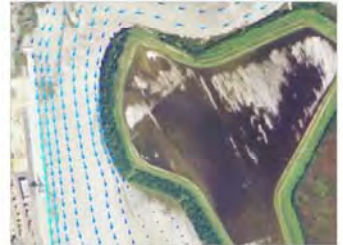


APPLIED TECHNOLOGY & MANAGEMENT

PROPOSAL FOR CONSULTING SERVICES

FEASIBILITY STUDY FOR DOCKING FACILITIES

SITES 80, 81, 82, 83, AND 84 AT THE PORT OF SOUTH LOUISIANA



SUBMITTED TO:
SHAH MATHIAS
AMERI METRO, INC.

NOVEMBER 14, 2012

ATMSM
APPLIED TECHNOLOGY & MANAGEMENT
www.appliedtm.com



5550 NW 111th BLVD.
GAINESVILLE, FLORIDA 32653
TEL: 386-418-6400
FAX: 386-418-6401

www.appliedtm.com

November 14, 2012

Shah Mathias
CEO, Ameri Metro, Inc.
Windsor Commons, Suite 3137A
Red Lion, PA 17356

Re: Feasibility Study for Docking Facilities at Sites 80, 81, 82, 83 and 84 at the Port of South Louisiana

Dear Mr. Mathias:

ATM understands that your group is in need of technical support in relation to development of docking facilities at various potential sites at the Port of South Louisiana. The support relates ultimately to the design and permitting of facilities to handle 4 to 6 vessels per site. As we discussed, the first phase of such a project is to perform analyses related to the economic, engineering, and environmental feasibility of the sites for the desired uses. Attached herein (along with supporting material) is a project approach that would be utilized in executing an environmental and engineering feasibility assessment for each of the proposed sites as it relates to the docking facilities. This would be the first phase of the proposed project and would coincide with other economic, engineering, and environmental feasibility assessments of the land-based portions of the various properties, storage and transportation of cargo shipped through these facilities.

As discussed, ATM is currently available to support your team on this project. I have attached materials related to ATM and its experience in the area of Port Feasibility and berth design and permitting. Additionally, I have provided a Project Approach that would be utilized in executing the feasibility assessment. If the approach meets your needs we can discuss costs and timing.

Please contact me if you have any questions or wish to discuss what we have provided. I can be contacted at the numbers shown below.

Sincerely,

A handwritten signature in blue ink, appearing to read 'S. Peene', is written over a light blue horizontal line.

Steven J. Peene, Ph.D.
Vice President
Office: 850-765-8150
Cell: 850-591-1888

APPLIED TECHNOLOGY & MANAGEMENT

PROPOSAL TO AMERI METRO, INC. for

FEASIBILITY STUDY FOR DOCKING FACILITIES

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APPLIED TECHNOLOGY & MANAGEMENT

FEASIBILITY STUDY FOR DOCKING FACILITIES

1.0 ATM QUALIFICATIONS AND EXPERIENCE

1.1 COMPANY OVERVIEW AND PROFESSIONAL SERVICES

Applied Technology & Management, Inc.

Company Overview

Applied Technology & Management, Inc. (ATM) is a coastal, environmental, marine, and water resources engineering, design, and consulting firm serving public and private clients worldwide.

Founded in 1984, ATM has eight offices throughout the eastern United States. A ninth office is located in Dubai, U.A.E. We have established an exceptional reputation for providing clients in the United States and worldwide with innovative and proactive solutions for their project challenges.

Our projects range from environmental impact assessments and municipal wastewater treatment plant design to permitting and design of resort and municipal marinas, and beach renourishment.

From project planning through implementation, ATM's technical professionals have the expertise to economically deliver the range of services needed to resolve complex engineering and environmental challenges for projects in all environments.

ATM's highly qualified technical staff of engineers, scientists, and consultants; network of offices; and years of experience allow us to provide the strategic assistance necessary for making projects successful.



Marine and Waterfront Development

Planning, design, engineering, construction services, and operations consulting for marinas, ports, and harbor navigation projects. Services range from initial feasibility evaluations and permitting through construction. We also offer complete financial and environmental management planning to our clients to ensure sustainable project development

Coastal Engineering

Assessment and management of shorelines for long-term recreational use, storm protection, and habitat protection from planning and permitting through design and construction. Our waterside solutions for coastal communities and developers include dredging, beach renourishment, and surveying. ATM provides viable and effective solutions for all coastal issues including shoreline and inlet management, littoral dynamics and processes, and protection from storm surge, storm waves, and sea level rise.

Environmental and Civil Engineering

Planning, financing assistance, design, permitting, operations assessment and compliance needs for water, wastewater, stormwater, and other regulated systems to meet any infrastructure demand. Our team services both private and public clients from municipalities and resort developments to industrial and agricultural facilities. ATM has LEED-certified staff and actively works with clients to develop sustainable green initiatives.

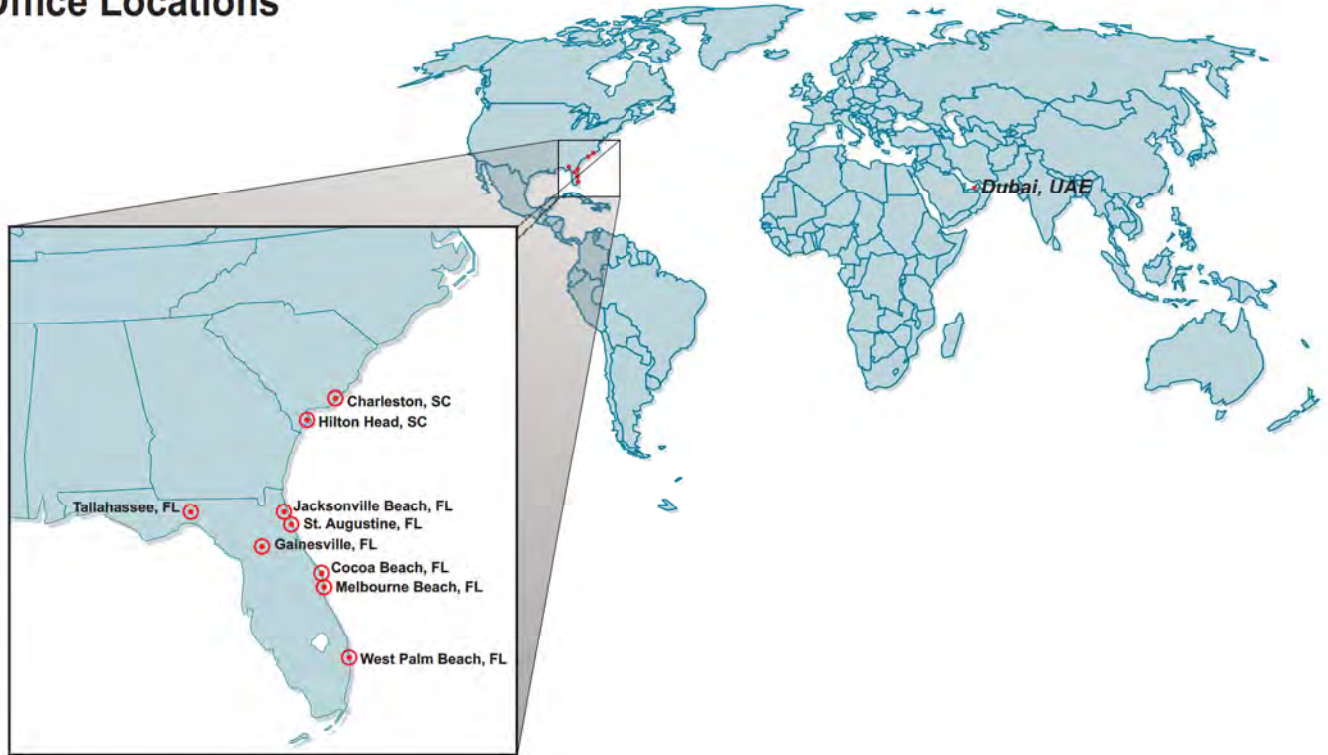
Ecological and Environmental Sciences

Environmental and ecological evaluations, planning, management, permitting, and mitigation services to meet regulatory requirements for uplands, wetlands, estuarine, and island systems. We offer a full range of services including NEPA and environmental impact assessments, wetlands delineations, surveying, compliance monitoring, threatened and endangered species evaluations, and habitat restoration.

Water Resources

Comprehensive solutions to a wide range of water-related issues including complex hydrodynamic, hydraulic, and water quality modeling; monitoring program development and implementation; impact assessment; and detailed hydraulic design support. ATM helps clients negotiate the regulatory process while protecting aquatic resources and providing a better understanding of issues that affect them.

