed by the RES team in previous projects and can be leveraged and can be customized for this project. Iterative adjustments to the scenarios can be performed to improve on the target metrics to increase project benefits.



AUTOMATIC TOOLS HAVE BEEN DEVELOPED BY THE RES TEAM IN PREVIOUS PROJECTS AND CAN BE CUSTOMIZED AND LEVERAGED FOR THIS PROJECT.

Ecological Assessments

RES will provide ecological permitting support and coordination for the regulatory agency permitting effort. This will include wetland delineations, protected species assessments, and mitigation for proposed impacts. Field reviews will be performed early in the process to verify and document existing conditions for wetlands, surface waters and protected species in accordance with state and federal guidelines and demonstrate avoidance and minimization.

Wetlands and surface waters will be delineated in general accordance with the State Unified Wetland Delineation Methodology (Chapter 62-340 F.A.C.) and the USACE Regional Supplement to the USACE Wetland Delineation Manual:



Atlantic and Gulf Coastal Plain Region (November 2010). The occurrence of hydric soil characteristics, hydrophytic vegetation, and evidence of hydrology were used to identify the existence of wetland features on the site. In addition, impacts to these resources will be assessed using the Uniform Mitigation Assessment Method (UMAM). Proposed mitigation will also be assessed using UMAM to demonstrate that any lost wetland function will be offset when the project is completed. The results of the wetland and surface water assessments will be documented in a Natural Resource Evaluation (NRE) report.

The project is located within the United States Fish and Wildlife Service (USFWS) consultation area for the Florida bonneted bat, Tricolored Bat, Florida panther, West Indian manatee, crested caracara, Eastern black rail, Everglade snail kite, Florida scrub-jay, red cockaded woodpecker, Eastern indigo snake, monarch butterfly, aboriginal prickly-apple, and beautiful pawpaw. Since the project occurs within the Yucca Pens Wildlife Management Area, there are suitable, natural habitats available for many of these species. Background research and general species surveys at the appropriate time of year will be conducted in concert with the project schedule to determine the likelihood of occurrence for each of these species as well as for state-listed species such as the gopher tortoise and Florida sandhill crane. Results will be provided in the NRE report.

Archeological Investigation

RES will support the wetland habitat enhancement and flood-improvement work by providing a qualified professional archaeologist to conduct a Cultural Resource Assessment Survey (CRAS) as defined by the Florida Division of Historical Resources (FDHR). The survey will include background research and archaeological fieldwork within an Area of Potential Effect (APE), as determined by the lead state agency in consultation with

FDHR. The purpose of the Phase I survey is to locate, identify, and evaluate any cultural resources present within the APE. In most cases, the APE (or survey area) is limited to locations where subsurface disturbance is proposed. A typical archaeological assessment survey, as defined by FDHR, includes an initial reconnaissance survey, systematic and judgmental subsurface shovel testing, site bounding (if necessary), and mapping of any archaeological or historical resources identified during fieldwork. RES uses ESRI ArcGIS Pro and Survey123 to collect accurate field data and maintain an in-house GIS team to produce the geodatabase files required for this project. Because this project is located on state-owned land, a 1A-32 permit from DHR's Compliance and Review Section will be required prior to initiating archaeological fieldwork.

Tasks supporting the cultural resources component will include consultation and coordination with the lead state agency, the Florida Bureau of Natural and Cultural Resources, and FDHR. Additional tasks include corresponding with DHR's Compliance and Review Section to obtain the 1A-32 permit, conducting research for the desktop analysis, and performing a Phase I archaeological survey to determine the presence or absence of archaeological sites and/or historic resources within the APE. Findings from these tasks will be presented in a CRAS report submitted to DHR for review and to the Florida Master Site File (FMSF) for curation.

The cultural resource portion of this project will include five deliverables:

1. 1A-32 State Lands Permit
2. Desktop Analysis Report
3. Phase I CRAS Report
4. Florida Master Site Forms (FMSF)
5. GIS Geodatabase files



THE RES TEAM INCLUDES IN-HOUSE STAFF
SPECIALIZED IN CULTURAL RESOURCES WITH
EXPERIENCE IN FLORIDA.



Engineering and Design Plan Development

Our team approaches Engineering and Design Plan Development as a unified partnership, where hydrology, ecology, engineering, and constructability are interwoven from the first conceptual sketch to the final construction ready drawing. Working side by side across modeling, geotechnical, ecological, archaeological, and permitting disciplines, we develop 30%, 60%, 90%, and 100% plans that translate analytical insight into practical, constructable restoration features for the Yucca Pens Wildlife Management Area. At this stage technical findings, stakeholder priorities, and regulatory requirements converge into a fully coordinated, bid ready package.

Because this project will reshape how water flows across nearly 8,000 acres of the Charlotte Harbor Flatwoods, our design philosophy centers on a core ecological truth: hydrology drives ecology. If we dial in the proper hydrology and restore a wetland’s characteristic timing, depth, duration, and variability, then the vegetation, habitat, biogeochemistry, and long-term resilience will follow. For us, ecological engineering is the means to create the hydrologic conditions required for nature to rebuild itself and sustain that recovery in perpetuity.

A Design Approach Rooted in Restored Sheet Flow Hydraulics, Hydrology, Ecology, and Constructability

Our work begins with the refined MIKE SHE/MIKE 11 modeling completed under Tasks 4a and 4b, which reveal the site’s surface water recession behavior, groundwater responses, tidal interactions, long term hydroperiod patterns, and the system’s sensitivity to ditch block spacing, seepage barrier depth, and flow way inflow rates. Yet the model is only the first lens. To ensure the restored wetlands function like natural systems and not engineered imitations, we supplement model outputs with detailed long term water budget calculations and regionally grounded hydropattern analysis.

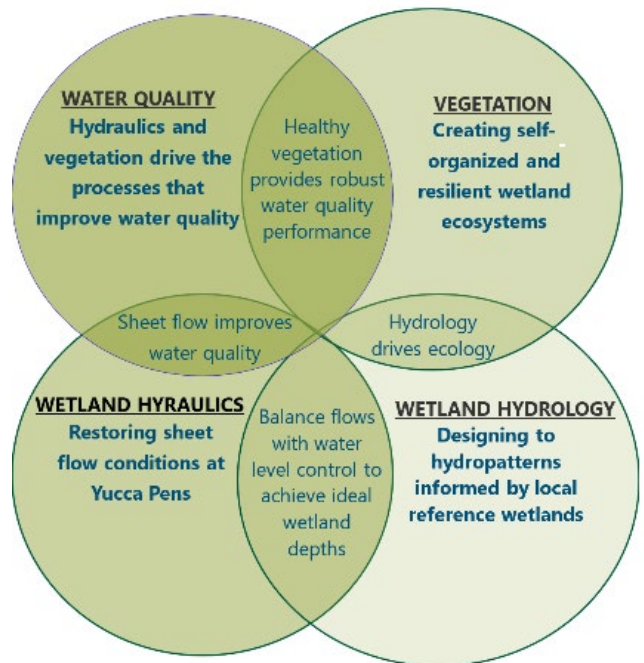
Using rainfall runoff relationships, infiltration profiles, evapotranspiration patterns, and site-specific soil properties, we calculate multiyear water budgets that characterize how restored depressional, marsh, and flatwoods wetlands should behave across wet and dry seasons. We then compare those theoretical hydrologic patterns with reference wetlands in the Charlotte Harbor Flatwoods region, where natural hydroperiods remain intact and serve as the ecological benchmark. This comparison yields stage duration and stage exceedance curves for both reference and restored conditions, enabling us to design towards hydropatterns that foster the correct species assemblages, habitat structure, and long-term resilience.

The synthesis of hydrology with ecology guides our engineering. The crest elevations of ditch blocks and low-water fords, along with the flow-way operating characteristics and outlet structure control elevations, are designed to achieve the intended hydropatterns. These features function effectively not only in average years but across the full range of climatic conditions, from extended drought to extreme rainfall.

Engineered wetlands cannot foresee future conditions, but wetlands designed to the right hydropattern can adapt to them.

Using Compound Weirs and Nature Mimicking Structures to Recreate Hydropatterns

Achieving these hydropatterns depends on the careful design of hydraulic control structures. Our team is experienced in designing compound weirs, an approach that mirrors natural systems by providing differentiated flow pathways for low flow, seasonal flows, and extreme events. Low crests support base flow hydrology and sustain soil moisture for plant communities during the dry months. Higher stages engage only during extreme weather, allowing the system to safely convey storm flows without eroding sensitive features or disrupting vegetation succession.



Our wetland design approach integrates water quality, vegetation, biogeochemistry, hydrology, and hydraulics to deliver resilient, high-performing ecosystems



These compound weir configurations mimic the nuanced elements found in natural wetlands, where shallow sill features, micro topography, and vegetative roughness create a dynamic range of storage and release behaviors. Incorporating these ecological design strategies supports vegetation communities in self-organization and self-adaptation, reducing future maintenance needs and increasing ecological value. The result is a system that functions like a natural wetland rather than a rigid engineered structure.

30% Design – Establishing the Framework for a Restored Flow System

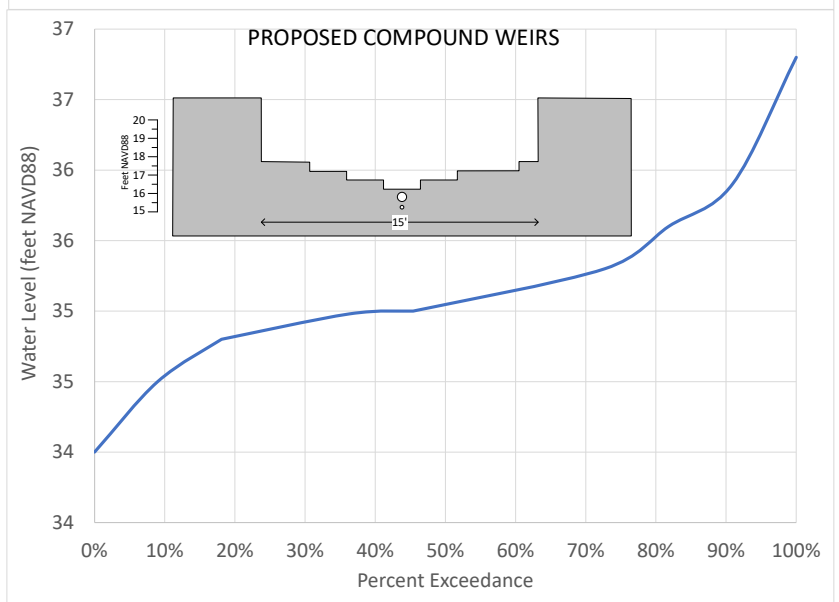
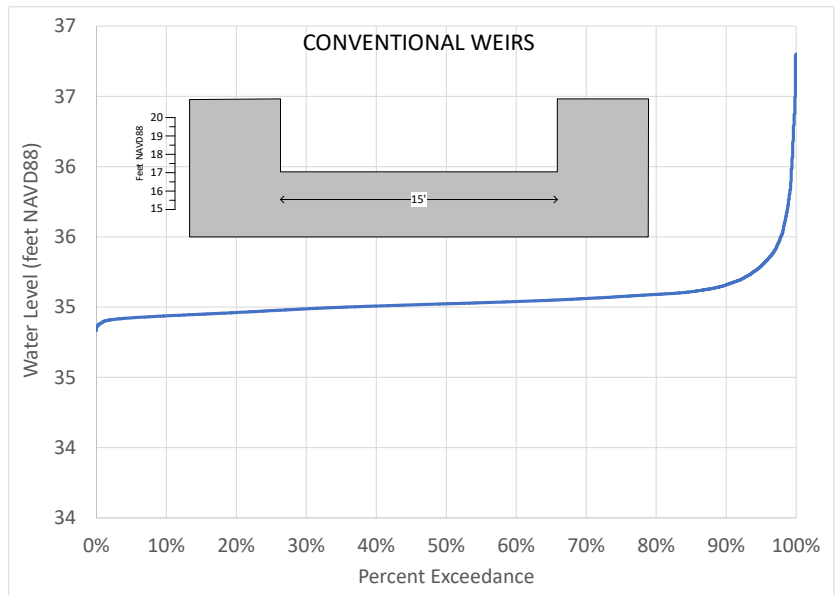
By the 30% stage, the project’s engineering framework emerges. Modeling results, water budget analysis, reference hydropatterns, geotechnical findings, and ecological constraints converge into a clear spatial arrangement of the project’s major features. We illustrate the initial layout and conceptual dimensions of ditch blocks, weirs, low water fords, the groundwater seepage barrier, and the routed flow way.

These plans include early grading footprints and representative sections designed to support the desired hydropatterns, along with construction access strategies that minimize disturbance to sensitive areas. This milestone serves as a shared checkpoint to give the County, CHNEP, and all permitting agencies confidence that the conceptual engineering aligns with the project’s hydrologic and ecological objectives before detailed design begins.

60% Design – Transforming Concepts into Engineered Systems

At 60% design, the project transitions from a hydrology driven conceptual layout to detailed engineering. The target hydropatterns derived from the stage exceedance curves determine control elevations, spillway widths, roughness coefficients, and embankment geometries. Simultaneously, geotechnical findings inform the seepage barrier’s depth profiles, borehole spacing, and grout specifications.

Each ditch block, weir, and ford becomes a detailed feature designed to operate predictably across the region’s climatic range. Flow way elements, including culverts, are sized to balance conveyance and ecological function. This phase also includes deliberate constructability reviews by evaluating wet season access, staging areas, hauling paths, and turbidity management practices to ensure that the features can be built efficiently and with minimal impact on the surrounding ecosystem.



Compound weirs engineered to reflect local hydrologic conditions replicate reference wetland hydropatterns, fostering self-organized and resilient wetland ecosystems

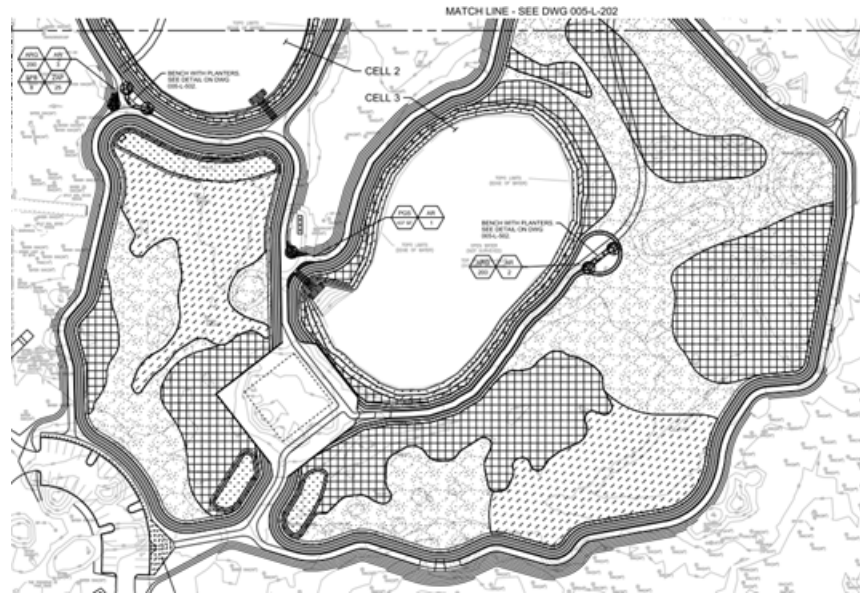


90% Design – Integrating Permitting, Refining Details, Preparing for Bid

By 90%, the design is near final, and this milestone represents the bridge between engineering and permitting. As required by the RFP, the 90% plans include the level of detail necessary for agency permit submittals.

Throughout the project, we collaborate closely with internal team and agency permitting specialists to weave wetland protection, wildlife considerations, erosion control measures, and access restrictions into the design long before the 90% stage, reducing RAIs and avoiding costly redesign. Our success at Crews Lake, the first herbaceous natural wetland permitted under Florida’s Wetland Application Rule, demonstrates the value of this integrated and highly collaborative approach.

The 90% package includes fully detailed plan sheets, specifications, bid itemization, flow calculations, and a refined cost estimate. At this point, the design clearly communicates constructability, ecological resilience, and environmental protections.



Detailed 90% planting plan for the Ocala Wetland Recharge Park illustrating micro-elevation design that supports diverse hydrologic zones, minimizes grading, and fosters resilient, biodiverse wetland communities

100% Design – A Complete, Integrated, Permit Compliant Package

At the 100% stage, our team delivers a cohesive, integrated set of plans and specifications that reflect every resolved comment from agencies, partners, and stakeholders. These final documents are informed by modeling, water budgeting, reference wetland hydropattern comparison, ecological conditions, geotechnical inputs, and constructability review, creating a set of construction documents aligned with the County’s goal of a shovel ready restoration project.

The 100% package includes sealed plan sheets, final specifications, a permit condition compliance matrix, contractor sequencing guidance, and a fully updated cost estimate. The design at this stage is not simply engineered, it is ecologically coherent, hydrologically sound, and fully implementable.

A Collaborative, Integrated Design Partnership that Engineers with Nature

Although our team members contribute distinct expertise, we work as a single, coordinated partnership guided by a shared ecological engineering philosophy and a common set of hydrological restoration objectives. Our design decisions emerge from continuous dialogue among modelers, ecologists, engineers, and permitting practitioners. This integrated process ensures that each design element supports the restored hydrology, reinforces ecological outcomes, and contributes to a system that will sustain itself over time.

At its heart, our approach is one of Engineering With Nature: creating the conditions that allow wetlands to function, adapt, and thrive, responding to climatic variability with the same grace and resilience as natural systems do. By aligning engineered features with the hydropatterns that sustain ecological communities, we deliver a sustainable restoration design that will mature into a self-maintaining, self-organizing landscape, fulfilling the County’s long-term vision for Yucca Pens.

Permitting Applications and Pre-Application Meetings

Permitting will proceed in coordination with design development to minimize schedule risk. Our team will schedule pre-application meetings at the completion of 30% design plans to engage the agencies early in the process. This early engagement will help identify concerns and plans to incorporate those concerns into the 60% Plans.

Application packages will be developed at 90% design plans and include detailed engineering plans, environmental documentation, construction methods, and impact assessments. Supporting documentation may include habitat benefit narratives, water quality considerations, and erosion control measures.



Responses to review comments will be tracked and addressed promptly to maintain the schedule. Coordination meetings will be held as needed to resolve technical questions.

General Schedule of Anticipated Deliverables

Our team will implement a milestone-driven management approach to guide the hydrologic restoration project at the Yucca Pens Unit State Wildlife Management Area from project initiation through final design and permitting. Given the scale of hydrologic modeling refinement, field investigations, stakeholder coordination, and regulatory review anticipated for a project of this magnitude, we estimate an overall duration of approximately **14 months** from Notice to Proceed to delivery of **100% bid-ready and permitted documents**. To achieve this schedule, our work plan intentionally sequences several tasks to occur concurrently where feasible, allowing technical analyses, field investigations, and design development to progress in parallel while maintaining appropriate decision points and quality control reviews.

A key component of the schedule involves refinement and expansion of the existing hydrologic model. Based on recommendations from prior technical evaluations of the Yucca Pens system, our approach includes extending the simulation period of the existing MIKE SHE/MIKE 11 modeling framework. Extending the model simulation period will require updating and extending all time-varying input datasets, including rainfall, evapotranspiration, boundary conditions, groundwater levels, and other hydrologic drivers. Our schedule accounts for the time required to assemble and quality-check these datasets and to recalibrate the model to ensure reliable performance over the expanded simulation period. Once the extended baseline model is calibrated, it will serve as the foundation for evaluating restoration alternatives that operate at different spatial and temporal scales. Because alternative scenarios will require both watershed-scale evaluations and more localized refinement in areas where restoration features are proposed, modeling tasks will proceed iteratively and in coordination with field investigations and preliminary design development. This overlapping workflow allows survey, geotechnical investigations, ecological assessments, and restoration concept development to inform modeling updates in real time, accelerating the evaluation of alternatives while maintaining technical rigor. The table below summarizes the anticipated major tasks, deliverables, and general start times relative to Notice to Proceed (NTP).

The Project Manager will maintain the schedule as a living document throughout the project. Monthly updates will compare planned versus actual progress, identify critical path tasks, and proactively address potential delays, particularly those associated with field conditions or regulatory review timelines. Where feasible, tasks will be overlapped (e.g., modeling refinement concurrent with field investigations) to compress overall duration without increasing risk. Regulatory coordination will begin during preliminary design to reduce downstream permitting delays. This milestone-based management framework ensures that technical development, agency coordination, and cost estimating progress in parallel, positioning the County to move efficiently from planning through final permitted design.





Previous Team Experience

Engineering

RES and Jacobs have partnered on large-scale restoration and water resource initiatives, most recently the East Winter Haven Aquifer Recharge and Wetland Restoration Project in Winter Haven, Florida (also known as the first bead in the “Sapphire Necklace”). This project closely parallels the Yucca Pens Hydrologic Restoration effort in terms of regional hydrology, groundwater/surface water interaction, regulatory coordination, and restoration-driven infrastructure design.



OUR PAST EXPERIENCE WORKING TOGETHER AS
A COHESIVE TEAM WILL PROVIDE THE COUNTY
WITH STREAMLINED AND EFFICIENT PROJECT
IMPLEMENTATION.

The East Winter Haven project was developed to create a resilient, multi-nodal water resource system connecting multiple water sources along the Sapphire Necklace corridor. The project objectives included increasing surface and groundwater storage and conveyance capacity, achieving a minimum well injection volume target of 2 MGD, restoring hydrologic and ecological function, and improving regional water quality. Approximately 150 acres of floodplain swamp, 125 acres of wetlands, and 200 acres of open water habitat are being restored while also reducing nutrient loading to local aquifer systems and improving dissolved oxygen levels. In addition, the project incorporated public amenities, including approximately four miles of trails and nine acres of natural park space. The regulatory and hydrologic complexity of East Winter Haven required addressing Minimum Flows and Levels in Peace Creek, compliance with Chapter 62-611 F.A.C., and coordination with local municipalities and state agencies. Similar to Yucca Pens, the project required careful balancing of surface water storage, ecological restoration, and stakeholder expectations within a sensitive hydrologic basin.

In this effort, RES led nature-based design, restoration implementation planning, and lifecycle stewardship strategy. Jacobs provided engineering, ecological planning, and regulatory coordination support. The firms worked collaboratively from conceptual design through technical refinement, integrating hydrologic modeling outputs into restoration structure design and permitting documentation. The coordination model employed in East Winter Haven mirrors the integrated delivery approach proposed for Yucca Pens.

Modeling

Jacobs and Collective Water Resources have partnered on multiple modeling efforts of similar size and technical complexity, including regional DHI (MIKE SHE/MIKE 11) modeling applications in southwest Florida. Their recent collaboration on the Corkscrew Watershed Initiative required refinement of large-scale integrated surface water/groundwater models to evaluate watershed-scale restoration alternatives, water budget analyses, and groundwater/surface water interactions.

The RES Team, with Jacobs and Collective have unmatched groundwater and surface water expertise, with extensive experience in wetland/ecological restoration and design. Collective, led by Dr. Maria Loinaz, brings deep experience in southwest Florida hydrology and advanced DHI modeling applications. Their familiarity with the local hydrology and geology in the project area, regional groundwater systems, canal influences, and restoration-driven hydraulic adjustments directly aligns with the proposed hydrologic restoration and design of Yucca Pens. Jacobs and Collective have an established workflow for model refinement, calibration, sensitivity analysis, evaluation, and translation of modeling outputs into defensible engineering design decisions.

Survey

CivilSurv Design Group provided survey services for the East Winter Haven project and maintains an ongoing working relationship with the team under the SWFWMD GES Chapter C contract. Their familiarity with restoration-driven survey augmentation, elevation control requirements for hydraulic modeling, and integration with engineering design ensures efficient coordination between field data collection and model refinement. CivilSurv’s established working relationships with Jacobs and RES streamline mobilization, QA/QC review processes, and digital data integration. Their regional presence in Lakeland and across central and southwest Florida further strengthens field responsiveness and schedule reliability.

Geotechnical Investigation

Schnabel has provided geotechnical engineering support to RES on numerous projects involving shoreline stabilization, embankment structures, and restoration-related geotechnical systems. Their experience supporting nature-based infrastructure, including seepage-control features and engineered retention systems, directly complements the hydrologic and structural elements anticipated at Yucca Pens. Their long-standing working relationship with RES ensures seamless integration of subsurface investigations, permeability analysis, and foundation design into restoration-driven infrastructure.



Project Control Schedule

Our team recognizes that field-based sample collection and laboratory analysis efforts are inherently subject to variables such as weather events, site access limitations, equipment availability, laboratory turnaround constraints, and evolving regulatory or stakeholder requests. Our process for managing and negotiating unanticipated changes to the sample collection or analysis schedule is proactive, collaborative, and accountable, ensuring that adjustments are addressed early, evaluated jointly, and resolved with clear responsibility and documentation.



SCHEDULE CONTROL WILL BE A
COLLABORATIVE AND TRANSPARENT PROCESS
WITH THE COUNTY.

Our approach is proactive in that potential risks to sampling events are evaluated before mobilization, including seasonal weather patterns, site access coordination, laboratory capacity confirmation, and equipment redundancy planning. Contingency allowances are built into the baseline schedule where appropriate. If a condition arises that may disrupt the approved sampling timeline, we do not wait for a missed milestone; instead, the Project Manager will notify the County in writing within two business days of identification and outline preliminary response options. Early notification preserves schedule flexibility and reduces the likelihood of compounding delays.

The process is collaborative because any proposed modification, whether initiated by the County or our team, is evaluated jointly with the County to confirm the technical need, regulatory implications, and downstream effects on modeling, reporting, or permitting. Following initial notification, we will prepare a concise Technical Impact Memorandum describing the unforeseen condition or requested change, identifying affected sampling events or analytical parameters, evaluating schedule implications (including critical path considerations), and assessing cost impacts. This memorandum will present practical alternatives where available, allowing the County to make informed decisions based on technical merit, cost, and schedule considerations.

The process is accountable in that no changes to the approved sampling scope, analytical suite, or schedule will be implemented without written authorization from the County. All proposed adjustments will clearly identify associated labor, laboratory, and logistical costs, and any impacts to subsequent project tasks. Once approved, revisions will be incorporated into an updated sampling schedule and, if required, a formal contract modification or work authorization amendment. Responsibilities, revised milestones, and reporting deadlines will be clearly documented to prevent ambiguity.

If the County requests additional sampling locations, expanded analytical parameters, or adjusted timing, we will provide a written scope and fee proposal detailing incremental costs and schedule adjustments. Conversely, if unforeseen field constraints or technical findings necessitate modification by our team to maintain data integrity or regulatory compliance, we will provide supporting documentation demonstrating the need for the adjustment and outlining alternatives where feasible.

Cost

Cost control will be managed through a structured project management framework that integrates budgeting, tracking, forecasting, and internal review procedures from project initiation through final deliverable submission. The project budget will be broken down by task and subtask consistent with the scope of services and grant requirements. This task-based budget structure will align directly with the project schedule to ensure scope, schedule, and cost remain integrated throughout the project lifecycle.



THE COUNTY WILL RECEIVE UPDATED BUDGET
INFORMATION ON A REGULAR BASIS.

The control techniques planned to manage project costs include task-based budgeting aligned with the scope of services, real-time tracking of labor and expenses through established accounting systems, monthly internal budget reviews, earned value-based comparison of actual costs to percent complete, milestone-based cost checkpoints at 30%, 60%, 90%, and 100% design stages, subconsultant scope tracking, proactive variance identification, and implementation of corrective actions when needed.



Project costs will be monitored using established accounting and project management systems that track labor hours, billing rates, subconsultant expenses, and direct costs in real time. Monthly internal budget reviews will compare actual expenditures against the planned budget and percent complete for each task. This earned value-based approach allows early identification of cost variances and enables corrective measures before impacts become significant. Any anticipated variance will be communicated promptly to the County with recommended mitigation strategies.

At each major design milestone, the team will evaluate the level of effort relative to progress achieved to confirm that remaining work can be completed within the established budget. This stepwise review process provides structured cost control checkpoints throughout the project.

Our team has demonstrated the ability to meet project cost control requirements on federally and state-funded coastal and habitat restoration projects by delivering services within fixed budgets, maintaining disciplined scope management, proactively coordinating with regulatory agencies, and identifying technical challenges early to prevent cost overruns.

The Project Manager will be responsible for overall cost control and financial performance of the project. The Project Manager will oversee budget development, review monthly cost reports, approve invoices, and ensure alignment between project progress and expenditures. The Project Manager will serve as the primary point of contact with the County and CHNEP regarding financial matters and will provide transparent reporting on budget status throughout the project.

Supporting this responsibility, technical leads will monitor discipline-specific labor utilization to ensure consistency with the planned level of effort, and subconsultant expenditures will be tracked against approved scopes to prevent cost creep.

While cost accountability is shared across the project team, ultimate responsibility for maintaining budget compliance rests with the Project Manager, who has the authority to adjust staffing allocations, redistribute resources, and implement corrective actions to maintain financial performance.

Recent, Current and Projects Workloads

RES understands that superior customer service and attention to our client's needs are paramount in our competitive marketplace, it is our license to operate. The workload for our assigned project team will not be an issue as we have already budgeted time for this project. We have more than sufficient capacity to perform assigned tasks under any resulting contract. On a quarterly basis, RES' senior leadership conducts a finance and resource budgeting analysis. During these planning cycles, RES considers work in progress and currently projected workloads paired with a review of pipeline opportunities to develop resource projections for the upcoming period. To maintain proper staffing levels and resource loading, RES plans and appropriately staffs our regional offices with strategic new hires and capacity in anticipation of winning new opportunities such as this opportunity with the County. RES has planned for winning several projects of this size and complexity and has the necessary capacity and is more than capable of providing the level of quality, responsiveness, and client service that you expect and deserve.



RES PROACTIVELY EVALUATES AVAILABLE RESOURCES AND AVAILABLE CAPACITY TO ENSURE WORKLOADS ARE PROPERLY BALANCED TO ENSURE OUR PROJECT TEAMS REMAIN RESPONSIVE TO THE NEEDS OF OUR CLIENTS.



Design Approach

Processes for Scheduling, Coordinating, and executing data collection, survey work, H&H Modeling and Other Analyses.

Upon Notice to Proceed, our team will implement a milestone-driven project management framework designed to integrate data collection, survey augmentation, geotechnical investigations, hydraulic and hydrologic (H&H) modeling, and supporting technical analyses into a coordinated and efficient workflow for the Yucca Pens restoration project.

The project will begin with the development of a detailed CPM schedule identifying task dependencies, regulatory coordination milestones, design review stages, and deliverable due dates aligned with the 30%, 60%, 90%, and 100% design submittals. This schedule will be maintained as a live



project management tool and updated monthly to reflect progress and emerging conditions. Interdependencies between topographic survey work, geotechnical borings, groundwater analysis, and model refinement will be clearly mapped to ensure that field activities directly support modeling needs and subsequent design decisions.

The first technical task will consist of a comprehensive data sufficiency review of existing topographic data, groundwater monitoring records, previous modeling files, and relevant documentation prepared by CHNEP. This review will identify gaps in spatial resolution, subsurface characterization, and monitoring coverage. Based on this evaluation, we will coordinate targeted survey augmentation and geotechnical investigations in priority areas such as proposed ditch block locations, low-water ford crossings, and along the planned seepage barrier alignment adjacent to Gator Slough Canal. Field efforts will be sequenced to minimize mobilizations and optimize data collection efficiency.

Hydraulic and hydrologic modeling will proceed in phases. The existing MIKE SHE/MIKE 11 model will be refined to a localized scale using a variable grid resolution, incorporating updated monitoring data and extending the calibration period to confirm model performance under both wet and dry season conditions. Once existing conditions are validated, we will conduct scenario testing to evaluate the hydraulic performance of ditch blocks, weirs, low-water fords, the groundwater seepage barrier, and the proposed dry-season flow augmentation from Bond Farm HEI. Sensitivity analyses will be used to optimize structure sizing and placement and to support prioritization in the event of phased implementation. Model outputs will directly inform design elevations, structure dimensions, and anticipated hydroperiod improvements, ensuring that engineering decisions are supported by defensible technical analysis.

All technical data collected will undergo internal QA/QC review prior to integration into modeling platforms. Final datasets and model grids will be delivered in GIS-compatible geodatabase format with supporting technical memoranda documenting assumptions, calibration parameters, and results.

Unforeseen field conditions, access limitations, or newly identified data gaps may require adjustments to sampling scope, survey limits, or analytical efforts. Should such circumstances arise, our process requires immediate documentation of the issue, evaluation of technical implications, and preparation of a written change summary describing the additional work required, schedule impacts, and associated cost adjustments. This summary will be submitted to the Project Administrator for review and discussion prior to proceeding. No scope expansion or cost adjustment will occur without written authorization. This transparent and documented process ensures that any modifications to sample collection or analytical efforts are clearly justified, technically necessary, and mutually agreed upon.

Cost control for technical tasks will be managed through detailed task-level budgeting developed at project initiation. Each task will be assigned to a labor and expense budget, and progress will be tracked monthly against earned value. Variances will be reviewed internally and discussed with the Project Administrator when thresholds are approached. Our team has extensive experience delivering complex hydrologic modeling and restoration design projects within fixed budgets by proactively identifying risks, coordinating field efforts efficiently, and avoiding redundant analyses. The Project Manager will have overall responsibility for cost control, including review of monthly invoices, budget tracking, and approval of labor allocations. The Project Manager will be supported by our internal accounting manager to ensure compliance with contract requirements and to provide early identification of potential cost variances. This structure ensures strong fiscal oversight while maintaining technical flexibility.



Processes for Conducting Project Meetings, Providing Written Responses to Stakeholder Comments and Providing Notes as Requested.

Given the multi-agency and stakeholder-intensive nature of this hydrologic restoration effort at Yucca Pens, our communication approach is structured, documented, and responsive. We recognize that restoration projects of this scale often involve iterative technical dialogue and evolving stakeholder priorities. Our process is designed to ensure that all input is captured, evaluated, and addressed.



For each project meeting, whether monthly coordination meetings, technical workshops, or broader stakeholder briefings our team will prepare and distribute an agenda in advance to focus discussion on decision points and technical updates. Within one week of each meeting, detailed meeting notes will be provided documenting attendees, discussion topics, decisions reached and clearly assigned action items with responsible parties and due dates. An action item log will be maintained and updated throughout the life of the project to ensure accountability and continuity.

Stakeholder comments will be managed through a formalized Comment/Response Matrix that serves as a living project document. Each comment received, whether verbal during a meeting or in a formal correspondence, will be logged with a unique identifier. The matrix will document the source of the comment, the date received, the discipline lead assigned to evaluate it, and the proposed response. Our process for responding to stakeholder comments includes the following steps:

First, the comments will be reviewed internally by the appropriate technical discipline lead to evaluating technical merit, regulatory implications, and potential cost or schedule impacts. Where necessary, modeling sensitivity analyses or design refinements will be performed to fully evaluate the concern.

Second, the Project Manager will convene an internal coordination meeting to confirm the recommended response and ensure consistency across disciplines. Third, a written response will be prepared that clearly explains how the comment has been addressed. The response will either (a) describe the modification made to the design or analysis, (b) explain why the existing approach remains appropriate with supporting technical rationale, or (c) identify additional study required and the proposed path forward.

Updated Comment/Response Matrices will be provided at each major design milestone (30%, 60%, 90%) to demonstrate how stakeholder input has influenced project evolution. Where comments result in substantive design modifications, we will clearly identify the associated drawing revisions and modeling updates to maintain traceability. This documentation approach ensures that decisions are transparent, technically defensible, and aligned with stakeholder expectations.

In situations where stakeholder comments have potential cost or schedule implications, we will document those impacts in writing and discuss them directly with the Project Administrator before implementing changes. This ensures alignment between technical responsiveness and project cost control objectives.



OUR APPROACH ENSURES ALIGNMENT
BETWEEN TECHNICAL RESPONSIVENESS AND
PROJECT COST CONTROL OBJECTIVES.



Preparation of Preliminary and Final Design Plans for the Project as Well as Preparation of Permit Applications and Responses to Permitting Agencies Questions/clarification and or Modifications.

Our permitting strategy is proactive and integrated with design development to minimize regulatory risk and avoid delays. Restoration projects within this region typically require coordination with multiple agencies, including the Florida Department of Environmental Protection and the South Florida Water Management District, as well as potential federal and local stakeholders depending on jurisdictional triggers. Our approach emphasizes early engagement, technically robust submittals, and timely responses to agency feedback.

Pre-application meetings will be requested with regulatory staff to present the conceptual restoration approach, review modeling assumptions, and confirm data requirements. These early coordination efforts significantly reduce the volume and complexity of Requests for Additional Information (RAIs) later in the review process.

Permit applications will be prepared in accordance with agency-specific requirements and will include detailed engineering plans, hydraulic calculations, modeling outputs, environmental assessments, construction sequencing narratives, and erosion and sediment control measures. Where applicable, we will include supporting documentation addressing wetland impacts, species considerations, groundwater interactions, and water quality benefits. Application packages will be internally reviewed for completeness and consistency prior to submittal to ensure that all required forms, exhibits, and attachments are included.

Upon receipt of RAIs or agency comments, we will immediately log the request and assign responsibility to the appropriate technical lead. Each RAI will be reviewed to determine whether it requires additional analysis, clarification of existing documentation, or modification to the proposed design. If additional fieldwork or modeling is required, we will prepare a brief technical plan outlining the scope of effort, schedule, and any cost implications for approval prior to proceeding.

Draft RAI responses will undergo internal QA/QC review to confirm accuracy and ensure that responses fully address the agency's concerns. Where appropriate, responses will include revised plan sheets, updated calculations, supplemental modeling runs, or technical memoranda. Our goal is to provide comprehensive, well-supported responses that reduce the likelihood of subsequent follow-up requests.

Throughout the permitting process, the Project Manager will create and maintain a permitting log tracking submittal dates, review deadlines, RAI response timelines, and anticipated permit issuance dates. This log will be shared with the Project Administrator to maintain transparency and schedule awareness.

As permit conditions are issued, we will review each condition for implications to construction, monitoring, reporting, and long-term operations. These conditions will be incorporated directly into the 100% bid-ready design documents and technical specifications to ensure full compliance. If any permit condition materially affects cost or constructability, we will document the impact and coordinate with the Project Administrator to determine the appropriate course of action.

Through early coordination, technically robust submittals, structured RAI management, and disciplined documentation, our team will guide the project efficiently through the regulatory process and deliver a fully permitted, construction-ready restoration project.



THROUGH EARLY COORDINATION,
TECHNICALLY ROBUST SUBMITTALS,
STRUCTURED RAI MANAGEMENT, AND
DISCIPLINED DOCUMENTATION, OUR TEAM
WILL GUIDE THE PROJECT EFFICIENTLY
THROUGH THE REGULATORY PROCESS AND
DELIVER A FULLY PERMITTED,
CONSTRUCTION-READY RESTORATION
PROJECT.



Recent Similar Projects

Wilson Ranch REServe Hydrologic Restoration Project

Polk County, Florida



Florida’s Heartland Region includes some of the fastest growing areas in Florida. In addition to being highly desirable for new residents, it remains a place rich in resources and the location of the headwaters of the Peace River. Continued growth and land use changes in the area have weighed heavily on the region’s natural resources, water resources, both groundwater and surface water.

As a result, the region is now included as a Water Resource Caution Area for water supply and has over 50 U.S. EPA designated impaired water bodies for poor water quality, of which several of these water bodies have now received Total Maximum Daily Load (TMDL) designations for contaminant contributions into those water bodies. The Heartland region has taken an active role in seeking solutions and developing plans to improve the impaired water bodies, even prior to the implementation of TMDLs by the U.S. EPA and the FDEP.

Recognizing the “heavy lift” placed on the region to provide solutions to reduce nutrients in the regional surface water system within the impaired watersheds of Peace Creek and Saddle Creek, RES developed a concept plan for a turnkey stream/wetland hydrologic restoration project that includes, stream, wetland, and floodplain restoration to improve water quality, conservation, water supply and recharge opportunities, and enhance and preserve the natural system and improve resiliency and sustainability for the region. The project also produces long-term, lasting effects through a wide range of environmental benefits on approximately 400 acres of RES-owned, historic pasture lands.

The project will provide additional sheet flow across a restored, vegetated floodplain area when stream conditions in the project area exceed bank full. The sheet flow across the restored vegetated floodplain wetland areas promotes biogeochemical processes to remove excess Total Phosphorus (TP) and Total Nitrogen (TN) from the system prior to being returned through the natural hydrologic cycle via recharge, seepage, and evapotranspiration. The reduced nutrient loads in the system will ultimately support improved water quality conditions downstream in Charlotte Harbor Estuary. Our proposed approach to restoration will return a more appropriate and natural cross section and profile to the channel, which will stabilize its banks, encourage more out of bank flows into the restored floodplain, and significantly improve the range of aquatic habitat through the introduction of large wood and woody debris back into the system. This will fundamentally restore the critical functions and characteristics associated with this stream type and introduce additional biogeochemical conditions to induce processes that improve water quality and reduce nutrient contributions through stream and wetland ecosystem restoration activities.

RES is designing, building, and monitoring the project using in-house ecological engineering, science, and restoration practitioners. Construction will be supported by an external contractor. RES restoration field technicians are also providing full-time invasive, exotic, and nuisance vegetation monitoring and management activities for 150+ acres of densely forested wetland.

AT A GLANCE.

Client Contact

Polk County Parks & Natural Resources Division
Tabitha Beihl, Land & Water Natural Areas Manager
4177 Ben Durrance Road,
Bartow, FL 33830
863.534.7377 | TabithaBiehl@polk-county.net

Project Size

~400 acres

Contract Period

2023–2052, includes 10-year monitoring period, and 25-year operation and maintenance period

Project Highlights

- Public-Private Partnership (P3) Turnkey Project Delivery
- Hydrologic/floodplain restoration of 150+ acres
- ~ 9,000 LF stream restoration and enhancement
- Nutrient removal capability of ~ 1+ metric ton of TP and 2+ metric tons of TN annually
- 350+ acres wildlife habitat restoration and enhancement
- 350+ acres wetland restoration and conservation
- Land acquisition, design, permitting, construction, monitoring, and maintenance by RES Team

Key Staff

- Mary Szafraniec, PhD, PWS
- TJ LaRoue, PE
- Esteban Lopez, PE
- Renee Price, PhD, PWS, CE
- Jordan Bentley



East Winter Haven Aquifer Recharge and Wetland Restoration

City of Winter Haven | Polk County, Florida



The City of Winter Haven lies within Florida’s rapidly growing Heartland and is defined by its interconnected Chain of Lakes system, which includes more than 50 lakes encompassing approximately 5,200 acres. Formed within a karst landscape hydraulically connected to the Floridan Aquifer System, these lakes function as the headwaters of the Peace Creek watershed and play a critical role in regional groundwater recharge and flood attenuation. Continued population growth, historic drainage modifications, and expanding urbanization have reduced natural surface storage, altered hydroperiods, and contributed to nutrient loading within the watershed. As part of the broader Sapphire Necklace initiative, the East Winter Haven Aquifer Recharge and Wetland Restoration Project represents the City’s first large-scale implementation of a nature-based water resource solution designed to restore lost storage, improve water quality, and enhance long-term aquifer sustainability.

RES, in collaboration with Jacobs, CivilSurv, and specialty subconsultants, has advanced the Project. Our team developed a calibrated water budget supported by StormWise/ICPR and MIKE-SHE modeling, to demonstrate whether the wetlands can reliably maintain target hydroperiods while achieving the City’s 2.0 MGD annual-average recharge objective to the Upper Floridan Aquifer.

The project aims to restore approximately 150 acres of floodplain swamp, 125 acres of marsh and wet prairie systems, and 200 acres of open water habitat configured to optimize residence time, nutrient uptake, and ecological zonation. Baseline Floristic Quality Assessment (FQA) monitoring and Uniform Mitigation Assessment Method (UMAM) scoring document existing degraded conditions in marsh and prairie habitats, establishing measurable performance benchmarks and demonstrating significant potential for functional lift, particularly within herbaceous systems where improvements of 35 to 75 percent are anticipated as hydrology and native plant communities are reestablished. The design incorporates sill and flow way contouring, open water-to-marsh ratios consistent with successful Florida stormwater treatment areas, and reference-based elevations derived from comparable systems at Hilochee Wildlife Management Area to replicate natural basin marsh and basin swamp hydroperiods.

The aquifer recharge component is in the process of being engineered to meet Florida Underground Injection Control requirements and Chapter 62-611 standards for reclaimed water application to wetlands. The proposed treatment train includes solids removal, filtration, and disinfection, with provisions for advanced treatment such as granular activated carbon or ion exchange should PFAS management be required.

Updated hydrologic modeling confirmed no adverse offsite flood impacts, allowing removal of previously proposed perimeter berms and improving both constructability and long-term hydraulic connectivity. The Project is positioned to transition efficiently into final design and implementation while delivering measurable water supply resilience, flood risk reduction, nutrient attenuation, and large-scale ecological restoration for the Winter Haven community.

AT A GLANCE.

Project Size

~400 acres

Contact Period

2024–ongoing

Project Highlights

- Public-Private Partnership (P3) Turnkey Project Delivery
- Component of the City’s Sapphire Necklace Program, a regional water infrastructure and ecosystem restoration initiative
- Restoration of hydrologic connectivity and ecological function
- Restoration and enhancement of: ~150 acres of floodplain swamp, 125 acres of wetlands, and 200 acres of open water habitat
- Aquifer recharge target of minimum 2 MGD annual average through well injection

Key Staff

- Virginia Glazer, PE
- Rafael Vasquez-Burney, PE
- Amanda Berens, PE, PG, CHg
- Aaron van Ostran, PE
- Time Morris, PSM
- David Mahnken
- Mary Szafranec, PhD, PWS



Bois d’Arc Lake Mitigation Project

North Texas Municipal Water District | Fannin County, Northeast Texas



The North Texas Municipal Water District developed a 17,000-acre reservoir to provide new water services to 13 cities; the first surface water reservoir to be permitted in Texas in almost 30 years. RES restored 15,000 acres of habitats, including 70 miles of streams, to offset the environmental impacts of building this new lake.

RES is delivering complete stewardship of the Lower Bois d’Arc Creek Reservoir mitigation sites, from design and implementation through monitoring and maintenance over the next 20+ years. The project addresses the following:

- 369,000+ LF (70 miles) of stream restoration/enhancement
- 1,026 acres of forested wetland enhancement
- 3,875 acres of forested wetland restoration
- 1,560 acres of emergent wetland enhancement
- 1,200 acres of emergent wetland restoration
- 150 acres of shrub wetland restoration
- 1,146 acres of upland forest restoration
- 3,677 acres of native grassland restoration
- Planting over 5 million trees
- 200+ acres of clearing and grubbing

RES’ presence on the project is 24/7, with a full-time staff living on the property. Site performance success is measured by the restoration of aquatic and terrestrial species. RES bonded the entire project and all mitigation and transferred liability from the North Texas Municipal Water District to RES.



Aerial view of stream, post-construction



Wetland Restoration and Maintenance

AT A GLANCE.

Client Contact

Jennifer Stanley, Lake Operations Manager, 469.626.4761
JStanley@NTMWD.com

Contract Value

\$135,543,987.00

Project Size

17,000 acres

Contract Period

Construction completed by Feb 2022
Monitoring: 20 years post-construction

Project Type

Stream and Wetland Mitigation

Project Highlights

- 17,000-acre aquatic and terrestrial mitigation
- Nation’s largest permittee-responsible mitigation (PRM), offsetting impacts of a large municipal reservoir in North Texas
- Over 5 million trees planted
- Approximately 1.17 million tons of carbon sequestered in 10 years



Wetland Reserve Program Design Support

USDA Natural Resources Conservation Service | Various Locations

Jacobs supported the USDA NRCS for more than a decade through engineering design and inspection services for the Wetland Reserve Program (WRP). Over the course of this work, Jacobs has delivered design services for 26 wetland restoration projects, helping return more than 22,200 acres of disturbed lands to natural hydrology, with median restoration costs of approximately \$500 per acre.

Most WRP sites restored under this program began as improved pasturelands that had been ditched, drained, and planted with Bahia grass (*Paspalum notatum*). Portions of these sites supported shallow marsh and wet prairie communities, while historically they contained a diverse mosaic of deep and shallow wetlands bordered by oak pine mesic uplands. Dominant soil types were typically muck soils, with localized fine sands featuring spodic horizons that restrict drainage.

Jacobs' responsibilities included characterizing existing vegetative communities, locating and assessing invasive species, and evaluating hydroperiods using NRCS specified hydrologic modeling tools such as the SPAW model to develop detailed long-term water budget calculations and design desirable wetland hydrology governed by seasonal rainfall patterns.