Applied Technology & Management Office Locations



Florida

1435 E. Piedmont Drive, Suite 210
Tallahassee, FL 32308
(850) 765-8150 tel
(850) 591-1888 alt tel
(386) 418-6401 fax

411 Pablo Avenue
Jacksonville Beach, FL 32250
(904) 249-8009 tel
(904) 249-8007 fax

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St. Augustine, FL 32084
(904) 249-8009 tel
(904) 808-8478 fax

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Gainesville, FL 32653
(386) 418-6400 tel
(386) 418-6401 fax

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(561) 659-0041 tel
(561) 659-3733 fax

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PO Box 20336
Charleston, SC 29413-0336
(843) 414-1040 tel
(843) 414-0155 fax

PO Box 24156
Hilton Head Island, SC 29925-4156
(843) 290-0980 tel

Dubai, U.A.E.

SHIPPING: IBN Battuta Gate Building
Ground Floor #G0007
MAILING: PO Box 487197
Dubai, U.A.E.
971 (4) 432-9263 office
971 (4) 432-9265 fax

Additional Staff are Located:

Cocoa Beach, FL
(800) 275-6488 tel

Melbourne Beach, FL
(321) 403-2163 tel

Visit our website at:
www.appliedtm.com

Applied Technology & Management, Inc.

Professional Service Areas Overview



Water Resources

- Hydrodynamic and Water Quality Modeling
- Hydraulic and Floodplain Modeling
- Watershed Assessment/ Stormwater Management and Planning
- TMDL Development and Advocacy
- Basin Management Action Planning (BMAP)
- Stakeholder Outreach and Participation
- Point and Nonpoint Source Pollutant Load Reductions
- Mixing Zone Studies
- Integrated Water Resources Management Plans
- NPDES and Environmental Resource Permitting
- Potable and Irrigation Water Supply
- Data Collection and Field Services

Ecological / Environmental Sciences

- Environmental Impact Assessments and Environmental Impact Statements
- Environmental Management Plans
- Environmental Monitoring Plans
- Environmental Baseline Surveys
- Mitigation Planning and Design
- Water Quality Management
- Mangrove, Reef, and Sea Grass Management Plans
- Land Management
- Ecological Impact Assessments
- Plant and Wildlife Surveys
- Wetland Characterization and Delineation
- Wetlands Assessments/ Mitigation/Jurisdiction
- Mitigation Planning and Implementation
- Ecological Restoration
- Coral/Seagrass Relocation
- Surveying and Mapping
- Protected Species Studies and Mitigation
- Habitat Management Plans
- Terrestrial and Aquatic Species Monitoring

Coastal Engineering

- Coastal Analysis, Site Evaluation, and Modeling
- Beach Nourishment, Feasibility, Design and Permitting
- Shoreline Stabilization and Coastal Structures
- Wave and Shoreline Modeling
- Inlet and Channel Management
- Dredging Design Services
- Habitat Restoration and Enhancement
- Environmental Permitting and Negotiation
- International Resort Development and Planning
- Surveys and Environmental Assessments

Environmental / Civil Engineering

- Land Development
- Regulatory Compliance
- Funding Facilitation
- Resort Infrastructure Development
- Roadway Drainage and Stormwater Design
- Utility Design
- Water Distribution and Treatment Plant Design
- Wastewater and Reclaimed Water Systems
- Federal State and Local Permitting
- Construction Management Services
- Stormwater Systems Design
- Best Management Practice (BMP) Development
- Aquarium and Life Support Systems
- Effluent Disposal System Design
- Compliance Audits
- Environmental Audits

Marina and Waterfront Development

- Market Analysis
- Due Diligence and Business Audits
- Planning and Feasibility Studies
- Financial Analysis and Pro Forma Projection Modeling
- Engineering Studies and Design
- Dredge and Disposal Evaluations
- Environmental Permitting
- Operation Plans
- Grant Funding
- Bidding and Construction Contract Administration



Port and Harbor Development Services

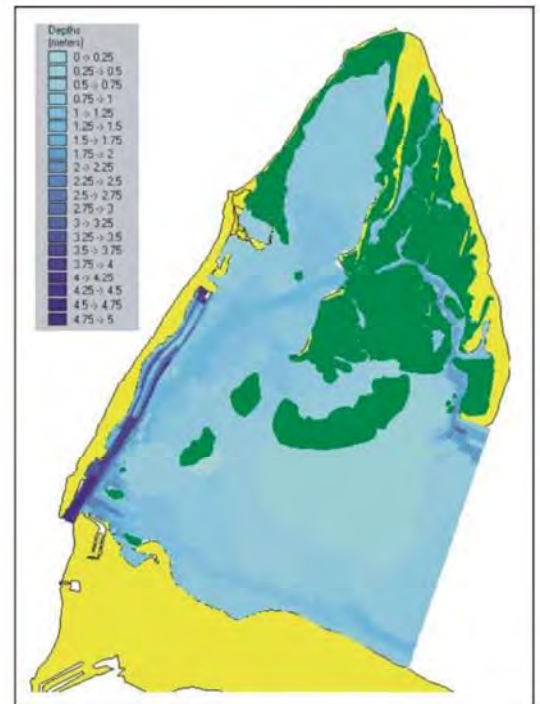
Enhancing Port Prosperity and Growth

- Sedimentation Minimization
- Field Services and Surveys
- Dredged Material Management
- Predictive Modeling
- Permitting and Environmental Compliance
- Strategic Development
- Environmental Impact Assessment Preparation

Since its inception in 1984, ATM has provided engineering and science services for countless harbor navigation and waterfront development projects. Whether addressing coastal engineering challenges or environmental impact concerns, ATM applies the latest technologies and management strategies to achieve client objectives in a cost-efficient manner. Our project list includes port and harbor expansions, marina development, maintenance dredging, dredged materials management, container berth design evaluation, cruise ship destination development, channel and berth deepening/widening, and inlet management planning.

ATM has developed an extensive resume working on harbor and shore projects within the United States Army Corps of Engineers South Atlantic Division (USACE-SAD) in support of navigation, dredging, coastal engineering, water resource management, and ecosystem restoration projects. We routinely coordinate with Federal, State and local government authorities on behalf of our Eastern United States, Gulf Coast, Caribbean, and international clients.

ATM assists port and harbor clients in minimizing operations and maintenance costs, optimizing the capacity of waterfront facilities, streamlining permitting and environmental compliance, and maximizing port revenue and strategic development.



Dredged Material Management and Planning Services

The Problem

Dredging and the management of dredge materials are among the greatest consumers of time, space and financial resources for ports, harbors, and private marine interests. Facility owners and operators must deal with multiple regulations, complex contaminant/chemical assessments and stringent requirements for the disposal of materials. These factors contribute to the rising operations and maintenance (O&M) costs and/or costs associated with the development of most new marine facilities.

With the availability of waterfront property decreasing, marine interests are being asked to maximize usage of space. The greatest dredging challenge most often lies in identifying acceptable disposal options. Disposal sites must satisfy present and/or future needs and at the same time not constrain the site from a more productive use for the client.

ATM offsets such constraints by developing effective dredge management master plans as part of strategic initiatives for port facilities and waterfront developments. Using 3-D hydrodynamic modeling, current velocity profile assessments, precision hydrographic surveys and in-depth knowledge of coastal/fluid mechanics, ATM quantifies sediment accumulation and shoaling rates throughout the port. ATM pairs state-of-the-art technology with scientific and engineering expertise, specializing in pinpointing innovative and cost-effective solutions that exceed the client's goals while satisfying ever-changing regulatory requirements.



OVER 

Dredged Material Management and Planning Services

The Solution

With decades of combined experience, ATM's scientists and engineers have demonstrated expertise in dredge management planning. No matter how complex the issues, these experts effectively direct dredge material management based on the following four criteria.