Working closely with NRCS engineers, Jacobs prepared construction drawings, specifications, cost estimates, bid schedules, O&M plans, and quality control plans for a broad range of wetland restoration interventions. Design services incorporated MicroStation, AutoCAD, Civil3D, ArcMap, and NRCS standard details. All projects required site specific land survey data collection to support grading, hydrologic restoration, and construction implementation.

Through this long-term partnership, Jacobs has helped NRCS deliver cost effective, nature-based wetland restoration across thousands of acres, restoring hydrology, improving ecological function, and enhancing long term resilience across WRP lands.

WRP Project	Restored Wetland Area (acres)
Audubon	163
Boney	325
Blackwater Plantation	555
Bentley Ranch	627
C.A. Thomas	216
Circle Cross	548
Conservation Fund	640
Otter Slough	550
Teague	310
Mary's Creek Archbold	490
Crooked Lake	3,267
Frances Ck at Archbold	494
Lazy O Ranch	2,594
Turkey Creek	2,892
Goldstein Ranch	37
Myrtle Island Ranch	438
Cutthroat Archbold	206
Santa Rosa Ranch	1,785
Malcolm & Diane Stokes	1,542
Williamson Cattle Ranch	2,813
Santa Rosa 2	1,025
Williamson Ranch	533
Total Restored Area	22,050

AT A GLANCE.

Project Size

Jacobs provided planning and design services for the restoration of more than 22,000 acres disturbed lands back to wetlands

Contract Period

2005-2016

Cost

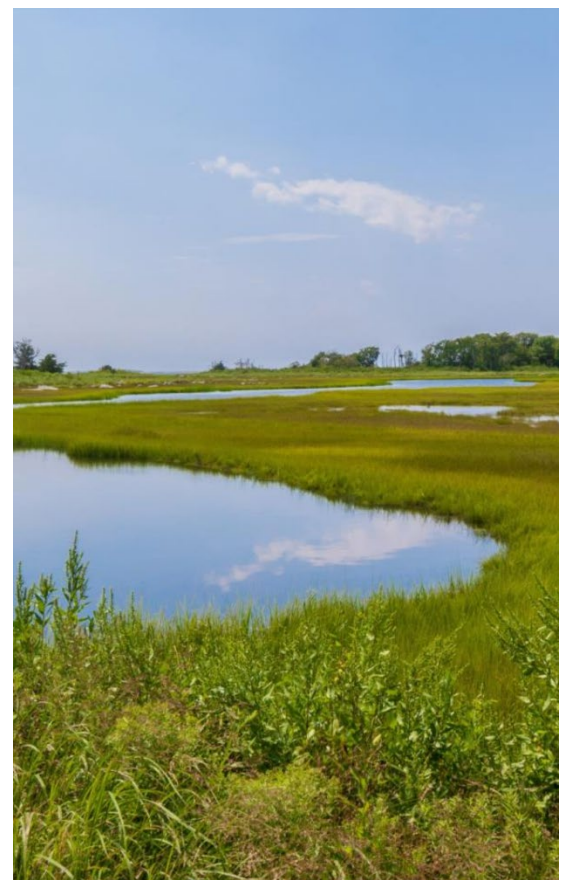
\$2.5M

Project Highlights

- Planning
- Environmental Permitting
- Watershed Hydraulic and Hydrologic Modeling
- Water Budget Modeling
- Freshwater Ecosystem Design
- Construction Inspection Services

Key Staff

- Mitch Griffin, PE
- Rich Morrison, PE
- Rafael Vazquez-Burney, PE





Tyndall Air Force Base Coastal Resilience Nature-based Pilot Project Design

The Nature Conservancy | Bay County, Florida



Since 2021, Jacobs has partnered with TNC's Gulf Program at Tyndall AFB to secure funding for NbS coastal resilience pilot projects. To date, TNC has obtained nearly \$11 million for planning, design, permitting, monitoring, and construction of four pilot projects: a 1,500-ft oyster reef, two living shorelines (1,000-ft and 3,500-ft), and a 5-acre seagrass enhancement. The projects are part of a larger base rebuilt program following Hurricane Michael in 2018.

Jacobs has led engineering design, modeling, and permitting, including MetaOcean analysis, hydrodynamic and sediment transport modeling with DHI's Mike 21, and field data collection (currents, vegetation, cultural resources, geotechnical, bathymetry). Deliverables include phased designs (30–100%), permit applications (FDEP, USACE), cost estimates, technical specs, and NEPA coordination for a programmatic Environmental Assessment covering pilot and upland projects under the Coastal Resilience Implementation Plan.

Jacobs has engaged stakeholders extensively, coordinating with Tyndall AFB staff on design feedback (including Bird Air Strike Hazard concerns) and working with South Atlantic Salt Marsh Restoration and Conservation Business and Ecosystem Partnership (SASJBEP) and permitting agencies. Jacobs also supports TNC on alternative contractor procurement strategies (DBB vs. CMAR), evaluating alternative construction materials such as Recycle Concrete Aggregate (RCA) to potentially offset material costs, as well as supporting proposal development of multiple National Fish and Wildlife Foundation (NFWF) and DoD REPI grants.

AT A GLANCE.

Contact

Katie Konchar, Coastal Resilience Projects Manager, katie.konchar@tnc.org, 850.296.7910

Contract Period

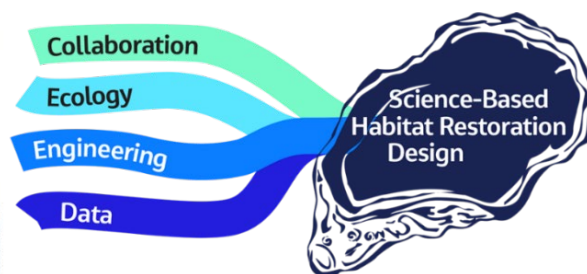
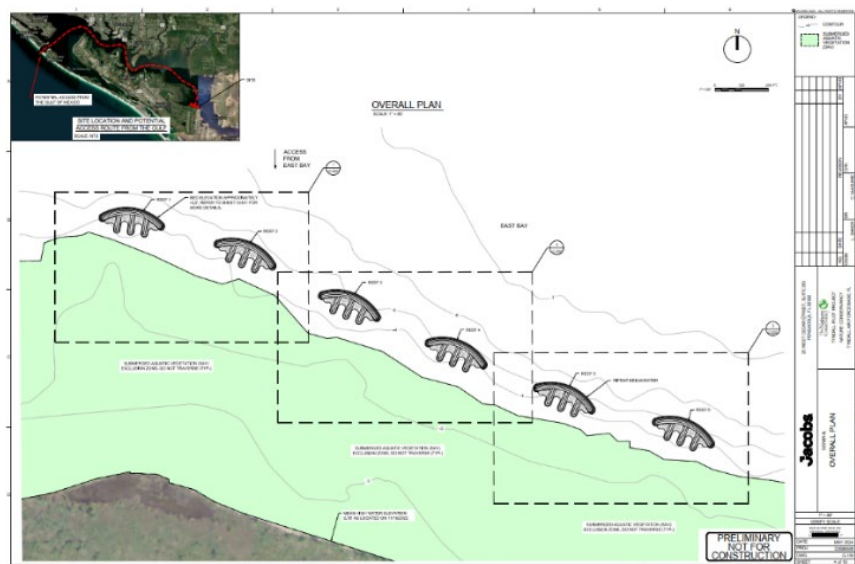
2022-ongoing

Cost

\$2.3 Million

Key Staff

- David Bell
- Luce Bassetti
- Joel Tillery
- Tunch Orsoy
- Don Kingery
- Christine Galther
- Leanne Baker
- Raffael Mario





Joe's Creek Restoration and Greenway Trail Pinellas County | Pinellas County, Florida



Jacobs is supporting Pinellas County in a comprehensive restoration of the Joe's Creek watershed to reestablish natural hydrology, improve water quality, and create self-sustaining wetland ecosystems. While located in an urban basin, the project's methods directly apply to large, non-urban wetland restoration focused on hydrologic reconnection and ecological function.

The project restores watershed processes by re-creating natural flow patterns, expanding floodplain and storage capacity, and establishing diverse wetland habitats. Jacobs used hydrologic and hydraulic modeling to understand watershed behavior, refine restoration alternatives, and design measures that improve connectivity and reduce peak flows, while also evaluating long term performance under changing conditions.

To enhance water quality, Jacobs applied process-based modeling to quantify pollutant reductions, support TMDL compliance, and guide placement of treatment wetlands and other nature-based systems that promote nutrient cycling and filtration. Ecological design principles shape restoration of native vegetation, riparian buffers, and wetland complexes to strengthen habitat connectivity and system resilience.

The project integrates climate resilience strategies through natural storage expansion and watershed scale optimization to support long term flood mitigation. After leading planning and preliminary design, Jacobs is now completing permitting and detailed design, delivering a fully integrated, construction ready package.

Together, Jacobs and Pinellas County are advancing a forward-looking restoration program that reconnects hydrology, restores wetlands, improves water quality, and enhances watershed resilience showcasing approaches readily transferable to large scale, non-urban wetland restoration.



Renderings of freshwater ecosystems and nature-based approaches proposed for stream restoration, water quality improvement, and habitat creation.
Charlotte County | RFP 20260279

AT A GLANCE.

Client Contact

Paul Miselis/Pinellas County
pmiselis@pinellas.gov
727.453.3406

Project Cost

\$950,000

Contract Period

2022-2025

Project Highlights

- Watershed Hydraulic and Hydrologic Modeling
- Water Quality Modeling
- Freshwater Ecosystem Design
- Public Outreach & Input
- Natural Systems and Bank Stabilization
- Resilience and Climate Adaptation

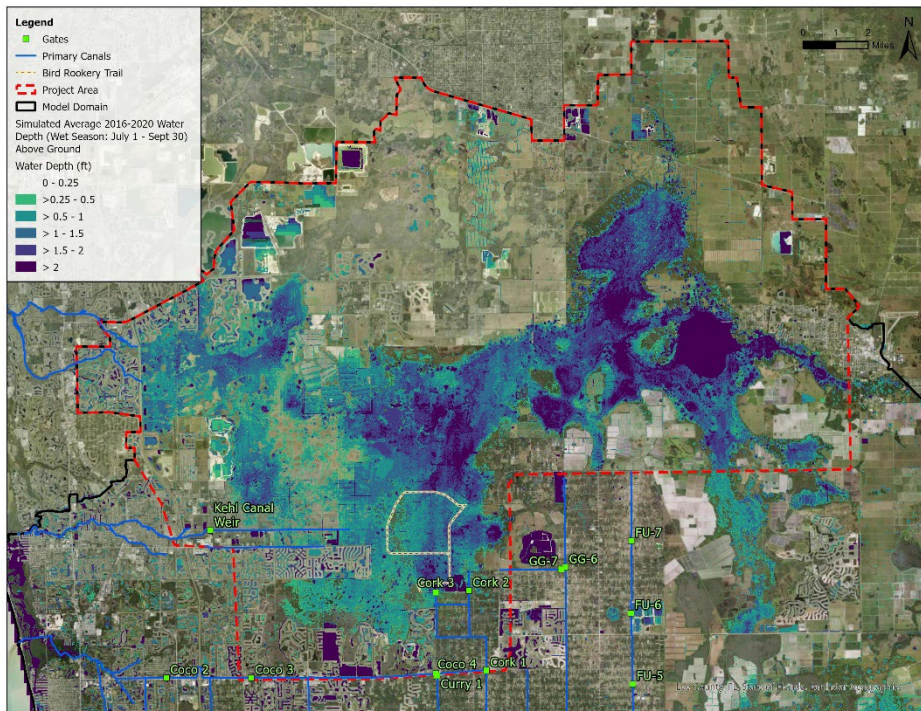
Key Staff

- Kerstin Kenty
- Rafael Vázquez-Burney
- Swamy Pati
- Jason Montminy
- Pieter De Wolf
- Amanda Berens
- Tricia Shuler



Corkscrew Watershed Initiative

J-Tech (a Jacobs and Tetra Tech joint venture) | Lee and Collier Counties, Florida



AT A GLANCE.

Client Contact

Paul Miselis/Pinellas County
pemiselis@pinellas.gov
727.453.3406

Contract Period

2024-present

Project Highlights

- Refined model to better serve project outcomes.
- Developed an existing conditions model utilizing rule-based structure operations.
- Identified areas of flooding, water supply, and ecological concern under long term and design storm conditions.

Key Staff

- Maria Loinaz, PhD, PE

The Corkscrew Watershed Initiative (CWI) Project encompasses southern Lee County and northern Collier County. The project area is generally comprised of rivers (Imperial, Estero), creeks (Halfway, Spring) and wetland sloughs/swamps (Flint Pen Strand, Upper Corkscrew Swamp) within the Estero Bay Basin Watershed in south Lee County and the Cocohatchee Canal/River Basin and Golden Gate/Naples Bay Watershed in north Collier County.

The objective of the CWI Project is to develop a comprehensive strategy to achieve ecological restoration of the Corkscrew Watershed by improving wetland hydroperiods and natural flows, while reducing flood risk in nearby flood-prone areas without adversely impacting the water supply and water management needs of the Corkscrew Watershed. Collective has completed a refinement of the Big Cypress Basin MIKE SHE / MIKE HYDRO Model and an existing conditions simulation. Collective is currently working on the future baseline and will then proceed with alternative conditions modeling efforts.

The CWI MIKE model refinements included DEM adjustments, redefinition of wetland flow ways based on a high-resolution overland flow model, primary system structure verification, changes in structure operations, addition of hydraulic connections, addition of flow blockages, basin drainage revisions, groundwater-use input checks, boundary and initial condition adjustments, and parameter adjustments to optimize surface water stages, flows and groundwater level. Advanced GIS tool usage was applied to efficiently refine model parameters as well as process model results.

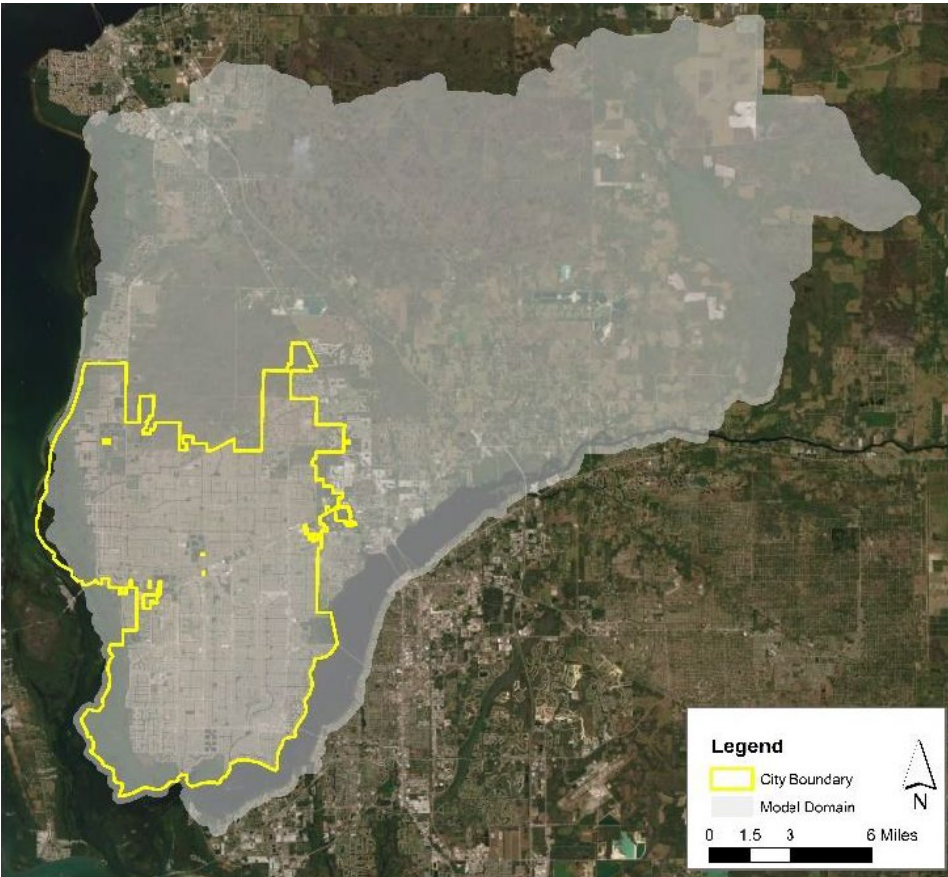
Following the model refinements, an existing conditions model was built as the first step in building the baseline future conditions model (FCM) that will then be used to compare alternatives. The FCM includes recent detailed changes in land use and infrastructure that directly impact the wetland ecosystem, future land use projections, and projected changes in design event rainfall and sea level rise.

The alternatives simulations will evaluate nine potential wetland restoration projects, including subsurface barriers, with a number of performance measures and targets that have been defined by the project working group consisting of water managers, ecologists and engineers.



Integrated Modeling and Alternative Analysis for Weir 7 Modifications

City of Cape Coral | Cape Coral, Florida



AT A GLANCE.

Contract Period

December 2021 – September 2022

Project Highlights

- Leveraged existing models and previous efforts to serve client needs
- Modeled structural operational controls for a tidal hydraulic system
- Conducted future conditions modeling
- Communicated results with the design team

Key Staff

- Maria Loinaz, PhD, PE

Collective was a subconsultant serving as the MIKE SHE/MIKE 11 modeling lead for an analysis of the redesign of the Weir 7 control structure, located on Courtney Canal underneath Mohawk Parkway. Weir 7 is the southernmost freshwater basin control structure, separating the City's fresh system from its tidal basins and the operation of Weir 7 needs to balance flood protection with basin storage capabilities and water use demand. The focus of this project and modeling was flood control and protection from the 100-year storm event.

Collective converted the existing conditions MIKE SHE/MIKE 11 model that was used for the Cape Coral Stormwater Master Plan of 2015 into three scenarios to evaluate the potential improvements in flood control, including operation and infrastructure changes in Weir 7. The existing conditions model has a two-year simulation period, which was used to extract initial and boundary conditions for the design storm event models to evaluate the potential flood risk reduction in three weir design alternative scenarios under the 25-year, 72-hour and 100-year, 72-hour design storms. Collective provided simulated stages for each alternative to evaluate roadway overtopping and reduction of peak stages as compared to existing conditions. Additionally, Collective was able to provide recommendations for updates to the existing MIKE SHE/MIKE 11 model to further enhance future analyses.



Specialized Capabilities

Advanced H&H Modeling

Our team brings nationally recognized expertise with decades of experience in advanced hydrologic and hydraulic modeling, with extensive experience applying DHI platforms, including MIKE SHE, MIKE 11, and MIKE Hydro to complex watershed and restoration projects throughout Florida. Jacobs and Collective Water Resources have collaborated on multiple large-scale modeling efforts in southwest Florida, refining fully integrated surface water and groundwater models to evaluate restoration alternatives, conveyance systems, hydroperiod adjustments, and canal interactions.

Collective, led by Dr. Maria Loinaz, includes one of the most experienced DHI modeling teams in Florida. Their team has developed, calibrated, and refined complex MIKE SHE/MIKE 11 models for regional watershed initiatives, including work within southwest Florida basins with hydrologic characteristics similar to the Yucca Pens Unit State Wildlife Management Area. Jacobs complements this capability with integrated water resources engineering expertise, translating modeling outputs into constructible, defensible design solutions. Together, the team provides advanced scenario testing, sensitivity analysis, groundwater/surface water interaction modeling, and performance evaluation necessary to optimize restoration structure sizing and placement while ensuring regulatory defensibility.

Advanced GIS

RES' Geospatial Solutions Group is a full-service GIS team delivering geospatial solutions across project lifecycles. Our geospatial professionals leverage the Esri ArcGIS ecosystem and other platforms to turn complex spatial data into decision-ready insight. As an Esri Business Partner, we pair modern technology with domain expertise to accelerate projects and deliver measurable results. The RES geospatial team supports all internal and external projects throughout the company. We have a talented team with a wide variety of skillsets including advanced geospatial analysis, remote sensing, lidar classification, and web mapping application development. Our team is supported by a diverse group of subject matter experts in ecology, biology, water resources, engineering, and design, giving RES the unique ability to combine geospatial workflows with natural resource expertise.



The RES geospatial team leverages the latest capabilities in the industry: GeoAI, ESRI product suite, ArcGIS Online, ArcGIS Enterprise, FME, eCognition, among other tools. We maintain a drone fleet capable of multispectral and lidar data capture as well as the ability to classify and map these powerful datasets to bring new insights and efficiency to projects.

Ecological Assessment

RES brings extensive experience in South Florida conducting ecological assessments, regulatory coordination, and habitat restoration services for both public and private clients. Our multidisciplinary team of ecologists, biologists, marine scientists, and GIS specialists works closely with coastal engineers to ensure that restoration and shoreline stabilization solutions are environmentally sound, permissible, and resilient.

Wetland Delineation and Evaluation: Projects frequently involve work within wetlands, tidal systems, and sovereign submerged lands. RES staff have delineated thousands of acres of wetlands throughout Florida and are highly experienced in both Florida Unified and Federal wetland delineation methodologies. For Yucca Pens, we will conduct detailed wetland and jurisdictional boundary assessments to confirm the extent of jurisdictional wetlands, surface waters, and other regulated resources. Wetland and surface water habitats within the general project area include Hydric Pinelands, Cypress Domes, Mixed Shrubs, Wet Prairies, and Freshwater Marshes.

Our team utilizes GPS survey equipment, aerial interpretation, and GIS analysis to accurately document wetland limits and habitat conditions. Several of our senior scientists are former regulators and have experience reviewing jurisdictional determinations from an agency perspective. This background allows us to proactively prepare documentation that meets regulatory expectations and minimizes delays during agency review. Early coordination with agencies having wetland jurisdiction will support a clear permitting pathway.



Wildlife Surveys and Protected Species Coordination: Our ecological team will conduct wildlife surveys and protected species evaluations to support design and permitting. Surveys will assess habitat suitability; document observed species utilization and identify any state or federally listed species potentially affected by hydrologic restoration activities.

RES has extensive experience coordinating with the FWC, USFWS, and other agencies on protected species compliance. This includes the identification of gopher tortoise impacts. Our team has successfully conducted gopher tortoise surveys, permitting, and relocations across Florida in accordance with FWC guidelines. RES routinely manages tortoise relocation efforts, including burrow surveys, recipient site coordination, trapping and transport, and compliance documentation. If gopher tortoises or other protected upland species are identified within work areas, we will implement avoidance strategies where feasible and coordinate relocation or impact authorization as required.

In addition to upland species, assessments will consider wading bird foraging habitat, amphibian breeding areas, fisheries utilization, and wildlife corridor connectivity influenced by hydroperiod restoration. Our coordination process includes early agency engagement, preparation of species-specific technical memoranda, and incorporation of conservation measures directly into design plans and construction sequencing to avoid delays during permitting.

Through integrated wetland delineation, species surveys, and regulatory coordination, our ecological assessment program ensures that hydrologic restoration at Yucca Pens achieves measurable habitat uplift while maintaining full compliance with state and federal resource protection requirements.

Habitat Assessments and Conservation Planning: Our team of personnel has prepared and secured authorizations throughout Florida for large-scale wetland and watershed restoration projects, including systems involving groundwater/surface water interaction and regional hydrologic modification. Our experience in integrating hydrologic modeling, engineering design, and ecological restoration planning is directly applicable to the restoration objectives within the Yucca Pens Unit State Wildlife Management Area. By aligning restoration structure design, such as ditch blocks, flow-way reconnections, low-water crossings, and potential seepage controls, with ecological performance goals, we ensure that hydrologic corrections translate into measurable habitat uplift and long-term functional recovery.

For this project, we will evaluate existing habitat communities, hydroperiod conditions, soil saturation patterns, and vegetative response to altered drainage regimes to identify opportunities for restoring natural floodplain swamp, wet prairie, and freshwater marsh systems. Our team will assess current ecological functions relative to historical conditions and develop restoration strategies that improve groundwater recharge, enhance hydroperiod consistency, reduce nutrient transport, and increase habitat connectivity. Where appropriate, conservation measures will be incorporated to support regional wildlife corridors, improve fisheries and amphibian habitat, and align with watershed-scale water quality and resilience objectives. This integrated approach ensures that hydrologic restoration investments at Yucca Pens produce durable ecological benefits consistent with state and regional resource management priorities.

Shovel Ready Work

RES possesses robust capabilities for delivering shovel-ready engineering and design plans and reliable cost estimates, supported by our integrated delivery model and experience implementing large-scale restoration and water management projects. Our turnkey capabilities allow RES to support projects from feasibility through construction, monitoring, and long-term maintenance. This integrated structure is particularly valuable during the planning and design phases because it ensures that engineering documents and cost estimates are developed with direct input from General Contractors and Chief Estimators who routinely build similar projects. This approach results in design packages that are practical, constructible, and ready to move efficiently into implementation.

Our ability to produce shovel-ready plans stems from integrating design and construction expertise within the same organization. This coordination reduces the disconnects that often occur in traditional Design-Bid-Build delivery models, where engineering and construction teams operate independently. By involving experienced construction professionals during the design process, our team can evaluate proposed restoration features against actual site conditions and construction constraints, incorporate lessons learned from similar projects, and identify potential implementation challenges early. This collaboration helps streamline the design process while ensuring that restoration grading, hydraulic features, access considerations, and material selections are realistic and buildable from the outset. The result is a set of engineering documents that can move efficiently into permitting and implementation without extensive redesign.



The same integrated approach strengthens our ability to prepare accurate and defensible construction cost estimates that support shovel-ready planning. Our Estimators provide current insights into material costs, labor rates, equipment needs, and site logistics, allowing the design team to refine cost projections based on real-world conditions rather than generalized assumptions. For example, rough estimates for activities such as riprap or articulated block placement may average approximately \$2,200 per linear foot and dredge and fill operations may average around \$40 per cubic yard; however, these values can vary significantly depending on site access, material sourcing, and subsurface conditions. By incorporating input from our construction teams early in the design process, these estimates can be refined to better reflect the unique characteristics of each project site.

Our ability to provide highly accurate and reliable cost estimates for shovel-ready engineering and design plans is significantly enhanced by the direct involvement of our construction team, a practice that sets us apart in the engineering field. This integrated approach is a cornerstone of our turnkey project delivery model. Unlike traditional engineering firms that typically separate design from construction, our model embeds constructability expertise directly into the design process. This means our experienced construction personnel contribute their real-world knowledge from the earliest stages of project development. This early involvement allows us to:

- **Refine Material and Labor Estimates:** Our construction team provides current, real-time insights into material costs, availability, and labor rates, which can fluctuate significantly. For instance, rough estimates for riprap placement can be around \$2,200 per linear foot, and dredge and fill around \$40 per cubic yard, but these figures can vary by as much as 50% depending on specific project conditions. By having our construction experts on board, we can fine-tune these numbers to account for each site's unique characteristics, resulting in more precise cost projections.
- **Identify Efficiencies and Cost Savings:** Our construction team helps identify opportunities for value engineering and cost-saving measures during the design phase, rather than post-design. They can recommend construction methods that are more efficient or identify alternative materials that offer comparable performance at a lower cost, thereby preventing costly revisions during execution. For example, specific cost estimates often detail unit costs for various activities, like ditch block construction (earthen, sheet pile, or hybrid structures), low-water ford crossings, seepage barrier installation (including cutoff walls or grout curtains), canal tie-ins, berm regrading, and minor grading for flow ways.
- **Account for Site-Specific Challenges:** Construction teams are adept at anticipating potential challenges related to site access, logistics, and unforeseen ground conditions that can significantly impact project costs. Their input helps incorporate realistic allowances for items such as mobilization/demobilization, clearing and grubbing, and managing unsuitable soil, which can be substantial components of overall construction expenses.
- **Provide Detailed Cost Breakdowns:** Our cost estimates are meticulously prepared, breaking down expenses by specific work items and activities. This includes not only direct construction costs like excavation, structure demolition, and material installation, but also indirect costs such as environmental assessments, design and permitting, and bidding and construction phase services. We also factor in general cost items like mobilization, contractor general conditions, and bonding, and construction contingencies to provide a comprehensive financial picture.

Permit Applications

RES has extensive experience preparing permit applications and conducting pre-application agency coordination throughout Florida and along the Florida coast. Our team brings decades of collective experience navigating ERP, Clean Water Act authorizations, NPDES permits, coastal construction permits, NEPA documentation, mitigation planning, and related local, state, and federal approvals. We routinely coordinate with the FDEP, USACE, FWS, FWC, NMFS, Water Management Districts, the U.S. Coast Guard, U.S. EPA, and local municipalities to advance projects efficiently through the regulatory process. Senior leadership anchors this capability.

Bill Lites will lead the permitting tasks and provides expertise in permit applications and pre-application coordination. Supporting Bill is a deep bench of permitting and compliance professionals with specialized expertise. Team members bring decades of experience in permitting and compliance, pollutant load analysis, mitigation planning, wetland delineation, compensatory mitigation banking, habitat restoration permitting, and permit tracking systems. Our staff includes professionals with backgrounds in soil and water science, ecology, biology, marine science, urban forestry, hydrology, and



civil and environmental engineering. Several team members have former regulatory experience, providing valuable insight into agency review processes and expectations.

Our team's permitting services are grounded in rigorous environmental analysis and defensible documentation. Along Florida's coast, RES brings specialized experience addressing the regulatory and technical challenges of sensitive marine and estuarine environments. We conduct benthic resource surveys, seagrass mapping, mangrove assessments, soil/sediment sampling and water quality monitoring to inform permit documentation. Our team understands the unique conditions of coastal systems, including high water tables, sandy soils, saline environments, tidal influence, and wave energy, and incorporates those considerations into permit narratives and supporting technical analyses. Our team routinely prepares applications for projects involving shoreline stabilization, living shorelines, dredge and fill activities, coastal restoration, and habitat enhancement, ensuring consistency with state and federal coastal resource regulations.

Pre-application agency coordination is a cornerstone of our approach. RES proactively engages regulatory staff early in project development to present conceptual plans, discuss potential impacts, confirm data requirements, and identify mitigation expectations. This early coordination reduces uncertainty, aligns technical analyses with agency priorities, and minimizes the likelihood of delays during formal review. Our team prepares meeting materials, technical memoranda, and follow-up documentation to ensure agencies have clear, concise, and defensible information from the outset. We maintain detailed permit tracking systems to monitor review timelines, information requests, and compliance obligations through construction and post-construction reporting.

Across Florida and its coastal regions, RES has demonstrated the ability to successfully advance projects through complex regulatory frameworks by combining technical depth, thorough documentation, proactive coordination, and disciplined permit management. Our cumulative experience spans several decades and is supported by a multidisciplinary team, which positions us to efficiently prepare permit applications and conduct pre-application coordination that reduces risk, maintains schedule momentum, and supports successful project delivery.

Project Management

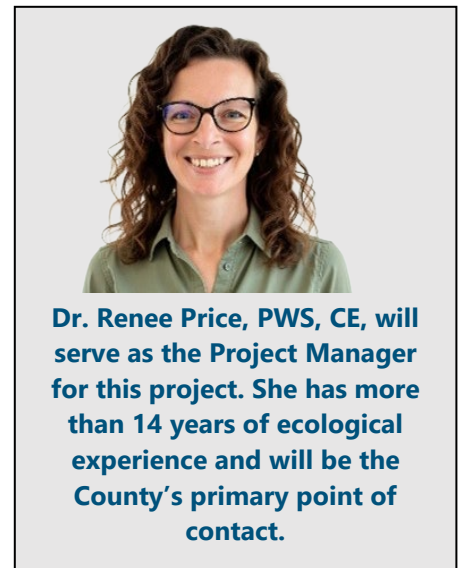
EXPERIENCE AND CAPABILITIES IN PROJECT MANAGEMENT

RES brings a disciplined, transparent, and performance-driven approach to project management, with strength in conducting meetings, preparing clear technical presentations, and developing comprehensive responses to stakeholder comments. Our approach is built on structured planning, defined roles and responsibilities, proactive communication, and rigorous documentation to ensure projects are delivered efficiently and collaboratively.

At the outset of each project, RES develops and implements a dynamic Project Management Plan (PMP) that defines scope, schedule, budget controls, communication protocols, and quality assurance procedures. The PMP establishes a clear team structure led by a Project Manager who serves as the primary point of contact for the client and stakeholders. Phase leads such as design, permitting, and monitoring leads are identified and integrated into a RACI (Responsible, Accountable, Consulted, Informed) matrix to clearly define responsibilities across the team, subcontractors, and client representatives. The PMP is treated as a living document and is updated throughout the project lifecycle to reflect evolving conditions, stakeholder input, and technical refinements.

Beyond meeting facilitation and stakeholder coordination, RES integrates risk management, quality control, and compliance oversight into every project. Potential risks, including schedule delays, cost impacts, utility coordination issues, or regulatory constraints, are identified early and monitored throughout execution. Safety and environmental compliance plans are developed and enforced, and quality control testing is performed in accordance with applicable standards. Subcontractors are carefully selected and managed, with defined performance expectations and reporting requirements.

Scope changes are managed through formal change order procedures to ensure transparency and mutual agreement. All project documentation, including schedules, meeting minutes, comment matrices, compliance records, and financial documentation, is maintained systematically to ensure accountability and audit readiness.





CONDUCTING MEETINGS

Effective meetings are central to RES' project delivery model. Internally, regular coordination meetings are held during active phases of design, permitting, and construction to ensure alignment across disciplines, maintain accountability, and track progress against milestones. Meeting frequency is scaled to project intensity and phasing. Meetings are held weekly during critical phases and biweekly or monthly as appropriate. Agendas are prepared in advance, action items are documented, and responsibilities and due dates are clearly assigned to maintain forward momentum.

Externally, the Project Manager leads all client and stakeholder meetings to ensure consistency in messaging and responsiveness. These meetings may include progress updates, milestone reviews, public briefings, regulatory coordination sessions, and construction progress meetings. Pre-construction conferences and pre-bid meetings are also facilitated to ensure clarity of scope, expectations, and compliance requirements before work begins.

Public outreach meetings will be led in combination by the project manager and the lead engineer.

RES Government Affairs and Community Engagement professionals will assist with meeting logistics, messaging strategy, and documentation to ensure information is conveyed in a clear, accessible, and positive manner. Meetings will be conducted in an organized and interactive format, typically including a presentation outlining project goals, anticipated benefits, schedule, and design progression, followed by an open question-and-answer session and opportunities for written comments. Visual exhibits, renderings, and summary handouts will be used to help stakeholders understand the project in practical terms. All meetings will be documented through sign-in sheets, presentation materials, and meeting summaries, capturing key comments and responses.

Many technical people can overlook the importance of how the public is handled and let the technical drivers overshadow stakeholder wishes. Our job is not only to make the project technically sound and environmentally beneficial, but it is also to give the public an amenity that they can be proud of. It is our experience that projects are only successful if the stakeholders believe they are successful. We have had to learn some tough lessons through public meetings and the largest lesson is to not disregard the importance of the stakeholder voice. We have learned to listen, document and address public concerns and show the public how we will address their concerns directly. We also realize that we cannot address everyone's desires, especially when there are opposing opinions. But with careful listening and thoughtful education, we can bring everyone to understand and accept the design decisions.

PREPARATION OF PRESENTATIONS

RES routinely prepares comprehensive, audience-appropriate presentations for clients, regulatory agencies, public stakeholders, and governing bodies. Presentations are developed for major milestones and decision points and are structured to clearly communicate complex technical information in a concise and visually accessible format. Materials are tailored to the audience, providing technical depth for engineering and regulatory discussions while offering clear, high-level summaries for community or board presentations.

RES understands that the visual aids for public meetings need to be graphically pleasing and in laymen terms. They need to be stylized, aesthetically pleasing and professional. For design reviews, presentations are structured to confirm the overall approach, identify critical issues, solicit targeted feedback, and document consensus decisions. These materials typically include design summaries, cost estimates, schedule updates, risk assessments, and supporting technical documentation. Visual aids such as site plans, grading plans, cross-sections, modeling outputs, conceptual renderings, and construction details are incorporated to enhance understanding.





PREPARATION OF RESPONSES TO STAKEHOLDER COMMENTS

RES employs a systematic and transparent process for managing and responding to stakeholder comments. All comments received during design reviews, public meetings, or regulatory coordination are logged into a formal comment tracking matrix. This matrix identifies the source of the comment, the subject matter, the assigned team member responsible for response, and the resolution status. This structured approach ensures that no comment is overlooked and that responses are consistent, documented, and defensible. RES will prepare responses to comments and provide them in the matrix format to the County, City and CHNEP for review and adjustment for review and augmentation. We will update the comments for final review. We will consult with you to determine how the responses should be relayed and tracked, to ensure timely responses are provided to all stakeholders.

As part of the permit processing, notices will be sent to upland owners with riparian rights. RES will prepare those notices for the agencies in accordance with the statutes. As public comments are relayed to the agencies, RES will incorporate them into a separate matrix and prepare responses for review. Mailings require certified letters be sent as evidence of delivery. Responses will be prepared with clarity and supporting documentation as needed. This may include additional data analysis, revised plans, updated technical memoranda, or explanatory narratives. Where appropriate, responses clarify technical methodologies, justify design decisions, or incorporate stakeholder recommendations into revised project documents. When feedback cannot be fully incorporated, RES provides a clear rationale supported by technical analysis or regulatory standards. Updated plans and reports are issued to reflect all agreed-upon revisions, maintaining a transparent and traceable record of changes.

RES has extensive experience preparing detailed response packages for regulatory agencies and stakeholders, including purpose-and-need narratives, supporting environmental documentation, jurisdictional determinations, and property access documentation. This disciplined comment management process strengthens agency relationships, builds stakeholder confidence, and helps maintain project momentum. For one project in Miami-Dade County, we had to facilitate the largest mailing and comment resolution that FDEP's Southeast District had every required. Over 6,000 mailings were successfully managed, comments addressed, and permits were issued.

Volume of Work

Within the past 24 months, RES has received \$0.00 in total payments from the County. We currently do not have any active or completed contracts within this jurisdiction for the specified period, ensuring we have full capacity and resources available to dedicate to this project.

Location

RES and our project partners maintain a strong presence in Florida, with several key team members based in Tampa, Sarasota and the surrounding areas. This geographic distribution allows the team to remain highly responsive to the needs of the Yucca Pens project. Team members located in the Tampa area can typically reach Charlotte County within approximately one hour, while Fort Lauderdale-based staff can mobilize to the project area in approximately 2.5 hours.

In addition, team members located elsewhere in Florida and nationally are fully committed to supporting the project. While some staff may not reside within immediate driving distance, they routinely travel for project meetings, site visits, and critical milestones to ensure continuity and hands-on involvement. Through a combination of regional presence, strategic travel, and virtual coordination tools, the RES and Jacobs team ensures consistent accessibility, rapid response capability, and dedicated support throughout the duration of the project.

Litigation

In the past five years, RES has not been or currently is a party to any litigation that will impact our ability to provide the services described in this proposal.

Minority Business

RES is not a certified Minority Business Enterprise (MBE). However, our team is committed to providing opportunities for such firms. In addition, CivilSurv is a Water Management District and City of St. Petersburg Certified Small Business Enterprise and Collective Water Resources is a small, minority/woman-owned water resources engineering firm. We regularly subcontract specific elements of our projects to a range of professional service firms and vendor/supplier companies classified as Disadvantaged Business Enterprises (DBEs) and MBEs. In addition, our proposed subconsultant team comprised of Jacobs, OHS and Schnabel do not hold MBE certifications. These partners were selected specifically for their technical capabilities and specialized experience.



Resumes

Justin Freedman

General Manager

Justin is an experienced environmental professional serving public and private clients throughout Florida. He provides expertise in diverse service areas including urban forestry, environmental permitting, and transportation-related services and manages complex, multidisciplinary projects that include a variety of environmental and engineering-related tasks. He manages RES' Dania Beach, Clearwater, and Miami offices.

He specializes in municipal consulting and has provided plan review, landscape inspection, environmental assessments, expert witness, permitting, ordinance development, street tree inventory, canopy assessments, carbon sequestration analysis, and wildlife permitting services to municipalities throughout Florida. He has also conducted numerous studies related to climate change and sea-level rise and was involved with the preparation of the Broward County Climate Change Action Plan.

Justin has had a significant role in urban forestry in Florida for many years. He serves on the Executive Committee of the Florida Urban Forestry Council and on the Board of Directors for the Florida Chapter of the ISA. Justin was also a longtime member of the Southeast Florida Coral Reef Initiative.

He also specializes in transportation services. He has been providing consulting services to the FDOT for more than 10 years and manages a variety of transportation-related contracts and projects. Projects include NEPA documentation for major PD&E and minor projects, NPDES and permit compliance inspections of FDOT assets, environmental resource permitting, landscape CEI and inspection services, and mitigation and maintenance monitoring for dozens of FDOT constructed sites.

AT A GLANCE.

Contact

jfreeman@res.com | 301.602.0657

Years of Experience

21 years

Education

- MS Marine Biology, Nova Southeastern University Oceanographic Center, 2010
- BS, Biology, Tufts University, 1997

Certificates | Licenses

- Certified Arborist, FL 5488A
- FDEP Certified Erosion and Sediment Control Inspector and Instructor
- PADI Advanced Open Water, Enriched Air Certified Diver
- Certified Green Industries Best Management Practices Instructor

SELECT EXPERIENCE

Permitting Support for Horse Facility on 10- Acre Property, Miami-Dade County, Florida

A landowner engaged RES to assist with permitting and stormwater management system design for a private equestrian facility located in western Miami-Dade County. The parcel is located within the Bird Drive Recharge Area, which was previously designated for use as a CERP project but was never funded. Justin managed this project, which included design and permitting services.

River Oaks Preserve Stormwater Park, City of Fort Lauderdale, Broward County, Florida

The purpose of the project was to create a passive stormwater park with wetland features to relieve flooding in the River Oaks neighborhood and provide recreational use for local residents. Justin provided permitting support for this project.

Markham Park Target Range, Broward County, Florida

RES conducted permitting, including designing an alternate drainage system and mitigation to offset wetland impacts, in preparation for the pond and other wetlands to be backfilled to comply with State Best Management Practices for gun ranges. This project reduced the opportunity for surface water impacts and the need to conduct dredging on future cleanups. Permitting agencies included SFWMD, USACE, and Broward County. Justin and RES' staff conducted construction inspections and certification of the drainage system.

Nelms Wetland Delineation and Determination, Lake Worth, Palm Beach County, Florida

RES conducted a wetland delineation and coordinated with the USACE to receive a wetlands determination for a five-acre site in the Homeland neighborhood in Palm Beach County, Florida. Mr. Freedman provided project management and senior-level technical consulting for this project. The client was pleased with the services provided and referred RES to other neighbors.



Manfredi Wetland Delineation and Determination, Lake Worth, Palm Beach County, Florida

RES conducted a wetland delineation for a three-acre site in the Homeland neighborhood in Palm Beach County, Florida. Justin provided project management and senior-level technical consulting for this project.

S Ranch-LLC and Wintergreen Cypress Properties, LLC Due Diligence Assessment, Hendry County, Florida

This work was performed for the Seminole Tribe of Florida (SOF) as a sub-consultant. This project consisted of a Phase I Environmental Site Assessment (ESA) and preliminary ecological permitting assessment for the ±1800-acre, undeveloped S Ranch/Wintergreen Cypress property. The work involved field visits and database research to identify potential contamination sources and protected ecological resources (i.e. wetlands) that may be impediments to development and require regulatory agency permitting. The results of this assessment were provided to SOF in two separate reports (i.e. one for the ESA and one for ecological resources). The reports provided summaries of findings from the field visits and research, as well as discussions of the measures necessary to obtain regulatory agency approval for development. Justin provided project management and senior-level technical guidance on this project.

Sawgrass Expressway Canal Revetment, Florida's Turnpike Enterprise, Broward County, Florida

RES conducted landscape improvements and ecological restoration along a 3-mile stretch of the Sawgrass Expressway (SR 869). The site is immediately north of the Expressway and adjacent to the Parkland residential neighborhood. The natural limestone structure and the ecology of the existing canal that runs parallel to the expressway have been deteriorating and have become overgrown with invasive plant species that affected the natural environment and microclimate. Justin provided oversight for landscape design, permitting and NPDES inspections conducted for the staging area.

I-95 Design-Build from SR-60 to Brevard County Line, FDOT District Four, Indian River County, Florida

This project involves the design and construction of the SR-9/I-95 mainline widening from four lanes to six lanes from just north of SR 60/Osceola Boulevard Interchange (MP 6.688) to the Indian River/Brevard County Line (MP 19.198) in Indian River County. It also includes replacing existing bridge numbers 880036 & 880037 with a new bridge structure to provide three lanes with shoulders in each direction. RES, as a subconsultant, provided Environmental Resources Permitting support for this project, including conducting wetland delineations and listed species surveys, agency coordination, and assistance with preparing the permit applications for the project. To allow for early works to commence while completing design and permitting for the entire corridor, RES was able to acquire an early works permit from the USACE over a weekend. Post design services included conducting permit compliance inspections of the corridor. Justin's role on this project included project management and coordination.

SR 713 / Kings Highway from SR 70 to Picos Road Environmental Permitting and Compliance, FDOT District Four, St. Lucie County, Florida

Justin is the project manager for this contract providing permitting support for this 3.040-mile corridor.

Lateral Ditch Permitting, FDOT District Four, Indian River County, Florida

This project consisted of the reconstruction of a stormwater management ditch that sustained major damage from hurricane activity. Permitting work included delineation of wetlands and the extent of mangrove habitat, creation, and submittal of and ERP application to the SFWMD and the USACE, and design of mitigation measures including a mangrove habitat component incorporated in the new stormwater ditch design.

Homestead Extension Design-Build, Florida's Turnpike Enterprise, Miami-Dade County, Florida

This project consists of widening the HEFT from SW 72nd Street (Sunset Drive) to the north of SW 40th Street (Bird Road). Improvements included widening from three lanes in each direction to five lanes. Other improvements included bridge widenings over SW 60th Street Canal, SW 56th Street, SW 40th Street, intermediate access (slip) ramps for the express lanes, removal and replacing existing NB SR 821 off-ramp (Ramp A), widening of SW 40th Street (Bird Road), addition of turn lanes and signal improvements along SW 40th Street, and construction of new toll equipment structures. RES is assisting with the project permitting, including tree removals on off-system roads. Justin was the project manager for this project.



Renee Price, PhD, PWS, CE

Project Manager

Dr. Renee Price is an ecologist and project manager with over 14 years of experience leading complex environmental and ecological restoration projects for public- and private-sector clients. Her technical focus is on wetlands, including water quality and quantity evaluations, delineations, and restoration. For these efforts, she develops and implements field studies and statistical plans and serves as a lead SAS and R programmer to evaluate relationships between water levels, withdrawals, rainfall, and changes in vegetation communities to assess overall ecosystem conditions. Additionally, Renee’s recent dissertation focused on hydrologic and vegetation trajectories of reference and restored wetlands in central Florida. Renee has successfully managed large multidisciplinary teams from initial site evaluation through design, permitting, and implementation while maintaining schedule and budget control.

SELECT WORK EXPERIENCE

Crescent Lake Water Quality Improvements Project, City of St. Petersburg, Pinellas County, FL

Scientist responsible for reviewing historical water quality data to assess trends and inform design plans for upcoming restoration activities, wetland delineation, and planting plan. This project aims to improve the water quality of a 20.3-acre lake that receives stormwater from a highly urbanized watershed comprised of residential and commercial land uses. Restoration activities will include grading existing lake banks to create littoral shelves suitable for submerged and emergent aquatic vegetation and replacing an existing weir to alter water levels, ultimately creating a more natural hydropattern for the lake with improved water quality.

Sunshine Lake/Sunrise Waterway Water Quality Monitoring, Charlotte County, FL

Project manager and scientist responsible for surface water sampling, water column profile casts, benthic monitoring, and evaluation of floating wetland treatment islands. Atkins and Charlotte County have worked together on numerous water quality improvement projects (i.e. raising the lake water level, installing floating wetland treatment island, whole lake aeration, etc.) and development/implementation of an Environmental Management Plan to address algal blooms in Sunshine Lake and Sunrise Waterway.

St. Joseph Bay Aquatic Preserve Seagrass Restoration Implementation and Design, Florida Department of Environmental Protection (FDEP), Port St. Joe, FL

Deputy project manager and scientist for restoration planning and implementation phases. This project analyzed high-resolution drone and satellite imagery to map all propeller scars occurring within seagrass beds in the St. Andrews Bay Aquatic Preserve, Alligator Harbor Aquatic Preserve, and St. Joseph Bay Aquatic Preserve in the Florida panhandle. Based on mapping, categorization, and quantification of propeller scar acreage, priority restoration areas were identified for sediment tube placement. The restoration utilized over 43,560 sediment tubes, resulting in the restoration of over 16,000 linear feet of propeller scars – one of the largest seagrass restoration efforts in Florida.