- **Knowing Our Client's Current and Future Disposal Needs.** ATM's engineers and scientists work closely with marine facility owners and operators to determine amounts of materials to be removed and calculate the associated O&M cost that can be expected from the dredging of channels, berths and slips. Using 3-D hydrodynamic modeling, current velocity profile assessments, precision hydrographic surveys and in-depth knowledge of coastal/fluid mechanics, ATM quantifies sediment accumulation and shoaling rates throughout the facility. This technology and expertise makes it possible to extrapolate collected data through computer computation to provide results with great accuracy. With such information, ATM contributes to enhanced planning for new berth/slip construction when O&M costs associated with dredging figure heavily into the feasibility of a project.
- **Understanding the Complexities of Sediment Geochemistry, Contamination and Regulatory Disposal Guidelines.** ATM's scientists and engineers are authorities on the complex behavior of contaminants found in sediments within harbors and port facilities. Knowledge of these physical/chemical issues, along with water quality guidelines and sediment quality criteria enables them to adequately plan for the disposing and/or remediation of highly contaminated dredge material. ATM applies innovative techniques coupled with negotiating talent to make impossible dredging projects a reality.
- **Knowledge of Designing Confined Disposal Facilities (CDF) and Implementation of Measures to Maximize Material Capacity.** ATM's methods for designing and modeling disposal containment systems are unique and have been developed and approved through years of interaction with the United States Army Corps of Engineers. The proficiency of ATM's engineers and scientists for designing CDFs results in structures that are capable of exceeding water quality guidelines and the sediment quality criteria promulgated by federal and state agencies. ATM works to maximize the pumping rate into the CDF while simultaneously attenuating contaminant concentrations and anticipated turbidity from the dredged material. ATM's design solutions include dike elevations and weir placement that provide the optimum retention time for materials and cost savings for clients.
- **Tenacity for Solving Complex Dredging Problems in a Short Period of Time.** Each day, ATM's scientists and engineers work to develop better dredge material management plans that exceed client goals in both cost savings and performance. Whether dealing with elevated contaminant levels or a limited disposal capacity, ATM takes pride in years of proven experience, an unparalleled track record and the ability to solve the most challenging dredge-related issues.

Environmental Services for the Port Industry

Record Port Growth with Record Environmental Needs

With the port sector experiencing an era of unprecedented growth, Port Authorities are pressed to increase their capacity through faster rates of cargo exchange and expanded port facilities. Navigating the myriad environmental issues and increasing regulations that influence design options can be challenging and time consuming. Decisions for a course of action that affect short- and long-term construction, environmental impacts, and Operations and Maintenance (O&M) costs must be made with current and complete information. Access to experienced professionals for effective design and rapid permitting is, therefore, essential to continuing a port's prosperous growth into the future.



One-Stop Shop for Environmental Services

ATM offers experienced engineering and science professionals in technical disciplines that meet a port's changing environmental needs. These services include water resources engineering and science, civil and coastal engineering, biological and ecological sciences, hazardous materials remediation and other related disciplines. ATM staff use their expertise in dredge materials management, predictive hydrodynamic modeling, environmental impact assessments and mitigation options to work with port operators to optimize the design and development of terminals, berths, slips, intermodal and container yards with an end result that maximizes site utilization.



No Surprises from Experienced Professionals

ATM's methodology is to anticipate environmental issues and requirements before they become more time-consuming or expensive for our clients. Our experienced professionals thoroughly evaluate project designs, assess all environmental impacts and provide acceptable mitigation or design alternatives. With ATM's up-front contributions during planning, proactive approach to the regulatory community and wealth of technical expertise, the permitting process is streamlined, O&M is minimized and mitigation costs are reduced for years to come.

OVER 

Environmental Services for the Port Industry

The following is a comprehensive list of environmental services ATM provides to our clients. Our unique and innovative delivery of these services has perpetuated our continued success. Please contact our offices and our staff will be happy to discuss any of our services with you.

NEPA Permitting/Documentation

- Environmental Assessments
- Environmental Impact Studies/Statements
- Individual/Nationwide Permits

Wetland Jurisdictional Determinations and Section 404 Permitting

- Identify vegetation, hydrology, or hydric soils that would indicate freshwater wetlands
- Delineate boundaries of jurisdictional wetlands and coastal marshland (salt marsh)
- Determine areas of unavoidable wetland impacts and calculate mitigation credits required by the Army Corps of Engineers to offset adverse effects to wetlands
- Design mitigation plans such as wetland and salt marsh creation
- Perform post-construction monitoring of mitigation sites

Sediment Geochemistry Evaluations

- Chemical analysis of potential dredge material for sediment-bound contaminants of concern that may become available during dredging operations and adversely impact surrounding ecological populations
- Elutriate testing of potential dredge material to evaluate compliance with water quality standards and potential water column toxicity
- Physical testing of sediments to evaluate settling characteristics and design upland disposal facilities

Phase I and II Contamination Assessments

- ASTM Standard 1527 Phase I Environmental Site Assessments
- Phase II subsurface soil and groundwater investigations
- Hydrogeologic studies
- Groundwater contaminant fate and transport modeling/analysis
- Site remediation planning, design and management

Essential Fish Habitat Assessments

- Species determinations
- Habitat evaluations

Threatened and Endangered Species Surveys

- Identify potential fish and wildlife species in the project area that are classified as threatened or endangered by the U.S. Fish and Wildlife Service



1.2 SELECTED PROJECTS

Community Impact Assessments, Environmental Justice Evaluations, and Community Outreach Plans

SC State Ports Authority Port of Charleston, South Carolina

When the SCSPA applied for a federal permit to construct a marine container terminal at the Charleston Naval Complex in North Charleston (CNC), SC, the application was evaluated in accordance with the National Environmental Policy Act (NEPA). To complete the evaluation, ATM was contracted to develop an Environmental Impact Statement (EIS) following the policies and procedures outlined in NEPA.

One of the basic tenets of NEPA is the comprehensive consideration and involvement of the general public. This includes disseminating information to citizens before decisions are made and actions are taken, as well as completing thorough assessments of communities potentially impacted by the proposed project.



Public Outreach

Public involvement is a requisite of the NEPA process and, as such, critical to the development of a successful EIS. ATM is experienced in designing community outreach plans that promote the full and fair participation by all potentially affected communities in the decision-making process (a fundamental principle of environmental justice). For example, for the SCSPA project, ATM utilized many forms of project information dissemination, including neighborhood outreach meetings, public information workshops, press releases, newsletters, email alerts, flyers, hotlines, and a public-access website (www.PortEIS.com).

ATM considered the public outreach plan for the SCSPA project to be a success. In fact, after reviewing the Draft EIS, the U.S. Environmental Protection Agency (EPA) wrote that they were “favorably impressed by the variety of methods which were used to provide the public up-to-date information related to the development of both the EIS and the project design. The applicant’s use of public information workshops and attendance at existing neighborhood meetings demonstrated a commitment to ensure that the impacted communities were well-informed and educated on the entire process. In addition, alternate outreach methods were employed to make certain that those residents who may not have participated in informational meetings were able to keep apprised of how the projects would affect them individually and their community.”

Community Impact Assessments

A Community Impact Assessment (CIA) is a process to evaluate the effects of a proposed project on a community and its quality of life. The assessment process is an integral part of project planning, with the resulting information used to shape the project and provide documentation of the current and anticipated social environment of a geographic area with and without the project. The assessment includes all items of importance to people, such as mobility, safety, employment effects, relocation, isolation, and other community issues.

OVER →

Community Impact Assessments, Environmental Justice Evaluations, and Community Outreach Plans

SC State Ports Authority Port of Charleston, South Carolina

ATM performed the following work for the CIA completed as part of the EIS for SCSPA's proposed marine container terminal at the CNC:

- Field Investigations
- Personal Interviews
- Technical Reports
- Evaluation of Community Stability and Cohesion
- Evaluation of Economic Impacts
- Evaluation of Environmental Impacts
- Population Data Gathering using U.S. Bureau of the Census

Environmental Justice Evaluations

Executive Order 12898 provides that an objective of the NEPA process is to “make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” Therefore, as part of the EIS for the SCSPA's proposed marine container terminal at the CNC, ATM conducted an environmental justice analysis to assess whether the populations currently residing near the proposed project could be defined as minority and/or low-income populations. To complete the assessment, ATM followed a specific methodology for the identification of environmental justice populations that included statistical evaluations of the racial and income characteristics of persons within the community study areas.

Feasibility Study and Planning For Proposed Marine Terminal Improvements

CertainTeed Gypsum Jacksonville, Florida

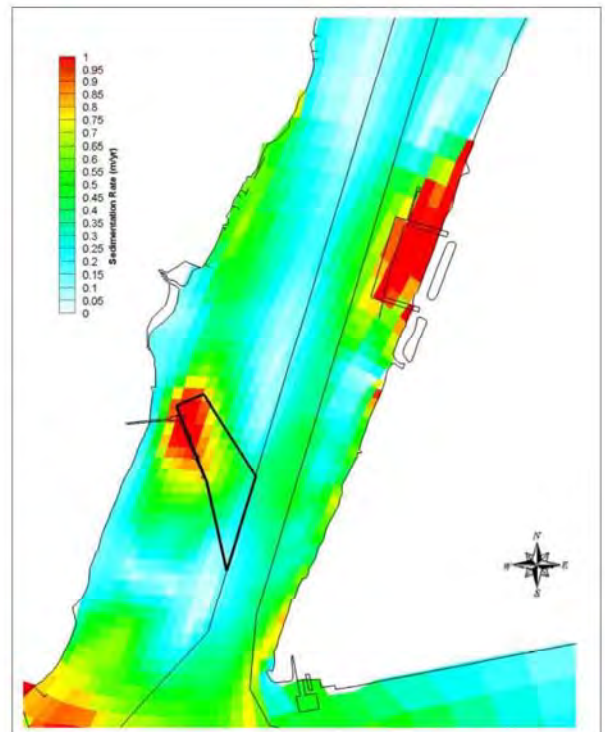
Services Rendered

- Marine Engineering
- Alternatives Analysis/Feasibility Study
- Performed a Sedimentation Model Evaluation
- Evaluated Terminal Options
- Provided Preliminary Budget Options

Project Summary

ATM assisted CertainTeed Gypsum (Owner) with improving the transportation of bulk gypsum from deep-draft ships to their facilities on the St. Johns River in Jacksonville, Florida. The Jacksonville Plant has an existing marine terminal, constructed in 1962, and a berth which has not been maintained in the past 10 years. Because of the lack of maintenance, the effective depth of the berth has decreased due to sedimentation (to -20 feet MLW from a permitted depth of -32 feet MLW).

An initial evaluation of alternatives by ATM considered several terminal options for the unloading of bulk gypsum to the Owner's plant, such as deepening the existing berth, construction of a new berth, or trucking from a nearby terminal facility. The preferred option included construction of a new deep berth along the navigation channel, marine dock structures, and cargo handling equipment. ATM performed hydrodynamic and sedimentation modeling to identify the best berth alignment in order to minimize sedimentation and maintenance dredging costs. ATM provided preliminary budget estimates for both capital costs and maintenance dredging costs for this preferred option.



TraPac Container Terminal Sedimentation Study

TraPac, Inc.
Jacksonville, FL

Services Rendered

- Analysis of Historic Sedimentation Rates and Patterns
- Field Measurement of Currents, Suspended Sediments, and Bottom Sediment Characteristics
- 3-D Numerical Modeling of Currents and Sediment Transport
- Evaluation of Alternatives to Reduce Sedimentation and Maintenance Dredging Costs
- Permitting for Entrance Channel Modification Designed to Reduce Maintenance Dredging

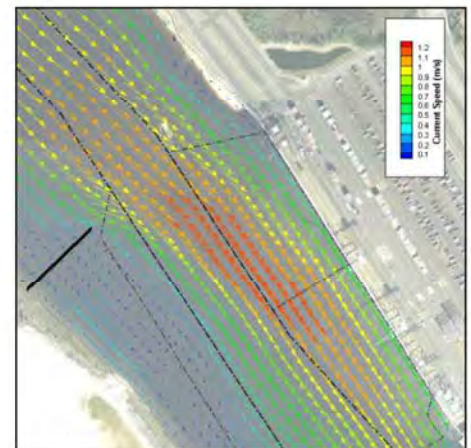
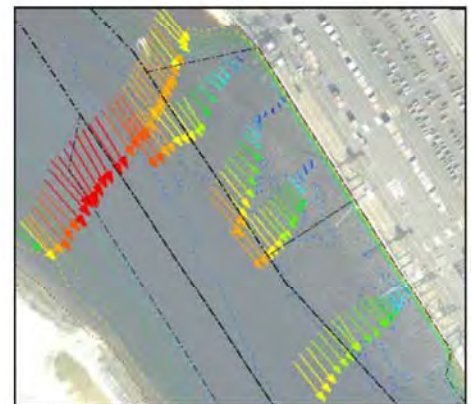
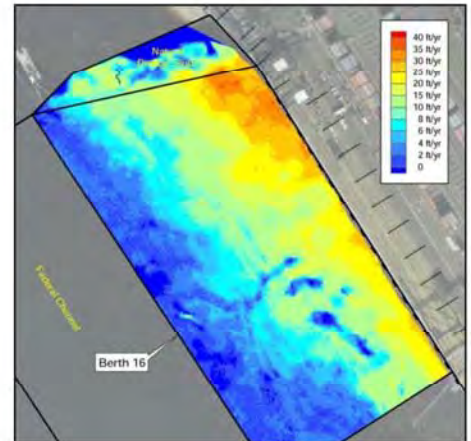
Project Summary

The TraPac container ship terminal in Jacksonville has been experiencing high rates of shoaling at both berths since initial construction in 2008. Approximately 468,000 CY of sediment deposited in the two berths between August 2008 and August 2010.

TraPac contracted with ATM to perform a hydrodynamic and sedimentation study to evaluate the problem and identify potential management solutions. This study gathered additional field data to document the current patterns and sediments at the site, set up a three-dimensional sediment transport model, and used the model to evaluate potential solutions for minimizing shoaling rates in the berths.

The study identified modifications to the entrance channel and berth design that will decrease sedimentation rates substantially. ATM's work included modification to the existing terminal permit to include the designed modifications to the entrance channel.

Following construction of this project, ATM will assist TraPac with evaluation of additional modifications to further reduce maintenance dredging at the site.



Hydrodynamic Model Study in Support of an Environmental Assessment

TEC, Inc.

Naval Submarine Base at Kings Bay, GA

Services Rendered

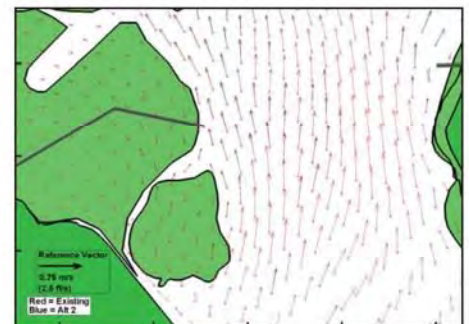
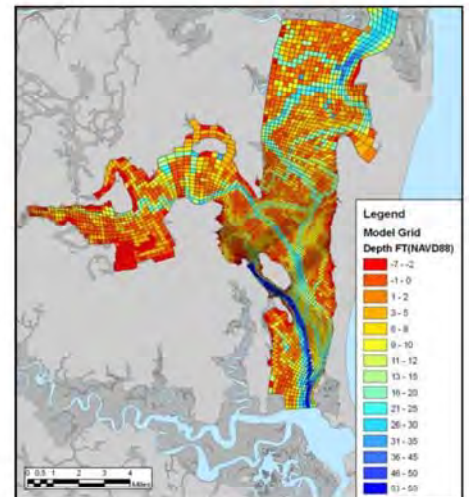
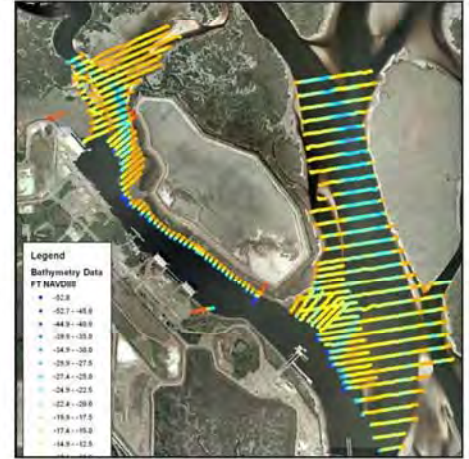
- Field Measurement of Bathymetry, Marsh Topography, Currents, and Water Levels
- 2-D Hydrodynamic Model Setup and Calibration
- Evaluation of Project Alternative Effects on Hydrodynamics and Sedimentation/Erosion Potential

Project Summary

ATM was subcontracted by TEC to support an Environmental Assessment (EA) for a Department of the Navy waterfront security improvement project at the Naval Submarine Base (NSB) at Kings Bay. ATM completed a study to evaluate potential changes to currents, water levels, and sedimentation patterns caused by the proposed project.

In support of the hydrodynamic model development, a field data collection effort was conducted that included measurement of bathymetry, marsh topography, currents, and water levels. Collected data was used to develop and calibrate a hydrodynamic model of the estuary. Comparisons of measured and model simulated current and water level data demonstrated that the model reasonably simulates the tidal circulation in the study area, including water levels and current velocities.

Once model calibration was complete, project alternative scenarios were modeled and results were compared with existing conditions to evaluate changes in hydrodynamics and sedimentation/erosion potential.