Cooper’s Bayou Hydrologic Restoration, City of Clearwater, Clearwater, FL

Senior scientist provided ecological assessments for Cooper’s Bayou located in Old Tampa Bay. The bayou has experienced water quality issues potentially due in part to the construction of Courtney Campbell and interruption of the natural tidal regime, surrounding freshwater input, and the lack of flushing. Renee worked with water resource engineers to assess potential hydrologic restoration alternatives for restoring natural hydrologic conditions that would allow for the natural recruitment of additional mangrove and seagrass resources within the bayou.

AT A GLANCE.

Email

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Years of Experience

14 years

Education

- PhD, Environmental Engineering Sciences, University of Florida
- MS, Environmental Science and Policy, University of South Florida
- BA, Environmental Science, New College of Florida

Certificates | Licenses

- Professional Wetland Scientist (PWS) No. 3598, Society of Wetland Scientists, 2022
- Certified Ecologist, Ecological Society of America, 2019

Additional Information

- HAZWOPER 40, Occupational Safety and Health Administration, 2025
- OSHA 10 Construction Safety and Health, Occupational Safety and Health Administration, 2013
- CPR/First Aid/O2, American Safety and Health Institute, 2025
- Advanced Florida Master Naturalist, University of Florida IFAS, 2018



Lower Peninsula Stormwater Improvements Regional System Design-Build, City of Tampa, Pinellas County, FL

Lead senior scientist responsible for ecological assessments including wetland delineations, planting plans, and extensive tree survey. This project included design and construction of a major stormwater conveyance system to reduce residential flooding and provide water quality treatment prior to discharging to Tampa Bay as well as habitat enhancement and creation of a passive park. The pond was designed to increase biodiversity as well as restore an existing desiccated wetland.

Cypress Creek Water Quality Study, Pasco County, Pasco County, FL

Project manager and scientist responsible for obtaining data pertaining to water quality conditions of the Cypress Creek Watershed, including government/regulatory agency database review; development of a Natural Systems Inventory to document connectivity, watershed composition, critical natural areas for protection, and forested/wooded regions; pollutant loading assessment; and Stream Condition Index assessment. Data were leveraged to identify two conceptual water quality BMPs and two natural systems restoration alternatives.

Englewood Wellfield Monitoring, Englewood Water District, Sarasota County, FL

Project manager and lead scientist responsible for groundwater level monitoring, groundwater quantity evaluations, and short- and long-term monitoring trend analyses and reporting. This project involves Water Use Permit (WUP) mandated vegetation, soil, and surface/groundwater level monitoring at reference wetlands and wetlands potentially affected by groundwater withdrawals from Englewood Water District. Annual reports include summary statistics and linear regressions to describe short- and long-term relationships between water levels, rainfall, and withdrawals, aerial imagery comparisons, as well as soil and vegetation data analyses.

Hydrobiological Monitoring Program for Alafia, Palm, and Hillsborough Rivers, Tampa Bay Water, Hillsborough County, FL

Project Manager, lead SAS programmer and quantitative ecologist responsible for large-scale and intensive data interpretation, review, statistical analysis, and management, quality assurance and control. This project is a \$15 million, 16-year, water quality, hydrologic, and biological monitoring effort to determine effect of freshwater withdrawals on the Tampa Bay estuary. This project includes hydrologic, water quality, benthic invertebrate, fish, plankton, waterfowl, and wetland and submerged aquatic vegetation sampling and monitoring, which generate almost 2 million environmental measurements a year. Statistical analysis and modeling successfully verified that Tampa Bay Water operations result in very small changes in estuarine resources with little or no ecological effects.

Tampa Bay Desalination Facility Hydrobiological Monitoring Program Tampa Bay Water, Hillsborough County, FL

Project Manager, lead SAS programmer and quantitative ecologist responsible for statistical analysis and modeling on the extensive estuarine monitoring data collected for the largest seawater desalination facility in the U.S. This project is a \$4 million, 14-year, water quality and biological monitoring effort that includes water chemistry, hydrologic, benthic invertebrate, fish, and seagrass, sampling and/or monitoring efforts. This project generated significant publicity. Statistical analyses found no impact as a result of facility operation and has been able to communicate this result in forms that can be conveyed to the general public.

Morris Bridge Wellfield Monitoring, Tampa Bay Water, Hillsborough County, FL

Project manager and lead scientist responsible for semi-annual ecological site assessments, annual vegetation monitoring, and short- and long-term monitoring trend analyses and reporting. Monitoring efforts at Morris Bridge are required per a WUP mandated Environmental Management Plan designed to identify adverse environmental impacts in 28 wetlands. Reporting includes semi-annual impact assessments that quantitatively assess water level data for each wetland, including water level conditions, rainfall data, water production, and pan evaporation for the reporting period. Additionally, annual reports include ecological and hydrological data summaries and aerial photographic imagery interpretation.

Investigation Of Iron Stimulation of Macroalgal Blooms in Rainbow River, Southwest Florida Water Management District (SWFWMD), Marion County, FL

Project manager and lead scientist response for water column sampling for iron, nitrogen, and phosphorus at 12 locations proximal to an annual epiphytic algae bloom in Rainbow River. Statistical analyses included Kendall Tau correlations, PERMANOVA, and PCA biplots to determine that discrete water quality conditions were occurring, suggest that the presence of annual epiphytic algae blooms is influenced by sudden increases in total nitrogen and total phosphorus, which appears to occur during the wet season between June and August.



Rafael Vázquez-Burney, PE

Design Lead

Rafael is a Global Principal with extensive experience in ecological engineering, specializing in the design of wetland restoration and creation projects. He has led a wide range of efforts that improve water quality, restore habitat, and strengthen the long-term function of natural wetland systems. His work includes developing hydrologic, geomorphic, and ecological design frameworks and preparing detailed engineering plans that are shovel ready and practical to build. Rafael leads teams that focus on producing implementation-ready project designs that provide cost certainty and clear, well-coordinated construction documents that require little interpretation by contractors. His approach supports healthier watersheds and resilient ecosystems, and as Design Lead he ensures that each project is grounded in clear objectives, sound science, and durable, buildable design.

SELECT WORK EXPERIENCE

Edgewater Wetland Park, Deering Park Stewardship District, City of Edgewater

Rafael is leading the planning, design, and implementation of a 50-acre constructed wetland that repurposes excess reclaimed water from the City's Advanced Wastewater Treatment Facility. Instead of dis-charging to the Indian River Lagoon, the system redirects up to 3 mgd for aquifer recharge, eliminating nitrogen loads and supporting water quality goals. Designed as a high-value ecological park, the wetland provides habitat for wildlife and birding, while offering public amenities such as trails for walking and biking. The project integrates ecological restoration, passive recreation, and environmental education in a multifunctional landscape.

Joe's Creek Restoration and Greenway Trail, Pinellas County, FL

Rafael played a central role in the planning and conceptual design for this multi-benefit restoration and greenway project, which is now advancing through detailed design and permitting. Working within grant-funding budget limitations, he helped establish the project's overall restoration vision and developed early nature-based concepts such as vegetated shelves, in-line marsh areas, and bioretention features to improve water quality and habitat conditions. As the project moves forward, Rafael is providing lead services for the habitat design components, guiding the development of practical, constructible restoration strategies that balance ecological objectives with funding and implementation requirements.

City of Ocala Wetland Recharge Park, City of Ocala, FL

As Project Manager and Subject Matter Expert, Rafael led the planning, design, and permitting of this 35-acre wetland recharge park created to offset consumptive use impacts through the beneficial reuse of reclaimed water. He guided the conceptual restoration vision and oversaw multidisciplinary design efforts that shaped the wetland system's hydrology, nutrient reduction performance, and ecological layout. The project incorporates stormwater and reclaimed water for nutrient polishing and infiltration, supporting ecological flows and improving water quality within the Silver Springs system. Designed to recharge up to 5 mgd and reduce nitrate to background levels, the park also serves as a public ecological amenity with wildlife viewing and birding opportunities. Rafael's leadership ensured that the project integrated nature-based solutions with practical engineering, resulting in a constructible, high-value restoration investment for the community.

4G Ranch Wetlands, Pasco County Utilities Services Branch, Pasco County, FL

Rafael led the concept development, feasibility evaluation, planning, design, and permitting for this 176-acre constructed wetland system created to offset consumptive use impacts through the beneficial reuse of reclaimed water. The system includes 15 wetland cells designed to receive up to 5 mgd, recharge groundwater, and reduce nitrate to background levels while supporting diverse habitat functions and improving regional ecological conditions. Rafael guided the ecological and habitat design, including vegetative community planning and hydrologic controls, and oversaw hydrogeologic testing that informed a calibrated groundwater model. He secured environmental permits without RFIs and managed construction, commissioning, and startup. Recent work has included vegetation assessments and groundwater data analysis to evaluate system performance and identify opportunities for operational optimization.

AT A GLANCE.

Contact

Rafael.vazquez-burney@jacobs.com | 727.366.3301

Years of Experience

20 Years

Education

- MCE, Civil Engineering, North Carolina State University, 2005
- BS Environmental Engineering, North Carolina State University, 2004

Certificates | Licenses

- Professional Engineer: Florida (2010, 70768)



Crews Lake Natural Systems Restoration Project, Pasco County Utilities Services Branch, Pasco County, FL.

Rafael led the feasibility study for this natural systems restoration effort, evaluating the use of reclaimed water to help restore lake levels, improve aquatic habitat, and expand the County's reuse capacity. His nature-based approach built on the existing wetland systems, emphasizing nutrient uptake, hydrologic function, and habitat enhancement. Rafael supported Pasco County in securing funding for design and permitting and later led the design of the treatment wetland, including grading, conveyance planning, and hydraulic controls. He also assisted the County in obtaining construction funding through SFWMD and FDEP by presenting the project's ecological and water-quality benefits to agency boards. In addition, he supported the effort to secure mitigation credits within the project footprint to offset specific construction components, helping reduce overall project costs and streamline regulatory compliance.

Restoration Program Design Services USDA Natural Resources Conservation Service

Rafael provided hydrologic evaluations and restoration design support across thousands of acres of wetlands restored to natural hydrology, developing long-term water budget and hydrologic models using NRCS-approved tools such as SPAW to assess hydroperiods and establish target wetland conditions. His modeling directly informed the design of ditch blocks, berms, and grading features to reestablish natural flow paths and storage capacity. Rafael contributed to construction-ready drawings, specifications, cost estimates, and quality-control documentation for a range of restoration interventions, including drainage removal and rehydration of marsh, wet prairie, and mixed wetland systems. He also evaluated vegetation communities, identified invasive species, and integrated soil, survey, and ecological data into restoration plans to ensure durable, nature-based solutions that improve ecological function, water quality, and long-term watershed resilience.

Aradia Treatment Wetland, City of Arcadia, FL

Rafael served as the technical lead and subject matter expert for the Aradia Treatment Wetland project, developing the concept of transforming existing stormwater ponds into high-performance treatment wetlands to achieve water quality compliance. He introduced an innovative pure-oxygen-driven nitrification approach to intensify treatment and meet stringent nutrient-reduction goals. Rafael led the interdisciplinary design and permitting teams and now oversees construction management to ensure effective implementation. His work incorporates ecological design features, a native planting palette, and long-term habitat enhancements aligned with the city's goal of creating a future ecological park. Rafael also contributed to securing project funding and shaping the compliance strategy, positioning the city to meet regulatory requirements and exit a burdensome consent order through a sustainable, nature-based solution.



Mary Szafraniec, PhD, PWS

Technical Advisor

Dr. Mary Szafraniec’s extensive ecological assessment and restoration background includes design and implementation of marine and freshwater ecological monitoring and assessments, springshed and watershed pollutant evaluation and restoration, and within-system ecological restoration such as sediment removal or inactivation, hydrologic alteration, invasive vegetation or algae removal, and native vegetation planting. Dr. Szafraniec has 20 years of experience designing ecological studies analyzing and characterizing water quality, hydrologic regime, and biological community structure to assess the effects of anthropogenic and hydrological modifications on ecosystem response, and to determine the effectiveness of restoration activities. Her watershed approach to ecosystem restoration includes investigations of source, cycling, removal, and legacy effects of pollutants to help determine cost-effective alternatives to meet TMDLs, RAPS, and NNCs for Florida waterbodies.

SELECT WORK EXPERIENCE

Wilson Ranch Stream and Wetland Restoration Project, Polk County, FL

Technical Advisor. Mary provided technical expertise for the development and implementation of a full delivery public-private partnership project with Polk County to improve water quality and hydrologic conditions in the highly impaired Upper Peace River Basin, that feeds Charlotte Harbor Estuary. RES acquired a 400+ acre parcel to implement a stream and wetland restoration project that will reduce approximately 1 metric ton of total phosphorus and 2 metric tons of total nitrogen. RES is designing, building, maintaining, and monitoring the project using in-house ecological engineering, science, and restoration practitioners. Once constructed, RES will own and operate the project for 25 years before the project is transferred to Polk County.

Carpenter Creek and Bayou Texar Watershed Management Plan, Escambia County, Florida, October, 2019 - 2022

Technical Lead. The project involved the development of a comprehensive watershed management plan for the Carpenter Creek and Bayou Texar watersheds in Northwest Florida, totaling approximately 19 square miles in Pensacola, Florida. Funding for the plan development was secured through the Escambia County RESTORE Direct Component Allocation. The management plan provided a roadmap for identifying, addressing, and recommending actions for at least the following main objectives: water quantity and quality, fish and wildlife habitat, public access and recreation, and community resilience. In addition to hydraulic and hydrologic watershed modeling, this project included statistical analysis of water quality and hydrologic data, stream assessment, and BMP alternatives analysis. This project included several meetings and site visits with stakeholders, media, and the public to present and discuss the WMP.

Joe's Creek Channel 1 Bank/Stream Restoration, Pinellas County, Florida, \$159,394, 2018 - 2020

Project Manager. The channelized segment of Joe's Creek experiences erosion and bank failure due to steep banks and rapidly changing water levels from draining its highly urbanized watershed. Directed efforts to assess erosion impacts, perform stream assessment, prepare and compare conceptual design alternatives, and a preliminary engineering design report. Water quality in the creek was assessed with trend analysis, correlations, and comparisons to NNC. While Joe's Creek is not impaired, the County desired to include nutrient removal with bank stabilization design to protect downstream waters. Two-dimensional hydraulic modeling was performed to compare shear stresses in three conceptual bank stabilization designs (hard-armor, reducing bank slopes, and natural channel design). The natural channel design, which used Florida-specific stream restoration concepts to develop a floodplain and natural stream properties, outperformed the other options. Conducted a public forum to explain and discuss study findings and conceptual designs to the Joe's Creek community and incorporated public feedback into final deliverables. The project also included incorporation of the preliminary design into the existing County ICPR model.

AT A GLANCE.

Email

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Years of Experience

23 years

Education

- Ph.D. Environmental Engineering Sciences
- Graduate Certificate in Wetlands Science
- MS. Environmental Engineering Sciences
- BS. Biology

Certificates | Licenses

- Professional Wetland Scientist, No. 2182
- FDEP BioRecon
- FDEP Lake Condition Index
- FDEP Boating Safety
- FDEP Stream Condition Index
- FDEP Lake Vegetation Index
- FDEP Linear Vegetation Survey
- FDEP Rapid Periphyton Survey
- FDEP Habitat Assessment
- PADI Open Water SCUBA Certification



Lake Tarpon and Brooker Creek WMPs, Pinellas County, Florida, 2019 - Ongoing

Technical Lead SWRA. Provided technical oversight and direction on watershed management planning services for the Lake Tarpon and Brooker Creek watersheds in Pinellas County. Services include watershed evaluation and characterization, hydrologic and hydraulic modeling, pollutant load modeling, floodplain delineation, identification of flood and water quality issues (Surface Water Resource Assessment), recommendations for improvements, conceptual plans, permit meetings, and cost estimates.

Nutrient Source Tracking Study, Pinellas County, Florida, 2020 - Ongoing

Project Manager. Wood is reviewing existing water quality data to identify nutrient sources and assess additional monitoring needs for McKay, Allen's, and Curlew Creeks. A robust statistical framework using random forests and linear mixed effects models will detect and quantify complex relationships among water quality, hydrological, biological, and climatic variables to identify the sub-basins most strongly contributing to downstream water quality problems. Samples are analyzed for basic water quality constituents, and some sites are assessed to examine the presence radioisotopes including $\delta^{15}\text{N}$, $\delta^{18}\text{O}$, and $\delta^{11}\text{B}$ as well as sucralose, aspartame, and caffeine, which may indicate contribution from human sources (i.e. wastewater tracers). These data are being used to help determine whether the nutrient sources are natural or anthropogenic and whether they are a result of organic (sewage or natural) or inorganic (fertilizer) inputs.

Wekiva Springshed Groundwater Monitoring Study, Orange County, 2017 - 2022

Technical Lead. Provided technical oversight and direction for a groundwater study in the Wekiva springshed in Orange County as part of an ongoing effort to identify the source of nitrate in the Wekiwa mainspring. Samples were analyzed for basic groundwater water quality constituents, however, some of the wells with higher nitrate concentrations were part of an effort to examine the presence radioisotopes including $\delta^{15}\text{N}$, $\delta^{18}\text{O}$, and $\delta^{11}\text{B}$ as well as sucralose, aspartame, and caffeine, which may indicate contribution from human sources (i.e. wastewater tracers). These data were used to help determine whether the nitrate sources are natural or anthropogenic and whether they are a result of organic (sewage or natural) or inorganic (fertilizer) inputs. Statistical analyses such as multivariate and Bayesian modeling provided much insight into the potential sources of nitrate. Areas under new fertilizer ordinances were evaluated and compared to areas that were not under the ordinance. Recommendations were provided to the County Commission for a path forward to reduce nutrient enrichment in the aquifer.

Lake Conine Treatment Wetland Design and Modifications, Polk County Parks & National Resources, 2015 - 2017

Technical Advisor. Provided design and permitting services for the development and restoration of a 34-acre treatment wetland to restore a low quality, dehydrated wetland along the southeast shore of Lake Conine in Winter Haven, Polk County. The lake is impaired and currently has a nutrient TMDL. Design included a regional stormwater pond and treatment train, finishing with a treatment wetland before discharge into the lake. The design was intended to improve lake water quality via nutrient load reductions. Other services included wetlands delineation and assessments, soil geotechnical investigations, boundary and topographic surveys, watershed modeling, stormwater pollutant load modeling, stormwater treatment train design, bidding and construction services, and park design.

Lake Prima Vista Nutrient Budget, City of Ocoee, Florida, 2017 2018

Technical Lead and Sediment Flux Lab Director. Assisted the City of Ocoee with a nutrient budget and lake management plan for the Lake Prima Vista. The lake has experienced a significant decrease in water quality along with continuous algal blooms and is currently impaired for nutrients. In addition to pollutant load modeling, we collected seepage meter data and conducted an assessment of nutrient flux to determine the contribution of both internal and external nutrient sources. In addition, collected sediment samples for phosphorus fractionation. Seepage meter and nutrient flux data indicated significant nitrate inputs from seepage from a portion of the basin. Recommendations for sediment inactivation and implementation of bioreactors downgradient of a blueberry farm on the lake's shoreline were provide as part of the alternatives analysis.



David Mahnken, CPSS

Technical Writer

David is a senior scientist with more than 30 years of technical and professional experience as an environmental scientist in both the private and public sectors. His broad range of experience includes all aspects of local, state, and federal environmental resource permitting including Florida Statewide Environmental Resource Permitting (SWERP), USACE and FDEP Section 404 Dredge and Fill permitting, NEPA and PD&E studies, jurisdictional wetland delineations, mitigation design, threatened and endangered species surveys, wildlife habitat evaluations, and GIS analysis of environmental data. David is a Certified Professional Soil Scientist (CPSS) providing expertise in hydric soil identification for wetland determinations, wetland mitigation bank design, and seasonal high water elevation determinations. He provides professional environmental consulting services for roadway planning and design projects, land development projects, local government plan reviews, wetland mitigation bank projects, municipal capital improvement projects and gas pipeline transmission projects.

SELECT WORK EXPERIENCE

Mascotte Stormwater Facility Improvements, City of Mascotte, Lake County, Florida

David provided natural resource consulting and permitting services to support the project design team for this stormwater conveyance improvement project in the City of Mascotte. The project included improvements to more than 1000 linear feet of stormwater conveyance and evaluation of an existing stormwater storage facility and the proposed locations of additional stormwater storage facilities. David and a RES team of ecologists provided wetland delineation, functional assessment and an evaluation of regulatory constraints for Environmental Resource Permitting including potential mitigation costs. David also provided a wildlife habitat assessment to address gopher tortoises and the potential occurrence of other listed species including sand skinks, scrub jays and Eastern indigo snakes.

Monteverde Water Treatment Plant Expansion, Town of Monteverde, Lake County, Florida

David provided natural resource evaluation and regulatory constraints analysis to support a proposed water treatment plant expansion project for the Town of Monteverde. The proposed project location was surveyed for gopher tortoises and wetland extents. Habitat evaluation was also conducted for the project site's ability to support scrub jays, sand skinks or other listed species. U.S. Fish and Wildlife Service (FWS) informal consultation was conducted, and clearance was obtained from FWS for all other federally protected species that have the potential to occur in the region.

Lake Saunders Environmental Resource Permitting, Lakeshore Restoration and Eagle Monitoring, Lake County, Florida

David provided environmental resource permitting, lakeshore restoration planning and eagle nest monitoring services for this multifamily affordable housing project in Lake County. Environmental resource permitting (ERP) included wetland delineation, mitigation planning, and coordination with the design engineers to address avoidance and minimization of wetland impacts. During the design and permitting phase of the project a bald eagle nest was observed on an adjacent property. Because of the proximity of the nest to the project site, an Incidental Take Permit was applied for through the FWS and a monitoring plan implemented to ensure the status of the nest and eagle behavior was documented during the construction process. A specific ERP condition was negotiated between the St. Johns River Water Management District (SJRWMD) and the FWS to allow construction to continue provide the nest was monitored throughout the construction process until any juvenile bald eagles fledge and leave the nest. Eagle nest monitoring is currently ongoing. David also assisted the project design team by providing an assessment of lakeshore vegetation adjacent to the project. Nuisance and exotic vegetation was identified and mapped and by evaluating 3D LiDAR data, concentrations of nonnative species were identified for removal and an enhancement plan prepared to replanting native vegetation to improve the aesthetics and viewshed of the project.

AT A GLANCE.

Contact

dmahnken@res.us | 407.481.9006

Years of Experience

37 years

Education

- MS, Environmental Science, Soil and Water Science Department, University of Florida, 2008
- BS, Biology, University of Central Florida, 1997

Certificates | Licenses

- Certified Professional Soil Scientist No. 208093
- Certified FDEP Stormwater, Erosion and Sedimentation Control Inspector #4105



Wilson Ranch Reserve Soil Analysis, Polk County, Florida

David supported the project design team of this 400-acre floodplain restoration and water quality improvement project in Polk County, Florida, by coordinating the soil sampling and analysis effort to evaluate the nutrient removal efficiency of the proposed project, specifically for phosphorus. Samples were collected throughout the property and analyzed for nutrient concentrations and grain size distribution. David provided interpretation of laboratory results including assessment of phosphorus sorption capacity, phosphorus saturation ratio and soil phosphorus storage capacity to be used during the operation and monitoring phase of the project following future construction.

Barrett Ranch Soil Floodplain Evaluation, Highlands County, Florida

RES was contracted by the property owner to evaluate historic wetland alteration and floodplain impacts on this 160 acre ranch that occurred as the result of historical agricultural land use practices and to assess the potential for the property to provide wetland mitigation through wetland and floodplain restoration. Numerous borrow pits were excavated throughout the property over time and spoil material was deposited around the various pits and in low lying areas of the property. David conducted soil borings throughout the property and evaluated the soil morphology, horizonation, and soil taxonomic classification characteristics to determine the depth of the naturally occurring historic A horizon across the property. Using geographic information system (GIS) spatial analysis and LiDAR data, a topographic surface of the historic floodplain elevations and overburden volumes were estimated for future floodplain and wetland restoration design purposes.

Theodore Roosevelt Presidential Library, Medora, North Dakota

The Theodore Roosevelt Presidential Library Foundation, following congressional approval, purchased 90.3 acres of land from the United States Forest Service to construct the Theodore Roosevelt Presidential Library (TRPL) in the Badlands of southwestern North Dakota. In addition to the library facility and other amenities, the project included the restoration of wet and mesic prairie grasslands and evaluation of soil carbon sequestration. RES worked with the project design firm to provide soil carbon analysis and design, implementation, and monitoring specifications for the prairie restoration component of the project. David worked with the RES team to develop the construction soil specifications for the project including mesic and dry prairie soil grain size distribution specifications and soil health specifications including soil amendments and nutrient thresholds. David also assisted in coordination with the local NRCS soil scientists in evaluating soil data collected from the site for classification as a soil of statewide importance.

Central State Aggregates Adaptive Management Plan, Zephyrhills, Florida

Prior to current regulatory requirements, historic mining activity adjacent to following years of mining activity adjacent to an approximately 60-acre mixed forested wetland had been affected by soil subsidence and subsequently, as a result of an inappropriate hydroperiod, a significant loss of canopy coverage. David evaluated hydric soil characteristics of the wetland including an investigation of the extents of relict and contemporary hydric soil indicators occurring near the soil surface as well as evidence of below-land-surface redoximorphic features to estimate the seasonal high-water elevation (SWHE) of adjacent uplands. This information was used in conjunction with the hydric soil evaluation of nearby, unimpacted reference sites, existing elevation data and LiDAR data to propose a historic wetland SHWE and seasonal elevation ranges as part of an adaptive management plan to more effectively manage the wetland hydroperiod.

Tomoka Farms Road Formal Wetland Determination, Flagler County, Florida

David provided management and oversight of a formal wetland delineation submitted for review through the St. Johns River Water Management District (SJRWMD). The property had a history as a pine plantation adjacent to the Tomoka River where soils consisted of poorly drained spodosols and entisols with various hydric and nonhydric component soils occurring throughout the property. As a result of the silviculture activity including furrowing, ditching and pond excavation, the site contained a complex array of contemporary and relict hydric soil indicators within disturbed, wet pine flatwoods. David provided hydric soils identification expertise to the project team including comparative analysis of below surface seasonal high-water level redoximorphic features in areas with a predominance of upland vegetation to determine the approximate land surface elevation where reliable hydric soil indicators would be encountered in association with a predominance of hydrophytic vegetation, to the satisfaction of the SJRWMD regulatory scientists.



Amanda Berens, PE, PG, CHg

Modeling Lead

Amanda is an accomplished water resources engineer and hydrogeologist with 26+ years leading multidisciplinary teams across the Southeast region. She has a proven record delivering innovative groundwater and surface water solutions for utilities, industrial clients, and public agencies. Expert in groundwater/surface water modeling, regional program management, permitting strategy, and stakeholder engagement. Known for mentoring talent, elevating technical standards, and aligning projects with organizational priorities.

SELECT WORK EXPERIENCE

Beneficial Water Reuse Project: 4G Ranch Wetlands; Pasco County Utilities Services Branch; Pasco County, FL. Hydrogeologist / Groundwater Modeler.

Amanda developed design criteria for evaluating site suitability for groundwater recharge. She conducted a literature review and desktop analysis to implement these design criteria, including criteria weighting to select a site for 5 mgd into the aquifer, while maximizing benefits to the upper Floridan aquifer and surrounding wetlands. Amanda designed and executed a field investigation to characterize the site's hydrology and hydrogeology. This included monitoring water levels in sand and limestone aquifers, wetlands, and surface water bodies, as well as assessing hydraulic parameters, infiltration rates, geology, groundwater flow directions and gradients, precipitation, and evapotranspiration. She utilized the SWFWMD DWRM2 model as a basis to develop, calibrate, and verify site-specific transient and steady state groundwater flow models based on site characterization data. These models were used to quantify aquifer recharge rates that minimize impacts and maximize benefits to the upper Floridan aquifer and wetlands. Amanda successfully permitted the largest groundwater recharge wetland in the world. She demonstrated the model's accuracy in predicting long-term groundwater elevations, wetland stages, and infiltration rates by verifying the model annually during the first three years of operation.

Wetland Groundwater Recharge Park; City of Ocala; Ocala, FL. Hydrogeologist/ Groundwater Modeler.

This project included a feasibility study, design, and construction of a 32-acre infiltration wetland system by using reclaimed water and stormwater to recharge the aquifer and offset consumptive use impacts; reduce nutrients to prevent algal growth in Silver Springs; recover and enhance flows to Silver Springs; and create a public park with walking paths, boardwalks, and interpretive educational signage. Amanda designed and implemented a field investigation study to characterize site hydrology and hydrogeology including water levels in sand and limestone aquifers, water levels in wetlands and ponds, hydraulic parameters, infiltration rates, geology, groundwater flow direction, groundwater flow gradients, and precipitation. She developed and calibrated groundwater flow models based on site characterization data. She utilized the groundwater flow model to quantify aquifer recharge rates that minimize impacts and maximum benefits to Silver Springs and the upper Floridan aquifer. She successfully permitted the three-infiltration wetland cells.

Groundwater Recharge Wetland Project; Gainesville Regional Utilities (GRU); Gainesville, FL.

Groundwater Modeler. GRU, in partnership with the Suwannee River Water Management District and the Florida Department of Environmental Protection, is constructing a groundwater recharge wetland. The project will help replenish, or recharge, the Floridan Aquifer System, which will benefit the Santa Fe River, its springs, and community. Amanda was responsible for evaluating the suitability of the site hydrogeology for recharge wetlands and developing a 3-dimensional model to visualize hydrostratigraphy and depth to water.

Surface Water Modeler/Project Hydrogeologist, Crews Lake Augmentation, Pasco County, FL, Lead Surface Water Modeler.

Compiled surface water flow model using Flood Modeller to simulate natural and proposed augmentation flow through a hydrologically altered lakebed, including proposed additional water control structures. Evaluated infiltration through lakebed and flow to karstic features. Evaluated natural and proposed maximum stages and flood extents for 25- and 100-year storms.

AT A GLANCE.

Contact

amanda.berens@jacobs.com

Years of Experience

26 years

Education

- MS, Civil Engineering; University of California - Irvine
- BS, Geological Engineering, Missouri University of Science and Technology

Certificates | Licenses

- Professional Engineer, FL, #68871, CA, #71072
- Professional Geologist: FL, #2779, CA, #7944

Proficiencies

- HEC-RAS
- Surfer
- MODFLOW-USG
- MODFLOW-NWT
- MODFLOW6
- SEAWAT
- Groundwater Vistas
- PEST
- BeoPEST
- PEST-HP
- HSPF
- ArcGIS



Benjamin “Benji” Guempel

Geospatial Solutions Manager

Benji joined RES in 2015 and has over 18 years of extensive GIS experience in the environmental consulting field providing GIS analysis, database development, spatial analysis, imagery analysis, cartographic design, litigation support, 3d modeling, data management, field data collection/integration, map automation, internet mapping applications, and report production for research, planning, impact assessment, and land acquisition projects. Benjamin currently manages the enterprise GIS system, Geospatial Solutions Group at RES, and drone operations.

Benjamin has created, developed, and implemented multiple custom web applications, web solutions, system enhancements, workflows, and methodologies to improve accuracy, efficiency, and communication for internal and client-related projects. He has extensive knowledge in model development using various software packages such as ArcGIS (3-D and Spatial Analyst), ArcScene, Global Mapper, and EVS. He developed methodologies and an integrated web solution for quick and efficient site analysis to identify project-specific properties for our land acquisition team to pursue.

He automated the process of identifying and mapping parcels that fit various ecological offsets need such as wetland and stream restoration, threatened and endangered species, and nutrients reductions. He is currently working to implement emerging technologies such as artificial intelligence, machine learning, and augmented reality into current workflows.

SELECT WORK EXPERIENCE

Wetland, Stream, and Species Mitigation Sites, Various Sites – CA, LA, MD, NC, OR, PA, SC, TN, TX, VA, IN, IL, WV

Prepares graphic and mapping documentation for the Interagency Review Team (IRT) submittal for the development of mitigation banks. Prepares existing constraints mapping including bank site vicinity maps, national wetland inventory maps, threatened and endangered species inventory maps, and cultural resource inventory maps. Prepares all needed graphics and proposed conditions mapping, including proposed mitigation plans.

Louisiana Coastwide Nutria Control Program. Louisiana Department of Wildlife and Fisheries, Statewide, LA

Served as Project Manager to supervise a field crew and overseeing the entire tail collection/disposal process throughout the Louisiana coastal zone. Managed all aspects of data collection, data processing, data management, and data quality control. Other duties included, the process of mapping lease and harvest data, generating weekly, monthly, and seasonal reports for the Louisiana Department of Wildlife and Fisheries (LDWF). Oversaw the accurate and timely payment of participants who were mailed checks after each transaction.

North Texas Municipal Lake Project. North Texas Municipal Water District, Fannin County, TX

Provided complete GIS support for all phases (design, construction, and monitoring) of the largest Permittee Responsible Mitigation (PRM) project to date. Organized, maintained, and disseminated a very large amount of spatial data from a wide range of sources in varying formats. Developed various web applications and dashboards to improve data integrity and dissemination as well as communication with stakeholders, partners, and regulatory agencies. Created customized field data collection applications capable of collecting and displaying data in near-realtime.

Shakopee Mdewakanton Sioux Community (SMSC) Wetland Program Expansion & Refinement, Scott County, MN

Served as the Geospatial Team Lead for this GIS-based project to provide SMSC with a much-improved, more robust wetland program that will facilitate efficient and effective inventory, assessment, monitoring, restoration, and protection for their wetland resources. This project created a dynamic and scalable wetland identification tool designed to use their UAV LiDAR data to model potential wetlands. In addition, a repeatable methodology for identifying threats and stressors using AI/ML technology was developed to create a high resolution, high accuracy land cover dataset. Finally, a web portal was designed to host, communicate, and disseminate SMSC wetland information/data to all stakeholders.

Klamath River Restoration Project

RES is leading the massive restoration effort to restore the Klamath River after multiple dam removals along the river. The RES Geospatial Department created a portal designed to store, disseminate, and visualize the massive amount of data being produced for the project. This included the creation of an automated system for gathering USGS and private stream gauge data for visualization and reporting purposes.

AT A GLANCE.

Contact

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225.372.6104

Years of Experience

18 years

Education

- Master of Natural Sciences, Geography



David Paiko, PE

Geotechnical Engineer

Geotechnical engineer with 18 years of experience including engineering design, project management, quality management, and services during construction (SDC) for large-scale wetland, reservoir, and hydrologic restoration projects across Florida. Background includes geotechnical design lead, subsurface investigations, seepage and stability analyses, services during construction (SDC), and dam safety programs/inspections for large reservoir facilities. Notable wetland projects include the award-winning 4G Ranch Wetlands and the Ocala Groundwater Recharge Park. Those projects were supported by investigation, geotechnical design, permitting compliance, and full-time construction management. Proven record developing tools, processes, and inspection programs to support long-term environmental system performance.

C-43 West Basin Storage Reservoir; SFWMD; LaBelle, FL.

Field Engineer, PM, GMCR Lead for the 10,500 acre C43 reservoir. Oversaw construction of ~19 miles of high-hazard dam embankments, foundation preparation, drainage systems, soil-bentonite cutoff walls, and soil-cement armoring. Led development of electronic QA tools, coordinated a 20-person inspection team, and directed creation of the Geotechnical & Materials Completion Report (GMCR). Supported implementation of dam safety program elements and reservoir operations inspection protocols.

C-44 Reservoir; SFWMD; Indiantown, FL.

Project Manager and dam safety inspection development lead. Implemented tablet-based field inspection systems integrated with the District's RIMS/Dashboard platform. Managed planning, budgeting, and client coordination; led development of multi-disciplinary inspection workflows to support high-hazard reservoir operations.

Lake Okeechobee Component A. Reservoir; SFWMD; Highlands County, FL.

Geotechnical Lead for feasibility-level design of a 13,000-acre, 200,000 acre-foot reservoir. Directed subsurface exploration, seepage and stability modeling, and dam safety feature design including foundation preparation, drainage systems, soil-bentonite cutoff walls, and soil-cement lining. Incorporated lessons learned from C-43 construction to strengthen early-phase recommendations.

4G Ranch Wetlands - Central Pasco County Beneficial Water Reuse Project; Pasco County; Pasco County, FL.

Geotechnical Engineer for design and construction of the award-winning 4G Ranch wetland restoration system. Work included slope stability & seepage modeling, exploration of karst risk, and seepage control design. Served full-time as resident engineer overseeing earthwork, hydraulic structures, piping/valve manifolds, HDD installations, and structural/I&C elements.

Ocala Wetland Groundwater Recharge Park; City of Ocala; Ocala, FL

Geotechnical Engineer for subsurface exploration, geotechnical design, and construction oversight supporting creation of a groundwater recharge wetland system. Directed SPT, CPT, ERI, and GPR investigations to evaluate karst potential. Prepared specifications, provided constructability review, and oversaw berm and trench backfill construction.

Boyette Road Reclaimed Water Reservoir; Pasco County; Pasco, FL.

Resident Engineer for services during construction (SDC) phase and Permit Compliance Engineer for operations-phase inspections of the 500-million-gallon reservoir. SDC tasks included QA observation, inspection, and submittal review for civil, mechanical, and electrical aspects of construction including embankment earthwork, cutoff wall construction by trench remixing deep (TRD), reservoir & toe drain pump stations, stormwater management swales, pipe installation, structural construction, etc.

AT A GLANCE.

Contact

david.paiko@jacobs.com

Years of Experience

18 years

Education

- MS, Civil Engineering, University of Illinois
- MBA (Expected Spring 2026) University of South Florida
- BS, Civil Engineering, University of Portland

Certificates | Licenses

- PE: FL (#77056)
- PE: GA (#PE050003)
- Six Sigma Black Belt Certification

Additional Information

- Heavily involved in the 4G Ranch/Central Pasco Beneficial Water Reuse Project which received several local, national, and international awards.



Paul Maxwell, PG, LEP

Geologist

Paul is experience in providing strategic environmental solutions for clients across various industries. He has managed and executed a wide variety of multi-faceted environmental projects including groundwater monitoring, water well permitting and abandonment, stormwater pollution prevention plans, and sinkhole investigations and evaluations. Paul is passionate about applying geological knowledge to contribute to environmental sustainability and resource management initiatives. Familiar with the analysis and interpretation of geological data using GPS/GIS software and other analytical tools and collaborated with cross-functional teams to integrate geological findings into project designs and development plans. He has assisted clients in navigating environmental regulations and permitting requirements at the federal, state, and local levels. He has experience in collaboration with multidisciplinary teams, including engineers, geologists, and regulatory specialists, to develop comprehensive environmental solutions.

SELECT WORK EXPERIENCE

Port Miami Turbidity and Species Monitoring, Miami, Miami-Dade County, Florida

MSC Cruises is currently expanding its cruise ship berths at PortMiami in Government Cut. The area has multiple cruise ship berths, a coastguard station, two ferry terminals as well as very busy pleasure craft traffic. RES is working to conduct marine species monitoring and water quality (turbidity) monitoring for this 8.5-acre dredging project. The ultimate dredging depth is -38 feet North American Vertical Datum of 1988 (NAVD 88). The dredging portion of the project will take 16- 20 months to complete and is scheduled for completion in late 2024. The project is permitted through several local, state, and federal agencies since it is in a marine preserve. Samples are collected in a boat at least 300 meters upstream of construction and within 150 meters downstream at three depth intervals in the water column (surface, mid-depth, bottom). Sampling starts within 30 minutes of the dredging beginning for the day and every four hours until the dredging ceases for the day. Dredging is conducted seven days a week and generally 12 hours per day. Since the project is in a marine preserve, there is a 0 Nephelometric Turbidity Unit (NTU) regulatory limit over the observed background turbidity levels for this project. Any turbidity exceedances are reported to the client and ultimately to the governing agencies the Florida Department of Environmental Protection (FDEP) and Miami-Dade County Department of Environmental Resources Management (DERM). Dredging work at the site is stopped until the turbidity readings are 0 NTU above the background. RES has developed a custom Survey123 program that collects data from daily activities, the data is uploaded, and then daily maps and logs are created to support the agency's weekly reporting requirements. Mr. Maxwell assists in submitting the weekly turbidity monitoring reports to the client after the field data has been generated and maps are created illustrating the sample locations and other pertinent information.

Environmental Site Assessment Grant, Tallevast, Manatee County, Florida

RES is working for the University of South Florida (USF) through the United States Environmental Protection Agency (USEPA) Brownfields Grant for various phases of environmental assessment activities in the Tallevast community located in Sarasota, Florida. The EPA's Brownfields Program empowers institutions, states, communities, and other stakeholders to work together to prevent, assess, safely clean up, and sustainably reuse contaminated sites. The target area for this Brownfields Grant is the Tallevast community which has approximately 50 properties that have suspected solvent-contaminated groundwater from the former American Beryllium Company (ABC) site. Four of the sites are believed to be among the most contaminated including a church and an adjacent

AT A GLANCE.

Contact

pmaxwell@res.us | 813.947.2777

Years of Experience

15 years

Education

- MS, Geology, University of South Florida, 2017
- Graduate Certificate, Hydrogeology, University of South Florida, 2016
- BS, Environmental Science & Policy, University of South Florida, 2009

Certificates | Licenses

- Florida Professional Geologist #3218 | Received: 6/2024
- INSTEP Licensed Environmental Professional #416
- Florida Water Well Contractor #9542

Additional Information

- OSHA 40 Hour HAZWOPER / OSHA 8 Hour HAZWOPER IAW
- CPR and First Aid
- Florida Phosphate Producers Basic Training
- Part 46 MSHA Surface Mine Training
- FDEP Stormwater, Sediment, Erosion Control Inspector
- Watershed Management Training, USEPA Watershed Academy
- Transportation Worker Identification Credential (TWIC)



vacant lot, and two lots identified for future reuse as a park, green space, housing, healthcare, or commercial facilities. Mr. Maxwell is assisting a team of professionals working on the project with a scope to conduct 20 Phase I Environmental Site Assessments (ESAs), 10 Phase II ESAs, and community outreach.

Monarch Hill Landfill Recommendation Letter, Coconut Creek, Broward County, Florida

Paul is the Project Manager responsible for compiling a letter to the City of Coconut Creek for recommendations regarding a proposed land use amendment to expand landfill operations at the Monarch Hill Landfill facility. The Monarch Hill facility has been operating as a landfill since the mid-1960s. The landfill footprint currently includes three major cells that are referred to as CDSL1, CDSL2, and CDSL3. Filling operations began in 1965 in an unlined cell, CDSL1, with a base depth that was documented to be below the groundwater table. The Monarch Hill facility also includes a solid waste transfer station, a yard waste composting area, a materials recovery facility, and a waste tire processing facility, each permitted under the Broward County Environmental Protection and Growth Management Division (EPGMD) license Number SW-LF00076-21/Florida Department of Environmental Protection (FDEP) Permit Number 05323-033-SC. In addition to the extensive expansions, the facility has undergone multiple drainage system alterations to accommodate the operational changes. The facility has been designated as an "existing installation" according to 62-520.200(10), Florida Administrative Code (FAC), and therefore exempt from compliance with secondary water quality standards outside the zone of discharge as provided by Rule 62-520.310(14), FAC.

Bonita Springs Fire Control and Rescue District, Bonita Springs, Florida

The Bonita Springs Fire Control & Rescue District Training Facility includes a fire-fighting training area where aqueous film-forming foam (AFFF) has been used to suppress fires during training exercises. The constituents perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) are included in AFFF and make up some of the proprietary fluorosurfactant components. The site contains a burn tower with multiple burn props, three retention ponds (two typically dry and one typically filled with water), multiple drainage systems, and does not utilize any on-site water wells. The facility and burn tower were constructed in 2006 and most of the training is conducted on the north and west sides of the burn tower. Mr. Maxwell was the project manager for a Per- and poly-fluoroalkyl (PFAS) PFAS groundwater assessment conducted in suspected areas where AFFF was used for training procedures. Groundwater monitoring wells were installed and sampled for PFAS constituents. Additional assessment at the facility has been conducted by FDEP's Site Investigation Section (SIS).

Englewood Area Fire Control District Training Center, Englewood, Florida

The Englewood Area Fire Control District Training Center Training Facility includes a fire-fighting training area where AFFF has been used to suppress fires during training exercises. Preliminary site assessment activities were conducted in 2019, which consisted of sampling soils, sediments, surface water, and groundwater. The sampling locations were selected based on likely areas where AFFF was used and stored, as well as drainage basins and migration pathways from training areas to surface drainage areas. These areas were identified based on FDEP interviews with site personnel, FDEP site reconnaissance, and a review of historical aerial photographs. Groundwater analytical results of a sample collected from a temporary monitor well indicated an elevated concentration of PFOS+PFAS. Based on the preliminary assessment, Mr. Maxwell supervised the installation of additional groundwater monitoring wells at the site to determine aquifer characteristics and delineate the contaminated groundwater. Additional assessment at the site has been paused based on the State of Florida Legislature House Bill 1475.

Plantation Fire Department, Plantation, Florida

The Plantation Fire Department Training Center is located within the Plantation Fire Department Station 4 and includes a three-story burn tower, an administrative office and firetruck garage building, a burn pit located in the southwest portion of the property, and an AFFF training area located in the southeast portion of the property. In December 2019, FDEP SIS personnel conducted a ground penetrating radar (GPR) survey, installed soil borings and temporary groundwater monitoring wells, and collected soil, groundwater, and product samples for laboratory analysis. The results of the assessment indicated that PFOS compounds were detected at concentrations exceeding Provisional Soil Cleanup Target Levels (PSTCLs) in soil samples collected from four of the nine borings, and concentrations of PFOS & PFOA in the groundwater sample collected were below the Provisional Groundwater Cleanup Target Level (PGCTL) and Florida Department of Health lifetime health advisory level (HAL). Mr. Maxwell was the project manager for the subsequent assessment which included a further assessment of soils, defining aquifer characteristics, and installation of permanent groundwater monitoring wells for sample collection. Quarterly groundwater monitoring followed the site assessment activities and additional assessment at the facility has been conducted by FDEP SIS.



Mechelle Kerns, Ph.D., PMP, RPA

Lead Archaeologist

Dr. Mechelle Kerns has extensive experience as a professional archaeologist specializing in cultural resource management. She has directed cultural resources surveys for all phases of investigation at historic and prehistoric sites in the eastern United States, working with both private and public sector clients. Her project experience includes working for the USACE, the National Park Service (NPS), the U.S. Army, the Florida Department of Transportation (FDOT), Miami-Dade County, and the City of Annapolis, Maryland.

Dr. Kerns has received training and has hands-on experience in conducting compliance surveys for Section 106 of the National Historic Preservation Act (NHPA) and the National Environmental Policy Act (NEPA). She is a registered member of the Register of Professional Archaeologists (RPA). She exceeds the qualifications established by the Secretary of the Interior's (SOI) Standards and Guidelines for Archaeology and Historic Preservation. Additionally, she holds a Project Management Professional (PMP) certification.

Throughout her career, Dr. Kerns has written and contributed to numerous compliance reports, NEPA permitting documents, research design documents, cultural resource management plans, resource inventories, archaeological monitoring work plans, and health and safety plans. She also has supervisory experience, managing, mentoring, and training junior staff for fieldwork and report composition.

In addition to her archaeological work, Dr. Kerns teaches U.S. and World History for the University of Maryland System (UMGC). Previously, she taught undergraduate classes at the U.S. Naval Academy and the University of Baltimore. She has also been part of the curation team at the U.S. Naval Academy Museum in Annapolis, Maryland, for the Naval History and Heritage Command.

SELECT WORK EXPERIENCE

Project Title, Client, Role, City, State, Date

Wetland mitigation bank for a commercial parking development in Illinois. RES is currently engaged in the first Task of a multi-Task wetland mitigation solution. The initial Task includes land identification and site assessment for mitigation and conceptual mitigation plan development including regulatory coordination. Erin serves as RES' Client Solutions Manager for this contract and leads client interaction in coordination with the RES project management team.

PREVIOUS WORK EXPERIENCE

Riverfront Canal Repair, City of Columbia, South Carolina

Principal Investigator. Responsible for archaeological testing and archaeological monitoring during construction.