Environmental Impact Analysis

Chevron-Texaco Malongo Terminal

Cabinda, Angola

Services Rendered

- Port Facility Siting Evaluation
- Environmental Impact Analysis
- Sediment Transport and Exposure Analysis
- Mitigation Strategy Development

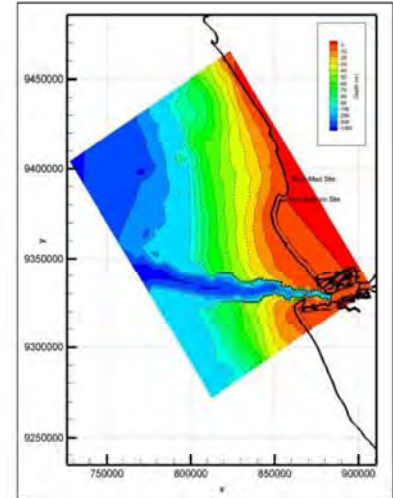
Project Summary

Due to the physical limitations relating to the expansion of Chevron-Texaco's existing Malongo Terminal in Cabinda, Angola, an alternative site for a new container port facility was needed to accommodate increased shipping activity. In response to this need, the U.S. Trade and Development Agency (TDA) sponsored a study to locate a new port facility in Cabinda. ATM was selected to analyze the environmental and physical constraints relating to prospective port sites.

ATM inspected the entire coastline of Cabinda and, working with the TDA team, developed a shortlist of three potentially feasible port locations. For each of these port locations, ATM developed a brief environmental impact assessment and performed a review of bathymetric and potential wind and wave conditions. Using these data, the shortlist of sites was narrowed down through a matrix analysis to one site located between the existing Port of Cabinda and the Malongo Terminal.

ATM then conducted a more in-depth environmental analysis and sediment transport and exposure analysis. The purpose of these analyses was to provide basic information regarding this project and its potential environmental impacts, develop mitigation opportunities, and to serve as the basis for a comprehensive EIA should the project progress. Areas that were analyzed for impacts included:

- Construction of New Roads in Sensitive Areas
- Disruption of Sand Transport Along the Coast
- Dredge Spoil Disposal
- Displacement of Local Population
- Deforestation of Natural Areas and Reserves
- Wetland Destruction
- Water Resource Alterations
- Impacts to Fisheries



Clifton Pier EIA

Shell Bahamas, Ltd.

New Providence Island, Bahamas

Services Rendered

- Preparation of Environmental Impact Assessment
- Initiation of Baseline Monitoring of Water and Sediment Quality
- Preparation of Environmental Management Plan
- Modeling of Ecological Risk Scenarios for Oil Spills

Project Summary

ATM was part of a team retained by Shell Bahamas, Ltd. to conduct an environmental assessment of the proposed Shell Bahamas Offshore Berthing Buoys and Fuel Pipeline Project at Clifton Pier. A formal EIA document was required by the Bahamas government to be submitted to the Bahamas Environment Science and Technology (BEST) Commission.

ATM conducted oil spill modeling scenarios to determine the potential changes that would occur at the facility in the event of a spill. ATM also initiated baseline monitoring of water and sediment quality to provide a benchmark for determination of the environmental health of the project area prior to construction of the project. An environmental management plan was developed by ATM to address environmental control operations at the offshore berthing facility.

Following submission of the EIA, the BEST Commission approved the project after extensive discussions with government representatives and the development of mitigation plans to address the environmental risks.



GIS Analyses for Environmental Impact Study

Marine Container Terminal Development

South Carolina State Ports Authority, Port of Charleston

Services Rendered

- Development of Extensive GIS Database of Land Use, Natural Resources, Water Resources, Neighborhoods, Community Infrastructure and Municipal Services, Transportation Infrastructure, Navigation and Terminal Facilities, Recreational Facilities, Cultural Resources; Hazardous Waste Sites, Aquatic Sediments and Dredging Data, Shorelines, Floodplains, and Noise and Light Sensitive Receptors.
- Quantification of Impacts that would Result from the Construction of a New Marine Container Terminal

Project Summary

ATM was contracted by the USACE and the South Carolina State Ports Authority to prepare an Environmental Impact Statement for the proposed marine container terminal at the former Charleston Naval Complex. In this three year effort, ATM utilized GIS for spatial and environmental analysis, project data management and high-volume map production.

The initial effort required development of a detailed GIS database describing the affected environment in the Charleston region. Over the course of the project, GIS was used in a wide array of capacities, from determining dredge and fill volumes for multiple ship berths and turning basins to quantifying the increase of impervious surface to the Charleston Peninsula. Community sensitive receptors such as schools and nursing homes were analyzed to determine the air quality impacts of increased ship and truck traffic. Wetland impact calculations helped to determine the final design and location of the port access road.

The mapping and graphical capabilities of GIS were crucial throughout the project as a means of communication between ATM team members, subcontractors, and USACE. These capabilities were also critical to the timely completion of the EIS final report, which incorporated over 160 full-color map products.



Container Berth Expansion

Georgia Ports Authority Savannah Harbor, Georgia

Services Rendered

- Sediment and Water Collection, Testing and Evaluation
- Permitting Services and Agency Negotiations
- Environmental Assessment
- Open Water Dredged Material Disposal
- Hydrodynamic Field Studies
- Environmental Monitoring of TSS, DO, etc. During Dredging
- Modeling of Berth Alignment Scenarios to Reduce Sedimentation
- Baseline Sedimentation Studies



Project Summary

The Georgia Ports Authority (GPA) proposed the construction of two new container berths upstream from the existing container terminal in Garden City, Georgia. ATM assisted GPA with the planning and permitting of this effort. Services included baseline hydrodynamic and sedimentation studies in support of a numerical model that was used to establish the best berth alignment to reduce future sedimentation along the berth faces. Additionally, ATM assisted GPA in obtaining environmental permits to dredge the existing berths to proposed depth so that construction may begin on the facilities. Besides typical agency coordination and negotiations, ATM collected sediment and water samples in accordance with the Savannah District Corps' Scope of Work and prepared a comprehensive evaluation that permitted the placement of this material in two open water areas in the Savannah Wildlife Refuge, New Cut and Onslow Slot.

In compliance with the Georgia Environmental Policy Act (GEPA), ATM performed an environmental assessment (EA) on potential impacts resulting from the construction and operation of this new container berth. The EA included wetlands, threatened and endangered species (T&E) of flora and fauna, shoreline, marshlands, fisheries, noise, health and safety, water quality, flooding and other sensitive features. Work performed for the T&E included a literature survey and evaluation of habitat suitability, pedestrian survey, herpetofaunal and small mammal trapping, full color maps depicting habitat and wildlife resource locations and interaction with permitting agencies. ATM performed a census of nesting wading birds in a rookery identified on the site and developed a mitigation plan to allow construction during non-nesting season. ATM worked closely with the wildlife agencies for the State of Georgia, including the GDNR, USFWS, NMFS, USEPA and the USACE.

Container Berth 8 (CB8)

Georgia Ports Authority Savannah, Georgia

Services Rendered

- 404/Section 10 Permitting
- NEPA
- Ecological Studies
- Environmental Engineering Studies
- Water Quality Studies
- Hydrodynamic Modeling
- Shoaling Rate Quantification/Characterization
- Wetland Identification Delineation



Project Summary

ATM has acted as representing agent for the Georgia Ports Authority for the development of a 1,722-foot long pile-supported dock and supporting facilities for commercial vessels. As agent, ATM performed all of the studies and coordinated with resource agencies as part of report compilations and permit application review. ATM's services were retained at the point of project conception in order to provide recommendations on the 404 Section 10 permitting process with respect to NEPA consistency, avoidance issues and project design. In addition, ATM provided a detailed project description, alternatives analysis and project justification.

Ecological studies performed by ATM as part of the CB8 project included (a) wetlands identification, delineation and development of a mitigation scenario with USACE and USEPA consultation; (b) Threatened and Endangered species (T&E) survey with USFWS consultation; and (c) Essential Fish Habitat (EFH) evaluation and consultation with NMFS.

Environmental engineering studies included (a) development of sediment geochemistry Sampling and Analysis Plan (SAP) with USACE coordination; (b) collection of sediment cores and grab samples; (c) interpretation of a sediment geochemistry study with development of a USACE report; (d) recommendation of sediment and dredge material management; (e) design of confined disposal facility with effluent calculations based on accepted water quality standards; and (f) Phase I Environmental Site Assessment (ESA) of properties identified within the project footprint.

Water quality studies and identification of potential impacts to the river system included (a) modeling of shoaling rates located at the proposed berth; (b) modeling and calculation of anticipated maintenance dredging as the result of berth construction; (c) modeling of anticipated changes in current velocities that result from berth construction; and (d) characterization and modeling of changes in water quality parameters that result from berth construction.

Savannah Maritime Trade Center

Chatham County and CSX Realty

Hutchinson Island, Georgia and South Carolina

Services Rendered

- Sampling and Analysis Plan
- Sediment Coring and Water Sampling Collection
- Comprehensive Dredged Material Effects Evaluation
- Intensive Agency Negotiations and Coordination
- Permit Modification to Spoil Slip 1 Sediments in CDF Area 12A
- Sediment and Water Column Monitoring in Area 12A
- Environmental Monitoring of TSS, DO, etc., During Dredging
- Modeling of Mixing Zone for CDF Discharge

Project Summary

Chatham County and CSX Realty Corporation are developing a trade center, hotel, infrastructure, golf course, and recreational boat harbor on Hutchinson Island, immediately across the Savannah River from River Street and Downtown Savannah.

ATM assisted these clients in obtaining a modification to their existing dredging and disposal permits. Because the originally proposed spoil site was no longer available, the project used CDF Area 12A in South Carolina. ATM prepared a Sampling and Analysis Plan (SAP) for the project that was reviewed by the Savannah and Charleston Corps Districts, SCDHEC, OCRM, USFWS, NMFS, SCDNR and the USEPA. The plan was consistent with the Savannah Corps District's Scope of Work and the Charleston District's SAP. A comprehensive evaluation was conducted on the water, sediments, and elutriated sediments for the potential effects to benthic, water column, and terrestrial organisms. The evaluation was subjected to intense scrutiny by the agencies and their comments and objections were answered.

This project represents the first disposal by a private applicant to a SC Corps CDF since the Charleston District and the SC CZM authority began intensively regulating these sites. Appropriate permit conditions and a monitoring plan were negotiated to appease the USFWS. ATM conducted this monitoring in the CDF water column and sediments and provided reports to the USACE. The CDF effluent discharge to SC waters was modeled by ATM using the USACE modified elutriate test procedures and the Cornell Mixing Zone Expert System (CORMIX) model. Risk evaluations to upland birds were conducted as part of the evaluation.



Environmental Impact Statement for Marine Container Terminal Development

South Carolina State Ports Authority Port of Charleston, South Carolina

Services Rendered

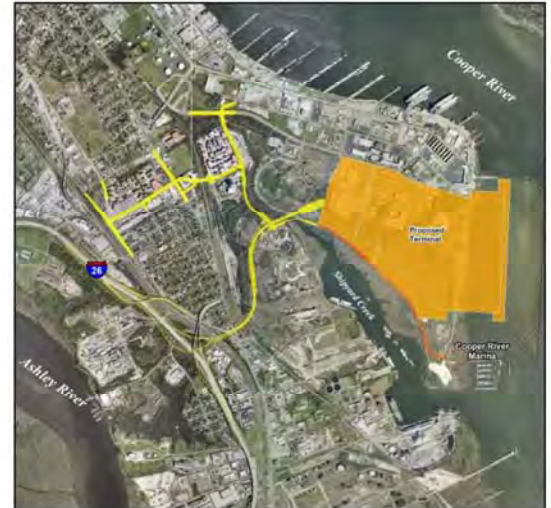
- Access Roadway Feasibility Study
- Community Impact Assessment
- Air Dispersion Modeling
- 3-D Hydrodynamic, Salinity, and Sediment Transport Modeling
- Contamination Assessment
- Ecological Impact Assessment and Mitigation Plan

Project Summary

When the South Carolina State Ports Authority (SCSPA) applied to the U.S. Army Corps of Engineers (USACE), Charleston District, for a permit to construct and operate a marine container terminal at the Charleston Naval Complex (CNC), the USACE had to evaluate the application in compliance with the National Environmental Policy Act of 1969 (NEPA). ATM was selected by both the USACE and SCSPA to facilitate compliance with NEPA (and other federal and state regulations, laws, and executive orders) by developing a comprehensive Environmental Impact Statement (EIS). The purpose of the EIS was to identify and evaluate the potential social, economic, and environmental impacts from the proposed project along with project alternatives.

The challenge of the project was the size and complexity of the port terminal project that will have capital costs of about \$1 billion. The container terminal project included a 286.5-acre terminal with a 3,510-foot-long wharf fronting on the Cooper River. The construction of the project would require dredging 6.5 million cubic yards of material. It would also require placement of 6.5 million cubic yards of suitable material from offsite borrow sources to bring the terminal elevation up to the required grade. To reduce the impact of port traffic on local roads, the project also included a four-lane limited access highway that would directly connect the terminal to the interstate highway one mile from the site.

In a comment letter issued on the Final EIS, EPA wrote that the public participation process used for this EIS should serve as a model for port development projects throughout the U.S.



Savannah Harbor Expansion Project

Georgia Port Authority

Savannah, Georgia

Services Rendered

- 3-D Hydrodynamic and Water Quality Modeling
- Dredge Material Assessment and Management
- Tidal Marsh Studies
- Wave and Coastal Processes Modeling
- Sediment Transport Modeling
- Biological Assessments and Study Management

Project Summary

ATM developed a 3-D hydrodynamic and water quality model to support decision-making in the Tier II EIS process. In order to support the calibration of the 3-D model, ATM designed and performed an extensive data collection on the Lower Savannah River Estuary in 1999. The number of monitoring stations, locations of continuous monitoring stations, and amount of simultaneous water chemistry samples make the collection effort one of the most extensive data sets ever collected. Monitoring plans, data QA/QC, and model calibration were all coordinated with federal, state, and local regulating agencies to address concerns raised in the tier I EIS.

ATM also developed a marsh vegetation model that is capable of predicting changes in vegetation resulting from potential salinity intrusion caused by channel deepening and as predicted by the 3-D hydrodynamic model. A variety of channel design alternatives have been evaluated to support discussions of potential impacts to the existing freshwater marsh. Salinity intrusion is a concern because of the Savannah Wildlife Refuge located upriver of the Federal Navigation Project and the presence of tidal freshwater marshes.

ATM also performed wave and coastal processes modeling to evaluate the potential shoreline changes resulting from deepening the bar channel. Combining the 3-D river hydrodynamic and coastal processes models will enable agencies to evaluate potential impacts of the harbor expansion project.



Access Roadway Feasibility Study for Marine Container Terminal Development

South Carolina State Ports Authority
Port of Charleston, South Carolina

Services Rendered

- Access Roadway Feasibility Study
- Alternatives Recommendation and Review
- Impact Assessment of Community, Ecology, Noise and Lighting, Transportation and Utility Infrastructure, Air Quality, Cultural Resources, Site Contamination, etc.
- Environmental Justice Analysis
- Coordination of Meetings and Feedback of Agencies, Stakeholders, and the Public

Project Summary

ATM was contracted to conduct a study of the feasibility of a direct access roadway to the proposed marine container terminal at the Charleston Naval Complex (CNC) in North Charleston, South Carolina. The feasibility study was conducted as part of an overall Environmental Impact Statement (EIS) for the proposed terminal project. Proposed road work consisted of the development of a four-lane limited access highway between the proposed terminal and Interstate 26, a local access road, and a new access road to Cooper River Marina.



ATM completed the following tasks in support of the roadway evaluation.

- ATM completed all site contamination, wetland, and natural resource surveys needed to assess each roadway alternative.
- ATM supported the USACE in the Section 10/404 permitting process. Development of the proposed roadway would result in dredge and fill activities within waters of the U.S., including impacts to open water and tidal marsh.
- ATM conducted an Environmental Justice Analysis for all port and access road alternatives and included the neighborhoods surrounding the CNC. ATM conducted a comprehensive Community Impact Evaluation that included field investigations, personal interviews, and technical reports.
- ATM supported the USACE in the development and implementation of a public participation process. ATM coordinated with numerous stakeholders, providing information regarding meetings and study progress. Stakeholder meetings were held as needed and served as forums for stakeholders to receive study progress information and provide feedback on the process.

In a comment letter issued on the Final EIS, EPA wrote that the public participation process used for this EIS should serve as a model for port development projects throughout the U.S.

Brunswick Harbor

Georgia Ports Authority

Brunswick, Georgia

Services Rendered

- Sediment and Water Sample Collection, Analysis and Evaluation for:
 - Colonels Island Terminal
 - Braswell Services
 - Andrews Island
- Sampling and Analysis Plans Generated for:
 - Mayors Point Terminal
 - Braswell Services
 - Colonels Island
- Wetland Determinations for Colonels Island Terminal Expansion
- Mitigation Plan for Harbor Expansion
- Wave Refraction Modeling/Adjacent Beaches Impacts from Harbor Expansion
- Value Engineering for Harbor Expansion
- Split Sampling Study with GDNR and USEPA



Project Summary

ATM has assisted the Georgia Ports Authority (GPA), the U.S. Army Corps of Engineers, and private clients with environmental, structural, coastal, and value engineering services. ATM has prepared Sampling and Analysis Plans for several projects consistent with the Savannah District Corps' Scope of Work for Brunswick Harbor. ATM sampled several sites and prepared comprehensive evaluations for material disposal on Andrews Island. Additionally, ATM served as GPA's environmental and coastal consultant for the recent Harbor Expansion project. Work on this project included the development of a wetland mitigation plan, review of sediment chemistry data, and coastal engineering studies including wave refraction/diffraction modeling. ATM staff also served as coastal engineering and dredging engineering experts for the Harbor Expansion value engineering review.