Archaeological Monitoring for SR 90/US HWY-41/Tamiami Trail from Structure S-333 to Structure S-334, FDOT District Six and NPS Everglades, Miami-Dade County, Florida (2020 – 2023)

Project Manager. Responsible for archaeological monitoring for a 10-mile project corridor in the Florida Everglades. \$300,000

IDIQ for Cultural Resources Support, FDOT District Six, Miami-Dade County, Florida (2018 – 2022)

Project Manager. Responsible for HPA Section 106/NEPA cultural resource surveys of 100 tasks assigned by FDOT District Six for archaeological survey and monitoring. \$1,600,000

AT A GLANCE.

Contact

mkerns@res.us | 410.409.5187

Years of Experience

25 years

Education

- Ph.D., Archaeology and History, University of St Andrews, Scotland, 2004
- MA, Public History, University of Maryland, Baltimore County, 1999
- BA, Ancient Studies, University of Maryland, Baltimore County, 1996

Certificates | Licenses

- Project Management Professional (PMP), 2022
- Registered Professional Archaeologist, 2004

Additional Information

- Hazardous Waste Site Worker (40 hour) OSHA 29CFR1910.120 (e) (3) (i)
- National Preservation Institute, Section 106: A Review for Experienced Practitioners
- DAN Oxygen First Aid for Scuba Diving Injuries
- Maryland Department of Natural Resources, Maryland Boaters Course
- PADI Rescue Diver
- Scientific Diver
- Dive Master (IANTD)
- Nitrox Diver (IANTD)



Matthew Martin, GISP

Wetland Scientist

Matt is a senior scientist with experience in environmental science, including planning, assessment, and restoration. He has experience coordinating complex projects and working directly with clients to achieve project goals and ensure timely delivery of project deliverables. His ecological experience includes environmental resource permitting, threatened and endangered species surveys and monitoring, wetland delineation, monitoring, and restoration, wetland mitigation site planning, monitoring, and reporting, dune and coastal habitat monitoring and restoration, NEPA studies, biological monitoring for offshore pipeline cover remediation, lake management and aquatic restoration.

He is also proficient in geospatial efforts including ArcGIS software, geospatial analysis and modeling, web-based mapping and web application development, utility mapping and GPS data collection and analysis, geodatabase management, and raster analysis for wetland and habitat assessment.

SELECT WORK EXPERIENCE

I-75 (SR 93) Widening from Turnpike (SR 91) to SR 200 PD&E Study, FDOT District Five, Sumter and Marion Counties, Florida

Served as a Senior Scientist, assisting with field surveys to collect and analyze data for wetlands, protected species and essential fish habitat. He served as lead author for the preparation of the Natural Resources Evaluation Report documenting potential impacts with each of the project alternatives including over 100 pond alternatives. Species-specific surveys were conducted for the gopher tortoise and the longspurred mint with a draft relocation plan for the longspurred mint developed by RES and approved by the USFWS. RES also provided the WQIE Checklist and Farmlands.

Shingle Creek Regional Trail Phase II, Osceola County, Florida

Provided ecological assessment for the Shingle Creek Regional Trail project, including wetland determination, GPS data collection, qualitative assessment and GIS analysis and mapping.

Woodland Avenue Pedestrian Bridge, Polk County, Florida

Performed a wetland delineation and wildlife habitat evaluation for a proposed pedestrian bridge reconstruction project being conducted by Polk County. The purpose of the pedestrian bridge project was to provide enhanced safety and design standard improvements to the structural support and modification of the existing dilapidated walkway. Assisted in the preparation of documentation and applications for a State General Permit and Federal Nationwide permit greatly reducing the timeframes for permit issuance.

West Florida Aggregates Engineering Support, Hernando County, Florida

Conducted the 2018 transect setup and baseline monitoring event for the reference and target wetlands in accordance with the SWFWMD Wetland Assessment Procedure (WAP). Support included soil assessment, review of historical aerial photographs, review of historic and baseline climate conditions, WAP vegetative monitoring, data collection, and reporting.

Water Conserve II Reservoir Study, Orange County, Florida

Provided ecological assessment for the Water Conserve II project, including a wetland determination, GPS data collection, qualitative assessment and GIS analysis and mapping.

Creel Street Wetland Feasibility Study, City of Melbourne, Brevard County, Florida

Provided an ecological assessment for this project. He performed field survey and qualitative assessment of onsite wetlands that were then analyzed using the UMAM to assess the functional quality of onsite wetlands, including GIS analysis and mapping.

AT A GLANCE.

Contact Information

mmartin@res.us | 407.481.9006

Years of Experience

25 years

Education

- BS, Marine Environmental Science, Coastal Carolina University
- Graduate Certificate in GIS, University of Central Florida

Certificates | Licenses

- GISP Certification No. 160737
- FWC Authorized Gopher Tortoise Agent GTA-21-00023
- FDEP Wetland Delineation Training Course
- Princeton Groundwater Pollution and Hydrology
- FDEP SOP Sampling Training for Groundwater, Surface Water and Wastewater
- HAZWOPER 40-Hour
- Advanced Open Water Dive Certification



Bill Lites

Ecologist

With over 37 years of experience in ecological consulting and environmental planning and permitting across Florida, Bill brings a deep understanding of the state’s diverse ecosystems and regulatory landscape. As Environmental Director, Project Manager, and Field Ecologist, he has led and supported a wide range of projects involving environmental planning and design, listed species surveys, wetland delineations and functional assessments, habitat management planning, mitigation design (upland and wetland creation, enhancement and restoration) and permitting wetlands and listed species.

SELECT WORK EXPERIENCE

Viera Stewardship District (VSD), Environmental Professional (EP), Viera, Florida

Bill serves as staff to the VSD (F.S. Chapter 189 Special Government) Board as the EP for the ±5,280-acre Viera Wilderness Park (VWP) focusing on habitat restoration, enhancement, management, budgeting, and contracting for exotic species control, tree canopy habitat maintenance, prescribed burn coordination, under brushing, monitoring, and reporting. Bill assesses all the preserved natural habitats in the Villages and the VWP and prioritizes areas for regular habitat management to enhance the “Conservation District” to eliminate exotic species, conduct prescribed burns, and necessary mulching to remain in compliance with the HMP and state and federal permits.

Daytona State College – Deltona Campus Florida Scrub Jay Safe Harbor and HMP, Project Manager/ Ecological Team Lead, Deltona, Florida

Bill discovered a 10-year-old Safe Harbor Agreement (SHA) and Incidental Take Permit (ITP) for the 100-acre Daytona State College site in Deltona, Florida. He coordinated with FWS to extend the 20-year permit for 10 more years and updated the SHA to modify the HMP and take responsibility for management from Volusia County. Bill has conducted Florida scrub jay surveys to identify territorial ranges, and population estimates each summer for the last 6 years. Bill prescribes habitat restoration/enhancement of approximately 20% of the scrub to be managed each year. Bill obtains bids from contractors, supervises the enhancement and reports on the habitat restoration each year to the FWS.

Reunion Resort and Club DRI Environmental Planning and Permitting, Project Manager/Ecological Team Lead, Osceola County, Florida

Bill performed wetland delineations, functional assessments, and listed species surveys (sand skink, Florida scrub jay, bald eagle, sandhill crane, federally listed plants, etc.) for 15 years on this ±2000-acre DRI. Bill created a comprehensive mitigation, habitat enhancement, and management plan that included long-term restoration of ±50 acres scrub habitat, relocation of the federally listed scrub buckwheat, and long-term monitoring of sand skink populations and exotic species eradication. The conservation area management was funded by the Community Development District (CDD) and has been actively managed for resource protection and passive recreation centered on the Davenport Creek corridor.

Lake Nona DRI Wetland Assessment, Comprehensive Mitigation Design, and Permitting, Project Manager/Ecological Team Lead, Orlando, Florida

Bill performed wetland and wildlife surveys on the ±7,000-acre Lake Nona DRI. He led teams of ecologists that delineated wetlands and conducted function assessments on thousands of acres of wetlands as part of the state and federal permitting efforts in the DRI. He designed and permitted the Primary Conservation Network (PCN), a comprehensive mitigation plan. Bill obtained multiple environmental permits from the USACE, the SFWMD, and FWC for wetland and listed species impacts, mitigation, and relocation. Bill implemented the wetland enhancement and upland restoration components of the PCN mitigation for over a decade for each phase of development. This included specifying the restored habitat target type, restoration methods, contracting, overseeing the restoration/enhancement, and long term monitoring/reporting to the agencies.

AT A GLANCE.

Contact

blites@res.us | 407.832.1758

Years of Experience

37 years

Education

- B.S. Biology University of Central Florida, 1987

Certificates | Licenses

- Authorized Gopher Tortoise Agent (GTA) 12-00018-H
- Authorized Imperiled Beach Nesting Bird (IBNB) Monitor, LSIT-25-00332
- USACE Certified Wetland Delineator

Additional Information

- C Former Florida Green Building Coalition (FGBC): Board of Directors, Chairman and Board Liaison, Green Development Committee Chair



Greenway Park DRI Wetland Delineation, Mitigation Planning, and Permitting, Project Manager/Ecological Team Lead, Orange County, Florida

Bill served as the project manager and ecologist for this ±2000-acre DRI to obtain Conceptual and construction permits from federal, state, and local agencies. Bill led a team of ecologists to perform wetland determinations and functional assessments, protected species surveys, and designed a comprehensive mitigation plan and HMP for wetland and listed species impacts which included a network of wildlife corridors and a substantial component of upland restoration and enhancement. Bill developed the upland restoration methodology, directed sub-contractors to implement the restoration, conducted long-term monitoring and maintenance, and provided annual monitoring reports to regulatory agencies.

Forest Lake Academy Environmental Design, Permitting, and Implementation, Project Manager/Lead Ecologist, Seminole County, Florida

Bill performed wetland delineations and functional assessments, threatened and endangered species surveys, and comprehensive mitigation design on this ±450-acre project near Apopka, FL. Bill designed and implemented the Central Greenway Corridor (CGC) which includes wetland creation, planting and maintenance, upland restoration/enhancement, and upland and wetland preservation. Over 10 years, Bill permitted each phase of development/mitigation and implemented, contracted, monitored, and maintained the CGC.

Ormond Beach Meadows Mitigation, Environmental Director, Ormond Beach, Florida

Bill worked for the City of Ormond Beach to provide a HMP and secured bids from independent contractors to perform upland and wetland enhancement and maintenance on 41 acres of a Conservation Easement located west of the Ormond Beach Airport Business Park. Management was required to remain compliant with the SJRWMD ERPs that utilized these areas for onsite mitigation.

Ormond Beach 901 Airport Road Land Management, Environmental Supervisor, Volusia County, Florida

Bill directed ecologists who worked for the City of Ormond Beach, and the SJRWMD to establish a Land Management Plan (LMP) for the 19-acre property on Airport Road that is being utilized to offset Riparian Habitat Protection Zone (RHPZ) impacts for a FDOT roadway expansion project. The LMP included habitat descriptions, recommended and allowed land management and maintenance activities, and described the resource-based recreational activities (mountain bike trails) authorized by the Conservation Easement.

Edgewater Public Works Complex, Environmental Director/Ecological Team Lead, Edgewater, Florida

Bill coordinated with the City of Edgewater to design and permit a new public works facility on ±70 acres. The project was permitted through the SJRWMD to impact wetlands, which are required to be mitigated onsite because there are no freshwater herbaceous mitigation credits within Basin 21. Bill led ecologists to identify and design a 5-acre mitigation plan which includes wetland and upland habitat enhancement and preservation. Bill developed a HMP which defined management activities.

Cypress Landing, Project Manager/Ecological Team Lead, West Melbourne, Florida

Bill implemented an onsite mitigation plan which included wetland and upland enhancement/restoration, buffer plantings, exotic species eradication, and monitoring/reporting for 5 years. The team performed all management, monitoring and reporting and obtained final release.



Maria Loinaz, PhD, PE

MIKE SHE Modeler

Maria is an integral part of the leadership team as the Director of Modeling Innovation and Technology. Maria has her PhD, PE licensure in the state of Florida, and has 25 years of experience in MIKE SHE/HYDRO/11 modeling. Maria regularly interfaces with permitting and design teams related to model set-up and model results to ensure models are representative of proposed restoration design features and to communicate model results so that the design reflects the modeling appropriately. Not only is Maria an expert in MIKE SHE, MIKE 11 and MIKE Hydro models, but she is also a professional engineer in the State of Florida which enables her to integrate seamlessly with design teams for successful projects from conception through construction-ready plans. She specializes in modeling of hydraulics/hydrology, groundwater systems, and water quality, with an emphasis on surface water and groundwater interactions. Her experience includes numerous water resources applications, such as regional watershed restoration and planning studies, stormwater master plans, flood control assessments, wetland impacts studies, climate change and sea level rise (SLR) scenarios, and hydraulic systems design. She has vast experience working with GIS tools and developing customized models and tools that automate model input and output, aid in data analysis, and add processes to models, such as particle tracking and water quality components.

SELECT WORK EXPERIENCE

Corkscrew Watershed Initiative, South Florida Water Management District. Technical Lead, Integrated Surface Water and Groundwater Modeling.

The SFWMD's Corkscrew Watershed Initiative Project (CWI) encompasses southern Lee County and northern Collier County. The project area is generally comprised of rivers (Imperial, Estero), creeks (Halfway, Spring) and wetland sloughs/swamps (Flint Pen Strand, Upper Corkscrew Swamp) within the Estero Bay Basin Watershed in south Lee County and the Cocohatchee Canal/River Basin and Golden Gate/Naples Bay Watershed in north Collier County. The objective of the Corkscrew Watershed Initiative is to develop a comprehensive strategy to achieve ecological restoration of the Corkscrew system (in particular it has been affected by dryer conditions during the dry seasons and shortened hydroperiods, which negatively impacts feeding ability of wading birds such as the Wood Stork), reduce flood risk downstream of the system, without adversely impacting water supply within the region. Maria refined an existing MIKE SHE/MIKE Hydro model to evaluate both flooding conditions and drought conditions within the project area. A key challenge in the modeling effort was the accurate representation of 1D, 2D, and 3D water movement in the Corkscrew wetlands areas, as well as the water budget dynamics, i.e., rainfall-runoff-storage dynamics and losses via ET, groundwater pumping and flow and stormwater and primary drainage systems. Maria also built an existing conditions model to be used as a baseline for future conditions model and alternative analysis. Future conditions modeling is currently underway.

Bond Farm Hydrological Enhancement, Florida Fish and Wildlife Conservation Commission and SFWMD. Hydrologic/Hydraulic Modeler.

The Bond Farm Hydrological Enhancement Project – Phase I, project consists of converting a 669-acre farm property to a Flow Equalization Basin (FEB) that would store 4 feet of water from the Babcock-Webb Wildlife Management Area (WMA). Water will enter the FEB from two locations and will follow the existing outfall location, which currently flows to the headwaters of Powell Creek and Gator Slough via Prairie Pines Preserve. This phase of the Charlotte Harbor Flatwoods Initiative will help reduce hydroperiods in southern Babcock-Webb WMA. The purpose of the proposed action is regional hydrological restoration. The intent is to use the Bond Farm (project site) as a flow equalization basin to capture and hold surface waters in order to help restore seasonal high-water levels and wetland hydroperiods upstream of the Bond Farm on the Babcock-Webb WMA and downstream from the Bond Farm on the Yucca Pens Unit. An integrated surface water and groundwater model (MIKE SHE/MIKE 11) was developed to support the design effort by testing the proposed infrastructure

AT A GLANCE.

Contact

mloinaz@collectivewater.com

Years of Experience

25 years

Education

- BA, Environmental Studies, Washington University
- ME, Environmental Engineering, University of Florida
- PhD, Environmental Engineering, Technical University of Denmark

Certificates | Licenses

- PE – Florida #68443

Proficiencies

- ArcPro + Extensions
- Python, Visual Basic, C#.NET
- HEC-RAS
- StormWise
- MIKE 11/MIKE
- MIKE HYDRO
- MIKE SHE
- MIKE 21/MIKE FLOOD
- MODFLOW
- ECO Lab



under design storm conditions, estimate the impact of the project on surrounding areas and evaluate the potential benefits of the projects in the Babcock-Webb WMA and the Yucca Pens Unit. Maria reviewed and modified the model based on changes in the design and collected field information. She also analyzed the impact of the project to adjacent residential and wetland areas.

EAA A-2 Storage Reservoir and Treatment Wetlands Feasibility Study, South Florida Water Management District. Lead Hydrologic/Hydraulic and Groundwater Modeler.

The project evaluated alternatives for the construction of the A-2 reservoir in the Everglades Agricultural Area with a storage capacity of 240,000 ac-ft and a 6,500-acre Stormwater Treatment Area (STA). Surface water models (MIKE 11) were developed to perform hydraulic design calculations associated with sizing of the reservoir inflow and outflow canals, seepage canals, and control structures. Maria developed a 3-dimensional (3D) groundwater model coupled to a surface water model (MIKE SHE/MIKE 11) to predict the potential groundwater seepage impacts of the reservoir into the adjacent lands. In addition, Maria helped develop and oversaw 1D (MIKE 11) and 2D (ICPR4) surface water models in support of the preliminary design of the STA portion of the project. The hydraulic performance of several configuration alternatives for the STA were evaluated using several hydraulic measures representative of treatment efficiency. These were assessed against other variables such as construction, operation and maintenance costs and a preferred alternative was recommended for the STA design.

Cape Coral Weir 7 Design. Lead Modeler.

The City of Cape Coral redesigned the Weir 7 control structure, to provide flood protection against a 100-year storm event. Weir 7 is the southernmost freshwater basin control structure, separating City's fresh system from its tidal basins. The operation of Weir 7 needs to balance flood protection with basin storage capabilities and water use demand. The MIKE SHE model that was developed and calibrated for the Cape Coral Stormwater Master Plan, which includes the entire City boundary and adjacent watersheds (Yucca Pens WMA, Babcock / Webb WMA and the Gator Slough, and North Ft. Myers basins), was used to evaluate the potential reduction in flood risk in Basin 16 of three design alternatives for Weir 7 under the 25-year, 3-day and 100-year, 3-day design storms. Maria lead the modeling effort and analysis.

I-75 Widening & Watershed Study, Florida Dept. of Transportation (FDOT) Lead Surface Water and Groundwater Modeler.

Maria refined and calibrated the Tidal Caloosahatchee Basin MIKE SHE/MIKE 11 model, including a 560-square mile area that drains into the Charlotte Harbor and Caloosahatchee River estuaries. The model was used to identify flow blockages that impede flows from east of I-75 to west of I-75 south of Punta Gorda and evaluate the impact of widening this stretch of I-75. The modeling was conducted at various scales and resolutions to evaluate regional flow patterns, as well as local impacts in storage and flow due to the road construction. A comprehensive approach was proposed that provides regional solution instead of the typical stormwater management facilities used in road construction or expansion. The proposed project will improve wetland hydroperiods, enhance upland habitat, reduce excessive wet season freshwater discharges to tide, improve estuarine health, and is anticipated to reduce the overall cost of expanding I-75 from 2 to 3 lanes between Tuckers Grade Road and the Lee County Line.

Cape Coral Basin Study for Utilities Expansion and Weir 20 Modifications (Cape Coral). Project Manager/Technical Lead.

The City of Cape Coral Utility Extension Projects (UEP) consist of expanding their extensive irrigation network to the North 2 and North 1 sections located in the northern drainage basins of the city. The Cape Coral Stormwater Master Plan MIKE SHE/MIKE 11 model was updated in key areas to evaluate the impact of added UEP areas for present and future conditions. In addition, the model was used to optimize the discharge from a pump station that controls the flow from the north basins to the southern basins and to modify water control structures that control the inflow and outflow to the northern basins to increase storage. The analysis focused on balancing the need of maximizing storage during the dry season, while maintaining flood control during the wet season under different land use (UEP) scenarios. Modifications of other structures, such as the Weir 20 modifications for flood control were also evaluated. Maria provided guidance, reviewed, and contributed to the model scenario development, analysis and report.



James Greco, PH

MIKE SHE QA/QC

James is a professional hydrologist with over 20 years of experience in hydrologic and hydraulic modeling, data collection, field planning, project studies, specifications preparation, environmental permitting, inspections, and mapping. He has completed integrated surface water/groundwater modeling with MIKE SHE and MIKE 11 and conducted other hydrology and hydraulics modeling with HEC-RAS, HEC-HMS, EPA SWMM, HSPF, and ICPR. Simulations assessed open channel flow, pipe hydraulics, runoff, groundwater levels, evapotranspiration, rainfall, and soil moisture. Additional modeling in support of design/alternatives analysis has been undertaken by James for BMP optimization and control structure operations in support of wetland/environmental restoration, flood control and water quality assessments.

Big Cypress Basin Curry Canal Structure Evaluation, South Florida Water Management District, Collier County, FL. Project Manager. Revised and utilized the BCB-FloodWatch model, developed in MIKE SHE/MIKE 11, to simulate the effects of a proposed operable control structure in the Curry Canal, and determine if additional water table storage can be provided by the structure during dry season months, while maintaining existing levels of flood protection and conveyance in the major canals. MIKE SHE/MIKE-11 simulations consisted of a 2-year continuous simulation as well as a 25-year 3-day design storm event.

Comprehensive Stormwater Management Master Plan Development, East County Water Control District, Lee County, FL. Project Hydrologist.

Conducted MIKE SHE/MIKE 11 modeling for the hydrologic and hydraulic modeling, along with detailed evaluation of design projects to reduce flooding, promote additional groundwater recharge, improve dry season baseflows, enhance wetland hydroperiods, and improve water quality. Also collected field data detailing channel cross sections, weirs, and gates to develop a MIKE 11 model network.

Cypress Creek Hydrologic Restoration and Upland Enhancement Feasibility Assessment, Pasco County, FL. Project Manager/Technical Lead.

Leading a multiservice project team to develop a feasibility study to improve the hydrologic function of historic wetlands that have been ditched and drained for agricultural purposes, since the 1950s. The team has conducted field efforts to characterize wetland communities, site soils, developed and simulated conceptual BMPs to store surface water runoff before release to the watershed and restore wetland hydrology and quality through modeling and analysis. Deliverables included conceptual sketches and Class V cost estimates.

Yucca Pens Hydrologic Restoration, South Florida Water Management District and Florida Fish and Wildlife Conservation Commission, Lee County, FL. Project Hydrologist.

Designed channel blocks to reduce over-drainage of the Yucca Pens Preserve into Gator Slough. Also used Natural Resources Conservation Service curve number techniques and HEC-RAS to simulate a hydrograph for a 100-year flood for Yucca Pens, a tributary of Gator Slough in the Cape Coral area.

Winter Haven Sapphire Necklace; RES; Polk County, FL. Lead Hydrologist QA/QC.

James assisted with the update of an existing MIKE SHE/MIKE HYDRO model to simulate a proposed wetland enhancement and groundwater recharge project. Updates included extending the calibration period, updating boundary conditions, adding Mike Hydro 1D elements, and an injection well. The updated model was used to simulate diversion from the Peace Creek Drainage Canal and aquifer recharge via constructed wetland and injection well. Model results and water budget calculations were used to evaluate compliance with MFLs for streams and lakes near the area of interest.

Three Lakes Integrated Modeling, South Florida Water Management District and Florida Fish and Wildlife Commission, Osceola County, FL. Project Hydrologist.

Conducted MIKE SHE/MIKE-11 modeling studies of Three Lakes to assess environmental impacts in wetlands and lakes resulting from structural and land use modifications. Simulations were evaluated against measured data, and water balance calculations were conducted to assess potential impacts of land use changes in the watershed, structural controls of the lakes, on wetland hydroperiods, groundwater, lake, and stream levels and flow.

AT A GLANCE.

Contact

jamesgreco@jacobs.com |
813.939.6415

Years of Experience

21 years

Education

- MS, Water and Soil Resources, University of Georgia
- BSA, Horticulture, University of Georgia

Certificates | Licenses

- Professional Hydrologist



Rich Morrison, PE

Civil Design Lead

Rich Morrison is a civil design lead specializing in hydrologic restoration and nature-based water infrastructure. He develops grading, hydraulic structures, conveyance systems, and seepage-control designs informed by survey data and H&H modeling, delivering constructible, permit-ready wetland solutions.

SELECT WORK EXPERIENCE

Edgewater Wetland Park, Deering Park Stewardship District, City of Edgewater, FL

Rich served as Civil Design Lead for the 50-acre constructed wetland system that will reuse up to 3 mgd of reclaimed water for aquifer recharge. He prepared grading, piping, berm, and planting-plan designs, along with permit-ready drawings. He also supported modeling to guide system sizing and contributed to a multifunctional wetland that will improve water quality, habitat, and public recreation.