ATM prepared sampling plans for two of GPA's terminals (Mayors Point and Colonels Island) and negotiated and received maintenance dredging and deepening permits for the Colonels Island site.

New Inner Basin LNG Terminal

Southern Liquid Natural Gas (SLNG)/EI Paso Energy

Elba Island, Savannah Harbor, Georgia

Services Rendered

- 404/Section 10 Permitting
- NEPA
- Ecological Studies
- Environmental Engineering Studies
- Water Quality Studies
- Shoaling Rate Characterization
- Current Velocity Study
- Wetland Delineation
- Mitigation Wetland Creation



Project Summary

ATM acted as representing agent for Southern Liquid Natural Gas/EI Paso Energy (SLNG) on the development of a 735-foot wide, 1,600-foot long slip. Following NEPA guidelines, this slip was constructed to provide for the safe and secure docking of tankers carrying liquefied natural gas. Project needs included the dredging of 3.3 MCY of new work material dredged to approximately -42 feet mean low water. As agent, ATM performed all of the studies and coordinated with resource agencies as part of the report compilation and permit application review. SLNG retained ATM at project conception in order to provide recommendations on the 404/Section 10 permitting process regarding NEPA consistency, avoidance issues and project design. A detailed project description, alternatives analysis and project justification were provided as part of the permit development.

Two successful interagency meetings were chaired by ATM. The meetings were held to discuss the findings associated with environmental studies performed during the permitting effort. This project required close interaction and data review by the U.S. Environmental Protection Agency (EPA), U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Georgia Department of Natural Resources (GaDNR), Georgia Environmental Protection Division (GaEPD) and the U.S. Coast Guard (USCG). ATM worked closely with USACE to draft the environmental assessment, notice of intent and case document.

ATM provided the environmental studies and corresponding reports for the development of the Federal Energy Regulatory Commission (FERC) report. On behalf of SLNG, ATM also participated in two FERC-sponsored public meetings to discuss the project and provided responses to public comments and stakeholder evaluations.

Harbor Deepening Project

Georgia Ports Authority

Savannah Harbor, Georgia

Services Rendered

- Preparation of Tier I Sediment Quality Evaluation
- Preparation of Dredged Material Environmental Effects Evaluation
- Sediment and Water Sample Collection, Analyses, and Evaluation
- Preparation of Project-Specific Tier II Sampling and Analysis Plan
- Development of Consensus Sediment Quality Guidelines (SQG)
- Consultations and Negotiations with Federal and State Regulatory Agencies (USEPA, GADNR, and SCDHEC)

Project Summary

The Georgia Ports Authority submitted an application to deepen approximately 35 miles of the Savannah Harbor Navigation Channel. The U.S. Army Corps of Engineers Savannah District determined that the potential environmental impacts warranted completion of an Environmental Impact Statement in keeping with the requirements of the National Environmental Policy Act (NEPA).

The dredging component of the proposed deepening project was subject to the requirements of Sections 401 and 404 of the Clean Water Act (CWA) as well as Section 103 of the Marine Protection, Research, and Sanctuaries Act (MPRSA) since dredged materials were proposed to be disposed of in both upland confined disposal facilities (CDF) and at a designated ocean dredged material disposal site (ODMDS).

ATM prepared the Tier I sediment quality evaluation, identified potential chemicals of concern (COC), conducted a dredged materials environmental effects evaluation (DMEEE) and prepared a DMEEE documentation report. ATM also prepared the Tier II Sampling and Analysis Plan and developed consensus sediment quality guidelines for sediment quality screening purposes.



Georgia Ports Authority Sedimentation Reduction Strategies For Container Berths 8 and 9

Georgia Ports Authority Savannah Harbor, Georgia

Services Rendered

- Optimal Berth Alignment
- Fluid Mud Dynamics
- Sediment Resuspension Unit Feasibility
- I-Beam Dragging Maintenance Dredging
- Overboard Disposal by Hydraulic Dredge
- Conventional Hydraulic Dredging Techniques
- Water Quality and Biological Effects
- Endangered Species Evaluation

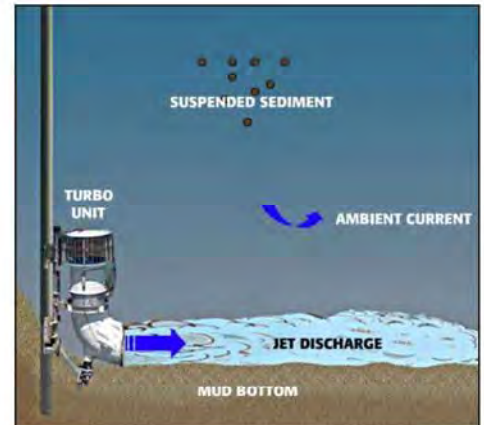
Project Summary

The Georgia Ports Authority (GPA) primary port of Savannah is one of the top container terminals on the East Coast. GPA currently operates two terminals in the Savannah River including the Garden City Terminal which is a dedicated container terminal facility that currently provides 9 berths along almost 10,000 linear feet of riverbank. Unfortunately this region of the Savannah Harbor also exhibits high sedimentation rates which present challenges for maintaining navigable depths on this fast-growing port.

As a result, GPA is always looking for ways to reduce sedimentation and improve dredging efficiency and has consistently relied on ATM to provide expertise on Savannah River sedimentation and hydrodynamics. Container Berths 8 & 9 represent the latest expansion of Garden City Terminal and ATM has performed several studies in support of this expansion.

ATM did a feasibility study to evaluate the potential use of water jet sedimentation control units for Georgia Ports Authority container ship berths. The feasibility study included assessment of alternative maintenance dredging methods and associated costs. ATM assisted GPA with the permitting for a multi-unit installation at their Garden City Terminal. As part of the permitting process, ATM completed biological impact studies to assess potential impacts to striped bass and short nose sturgeon.

With ATM's support, GPA has been able to expand container throughput while reducing maintenance dredging costs and ATM looks forward to assisting GPA with future projects.



Survey Services

Canaveral Port Authority, Norfolk Dredging Company Port Canaveral, Florida

Services Rendered

- Hydrographic Surveying

Project Summary

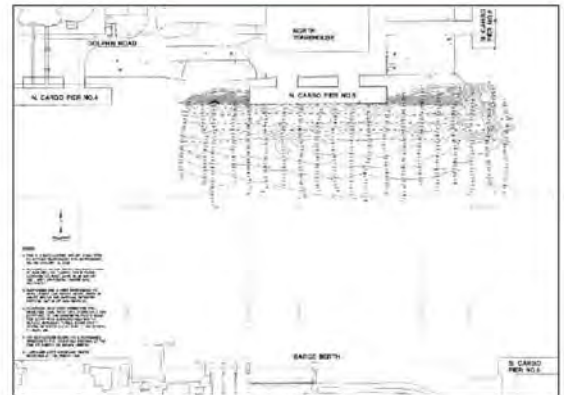
Applied Technology and Management, Inc. (ATM) currently has a continuing services contract to provide land and hydrographic survey services to the Canaveral Port Authority (CPA).

In July of 2002, Norfolk Dredging Company contracted ATM to do a pre-dredge hydrographic survey of the Canaveral Offshore Disposal Site. At the completion of the dredging, ATM was again contracted to perform a post-dredge survey of the same area.

In September of 2004, ATM surveyors were retained to do a Port-Wide Berth Survey, which included bathymetric surveys of all cruise terminals, commercial wharfs, and tanker berths. Following Hurricanes Frances and Jeanne, a portion of these areas were resurveyed to check for possible shoaling. ATM was able to respond to the request for these follow-up surveys very quickly in an effort to assist the CPA with getting back to normal operations following an evacuation of the entire port due to the hurricanes.

ATM has also completed a number of boundary surveys of upland parcels and a conservation area easement owned by the CPA.

Bathymetric surveying was also done in the area around the Port Canaveral Yacht Club out to the navigation channel for use in the design of a new dock that was also permitted by ATM engineers.



Silk Island / Hailong Bay Development Planning

Dataga Holding

Shangchuan Island, Guangdong Province, China

Services Rendered

- Field Inspection / Site Evaluation
- Marine and Infrastructure Feasibility Studies
- General Marina and Cruise Market Evaluations
- Marina Master Planning
- Ferry / Waterborne Transportation Study
- Commercial Port
- Cruise Terminal Planning
- Due Diligence Support



Project Summary

ATM was contracted by Dataga Holding to provide due diligence, feasibility, and planning consulting services in support of seeking concessions to develop two properties located in the Guangdong Province of China. To accomplish this task, ATM teamed with OBM International to conduct comprehensive site evaluation and master planning efforts for the two distinct, large-scale development sites. Efforts included travel to Shangchuan Island to assess the existing resorts and potential development sites on the 14,320-hectare island. Additionally, a secondary mainland development site covering over 450 hectares along Hailong Bay was evaluated.



Translation, review, and incorporation of available studies outlining geologic, oceanographic, meteorological, and other pertinent local information were performed by ATM staff. Conceptual engineering and master planning efforts for four marina sites with potential wet berth capacities totaling over two thousand slips were completed along with master planning efforts for a commercial port, two ferry service terminals, and two cruise ship terminals. Additionally, field evaluations, engineering feasibility, and master plan concepts for protecting and/or enhancing several stretches of resort beach were developed.



Multiple trips to China involved meetings with project team members and local government officials, with formal presentations to various government representatives being directly supported by ATM staff. As a result of ATM's efforts, Dataga is poised to gain one of only a few non-national development concessions to be potentially issued by the Chinese Government.



APPLIED TECHNOLOGY & MANAGEMENT

FEASIBILITY STUDY FOR DOCKING FACILITIES

2.0 PROPOSED APPROACH

2.0 PROJECT APPROACH

Introduction

In all Berthing Facility Design projects the first step is to provide a feasibility study to assess the engineering, planning, and environmental issues that exist at the site and to clearly identify the path forward to allow for planning and permitting of the proposed facility and ultimately design and construction. Under a feasibility study the following waterside components are typically assessed:



- Navigation and Ship Access
- Sedimentation and Maintenance Dredging
- Berth Facility Siting
- Regulatory

In the navigation component, the feasibility of the project is assessed in relation to the ships to be served and their ability to navigate to the site (depth, clearance of structures, and navigability of the maintained federal channel in the area). The Sedimentation and Maintenance Dredging assessment is completed to determine the optimal location of berthing areas in terms of limiting the overall berth maintenance requirements in terms of dredging as well as potential impacts to sedimentation of the primary navigation channel and storage/disposal of dredge materials. Berth facility siting assesses the optimal location of the docks and access routes to the remainder of the property. Finally, the Regulatory feasibility of the site is assessed to determine the potential limiting factors related to permitting of the various aspects of the berth and associated facilities.

The feasibility assessment as proposed is limited to engineering and environmental aspects of the proposed berthing facilities and the immediate facilities adjacent to the docks. This assessment does not address issues associated with the economic viability of the overall project or the planning and design of support facilities within the property for storage and transfer of cargo and mobilization to other locations.

Under the Project Approach, 6 work tasks will be completed. These are;

- Task 1: Baseline Database Development
- Task 2: Navigation and Ship Access
- Task 3: Sedimentation and Maintenance Dredging
- Task 4: Berth Facility Siting
- Task 5: Regulatory Feasibility
- Task 6: Feasibility Report

The following outlines the work to be completed under each Task.

Task 1: Baseline Database Development

ATM will coordinate with the Client, as well as local government and agency sources to obtain all available information that may be relevant to the project and that is available. The following is a list of the types of information to be gathered. It is anticipated that this information is presently available at levels sufficient for use in the feasibility assessment.

- Bathymetry of the river, from the study area to the ocean including coverages for the navigation channel and other navigational restrictions
- Hydraulic and hydrologic data, including river water level measurements
- Soil maps, geologic and/or geotechnical studies for the property sites
- Low resolution topographic maps, satellite images, etc
- Port and navigation infrastructure along the river

Once all available data have been gathered and processed into a project database, ATM will prepare a list of additional requests or clarification. ATM will review all information received from the Client and assess its applicability for further planning use.

ATM will acquire high resolution aerial photography of the project site as well as available infrared imagery. ATM will process the images to obtain 2 geo-referenced, rectified high resolution images for each site: true color and infrared. The analysis of true color and infrared image can be used to identify different vegetation types and locate areas with standing water. The images will be attached to an AutoCAD file and geo-referenced so that they are readily usable for planning purposes.



ATM will compile base maps for use in master planning, combining the data received from other sources (if available) and the images.

Task 2: Navigation and Ship Access

ATM will utilize information provided for the design vessel and capacity and recommended minimum channel depths and geometry (widths and curves), and bridge soffit elevations, etc. To support this effort, ATM will apply international navigation guidelines and provide:

- Channel capacity (ship-flow rate)
- Navigation requirements (i.e., directionality of the traffic, turning circles, and recommended navigation aids, etc.)
- Design vessel utilized for each facility together with maximum recommended ship sizes
- Effect of the channel dimensions and geometry (i.e., curves) on the maneuverability and safety of the incoming ships and recommended changes to the master plan to provide for safer navigation in problem areas
- Boat-induced wave (wake) effects and the impact on proposed edge treatments (i.e., wave overtopping, reflection, possible effects on upland areas, etc.) and recommended alternative edge treatments
- Traffic effects on project facilities

The results of this analysis may affect the master plan to an extent that it will require an iterative analysis or changes to the design vessel assumptions, etc.

Task 3: Sedimentation and Maintenance Dredging

Significant maintenance dredging costs can accumulate in order to maintain safe navigation for a cargo terminal. While the federal navigation channel in this area is maintained for a control depth of 47 ft, access to the berth from the channel and the mooring areas themselves are the responsibility of the terminal operator. When assessing the feasibility of terminal construction and the more localized issues like berth alignment, structure type, etc., it is important to both plan for maintenance dredging and to plan the terminal to reduce the maintenance dredging burden in the first place. This latter task involves appropriate siting to take advantage of the hydrodynamics of the system and careful planning of the berthing structures to reduce localized sedimentation.



Maintenance dredging can also be performed in several ways and with different types of dredges. ATM will evaluate the alternatives most likely to be employed at each of the sites and rank them in terms of cost, logistics, level of operational disruption and regulatory feasibility. For the dredging alternatives that include removal of the sediments from the system and placement in another location, the distance to available locations will be determined along with availability and the estimated costs of disposal and transportation.

ATM will synthesize the results of the above evaluations and recommend which alternatives appear to be the most feasible either individually or in some combination for the long-term management of site(s) sedimentation. Each of the selected alternatives will be evaluated in terms of potential capital costs, operations & maintenance costs, financial impact to the operation, long-term environmental impact (some short-term impacts could be offset by long-term gains and the decreased frequency of perturbations), permitability, public acceptance, and logistical and engineering practicality.

Task 4: Berth Facility Siting

Under this task ATM will evaluate the needed mooring infrastructure for each of the selected sites to meet the program requirements. ATM will comprehensively assess the existing physical conditions, environmental (wind, wave & current) conditions, land use requirements, concept plans, and waterborne transportation information for the design vessel. We will then recommend strategic guidelines for the development of various terminals and propose a series of alternative siting, layouts, and sizing of terminals. General siting for individual terminals will later be refined during the planning of those facilities. The Berth Facility Siting component will contain:

- General water space use plans and facility requirements
- Site-specific navigation plan including ingress/egress, offset to federal channel, and turning circles, etc.
- Development planning and siting alternatives. This effort will include tabular programming of each site, but not detailed layouts. These will be produced at the later conceptual design phase.
- Projected user profiles for each location proposed (ship and cargo types, ship specifications and requirements, etc.)
- Number of berths and typical size mix for each site.

Task 5: Regulatory Feasibility

ATM will perform a regulatory feasibility investigation to acquaint the Developer with the rules for port development in the Louisiana Coastal Zone area, the permits required, and the agencies that will be involved. This overview will also evaluate the potential problems that may be encountered such as threatened and endangered species, aquatic vegetation, water quality classifications, submerged land lease issues, and other issues

It is prudent to determine potential significant roadblocks and constraints for the proposed project from a regulatory standpoint. In this way, the Developer obtains a realistic understanding of project feasibility. Although the regulatory opinions unfold during permit application processing, upfront assessment can identify hurdles and possible denial issues. Specific items covered under this task include:

- Water quality regulations and protection areas review
- Critical species protection areas and regulations review
- Potential ramifications from impacts to aquatic vegetation [note: This task does not include an aquatic vegetation survey; only the potential restrictions that may arise from the presence of vegetation.]
- Stormwater control requirements and applicable regulations
- Sovereign Submerged Land issues
- Initial LDNR, LDEQ, and USACE contacts and information review

Task 6: Feasibility Report

Upon completion of Tasks 1 through 5 a summary report will be prepared that outlines the findings from the individual feasibility assessment studies for each of the proposed site locations. The report will be provided as a draft to the Client for review and approval. Upon receipt of comments the report will be finalized. The report will be provided in electronic format as a PDF document and will include write ups of all of the analyses performed and the assumptions and data utilized with each. The report will be provided on a CD along with all data utilized in the analyses.