City of Ocala Wetland Recharge Park, City of Ocala, FL

Rich served as Civil Design Lead for the 35-acre wetland recharge park that reuses reclaimed and stormwater to support the Silver Springs system. He completed civil design drawings for grading, hydraulic structures, culverts, piping, berms, and planting plans, and developed permit-ready packages. Rich supported hydraulic modeling to optimize wetland cell performance and contributed to a system designed to recharge up to 5 mgd and reduce nitrate to background levels.

4G Ranch Wetlands, Pasco County Utilities Services Branch, Pasco County, FL

Rich served as Civil Design Lead for the 176-acre, 15-cell wetland system that reuses up to 5 mgd of reclaimed water for groundwater recharge and nitrate reduction. He prepared detailed grading, conveyance, berm, and planting-plan designs and supported permit submittals. Rich also informed design through hydraulic inputs, helping deliver a high-performance ecological and recharge system.

Crews Lake Natural Systems Restoration Project, Pasco County Utilities Services Branch, Pasco County, FL

Rich served as Civil Design Lead, preparing grading, hydraulic structure, conveyance, berm, and planting-plan designs to support restoration of lake levels. He developed permit-ready documents and incorporated hydraulic analysis to produce a nature-based design that improves hydrology and habitat.

Restoration Program Design Services USDA Natural Resources Conservation Service

Rich prepared civil design drawings and specifications for ditch blocks, berms, grading, and flow-restoration features for large-scale wetland restorations under the NRCS program. He translated hydrologic modeling inputs into constructible designs, developed details for ditch blocks and rehydration features, and contributed to permit drawings, construction packages, and cost estimates to restore natural hydrology across diverse wetland systems.

Arcadia Treatment Wetland, City of Arcadia, FL

Rich served as Civil Design Lead, preparing grading, hydraulic structure, culvert, piping, berm, and planting-plan designs to convert stormwater ponds into a high-performance treatment wetland. He produced permit-ready plans and supported hydraulic modeling to size treatment and flow-control features, contributing to a nature-based solution that improves water quality and supports long-term compliance.

AT A GLANCE.

Contact

richard.morrison@jacobs.com

Years of Experience

23 Years

Education

BS, Civil Engineering,
University of Florida, 2002

Certificates | Licenses

Professional Engineer: Florida
(2007, PE# 67713)



Tim Morris, PSM

Lead Surveyor

Tim has 25 23 years of experience surveying, 20 years in responsible charge of accuracy and completeness of boundary surveys, A.L.T.A/A.C.S.M. surveys, topographic surveys, jurisdictional wetland delineation surveys, construction staking / layouts, as-built surveys, record platting, bridge deformation monitoring, Florida Department of Transportation right of way control surveys, right of way maps, and design surveys. He is currently charged with the operation of our Subsurface Utility Services, and Unmanned Aerial Systems mapping including the project planning and production of deliverables.

SELECT WORK EXPERIENCE

Project Surveyor, Misc. Drainage Improvements, City of Plant City, Plant City, Florida.
This project involved drainage system analysis at several locations throughout the City. Oversaw the establishment of control at multiple sites & performed topographic mapping in support of the engineering analysis.

Project Manager, SR 91, FDOT Turnpike Enterprise District, Osceola County, Florida.
Purpose of this project was to create final alignment & right of way determination for future use on 17.4-mile project (from mile post 204.36 to mile post 221.72) in Osceola County. Researched & coordinated field recovery of plats, certified corner records, right of way maps, & government notes for the purpose of the creation of alignment control maps.

Project Surveyor, Webster Turn Drive Reconstruction & Rehabilitation, Sebring Airport Authority, Sebring, Florida.

This project involved the design for reconstruction and, in certain areas, repair of existing pavement along the 0.7-mile 2-lane rural roadway section within the airport district. Existing stormwater pipes crossing under Webster Turn Drive were evaluated for rehabilitation or replacement needs. Services included utility coordination, SWFWMD Environmental Resource Permit modification, and bid phase assistance.

Project Surveyor, West Landover Sidewalk, Hernando County Board of County Commissioners, Spring Hill, Florida.

This project involved the design of 1.2 miles of new sidewalk along Landover Boulevard from Northcliffe Road to Elgin Boulevard. The County contracted with CivilSurv to complete the design survey utilizing UAS (drone) and photogrammetric mapping methods. CivilSurv's survey deliverable was used by the County's Engineering Department as the basis for design of the new sidewalk.

Project Surveyor, Old Northeast Infrastructure, City of St. Petersburg, St. Petersburg, Florida.

This project is for the design and upgrading of the water service and improving the drainage system in the area. Much of the existing infrastructure in this area dates back to the early 1900s. Due to its age and other considerations, the existing infrastructure is antiquated and in need of replacement. CivilSurv established the horizontal and vertical control, collected topographic and storm sewer information, and recovered the existing right of way. The survey will be used as the basis for design of infrastructure improvements.

Project Surveyor, Five Points Roundabout, City of Lakeland, Lakeland, Florida.

This project involved the design of a new roundabout at the intersection of Lake Beulah Drive, Sloan Avenue, and West Main Street in Lakeland, Florida. The project will serve as a gateway to the City's Downtown West area and improve access to Bonnet Springs Park. CivilSurv's responsibilities for the project included SUE Level A utility locates.

Project Surveyor, Memorial Drive Multi-Use Trail, Highlands County Board of County Commissioners, Sebring, Florida.

This project involved the design of 1.4-miles of a new 8-foot-wide multi-use trail within the existing Memorial Drive right of way. The multi-use trail connects with an existing multi-use trail at Pompano Drive and existing sidewalk at Sebring Parkway. The drainage system design concept for the project involved the utilization of existing drainage infrastructure, where possible. This innovative approach required the use of multiple typical cross sections throughout the project and resulted in significant reductions to the overall project costs. The project was performed under a Local Agency Program (LAP) project agreement between FDOT and Highlands County. Responsibilities included topographic survey.

AT A GLANCE.

Contact

tmorris@civilsurv.com

Years of Experience

25+ years

Education

- BS / Geomatics / University of Florida / With Honors

Certificates | Licenses

- Professional Surveyor & Mapper FL# LS7261
- Issued: 9/25/2019
- Mapping with Small Unmanned Aerial Systems Certificate University of Florida

Additional Information

- LiDAR
- Subsurface Utility Engineering
- Mapping with Unmanned Aerial Systems
- Project Management



Pieter De Wolf, PE

Field Technician Lead

Pieter is an environmental engineer specializing in the design, construction, and monitoring of constructed wetlands and other natural treatment systems for water treatment and purification. Project experience includes insitu water quality monitoring, quality assurance oversight of construction, design-build of natural treatment systems, and post-construction monitoring of constructed treatment systems. Pieter became an FAA certified remote pilot-in-command to operate small unmanned aerial systems (drones) for geophysical surveys, photography, and videography. With experience as a licensed pilot and extensive recreational drone experience, Pieter brings a unique perspective using his knowledge of natural systems to provide construction progress updates and aerial surveys.

Bonita Springs Utilities Wetland Monitoring Services, Bonita Springs, FL, Field Engineer/Project Manager.

Project is long-term multi-year environmental monitoring program started over 20 years ago. This program includes an assessment of wetland health and hydrologic conditions influenced by groundwater withdrawals from municipal wellfields. Pieter's role includes planning and conducting seasonal site visits to document wetland functional indicators, vegetation and habitat condition, and incidental wildlife observations. Pieter also leads the hydrologic analysis by validating piezometer and shallow monitoring well data and performing statistical evaluations to identify long-term trends in wetland condition.

Ritch Grissom Memorial Wetlands Wetland Operation Optimization, Brevard County, FL, Project Manager/Drone Pilot.

Project supports Brevard County's rehabilitation and optimization of the hydraulics and hydrology of the 200-acre Ritch Grissom Memorial Wetlands. Pieter's role as the Drone Pilot was to conduct field visits to conduct drone flights following FAA requirements to collect high-resolution aerial imagery for vegetation assessment. As the Project Manager, Pieter planned and conducted seasonal field visits to perform on-site ground-truthing to confirm species identification and validate aerial interpretations. Field work and drone information was compiled to evaluate operational improvement recommendations including guided wetland maintenance, hydrologic improvements and long-term treatment performance optimization for the constructed wetlands.

Joes Creek Stream Restoration, Pinellas County Utilities, Pinellas County, FL, Field Engineer.

Project incorporates a wholistic approach to reducing watershed flooding and improving water quality along five miles of highly urbanized creek in Pinellas County. In the preliminary design phase, Pieter contributed by developing natural systems based water quality improvement solutions and conducting extensive field assessments to document existing site conditions and constraints.

Beneficial Water Reuse Project: 4G Ranch Wetlands Project, Pasco County, FL, Project Engineer/Drone Pilot.

Project Engineer and Drone Pilot supporting construction and post-construction optimization of a 175-acre groundwater recharge treatment wetland. Pieter conducted post-construction aerial (drone) surveys and supported optimization of the automated system for three years following startup. He contributed to the O&M manual, data management, GIS mapping, fieldwork, annual optimization reports, and final client recommendations.

AT A GLANCE.

Contact

Pieter De Wolf@jacobs.com

Years of Experience

8 years

Education

- ME, Environmental Engineering, University of Florida
- BS, Environmental Engineering, University of Florida

Certificates | Licenses

- Professional Engineer, FL #97754
- Part 107 Registered Drone Operator, FAA #4362959



Jordan Bentley

Lead Field Technician

Highly motivated Environmental Professional with 8 years of progressive experience in stormwater management, regulatory compliance, & water quality sampling. Proven ability to conduct specialized technical lab & field work, including FDEP-certified inspections & sampling to ensure compliance with federal & local environmental codes.

SELECT WORK EXPERIENCE

Peace River Restoration, Polk County, Field Lead, Bartow, FL, 2025-2026

Wetland Restoration project at the confluence of Peace River and Saddle Creek. Currently tasked with coordinating field operations including, but not limited to, sampling events, discharge measurement, monitoring stations, and data analysis.

Newnan's Lake Restoration, Alachua County, Field Lead, Gainesville, FL, 2025-26

Wetland Restoration project at the Newnan's Lake Conservation Area. Currently tasked with coordinating field operations including, but not limited to, soil/water sampling events, discharge measurement, monitoring stations, and data analysis.

Turkey Creek Sediment Inactivation Pilot Study, Field Lead, Brevard County, FL, 2025-2026

Pilot Study related to nutrient inactivation of sediments in the Turkey Creek basin. Jordan is tasked with coordinating field operations including, but not limited to muck probing, sediment sampling, and data analysis.

Lake Tilden Hydrologic/Nutrient Budget & Water Quality Management Plan, CPWG , Environmental Specialist, Orange County, FL, 2015-2016

Evaluated Lake Tilden and its surrounding basin to identify pollutant sources, quantify their contributions, and recommend best management practices to reduce nutrient loading, improve water quality, and ensure compliance with environmental regulations, supporting sustainable watershed management and the development of a Total Maximum Daily Load (TMDL) to restore the lake to meet Class III waterbody standards. Jordan worked in the field to collect water samples, sediment cores, and discharge measurements with the Flowtracker 1. He also worked as an analyst to analyze water quality data collected and create isopleth maps showing nutrient distributions in the lake sediment.

Lake Gem Mary Hydrologic/Nutrient Budget & Water Quality Management Plan, CPWG , Environmental Specialist, Orange County, FL, 2015-2016

Evaluated Lake Gem Mary and its surrounding basin to identify pollutant sources, quantify their contributions, and recommend best management practices to reduce nutrient loading, improve water quality, ensure compliance with environmental regulations, supporting sustainable watershed management and the development of a Total Maximum Daily Load (TMDL) to restore the lake to meet Class III waterbody standards. Jordan worked in the field to collect water samples, sediment cores, and continuous discharge measurements with ISCO 2150's. He also worked as an analyst to calibrate meters, analyze water quality data collected, and create isopleth maps showing nutrient distributions in the lake sediment.

Lake Burkett Hydrologic/Nutrient Budget & Water Quality Management Plan, CPWG, Environmental Specialist, Orange County, FL, 2015-2016

Evaluated Lake Burkett and its surrounding basin to identify pollutant sources, quantify their contributions, and recommend best management practices to reduce nutrient loading, improve water quality, and ensure compliance with environmental regulations, supporting sustainable watershed management and the development of a Total Maximum Daily Load (TMDL) to restore the lake to meet Class III waterbody standards. Jordan worked in the field to collect water samples, collect sediment cores, build/install seepage meters and sample their contents. He also worked as an analyst to calibrate meters, analyze water quality data collected, and create isopleth maps showing nutrient distributions in the lake sediment.

AT A GLANCE.

Contact

jbentley@res.us | 407.488.0724

Years of Experience

8 years

Education

- Environmental Studies, BS, UCF 2014

Certificates | Licenses

- FDEP Stormwater Inspector
- FSA Stormwater Operator II
- HAZWOPER 40
- FAA Part 107 Drone Operator
- PADI Basic Open Water Scuba
- Florida Boater Safety

Additional Information

- **Languages:** Fluent in Spanish, Conversational in Portuguese.
- **Software:** ArcGIS, ICPR, Flowtracker, Levellogger, Winsitu, Manta 2 Control, Microsoft Office Suite.
- **Core Skills:** Regulatory Compliance (NNC, BMAP, TMDL, NPDES), Water Quality Monitoring, Discharge Measurement, Project Management.



Thomas “TJ” LaRoue, P.E.

Project Engineer

TJ’s background primarily includes drainage improvement projects, water quality improvement/retrofit projects, water quality sampling, remediation, programming, and natural system restoration (i.e., wetlands and lakes). His experience includes project management, engineering design and modeling, groundwater and soil sampling, and construction supervision.

SELECT WORK EXPERIENCE

Winter Haven Sapphire Restoration and Aquifer Recharge Project, Polk County, FL

Thomas is the technical lead for this full delivery public-private partnership project with the City of Winter Haven to provide 2MGD+ of aquifer recharge to the Floridan Aquifer and restore approximately 700 acres of previous agricultural lands to historic wetland communities. RES is designing, building, maintaining, and monitoring the project using in-house ecological engineering, science, and restoration practitioners.

Lemon Creek Wildflower Preserve Habitat Restoration, Charlotte County, FL

Served as Project Engineer for the SWFWMD on the Lemon Creek Wildflower Preserve habitat restoration project, a multi-partner initiative led with the Lemon Bay Conservancy and National Oceanic and Atmospheric Administration to restore coastal wetland and upland habitats on a former golf course site. The project transformed altered ponds and drainage features into a connected mosaic of freshwater and estuarine wetlands by regrading pond banks, restoring tidal connectivity to Lemon Creek and Lemon Bay, removing underground drainage infrastructure, expanding wetlands, and installing extensive native plantings. The restoration improved water quality, enhanced nursery habitat for estuarine fisheries, and increased ecological resilience within the Charlotte Harbor watershed. As a project engineer, supported planning and implementation of restoration design and construction activities, coordinated with consultants and stakeholders, reviewed technical deliverables, and assisted with permitting, construction oversight, and project documentation to ensure the restoration objectives and regulatory requirements were achieved.

Alligator Creek Wetlands Restoration, Charlotte County, FL

Served as Project Engineer for the SWFWMD on the Alligator Creek Wetlands Restoration Project, a large-scale hydrologic and ecosystem restoration effort within the Charlotte Harbor Preserve system. The project restored hundreds of acres of degraded freshwater and coastal wetlands impacted by historic mosquito ditching and drainage alterations by backfilling miles of ditches, removing invasive vegetation, and reestablishing natural hydroperiods and salinity gradients. These actions were designed to improve water quality and restore critical nursery habitat for fish species within the Charlotte Harbor estuary, one of southwest Florida’s most productive estuarine systems. In his role, he supported engineering and restoration implementation by coordinating project design and construction activities, reviewing technical plans and specifications, assisting with permitting and regulatory coordination, and working with interdisciplinary teams and contractors to ensure restoration goals related to hydrology, habitat function, and ecological performance were achieved.

Newnans Lake Restoration, Alachua County, FL

This TMDL-driven watershed restoration project will restore over 3,000 linear feet of stream and 400 acres of wetland floodplain to reduce nutrient loads entering Newnans Lake. As a design engineer, Thomas is providing support for the engineering design and modeling efforts for the project. The project is expected to remove more than 1,500 pounds of total nitrogen and over 600 pounds of total phosphorus annually. Key strategies include enhanced biosorption bioswales for stormwater treatment, in-lake sediment inactivation to bind existing nutrients, and stream restoration.

Headwaters of the Peace River Restoration at Wilson Ranch, Polk County, FL

As a design engineer, Thomas is providing engineering support for this full delivery public-private partnership project with Polk County to improve water quality and hydrologic conditions in the highly impaired Upper Peace River Basin, that feeds Charlotte Harbor Estuary. RES acquired a 400+ acre parcel to implement a stream and wetland restoration project that will reduce approximately 1 metric ton of total phosphorus and 2 metric tons of total nitrogen. RES is designing, building, maintaining, and monitoring the project using in-house ecological engineering, science, and restoration practitioners.

AT A GLANCE.

Email

tlaroue@res.us | 727.457.9981

Years of Experience

12 years

Education

- MS. Civil Engineering
- BS. Civil Engineering

Certificates | Licenses

- Professional Engineer, FL #84301

Additional Information

- Past President, VP, and Treasurer – American Society of Civil Engineers – Ridge Branch



Construction will be supported by an external earthwork contractor. Once constructed, RES will own and operate the project for 25 years before the project is transferred to Polk County.

Lake Lulu WQ Improvement, Permitting and Design, Polk County, FL

Directed permitting and design to rehydrate/reconnect degraded floodplain wetlands along the Lake Lulu shoreline that have been disconnected from the lake. The purpose of this project was to remove excess nutrients in the surface water to meet TMDL requirements.

Florida Fish and Wildlife Conservation Commission, Hilochee Wildlife Management Area Hydrological Assessment, Tallahassee, FL

The project consists of the Polk County portion of the approximately 16,000 acres of Hilochee WMA. The emphasis of the Florida Fish and Wildlife Conservation Commission (FWC) was to develop and support restoration strategies and management activities to re-establish sheet flow and rainfall-driven hydroperiods to improve the function of both terrestrial and aquatic habitats. Both desktop and field review identified existing features to be surveyed. Historic aerials were used to determine areas within the existing digital terrain model (DTM) that needed to be modified to reflect historical conditions. The historical conditions DTM was used in the development of the historical conditions MIKE SHE model. The existing conditions model was then used to create a proposed conditions model that included the addition of control structures and berms to simulate historical hydrologic conditions. A hydrologic assessment report was developed to provide FWC with water regulation schedules, draw-down rates, annual variations in water depth and hydroperiods, identify enhancements to habitats, and monitoring plans.

Lake County, Pasture Reserve, Lake County, FL

Served as Engineer of Record. Pasture Reserve is roughly 810 acres of conservation land consisting of a mosaic of uplands and wetlands, including cypress strands, marsh, mixed forested wetlands, pasture and pine flatwoods. This was a natural systems habitat project involving hydrologic and ecosystems enhancement and restoration. The restoration goal was to create sustainable surficial connections to wetlands which are currently connected by culverts and bisected by ditches/dikes and to improve natural sheet flow as much as possible.



Required Forms

PART IV - SUBMITTAL FORMS PROPOSAL SUBMITTAL SIGNATURE FORM

1.	Project Team Name and Title	Years experience	City of office individual will work out of for this project	City individual's office is normally located	City of individual's residence
	Justin Freedman, General Manager	24	Ft. Lauderdale, FL	Ft. Lauderdale, FL	Hollywood, FL
	Renee Price, PWS, CE Project Manager	14	St. Petersburg, FL	St. Petersburg, FL	St. Petersburg, FL
	Rafael Vazquez-Burney, PE, Design Lead	20	Tampa, FL	Tampa, FL	St. Petersburg, FL
	David Mahnken, Technical Writer	37	Orlando, FL	Orlando, FL	Winter Spring, FL
	Amanda Berens, PE, P.G, CHG, H&H Lead Modeler	26	Tampa, FL	Tampa, FL	Safety Harbor, FL
	Benji Guempel, GIS Lead	18	Baton Rouge LA	Baton Rouge, LA	Prairieville, LA
	Matt Martin, Wetland Scientist	24	Orlando, FL	Orlando, FL	Altamonte Springs, FL
	Bill Lites, Ecologist	37	Deland, FL	Deland, FL	Orange City, FL
	Mechelle Keen, PhD, PMP, RPA, Archaeologist	25	Columbia, SC	Columbia, SC	Columbia, SC
	Mary, Szafraniec, Technical Advisor	20	Tampa, FL	Tampa, FL	Tampa, FL
	Paul Maxwell, PG, Geologist	15	Orlando, FL	Orlando, FL	Land O' Lakes
	David Paiko, PE, Geotechnical Engineer	18	Tampa, FL	Tampa, FL	Tampa, FL
	Jordan Bentley, Field Technician	8	Orlando, FL	Orlando, FL	Orlando, FL
	TJ LaRoue, PE, Project Engineer	12	Tampa, FL	Tampa, FL	Tampa, FL
	Richard Morrison, PE, Civil Engineering Lead	23	Gainesville, FL	Gainesville, FL	Gainesville, FL
	Tim Morris, PSM, Survey Lead	25	Lakeland, FL	Lakeland, FL	Plant City, FL
	Maria Loinaz, PhD, PE, MIKE SHE Modeler	25	St. Petersburg, FL	St. Petersburg, FL	St. Petersburg, FL
	James Greco, PH, MIKE SHE QA/QC	21	Tampa, FL	Tampa, FL	Tampa, FL
	Pieter De Wolf, Lead Field Technician	8	St. Petersburg, FL	St. Petersburg, FL	St. Petersburg, FL
2. Magnitude of Company Operations					
	A) Total professional services fees received within last 24 months:			\$ 46,290,108	
	B) Number of similar projects started within last 24 months:			4 (project team only)	
	C) Largest single project to date: Bois d'Arc Lake Mitigation Project			\$ 135,543,987	
3. Magnitude of Charlotte County Projects					
	A) Number of current or scheduled County Projects			0	
	B) Payments received from the County over the past 24 months (based upon executed contracts with the County).			\$ 0	
4. Sub-Consultant(s) (if applicable)					
	Sub-Consultant(s) (if applicable)	Location	% of Work to be Provided	Services to be Provided	
	Jacobs	Sarasota, FL	40%	Engineering Support	
	Schnabel Geotechnical Design & Construction	Tampa, FL	5%	Geotechnical Support	
	Collective Water Resources, LLC	West Palm Beach, FL	10%	H&H Modeling Support	
	CIVISURV Inc.	Lakeland, FL	5%	Survey Support	
5. Disclosure of interest or involvement: List below all private sector clients with whom you have an active pending contract and who have an interest within the areas affected by this project. Also, include any properties or interests held by your firm, or officers of your firm, within the areas affected by this project. None.					
	Firm	Address			
	Phone #	Contact Name			
	Start Date	Ending Date			
	Project Name/Description				

NAME OF FIRM RES Florida Consulting, LLC

(This form must be completed and returned)



DRUG FREE WORKPLACE FORM

The undersigned vendor in accordance with Florida Statute 287.087 hereby certifies that RES Florida Consulting, LLC
does: (name of business)

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).
4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
5. Impose a sanction on or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.
6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Justin French

Proposer's Signature

03/03/2026
Date

NAME OF FIRM RES Florida Consulting, LLC
(This form must be completed and returned)



**HUMAN TRAFFICKING AFFIDAVIT
for Nongovernmental Entities Pursuant To FS. §787.06**

Charlotte County Contract #20260279

The undersigned on behalf of the entity listed below, (the "Nongovernmental Entity"), hereby attests under penalty of perjury as follows:

1. I am over the age of 18 and I have personal knowledge of the matters set forth except as otherwise set forth herein.
2. I am an officer or representative of the Nongovernmental Entity and authorized to provide this affidavit on the Company's behalf.
3. Nongovernmental Entity does not use coercion for labor or services as defined in Section 787.06, Florida Statutes.
4. This declaration is made pursuant to Section 92.525, Florida Statutes. I understand that making a false statement in this declaration may subject me to criminal penalties.

Under penalties of perjury, I declare that I have read the foregoing Human Trafficking Affidavit and that the facts stated in it are true.

Further Affiant sayeth naught.

Signature

Justin Freedman

Printed Name

General Manager

Title

RES Florida Consulting, LLC

Nongovernmental Entity

03/03/2026

Date

END OF PART IV

NAME OF FIRM RES Florida Consulting, LLC

(This form must be completed and returned)